

- Aaron-Morrison, A.P., Ackerman, S.A., Adams, N.G., Adler, R.F., Albanil, A., Alfaro, E.J., Allan, R., Alves, L.M., Amador, J.A., et al., 2015, State of the climate in 2014, *Bulletin of the American Meteorological Society*, v. 96, no. 7, 267 p., at <https://doi.org/10.1175/2015bamsstateoftheclimate.1>.
- Abatzoglou, J.T., McEvoy, D.J., Nauslar, N.J., Hegewisch, K.C., and Huntington, J.L., 2023, Downscaled subseasonal fire danger forecast skill across the contiguous United States: *Atmospheric Science Letters*, v. 24, no. 8, article e1165, at <https://doi.org/10.1002/asl.1165>.
- Abbasi, N., Nouri, H., Didan, K., Barreto-Muñoz, A., Chavoshi Borujeni, S., Opp, C., Nagler, P., Thenkabail, P.S., and Siebert, S., 2023, Mapping vegetation index-derived actual evapotranspiration across croplands using the Google Earth Engine platform: *Remote Sensing*, v. 15, no. 4, article 1017, at <https://doi.org/10.3390/rs15041017>.
- Abdalati, W., Zwally, H.J., Bindenschadler, R.A., Csatho, B., Farrell, S.L., Fricker, H.A., Harding, D., Kwok, R., Lefsky, M., et al., 2010, The ICESat-2 Laser Altimetry Mission: *Proceedings of the IEEE*, v. 98, no. 5, p. 735–751, at <https://doi.org/10.1109/JPROC.2009.2034765>.
- Abdou, W.A., Bruegge, C.J., Helmlinger, M.C., Conel, J.E., Pilorz, S.H., Ledebouer, W., Gaitley, B.J., and Thome, K.J., 2002, Vicarious calibration experiment in support of the multi-angle imaging spectroradiometer: *IEEE Transactions on Geoscience and Remote Sensing*, v. 40, no. 7, p. 1500–1511, at <https://doi.org/10.1109/TGRS.2002.801582>.
- Abernethy, R., Ackerman, S.A., Adler, R., Albanil Encarnación, A., Aldeco, L.S., Alfaro, E.J., Aliaga-Nestares, V., Allan, R.P., Allan, R., et al., 2018, State of the climate in 2017, *Bulletin of the American Meteorological Society*, v. 99, no. 8, 310 p., at <https://doi.org/10.1175/2018BAMSStateoftheClimate.1>.
- Abuelgasim, A.A., Gopal, S., Irons, J.R., and Strahler, A.H., 1996, Classification of ASAS multiangle and multispectral measurements using artificial neural networks: *Remote Sensing of Environment*, v. 57, no. 2, p. 79–87, at [https://doi.org/10.1016/0034-4257\(95\)00197-2](https://doi.org/10.1016/0034-4257(95)00197-2).
- Abuelgasim, A.A., Ross, W.D., Gopal, S., and Woodcock, C.E., 1999, Change detection using adaptive fuzzy neural networks—Environmental damage assessment after the Gulf War: *Remote Sensing of Environment*, v. 70, no. 2, p. 208–223, at [https://doi.org/10.1016/S0034-4257\(99\)00039-5](https://doi.org/10.1016/S0034-4257(99)00039-5).
- Achard, F., Defries, R., Eva, H., Hansen, M.C., Mayaux, P., and Stibig, H.J., 2007, Pan-tropical monitoring of deforestation: *Environmental Research Letters*, v. 2, no. 4, article 045022, at <https://doi.org/10.1088/1748-9326/2/4/045022>.
- Achard, F., Eva, H.D., Mayaux, P., Stibig, H.J., and Belward, A.S., 2004, Improved estimates of net carbon emissions from land cover change in the tropics for the 1990s: *Global Biogeochemical Cycles*, v. 18, no. 2, article GB2008, at <https://doi.org/10.1029/2003GB002142>.
- Affek, A.N., Jabs-Sobocińska, Z., Wolski, J., and Radeloff, V.C., 2023, Pockets of persistence of agricultural land use during the socioeconomic shock of forced post-WWII displacements in the Carpathians: *Land Use Policy*, v. 131, at <https://doi.org/10.1016/j.landusepol.2023.106678>.
- Agam, N., Kustas, W.P., Alfieri, J.G., Gao, F., McKee, L.M., Prueger, J.H., and Hipps, L.E., 2019, Micro-scale spatial variability in soil heat flux (SHF) in a wine-grape vineyard: *Irrigation Science*, v. 37, no. 3, p. 253–268, at <https://doi.org/10.1007/s00271-019-00634-6>.

- Agam, N., Kustas, W.P., Anderson, M.C., Li, F., and Colaizzi, P.D., 2007, Utility of thermal sharpening over Texas high plains irrigated agricultural fields: *Journal of Geophysical Research Atmospheres*, v. 112, no. 19, article D19110, at <https://doi.org/10.1029/2007JD008407>.
- Agam, N., Kustas, W.P., Anderson, M.C., Li, F., and Colaizzi, P.D., 2008, Utility of thermal image sharpening for monitoring field-scale evapotranspiration over rainfed and irrigated agricultural regions: *Geophysical Research Letters*, v. 35, no. 2, article L02402, at <https://doi.org/10.1029/2007GL032195>.
- Agam, N., Kustas, W.P., Anderson, M.C., Li, F., and Neale, C.M.U., 2007, A vegetation index based technique for spatial sharpening of thermal imagery: *Remote Sensing of Environment*, v. 107, no. 4, p. 545–558, at <https://doi.org/10.1016/j.rse.2006.10.006>.
- Agam, N., Kustas, W.P., Anderson, M.C., Norman, J.M., Colaizzi, P.D., Howell, T.A., Prueger, J.H., Meyers, T.P., and Wilson, T.B., 2010, Application of the Priestley-Taylor approach in a two-source surface energy balance model: *Journal of Hydrometeorology*, v. 11, no. 1, p. 185–198, at <https://doi.org/10.1175/2009JHM1124.1>.
- Aghakouchak, A., Farahmand, A., Melton, F.S., Teixeira, J., Anderson, M.C., Wardlow, B.D., and Hain, C.R., 2015, Remote sensing of drought—Progress, challenges and opportunities: *Reviews of Geophysics*, v. 53, no. 2, p. 452–480, at <https://doi.org/10.1002/2014RG000456>.
- Ahmed, O.S., Franklin, S.E., and Wulder, M.A., 2014, Integration of lidar and Landsat data to estimate forest canopy cover in coastal British Columbia: *Photogrammetric Engineering and Remote Sensing*, v. 80, no. 10, p. 953–962, at <https://doi.org/10.14358/PERS.80.10.953>.
- Ahmed, O.S., Franklin, S.E., and Wulder, M.A., 2014, Interpretation of forest disturbance using a time series of Landsat imagery and canopy structure from airborne lidar: *Canadian Journal of Remote Sensing*, v. 39, no. 6, p. 521–542, at <https://doi.org/10.5589/m14-004>.
- Ahmed, O.S., Franklin, S.E., Wulder, M.A., and White, J.C., 2015, Characterizing stand-level forest canopy cover and height using Landsat time series, samples of airborne LiDAR, and the Random Forest algorithm: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 101, p. 89–101, at <https://doi.org/10.1016/j.isprsjprs.2014.11.007>.
- Ahmed, O.S., Franklin, S.E., Wulder, M.A., and White, J.C., 2016, Extending airborne lidar-derived estimates of forest canopy cover and height over large areas using kNN With Landsat time series data: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 9, no. 8, p. 3489–3496, at <https://doi.org/10.1109/JSTARS.2015.2492363>.
- Ahmed, O.S., Wulder, M.A., White, J.C., Hermosilla, T., Coops, N.C., and Franklin, S.E., 2017, Classification of annual non-stand replacing boreal forest change in Canada using Landsat time series—A case study in northern Ontario: *Remote Sensing Letters*, v. 8, no. 1, p. 29–37, at <https://doi.org/10.1080/2150704X.2016.1233371>.
- Akasheh, S.Z., Neale, C.M.U., Anderson, M.C., Hain, C.R., Roberti, D.R., Souza, V.A., Goncalves, I.Z., and Schull, M.A., 2023, Regional daily evapotranspiration estimation using remote sensing data and atmospheric-land exchange inverse energy model in Brazil, *in* *Remote Sensing for Agriculture, Ecosystems, and Hydrology XXV*, Amsterdam, Netherlands, 3–6 September 2023, *Proceedings of SPIE Vol. 12727*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 127270x, at <https://doi.org/10.1117/12.2680247>.
- Akçakaya, H.R., Radeloff, V.C., Mladenoff, D.J., and He, H.S., 2004, Integrating landscape and metapopulation modeling approaches—Viability of the sharp-tailed grouse in a dynamic

landscape: *Conservation Biology*, v. 18, no. 2, p. 526–537, at <https://doi.org/10.1111/j.1523-1739.2004.00520.x>.

- Akumaga, U., Gao, F., Anderson, M., Dulaney, W.P., Houborg, R., Russ, A., and Hively, W.D., 2023, Integration of remote sensing and field observations in evaluating DSSAT model for estimating maize and soybean growth and yield in Maryland, USA: *Agronomy*, v. 13, no. 6, article 1540, at <https://doi.org/10.3390/agronomy13061540>.
- Albano, C.M., Abatzoglou, J.T., McEvoy, D.J., Huntington, J.L., Morton, C.G., Dettinger, M.D., and Ott, T.J., 2022, A multidataset assessment of climatic drivers and uncertainties of recent trends in evaporative demand across the continental United States: *Journal of Hydrometeorology*, v. 23, no. 4, p. 505–519, at <https://doi.org/10.1175/JHM-D-21-0163.1>.
- Albano, C.M., McClure, M.L., Gross, S.E., Kitlsten, W., Souldard, C.E., Morton, C., and Huntington, J., 2019, Spatial patterns of meadow sensitivities to interannual climate variability in the Sierra Nevada: *Ecology*, v. 12, no. 7, article e2128, at <https://doi.org/10.1002/eco.2128>.
- Albano, C.M., McGwire, K.C., Hausner, M.B., McEvoy, D.J., Morton, C.G., and Huntington, J.L., 2020, Drought sensitivity and trends of riparian vegetation vigor in Nevada, USA (1985–2018): *Remote Sensing*, v. 12, no. 9, article 1362, at <https://doi.org/10.3390/RS12091362>.
- Albee, A.L., Arvidson, R.E., Palluconi, F.D., and Thorpe, T., 2001, Overview of the Mars Global Surveyor mission: *Journal of Geophysical Research Planets*, v. 106, no. E10, p. 23291–23316, at <https://doi.org/10.1029/2000JE001306>.
- Albee, A.L., Palluconi, F.D., and Arvidson, R.E., 1998, Mars Global Surveyor mission—Overview and status: *Science*, v. 279, no. 5357, p. 1671–1672, at <https://doi.org/10.1126/science.279.5357.1671>.
- Albert, M., Shuman, C., Courville, Z., Bauer, R., Fahnestock, M., and Scambos, T.A., 2004, Extreme firn metamorphism—Impact of decades of vapor transport on near-surface firn at a low-accumulation glazed site on the East Antarctic plateau: *Annals of Glaciology*, v. 39, p. 73–78, at <https://doi.org/10.3189/172756404781814041>.
- Albright, T.P., Pidgeon, A.M., Rittenhouse, C.D., Clayton, M.K., Flather, C.H., Culbert, P.D., and Radeloff, V.C., 2011, Heat waves measured with MODIS land surface temperature data predict changes in avian community structure: *Remote Sensing of Environment*, v. 115, no. 1, p. 245–254, at <https://doi.org/10.1016/j.rse.2010.08.024>.
- Albright, T.P., Pidgeon, A.M., Rittenhouse, C.D., Clayton, M.K., Flather, C.H., Culbert, P.D., Wardlow, B.D., and Radeloff, V.C., 2010, Effects of drought on avian community structure: *Global Change Biology*, v. 16, no. 8, p. 2158–2170, at <https://doi.org/10.1111/j.1365-2486.2009.02120.x>.
- Albright, T.P., Pidgeon, A.M., Rittenhouse, C.D., Clayton, M.K., Wardlow, B.D., Flather, C.H., Culbert, P.D., and Radeloff, V.C., 2010, Combined effects of heat waves and droughts on avian communities across the conterminous United States: *Ecosphere*, v. 1, no. 5, p. 1–22, at <https://doi.org/10.1890/ES10-00057.1>.
- Alcantara, C., Kuemmerle, T., Baumann, M., Bragina, E.V., Griffiths, P., Hostert, P., Knorn, J., Müller, D., Prishchepov, A.V., et al., 2013, Mapping the extent of abandoned farmland in Central and Eastern Europe using MODIS time series satellite data: *Environmental Research Letters*, v. 8, no. 3, article 035035, at <https://doi.org/10.1088/1748-9326/8/3/035035>.

- Alcantara, C., Kuemmerle, T., Prishchepov, A.V., and Radeloff, V.C., 2012, Mapping abandoned agriculture with multi-temporal MODIS satellite data: *Remote Sensing of Environment*, v. 124, p. 334–347, at <https://doi.org/10.1016/j.rse.2012.05.019>.
- Alden, C.B., Miller, J.B., Gatti, L.V., Gloor, M.M., Guan, K., Michalak, A.M., van der Laan-Luijkx, I.T., Touma, D., Andrews, A., et al., 2016, Regional atmospheric CO₂ inversion reveals seasonal and geographic differences in Amazon net biome exchange: *Global change biology*, v. 22, no. 10, p. 3427–3443, at <https://doi.org/10.1111/gcb.13305>.
- Alexandre, P.M., Mockrin, M.H., Stewart, S.I., Hammer, R.B., and Radeloff, V.C., 2015, Rebuilding and new housing development after wildfire: *International Journal of Wildland Fire*, v. 24, no. 1, p. 138–149, at <https://doi.org/10.1071/WF13197>.
- Alexandre, P.M., Stewart, S.I., Keuler, N.S., Clayton, M.K., Mockrin, M.H., Bar-Massada, A., Syphard, A.D., and Radeloff, V.C., 2016, Factors related to building loss due to wildfires in the conterminous United States: *Ecological Applications*, v. 26, no. 7, p. 2323–2338, at <https://doi.org/10.1002/eap.1376>.
- Alexandre, P.M., Stewart, S.I., Mockrin, M.H., Keuler, N.S., Syphard, A.D., Bar-Massada, A., Clayton, M.K., and Radeloff, V.C., 2016, The relative impacts of vegetation, topography and spatial arrangement on building loss to wildfires in case studies of California and Colorado: *Landscape Ecology*, v. 31, no. 2, p. 415–430, at <https://doi.org/10.1007/s10980-015-0257-6>.
- Alfieri, J.G., Anderson, M.C., Kustas, W.P., and Cammalleri, C., 2017, Effect of the revisit interval and temporal upscaling methods on the accuracy of remotely sensed evapotranspiration estimates: *Hydrology and Earth System Sciences*, v. 21, no. 1, p. 83–98, at <https://doi.org/10.5194/hess-21-83-2017>.
- Alfieri, J.G., Kustas, W.P., Nieto, H., Prueger, J.H., Hipps, L.E., McKee, L.G., Gao, F., and Los, S., 2019, Influence of wind direction on the surface roughness of vineyards: *Irrigation Science*, v. 37, no. 3, p. 359–373, at <https://doi.org/10.1007/s00271-018-0610-z>.
- Alfieri, J.G., Kustas, W.P., Prueger, J.H., Chavez, J.L., Evett, S.R., Neale, C.M.U., Anderson, M.C., Hipps, L.E., Copeland, K.S., et al., 2012, A comparison of the eddy covariance and lysimetry-based measurements of the surface energy fluxes during BEAREX08, *in* *Remote Sensing and Hydrology 2010, Jackson Hole, Wyo., 27–30 September 2010*, IAHS Publication 352: Wallingford, UK, International Association of Hydrological Sciences, p. 215–218.
- Alfieri, J.G., Kustas, W.P., Prueger, J.H., McKee, L.G., Hipps, L.E., and Gao, F., 2019, A multi-year intercomparison of micrometeorological observations at adjacent vineyards in California's Central Valley during GRAPEX: *Irrigation Science*, v. 37, no. 3, p. 345–357, at <https://doi.org/10.1007/s00271-018-0599-3>.
- Alix-Garcia, J., Kuemmerle, T., and Radeloff, V.C., 2012, Prices, land tenure institutions, and geography—A matching analysis of farmland abandonment in post-socialist eastern Europe: *Land Economics*, v. 88, no. 3, p. 425–443, at <https://doi.org/10.3368/le.88.3.425>.
- Alix-Garcia, J., Munteanu, C., Zhao, N., Potapov, P.V., Prishchepov, A.V., Radeloff, V.C., Krylov, A., and Bragina, E., 2016, Drivers of forest cover change in Eastern Europe and European Russia, 1985–2012: *Land Use Policy*, v. 59, p. 284–297, at <https://doi.org/10.1016/j.landusepol.2016.08.014>.
- Alix-Garcia, J., Walker, S., Radeloff, V., and Kozak, J., 2018, Tariffs and trees—The effects of the Austro-Hungarian Customs Union on specialization and land-use change: *Journal of Economic History*, v. 78, no. 4, p. 1142–1178, at <https://doi.org/10.1017/S0022050718000554>.

- Alleaume, S., Hély, C., Le Roux, J., Korontzi, S., Swap, R.J., Shugart, H.H., and Justice, C.O., 2005, Using MODIS to evaluate heterogeneity of biomass burning in southern African savannahs—A case study in Etosha: *International Journal of Remote Sensing*, v. 26, no. 19, p. 4219–4237, at <https://doi.org/10.1080/01431160500113492>.
- Allen, R., Foken, T., Kilic, A., Trezza, R., and Ortega-Farias, S., 2021, Evapotranspiration measurements and calculations, *in* Foken, T., ed., *Springer Handbook of Atmospheric Measurements*: Cham, Switzerland, Springer, p. 1545–1581, at https://doi.org/10.1007/978-3-030-52171-4_57.
- Allen, R.G., 1996, Assessing integrity of weather data for reference evapotranspiration estimation: *Journal of Irrigation and Drainage Engineering*, v. 122, no. 2, p. 97–106, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(1996\)122:2\(97\)](https://doi.org/10.1061/(ASCE)0733-9437(1996)122:2(97)).
- Allen, R.G., 1996, Relating the Hazen-Williams and Darcy-Weisbach friction loss equations for pressurized irrigation: *Applied Engineering in Agriculture*, v. 12, no. 6, p. 685–693, at <https://doi.org/10.13031/2013.25699>.
- Allen, R.G., 1997, Self-calibrating method for estimating solar radiation from air temperature: *Journal of Hydrologic Engineering*, v. 2, no. 2, p. 56–67, at [https://doi.org/10.1061/\(ASCE\)1084-0699\(1997\)2:2\(56\)](https://doi.org/10.1061/(ASCE)1084-0699(1997)2:2(56)).
- Allen, R.G., 2000, Using the FAO-56 dual crop coefficient method over an irrigated region as part of an evapotranspiration intercomparison study: *Journal of Hydrology*, v. 229, no. 1–2, p. 27–41, at [https://doi.org/10.1016/S0022-1694\(99\)00194-8](https://doi.org/10.1016/S0022-1694(99)00194-8).
- Allen, R.G., 2004, Penman-Monteith equation, *in* Hillel, D., and Hatfield, J.L., eds., *Encyclopedia of soils in the environment*: Amsterdam, Netherlands, Elsevier, p. 180–188, at <https://doi.org/10.1016/B0-12-348530-4/00399-4>.
- Allen, R.G., 2007, Footprint analysis to assess the conditioning of temperature and humidity measurements in a weather station vicinity, *in* *Restoring our natural habitat*, World Environmental and Water Resources Congress, Tampa, Fla., 15–19 May 2007, Proceedings: Reston, Va., American Society of Civil Engineers, p. 1–12, at [https://doi.org/10.1061/40856\(200\)292](https://doi.org/10.1061/40856(200)292).
- Allen, R.G., 2008, Quality assessment of weather data and micrometeorological flux-impacts on evapotranspiration calculation: *Journal of Agricultural Meteorology*, v. 64, no. 4, p. 191–204, at <https://doi.org/10.2480/agrmet.64.4.5>.
- Allen, R.G., 2011, Skin layer evaporation to account for small precipitation events—An enhancement to the FAO-56 evaporation model: *Agricultural Water Management*, v. 99, no. 1, p. 8–18, at <https://doi.org/10.1016/j.agwat.2011.08.008>.
- Allen, R.G., and Bastiaanssen, W.G.M., 2005, Editorial—Special issue on remote sensing of crop evapotranspiration for large regions: *Irrigation and Drainage Systems*, v. 19, no. 3–4, p. 207–210, at <https://doi.org/10.1007/s10795-005-5185-1>.
- Allen, R.G., Burnett, B., Kramber, W., Huntington, J.L., Kjaersgaard, J., Kilic, A., Kelly, C., and Trezza, R., 2013, Automated calibration of the METRIC-Landsat evapotranspiration process: *Journal of the American Water Resources Association*, v. 49, no. 3, p. 563–576, at <https://doi.org/10.1111/jawr.12056>.
- Allen, R.G., Clemmens, A.J., Burt, C.M., Solomon, K., and O’Halloran, T., 2005, Prediction accuracy for projectwide evapotranspiration using crop coefficients and reference evapotranspiration: *Journal*

- of Irrigation and Drainage Engineering, v. 131, no. 1, p. 24–36, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2005\)131:1\(24\)](https://doi.org/10.1061/(ASCE)0733-9437(2005)131:1(24)).
- Allen, R.G., Hendrickx, J., Bastiaanssen, W., Kjaersgaard, J., Irmak, A., and Huntington, J.L., 2010, Status and continuing challenges in operational remote sensing of ET, *in* 5th National Decennial Irrigation Conference 2010, Held in Conjunction with Irrigation Show 2010, Phoenix, Ariz., 5–8 December 2010, Proceedings: St. Joseph, Mich., American Society of Agricultural and Biological Engineers, p. 728–747, at <https://doi.org/10.13031/2013.35872>.
- Allen, R.G., and Hubler, W.H., 2015, Using frictional power to model LSST removal with conventional abrasives, *in* Optical Manufacturing and Testing XI, San Diego, Calif., 9–11 August 2015, Proceedings of SPIE Vol. 9575: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 95750q, at <https://doi.org/10.1117/12.2188968>.
- Allen, R.G., Irmak, A., Trezza, R., Hendrickx, J.M.H., Bastiaanssen, W., and Kjaersgaard, J., 2011, Satellite-based ET estimation in agriculture using SEBAL and METRIC: Hydrological Processes, v. 25, no. 26, p. 4011–4027, at <https://doi.org/10.1002/hyp.8408>.
- Allen, R.G., and Jensen, M.E., 2015, ASCE manual 70, Second edition—Evaporation, evapotranspiration and irrigation requirements, *in* IA Irrigation Symposium—Emerging Technologies for Sustainable Irrigation - A Tribute to the Career of Terry Howell, Sr., Long Beach, Calif., 10–12 November 2015, Conference Proceedings: St. Joseph, Mich., American Society of Agricultural and Biological Engineers, p. 351–367, at <https://doi.org/10.13031/irrig.20152143358>.
- Allen, R.G., Kilic, A., Suyker, A., and Okalebo, J., 2015, Fitting measured evapotranspiration data to the FA056 dual crop coefficient method, *in* IA Irrigation Symposium—Emerging Technologies for Sustainable Irrigation - A Tribute to the Career of Terry Howell, Sr., Long Beach, Calif., 10–12 November 2015, Conference Proceedings: St. Joseph, Mich., American Society of Agricultural and Biological Engineers, p. 434–469, at <https://doi.org/10.13031/irrig.20152143520>.
- Allen, R.G., Kjaersgaard, J.H., Trezza, R., Oliveira, A., Robison, C., and Lorite-Torres, I., 2012, Refining components of a satellite-based surface energy balance model to complex land-use systems, *in* Remote Sensing and Hydrology 2010, Jackson Hole, Wyo., 27–30 September 2010, IAHS Publication 352: Wallingford, UK, International Association of Hydrological Sciences, p. 73–75.
- Allen, R.G., Morse, A., Tasumi, M., Bastiaanssen, W., Kramber, W., and Anderson, H., 2001, Evapotranspiration from Landsat (SEBAL) for water rights management and compliance with multi-state water compacts, *in* 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 830–833, at <https://doi.org/10.1109/IGARSS.2001.976651>.
- Allen, R.G., Morton, C., Kamble, B., Kilic, A., Huntington, J.L., Thau, D., Gorelick, N.S., Erickson, T., Moore, R., et al., 2015, EEFlux—A Landsat-based evapotranspiration mapping tool on the Google Earth Engine, *in* IA Irrigation Symposium—Emerging Technologies for Sustainable Irrigation - A Tribute to the Career of Terry Howell, Sr., Long Beach, Calif., 10–12 November 2015, Conference Proceedings: St. Joseph, Mich., American Society of Agricultural and Biological Engineers, p. 424–433, at <https://doi.org/10.13031/irrig.20152143511>.
- Allen, R.G., and Pereira, L.S., 2009, Estimating crop coefficients from fraction of ground cover and height, *in* Great rivers, World Environmental and Water Resources Congress, Kansas City, Mo., 17–21 May 2009, Proceedings: Reston, Va., American Society of Civil Engineers, p. 4036–4050, at [https://doi.org/10.1061/41036\(342\)408](https://doi.org/10.1061/41036(342)408).

- Allen, R.G., Pereira, L.S., Howell, T.A., and Jensen, M.E., 2010, Recommended documentation of evapotranspiration measurements and associated weather data and a review of requirements for accuracy, *in* 5th National Decennial Irrigation Conference 2010, Held in Conjunction with Irrigation Show 2010, Phoenix, Ariz., 5–8 December 2010, Proceedings: St. Joseph, Mich., American Society of Agricultural and Biological Engineers, p. 196–235, at <https://doi.org/10.13031/2013.35828>.
- Allen, R.G., Pereira, L.S., Howell, T.A., and Jensen, M.E., 2011, Evapotranspiration information reporting— I. Factors governing measurement accuracy: *Agricultural Water Management*, v. 98, no. 6, p. 899–920, at <https://doi.org/10.1016/j.agwat.2010.12.015>.
- Allen, R.G., Pereira, L.S., Howell, T.A., and Jensen, M.E., 2011, Evapotranspiration information reporting— II. Recommended documentation: *Agricultural Water Management*, v. 98, no. 6, p. 921–929, at <https://doi.org/10.1016/j.agwat.2010.12.016>.
- Allen, R.G., Pereira, L.S., Smith, M., Raes, D., and Wright, J.L., 2005, FAO-56 dual crop coefficient method for estimating evaporation from soil and application extensions: *Journal of Irrigation and Drainage Engineering*, v. 131, no. 1, p. 2–13, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2005\)131:1\(2\)](https://doi.org/10.1061/(ASCE)0733-9437(2005)131:1(2)).
- Allen, R.G., Pruitt, W.O., Raes, D., Smith, M., and Pereira, L.S., 2005, Estimating evaporation from bare soil and the crop coefficient for the initial period using common soils information: *Journal of Irrigation and Drainage Engineering*, v. 131, no. 1, p. 14–23, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2005\)131:1\(14\)](https://doi.org/10.1061/(ASCE)0733-9437(2005)131:1(14)).
- Allen, R.G., Pruitt, W.O., Wright, J.L., Howell, T.A., Ventura, F., Snyder, R., Itenfisu, D., Steduto, P., Berengena, J., et al., 2006, A recommendation on standardized surface resistance for hourly calculation of reference ETo by the FAO56 Penman-Monteith method: *Agricultural Water Management*, v. 81, no. 1-2, p. 1–22, at <https://doi.org/10.1016/j.agwat.2005.03.007>.
- Allen, R.G., Robison, C.W., Huntington, J., Wright, J.L., and Kilic, A., 2021, Applying the FAO-56 dual K_c method for irrigation water requirements over large areas of the Western U.S.: *Transactions of the ASABE*, v. 63, no. 6, p. 2059–2081, at <https://doi.org/10.13031/TRANS.13933>.
- Allen, R.G., Smith, M., Pereira, L.S., and Pruitt, W.O., 1997, Proposed revision to the fao procedure for estimating crop water requirements: *Acta Horticulturae*, v. 449, p. 17–33, at <https://doi.org/10.17660/ActaHortic.1997.449.2>.
- Allen, R.G., Smith, M., Pereira, L.S., Raes, D., and Wright, J.L., 2004, Revised FAO procedures for calculating evapotranspiration—Irrigation and drainage paper no. 56 with testing in Idaho, *in* Watershed Management and Operations Management 2000, Fort Collins, Colo., 20–24 June 2000, Proceedings: Reston, Va., American Society of Civil Engineers, p. 1–10, at [https://doi.org/10.1061/40499\(2000\)125](https://doi.org/10.1061/40499(2000)125).
- Allen, R.G., Su, P., Burge, J.H., Cuerden, B., and Martin, H.M., 2010, Scanning pentaprism test for the GMT 8.4 m off-axis segments, *in* Modern Technologies in Space- and Ground-Based Telescopes and Instrumentation, San Diego, Calif., 27 June–2 July 2010, Proceedings of SPIE Vol. 7739: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 773911, at <https://doi.org/10.1117/12.857901>.
- Allen, R.G., and Tasumi, M., 2005, Evaporation from American Falls Reservoir in Idaho via a combination of bowen ratio and eddy covariance, *in* 2005 World Water and Environmental Resources

- Congress, Anchorage, Alaska, 15–19 May 2005, Proceedings: Reston, Va., American Society of Civil Engineers, p. 1–17, at [https://doi.org/10.1061/40792\(173\)527](https://doi.org/10.1061/40792(173)527).
- Allen, R.G., Tasumi, M., Morse, A., and Trezza, R., 2005, A Landsat-based energy balance and evapotranspiration model in Western US water rights regulation and planning: Irrigation and Drainage Systems, v. 19, no. 3–4, p. 251–268, at <https://doi.org/10.1007/s10795-005-5187-z>.
- Allen, R.G., Tasumi, M., Morse, A., and Trezza, R., 2005, Satellite-based evapotranspiration by energy balance for western states water management, *in* 2005 World Water and Environmental Resources Congress, Anchorage, Alaska, 15–19 May 2005, Proceedings: Reston, Va., American Society of Civil Engineers, p. 1–19, at [https://doi.org/10.1061/40792\(173\)556](https://doi.org/10.1061/40792(173)556).
- Allen, R.G., Tasumi, M., Morse, A., Trezza, R., Wright, J.L., Bastiaanssen, W., Kramber, W., Lorite, I., and Robison, C.W., 2007, Satellite-based energy balance for mapping evapotranspiration with internalized calibration (METRIC)—Applications: Journal of Irrigation and Drainage Engineering, v. 133, no. 4, p. 395–406, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2007\)133:4\(395\)](https://doi.org/10.1061/(ASCE)0733-9437(2007)133:4(395)).
- Allen, R.G., Tasumi, M., and Trezza, R., 2006, Benefits from tying satellite-based energy balance to reference evapotranspiration, *in* Earth observation for vegetation monitoring and water management, Naples, Italy, 10–11 November 2005, Proceedings: Melville, N.Y., American Institute of Physics, p. 127–137, at <https://doi.org/10.1063/1.2349336>.
- Allen, R.G., Tasumi, M., and Trezza, R., 2007, Satellite-based energy balance for mapping evapotranspiration with internalized calibration (METRIC)—Model: Journal of Irrigation and Drainage Engineering, v. 133, no. 4, p. 380–394, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2007\)133:4\(380\)](https://doi.org/10.1061/(ASCE)0733-9437(2007)133:4(380)).
- Allen, R.G., Tasumi, M., and Trezza, R., 2007, Why use reference evapotranspiration to calibrate satellite-based energy balances?, *in* Restoring our natural habitat, World Environmental and Water Resources Congress, Tampa, Fla., 15–19 May 2007, Proceedings: Reston, Va., American Society of Civil Engineers, p. 1–12, at [https://doi.org/10.1061/40856\(200\)272](https://doi.org/10.1061/40856(200)272).
- Allen, R.G., Tasumi, M., Trezza, R., Robison, C.W., Garcia, M., Toll, D., Arsenault, K., Hendrickx, J.M.H., and Kjaersgaard, J., 2008, Comparison of evapotranspiration images derived from MODIS and Landsat along the middle Rio Grande, *in* World Environmental and Water Resources Congress, Honolulu, Hawaii, 12–16 May 2008, Proceedings: Reston, Va., American Society of Civil Engineers, p. 1–13, at [https://doi.org/10.1061/40976\(316\)87](https://doi.org/10.1061/40976(316)87).
- Allen, R.G., Trezza, R., Kilic, A., Tasumi, M., and Li, H., 2013, Sensitivity of Landsat-scale energy balance to aerodynamic variability in mountains and complex terrain: Journal of the American Water Resources Association, v. 49, no. 3, p. 592–604, at <https://doi.org/10.1111/jawr.12055>.
- Allen, R.G., Trezza, R., and Tasumi, M., 2006, Analytical integrated functions for daily solar radiation on slopes: Agricultural and Forest Meteorology, v. 139, no. 1-2, p. 55–73, at <https://doi.org/10.1016/j.agrformet.2006.05.012>.
- Allen, R.G., and Wright, J.L., 1997, Translating wind measurements from weather stations to agricultural crops: Journal of Hydrologic Engineering, v. 2, no. 1, p. 26–34, at [https://doi.org/10.1061/\(ASCE\)1084-0699\(1997\)2:1\(26\)](https://doi.org/10.1061/(ASCE)1084-0699(1997)2:1(26)).
- Allen, R.G., and Wright, J.L., 2009, Estimation of evaporation and evapotranspiration during nongrowing seasons using a dual crop coefficient, *in* Great rivers, World Environmental and Water Resources Congress, Kansas City, Mo., 17–21 May 2009, Proceedings: Reston, Va., American Society of Civil Engineers, p. 4158–4171, at [https://doi.org/10.1061/41036\(342\)419](https://doi.org/10.1061/41036(342)419).

- Allendorf, T.D., Radeloff, V.C., and Keuler, N.S., 2019, People's perceptions of protected areas across spatial scales: Parks, v. 25, no. 1, p. 25–38, at <https://doi.org/10.2305/IUCN.CH.2019.PARKS-25-1TDA.en>.
- Alley, K.E., Scambos, T.A., and Alley, R.B., 2023, The role of channelized basal melt in ice-shelf stability—Recent progress and future priorities: Annals of Glaciology, v. 2019, no. 5, at <https://doi.org/10.1017/aog.2023.5>.
- Alley, K.E., Scambos, T.A., Alley, R.B., and Holschuh, N., 2019, Troughs developed in ice-stream shear margins precondition ice shelves for ocean-driven breakup: Science Advances, v. 5, no. 10, article aax2215, at <https://doi.org/10.1126/sciadv.aax2215>.
- Alley, K.E., Scambos, T.A., Anderson, R.S., Rajaram, H., Pope, A., and Haran, T.M., 2018, Continent-wide estimates of Antarctic strain rates from Landsat 8-derived velocity grids: Journal of Glaciology, v. 64, no. 244, p. 321–332, at <https://doi.org/10.1017/jog.2018.23>.
- Alley, K.E., Scambos, T.A., Miller, J.Z., Long, D.G., and MacFerrin, M., 2018, Quantifying vulnerability of Antarctic ice shelves to hydrofracture using microwave scattering properties: Remote Sensing of Environment, v. 210, p. 297–306, at <https://doi.org/10.1016/j.rse.2018.03.025>.
- Alley, K.E., Scambos, T.A., Siegfried, M.R., and Fricker, H.A., 2016, Impacts of warm water on Antarctic ice shelf stability through basal channel formation: Nature Geoscience, v. 9, no. 4, p. 290–293, at <https://doi.org/10.1038/ngeo2675>.
- Alley, K.E., Wild, C.T., Luckman, A., Scambos, T.A., Truffer, M., Pettit, E.C., Muto, A., Wallin, B., Klinger, M., et al., 2021, Two decades of dynamic change and progressive destabilization on the Thwaites Eastern Ice Shelf: Cryosphere, v. 15, no. 11, p. 5187–5203, at <https://doi.org/10.5194/tc-15-5187-2021>.
- Allstadt, A.J., Vavrus, S.J., Heglund, P.J., Pidgeon, A.M., Thogmartin, W.E., and Radeloff, V.C., 2015, Spring plant phenology and false springs in the conterminous US during the 21st century: Environmental Research Letters, v. 10, no. 10, article 104008, at <https://doi.org/10.1088/1748-9326/10/10/104008>.
- Alonso, A., Muñoz-Carpena, R., Kennedy, R.E., and Murcia, C., 2016, Wetland landscape spatio-temporal degradation dynamics using the new Google Earth Engine cloud-based platform—Opportunities for non-specialists in remote sensing: Transactions of the ASABE, v. 59, no. 5, p. 1333–1344, at <https://doi.org/10.13031/trans.59.11608>.
- Altena, B., Scambos, T., Fahnestock, M., and Käab, A., 2019, Extracting recent short-term glacier velocity evolution over southern Alaska and the Yukon from a large collection of Landsat data: Cryosphere, v. 13, no. 3, p. 795–814, at <https://doi.org/10.5194/tc-13-795-2019>.
- Alves, D.S., and Skole, D.L., 1996, Characterizing land cover dynamics using multi-temporal imagery: International Journal of Remote Sensing, v. 17, no. 4, p. 835–839, at <https://doi.org/10.1080/01431169608949049>.
- Amatulli, G., McInerney, D., Sethi, T., Strobl, P., and Domisch, S., 2020, Geomorpho90m, empirical evaluation and accuracy assessment of global high-resolution geomorphometric layers: Scientific Data, v. 7, no. 1, article 162, at <https://doi.org/10.1038/s41597-020-0479-6>.
- Ambeau, B.L., Gerace, A.D., Montanaro, M., and McCorkel, J.T., 2016, The characterization of a DIRSIG simulation environment to support the inter-calibration of spaceborne sensors, *in* Earth Observing Systems XXI, San Diego, Calif., 28 August–1 September 2016, Proceedings of SPIE Vol.

- 9972: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 99720m, at <https://doi.org/10.1117/12.2238317>.
- Amos, K.J., Croke, J.C., Hughes, A.O., Chapman, J., Takken, I., and Lymburner, L., 2008, A catchment-scale assessment of anabranching in the 143 000 km² Fitzroy River catchment, north-eastern Australia: *Earth Surface Processes and Landforms*, v. 33, no. 8, p. 1222–1241, at <https://doi.org/10.1002/esp.1609>.
- Amstislavski, P., Zubov, L., Chen, H., Ceccato, P., Pekel, J.F., and Weedon, J., 2013, Effects of increase in temperature and open water on transmigration and access to health care by the Nenets reindeer herders in northern Russia: *International Journal of Circumpolar Health*, v. 72, no. S1, article 21183, at <https://doi.org/10.3402/ijch.v72i0.21183>.
- Anderson, C., Helder, D.L., and Jenó, D., 2017, Statistical relative gain calculation for Landsat 8, *in* Earth Observing Systems XXII, San Diego, Calif., 6–10 August 2017, Proceedings of SPIE Vol. 10402: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 104021f, at <https://doi.org/10.1117/12.2276000>.
- Anderson, C., Labahn, S.T., Helder, D., Stensaas, G.L., Engebretson, C., Crawford, C.J., Jenkerson, C.B., and Barnes, C.A., 2019, The U.S. Geological Survey's approach to analysis ready data, *in* 2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5541–5544, at <https://doi.org/10.1109/IGARSS.2019.8899216>.
- Anderson, D.E., and Cahalan, R.F., 2005, The Solar Radiation and Climate Experiment (SORCE) mission for the NASA Earth Observing System (EOS), *in* Rottman, G., Woods, T.N., and George, V., eds., *The Solar Radiation and Climate Experiment (SORCE)—Mission description and early results*: New York, N.Y., Springer, p. 3–6, at https://doi.org/10.1007/0-387-37625-9_1.
- Anderson, G.P., Schaaf, C.B., Loukachine, K., Stone, R.S., Andrews, E., Shettle, E.P., Dutton, E.G., Roman III, M.O., Stohl, A., and Berk, A., 2008, Assessing the radiative impact of aerosol smoke using MODTRAN™5, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery, XIV, Orlando, Fla., 17–19 March 2008, Proceedings of SPIE Vol. 6966: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 696617, at <https://doi.org/10.1117/12.782364>.
- Anderson, M., Diak, G., Gao, F., Knipper, K., Hain, C., Eichelmann, E., Hemes, K.S., Baldocchi, D., Kustas, W., and Yang, Y., 2019, Impact of insolation data source on remote sensing retrievals of evapotranspiration over the California delta: *Remote Sensing*, v. 11, no. 3, article 216, at <https://doi.org/10.3390/rs11030216>.
- Anderson, M.C., Allen, R.G., Morse, A., and Kustas, W.P., 2012, Use of Landsat thermal imagery in monitoring evapotranspiration and managing water resources: *Remote Sensing of Environment*, v. 122, p. 50–65, at <https://doi.org/10.1016/j.rse.2011.08.025>.
- Anderson, M.C., Bland, W.L., Norman, J.M., and Diak, G.D., 2001, Canopy wetness and humidity prediction using satellite and synoptic-scale meteorological observations: *Plant Disease*, v. 85, no. 9, p. 1018–1026, at <https://doi.org/10.1094/PDIS.2001.85.9.1018>.
- Anderson, M.C., Gao, F., Knipper, K., Hain, C., Dulaney, W., Baldocchi, D., Eichelmann, E., Hemes, K., Yang, Y., et al., 2018, Field-scale assessment of land and water use change over the California delta using remote sensing: *Remote Sensing*, v. 10, no. 6, article 889, at <https://doi.org/10.3390/rs10060889>.

- Anderson, M.C., Hain, C., Gao, F., Kustas, W., Yang, Y., Sun, L., Yang, Y., Holmes, T., and Dulaney, W., 2016, Mapping evapotranspiration at multiple scales using multi-sensor data fusion, *in* 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 226–229, at <https://doi.org/10.1109/IGARSS.2016.7729050>.
- Anderson, M.C., Hain, C., Otkin, J., Zhan, X., Mo, K., Svoboda, M., Wardlow, B., and Pimstein, A., 2013, An intercomparison of drought indicators based on thermal remote sensing and NLDAS-2 simulations with U.S. drought monitor classifications: *Journal of Hydrometeorology*, v. 14, no. 4, p. 1035–1056, at <https://doi.org/10.1175/JHM-D-12-0140.1>.
- Anderson, M.C., Hain, C., Wardlow, B., Pimstein, A., Mecikalski, J.R., and Kustas, W.P., 2011, Evaluation of drought indices based on thermal remote sensing of evapotranspiration over the continental United States: *Journal of Climate*, v. 24, no. 8, p. 2025–2044, at <https://doi.org/10.1175/2010JCLI3812.1>.
- Anderson, M.C., Hain, C.R., Jurecka, F., Trnka, M., Hlavinka, P., Dulaney, W., Otkin, J.A., Johnson, D.M., and Gao, F., 2016, Relationships between the evaporative stress index and winter wheat and spring barley yield anomalies in the Czech Republic: *Climate Research*, v. 70, no. 2-3, p. 215–230, at <https://doi.org/10.3354/cr01411>.
- Anderson, M.C., Hain, C.R., Wardlow, B.D., Pimstein, A., Mecikalski, J.R., and Kustas, W.P., 2012, Thermal-based evaporative stress index for monitoring surface moisture depletion, *Remote sensing of drought—innovative monitoring approaches*: Boca Raton, Fla., CRC Press, p. 145–167, at <https://doi.org/10.1201/b11863-14>.
- Anderson, M.C., and Kustas, W., 2008, Thermal remote sensing of drought and evapotranspiration: *Eos*, v. 89, no. 26, p. 233–234, at <https://doi.org/10.1029/2008EO260001>.
- Anderson, M.C., and Kustas, W.P., 2008, Mapping evapotranspiration and drought at local to continental scales using thermal remote sensing, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. IV121–IV123, at <https://doi.org/10.1109/IGARSS.2008.4779671>.
- Anderson, M.C., Kustas, W.P., Alfieri, J.G., Gao, F., Hain, C., Prueger, J.H., Evett, S., Colaizzi, P., Howell, T., and Chávez, J.L., 2012, Mapping daily evapotranspiration at Landsat spatial scales during the BEAREX'08 field campaign: *Advances in Water Resources*, v. 50, p. 134–151, at <https://doi.org/10.1016/j.advwatres.2012.06.005>.
- Anderson, M.C., Kustas, W.P., Dulaney, W.P., Gao, F., and Sumner, D., 2012, Integration of multi-scale thermal satellite imagery for evaluation of daily evapotranspiration at sub-field scales, *in* *Remote Sensing and Hydrology 2010*, Jackson Hole, Wyo., 27–30 September 2010, IAHS Publication 352: Wallingford, UK, International Association of Hydrological Sciences, p. 132–136.
- Anderson, M.C., Kustas, W.P., and Norman, J.M., 2003, Upscaling and downscaling—A regional view of the soil-plant-atmosphere continuum: *Agronomy Journal*, v. 95, no. 6, p. 1408–1423, at <https://doi.org/10.2134/agronj2003.1408>.
- Anderson, M.C., Kustas, W.P., and Norman, J.M., 2006, A multi-scale remote sensing-based modeling system for estimating local and regional fluxes, *in* *AIP Conference*, Naples, Italy, 10–11 November 2005, Proceedings: Melville, N.Y., American Institute of Physics, p. 146–153, at <https://doi.org/10.1063/1.2349338>.

- Anderson, M.C., Kustas, W.P., and Norman, J.M., 2007, Upscaling flux observations from local to continental scales using thermal remote sensing: *Agronomy Journal*, v. 99, no. 1, p. 240–254, at <https://doi.org/10.2134/agronj2005.0096S>.
- Anderson, M.C., Kustas, W.P., Norman, J.M., Hain, C.R., Mecikalski, J.R., Schultz, L., González-Dugo, M.P., Cammalleri, C., D'Urso, G., et al., 2011, Mapping daily evapotranspiration at field to continental scales using geostationary and polar orbiting satellite imagery: *Hydrology and Earth System Sciences*, v. 15, no. 1, p. 223–239, at <https://doi.org/10.5194/hess-15-223-2011>.
- Anderson, M.C., Neale, C.M.U., Li, F., Norman, J.M., Kustas, W.P., Jayanthi, H., and Chavez, J., 2004, Upscaling ground observations of vegetation water content, canopy height, and leaf area index during SMEX02 using aircraft and Landsat imagery: *Remote Sensing of Environment*, v. 92, no. 4, p. 447–464, at <https://doi.org/10.1016/j.rse.2004.03.019>.
- Anderson, M.C., Norman, J.M., Diak, G.R., and Kustas, W.P., 1996, Simple method for estimating surface energy fluxes and air temperatures from satellite observations, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2104–2106, at <https://doi.org/10.1109/IGARSS.1996.516902>.
- Anderson, M.C., Norman, J.M., Diak, G.R., Kustas, W.P., and Mecikalski, J.R., 1997, A two-source time-integrated model for estimating surface fluxes using thermal infrared remote sensing: *Remote Sensing of Environment*, v. 60, no. 2, p. 195–216, at [https://doi.org/10.1016/S0034-4257\(96\)00215-5](https://doi.org/10.1016/S0034-4257(96)00215-5).
- Anderson, M.C., Norman, J.M., Kustas, W.P., Houborg, R., Starks, P.J., and Agam, N., 2008, A thermal-based remote sensing technique for routine mapping of land-surface carbon, water and energy fluxes from field to regional scales: *Remote Sensing of Environment*, v. 112, no. 12, p. 4227–4241, at <https://doi.org/10.1016/j.rse.2008.07.009>.
- Anderson, M.C., Norman, J.M., Kustas, W.P., Li, F., Prueger, J.H., and Mecikalski, J.R., 2005, Effects of vegetation clumping on two-source model estimates of surface energy fluxes from an agricultural landscape during SMACEX: *Journal of Hydrometeorology*, v. 6, no. 6, p. 892–909, at <https://doi.org/10.1175/JHM465.1>.
- Anderson, M.C., Norman, J.M., Mecikalski, J.R., Otkin, J.A., and Kustas, W.P., 2007, A climatological study of evapotranspiration and moisture stress across the continental United States based on thermal remote sensing—1. Model formulation: *Journal of Geophysical Research Atmospheres*, v. 112, no. 10, article D10117, at <https://doi.org/10.1029/2006JD007506>.
- Anderson, M.C., Norman, J.M., Mecikalski, J.R., Otkin, J.A., and Kustas, W.P., 2007, A climatological study of evapotranspiration and moisture stress across the continental United States based on thermal remote sensing—2. Surface moisture climatology: *Journal of Geophysical Research Atmospheres*, v. 112, no. 11, article D11112, at <https://doi.org/10.1029/2006JD007507>.
- Anderson, M.C., Norman, J.M., Mecikalski, J.R., Torn, R.D., Kustas, W.P., and Basara, J.B., 2004, A multiscale remote sensing model for disaggregating regional fluxes to micrometeorological scales: *Journal of Hydrometeorology*, v. 5, no. 2, p. 343–363, at [https://doi.org/10.1175/1525-7541\(2004\)005<0343:AMRSMF>2.0.CO;2](https://doi.org/10.1175/1525-7541(2004)005<0343:AMRSMF>2.0.CO;2).
- Anderson, M.C., Norman, J.M., Meyers, T.P., and Diak, G.R., 2000, An analytical model for estimating canopy transpiration and carbon assimilation fluxes based on canopy light-use efficiency:

- Agricultural and Forest Meteorology, v. 101, no. 4, p. 265–289, at [https://doi.org/10.1016/S0168-1923\(99\)00170-7](https://doi.org/10.1016/S0168-1923(99)00170-7).
- Anderson, M.C., Twine, T., and Black, A., 2009, Foreword for special issue on Environmental Biophysics: Agricultural and Forest Meteorology, v. 149, no. 12, p. 2061–2063, at <https://doi.org/10.1016/j.agrformet.2009.09.003>.
- Anderson, M.C., Zaitchik, B.F., and Simane, B., 2012, Data and ingenuity for climate change solutions—Water balance from space—promoting climate resilience in the Blue Nile/Abay Highlands: Resource—Engineering and Technology for Sustainable World, v. 19, no. 3, p. 14–15, at <http://elibrary.asabe.org/abstract.asp?aid=41352&t=11>.
- Anderson, M.C., Zaitchik, B.F., and Simane, B., 2012, Water balance from space: Resource—Engineering and Technology for Sustainable World, v. 19, no. 3, p. 14–15.
- Anderson, M.C., Zolin, C.A., Hain, C.R., Semmens, K., Tugrul Yilmaz, M., and Gao, F., 2015, Comparison of satellite-derived LAI and precipitation anomalies over Brazil with a thermal infrared-based Evaporative Stress Index for 2003–2013: Journal of Hydrology, v. 526, p. 287–302, at <https://doi.org/10.1016/j.jhydrol.2015.01.005>.
- Anderson, M.C., Zolin, C.A., Sentelhas, P.C., Hain, C.R., Semmens, K., Tugrul Yilmaz, M., Gao, F., Otkin, J.A., and Tetrault, R., 2016, The Evaporative Stress Index as an indicator of agricultural drought in Brazil—An assessment based on crop yield impacts: Remote Sensing of Environment, v. 174, p. 82–99, at <https://doi.org/10.1016/j.rse.2015.11.034>.
- Anderson, N., Biggar, S., Burkhart, C., Thome, K.J., and Mavko, M., 2002, Bi-directional calibration results for the cleaning of Spectralon™ reference panels, in Earth Observing Systems VII, Seattle, Wash., 7–10 July 2002, Proceedings of SPIE Vol. 4814: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 201–210, at <https://doi.org/10.1117/12.451780>.
- Anderson, N., Biggar, S., Thome, K.J., and Leisso, N., 2007, Solar radiation-based calibration of laboratory grade radiometers, in Earth Observing Systems XII, San Diego, Calif., 26–28 August 2007, Proceedings of SPIE Vol. 6677: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 66770x, at <https://doi.org/10.1117/12.740146>.
- Anderson, N., Czaplá-Myers, J., Leisso, N., Biggar, S., Burkhart, C., Kingston, R., and Thome, K.J., 2013, Design and calibration of field deployable ground-viewing radiometers: Applied Optics, v. 52, no. 2, p. 231–240, at <https://doi.org/10.1364/AO.52.000231>.
- Anderson, N., Thome, K., Biggar, S., and Wenny, B., 2023, Design of an ultra-portable field-capable short wave infrared transfer radiometer supporting Earth observing sensor calibration, in Earth Observing Systems XXVIII, San Diego, Calif., 22–24 August 2023, Proceedings of SPIE Vol. 12685: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1268504, at <https://doi.org/10.1117/12.2676533>.
- Anderson, N., Thome, K.J., Biggar, S., and Czaplá-Myers, J.S., 2008, Design and validation of a transfer radiometer, in Earth Observing Systems XIII, San Diego, Calif., 11–13 August 2008, Proceedings of SPIE Vol. 7081: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 708104, at <https://doi.org/10.1117/12.795478>.
- Anderson, N., Thome, K.J., Czaplá-Myers, J., and Biggar, S., 2015, Design of an ultra-portable field transfer radiometer supporting automated vicarious calibration, in Earth Observing Systems XX, San Diego, Calif., 10–13 August 2015, Proceedings of SPIE Vol. 9607: Bellingham, Wash., Society of

- Photo-Optical Instrumentation Engineers (SPIE), paper no. 960709, at <https://doi.org/10.1117/12.2186894>.
- Anderson, N., Velarde, C.C., Dylla, J., Czaplá-Myers, J., and Thome, K., 2023, Evaluating commercial tablet screens for use as portable spectral radiance calibration assessment sources, specifically in support of field-deployed ground viewing radiometers, *in* Earth Observing Systems XXVIII, San Diego, Calif., 22–24 August 2023, Proceedings of SPIE Vol. 12685: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 126851b, at <https://doi.org/10.1117/12.2676537>.
- Anderson, N., Young, J., Stockmann, K., Skog, K., Healey, S.P., Loeffler, D., Greg Jones, J., and Morrison, J., 2013, Regional and forest-level estimates of carbon stored in harvested wood products from the United States forest service Northern Region, 1906-2010, General Technical Report, USDA Forest Service, Rocky Mountain Research Station, RMRS-GTR-311, 114 p., at <https://doi.org/10.2737/RMRS-GTR-311>.
- Anderson, S.F., Margon, B., Deutsch, E.W., Downes, R.A., and Allen, R.G., 1997, Time-resolved ultraviolet observations of the globular cluster X-ray source in NGC 6624—The shortest known period binary system: *Astrophysical Journal*, v. 482, no. 1 pt. 2, p. L69–L72, at <https://doi.org/10.1086/310672>.
- Anderson, W.B., Zaitchik, B.F., Hain, C.R., Anderson, M.C., Yilmaz, M.T., Mecikalski, J., and Schultz, L., 2012, Towards an integrated soil moisture drought monitor for East Africa: *Hydrology and Earth System Sciences*, v. 16, no. 8, p. 2893–2913, at <https://doi.org/10.5194/hess-16-2893-2012>.
- Andréfouët, S., Muller-Karger, F.E., Hochberg, E.J., Hu, C., and Carder, K.L., 2001, Change detection in shallow coral reef environments using Landsat 7 ETM+ data: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 150–162, at [https://doi.org/10.1016/S0034-4257\(01\)00256-5](https://doi.org/10.1016/S0034-4257(01)00256-5).
- Andreu, A., González-Dugo, M.P., Kustas, W.P., Polo, M.J., and Anderson, M.C., 2013, Modelling surface energy fluxes over a dehesa ecosystem using a twosource energy balance model and medium resolution satellite data, *in* Conference on Remote Sensing for Agriculture, Ecosystems, and Hydrology XV, Dresden, Germany, 24–26 September 2013, Proceedings of SPIE Vol. 8887: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 888717, at <https://doi.org/10.1117/12.2029235>.
- Andrew, M.E., Nelson, T.A., Wulder, M.A., Hobart, G.W., Coops, N.C., and Farmer, C.J.Q., 2013, Ecosystem classifications based on summer and winter conditions: *Environmental Monitoring and Assessment*, v. 185, no. 4, p. 3057–3079, at <https://doi.org/10.1007/s10661-012-2773-z>.
- Andrew, M.E., and Wulder, M.A., 2011, Idiosyncratic responses of Pacific salmon species to land cover, fragmentation, and scale: *Ecography*, v. 34, no. 5, p. 780–797, at <https://doi.org/10.1111/j.1600-0587.2010.06607.x>.
- Andrew, M.E., Wulder, M.A., and Cardille, J.A., 2014, Protected areas in boreal Canada—A baseline and considerations for the continued development of a representative and effective reserve network: *Environmental Reviews*, v. 22, no. 2, p. 135–160, at <https://doi.org/10.1139/er-2013-0056>.
- Andrew, M.E., Wulder, M.A., and Coops, N.C., 2011, How do butterflies define ecosystems? A comparison of ecological regionalization schemes: *Biological Conservation*, v. 144, no. 5, p. 1409–1418, at <https://doi.org/10.1016/j.biocon.2011.01.010>.

- Andrew, M.E., Wulder, M.A., and Coops, N.C., 2011, Patterns of protection and threats along productivity gradients in Canada: *Biological Conservation*, v. 144, no. 12, p. 2891–2901, at <https://doi.org/10.1016/j.biocon.2011.08.006>.
- Andrew, M.E., Wulder, M.A., and Coops, N.C., 2012, Identification of de facto protected areas in boreal Canada: *Biological Conservation*, v. 146, no. 1, p. 97–107, at <https://doi.org/10.1016/j.biocon.2011.11.029>.
- Andrew, M.E., Wulder, M.A., Coops, N.C., and Baillargeon, G., 2012, Beta-diversity gradients of butterflies along productivity axes: *Global Ecology and Biogeography*, v. 21, no. 3, p. 352–364, at <https://doi.org/10.1111/j.1466-8238.2011.00676.x>.
- Andrew, M.E., Wulder, M.A., and Nelson, T.A., 2014, Potential contributions of remote sensing to ecosystem service assessments: *Progress in Physical Geography*, v. 38, no. 3, p. 328–353, at <https://doi.org/10.1177/0309133314528942>.
- Andrew, M.E., Wulder, M.A., Nelson, T.A., and Coops, N.C., 2015, Spatial data, analysis approaches, and information needs for spatial ecosystem service assessments—A review: *GIScience and Remote Sensing*, v. 52, no. 3, p. 344–373, at <https://doi.org/10.1080/15481603.2015.1033809>.
- Aneece, I., Foley, D., Thenkabail, P., Oliphant, A., and Teluguntla, P., 2022, New generation hyperspectral data from DESIS compared to high spatial resolution PlanetScope data for crop type classification: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 15, p. 1–14, at <https://doi.org/10.1109/JSTARS.2022.3204223>.
- Aneece, I., and Thenkabail, P., 2018, Accuracies achieved in classifying five leading world crop types and their growth stages using optimal Earth Observing-1 Hyperion hyperspectral narrowbands on Google Earth Engine: *Remote Sensing*, v. 10, no. 12, article 2027, at <https://doi.org/10.3390/rs10122027>.
- Aneece, I., and Thenkabail, P.S., 2021, Classifying crop types using two generations of hyperspectral sensors (Hyperion and DESIS) with machine learning on the cloud: *Remote Sensing*, v. 13, no. 22, article 4704, at <https://doi.org/10.3390/rs13224704>.
- Aneece, I., and Thenkabail, P.S., 2022, New generation hyperspectral sensors DESIS and PRISMA provide improved agricultural crop classifications: *Photogrammetric Engineering and Remote Sensing*, v. 88, no. 11, p. 715–729, at <https://doi.org/10.14358/PERS.22-00039R2>.
- Angal, A., Brinkmann, J., Mishra, N., Link, D., Xiong, X.J., and Helder, D.L., 2015, Cross-calibration of the reflective solar bands of Terra MODIS and Landsat 7 Enhanced Thematic Mapper plus over PICS using different approaches, *in* *Sensors, Systems, and Next-Generation Satellites XIX*, Toulouse, France, 21–24 September 2015, *Proceedings of SPIE Vol. 9639*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 963911, at <https://doi.org/10.1117/12.2195170>.
- Angal, A., McCorkel, J.T., Cook, B., Corp, L.A., and Thome, K.J., 2015, Radiometric calibration of G-LiHT's imaging spectrometer using GLAMR for satellite sensor intercalibration, *in* *Earth Observing Systems XX*, San Diego, Calif., 9–13 August 2015, *Proceedings of SPIE Vol. 9607*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 96070c, at <https://doi.org/10.1117/12.2188763>.
- Angal, A., McCorkel, J.T., and Thome, K.J., 2016, Evaluation of GLAMR-based calibration for SI-traceable field reflectance retrievals, *in* *Earth Observing Systems XXI*, San Diego, Calif., 28 August–1

- September 2016, Proceedings of SPIE Vol. 9972: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 99721u, at <https://doi.org/10.1117/12.2238630>.
- Angal, A., McCorkel, J.T., and Thome, K.J., 2016, Results from source-based and detector-based calibrations of a CLARREO calibration demonstration system, *in* Earth Observing Systems XXI, San Diego, Calif., 28 August–1 September 2016, Proceedings of SPIE Vol. 9972: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 997206, at <https://doi.org/10.1117/12.2238634>.
- Angal, A., Mishra, N., Xiong, X., and Helder, D.L., 2014, Cross-calibration of Landsat 5 TM and Landsat 8 OLI with aqua MODIS using PICS, *in* Earth Observing Systems XIX, San Diego, Calif., 18–20 August 2014, Proceedings of SPIE Vol. 9218: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 92180k, at <https://doi.org/10.1117/12.2062165>.
- Angal, A., Xiong, X., Helder, D., Kaewmanee, M., and Leigh, L., 2018, Assessing the calibration differences in the reflective solar bands of Terra MODIS and Landsat-7 enhanced thematic mapper plus: *Journal of Applied Remote Sensing*, v. 12, no. 4, article 044002, at <https://doi.org/10.1117/1.JRS.12.044002>.
- Angal, A., Xiong, X., Thome, K., and Wenny, B.N., 2021, Cross-calibration of Terra and Aqua MODIS using RadCalNet: *IEEE Geoscience and Remote Sensing Letters*, v. 18, no. 2, p. 188–192, at <https://doi.org/10.1109/LGRS.2020.2973535>.
- Angal, A., Xiong, X.J., Choi, T.J., Chander, G., Mishra, N., and Helder, D.L., 2013, Impact of Terra MODIS Collection 6 on long-term trending comparisons with Landsat 7 ETM+ reflective solar bands: *Remote Sensing Letters*, v. 4, no. 9, p. 873–881, at <https://doi.org/10.1080/2150704X.2013.809496>.
- Annandale, J., Jovanovic, N., Benadé, N., and Allen, R.G., 2002, Software for missing data error analysis of Penman-Monteith reference evapotranspiration: *Irrigation Science*, v. 21, no. 2, p. 57–67, at <https://doi.org/10.1007/s002710100047>.
- Anyamba, A., Justice, C.O., Tucker, C.J., and Mahoney, R., 2003, Seasonal to interannual variability of vegetation and fires at SAFARI 2000 sites inferred from advanced very high resolution radiometer time series data: *Journal of Geophysical Research Atmospheres*, v. 108, no. 13, p. SAF 43–1 – SAF 43–26, at <https://doi.org/10.1029/2002JD002464>
- Arai, K., Thome, K.J., Iwasaki, A., and Biggar, S., 2011, ASTER VNIR and SWIR radiometric calibration and atmospheric correction, *in* Ramachandran, B., Justice, C., and Abrams, M.J., eds., *Remote sensing and digital image processing*: New York, N.Y., Springer, p. 83–116, at https://doi.org/10.1007/978-1-4419-6749-7_5.
- Arai, K., Tsuchida, S., and Thome, K.J., 1997, Calibration plan and preliminary field campaign for ASTER, *in* *Advanced and Next-Generation Satellites II*, Taormina, Italy, 23–27 September 1996, Proceedings of SPIE Vol. 2957: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 256–265, at <https://doi.org/10.1117/12.265440>.
- Archibald, S., and Roy, D.P., 2009, Identifying individual fires from satellite-derived burned area data, *in* 2009 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Cape Town, South Africa, 12–17 July 2009, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. III160–III163, at <https://doi.org/10.1109/IGARSS.2009.5417974>.

- Archibald, S., Roy, D.P., van Wilgen, B.W., and Scholes, R.J., 2009, What limits fire? An examination of drivers of burnt area in Southern Africa: *Global Change Biology*, v. 15, no. 3, p. 613–630, at <https://doi.org/10.1111/j.1365-2486.2008.01754.x>.
- Archibald, S., Scholes, R.J., Roy, D.P., Roberts, G., and Boschetti, L., 2010, Southern African fire regimes as revealed by remote sensing: *International Journal of Wildland Fire*, v. 19, no. 7, p. 861–878, at <https://doi.org/10.1071/WF10008>.
- Arévalo, P., Olofsson, P., and Woodcock, C.E., 2020, Continuous monitoring of land change activities and post-disturbance dynamics from Landsat time series—A test methodology for REDD+ reporting: *Remote Sensing of Environment*, v. 238, article 111051, at <https://doi.org/10.1016/j.rse.2019.01.013>.
- Argañaraz, J.P., Radeloff, V.C., Bar-Massada, A., Gavier-Pizarro, G.I., Scavuzzo, C.M., and Bellis, L.M., 2017, Assessing wildfire exposure in the Wildland-Urban Interface area of the mountains of central Argentina: *Journal of Environmental Management*, v. 196, p. 499–510, at <https://doi.org/10.1016/j.jenvman.2017.03.058>.
- Arino, O., Vermote, E.F., and Spaventa, V., 1997, Operational atmospheric correction of Landsat TM imagery: *Earth Observation Quarterly*, no. 56, p. 32–35.
- Arnold, P.S., Brown, S.D., and Schott, J.R., 2000, Hyperspectral simulation of chemical weapon dispersal patterns using DIRSIG, *in* Target and Backgrounds VI—Characterization, Visualization, and the Detection Process, Orlando, Fla., 24–26 April 2000, Proceedings of SPIE Vol. 4029: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 288–299, at <https://doi.org/10.1117/12.392538>.
- Arroyo, L.A., Healey, S.P., Cohen, W.B., Cocero, D., and Manzanera, J.A., 2006, Using object-oriented classification and high-resolution imagery to map fuel types in a Mediterranean region: *Journal of Geophysical Research Biogeosciences*, v. 111, no. 4, article G04S04, at <https://doi.org/10.1029/2005JG000120>.
- Arvani, B., Pierce, R.B., Lyapustin, A.I., Wang, Y., Ghermandi, G., and Teggi, S., 2016, Seasonal monitoring and estimation of regional aerosol distribution over Po valley, northern Italy, using a high-resolution MAIAC product: *Atmospheric Environment*, v. 141, p. 106–121, at <https://doi.org/10.1016/j.atmosenv.2016.06.037>.
- Arvani, B., Pierce, R.B., Lyapustin, A.I., Wang, Y., Teggi, S., and Ghermandi, G., 2013, Application of MAIAC high spatial resolution aerosol retrievals over Po Valley (Italy), *in* Remote Sensing of Clouds and the Atmosphere XVIII; and Optics in Atmospheric Propagation and Adaptive Systems XVI, Dresden, Germany, 23–26 September 2013, Proceedings of SPIE Vol. 8890: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 88900p, at <https://doi.org/10.1117/12.2029297>.
- Arvidson, T., Gasch, J., and Goward, S.N., 2000, Building a global, consistent, and meaningful Landsat 7 data archive, *in* Algorithms for Multispectral, Hyperspectral, and Ultraspectral Imagery VI, Orlando, Fla., 24–26 April 2000, Proceedings of SPIE Vol. 4049: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 356–367, at <https://doi.org/10.1117/12.410359>.
- Arvidson, T., Gasch, J., and Goward, S.N., 2000, Global vegetation - assessing Landsat 7/ETM+ coverage of tropical rainforest and global agricultural and forest extents, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000,

- Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 393–395, at <https://doi.org/10.1109/IGARSS.2000.860530>.
- Arvidson, T., Gasch, J., and Goward, S.N., 2001, Landsat 7's long-term acquisition plan—An innovative approach to building a global imagery archive: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 13–26, at [https://doi.org/10.1016/S0034-4257\(01\)00263-2](https://doi.org/10.1016/S0034-4257(01)00263-2).
- Arvidson, T., Goward, S.N., Gasch, J., and Williams, D.L., 2006, Landsat-7 long-term acquisition plan—Development and validation: *Photogrammetric Engineering and Remote Sensing*, v. 72, no. 10, p. 1137–1146, at <https://doi.org/10.14358/PERS.72.10.1137>.
- Arvidson, T., Martin, L., Gasch, J., Goward, S.N., Andréfouët, S., Hu, C., and Müller-Karger, F., 1999, Long-term acquisition plan of Landsat 7—Collecting coral reef data worldwide: *Earth System Monitor*, v. 10, no. 2, p. 6–7.
- Aryal, R.R., Wespestad, C., Kennedy, R., Dilger, J., Dyson, K., Bullock, E., Khanal, N., Kono, M., Poortinga, A., et al., 2021, Lessons learned while implementing a time-series approach to forest canopy disturbance detection in Nepal: *Remote Sensing*, v. 13, no. 14, article 2666, at <https://doi.org/10.3390/rs13142666>.
- Auch, R.F., Wellington, D.F., Taylor, J.L., Stehman, S.V., Tollerud, H.J., Brown, J.F., Loveland, T.R., Pengra, B.W., Horton, J.A., et al., 2022, Conterminous United States Land-Cover Change (1985–2016)—New insights from annual time series: *Land*, v. 11, no. 2, article 298, at <https://doi.org/10.3390/land11020298>.
- Awadallah, M., Gopalakrishnan, R., Ghannam, S., Abbott, A.L., Wynne, R.H., and Thomas, V.A., 2015, An adaptive ground-filtering technique for noisy high-altitude laser profiling data, *in* *Imaging Geospatial Technology Forum, IGTF - ASPRS, Annual Conference, Tampa, Fla., 4–8 May 2015, Proceedings: Bethesda, Md., American Society for Photogrammetry and Remote Sensing*, p. 32–41, at <https://www.asprs.org/wp-content/uploads/2015/05/2C%5BLD5H4%5D-paper.pdf>.
- Aytac, Y., Thome, K., Wenny, B.N., Angal, A., Shuman, T.M., and McAndrew, B., 2019, Detector based calibration of a portable imaging spectrometer for CLARREO Pathfinder Mission, *in* *Earth Observing Systems XXIV 2019, San Diego, Calif., 11–15 August 2019, Proceedings of SPIE Vol. 11127: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE)*, paper no. 111270a, at <https://doi.org/10.1117/12.2528760>.
- Baccheschi, N.L., Brown, S., Kerekes, J., and Schott, J.R., 2005, Generation of a combined dataset of simulated radar and EO/IR imagery, *in* *Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI, Orlando, Fla., 28 March–1 April 2005, Proceedings of SPIE Vol. 5806: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE)*, p. 88–99, at <https://doi.org/10.1117/12.605711>.
- Baccini, A., Friedl, M.A., Woodcock, C.E., and Warbington, R., 2004, Forest biomass estimation over regional scales using multisource data: *Geophysical Research Letters*, v. 31, no. 10, p. L10501 1–4, at <https://doi.org/10.1029/2004GL019782>.
- Baccini, A., Friedl, M.A., Woodcock, C.E., and Zhu, Z., 2007, Scaling field data to calibrate and validate moderate spatial resolution remote sensing models: *Photogrammetric Engineering and Remote Sensing*, v. 73, no. 8, p. 945–954, at <https://doi.org/10.14358/PERS.73.8.945>.
- Badawi, M., Helder, D., Leigh, L., and Jing, X., 2019, Methods for Earth-observing satellite surface reflectance validation: *Remote Sensing*, v. 11, no. 13, article 1543, at <https://doi.org/10.3390/rs11131543>.

- Badjana, H.M., Olofsson, P., Woodcock, C.E., Helmschrot, J., Wala, K., and Akpagana, K., 2017, Mapping and estimating land change between 2001 and 2013 in a heterogeneous landscape in West Africa—Loss of forestlands and capacity building opportunities: *International Journal of Applied Earth Observation and Geoinformation*, v. 63, p. 15–23, at <https://doi.org/10.1016/j.jag.2017.07.006>.
- Bajorski, P., Ientilucci, E.J., and Schott, J.R., 2004, Comparison of basis-vector selection methods for target and background subspaces as applied to subpixel target detection, *in* *Algorithms and Technologies for MultiSpectral, Hyperspectral, and Ultraspectral Imagery X*, Orlando, Fla., 12–15 April 2004, *Proceedings of SPIE Vol. 5425*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 97–108, at <https://doi.org/10.1117/12.542460>.
- Bala, G., Caldeira, K., and Nemani, R.R., 2010, Fast versus slow response in climate change—Implications for the global hydrological cycle: *Climate Dynamics*, v. 35, no. 2, p. 423–434, at <https://doi.org/10.1007/s00382-009-0583-y>.
- Bala, G., Caldeira, K., Nemani, R.R., Cao, L., Ban-Weiss, G., and Shin, H.J., 2011, Albedo enhancement of marine clouds to counteract global warming—Impacts on the hydrological cycle: *Climate Dynamics*, v. 37, no. 5, p. 915–931, at <https://doi.org/10.1007/s00382-010-0868-1>.
- Bala, G., Devaraju, N., Chaturvedi, R.K., Caldeira, K., and Nemani, R.R., 2013, Nitrogen deposition—How important is it for global terrestrial carbon uptake: *Biogeosciences*, v. 10, no. 11, p. 7147–7160, at <https://doi.org/10.5194/bg-10-7147-2013>.
- Bala, G., Gopalakrishnan, R., Jayaraman, M., Nemani, R.R., and Ravindranath, N.H., 2011, CO₂-fertilization and potential future terrestrial carbon uptake in India: *Mitigation and Adaptation Strategies for Global Change*, v. 16, no. 2, p. 143–160, at <https://doi.org/10.1007/s11027-010-9260-z>.
- Bala, G., Krishna, S., Narayanappa, D., Cao, L., Caldeira, K., and Nemani, R.R., 2013, An estimate of equilibrium sensitivity of global terrestrial carbon cycle using NCAR CCSM4: *Climate Dynamics*, v. 40, no. 7-8, p. 1671–1686, at <https://doi.org/10.1007/s00382-012-1495-9>.
- Balasubramanian, S.V., Pahlevan, N., Smith, B., Binding, C., Schalles, J., Loisel, H., Gurlin, D., Greb, S., Alikas, K., et al., 2020, Robust algorithm for estimating total suspended solids (TSS) in inland and nearshore coastal waters: *Remote Sensing of Environment*, v. 246, article 111768, at <https://doi.org/10.1016/j.rse.2020.111768>.
- Bamber, J.L., and Bindschadler, R.A., 1997, An improved elevation dataset for climate and ice-sheet modelling—Validation with satellite imagery: *Annals of Glaciology*, v. 25, p. 439–X69, at <https://doi.org/10.3189/S0260305500014427>.
- Ban, Y., Zhang, P., Nascetti, A., Bevington, A.R., and Wulder, M.A., 2020, Near real-time wildfire progression monitoring with Sentinel-1 SAR time series and deep learning: *Scientific Reports*, v. 10, no. 1, article 1322, at <https://doi.org/10.1038/s41598-019-56967-x>.
- Banaszkiewicz, M., Pignatelli, F., and Belward, A.S., 2006, GMES and the solar energy issue, *in* Dunlop, E.D., Wald, L., and Suri, M., eds., *Solar energy resource management for electricity generation from local level to global scale*: New York, N.Y., Nova Science Publishers, p. 181–190.
- Banda, K.R., Delgado-Salinas, A., Dexter, K.G., Linares-Palomino, R., Oliveira-Filho, A., Prado, D., Pullan, M., Quintana, C., Riina, R., et al., 2016, Plant diversity patterns in neotropical dry forests and their conservation implications: *Science*, v. 353, no. 6306, article 1383, at <https://doi.org/10.1126/science.aaf5080>.

- Banskota, A., Kayastha, N., Falkowski, M.J., Wulder, M.A., Froese, R.E., and White, J.C., 2014, Forest monitoring using Landsat time series data—A review: *Canadian Journal of Remote Sensing*, v. 40, no. 5, p. 362–384, at <https://doi.org/10.1080/07038992.2014.987376>.
- Banskota, A., Serbin, S.P., Wynne, R.H., Thomas, V.A., Falkowski, M.J., Kayastha, N., Gastellu-Etchegorry, J., and Townsend, P.A., 2015, An LUT-Based inversion of DART model to estimate forest LAI from hyperspectral data: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 8, no. 6, p. 3147–3160, at <https://doi.org/10.1109/JSTARS.2015.2401515>.
- Banskota, A., Wynne, R.H., Johnson, P., and Emessiene, B., 2011, Synergistic use of very high-frequency radar and discrete-return lidar for estimating biomass in temperate hardwood and mixed forests: *Annals of Forest Science*, v. 68, no. 2, p. 347–356, at <https://doi.org/10.1007/s13595-011-0023-0>.
- Banskota, A., Wynne, R.H., and Kayastha, N., 2011, Improving within-genus tree species discrimination using the discrete wavelet transform applied to airborne hyperspectral data: *International Journal of Remote Sensing*, v. 32, no. 13, p. 3551–3563, at <https://doi.org/10.1080/01431161003698302>.
- Banskota, A., Wynne, R.H., Serbin, S.P., Kayastha, N., Thomas, V.A., and Townsend, P.A., 2013, Utility of the wavelet transform for LAI estimation using hyperspectral data: *Photogrammetric Engineering and Remote Sensing*, v. 79, no. 7, p. 653–662, at <https://doi.org/10.14358/PERS.79.7.653>.
- Banskota, A., Wynne, R.H., Thomas, V.A., Serbin, S.P., Kayastha, N., Gastellu-Etchegorry, J.P., and Townsend, P.A., 2013, Investigating the utility of wavelet transforms for inverting a 3-D radiative transfer model using hyperspectral data to retrieve forest LAI: *Remote Sensing*, v. 5, no. 6, p. 2639–2659, at <https://doi.org/10.3390/rs5062639>.
- Bar Massada, A., Radeloff, V.C., and Stewart, S.I., 2011, Allocating fuel breaks to optimally protect structures in the wildland-urban interface: *International Journal of Wildland Fire*, v. 20, no. 1, p. 59–68, at <https://doi.org/10.1071/WF09041>.
- Bar Massada, A., Radeloff, V.C., Stewart, S.I., and Hawbaker, T.J., 2009, Wildfire risk in the wildland-urban interface—A simulation study in northwestern Wisconsin: *Forest Ecology and Management*, v. 258, no. 9, p. 1990–1999, at <https://doi.org/10.1016/j.foreco.2009.07.051>.
- Bar Massada, A., Syphard, A.D., Hawbaker, T.J., Stewart, S.I., and Radeloff, V.C., 2011, Effects of ignition location models on the burn patterns of simulated wildfires: *Environmental Modelling and Software*, v. 26, no. 5, p. 583–592, at <https://doi.org/10.1016/j.envsoft.2010.11.016>.
- Bar Massada, A., Syphard, A.D., Stewart, S.I., and Radeloff, V.C., 2013, Wildfire ignition-distribution modelling—A comparative study in the Huron-Manistee National Forest, Michigan, USA: *International Journal of Wildland Fire*, v. 22, no. 2, p. 174–183, at <https://doi.org/10.1071/WF11178>.
- Barcomb, K., Schott, J.R., Brown, S., and Hattenberger, T., 2004, High-resolution, slant-angle scene generation and validation of concealed targets in DIRSIG, in *Imaging Spectrometry X*, Denver, Colo., 2–4 August 2004, Proceedings of SPIE Vol. 5546: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 300–311, at <https://doi.org/10.1117/12.561256>.
- Barker, J.L., Kenneth Dolan, S., Sabelhaus, P.A., Williams, D.L., Irons, J.R., Markham, B.L., Bolek, J.T., Scott, S.S., Thompson, R.J., et al., 1999, Landsat-7 mission and early results, in *Sensors, Systems, and Next-Generation Satellites III*, Florence, Italy, 20–23 September 1999, Proceedings of SPIE Vol.

- 3870: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 299–311, at <https://doi.org/10.1117/12.373220>.
- Bar-Massada, A., Alcasena, F., Schug, F., and Radeloff, V.C., 2023, The wildland-urban interface in Europe—Spatial patterns and associations with socioeconomic and demographic variables: *Landscape and Urban Planning*, v. 235, article 104759, at <https://doi.org/10.1016/j.landurbplan.2023.104759>.
- Bar-Massada, A., Hawbaker, T.J., Stewart, S.I., and Radeloff, V.C., 2012, Combining satellite-based fire observations and ground-based lightning detections to identify lightning fires across the conterminous USA: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 5, no. 5, p. 1438–1447, at <https://doi.org/10.1109/JSTARS.2012.2193665>.
- Bar-Massada, A., Radeloff, V.C., and Stewart, S.I., 2014, Biotic and abiotic effects of human settlements in the wildland-urban interface: *BioScience*, v. 64, no. 5, p. 429–437, at <https://doi.org/10.1093/biosci/biu039>.
- Bar-Massada, A., Stewart, S.I., Hammer, R.B., Mockrin, M.H., and Radeloff, V.C., 2013, Using structure locations as a basis for mapping the wildland urban interface: *Journal of Environmental Management*, v. 128, p. 540–547, at <https://doi.org/10.1016/j.jenvman.2013.06.021>.
- Bar-Massada, A., Wood, E.M., Pidgeon, A.M., and Radeloff, V.C., 2012, Complex effects of scale on the relationships of landscape pattern versus avian species richness and community structure in a woodland savanna mosaic: *Ecography*, v. 35, no. 5, p. 393–411, at <https://doi.org/10.1111/j.1600-0587.2011.07097.x>.
- Barnes, B.B., Hu, C., Bailey, S.W., Pahlevan, N., and Franz, B.A., 2021, Cross-calibration of MODIS and VIIRS long near infrared bands for ocean color science and applications: *Remote Sensing of Environment*, v. 260, article 112439, at <https://doi.org/10.1016/j.rse.2021.112439>.
- Barnes, C.A., and Roy, D.P., 2008, Radiative forcing over the conterminous United States due to contemporary land cover land use albedo change: *Geophysical Research Letters*, v. 35, no. 9, article L09706, at <https://doi.org/10.1029/2008GL033567>.
- Barnes, C.A., and Roy, D.P., 2010, Radiative forcing over the conterminous United States due to contemporary land cover land use change and sensitivity to snow and interannual albedo variability: *Journal of Geophysical Research Biogeosciences*, v. 115, no. 4, article G04033, at <https://doi.org/10.1029/2010JG001428>.
- Barnes, C.A., Roy, D.P., and Loveland, T.R., 2013, Projected surface radiative forcing due to 2000-2050 land-cover land-use albedo change over the eastern United States: *Journal of Land Use Science*, v. 8, no. 4, p. 369–382, at <https://doi.org/10.1080/1747423X.2012.667453>.
- Barnes, M.L., Moran, M.S., Scott, R.L., Kolb, T.E., Ponce-Campos, G.E., Moore, D.J.P., Ross, M.A., Mitra, B., and Dore, S., 2016, Vegetation productivity responds to sub-annual climate conditions across semiarid biomes: *Ecosphere*, v. 7, no. 5, article e01339, at <https://doi.org/10.1002/ecs2.1339>.
- Barnes, R.A., Eplee Jr, R.E., Biggar, S.F., Thome, K.J., Zalewski, E.F., Slater, P., and Holmes, A.W., 1999, *in* Hooker, S.B., and Firestone, E.R., eds., The SeaWiFS solar radiation-based calibration-and the transfer-to-orbit experiment, SeaWiFS Postlaunch Technical Report Series, NASA Technical Memorandum 1999-206892, v. 5, 28 p., at <https://ntrs.nasa.gov/api/citations/19990053350/downloads/19990053350.pdf>.

- Barnes, R.A., Eplee, R.E., Jr., Biggar, S.F., Thome, K.J., Zalewski, E.F., Slater, P.N., and Holmes, A.W., 2000, SeaWiFS transfer-to-orbit experiment: *Applied Optics*, v. 39, no. 30, p. 5620–5631, at <https://doi.org/10.1364/AO.39.005620>.
- Barnett, D.T., Duffy, P.A., Schimel, D.S., Krauss, R.E., Irvine, K.M., Davis, F.W., Gross, J.E., Azuaje, E.I., Thorpe, A.S., et al., 2019, The terrestrial organism and biogeochemistry spatial sampling design for the National Ecological Observatory Network: *Ecosphere*, v. 10, no. 2, article e02540, at <https://doi.org/10.1002/ecs2.2540>.
- Barreneche, J.M., Guigou, B., Gallego, F., Barbieri, A., Smith, B., Fernández, M., Fernández, V., and Pahlevan, N., 2023, Monitoring Uruguay's freshwaters from space—An assessment of different satellite image processing schemes for chlorophyll-a estimation: *Remote Sensing Applications—Society and Environment*, v. 29, article 100891, at <https://doi.org/10.1016/j.rsase.2022.100891>.
- Barsi, J.A., Barker, J.L., and Schott, J.R., 2003, An atmospheric correction parameter calculator for a single thermal band Earth-sensing instrument, in 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3014–3016, at <https://doi.org/10.1109/IGARSS.2003.1294665>.
- Barsi, J.A., Hook, S.J., Palluconi, F.D., Schott, J.R., and Raqueno, N.G., 2006, Landsat TM and ETM+ thermal band calibration, in *Earth Observing Systems XI*, San Diego, Calif., 14–16 August 2006, Proceedings of SPIE Vol. 6296: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 62960F, at <https://doi.org/10.1117/12.683212>.
- Barsi, J.A., Hook, S.J., Schott, J.R., Raqueno, N.G., and Markham, B.L., 2007, Landsat-5 thematic mapper thermal band calibration update: *IEEE Geoscience and Remote Sensing Letters*, v. 4, no. 4, p. 552–555, at <https://doi.org/10.1109/LGRS.2007.896322>.
- Barsi, J.A., Markham, B.L., Czaplá-Myers, J.S., Helder, D.L., Hook, S.J., Schott, J.R., and Haque, M.O., 2016, Landsat-7 ETM+ radiometric calibration status, in *Earth Observing Systems XXI*, San Diego, Calif., 28 August–1 September 2016, Proceedings of SPIE Vol. 9972: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 99720c, at <https://doi.org/10.1117/12.2238625>.
- Barsi, J.A., Markham, B.L., and Helder, D.L., 2012, Continued monitoring of Landsat reflective band calibration using pseudo-invariant calibration sites, in 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Munich, Germany, 22–27 July 2012, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 7007–7010, at <https://doi.org/10.1109/IGARSS.2012.6351958>.
- Barsi, J.A., Markham, B.L., Helder, D.L., and Chander, G., 2007, Radiometric calibration status of Landsat-7 and Landsat-5, in *Sensors, Systems, and Next-Generation Satellites XI*, Florence, Italy, 17–20 September 2007, Proceedings of SPIE Vol. 6744: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 67441F, at <https://doi.org/10.1117/12.738221>.
- Barsi, J.A., Markham, B.L., McCorkel, J., McAndrew, B., Donley, E., Morland, E., Pharr, J., Rodriguez, M., Shuman, T., et al., 2019, The Operational Land Imager-2—Prelaunch spectral characterization, in *Earth Observing Systems XXIV 2019*, San Diego, Calif., 11–15 August 2019, Proceedings of SPIE Vol. 11127: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 111270b, at <https://doi.org/10.1117/12.2529776>.

- Barsi, J.A., Markham, B.L., Montanaro, M., Morfitt, R., Hook, S.J., Schott, J.R., Raqueno, N.G., and Gerace, A., 2017, Landsat-8 TIRS thermal radiometric calibration status, *in* Earth Observing Systems XXII, San Diego, Calif., 6–10 August 2017, Proceedings of SPIE Vol. 10402: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 104021g, at <https://doi.org/10.1117/12.2276045>.
- Barsi, J.A., Markham, B.L., Schott, J.R., Hook, S.J., and Raqueno, N.G., 2009, Landsat-7 and Landsat-5 thermal band calibration updates, *in* Earth Observing Systems XIV, San Diego, Calif., 3–5 August 2009, Proceedings of SPIE Vol. 7452: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 74520S, at <https://doi.org/10.1117/12.828501>.
- Barsi, J.A., Markham, B.L., Schott, J.R., Hook, S.J., and Raqueno, N.G., 2010, Twenty-five years of Landsat thermal band calibration, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2287–2290, at <https://doi.org/10.1109/IGARSS.2010.5652528>.
- Barsi, J.A., McCorkel, J., McAndrew, B., Zukowski, B., Shuman, T., Johnston, S., and Markham, B., 2018, Spectral testing of the Landsat-9 OLI-2 instrument using the Goddard Laser Absolute Measurement of Radiance (GLAMR), *in* Earth Observing Systems XXIII, San Diego, Calif., 19–23 August 2018, Proceedings of SPIE Vol. 10764: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1076405, at <https://doi.org/10.1117/12.2321192>.
- Barsi, J.A., McCorkel, J.T., McAndrew, B., Shuman, T., Sushkov, A., Rodriguez, M.R., and Reed, N.G., 2023, Spectral and radiometric performance of the Goddard Laser for absolute measurement of radiance, *in* Earth Observing Systems XXVIII, San Diego, Calif., 22–24 August 2023, Proceedings of SPIE Vol. 12685: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 126850A, at <https://doi.org/10.1117/12.2678195>.
- Barsi, J.A., Montanaro, M., Thome, K.L., Raqueno, N.G., Hook, S., Anderson, C.H., and Micijevic, E., 2022, Early radiometric performance of Landsat-9 Thermal Infrared Sensor, *in* Earth Observing Systems XXVII 2022, San Diego, Calif., 21–26 August 2022, Proceedings of SPIE Vol. 12232: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 122320u, at <https://doi.org/10.1117/12.2634058>.
- Barsi, J.A., Schott, J.R., Hook, S.J., Raqueno, N.G., Markham, B.L., and Radocinski, R.G., 2014, Landsat-8 thermal infrared sensor (TIRS) vicarious radiometric calibration: Remote Sensing, v. 6, no. 11, p. 11607–11626, at <https://doi.org/10.3390/rs6111607>.
- Barsi, J.A., Schott, J.R., Palluconi, F.D., and Hook, S.J., 2005, Validation of a web-based atmospheric correction tool for single thermal band instruments, *in* Earth Observing Systems X, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5882: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 58820e, at <https://doi.org/10.1117/12.619990>.
- Bartalev, S.A., Belward, A.S., Erchov, D.V., and Isaev, A.S., 2003, A new SPOT4-VEGETATION derived land cover map of Northern Eurasia: International Journal of Remote Sensing, v. 24, no. 9, p. 1977–1982, at <https://doi.org/10.1080/0143116031000066297>.
- Bartels, S.F., Chen, H.Y.H., Wulder, M.A., and White, J.C., 2016, Trends in post-disturbance recovery rates of Canada's forests following wildfire and harvest: Forest Ecology and Management, v. 361, p. 194–207, at <https://doi.org/10.1016/j.foreco.2015.11.015>.

- Bartholomé, E., and Belward, A.S., 2005, GLC2000—A new approach to global land cover mapping from Earth observation data: *International Journal of Remote Sensing*, v. 26, no. 9, p. 1959–1977, at <https://doi.org/10.1080/01431160412331291297>.
- Bartholomé, E., Belward, A.S., Achard, F., Bartalev, S., Carmona-Moreno, C., Eva, H., Fritz, S., Grégoire, J.M., Mayaux, P., et al., 2003, Use of data from the VEGETATION instrument for global environmental monitoring—Some lessons from the GLC 2000 and the GBA 2000 projects, *in* 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 576–578, at <https://doi.org/10.1109/IGARSS.2003.1293847>.
- Bartlett, B., Devaraj, C., Gartley, M., Salvaggio, C., and Schott, J.R., 2009, Spectro-polarimetric BRDF determination of objects using in-scene calibration materials for polarimetric imagers, *in* Polarization Science and Remote Sensing IV, San Diego, Calif., 3–4 August 2009, Proceedings of SPIE Vol. 7461: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 74610T, at <https://doi.org/10.1117/12.825359>.
- Bartlett, B., and Schott, J.R., 2007, Atmospheric inversion in the presence of clouds—an adaptive ELM approach, *in* Imaging Spectrometry, XII, San Diego, Calif., 28–29 August 2007, Proceedings of SPIE Vol. 6661: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 66610H, at <https://doi.org/10.1117/12.730636>.
- Bartlett, B., and Schott, J.R., 2009, Atmospheric compensation in the presence of clouds—An adaptive empirical line method (AELM) approach: *Journal of Applied Remote Sensing*, v. 3, no. 1, article 033507, at <https://doi.org/10.1117/1.3091937>.
- Bartlett, B.D., Gartley, M.G., Messenger, D.W., Salvaggio, C., and Schott, J.R., 2010, Spectro-polarimetric bidirectional reflectance distribution function determination of in-scene materials and its use in target detection applications: *Journal of Applied Remote Sensing*, v. 4, no. 1, article 043552, at <https://doi.org/10.1117/1.3518394>.
- Bartz, K.K., Ford, M.J., Beechie, T.J., Fresh, K.L., Pess, G.R., Kennedy, R.E., Rowse, M.L., and Sheer, M., 2015, Trends in developed land cover adjacent to habitat for threatened salmon in Puget Sound, Washington, U.S.A: *PLoS ONE*, v. 10, no. 4, article e0124415, at <https://doi.org/10.1371/journal.pone.0124415>.
- Bastiaanssen, W.G.M., Allen, R.G., Droogers, P., D’Urso, G., and Steduto, P., 2007, Twenty-five years modeling irrigated and drained soils—State of the art: *Agricultural Water Management*, v. 92, no. 3, p. 111–125, at <https://doi.org/10.1016/j.agwat.2007.05.013>.
- Bastiaanssen, W.G.M., Noordman, E.J.M., Pelgrum, H., Davids, G., Thoreson, B.P., and Allen, R.G., 2005, SEBAL model with remotely sensed data to improve water-resources management under actual field conditions: *Journal of Irrigation and Drainage Engineering*, v. 131, no. 1, p. 85–93, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2005\)131:1\(85\)](https://doi.org/10.1061/(ASCE)0733-9437(2005)131:1(85)).
- Bastiaanssen, W.G.M., Pelgrum, H., Soppe, R.W.O., Thoreson, B.P., Allen, R.G., and Teixeira, A.H.D.C., 2008, Thermal-infrared technology for local and regional scale irrigation analyses in horticultural systems, *in* International Symposium on Irrigation of Horticultural Crops, 5th, Mildura, Australia, 28 August–2 September 2006, Proceedings: Leuven, Belgium, International Society for Horticultural Science, p. 33–46, at https://www.actahort.org/books/792/792_2.htm.

- Bastin, L., Buchanan, G., Beresford, A., Pekel, J.F., and Dubois, G., 2013, Open-source mapping and services for Web-based land-cover validation: *Ecological Informatics*, v. 14, p. 9–16, at <https://doi.org/10.1016/j.ecoinf.2012.11.013>.
- Bastin, L., Gorelick, N., Saura, S., Bertzky, B., Dubois, G., Fortin, M.J., and Pekel, J.F., 2019, Inland surface waters in protected areas globally—Current coverage and 30-year trends: *PLoS ONE*, v. 14, no. 1, article e0210496, at <https://doi.org/10.1371/journal.pone.0210496>.
- Basu, S., Ganguly, S., Mukhopadhyay, S., DiBiano, R., Karki, M., and Nemani, R.R., 2015, DeepSat—A learning framework for satellite imagery, in *23rd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, ACM SIGSPATIAL GIS 2015*, Seattle, Wash., 3–6 November 2015, Proceedings: New York, N.Y., Association for Computing Machinery, paper no. 37, at <https://doi.org/10.1145/2820783.2820816>.
- Basu, S., Ganguly, S., Nemani, R.R., Mukhopadhyay, S., Zhang, G., Milesi, C., Michaelis, A., Votava, P., Dubayah, R., et al., 2015, A semiautomated probabilistic framework for tree-cover delineation from 1-m NAIP imagery using a high-performance computing architecture: *IEEE Transactions on Geoscience and Remote Sensing*, v. 53, no. 10, p. 5690–5708, at <https://doi.org/10.1109/TGRS.2015.2428197>.
- Basu, S., Karki, M., Ganguly, S., DiBiano, R., Mukhopadhyay, S., and Nemani, R.R., 2015, Learning sparse feature representations using probabilistic quadrees and Deep Belief Nets: *Natural Processing Letters*, v. 45, no. 3, p. 855–867, at <https://doi.org/10.1007/s11063-016-9556-4>.
- Basu, S., Karki, M., Mukhopadhyay, S., Ganguly, S., Nemani, R.R., DiBiano, R., and Gayaka, S., 2016, A theoretical analysis of Deep Neural Networks for texture classification, in *2016 International Joint Conference on Neural Networks, IJCNN 2016*, Vancouver, Canada, 24–29 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 992–999, at <https://doi.org/10.1109/IJCNN.2016.7727306>.
- Basu, S., Mukhopadhyay, S., Karki, M., DiBiano, R., Ganguly, S., Nemani, R.R., and Gayaka, S., 2018, Deep neural networks for texture classification—A theoretical analysis: *Neural Networks*, v. 97, p. 173–182, at <https://doi.org/10.1016/j.neunet.2017.10.001>.
- Bateman, B.L., Pidgeon, A.M., Radeloff, V.C., Allstadt, A.J., Resit Akçakaya, H., Thogmartin, W.E., Vavrus, S.J., and Heglund, P.J., 2015, The importance of range edges for an irruptive species during extreme weather events: *Landscape Ecology*, v. 30, no. 6, p. 1095–1110, at <https://doi.org/10.1007/s10980-015-0212-6>.
- Bateman, B.L., Pidgeon, A.M., Radeloff, V.C., Flather, C.H., Vanderwal, J., Akçakaya, H.R., Thogmartin, W.E., Albright, T.P., Vavrus, S.J., and Heglund, P.J., 2016, Potential breeding distributions of U.S. birds predicted with both short-term variability and long-term average climate data: *Ecological Applications*, v. 26, no. 8, p. 2718–2729, at <https://doi.org/10.1002/eap.1416>.
- Bateman, B.L., Pidgeon, A.M., Radeloff, V.C., Vanderwal, J., Thogmartin, W.E., Vavrus, S.J., and Heglund, P.J., 2016, The pace of past climate change vs. potential bird distributions and land use in the United States: *Global Change Biology*, v. 22, no. 3, p. 1130–1144, at <https://doi.org/10.1111/gcb.13154>.
- Bater, C.W., Coops, N.C., Wulder, M.A., Hilker, T., Nielsen, S.E., McDermid, G., and Stenhouse, G.B., 2011, Using digital time-lapse cameras to monitor species-specific understorey and overstorey phenology in support of wildlife habitat assessment: *Environmental Monitoring and Assessment*, v. 180, no. 1-4, p. 1–13, at <https://doi.org/10.1007/s10661-010-1768-x>.

- Bater, C.W., Coops, N.C., Wulder, M.A., Nielsen, S.E., McDermid, G., and Stenhouse, G.B., 2011, Design and installation of a camera network across an elevation gradient for habitat assessment: *Instrumentation Science and Technology*, v. 39, no. 3, p. 231–247, at <https://doi.org/10.1080/10739149.2011.564700>.
- Bater, C.W., Wulder, M.A., Coops, N.C., Nelson, R.F., Hilker, T., and Næsset, E., 2011, Stability of sample-based scanning-LiDAR-derived vegetation metrics for forest monitoring: *IEEE Transactions on Geoscience and Remote Sensing*, v. 49, no. 6 PART 2, p. 2385–2392, at <https://doi.org/10.1109/TGRS.2010.2099232>.
- Bater, C.W., Wulder, M.A., White, J.C., and Coops, N.C., 2010, Integration of LIDAR and digital aerial imagery for detailed estimates of lodgepole Pine (*Pinus contorta*) volume killed by mountain Pine Beetle (*Dendroctonus ponderosae*): *Journal of Forestry*, v. 108, no. 3, p. 111–119, at <https://cfs.nrcan.gc.ca/publications?id=31557>.
- Baumann, M., Gasparri, I., Piquer-Rodríguez, M., Gavier Pizarro, G., Griffiths, P., Hostert, P., and Kuemmerle, T., 2017, Carbon emissions from agricultural expansion and intensification in the Chaco: *Global Change Biology*, v. 23, no. 5, p. 1902–1916, at <https://doi.org/10.1111/gcb.13521>.
- Baumann, M., Kuemmerle, T., Elbakidze, M., Ozdogan, M., Radeloff, V.C., Keuler, N.S., Prishchepov, A.V., Kruhlov, I., and Hostert, P., 2011, Patterns and drivers of post-socialist farmland abandonment in Western Ukraine: *Land Use Policy*, v. 28, no. 3, p. 552–562, at <https://doi.org/10.1016/j.landusepol.2010.11.003>.
- Baumann, M., Ozdogan, M., Kuemmerle, T., Wendland, K.J., Esipova, E., and Radeloff, V.C., 2012, Using the Landsat record to detect forest-cover changes during and after the collapse of the Soviet Union in the temperate zone of European Russia: *Remote Sensing of Environment*, v. 124, p. 174–184, at <https://doi.org/10.1016/j.rse.2012.05.001>.
- Baumann, M., Ozdogan, M., Richardson, A.D., and Radeloff, V.C., 2017, Phenology from Landsat when data is scarce—Using MODIS and Dynamic Time-Warping to combine multi-year Landsat imagery to derive annual phenology curves: *International Journal of Applied Earth Observation and Geoinformation*, v. 54, p. 72–83, at <https://doi.org/10.1016/j.jag.2016.09.005>.
- Baumann, M., Ozdogan, M., Wolter, P.T., Krylov, A., Vladimirova, N., and Radeloff, V.C., 2014, Landsat remote sensing of forest windfall disturbance: *Remote Sensing of Environment*, v. 143, p. 171–179, at <https://doi.org/10.1016/j.rse.2013.12.020>.
- Baumann, M., Radeloff, V.C., Avedian, V., and Kuemmerle, T., 2015, Land-use change in the Caucasus during and after the Nagorno-Karabakh conflict: *Regional Environmental Change*, v. 15, no. 8, p. 1703–1716, at <https://doi.org/10.1007/s10113-014-0728-3>.
- Bayas, J.C.L., See, L., Perger, C., Justice, C.O., Nakalembe, C., Dempewolf, J., and Fritz, S., 2017, Validation of automatically generated global and regional cropland data sets—The case of Tanzania: *Remote Sensing*, v. 9, no. 8, article 815, at <https://doi.org/10.3390/rs9080815>.
- Beamer, J.P., Huntington, J.L., Morton, C.G., and Pohl, G.M., 2013, Estimating annual groundwater evapotranspiration from phreatophytes in the Great Basin using Landsat and flux tower measurements: *Journal of the American Water Resources Association*, v. 49, no. 3, p. 518–533, at <https://doi.org/10.1111/jawr.12058>.
- Beaudry, F., Ferris, M.C., Pidgeon, A.M., and Radeloff, V.C., 2016, Identifying areas of optimal multispecies conservation value by accounting for incompatibilities between species: *Ecological Modelling*, v. 332, p. 74–82, at <https://doi.org/10.1016/j.ecolmodel.2016.04.007>.

- Beaudry, F., Pidgeon, A.M., Mladenoff, D.J., Howe, R.W., Bartelt, G.A., and Radeloff, V.C., 2011, Optimizing regional conservation planning for forest birds: *Journal of Applied Ecology*, v. 48, no. 3, p. 726–735, at <https://doi.org/10.1111/j.1365-2664.2011.01985.x>.
- Beaudry, F., Pidgeon, A.M., Radeloff, V.C., Howe, R.W., Mladenoff, D.J., and Bartelt, G.A., 2010, Modeling regional-scale habitat of forest birds when land management guidelines are needed but information is limited: *Biological Conservation*, v. 143, no. 7, p. 1759–1769, at <https://doi.org/10.1016/j.biocon.2010.04.025>.
- Beaudry, F., Radeloff, V.C., Pidgeon, A.M., Plantinga, A.J., Lewis, D.J., Helmers, D., and Butsic, V., 2013, The loss of forest birds habitats under different land use policies as projected by a coupled ecological-econometric model: *Biological Conservation*, v. 165, p. 1–9, at <https://doi.org/10.1016/j.biocon.2013.05.016>.
- Becker-Reshef, I., Bandaru, V., Barker, B., Coutu, S., Deines, J.M., Doorn, B., Eilerts, G., Franch, B., Galvez, A.S., et al., 2022, The NASA harvest program on agriculture and food security, *in* Vadrevu, K.P., Le Toan, T., Ray, S.S., and Justice, C., eds., *Remote sensing of agriculture and land cover/land use changes in South and Southeast Asian countries*: Cham, Switzerland, Springer, p. 53-80, at https://doi.org/10.1007/978-3-030-92365-5_3.
- Becker-Reshef, I., Barker, B., Humber, M., Puricelli, E., Sanchez, A., Sahajpal, R., McGaughey, K., Justice, C., Baruth, B., et al., 2019, The GEOGLAM crop monitor for AMIS—Assessing crop conditions in the context of global markets: *Global Food Security*, v. 23, p. 173–181, at <https://doi.org/10.1016/j.gfs.2019.04.010>.
- Becker-Reshef, I., Franch, B., Barker, B., Murphy, E., Santamaria-Artigas, A., Humber, M., Skakun, S., and Vermote, E., 2018, Prior season crop type masks for winter wheat yield forecasting—A US case study: *Remote Sensing*, v. 10, no. 10, article 1659, at <https://doi.org/10.3390/rs10101659>.
- Becker-Reshef, I., Justice, C., Whitcraft, A.K., and Jarvis, I., 2018, Geoglam—A Geo initiative on global agricultural monitoring, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 8155–8157, at <https://doi.org/10.1109/IGARSS.2018.8517575>.
- Becker-Reshef, I., Justice, C.O., Sullivan, M., Vermote, E.F., Tucker, C., Anyamba, A., Small, J., Pak, E., Masuoka, E., et al., 2010, Monitoring Global Croplands with Coarse Resolution Earth Observations—The Global Agriculture Monitoring (GLAM) Project: *Remote Sensing*, v. 2, no. 6, p. 1589–1609, at <https://doi.org/10.3390/rs2061589>.
- Becker-Reshef, I., Vermote, E.F., Lindeman, M., and Justice, C.O., 2010, A generalized regression-based model for forecasting winter wheat yields in Kansas and Ukraine using MODIS data: *Remote Sensing of Environment*, v. 114, no. 6, p. 1312–1323, at <https://doi.org/10.1016/j.rse.2010.01.010>.
- Begeman, C., Helder, D., Leigh, L., and Pinkert, C., 2022, Relative radiometric correction of pushbroom satellites using the yaw maneuver: *Remote Sensing*, v. 14, no. 12, article 2820, at <https://doi.org/10.3390/rs14122820>.
- Begliomini, F.N., Barbosa, C.C.F., Martins, V.S., Novo, E.M.L.M., Paulino, R.S., Maciel, D.A., Lima, T.M.A., O’Shea, R.E., Pahlevan, N., and Lamparelli, M.C., 2023, Machine learning for cyanobacteria mapping on tropical urban reservoirs using PRISMA hyperspectral data: *ISPRS Journal of*

- Photogrammetry and Remote Sensing, v. 204, p. 378–396, at <https://doi.org/10.1016/j.isprsjprs.2023.09.019>.
- Behnke, R., Vavrus, S., Allstadt, A., Albright, T., Thogmartin, W.E., and Radeloff, V.C., 2016, Evaluation of downscaled, gridded climate data for the conterminous United States: Ecological Applications, v. 26, no. 5, p. 1338–1351, at <https://doi.org/10.1002/15-1061>.
- Bell, D.M., Gregory, M.J., Kane, V., Kane, J., Kennedy, R.E., Roberts, H.M., and Yang, Z., 2018, Multiscale divergence between Landsat- and lidar-based biomass mapping is related to regional variation in canopy cover and composition 07 Agricultural and Veterinary Sciences 0705 Forestry Sciences 09 Engineering 0909 Geomatic Engineering: Carbon Balance and Management, v. 13, no. 1, article 15, at <https://doi.org/10.1186/s13021-018-0104-6>.
- Bell, R.E., Blankenship, D.D., Finn, C.A., Morse, D.L., Scambos, T.A., Brozena, J.M., and Hodge, S.M., 1998, Influence of subglacial geology on the onset of a West antarctic ice stream from aerogeophysical observations: Nature, v. 394, no. 6688, p. 58–62, at <https://doi.org/10.1038/27883>.
- Belle, J.H., Chang, H.H., Wang, Y., Hu, X., Lyapustin, A.I., and Liu, Y., 2017, The potential impact of satellite-retrieved cloud parameters on ground-level PM2.5 mass and composition: International Journal of Environmental Research and Public Health, v. 14, no. 10, article 1244, at <https://doi.org/10.3390/ijerph14101244>.
- Bellis, L.M., Pidgeon, A.M., Alcántara, C., Dardanelli, S., and Radeloff, V.C., 2015, Influences of succession and erosion on bird communities in a South American highland wooded landscape: Forest Ecology and Management, v. 349, p. 85–93, at <https://doi.org/10.1016/j.foreco.2015.03.047>.
- Bellis, L.M., Pidgeon, A.M., Radeloff, V.C., St-Louis, V., Navarro, J.L., and Martella, M.B., 2008, Modeling habitat suitability for greater rheas based on satellite image texture: Ecological Applications, v. 18, no. 8, p. 1956–1966, at <https://doi.org/10.1890/07-0243.1>.
- Beloconi, A., Chrysoulakis, N., Lyapustin, A., Utzinger, J., and Vounatsou, P., 2018, Bayesian geostatistical modelling of PM10 and PM2.5 surface level concentrations in Europe using high-resolution satellite-derived products: Environment International, v. 121, p. 57–70, at <https://doi.org/10.1016/j.envint.2018.08.041>.
- Belward, A.S., 1996, AVHRR data sets for global terrestrial ecosystem monitoring, in D'Souza, G., Belward, A.S., and Malingreau, J.-P., eds., Advances in the use of NOAA AVHRR data for land applications: Dordrecht, Netherlands, Springer, p. 455–470, at https://doi.org/10.1007/978-94-009-0203-9_19.
- Belward, A.S., 1997, The ceos working group on calibration and validation—Plans and perspectives: Canadian Journal of Remote Sensing, v. 23, no. 4, p. 415–419, at <https://doi.org/10.1080/07038992.1997.10855226>.
- Belward, A.S., 1999, International co-operation in satellite sensor calibration; the role of the CEOS Working Group on Calibration and Validation: Advances in Space Research, v. 23, no. 8, p. 1443–1448, at [https://doi.org/10.1016/S0273-1177\(99\)00296-3](https://doi.org/10.1016/S0273-1177(99)00296-3).
- Belward, A.S., 2014, Running out of land: Biologist, v. 61, no. 3, p. 28–31, at <https://www.rsb.org.uk/biologist-features/running-out-of-land>.
- Belward, A.S., Binaghi, E., Brivio, P.A., Lanzarone, G.A., and Tosi, G., 2003, Preface: International Journal of Remote Sensing, v. 24, no. 20, p. 3885–3886, at <https://doi.org/10.1080/0143116031000103754>.

- Belward, A.S., Estes, J.E., and Kline, K.D., 1999, The IGBP-DIS global 1-km land-cover data set DISCover—A project overview: *Photogrammetric Engineering and Remote Sensing*, v. 65, no. 9, p. 1013–1020, at https://www.asprs.org/wp-content/uploads/pers/1999journal/sep/1999_sept_1013-1020.pdf.
- Belward, A.S., and Skøien, J.O., 2015, Who launched what, when and why—Trends in global land-cover observation capacity from civilian Earth observation satellites: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 103, p. 115–128, at <https://doi.org/10.1016/j.isprsjprs.2014.03.009>.
- Belward, A.S., Stibig, H.J., Eva, H., Rembold, F., Bucha, T., Hartley, A., Beuchle, R., Khudhairi, D., Michielon, M., and Mollicone, D., 2007, Mapping severe damage to land cover following the 2004 Indian Ocean tsunami using moderate spatial resolution satellite imagery: *International Journal of Remote Sensing*, v. 28, no. 13-14, p. 2977–2994, at <https://doi.org/10.1080/01431160601091803>.
- Bendini, H.N., Fonseca, L.M.G., Schwieder, M., Rufin, P., Korting, T.S., Koumrouyan, A., and Hostert, P., 2020, Combining environmental and Landsat analysis ready data for vegetation mapping—A case study in the Brazilian Savanna Biome, in 24th ISPRS Congress - Technical Commission III, 2020 Edition (online virtual), 31 August–2 September 2020, *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XLIII-B3-2020: Lemmer, Netherlands, International Society for Photogrammetry and Remote Sensing, p. 953–960, at <https://doi.org/10.5194/isprs-archives-XLIII-B3-2020-953-2020>.
- Bendini, H.N., Fonseca, L.M.G., Soares, A.R., Rufin, P., Schwieder, M., Rodrigues, M.A., Maretto, R.V., Korting, T.S., Leitão, P.J., et al., 2020, Applying a phenological object-based image analysis (Phenobia) for agricultural land classification—A study case in the Brazilian Cerrado, in 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), online virtual meeting, 26 September–2 October 2020, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 1078–1081, at <https://doi.org/10.1109/IGARSS39084.2020.9323184>.
- Ben-Dor, E., Goldshalager, N., Agassi, M., Goetz, A.F.H., Braun, O., Kindel, B., Binaymini, Y., and Bonfil, D., 2002, Monitoring of soil degradation potential in semi arid soils using hyper spectroscopy technology, in *Remote Sensing for Environmental Monitoring, GIS Applications, and Geology II*, Agia Pelagia, Greece, 23–26 September 2002, *Proceedings of SPIE Vol. 4886*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 20–28, at <https://doi.org/10.1117/12.462966>.
- Ben-Dor, E., Goldshleger, N., Braun, O., Kindel, B., Goetz, A.F.H., Bonfil, D., Margalit, N., Binaymini, Y., Karnieli, A., and Agassi, M., 2004, Monitoring infiltration rates in semiarid soils using airborne hyperspectral technology: *International Journal of Remote Sensing*, v. 25, no. 13, p. 2607–2624, at <https://doi.org/10.1080/01431160310001642322>.
- Ben-Dor, E., Kindel, B., and Goetz, A.F.H., 2004, Quality assessment of several methods to recover surface reflectance using synthetic imaging spectroscopy data: *Remote Sensing of Environment*, v. 90, no. 3, p. 389–404, at <https://doi.org/10.1016/j.rse.2004.01.014>.
- Bergen, K.M., Goetz, S.J., Dubayah, R.O., Henebry, G.M., Hunsaker, C.T., Imhoff, M.L., Nelson, R.F., Parker, G.G., and Radeloff, V.C., 2009, Remote sensing of vegetation 3-D structure for biodiversity and habitat—Review and implications for lidar and radar spaceborne missions: *Journal of Geophysical Research Biogeosciences*, v. 114, no. 4, article G00e06, at <https://doi.org/10.1029/2008JG000883>.

- Berhane, T.M., Lane, C.R., Mengistu, S.G., Christensen, J., Golden, H.E., Qiu, S., Zhu, Z., and Wu, Q., 2020, Land-cover changes to surface-water buffers in the midwestern USA—25 years of Landsat data analyses (1993-2017): *Remote Sensing*, v. 12, no. 5, article 754, at <https://doi.org/10.3390/rs12050754>.
- Berterretche, M., Hudak, A.T., Cohen, W.B., Maier-sperger, T.K., Gower, S.T., and Dungan, J., 2005, Comparison of regression and geostatistical methods for mapping Leaf Area Index (LAI) with Landsat ETM+ data over a boreal forest: *Remote Sensing of Environment*, v. 96, no. 1, p. 49–61, at <https://doi.org/10.1016/j.rse.2005.01.014>.
- Berthier, E., Raup, B., and Scambos, T.A., 2004, New velocity map and mass-balance estimate of Mertz Glacier, East Antarctica, derived from Landsat sequential imagery: *Journal of Glaciology*, v. 49, no. 167, p. 503–511, at <https://doi.org/10.3189/172756503781830377>.
- Berthier, E., Scambos, T.A., and Shuman, C.A., 2012, Mass loss of Larsen B tributary glaciers (Antarctic Peninsula) unabated since 2002: *Geophysical Research Letters*, v. 39, no. 13, article L13501, at <https://doi.org/10.1029/2012GL051755>.
- Bertoldi, G., Albertson, J.D., Kustas, W.P., Li, F., and Anderson, M.C., 2007, On the opposing roles of air temperature and wind speed variability in flux estimation from remotely sensed land surface states: *Water Resources Research*, v. 43, no. 10, article W10433, at <https://doi.org/10.1029/2007WR005911>.
- Betts, M.G., Yang, Z., Hadley, A.S., Smith, A.C., Rousseau, J.S., Northrup, J.M., Nocera, J.J., Gorelick, N., and Gerber, B.D., 2022, Forest degradation drives widespread avian habitat and population declines: *Nature Ecology and Evolution*, v. 6, no. 6, p. 709–719, at <https://doi.org/10.1038/s41559-022-01737-8>.
- Betty, C.L., Fung, A.K., and Irons, J.R., 1996, Measured polarized bidirectional reflectance distribution function of a spectralon calibration target, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2183–2185, at <https://doi.org/10.1109/IGARSS.1996.516929>.
- Beuchle, R., Eva, H.D., Stibig, H.J., Bodart, C., Brink, A., Mayaux, P., Johansson, D., Achard, F., and Belward, A.S., 2011, A satellite data set for tropical forest area change assessment: *International Journal of Remote Sensing*, v. 32, no. 22, p. 7009–7031, at <https://doi.org/10.1080/01431161.2011.611186>.
- Bi, J., Belle, J.H., Wang, Y., Lyapustin, A.I., Wildani, A., and Liu, Y., 2019, Impacts of snow and cloud covers on satellite-derived PM_{2.5} levels: *Remote Sensing of Environment*, v. 221, p. 665–674, at <https://doi.org/10.1016/j.rse.2018.12.002>.
- Bi, J., Knyazikhin, Y., Choi, S., Park, T., Barichivich, J., Ciais, P., Fu, R., Ganguly, S., Hall, F., et al., 2015, Sunlight mediated seasonality in canopy structure and photosynthetic activity of Amazonian rainforests: *Environmental Research Letters*, v. 10, no. 6, article 064014, at <https://doi.org/10.1088/1748-9326/10/6/064014>.
- Bi, J., Myneni, R., Lyapustin, A.I., Wang, Y., Park, T., Chi, C., Yan, K., and Knyazikhin, Y., 2016, Amazon forests' response to droughts—A perspective from the MAIAC product: *Remote Sensing*, v. 8, no. 4, article 356, at <https://doi.org/10.3390/rs8040356>.
- Biggar, S., Thome, K.J., Geis, J., and Burkhart, C., 2004, Laser-based system for ground-based measurement of backscatter surface reflectance, in 2004 IEEE International Geoscience and

- Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1955–1957, at <https://doi.org/10.1109/IGARSS.2004.1370727>.
- Biggar, S.F., Thome, K.J., Holmes, J.M., Kuester, M.A., and Schowengerdt, R.A., 2001, In-flight radiometric and spatial calibration of EO-1 optical sensors, *in* 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 305–307, at <https://doi.org/10.1109/IGARSS.2001.976139>.
- Biggar, S.F., Thome, K.J., Lockwood, R.B., and Miller, S., 2007, VNIR transfer radiometer for validation of calibration sources for hyperspectral sensors, *in* Earth Observing Systems XII, San Diego, Calif., 26–28 August 2007, Proceedings of SPIE Vol. 6677: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 66770w, at <https://doi.org/10.1117/12.740231>.
- Biggar, S.F., Thome, K.J., McCorkel, J.T., and D'Amico, J.M., 2005, Vicarious calibration of the ASTER SWIR sensor including crosstalk correction, *in* Earth Observing Systems X, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5882: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 588217, at <https://doi.org/10.1117/12.620090>.
- Biggar, S.F., Thome, K.J., Spyak, P.R., and Zalewski, E.F., 1999, Solar-radiation based calibration in the range 740 to 2400 nm, *in* Sensors, Systems, and Next-Generation Satellites III, Florence, Italy, 20–23 September 1999, Proceedings of SPIE Vol. 3870: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 228–233, at <https://doi.org/10.1117/12.373190>.
- Biggar, S.F., Thome, K.J., and Wisniewski, W., 2003, Vicarious radiometric calibration of EO-1 sensors by reference to high-reflectance ground targets: *IEEE Transactions on Geoscience and Remote Sensing*, v. 41, no. 6 pt. 1, p. 1174–1179, at <https://doi.org/10.1109/TGRS.2003.813211>.
- Biggar, S.F., Thome, K.J., and Wisniewski, W.T., 2002, In-flight radiometric calibration of the advanced land imager and hyperion sensors on the EO-1 platform and comparisons with other Earth observing sensors, *in* Earth Observing Systems VII, Seattle, Wash., 7–10 July 2002, Proceedings of SPIE Vol. 4814: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 289–295, at <https://doi.org/10.1117/12.451781>.
- Biggs, T.W., Thenkabail, P.S., Gumma, M.K., Scott, C.A., Parthasaradhi, G.R., and Tural, H.N., 2006, Irrigated area mapping in heterogeneous landscapes with MODIS time series, ground truth and census data, Krishna Basin, India: *International Journal of Remote Sensing*, v. 27, no. 19, p. 4245–4266, at <https://doi.org/10.1080/01431160600851801>.
- Bindschadler, R.A., 1997, Actively surging West Antarctic ice streams and their response characteristics: *Annals of Glaciology*, v. 24, p. 409–414, at <https://doi.org/10.3189/S0260305500012520>.
- Bindschadler, R.A., 1998, Future of the West Antarctic ice sheet: *Science*, v. 282, no. 5388, p. 428–429, at <https://doi.org/10.1126/science.282.5388.428>.
- Bindschadler, R.A., 1998, Monitoring ice sheet behavior from space: *Reviews of Geophysics*, v. 36, no. 1, p. 79–104, at <https://doi.org/10.1029/97RG02669>.
- Bindschadler, R.A., 1999, Comparison of greenland ice sheet topography measured by tops ar and airborne laser altimetry: *IEEE Transactions on Geoscience and Remote Sensing*, v. 37, no. 5, p. 2530–2535, at <https://doi.org/10.1109/36.789648>.

- Bindschadler, R.A., 2002, History of lower Pine Island Glacier, West Antarctica, from Landsat imagery: *Journal of Glaciology*, v. 48, no. 163, p. 536–544, at <https://doi.org/10.3189/172756502781831052>.
- Bindschadler, R.A., 2003, Landsat Coverage of the Earth at High Latitudes: Photogrammetric Engineering and Remote Sensing, v. 69, no. 12, p. 1333–1339, at <https://doi.org/10.14358/PERS.69.12.1333>.
- Bindschadler, R.A., 2003, Tracking subpixel-scale Sastrugi with Advanced Land Imager: *IEEE Transactions on Geoscience and Remote Sensing*, v. 41, no. 6 pt. 1, p. 1373–1377, at <https://doi.org/10.1109/TGRS.2003.812902>.
- Bindschadler, R.A., 2006, The environment and evolution of the West Antarctic ice sheet—Setting the stage: *Philosophical Transactions of the Royal Society A—Mathematical, Physical and Engineering Sciences*, v. 364, no. 1844, p. 1583–1605, at <https://doi.org/10.1098/rsta.2006.1790>.
- Bindschadler, R.A., 2006, Hitting the ice sheets where it hurts: *Science*, v. 311, no. 5768, p. 1720–1721, at <https://doi.org/10.1126/science.1125226>.
- Bindschadler, R.A., 2008, Ice on the edge: *Natural History*, v. 117, no. 9, p. 28–33, at <https://digitallibrary.amnh.org/server/api/core/bitstreams/db59bbf1-f64e-4526-b95f-36b88225a0f4/content>.
- Bindschadler, R.A., 2012, Why predicting west Antarctic ice sheet behavior is so hard—What we know, what we don't know and how we will find out, in MacCracken, M., ed., *Sudden and disruptive climate change—Exploring the real risks and how we can avoid them*: London, UK, Routledge, p. 75–80, at <https://doi.org/10.4324/9781849772679>.
- Bindschadler, R.A., 2013, ICE CORES | Dynamics of the West Antarctic ice sheet, in Elias, S., and Mock, C., eds., *Encyclopedia of Quaternary science*, 2nd: Amsterdam, Netherlands, Elsevier, p. 448–455, at <https://doi.org/10.1016/B978-0-444-53643-3.00032-7>.
- Bindschadler, R.A., Alley, R.B., Anderson, J., Shipp, S., Borns, H., Fastook, J., Jacobs, S., Raymond, C.F., and Shuman, C.A., 1998, What is happening to the West Antarctic ice sheet?: *Eos*, v. 79, no. 22, p. 257–265, at <https://doi.org/10.1029/98EO00188>.
- Bindschadler, R.A., and Bentley, C.E., 1997, West Antarctic ice sheet collapse?: *Science*, v. 276, no. 5313, p. 662–664, at <https://doi.org/10.1126/science.276.5313.661d>.
- Bindschadler, R.A., and Bentley, C.R., 2002, On thin ice?: *Scientific American*, v. 287, no. 6, p. 98–105, at <https://doi.org/10.1038/scientificamerican1202-98>.
- Bindschadler, R.A., and Bentley, C.R., 2003, Erratum—On thin ice (*Scientific American*): *Scientific American*, v. 288, no. 4, p. 19–19.
- Bindschadler, R.A., Chen, X., and Vornberger, P., 2000, The onset area of Ice Stream D, West Antarctica: *Journal of Glaciology*, v. 46, no. 152, p. 95–101, at <https://doi.org/10.3189/172756500781833377>.
- Bindschadler, R.A., and Choi, H., 2003, Characterizing and correcting hyperion detectors using ice-sheet images: *IEEE Transactions on Geoscience and Remote Sensing*, v. 41, no. 6 pt. 1, p. 1189–1193, at <https://doi.org/10.1109/TGRS.2003.813208>.
- Bindschadler, R.A., and Choi, H., 2007, Increased water storage at ice-stream onsets—A critical mechanism?: *Journal of Glaciology*, v. 53, no. 181, p. 163–171, at <https://doi.org/10.3189/172756507782202793>.

- Bindschadler, R.A., Choi, H., Shuman, C., and Markus, T., 2005, Detecting and measuring new snow accumulation on ice sheets by satellite remote sensing: *Remote Sensing of Environment*, v. 98, no. 4, p. 388–402, at <https://doi.org/10.1016/j.rse.2005.07.014>.
- Bindschadler, R.A., Choi, H., Wichlacz, A., Bingham, R., Bohlander, J., Brunt, K., Corr, H., Drews, R., Fricker, H., et al., 2011, Getting around Antarctica—New high-resolution mappings of the grounded and freely-floating boundaries of the Antarctic ice sheet created for the International Polar Year: *Cryosphere*, v. 5, no. 3, p. 569–588, at <https://doi.org/10.5194/tc-5-569-2011>.
- Bindschadler, R.A., Diner, D.J., and Rignot, E., 2002, West Antarctic ice sheet releases New Iceberg: *Eos*, v. 83, no. 9, p. 85–93, at <https://doi.org/10.1029/2002EO000048>.
- Bindschadler, R.A., Dowdeswell, J., Hall, D., and Winther, J.G., 2001, Glaciological applications with Landsat-7 imagery—Early assessments: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 163–179, at [https://doi.org/10.1016/S0034-4257\(01\)00257-7](https://doi.org/10.1016/S0034-4257(01)00257-7).
- Bindschadler, R.A., King, M.A., Alley, R.B., Anandakrishnan, S., and Padman, L., 2003, Tidally controlled stick-slip discharge of a West Antarctic ice stream: *Science*, v. 301, no. 5636, p. 1087–1089, at <https://doi.org/10.1126/science.1087231>.
- Bindschadler, R.A., Nowicki, S., Abe-Ouchi, A., Aschwanden, A., Choi, H., Fastook, J., Granzow, G., Greve, R., Gutowski, G., et al., 2013, Ice-sheet model sensitivities to environmental forcing and their use in projecting future sea level (the SeaRISE project): *Journal of Glaciology*, v. 59, no. 214, p. 195–224, at <https://doi.org/10.3189/2013JoG12J125>.
- Bindschadler, R.A., and Rignot, E., 2001, “Crack!” in the polar night: *Eos*, v. 82, no. 43, p. 497–505, at <https://doi.org/10.1029/01EO00294>.
- Bindschadler, R.A., Scambos, T.A., Choi, H., and Haran, T.M., 2010, Ice sheet change detection by satellite image differencing: *Remote Sensing of Environment*, v. 114, no. 7, p. 1353–1362, at <https://doi.org/10.1016/j.rse.2010.01.014>.
- Bindschadler, R.A., Scambos, T.A., Rott, H., Skvarca, P., and Vornberger, P., 2002, Ice dolines on Larsen Ice Shelf, Antarctica: *Annals of Glaciology*, v. 34, p. 283–290, at <https://doi.org/10.3189/172756402781817996>.
- Bindschadler, R.A., Vaughan, D.G., and Vornberger, P., 2011, Variability of basal melt beneath the Pine Island Glacier ice shelf, West Antarctica: *Journal of Glaciology*, v. 57, no. 204, p. 581–595, at <https://doi.org/10.3189/002214311797409802>.
- Bindschadler, R.A., and Vornberger, P., 1998, Changes in the West Antarctic Ice Sheet since 1963 from declassified satellite photography: *Science*, v. 279, no. 5351, p. 689–692, at <https://doi.org/10.1126/science.279.5351.689>.
- Bindschadler, R.A., and Vornberger, P., 2000, Detecting ice-sheet topography with AVHRR, RESURS-01, and Landsat TM imagery: *Photogrammetric Engineering and Remote Sensing*, v. 66, no. 4, p. 417–422, at https://www.asprs.org/wp-content/uploads/pers/2000journal/april/2000_apr_417-422.pdf.
- Bindschadler, R.A., and Vornberger, P., 2005, Guiding the South Pole Traverse with ASTER imagery: *Journal of Glaciology*, v. 51, no. 172, p. 179–180, at <https://doi.org/10.3189/S0022143000215219>.

- Bindschadler, R.A., Vornberger, P., Blankenship, D., Scambos, T.A., and Jacobel, R., 1996, Surface velocity and mass balance of ice streams D and E, West Antarctica: *Journal of Glaciology*, v. 42, no. 142, p. 461–475, at <https://doi.org/10.1017/S0022143000003452>.
- Bindschadler, R.A., Vornberger, P., Fleming, A., Fox, A., Mullins, J., Binnie, D., Paulsen, S.J., Granneman, B., and Gorodetzky, D., 2008, The Landsat Image Mosaic of Antarctica: Remote Sensing of Environment, v. 112, no. 12, p. 4214–4226, at <https://doi.org/10.1016/j.rse.2008.07.006>.
- Bindschadler, R.A., Vornberger, P., and Gray, L., 2005, Changes in the ice plain of Whillans Ice Stream, West Antarctica: *Journal of Glaciology*, v. 51, no. 175, p. 620–636, at <https://doi.org/10.3189/172756505781829070>.
- Bindschadler, R.A., Vornberger, P.L., King, M.A., and Padman, L., 2003, Tidally driven stick-slip motion in the mouth of Whillans Ice Stream, Antarctica: *Annals of Glaciology*, v. 36, p. 263–272, at <https://doi.org/10.3189/172756403781816284>.
- Biradar, C.M., Thenkabail, P.S., Islam, M.A., Anputhas, M., Tharme, R., Vithanage, J., Alankara, R., and Gunasinghe, S., 2007, Establishing the best spectral bands and timing of imagery for land use—Land cover (LULC) class separability using Landsat ETM+ and Terra MODIS data: *Canadian Journal of Remote Sensing*, v. 33, no. 5, p. 431–444, at <https://doi.org/10.5589/m07-040>.
- Biradar, C.M., Thenkabail, P.S., Noojipady, P., Li, Y., Dheeravath, V., Turrall, H., Velpuri, M., Gumma, M.K., Gangalakunta, O.R.P., et al., 2009, A global map of rainfed cropland areas (GMRC) at the end of last millennium using remote sensing: *International Journal of Applied Earth Observation and Geoinformation*, v. 11, no. 2, p. 114–129, at <https://doi.org/10.1016/j.jag.2008.11.002>.
- Biradar, C.M., Thenkabail, P.S., Platonov, A., Xiao, X., Geerken, R., Noojipady, P., Turrall, H., and Vithanage, J., 2008, Water productivity mapping methods using remote sensing: *Journal of Applied Remote Sensing*, v. 2, no. 1, article 023544, at <https://doi.org/10.1117/1.3033753>.
- Biradar, C.M., Thenkabail, P.S., Turrall, H., Noojipady, P., Li, Y.J., Velpuri, M., Dheeravath, V., Vithanage, J., Schull, M., et al., 2006, A Global map of rainfed cropland areas at the end of last millennium using remote sensing and geospatial techniques, in *Geoinformatics 2006—GNSS and Integrated Geospatial Applications*, Wuhan, China, 28–29 October 2006, *Proceedings of SPIE Vol. 6418*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 64181Q, at <https://doi.org/10.1117/12.713204>.
- Birdsey, R.A., Cook, R., Denning, S., Griffith, P., Law, B., Masek, J.G., Michalak, A., Ogle, S., Ojima, D., et al., 2007, Investigators share improved understanding of the North American carbon cycle: *Eos*, v. 88, no. 24, p. 255–255, at <https://doi.org/10.1029/2007EO240004>.
- Bishop, M.P., Olsenholler, J.A., Shroder, J.F., Barry, R.G., Raup, B.H., Bush, A.B.G., Copland, L., Dwyer, J.L., Fountain, A.G., et al., 2004, Global Land Ice Measurements from Space (GLIMS)—Remote sensing and GIS investigations of the Earth’s Cryosphere: *Geocarto International*, v. 19, no. 2, p. 57–84, at <https://doi.org/10.1080/10106040408542307>.
- Bishop-Taylor, R., Nanson, R., Sagar, S., and Lymburner, L., 2021, Mapping Australia’s dynamic coastline at mean sea level using three decades of Landsat imagery: *Remote Sensing of Environment*, v. 267, article 112734, at <https://doi.org/10.1016/j.rse.2021.112734>.
- Bishop-Taylor, R., Sagar, S., Lymburner, L., Alam, I., and Sixsmith, J., 2019, Sub-pixel waterline extraction—Characterising accuracy and sensitivity to indices and spectra: *Remote Sensing*, v. 11, no. 24, article 2984, at <https://doi.org/10.3390/rs11242984>.

- Bishop-Taylor, R., Sagar, S., Lymburner, L., and Beaman, R.J., 2019, Between the tides—Modelling the elevation of Australia’s exposed intertidal zone at continental scale: *Estuarine, Coastal and Shelf Science*, v. 223, p. 115–128, at <https://doi.org/10.1016/j.ecss.2019.03.006>.
- Bissett, W.P., Carder, K.L., Walsh, J.J., and Dieterle, D.A., 1999, Carbon cycling in the upper waters of the Sargasso Sea—II. Numerical simulation of apparent and inherent optical properties: *Deep-Sea Research Part I—Oceanographic Research Papers*, v. 46, no. 2, p. 271–317, at [https://doi.org/10.1016/S0967-0637\(98\)00063-6](https://doi.org/10.1016/S0967-0637(98)00063-6).
- Bissett, W.P., Patch, J.S., Carder, K.L., and Lee, Z., 1997, Pigment packaging and chlorophyll a-specific absorption in high-light oceanic waters—A method, an algorithm, and validation, *in* *Ocean Optics XIII*, Halifax, NS, Canada, 22–25 October 1996, *Proceedings of SPIE Vol. 2963*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 358–374, at <https://doi.org/10.1117/12.266468>.
- Bissett, W.P., Patch, J.S., Carder, K.L., and Lee, Z.P., 1997, Pigment packaging and Chl a-specific absorption in high-light oceanic waters: *Limnology and Oceanography*, v. 42, no. 5, p. 961–968, at <https://doi.org/10.4319/lo.1997.42.5.0961>.
- Bissett, W.P., Walsh, J.J., Dieterle, D.A., and Carder, K.L., 1999, Carbon cycling in the upper waters of the Sargasso Sea—I. Numerical simulation of differential carbon and nitrogen fluxes: *Deep-Sea Research Part I—Oceanographic Research Papers*, v. 46, no. 2, p. 205–269, at [https://doi.org/10.1016/S0967-0637\(98\)00062-4](https://doi.org/10.1016/S0967-0637(98)00062-4).
- Biswas, S., Vadrevu, K.P., Lwin, Z.M., Lasko, K., and Justice, C.O., 2015, Factors controlling vegetation fires in protected and non-protected areas of Myanmar: *PLoS ONE*, v. 10, no. 4, article e0124346, at <https://doi.org/10.1371/journal.pone.0124346>.
- Biswas, S., Vadrevu, K.P., Mon, M.S., and Justice, C., 2021, Contemporary forest loss in Myanmar—Effect of democratic transition and subsequent timber bans on landscape structure and composition: *Ambio*, v. 50, no. 4, p. 914–928, at <https://doi.org/10.1007/s13280-020-01414-9>.
- Black, K.L., Petty, S.K., Radeloff, V.C., and Pauli, J.N., 2018, The Great Lakes Region is a melting pot for vicariant red fox (*Vulpes vulpes*) populations: *Journal of Mammalogy*, v. 99, no. 5, p. 1229–1236, at <https://doi.org/10.1093/jmammal/gyy096>.
- Black, S.E., Helder, D.L., and Schiller, S.J., 2003, Irradiance-based cross-calibration of Landsat-5 and Landsat-7 Thematic Mapper sensors: *International Journal of Remote Sensing*, v. 24, no. 2, p. 287–304, at <https://doi.org/10.1080/01431160304965>.
- Blackard, J.A., Finco, M.V., Helmer, E.H., Holden, G.R., Hoppus, M.L., Jacobs, D.M., Lister, A.J., Moisen, G.G., Nelson, M.D., et al., 2008, Mapping U.S. forest biomass using nationwide forest inventory data and moderate resolution information: *Remote Sensing of Environment*, v. 112, no. 4, p. 1658–1677, at <https://doi.org/10.1016/j.rse.2007.08.021>.
- Blevins, D.D., Brown, S.D., and Schott, J.R., 2006, First-principles based LIDAR simulation environment for scenes with participating mediums, *in* *Laser Radar Technology and Applications XI*, Orlando, Fla., 12–20 April 2006, *Proceedings of SPIE Vol. 6214*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 62140G, at <https://doi.org/10.1117/12.665958>.
- Bleyhl, B., Arakelyan, M., Askerov, E., Bluhm, H., Gavashelishvili, A., Ghasabian, M., Ghoddousi, A., Heidelberg, A., Khorozyan, I., et al., 2019, Assessing niche overlap between domestic and threatened wild sheep to identify conservation priority areas: *Diversity and Distributions*, v. 25, no. 1, p. 129–141, at <https://doi.org/10.1111/ddi.12839>.

- Bleyhl, B., Baumann, M., Griffiths, P., Heidelberg, A., Manvelyan, K., Radeloff, V.C., Zazanashvili, N., and Kuemmerle, T., 2017, Assessing landscape connectivity for large mammals in the Caucasus using Landsat 8 seasonal image composites: *Remote Sensing of Environment*, v. 193, p. 193–203, at <https://doi.org/10.1016/j.rse.2017.03.001>.
- Bleyhl, B., Sipko, T., Trepel, S., Bragina, E., Leitão, P.J., Radeloff, V.C., and Kuemmerle, T., 2015, Mapping seasonal European bison habitat in the Caucasus Mountains to identify potential reintroduction sites: *Biological Conservation*, v. 191, p. 83–92, at <https://doi.org/10.1016/j.biocon.2015.06.011>.
- Blickensdörfer, L., Schwieder, M., Pflugmacher, D., Nendel, C., Erasmi, S., and Hostert, P., 2022, Mapping of crop types and crop sequences with combined time series of Sentinel-1, Sentinel-2 and Landsat 8 data for Germany: *Remote Sensing of Environment*, v. 269, article 112831, at <https://doi.org/10.1016/j.rse.2021.112831>.
- Blinn, C.E., Albaugh, T.J., Fox, T.R., Wynne, R.H., Stape, J.L., Rubilar, R.A., and Allen, H.L., 2012, A method for estimating deciduous competition in pine stands using Landsat: *Southern Journal of Applied Forestry*, v. 36, no. 2, p. 71–78, at <https://doi.org/10.5849/sjaf.10-034>.
- Blinn, C.E., Browder, J.O., Pedlowski, M.A., and Wynne, R.H., 2013, Rebuilding the Brazilian rainforest—Agroforestry strategies for secondary forest succession: *Applied Geography*, v. 43, p. 171–181, at <https://doi.org/10.1016/j.apgeog.2013.06.013>.
- Blinn, C.E., House, M.N., Wynne, R.H., Thomas, V.A., Fox, T.R., and Sumnall, M., 2019, Landsat 8 based leaf area index estimation in loblolly pine plantations: *Forests*, v. 10, no. 3, article 222, at <https://doi.org/10.3390/f10030222>.
- Block, N.R., Introne, R.E., and Schott, J.R., 2004, Image quality analysis of a spectra-radiometric sparse aperture model, *in* *Spaceborne Sensors*, Orlando, Fla., 13–13 April 2004, *Proceedings of SPIE Vol. 5418*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 127–138, at <https://doi.org/10.1117/12.542419>.
- Block, N.R., Introne, R.E., and Schott, J.R., 2005, Using multispectral information to decrease the spectral artifacts in sparse-aperture imagery, *in* *Spaceborne Sensors II*, Orlando, Fla., 28–29 March 2005, *Proceedings of SPIE Vol. 5798*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 139–150, at <https://doi.org/10.1117/12.604002>.
- Blonquist Jr, J.M., Allen, R.G., and Bugbee, B., 2010, An evaluation of the net radiation sub-model in the ASCE standardized reference evapotranspiration equation—Implications for evapotranspiration prediction: *Agricultural Water Management*, v. 97, no. 7, p. 1026–1038, at <https://doi.org/10.1016/j.agwat.2010.02.008>.
- Blunden, J., Arndt, D.S., Bissolli, P., Diamond, H.J., Druckenmiller, M.L., Dunn, R.J.H., Ganter, C., Gobron, N., Jeffries, M.O., et al., 2019, State of the climate in 2018, *Bulletin of the American Meteorological Society*, v. 100, no. 9, 305 p., at <https://doi.org/10.1175/2019BAMSStateoftheClimate.1>.
- Boccia, V., Celesti, M., Gabriele, A., Gascon, F., Green, R., Isola, C., Miller, C., Nieke, J., Poulter, B., et al., 2022, NASA - ESA cooperation on the SBG and CHIME hyperspectral satellite missions, *in* 73rd International Astronautical Congress, IAC 2022, Paris, France, *Proceedings: Paris, France*, International Astronautical Federation, paper no. 73013, at <https://iafastro.directory/iac/paper/id/73013/summary/>.

- Bohlander, J., and Scambos, T.A., 2002, Ice Flow and Morphology of Prestrud Inlet and Western Sulzberger Ice Shelf, West Antarctica: *Polar Geography*, v. 26, no. 3, p. 227–234, at <https://doi.org/10.1080/789610194>.
- Boisvenue, C., Smiley, B.P., White, J.C., Kurz, W.A., and Wulder, M.A., 2016, Improving carbon monitoring and reporting in forests using spatially-explicit information: *Carbon Balance and Management*, v. 11, no. 1, article 23, at <https://doi.org/10.1186/s13021-016-0065-6>.
- Boisvenue, C., Smiley, B.P., White, J.C., Kurz, W.A., and Wulder, M.A., 2016, Integration of Landsat time series and field plots for forest productivity estimates in decision support models: *Forest Ecology and Management*, v. 376, p. 284–297, at <https://doi.org/10.1016/j.foreco.2016.06.022>.
- Bolton, D.K., Coops, N.C., Hermosilla, T., Wulder, M.A., and White, J.C., 2018, Evidence of vegetation greening at alpine treeline ecotones—Three decades of Landsat spectral trends informed by lidar-derived vertical structure: *Environmental Research Letters*, v. 13, no. 8, article 084022, at <https://doi.org/10.1088/1748-9326/aad5d2>.
- Bolton, D.K., Coops, N.C., Hermosilla, T., Wulder, M.A., White, J.C., and Ferster, C.J., 2019, Uncovering regional variability in disturbance trends between parks and greater park ecosystems across Canada (1985–2015): *Scientific Reports*, v. 9, no. 1, article 1323, at <https://doi.org/10.1038/s41598-018-37265-4>.
- Bolton, D.K., Coops, N.C., Hermosilla, T., Wulder, M.A., and White, J.C., 2017, Assessing variability in post-fire forest structure along gradients of productivity in the Canadian boreal using multi-source remote sensing: *Journal of Biogeography*, v. 44, no. 6, p. 1294–1305, at <https://doi.org/10.1111/jbi.12947>.
- Bolton, D.K., Coops, N.C., and Wulder, M.A., 2013, Investigating the agreement between global canopy height maps and airborne Lidar derived height estimates over Canada: *Canadian Journal of Remote Sensing*, v. 39, no. Suppl. 1, p. S139–S151, at <https://doi.org/10.5589/m13-036>.
- Bolton, D.K., Coops, N.C., and Wulder, M.A., 2013, Measuring forest structure along productivity gradients in the Canadian boreal with small-footprint Lidar: *Environmental Monitoring and Assessment*, v. 185, no. 8, p. 6617–6634, at <https://doi.org/10.1007/s10661-012-3051-9>.
- Bolton, D.K., Coops, N.C., and Wulder, M.A., 2015, Characterizing residual structure and forest recovery following high-severity fire in the western boreal of Canada using Landsat time-series and airborne lidar data: *Remote Sensing of Environment*, v. 163, p. 48–60, at <https://doi.org/10.1016/j.rse.2015.03.004>.
- Bolton, D.K., Tompalski, P., Coops, N.C., White, J.C., Wulder, M.A., Hermosilla, T., Queinnec, M., Luther, J.E., van Lier, O.R., et al., 2020, Optimizing Landsat time series length for regional mapping of lidar-derived forest structure: *Remote Sensing of Environment*, v. 239, article 111645, at <https://doi.org/10.1016/j.rse.2020.111645>.
- Bolton, D.K., White, J.C., Wulder, M.A., Coops, N.C., Hermosilla, T., and Yuan, X., 2018, Updating stand-level forest inventories using airborne laser scanning and Landsat time series data: *International Journal of Applied Earth Observation and Geoinformation*, v. 66, p. 174–183, at <https://doi.org/10.1016/j.jag.2017.11.016>.
- Bonczyk, W.C., Markham, B.L., Barker, J.L., and Helder, D.L., 1996, Artifact correction and absolute radiometric calibration techniques employed in the Landsat 7 image assessment system, *in* 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31

- May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1270–1272, at <https://doi.org/10.1109/IGARSS.1996.516634>.
- Bone, C., White, J.C., Wulder, M.A., Robertson, C., and Nelson, T.A., 2013, Impact of forest fragmentation on patterns of mountain pine beetle-caused tree mortality: *Forests*, v. 4, no. 2, p. 279–295, at <https://doi.org/10.3390/f4020279>.
- Bone, C., Wulder, M.A., White, J.C., Robertson, C., and Nelson, T.A., 2013, A GIS-based risk rating of forest insect outbreaks using aerial overview surveys and the local Moran's I statistic: *Applied Geography*, v. 40, p. 161–170, at <https://doi.org/10.1016/j.apgeog.2013.02.011>.
- Boonmee, M., Schott, J.R., and Messinger, D.W., 2006, Land surface temperature and emissivity retrieval from thermal infrared hyper spectral imagery, in *Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XII*, Orlando, Fla., 17–20 April 2006, Proceedings of SPIE Vol. 6233: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 62331V, at <https://doi.org/10.1117/12.665899>.
- Bortolot, Z.J., and Wynne, R.H., 2003, A method for predicting fresh green leaf nitrogen concentrations from shortwave infrared reflectance spectra acquired at the canopy level that requires no in situ nitrogen data: *International Journal of Remote Sensing*, v. 24, no. 3, p. 619–624, at <https://doi.org/10.1080/01431160304993>.
- Bortolot, Z.J., and Wynne, R.H., 2005, Estimating forest biomass using small footprint LiDAR data—An individual tree-based approach that incorporates training data: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 59, no. 6, p. 342–360, at <https://doi.org/10.1016/j.isprsjprs.2005.07.001>.
- Bos, M.G., Kselik, R.A.L., Allen, R.G., and Molden, D.J., 2009, *Water requirements for irrigation and the environment*: Dordrecht, Netherlands, Springer, 174 p., at <https://doi.org/10.1007/978-1-4020-8948-0>.
- Bosch, D., Jackson, T., Lakshmi, V., Jacobs, J., and Moran, M.S., 2004, In situ soil moisture network for validation of remotely sensed data, in *2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3188–3190, at <https://doi.org/10.1109/IGARSS.2004.1370378>.
- Boschetti, L., and Roy, D.P., 2008, Defining a fire year for reporting and analysis of global interannual fire variability: *Journal of Geophysical Research Biogeosciences*, v. 113, no. 3, article G03020, at <https://doi.org/10.1029/2008JG000686>.
- Boschetti, L., and Roy, D.P., 2009, Strategies for the fusion of satellite fire radiative power with burned area data for fire radiative energy derivation: *Journal of Geophysical Research Atmospheres*, v. 114, no. 20, article D20302, at <https://doi.org/10.1029/2008JD011645>.
- Boschetti, L., Roy, D.P., Barbosa, P., Boca, R., and Justice, C.O., 2008, A MODIS assessment of the summer 2007 extent burned in Greece: *International Journal of Remote Sensing*, v. 29, no. 8, p. 2433–2436, at <https://doi.org/10.1080/01431160701874561>.
- Boschetti, L., Roy, D.P., Giglio, L., Huang, H., Zubkova, M., and Humber, M.L., 2019, Global validation of the Collection 6 MODIS Burned Area Product: *Remote Sensing of Environment*, v. 235, article 111490, at <https://doi.org/10.1016/j.rse.2019.111490>.

- Boschetti, L., Roy, D.P., and Justice, C.O., 2008, Using NASA's World Wind virtual globe for interactive internet visualization of the global MODIS burned area product: *International Journal of Remote Sensing*, v. 29, no. 11, p. 3067–3072, at <https://doi.org/10.1080/01431160701733023>.
- Boschetti, L., Roy, D.P., Justice, C.O., and Giglio, L., 2010, Global assessment of the temporal reporting accuracy and precision of the MODIS burned area product: *International Journal of Wildland Fire*, v. 19, no. 6, p. 705–709, at <https://doi.org/10.1071/WF09138>.
- Boschetti, L., Roy, D.P., Justice, C.O., and Humber, M.L., 2015, MODIS-Landsat fusion for large area 30m burned area mapping: *Remote Sensing of Environment*, v. 161, p. 27–42, at <https://doi.org/10.1016/j.rse.2015.01.022>.
- Boschetti, L., Stehman, S.V., and Roy, D.P., 2016, A stratified random sampling design in space and time for regional to global scale burned area product validation: *Remote Sensing of Environment*, v. 186, p. 465–478, at <https://doi.org/10.1016/j.rse.2016.09.016>.
- Boucher, P.B., Hancock, S., Orwig, D.A., Duncanson, L., Armston, J., Tang, H., Krause, K., Cook, B., Paynter, I., et al., 2020, Detecting change in forest structure with simulated GEDI lidar waveforms—A case study of the hemlock woolly adelgid (HWA; *adelges tsugae*) infestation: *Remote Sensing*, v. 12, no. 8, article 1304, at <https://doi.org/10.3390/RS12081304>.
- Boucher, Y., Viallefont, F., Deadman, A., Fox, N., Behnert, I., Griffith, D., Harris, P., Helder, D.L., Knaeps, E., et al., 2011, Spectral reflectance measurement methodologies for Tuz Golu field campaign, in 2011 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Vancouver, Canada, 24–29 July 2011, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3875–3878, at <https://doi.org/10.1109/IGARSS.2011.6050077>.
- Bounoua, L., Bachir, N., Souidi, H., Bahi, H., Lagmiri, S., Khebiza, M.Y., Nigro, J., and Thome, K., 2023, Sustainable development in Algeria's urban areas—Population growth and land consumption: *Urban Science*, v. 7, no. 1, article 29, at <https://doi.org/10.3390/urbansci7010029>.
- Bounoua, L., Kahime, K., Houti, L., Blakey, T., Ebi, K.L., Zhang, P., Imhoff, M.L., Thome, K.J., Dudek, C., et al., 2013, Linking climate to incidence of zoonotic cutaneous leishmaniasis (*L. major*) in pre-Saharan North Africa: *International Journal of Environmental Research and Public Health*, v. 10, no. 8, p. 3172–3191, at <https://doi.org/10.3390/ijerph10083172>.
- Bounoua, L., Masek, J.G., and Turre, Y.M., 2006, Sensitivity of surface climate to land surface parameters—A case study using the simple biosphere model SiB2: *Journal of Geophysical Research Atmospheres*, v. 111, no. 22, article D22S09, at <https://doi.org/10.1029/2006JD007309>.
- Bounoua, L., Nigro, J., Thome, K., Saleous, N., Worden, H., Tsay, S.C., Minnett, P., and Al-Hamdan, M., 2022, Preface, special issue of “20th Anniversary of Terra Science”: *Remote Sensing of Environment*, v. 271, article 112889, at <https://doi.org/10.1016/j.rse.2022.112889>.
- Bounoua, L., Nigro, J., Thome, K., Zhang, P., and Lachir, A., 2018, Mapping urbanization in the United States for 2020, in 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 854–857, at <https://doi.org/10.1109/IGARSS.2018.8517770>.
- Bounoua, L., Nigro, J., Zhang, P., and Thome, K.J., 2016, Mapping impact of urbanization in the continental U.S. from 2001-2020, in 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of

- Electrical and Electronics Engineers (IEEE), p. 6750–6753, at <https://doi.org/10.1109/IGARSS.2016.7730762>.
- Bounoua, L., Nigro, J., Zhang, P., Thome, K.J., and Lachir, A., 2018, Mapping urbanization in the United States from 2001 to 2011: *Applied Geography*, v. 90, p. 123–133, at <https://doi.org/10.1016/j.apgeog.2017.12.002>.
- Bounoua, L., Safia, A., Masek, J.G., Peters-Lidard, C., and Imhoff, M.L., 2009, Impact of urban growth on surface climate—A case study in Oran, Algeria: *Journal of Applied Meteorology and Climatology*, v. 48, no. 2, p. 217–231, at <https://doi.org/10.1175/2008JAMC2044.1>.
- Bounoua, L., Zhang, P., Mostovoy, G., Thome, K.J., Masek, J.G., Imhoff, M., Shepherd, M., Quattrochi, D., Santanello, J., et al., 2015, Impact of urbanization on US surface climate: *Environmental Research Letters*, v. 10, no. 8, article 084010, at <https://doi.org/10.1088/1748-9326/10/8/084010>.
- Bounoua, L., Zhang, P., Nigro, J., Lachir, A., and Thome, K.J., 2017, Regional impacts of urbanization in the United States: *Canadian Journal of Remote Sensing*, v. 43, no. 3, p. 256–268, at <https://doi.org/10.1080/07038992.2017.1317208>.
- Bourbonnais, M.L., Nelson, T.A., Stenhouse, G.B., Wulder, M.A., White, J.C., Hobart, G.W., Hermosilla, T., Coops, N.C., Nathoo, F., and Darimont, C., 2017, Characterizing spatial-temporal patterns of landscape disturbance and recovery in western Alberta, Canada using a functional data analysis approach and remotely sensed data: *Ecological Informatics*, v. 39, p. 140–150, at <https://doi.org/10.1016/j.ecoinf.2017.04.010>.
- Bourbonnais, M.L., Nelson, T.A., and Wulder, M.A., 2014, Geographic analysis of the impacts of mountain pine beetle infestation on forest fire ignition: *Canadian Geographer*, v. 58, no. 2, p. 188–202, at <https://doi.org/10.1111/j.1541-0064.2013.12057.x>.
- Bourbonnais, M.L., Wulder, M.A., Coops, N.C., Nelson, T.A., White, J.C., Nathoo, F., Stenhouse, G.B., Hobart, G.W., Darimont, C.T., and Hermosilla, T., 2019, A functional data analysis approach for characterizing spatial-temporal patterns of landscape disturbance and recovery from remotely sensed data, *in* Conference on Spatial Knowledge and Information - Canada, SKI-Canada 2019, Banff, Alberta, Canada, 22–23 February 2019, Proceedings, v. 2323: Aachen, Germany, CEUR, p. 1–8, at <http://ceur-ws.org/Vol-2323/>.
- Bouvet, M., Thome, K., Berthelot, B., Bialek, A., Czaplá-Myers, J., Fox, N.P., Goryl, P., Henry, P., Ma, L., et al., 2019, RadCalNet—A radiometric calibration network for Earth observing imagers operating in the visible to shortwave infrared spectral range: *Remote Sensing*, v. 11, no. 20, article 2401, at <https://doi.org/10.3390/rs11202401>.
- Boyda, E., Basu, S., Ganguly, S., Michaelis, A., Mukhopadhyay, S., and Nemani, R.R., 2017, Deploying a quantum annealing processor to detect tree cover in aerial imagery of California: *PLoS ONE*, v. 12, no. 2, article e0172505, at <https://doi.org/10.1371/journal.pone.0172505>.
- Braaten, J.D., Cohen, W.B., and Yang, Z., 2015, Automated cloud and cloud shadow identification in Landsat MSS imagery for temperate ecosystems: *Remote Sensing of Environment*, v. 169, p. 128–138, at <https://doi.org/10.1016/j.rse.2015.08.006>.
- Brady, M.A., De Groot, W.J., Goldammer, J.G., Keenan, T., Lynham, T.J., Justice, C.O., Csiszar, I.A., and O’Loughlin, K., 2007, Developing a global early warning system for wildland fire, *in* Siva Kumar, M.V.K., and Motha, R.P., eds., *International workshop on agrometeorological risk management—Challenges and opportunities*: New York, N.Y., Springer, p. 355–366, at https://doi.org/10.1007/978-3-540-72746-0_20.

- Bragina, E.V., Ives, A.R., Pidgeon, A.M., Balčiauskas, L., Csányi, S., Khojetsky, P., Kysucká, K., Lieskovsky, J., Ozolins, J., et al., 2018, Wildlife population changes across Eastern Europe after the collapse of socialism: *Frontiers in Ecology and the Environment*, v. 16, no. 2, p. 77–81, at <https://doi.org/10.1002/fee.1770>.
- Bragina, E.V., Ives, A.R., Pidgeon, A.M., Kuemmerle, T., Baskin, L.M., Gubar, Y.P., Piquer-Rodríguez, M., Keuler, N.S., Petrosyan, V.G., and Radeloff, V.C., 2015, Rapid declines of large mammal populations after the collapse of the Soviet Union: *Conservation Biology*, v. 29, no. 3, p. 844–853, at <https://doi.org/10.1111/cobi.12450>.
- Bragina, E.V., Radeloff, V.C., Baumann, M., Wendland, K., Kuemmerle, T., and Pidgeon, A.M., 2015, Effectiveness of protected areas in the Western Caucasus before and after the transition to post-socialism: *Biological Conservation*, v. 184, p. 456–464, at <https://doi.org/10.1016/j.biocon.2015.02.013>.
- Brakke, T.W., Otterman, J., Irons, J.R., and Hall, F.G., 1996, Assessing canopy biomass and vigor by model-inversion of bidirectional reflectances—Problems and prospects, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1657–1659, at <https://doi.org/10.1109/IGARSS.1996.516761>.
- Brandeis, T.J., Helmer, E.H., Marcano-Vega, H., and Lugo, A.E., 2009, Climate shapes the novel plant communities that form after deforestation in Puerto Rico and the U.S. Virgin Islands: *Forest Ecology and Management*, v. 258, no. 7, p. 1704–1718, at <https://doi.org/10.1016/j.foreco.2009.07.030>.
- Brandt, J.S., Allendorf, T., Radeloff, V.C., and Brooks, J., 2017, Effects of national forest-management regimes on unprotected forests of the Himalaya: *Conservation Biology*, v. 31, no. 6, p. 1271–1282, at <https://doi.org/10.1111/cobi.12927>.
- Brandt, J.S., Butsic, V., Schwab, B., Kuemmerle, T., and Radeloff, V.C., 2015, The relative effectiveness of protected areas, a logging ban, and sacred areas for old-growth forest protection in southwest China: *Biological Conservation*, v. 181, p. 1–8, at <https://doi.org/10.1016/j.biocon.2014.09.043>.
- Brandt, J.S., Haynes, M.A., Kuemmerle, T., Waller, D.M., and Radeloff, V.C., 2013, Regime shift on the roof of the world—Alpine meadows converting to shrublands in the southern Himalayas: *Biological Conservation*, v. 158, p. 116–127, at <https://doi.org/10.1016/j.biocon.2012.07.026>.
- Brandt, J.S., Kuemmerle, T., Li, H., Ren, G., Zhu, J., and Radeloff, V.C., 2012, Using Landsat imagery to map forest change in southwest China in response to the national logging ban and ecotourism development: *Remote Sensing of Environment*, v. 121, p. 358–369, at <https://doi.org/10.1016/j.rse.2012.02.010>.
- Brandt, J.S., Radeloff, V., Allendorf, T., Butsic, V., and Roopsind, A., 2019, Effects of ecotourism on forest loss in the Himalayan biodiversity hotspot based on counterfactual analyses: *Conservation Biology*, v. 33, no. 6, p. 1318–1328, at <https://doi.org/10.1111/cobi.13341>.
- Brandt, J.S., Wood, E.M., Pidgeon, A.M., Han, L.X., Fang, Z., and Radeloff, V.C., 2013, Sacred forests are keystone structures for forest bird conservation in southwest China's Himalayan Mountains: *Biological Conservation*, v. 166, p. 34–42, at <https://doi.org/10.1016/j.biocon.2013.06.014>.
- Breitmeyer, R.J., Stewart, M.K., and Huntington, J.L., 2018, Evaluation of gridded meteorological data for calculating water balance cover storage requirements: *Vadose Zone Journal*, v. 17, no. 1, article 180009, at <https://doi.org/10.2136/vzj2018.01.0009>.

- Breon, F., Vermote, E.F., Murphy, E., and Franch, B., 2015, Measuring the directional variations of land surface reflectance from MODIS: *IEEE Transactions on Geoscience and Remote Sensing*, v. 53, no. 8, p. 4638–4649, at <https://doi.org/10.1109/TGRS.2015.2405344>.
- Bréon, F.M., and Vermote, E.F., 2012, Correction of MODIS surface reflectance time series for BRDF effects: *Remote Sensing of Environment*, v. 125, p. 1–9, at <https://doi.org/10.1016/j.rse.2012.06.025>.
- Bright, B.C., Hudak, A.T., Kennedy, R.E., Braaten, J.D., and Henareh Khalyani, A., 2019, Examining post-fire vegetation recovery with Landsat time series analysis in three western North American forest types: *Fire Ecology*, v. 15, no. 1, article 8, at <https://doi.org/10.1186/s42408-018-0021-9>.
- Bright, B.C., Hudak, A.T., Kennedy, R.E., and Meddens, A.J.H., 2014, Landsat time series and lidar as predictors of live and dead basal area across five bark beetle-affected forests: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 7, no. 8, p. 3440–3452, at <https://doi.org/10.1109/JSTARS.2014.2346955>.
- Bright, B.C., Hudak, A.T., Meddens, A.J.H., Hawbaker, T.J., Briggs, J.S., and Kennedy, R.E., 2017, Prediction of forest canopy and surface fuels from lidar and satellite time series data in a bark beetle-affected forest: *Forests*, v. 8, no. 9, article 322, at <https://doi.org/10.3390/f8090322>.
- Brink, A.B., Bodart, C., Buchanan, G., Clerici, M., Donnay, F., Eshiamwata, G., Gregoire, J.M., Kirui, B.K., Lupi, A., et al., 2013, Vegetation, in Paron, P., Olago, D.O., and Omuto, C.T., eds., *Kenya, a natural outlook—Geo-environmental resources and hazards*: Kiflington, Oxford, UK, Elsevier, p. 133–163, at <https://doi.org/10.1016/B978-0-444-59559-1.00012-8>.
- Broich, M., Hansen, M.C., Potapov, P., Adusei, B., Lindquist, E., and Stehman, S.V., 2011, Time-series analysis of multi-resolution optical imagery for quantifying forest cover loss in Sumatra and Kalimantan, Indonesia: *International Journal of Applied Earth Observation and Geoinformation*, v. 13, no. 2, p. 277–291, at <https://doi.org/10.1016/j.jag.2010.11.004>.
- Broich, M., Hansen, M.C., Potapov, P., and Wimberly, M., 2013, Patterns of tree-cover loss along the Indonesia-Malaysia border on Borneo: *International Journal of Remote Sensing*, v. 34, no. 16, p. 5748–5760, at <https://doi.org/10.1080/01431161.2013.796099>.
- Broich, M., Hansen, M.C., Stolle, F., Potapov, P., Margono, B.A., and Adusei, B., 2011, Forest cover loss in Sumatra and Kalimantan, Indonesia—Accurate maps and annual trends derived from time-series analysis of multi-resolution optical remote sensing, in *The GEOSS Era, Towards Operational Environmental Monitoring—34th International Symposium on Remote Sensing of Environment*, Sydney, Australia, 10–15 April 2011, Proceedings: International Society for Photogrammetry and Remote Sensing, p. 1–3, at <http://www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00429.pdf>.
- Broich, M., Hansen, M.C., Stolle, F., Potapov, P., Margono, B.A., and Adusei, B., 2011, Remotely sensed forest cover loss shows high spatial and temporal variation across Sumatera and Kalimantan, Indonesia 2000-2008: *Environmental Research Letters*, v. 6, no. 1, article 014010, at <https://doi.org/10.1088/1748-9326/6/1/014010>.
- Broich, M., Stehman, S.V., Hansen, M.C., Potapov, P., and Shimabukuro, Y.E., 2009, A comparison of sampling designs for estimating deforestation from Landsat imagery—A case study of the Brazilian Legal Amazon: *Remote Sensing of Environment*, v. 113, no. 11, p. 2448–2454, at <https://doi.org/10.1016/j.rse.2009.07.011>.

- Brooke, B., Lymburner, L., and Lewis, A., 2017, Coastal dynamics of Northern Australia—Insights from the Landsat Data Cube: Remote Sensing Applications—Society and Environment, v. 8, p. 94–98, at <https://doi.org/10.1016/j.rsase.2017.08.003>.
- Brooks, A.P., Spencer, J., Shellberg, J.G., Knight, J., and Lymburner, L., 2008, Using remote sensing to quantify sediment budget components in a large tropical river—Mitchell River, Gulf of Carpentaria, *in* Sediment Dynamics in Changing Environments, Christchurch, New Zealand, 1–5 December 2008, IAHS Publication 325: International Commission on Continental Erosion, ICCE, p. 225–236.
- Brooks, E.B., Coulston, J.W., Wynne, R.H., and Thomas, V.A., 2016, Improving the precision of dynamic forest parameter estimates using Landsat: Remote Sensing of Environment, v. 179, p. 162–169, at <https://doi.org/10.1016/j.rse.2016.03.017>.
- Brooks, E.B., Thomas, V.A., Wynne, R.H., and Coulston, J.W., 2012, Fitting the multitemporal curve—A fourier series approach to the missing data problem in remote sensing analysis: IEEE Transactions on Geoscience and Remote Sensing, v. 50, no. 9, p. 3340–3353, at <https://doi.org/10.1109/TGRS.2012.2183137>.
- Brooks, E.B., Wynne, R.H., and Thomas, V.A., 2018, Using window regression to gap-fill Landsat ETM+ post SLC-Off data: Remote Sensing, v. 10, no. 10, article 1502, at <https://doi.org/10.3390/rs10101502>.
- Brooks, E.B., Wynne, R.H., Thomas, V.A., Blinn, C.E., and Coulston, J.W., 2013, On-the-fly massively multitemporal change detection using statistical quality control charts and Landsat data: IEEE Transactions on Geoscience and Remote Sensing, v. 52, no. 6, p. 3316–3332, at <https://doi.org/10.1109/TGRS.2013.2272545>.
- Brooks, E.B., Yang, Z., Thomas, V.A., and Wynne, R.H., 2017, Edyn—Dynamic signaling of changes to forests using exponentially weighted moving average charts: Forests, v. 8, no. 9, article 304, at <https://doi.org/10.3390/f8090304>.
- Browder, J.O., Pedlowski, M.A., Walker, R., Wynne, R.H., Summers, P.M., Abad, A., Becerra-Cordoba, N., and Mil-Homens, J., 2008, Revisiting Theories of Frontier Expansion in the Brazilian Amazon—A Survey of the Colonist Farming Population in Rondônia’s Post-Frontier, 1992-2002: World Development, v. 36, no. 8, p. 1469–1492, at <https://doi.org/10.1016/j.worlddev.2007.08.008>.
- Browder, J.O., Wynne, R.H., and Pedlowski, M.A., 2005, Agroforestry diffusion and secondary forest regeneration in the Brazilian Amazon—Further findings from the Rondônia Agroforestry Pilot Project (1992-2002): Agroforestry Systems, v. 65, no. 2, p. 99–111, at <https://doi.org/10.1007/s10457-004-6375-9>.
- Brown De Colstoun, E.C., Story, M.H., Thompson, C., Commisso, K., Smith, T.G., and Irons, J.R., 2003, National Park vegetation mapping using multitemporal Landsat 7 data and a decision tree classifier: Remote Sensing of Environment, v. 85, no. 3, p. 316–327, at [https://doi.org/10.1016/S0034-4257\(03\)00010-5](https://doi.org/10.1016/S0034-4257(03)00010-5).
- Brown de Colstoun, E.C., Walthall, C.L., Cialella, A.T., Vermote, E.F., Halthore, R.N., and Irons, J.R., 1996, Variability of BRDF with land cover type for the west central HAPEX-Sahel super site, *in* 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1904–1907, at <https://doi.org/10.1109/IGARSS.1996.516837>.

- Brown, D.G., Johnson, K.M., Loveland, T.R., and Theobald, D.M., 2005, Rural land-use trends in the conterminous United States, 1950-2000: Ecological Applications, v. 15, no. 6, p. 1851–1863, at <https://doi.org/10.1890/03-5220>.
- Brown, I.C., and Scambos, T.A., 2004, Satellite monitoring of blue-ice extent near Byrd Glacier, Antarctica: Annals of Glaciology, v. 39, p. 223–230, at <https://doi.org/10.3189/172756404781813871>.
- Brown, J.F., Loveland, T.R., Ohlen, D.O., and Zhu, Z.L., 1999, The global land-cover characteristics database—The users' perspective: Photogrammetric Engineering and Remote Sensing, v. 65, no. 9, p. 1069–1074, at https://www.asprs.org/wp-content/uploads/pers/1999journal/sep/1999_sept_1069-1074.pdf.
- Brown, J.F., Tollerud, H.J., Barber, C.P., Zhou, Q., Dwyer, J.L., Vogelmann, J.E., Loveland, T.R., Woodcock, C.E., Stehman, S.V., et al., 2020, Lessons learned implementing an operational continuous United States national land change monitoring capability—The Land Change Monitoring, Assessment, and Projection (LCMAP) approach: Remote Sensing of Environment, v. 238, article 111356, at <https://doi.org/10.1016/j.rse.2019.111356>.
- Brown, M.E., Moran, M.S., Escobar, V., Entekhabi, D., O'Neill, P., and Njoku, E., 2011, The Soil Moisture Active Passive (SMAP) applications activity, in 2011 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Vancouver, Canada, 24–29 July 2011, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2306–2309, at <https://doi.org/10.1109/IGARSS.2011.6049670>.
- Brown, N.D.A., Nelson, T., Wulder, M.A., Coops, N.C., Hilker, T., Bater, C.W., Gaulton, R., and Stenhouse, G.B., 2016, An approach for determining relationships between disturbance and habitat selection using bi-weekly synthetic images and telemetry data, in Ban, Y., ed., Multitemporal remote sensing—Methods and applications: Cham, Switzerland, Springer, p. 341–356, at https://doi.org/10.1007/978-3-319-47037-5_16.
- Brown, S.D., Blevins, D.D., and Schott, J.R., 2005, Time-gated topographic LIDAR scene simulation, in Laser Radar Technology and Applications X, Orlando, Fla., 30 March–1 April 2005, Proceedings of SPIE Vol. 5791: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 342–353, at <https://doi.org/10.1117/12.604326>.
- Brown, S.D., and Schott, J.R., 2000, Characterization techniques for incorporating backgrounds into DIRSIG, in Target and Backgrounds VI—Characterization, Visualization, and the Detection Process, Orlando, Fla., 24–26 April 2000, Proceedings of SPIE Vol. 4029: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 205–216, at <https://doi.org/10.1117/12.392528>.
- Brown, S.D., Schott, J.R., and Raqueño, R., 1998, Critical image formation parameters in thermal hyperspectral image simulations, in Targets and Backgrounds—Characterization and Representation IV, Orlando, Fla., 13–15 April 1998, Proceedings of SPIE Vol. 3375: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 313–323, at <https://doi.org/10.1117/12.327164>.
- Brown, S.W., Johnson, B.C., Yoon, H.W., Butler, J.J., Barnes, R.A., Biggar, S., Spyak, P., Thome, K.J., Zalewski, E., et al., 2001, Radiometric characterization of field radiometers in support of the 1997 Lunar Lake, Nevada, experiment to determine surface reflectance and top-of-atmosphere radiance: Remote Sensing of Environment, v. 77, no. 3, p. 367–376, at [https://doi.org/10.1016/S0034-4257\(01\)00215-2](https://doi.org/10.1016/S0034-4257(01)00215-2).

- Brucker, L., Hiemstra, C., Marshall, H.P., Elder, K., De Roo, R., Mousavi, M., Bliven, F., Peterson, W., Deems, J., et al., 2018, NASA Snowex'17 in situ measurements and ground-based remote sensing, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6266–6268, at <https://doi.org/10.1109/IGARSS.2018.8517777>.
- Brucker, L., Hiemstra, C., Marshall, H.P., Elder, K., De Roo, R., Mousavi, M., Bliven, F., Peterson, W., Deems, J., et al., 2017, A first overview of SnowEx ground-based remote sensing activities during the winter 2016–2017, *in* 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, Tex., 23–28 July 2017, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1391–1394, at <https://doi.org/10.1109/IGARSS.2017.8127223>.
- Bruegge, C.J., Chrien, N.L., Ando, R.R., Diner, D.J., Abdou, W.A., Helmlinger, M.C., Pilorz, S.H., and Thome, K.J., 2002, Early validation of the Multi-angle Imaging SpectroRadiometer (MISR) radiometric scale: *IEEE Transactions on Geoscience and Remote Sensing*, v. 40, no. 7, p. 1477–1492, at <https://doi.org/10.1109/TGRS.2002.801583>.
- Bruegge, C.J., Coburn, C., Elmes, A., Helmlinger, M.C., Kataoka, F., Kuester, M., Kuze, A., Ochoa, T., Schaaf, C., et al., 2019, Bi-directional reflectance factor determination of the Railroad Valley playa: *Remote Sensing*, v. 11, no. 22, article 2601, at <https://doi.org/10.3390/rs11222601>.
- Brum, F.T., Graham, C.H., Costa, G.C., Hedges, S.B., Penone, C., Radeloff, V.C., Rondinini, C., Loyola, R., and Davidson, A.D., 2017, Global priorities for conservation across multiple dimensions of mammalian diversity: *Proceedings of the National Academy of Sciences of the United States of America*, v. 114, no. 29, p. 7641–7646, at <https://doi.org/10.1073/pnas.1706461114>.
- Brunsell, N.A., and Anderson, M.C., 2011, Characterizing the multi-scale spatial structure of remotely sensed evapotranspiration with information theory: *Biogeosciences*, v. 8, no. 8, p. 2269–2280, at <https://doi.org/10.5194/bg-8-2269-2011>.
- Brunsell, N.A., Mechem, D.B., and Anderson, M.C., 2011, Surface heterogeneity impacts on boundary layer dynamics via energy balance partitioning: *Atmospheric Chemistry and Physics*, v. 11, no. 7, p. 3403–3416, at <https://doi.org/10.5194/acp-11-3403-2011>.
- Brunt, K.M., Fricker, H.A., Padman, L., Scambos, T.A., and O'Neel, S., 2010, Mapping the grounding zone of the Ross Ice Shelf, Antarctica, using ICESat laser altimetry: *Annals of Glaciology*, v. 51, no. 55, p. 71–79, at <https://doi.org/10.3189/172756410791392790>.
- Brusa, G., Riccardi, A., Salinari, P., Wildi, F.P., Lloyd-Hart, M., Martin, H.M., Allen, R.G., Fisher, D., Miller, D.L., et al., 2002, MMT adaptive secondary—Performance evaluation and field testing, *in* Adaptive Optical System Technologies II, Waikoloa, Hawaii, 22–26 August 2002, Proceedings of SPIE Vol. 4839: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 691–702, at <https://doi.org/10.1117/12.459786>.
- Brusa, G., Riccardi, A., Wildi, F.P., Lloyd-Hart, M., Martin, H.M., Allen, R.G., Fisher, D., Miller, D.L., Biasi, R., et al., 2003, MMT adaptive secondary—First AO closed loop results, *in* Astronomical Adaptive Optics Systems and Applications, San Diego, Calif., 3–4 August 2003, Proceedings of SPIE Vol. 5169: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 26–36, at <https://doi.org/10.1117/12.508411>.
- Bryant, R., Moran, M.S., McElroy, S., Holifield, C., Thome, K.J., and Miura, T., 2002, Data continuity of Landsat-4 TM, Landsat-5 TM, Landsat-7 ETM+, and Advanced Land Imager (ALI) sensors, *in* 2002

- IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 584–586, at <https://doi.org/10.1109/IGARSS.2002.1025112>.
- Bryant, R., Moran, M.S., McElroy, S.A., Holified, C., Thome, K.J., Miura, T., and Biggar, S.F., 2003, Data continuity of Earth Observing 1 (EO-1) Advanced Land Imager (ALI) and Landsat TM and ETM+: IEEE Transactions on Geoscience and Remote Sensing, v. 41, no. 6 pt. 1, p. 1204–1214, at <https://doi.org/10.1109/TGRS.2003.813213>.
- Bryant, R., Moran, M.S., Thoma, D.P., Holifield Collins, C.D., Skirvin, S., Rahman, M., Slocum, K., Starks, P., Bosch, D., and González Dugo, M.P., 2007, Measuring surface roughness height to parameterize radar backscatter models for retrieval of surface soil moisture: IEEE Geoscience and Remote Sensing Letters, v. 4, no. 1, p. 137–141, at <https://doi.org/10.1109/LGRS.2006.887146>.
- Bryant, R., Qi, J., Moran, M.S., and Ni, W., 2003, Comparison of BRDF models with a fuzzy inference system for correction of bidirectional effects: Remote Sensing of Environment, v. 88, no. 3, p. 221–232, at [https://doi.org/10.1016/S0034-4257\(03\)00072-5](https://doi.org/10.1016/S0034-4257(03)00072-5).
- Buchanan, J., Dobler, J., Thome, K.J., and Biggar, S., 2006, Validation of a laser-based system for ground measurement of backscatter surface reflectance, in Earth Observing Systems XI, San Diego, Calif., 14–16 August 2006, Proceedings of SPIE Vol. 6296: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 629613, at <https://doi.org/10.1117/12.681310>.
- Buchner, J., Butsic, V., Yin, H., Kuemmerle, T., Baumann, M., Zazanashvili, N., Stapp, J., and Radeloff, V.C., 2022, Localized versus wide-ranging effects of the post-Soviet wars in the Caucasus on agricultural abandonment: Global Environmental Change, v. 76, article 102580, at <https://doi.org/10.1016/j.gloenvcha.2022.102580>.
- Buchner, J., Yin, H., Frantz, D., Kuemmerle, T., Askerov, E., Bakuradze, T., Bleyhl, B., Elizbarashvili, N., Komarova, A., et al., 2020, Land-cover change in the Caucasus Mountains since 1987 based on the topographic correction of multi-temporal Landsat composites: Remote Sensing of Environment, v. 248, article 111967, at <https://doi.org/10.1016/j.rse.2020.111967>.
- Budreski, K.A., Wynne, R.H., Browder, J.O., and Campbell, J.B., 2007, Comparison of segment and pixel-based non-parametric land cover classification in the Brazilian Amazon using multitemporal Landsat TM/ETM+ imagery: Photogrammetric Engineering and Remote Sensing, v. 73, no. 7, p. 813–827, at <https://doi.org/10.14358/PERS.73.7.813>.
- Bullock, E.L., Fagherazzi, S., Nardin, W., Vo-Luong, P., Nguyen, P., and Woodcock, C.E., 2017, Temporal patterns in species zonation in a mangrove forest in the Mekong Delta, Vietnam, using a time series of Landsat imagery: Continental Shelf Research, v. 147, p. 144–154, at <https://doi.org/10.1016/j.csr.2017.07.007>.
- Bullock, E.L., Healey, S.P., Yang, Z., Acosta, R., Villalba, H., Insfrán, K.P., Melo, J.B., Wilson, S., Duncanson, L., et al., 2023, Estimating aboveground biomass density using hybrid statistical inference with GEDI lidar data and Paraguay's national forest inventory: Environmental Research Letters, v. 18, no. 8, article 085001, at <https://doi.org/10.1088/1748-9326/acdf03>.
- Bullock, E.L., Healey, S.P., Yang, Z., Houborg, R., Gorelick, N., Tang, X., and Andrianirina, C., 2022, Timeliness in forest change monitoring—A new assessment framework demonstrated using Sentinel-1 and a continuous change detection algorithm: Remote Sensing of Environment, v. 276, article 113043, at <https://doi.org/10.1016/j.rse.2022.113043>.

- Bullock, E.L., Nolte, C., Segovia, A.R., and Woodcock, C.E., 2020, Ongoing forest disturbance in Guatemala's protected areas: Remote Sensing in Ecology and Conservation, v. 6, no. 2, p. 141–152, at <https://doi.org/10.1002/rse2.130>.
- Bullock, E.L., and Woodcock, C.E., 2021, Carbon loss and removal due to forest disturbance and regeneration in the Amazon: Science of the Total Environment, v. 764, article 142839, at <https://doi.org/10.1016/j.scitotenv.2020.142839>.
- Bullock, E.L., Woodcock, C.E., and Holden, C.E., 2020, Improved change monitoring using an ensemble of time series algorithms: Remote Sensing of Environment, v. 238, article 111165, at <https://doi.org/10.1016/j.rse.2019.04.018>.
- Bullock, E.L., Woodcock, C.E., and Olofsson, P., 2020, Monitoring tropical forest degradation using spectral unmixing and Landsat time series analysis: Remote Sensing of Environment, v. 238, article 110968, at <https://doi.org/10.1016/j.rse.2018.11.011>.
- Bunchalee, P., Chantaranonthai, P., Johnson, D.M., and Murray, N.A., 2019, *Polyalthia khaoyaiensis* (Annonaceae), a new species from Thailand: Phytotaxa, v. 405, no. 3, p. 171–179, at <https://doi.org/10.11646/phytotaxa.405.3.6>.
- Burakowski, E.A., Ollinger, S.V., Lepine, L., Schaaf, C.B., Wang, Z., Dibb, J.E., Hollinger, D.Y., Kim, J., Erb, A., and Martin, M., 2015, Spatial scaling of reflectance and surface albedo over a mixed-use, temperate forest landscape during snow-covered periods: Remote Sensing of Environment, v. 158, p. 465–477, at <https://doi.org/10.1016/j.rse.2014.11.023>.
- Burgess, R., Hansen, M.C., Olken, B.A., Potapov, P., and Sieber, S., 2012, The political economy of deforestation in the tropics: Quarterly Journal of Economics, v. 127, no. 4, p. 1707–1754, at <https://doi.org/10.1093/qje/qjs034>.
- Buřivalová, Z., Hart, S.J., Radeloff, V.C., and Srinivasan, U., 2021, Early warning sign of forest loss in protected areas: Current Biology, v. 31, no. 20, p. 4620–4626.e3, at <https://doi.org/10.1016/j.cub.2021.07.072>.
- Buřivalová, Z., Rosin, C., Buchner, J., Radeloff, V.C., and Ocampo-Peñuela, N., 2022, Conservation responsibility for bird species in tropical logged forests: Conservation Letters, v. 15, no. 5, article e12903, at <https://doi.org/10.1111/conl.12903>.
- Burkhalter, J.P., Martin, T.C., Allen, R.G., Kjaersgaard, J., Wilson, E., Alvarado, R., and Polly, J.S., 2013, Estimating crop water use via remote sensing techniques vs. conventional methods in the South Platte River Basin, Colorado: Journal of the American Water Resources Association, v. 49, no. 3, p. 498–517, at <https://doi.org/10.1111/jawr.12051>.
- Burkhart, H.E., Brooks, E.B., Dinon-Aldridge, H., Sabatia, C.O., Gyawali, N., Wynne, R.H., and Thomas, V.A., 2018, Regional simulations of loblolly pine productivity with CO₂ enrichment and changing climate scenarios: Forest Science, v. 64, no. 4, p. 349–357, at <https://doi.org/10.1093/forsci/fxy008>.
- Burnett, B., Allen, R.G., Robison, C.W., Tasumi, M., and Lorite, I., 2008, Estimating the soil surface evaporation and transpiration components from satellite images in the absence of a thermal band, in World Environmental and Water Resources Congress Honolulu, Hawaii, 12–16 May 2008, Proceedings: Reston, Va., American Society of Civil Engineers, p. 1–18, at [https://doi.org/10.1061/40976\(316\)86](https://doi.org/10.1061/40976(316)86).

- Burnett, C.N., Daley, N.N.M.A., Wulder, M.A., Niemann, K.O., and Goodenough, D.G., 1998, Directional variability in 1m CASI imagery—An analysis using semi-variance range and slope shape, *in* 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2342–2344, at <https://doi.org/10.1109/IGARSS.1998.702207>.
- Burt, C.M., Mutziger, A.J., Allen, R.G., and Howell, T.A., 2005, Evaporation research—Review and interpretation: *Journal of Irrigation and Drainage Engineering*, v. 131, no. 1, p. 37–58, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2005\)131:1\(37\)](https://doi.org/10.1061/(ASCE)0733-9437(2005)131:1(37)).
- Burton, R.R., Schott, J.R., and Brown, S.D., 2002, Elastic LADAR modeling for synthetic imaging applications, *in* Imaging Spectrometry VIII, Seattle, Wash., 7–11 July 2002, Proceedings of SPIE Vol. 4816: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 144–155, at <https://doi.org/10.1117/12.451630>.
- Busch, J., Ferretti-Gallon, K., Engelmann, J., Wright, M., Austin, K.G., Stolle, F., Turubanova, S., Potapov, P.V., Margono, B., et al., 2015, Reductions in emissions from deforestation from Indonesia's moratorium on new oil palm, timber, and logging concessions: *Proceedings of the National Academy of Sciences of the United States of America*, v. 112, no. 5, p. 1328–1333, at <https://doi.org/10.1073/pnas.1412514112>.
- Busker, T., De Roo, A., Gelati, E., Schwatke, C., Adamovic, M., Bisselink, B., Pekel, J.F., and Cottam, A., 2019, A global lake and reservoir volume analysis using a surface water dataset and satellite altimetry: *Hydrology and Earth System Sciences*, v. 23, no. 2, p. 669–690, at <https://doi.org/10.5194/hess-23-669-2019>.
- Butsic, V., Gaeta, J.W., and Radeloff, V.C., 2012, The ability of zoning and land acquisition to increase property values and maintain largemouth bass growth rates in an amenity rich region: *Landscape and Urban Planning*, v. 107, no. 1, p. 69–78, at <https://doi.org/10.1016/j.landurbplan.2012.05.003>.
- Butsic, V., Lewis, D.J., and Radeloff, V.C., 2010, Lakeshore zoning has heterogeneous ecological effects—An application of a coupled economic-ecological model: *Ecological Applications*, v. 20, no. 3, p. 867–879, at <https://doi.org/10.1890/09-0722.1>.
- Butsic, V., Lewis, D.J., and Radeloff, V.C., 2013, Reserve selection with land market feedbacks: *Journal of Environmental Management*, v. 114, p. 276–284, at <https://doi.org/10.1016/j.jenvman.2012.10.018>.
- Butsic, V., Lewis, D.J., Radeloff, V.C., Baumann, M., and Kuemmerle, T., 2017, Quasi-experimental methods enable stronger inferences from observational data in ecology: *Basic and Applied Ecology*, v. 19, p. 1–10, at <https://doi.org/10.1016/j.baae.2017.01.005>.
- Butsic, V., Munteanu, C., Griffiths, P., Knorn, J., Radeloff, V.C., Lieskovský, J., Mueller, D., and Kuemmerle, T., 2017, The effect of protected areas on forest disturbance in the Carpathian Mountains 1985–2010: *Conservation Biology*, v. 31, no. 3, p. 570–580, at <https://doi.org/10.1111/cobi.12835>.
- Butsic, V., Radeloff, V.C., Kuemmerle, T., and Pidgeon, A.M., 2012, Analytical solutions to trade-offs between size of protected areas and land-use intensity: *Conservation Biology*, v. 26, no. 5, p. 883–893, at <https://doi.org/10.1111/j.1523-1739.2012.01887.x>.
- Bwangoy, J.R.B., Hansen, M.C., Potapov, P., Turubanova, S., and Lumbuenamo, R.S., 2013, Identifying nascent wetland forest conversion in the Democratic Republic of the Congo: *Wetlands Ecology and Management*, v. 21, no. 1, p. 29–43, at <https://doi.org/10.1007/s11273-012-9277-z>.

- Bwangoy, J.R.B., Hansen, M.C., Roy, D.P., Grandi, G.D., and Justice, C.O., 2010, Wetland mapping in the Congo Basin using optical and radar remotely sensed data and derived topographical indices: *Remote Sensing of Environment*, v. 114, no. 1, p. 73–86, at <https://doi.org/10.1016/j.rse.2009.08.004>.
- Cahalan, R.F., 2013, Preface—Radiation processes in the atmosphere and Ocean, *in* *Radiation Processes in the Atmosphere and Ocean—International Radiation Symposium, IRS 2012, Berlin, Germany, 6–10 August 2012, Proceedings: Melville, N.Y., American Institute of Physics*, p. 1–5, at <https://doi.org/10.1063/1.4804695>.
- Cahalan, R.F., Ajiquichí, P., and Yatáz, G., 2022, Correction to—Solar temperature variations computed from SORCE SIM irradiances observed during 2003 – 2020 (*Solar Physics*, (2022), 297, 1, (16), 10.1007/s11207-021-01941-y): *Solar Physics*, v. 297, no. 2, article 25, at <https://doi.org/10.1007/s11207-022-01967-w>.
- Cahalan, R.F., Ajiquichí, P., and Yatáz, G., 2022, Solar temperature variations computed from SORCE SIM irradiances observed During 2003 – 2020: *Solar Physics*, v. 297, no. 1, article 16, at <https://doi.org/10.1007/s11207-021-01941-y>.
- Cahalan, R.F., Davis, A., Marshak, A., Silberstein, D., and Wiscombe, W., 1997, Cloud macrostructure and radiation, *in* 1997 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Singapore, 3–8 August 1997, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1444–1447, at <https://doi.org/10.1109/IGARSS.1997.608888>.
- Cahalan, R.F., McGill, M., Kolasinski, J., Várnai, T., and Yetzer, K., 2005, THOR - Cloud Thickness from Offbeam Lidar Returns: *Journal of Atmospheric and Oceanic Technology*, v. 22, no. 6, p. 605–627, at <https://doi.org/10.1175/JTECH1740.1>.
- Cahalan, R.F., Oreopoulos, L., Marshak, A., Evans, K.F., Davis, A.B., Pincus, R., Yetzer, K.H., Mayer, B., Davies, R., et al., 2005, The 13RC—Bringing together the most advanced radiative transfer tools for cloudy atmospheres: *Bulletin of the American Meteorological Society*, v. 86, no. 9, p. 1275–1293, at <https://doi.org/10.1175/BAMS-86-9-1275>.
- Cahalan, R.F., Oreopoulos, L., Wen, G., Marshak, A., Tsay, S.C., and DeFelice, T., 2001, Cloud characterization and clear-sky correction from Landsat-7: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 83–98, at [https://doi.org/10.1016/S0034-4257\(01\)00251-6](https://doi.org/10.1016/S0034-4257(01)00251-6).
- Cahalan, R.F., Wharton, L.E., and Wu, M.L., 1996, Empirical orthogonal functions of monthly precipitation and temperature over the United States and homogeneous stochastic models: *Journal of Geophysical Research Atmospheres*, v. 101, no. 21, p. 26309–26318, at <https://doi.org/10.1029/96jd01611>.
- Cai, L., Katopodis, C., Johnson, D., Zhang, P., and Zhao, P., 2018, Case study—Targeting species and applying swimming performance data to fish lift design for the Huangdeng Dam on the upper Mekong River: *Ecological Engineering*, v. 122, p. 32–38, at <https://doi.org/10.1016/j.ecoleng.2018.07.023>.
- Cai, X., Thenkabail, P.S., Biradar, C.M., Platonov, A., Gumma, M., Dheeravath, V., Cohen, Y., Goldshleger, N., Ben Dor, E., et al., 2009, Water productivity mapping using remote sensing data of various resolutions to support “more crop per drop”: *Journal of Applied Remote Sensing*, v. 3, no. 1, article 033557, at <https://doi.org/10.1117/1.3257643>.

- Cai, X.L., Thenkabail, P.S., and Platonov, A., 2008, Benchmarking cotton water use and productivity using spectral indices, *in* Asian Conference on Remote Sensing, 29th, Colombo, Sri Lanka, 10–14 November 2008, Proceedings: Tokyo, Japan, Asian Association on Remote Sensing, p. 17–23.
- Cairns, M.A., Brown, S., Helmer, E.H., and Baumgardner, G.A., 1997, Root biomass allocation in the world's upland forests: *Oecologia*, v. 111, no. 1, p. 1–11, at <https://doi.org/10.1007/s004420050201>.
- Calder, E.S., Harris, A.J.L., Peña, P., Pilger, E., Flynn, L.P., Fuentealba, G., and Moreno, H., 2004, Combined thermal and seismic analysis of the Villarrica volcano lava lake, Chile: *Revista Geologica de Chile*, v. 31, no. 2, p. 259–272, at <https://doi.org/10.4067/S0716-02082004000200005>.
- Calders, K., Adams, J., Armston, J., Bartholomeus, H., Bauwens, S., Bentley, L.P., Chave, J., Danson, F.M., Demol, M., et al., 2020, Terrestrial laser scanning in forest ecology—Expanding the horizon: *Remote Sensing of Environment*, v. 251, article 112102, at <https://doi.org/10.1016/j.rse.2020.112102>.
- Cammalleri, C., Anderson, M.C., Ciraolo, G., D'Urso, G., Kustas, W.P., Hain, C., Schultz, L., and Mecikalski, J.R., 2012, Analysis of energy flux estimations over Italy using time-differencing models based on thermal remote sensing data, *in* Remote Sensing and Hydrology 2010, Jackson Hole, Wyo., 27–30 September 2010, IAHS Publication 352: Wallingford, UK, International Association of Hydrological Sciences, p. 124–127.
- Cammalleri, C., Anderson, M.C., Ciraolo, G., Durso, G., Kustas, W.P., La Loggia, G., and Minacapilli, M., 2010, The impact of in-canopy wind profile formulations on heat flux estimation in an open orchard using the remote sensing-based two-source model: *Hydrology and Earth System Sciences*, v. 14, no. 12, p. 2643–2659, at <https://doi.org/10.5194/hess-14-2643-2010>.
- Cammalleri, C., Anderson, M.C., Ciraolo, G., D'Urso, G., Kustas, W.P., La Loggia, G., and Minacapilli, M., 2012, Applications of a remote sensing-based two-source energy balance algorithm for mapping surface fluxes without in situ air temperature observations: *Remote Sensing of Environment*, v. 124, p. 502–515, at <https://doi.org/10.1016/j.rse.2012.06.009>.
- Cammalleri, C., Anderson, M.C., Gao, F., Hain, C.R., and Kustas, W.P., 2013, A data fusion approach for mapping daily evapotranspiration at field scale: *Water Resources Research*, v. 49, no. 8, p. 4672–4686, at <https://doi.org/10.1002/wrcr.20349>.
- Cammalleri, C., Anderson, M.C., Gao, F., Hain, C.R., and Kustas, W.P., 2014, Mapping daily evapotranspiration at field scales over rainfed and irrigated agricultural areas using remote sensing data fusion: *Agricultural and Forest Meteorology*, v. 186, p. 1–11, at <https://doi.org/10.1016/j.agrformet.2013.11.001>.
- Cammalleri, C., Anderson, M.C., Houborg, R., Gao, F., Kustas, W.P., and Schull, M., 2012, An integrated approach for high spatial resolution mapping of water and carbon fluxes using multi-sensor satellite data, *in* Remote Sensing for Agriculture, Ecosystems, and Hydrology XIV, Edinburgh, Scotland, UK, 24–26 September 2012, Proceedings of SPIE Vol. 8531: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 85310o, at <https://doi.org/10.1117/12.974737>.
- Cammalleri, C., Anderson, M.C., and Kustas, W.P., 2014, Upscaling of evapotranspiration fluxes from instantaneous to daytime scales for thermal remote sensing applications: *Hydrology and Earth System Sciences*, v. 18, no. 5, p. 1885–1894, at <https://doi.org/10.5194/hess-18-1885-2014>.

- Campagnolo, M.L., Sun, Q., Liu, Y., Schaaf, C.B., Wang, Z., and Román, M.O., 2016, Estimating the effective spatial resolution of the operational BRDF, albedo, and nadir reflectance products from MODIS and VIIRS: *Remote Sensing of Environment*, v. 175, p. 52–64, at <https://doi.org/10.1016/j.rse.2015.12.033>.
- Campbell, J.L., Kennedy, R.E., Cohen, W.B., and Miller, R.F., 2012, Assessing the carbon consequences of western juniper (*Juniperus occidentalis*) encroachment across Oregon, USA: *Rangeland Ecology and Management*, v. 65, no. 3, p. 223–231, at <https://doi.org/10.2111/REM-D-11-00012.1>.
- Campbell, P.K.E., Middleton, E.M., Thome, K.J., Kokaly, R.F., Huemmrich, K.F., Lagomasino, D., Novick, K.A., and Brunsell, N.A., 2013, EO-1 hyperion reflectance time series at calibration and validation sites—Stability and sensitivity to seasonal dynamics: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 6, no. 2, p. 276–290, at <https://doi.org/10.1109/JSTARS.2013.2246139>.
- Cannizzaro, J.P., and Carder, K.L., 2006, Estimating chlorophyll a concentrations from remote-sensing reflectance in optically shallow waters: *Remote Sensing of Environment*, v. 101, no. 1, p. 13–24, at <https://doi.org/10.1016/j.rse.2005.12.002>.
- Cannizzaro, J.P., Carder, K.L., Chen, F.R., Heil, C.A., and Vargo, G.A., 2008, A novel technique for detection of the toxic dinoflagellate, *Karenia brevis*, in the Gulf of Mexico from remotely sensed ocean color data: *Continental Shelf Research*, v. 28, no. 1, p. 137–158, at <https://doi.org/10.1016/j.csr.2004.04.007>.
- Cannizzaro, J.P., Hu, C., Carder, K.L., Kelble, C.R., Melo, N., Johns, E.M., Vargo, G.A., and Heil, C.A., 2013, On the accuracy of SeaWiFS ocean color data products on the West Florida Shelf: *Journal of Coastal Research*, v. 29, no. 6, p. 1257–1272, at <https://doi.org/10.2112/JCOASTRES-D-12-00223.1>.
- Cannizzaro, J.P., Hu, C., English, D.C., Carder, K.L., Heil, C.A., and Müller-Karger, F.E., 2009, Detection of *Karenia brevis* blooms on the west Florida shelf using in situ backscattering and fluorescence data: *Harmful Algae*, v. 8, no. 6, p. 898–909, at <https://doi.org/10.1016/j.hal.2009.05.001>.
- Cao, C., Vermote, E.F., and Xiong, X., 2009, Using AVHRR lunar observations for NDVI long-term climate change detection: *Journal of Geophysical Research Atmospheres*, v. 114, no. 20, article D20105, at <https://doi.org/10.1029/2009JD012179>.
- Cao, L., Bala, G., Caldeira, K., Nemani, R.R., and Ban-Weiss, G., 2009, Climate response to physiological forcing of carbon dioxide simulated by the coupled Community Atmosphere Model (CAM3.1) and Community Land Model (CLM3.0): *Geophysical Research Letters*, v. 36, no. 10, article L10402, at <https://doi.org/10.1029/2009GL037724>.
- Cao, L., Bala, G., Caldeira, K., Nemani, R.R., and Ban-Weiss, G., 2010, Importance of carbon dioxide physiological forcing to future climate change: *Proceedings of the National Academy of Sciences of the United States of America*, v. 107, no. 21, p. 9513–9518, at <https://doi.org/10.1073/pnas.0913000107>.
- Cao, Z., Chen, S., Gao, F., and Li, X., 2020, Improving phenological monitoring of winter wheat by considering sensor spectral response in spatiotemporal image fusion: *Physics and Chemistry of the Earth*, v. 116, article 102859, at <https://doi.org/10.1016/j.pce.2020.102859>.
- Cao, Z., Ma, R., Duan, H., Pahlevan, N., Melack, J., Shen, M., and Xue, K., 2020, A machine learning approach to estimate chlorophyll-a from Landsat-8 measurements in inland lakes: *Remote Sensing of Environment*, v. 248, article 111974, at <https://doi.org/10.1016/j.rse.2020.111974>.

- Cao, Z., Ma, R., Pahlevan, N., Liu, M., Melack, J.M., Duan, H., Xue, K., and Shen, M., 2022, Evaluating and optimizing VIIRS retrievals of chlorophyll-a and suspended particulate matter in turbid lakes using a machine learning approach: *IEEE Transactions on Geoscience and Remote Sensing*, v. 60, article 4211417, at <https://doi.org/10.1109/TGRS.2022.3220529>.
- Cape, M.R., Vernet, M., Skvarca, P., Marinsek, S., Scambos, T.A., and Domack, E., 2015, Foehn winds link climate-driven warming to ice shelf evolution in Antarctica: *Journal of Geophysical Research Atmospheres*, v. 120, no. 21, p. 11,037–11,057, at <https://doi.org/10.1002/2015JD023465>.
- Carder, K.L., Cannizzaro, J.P., and Lee, Z., 2005, Ocean color algorithms in optically shallow waters—Limitations and Improvements, *in Remote Sensing of the Coastal Oceanic Environment*, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5885: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 588506, at <https://doi.org/10.1117/12.615039>.
- Carder, K.L., Chen, F.R., Cannizzaro, J.P., Campbell, J.W., and Mitchell, B.G., 2004, Performance of the MODIS semi-analytical ocean color algorithm for chlorophyll-a: *Advances in Space Research*, v. 33, no. 7, p. 1152–1159, at [https://doi.org/10.1016/S0273-1177\(03\)00365-X](https://doi.org/10.1016/S0273-1177(03)00365-X).
- Carder, K.L., Chen, F.R., Lee, Z.P., Hawes, S.K., and Kamykowski, D., 1999, Semianalytic Moderate-Resolution Imaging Spectrometer algorithms for chlorophyll α and absorption with bio-optical domains based on nitrate-depletion temperatures: *Journal of Geophysical Research Oceans*, v. 104, no. C3, p. 5403–5421, at <https://doi.org/10.1029/1998jc900082>.
- Carder, K.L., Costello, D.K., Warrior, H., Langebrake, L.C., Hou, W., Patten, J.T., and Kaltenbacher, E., 2001, Ocean-science mission needs—Real-time AUV data for command, control, and model inputs: *IEEE Journal of Oceanic Engineering*, v. 26, no. 4, p. 742–751, at <https://doi.org/10.1109/48.972116>.
- Carder, K.L., English, D.C., and Du, C., 2006, An Autonomous Marine Optical System (AMOS) for monitoring the optical properties of port and harbor waters, *in Photonics for Port and Harbor Security II*, Kissimmee, Fla., 18–19 April 2006, Proceedings of SPIE Vol. 6204: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 62040g, at <https://doi.org/10.1117/12.669693>.
- Carder, K.L., Lee, Z., Hawes, S.K., and Chen, F.R., 1997, Optical model of ocean remote sensing—Application to ocean color algorithm development, *in COSPAR Colloquium on Space Remote Sensing of Subtropical Oceans (SRSSO)*, Taiwan, 12–17 September 1995, 8, COSPAR Colloquia Series: Oxford, England, UK, Committee on Space Research, p. 191–198, at [https://doi.org/10.1016/S0964-2749\(97\)80023-6](https://doi.org/10.1016/S0964-2749(97)80023-6).
- Carder, K.L., Liu, C.C., Lee, Z., English, D.C., Patten, J., Chen, F.R., Ivey, J.E., and Davis, C.O., 2003, Illumination and turbidity effects on observing faceted bottom elements with uniform Lambertian albedos: *Limnology and Oceanography*, v. 48, no. 1 pt. 2, p. 355–363, at https://doi.org/10.4319/lo.2003.48.1_part_2.0355.
- Carder, K.L., Reinersman, P., Costello, D., Kaltenbacher, E., Kloske, J., and Montes, M., 2005, Optical inspection of ports and harbors—Laser-line sensor model applications in 2 and 3 dimensions, *in Photonics for Port and Harbor Security*, Orlando, Fla., 29–30 March 2005, Proceedings of SPIE Vol. 5780: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 49–58, at <https://doi.org/10.1117/12.606856>.

- Cardille, J.A., Perez, E., Crowley, M.A., Wulder, M.A., White, J.C., and Hermosilla, T., 2022, Multi-sensor change detection for within-year capture and labelling of forest disturbance: Remote Sensing of Environment, v. 268, article 112741, at <https://doi.org/10.1016/j.rse.2021.112741>.
- Cardille, J.A., White, J.C., Wulder, M.A., and Holland, T., 2012, Representative landscapes in the forested area of Canada: Environmental Management, v. 49, no. 1, p. 163–173, at <https://doi.org/10.1007/s00267-011-9785-2>.
- Carlson, A.R., Radeloff, V.C., Helmers, D.P., Mockrin, M.H., Hawbaker, T.J., and Pidgeon, A., 2023, The extent of buildings in wildland vegetation of the conterminous U.S. and the potential for conservation in and near National Forest private inholdings: Landscape and Urban Planning, v. 237, at <https://doi.org/10.1016/j.landurbplan.2023.104810>.
- Carlson, A.R., Sebasky, M.E., Peters, M.P., and Radeloff, V.C., 2021, The importance of small fires for wildfire hazard in urbanised landscapes of the northeastern US: International Journal of Wildland Fire, v. 30, no. 5, p. 307–321, at <https://doi.org/10.1071/WF20186>.
- Carmona, P.L., Moreno, J.E., Pla, F., and Schaaf, C.B., 2009, Affine compensation of illumination in hyperspectral remote sensing images, in 2009 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), University of Cape Town, South Africa, 12–17 July 2009, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. II266–II269, at <https://doi.org/10.1109/IGARSS.2009.5418059>.
- Carmona-Moreno, C., Belward, A.S., Caperan, P., Hartley, A., Malingreau, J.P., Antonovskiy, M., Buchshtaber, V., and Pivovarov, V., 2005, Spatial-temporal correlation analyses of global burned surface time series from remote sensing data (1982-1999), in Global Monitoring for Sustainability and Security—31st International Symposium on Remote Sensing of Environment, ISRSE 2005, St. Petersburg, Russian Federation, 20–24 June 2005, Proceedings: International Society for Photogrammetry and Remote Sensing, paper no. 886, at <http://www.isprs.org/proceedings/2005/isrse/html/papers/886.pdf>.
- Carmona-Moreno, C., Belward, A.S., Malingreau, J.P., Hartley, A., Garcia-Alegre, M., Antonovskiy, M., Buchshtaber, V., and Pivovarov, V., 2005, Characterizing interannual variations in global fire calendar using data from Earth observing satellites: Global Change Biology, v. 11, no. 9, p. 1537–1555, at <https://doi.org/10.1111/j.1365-2486.2005.01003.x>.
- Carpenter, G.A., Gjaja, M.N., Gopal, S., and Woodcock, C.E., 1997, ART neural networks for remote sensing—Vegetation classification from Landsat TM and terrain Data: IEEE Transactions on Geoscience and Remote Sensing, v. 35, no. 2, p. 308–325, at <https://doi.org/10.1109/36.563271>.
- Carpenter, G.A., Gopal, S., Macober, S., Martens, S., Woodcock, C.E., and Franklin, J., 1999, A neural network method for efficient vegetation mapping: Remote Sensing of Environment, v. 70, no. 3, p. 326–338, at [https://doi.org/10.1016/S0034-4257\(99\)00051-6](https://doi.org/10.1016/S0034-4257(99)00051-6).
- Carpenter, G.A., Gopal, S., Macomber, S., Martens, S., and Woodcock, C.E., 1999, A neural network method for mixture estimation for vegetation mapping: Remote Sensing of Environment, v. 70, no. 2, p. 138–152, at [https://doi.org/10.1016/S0034-4257\(99\)00027-9](https://doi.org/10.1016/S0034-4257(99)00027-9).
- Carpintero, E., Anderson, M.C., Andreu, A., Hain, C., Gao, F., Kustas, W.P., and González-Dugo, M.P., 2021, Estimating evapotranspiration of mediterranean oak savanna at multiple temporal and spatial resolutions—Implications for water resources management: Remote Sensing, v. 13, no. 18, article 3701, at <https://doi.org/10.3390/rs13183701>.

- Carpintero, E., González Dugo, M.P., Hain, C., Nieto, H., Gao, F., Andreu, A., Kustas, W.P., and Anderson, M.C., 2016, Continuous evapotranspiration monitoring and water stress at watershed scale in a Mediterranean oak savanna, *in* Remote Sensing for Agriculture, Ecosystems, and Hydrology XVIII, Edinburgh, Scotland, UK, 26–29 September 2016, Proceedings of SPIE Vol. 9998: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 99980n, at <https://doi.org/10.1117/12.2241521>.
- Carrasco-Benavides, M., Ortega-Farías, S., Lagos, L.O., Kleissl, J., Morales, L., Poblete-Echeverría, C., and Allen, R.G., 2012, Crop coefficients and actual evapotranspiration of a drip-irrigated Merlot vineyard using multispectral satellite images: *Irrigation Science*, v. 30, no. 6, p. 485–497, at <https://doi.org/10.1007/s00271-012-0379-4>.
- Carrasco-Benavides, M., Ortega-Farías, S., Lagos, L.O., Kleissl, J., Morales-Salinas, L., and Kilic, A., 2014, Parameterization of the satellite-based model (METRIC) for the estimation of instantaneous surface energy balance components over a drip-irrigated vineyard: *Remote Sensing*, v. 6, no. 11, p. 11342–11371, at <https://doi.org/10.3390/rs6111342>.
- Carroll, K.A., Pidgeon, A.M., Elsen, P.R., Farwell, L.S., Gudex-Cross, D., Zuckerberg, B., and Radeloff, V.C., in press, Mapping multiscale breeding bird species distributions across the United States and evaluating their conservation applications: *Ecological Applications*, article e2934, at <https://doi.org/10.1002/eap.2934>.
- Carroll, M., Townshend, J., Hansen, M.C., Dimiceli, C., Sohlberg, R., and Wurster, K., 2011, MODIS vegetative cover conversion and vegetation continuous fields, *in* Ramachandran, B., Justice, C., and Abrams, M.J., eds., *Remote sensing and digital image processing*: New York, N.Y., Springer, p. 725–745, at https://doi.org/10.1007/978-1-4419-6749-7_32.
- Carroll, R.W., Huntington, J.L., Snyder, K.A., Niswonger, R.G., Morton, C., and Stringham, T.K., 2017, Evaluating mountain meadow groundwater response to Pinyon-Juniper and temperature in a great basin watershed: *Ecohydrology*, v. 10, no. 1, article 31792, at <https://doi.org/10.1002/eco.1792>.
- Carroll, R.W., Pohl, G.M., Morton, C.G., and Huntington, J.L., 2015, Calibrating a basin-scale groundwater model to remotely sensed estimates of groundwater evapotranspiration: *Journal of the American Water Resources Association*, v. 51, no. 4, p. 1114–1127, at <https://doi.org/10.1111/jawr.12285>.
- Carter, E., Hain, C., Anderson, M.C., and Steinschneider, S., 2018, A water balance-based, spatiotemporal evaluation of terrestrial evapotranspiration products across the contiguous United States: *Journal of Hydrometeorology*, v. 19, no. 5, p. 891–905, at <https://doi.org/10.1175/JHM-D-17-0186.1>.
- Carter, S.K., Januchowski-Hartley, S.R., Pohlman, J.D., Bergeson, T.L., Pidgeon, A.M., and Radeloff, V.C., 2015, An evaluation of environmental, institutional and socio-economic factors explaining successful conservation plan implementation in the north-central United States: *Biological Conservation*, v. 192, p. 135–144, at <https://doi.org/10.1016/j.biocon.2015.09.013>.
- Carter, S.K., Keuler, N.S., Pidgeon, A.M., and Radeloff, V.C., 2014, Evaluating the influence of conservation plans on land protection actions in Wisconsin, USA: *Biological Conservation*, v. 178, p. 37–49, at <https://doi.org/10.1016/j.biocon.2014.07.014>.
- Carter, S.K., Maxted, S.S., Bergeson, T.L.E., Helmers, D.P., Scott, L., and Radeloff, V.C., 2019, Assessing vulnerability and threat from housing development to Conservation Opportunity Areas in State

- Wildlife Action Plans across the United States: Landscape and Urban Planning, v. 185, p. 237–245, at <https://doi.org/10.1016/j.landurbplan.2018.10.025>.
- Carter, S.K., Pohlman, J.D., Bergeson, T.L., Hamilton, C.M., Pidgeon, A.M., and Radeloff, V.C., 2014, Improving the utility of existing conservation plans using projected housing development: Landscape and Urban Planning, v. 126, p. 10–20, at <https://doi.org/10.1016/j.landurbplan.2014.03.002>.
- Cassiopeia, A., Anderson, M.C., and Rudnick, L., 1996, Sites of relativistic particle acceleration in supernova remnant: Astrophysical Journal Letters, v. 456, no. 1 pt. 1, p. 234–249, at <http://adsabs.harvard.edu/full/1996ApJ...456..234A>.
- Castelli, M., Anderson, M.C., Yang, Y., Wohlfahrt, G., Bertoldi, G., Niedrist, G., Hammerle, A., Zhao, P., Zebisch, M., and Notarnicola, C., 2018, Two-source energy balance modeling of evapotranspiration in Alpine grasslands: Remote Sensing of Environment, v. 209, p. 327–342, at <https://doi.org/10.1016/j.rse.2018.02.062>.
- Castillo-Soto, M.E., Rose Marie Garay, M., García-Chevesich, P.A., Radeloff, V., and Espinoza, P.A., 2017, The risk of wildfires in Chile, in Goncalves, A.J.B., Vieira, A.A.B., Costa, M.R.M., and Aranha, J.T.M., eds., Wildfires—Perspectives, issues and challenges of the 21st Century: Hauppauge, N.Y., Nova Science Publishers, p. 55–80.
- Castro-Prieto, J., Martinuzzi, S., Radeloff, V.C., Helmers, D.P., Quiñones, M., and Gould, W.A., 2017, Declining human population but increasing residential development around protected areas in Puerto Rico: Biological Conservation, v. 209, p. 473–481, at <https://doi.org/10.1016/j.biocon.2017.02.037>.
- Catania, G., Hulbe, C., Conway, H., Scambos, T.A., and Raymond, C.F., 2012, Variability in the mass flux of the Ross ice streams, West Antarctica, over the last millennium: Journal of Glaciology, v. 58, no. 210, p. 741–752, at <https://doi.org/10.3189/2012JoG11J219>.
- Catania, G.A., Conway, H., Raymond, C.F., and Scambos, T.A., 2005, Surface morphology and internal layer stratigraphy in the downstream end of Kamb Ice Stream, West Antarctica: Journal of Glaciology, v. 51, no. 174, p. 423–431, at <https://doi.org/10.3189/172756505781829142>.
- Catania, G.A., Conway, H., Raymond, C.F., and Scambos, T.A., 2006, Evidence for floatation or near floatation in the mouth of Kamb Ice Stream, West Antarctica, prior to stagnation: Journal of Geophysical Research Earth Surface, v. 111, no. F1, article F01005, at <https://doi.org/10.1029/2005JF000355>.
- Catania, G.A., Scambos, T.A., Conway, H., and Raymond, C.F., 2006, Sequential stagnation of Kamb Ice Stream, West Antarctica: Geophysical Research Letters, v. 33, no. 14, article L14502, at <https://doi.org/10.1029/2006GL026430>.
- Catrrall, C., Carder, K.L., and Gordon, H.R., 2003, Columnar aerosol single-scattering albedo and phase function retrieved from sky radiance over the ocean—Measurements of Saharan dust: Journal of Geophysical Research Atmospheres, v. 108, no. 9, p. AAC 10–1 AAC 10–11, at <https://doi.org/10.1029/2002JD002497>.
- Catrrall, C., Carder, K.L., Thome, K.J., and Gordon, H.R., 2002, Solar-reflectance-based calibration of spectral radiometers: Geophysical Research Letters, v. 29, no. 20, p. 2–1, at <https://doi.org/10.1029/2002gl015130>.

- Cattrall, C., Reagan, J., Thome, K.J., and Dubovik, O., 2005, Variability of aerosol and spectral lidar and backscatter and extinction ratios of key aerosol types derived from selected Aerosol Robotic Network locations: *Journal of Geophysical Research Atmospheres*, v. 110, no. 10, p. 1–13, at <https://doi.org/10.1029/2004JD005124>.
- Cattrall, C., Reagan, J.A., and Thome, K.J., 2003, Lidar aerosol ratios at 1 and 10 microns, *in* Laser Radar Technology and Applications VIII, Orlando, Fla., 22–25 April 2003, Proceedings of SPIE Vol. 5086: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 112–120, at <https://doi.org/10.1117/12.501163>.
- Cattrall, C., and Thome, K.J., 2003, Exploitation of MODTRAN 4 capabilities to predict at-sensor radiance, *in* Optical Spectroscopic Techniques and Instrumentation for Atmospheric and Space Research V, San Diego, Calif., 7–8 August 2003, Proceedings of SPIE Vol. 5157: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 98–106, at <https://doi.org/10.1117/12.506359>.
- Cawse-Nicholson, K., Anderson, M., Yang, Y., Yang, Y., Hook, S.J., Fisher, J., Halverson, G.H., Hulley, G., Hain, C., et al., 2021, Evaluation of a CONUS-wide ECOSTRESS DisALEXI evapotranspiration product: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 14, p. 10117–10133, at <https://doi.org/10.1109/JSTARS.2021.3111867>.
- Cawse-Nicholson, K., Townsend, P.A., Schimel, D., Assiri, A.M., Blake, P.L., Buongiorno, M.F., Campbell, P., Carmon, N., Casey, K.A., et al., 2021, NASA’s surface biology and geology designated observable—A perspective on surface imaging algorithms: *Remote Sensing of Environment*, v. 257, article 112349, at <https://doi.org/10.1016/j.rse.2021.112349>.
- Cawse-Nicholson, K., Van Aardt, J., Hagstrom, S., Romanczyk, P., Schaaf, C.B., Strahler, A., Li, Z., and Krause, K., 2014, Improving waveform lidar processing toward robust deconvolution of signals for improved structural assessments, *in* Laser Radar Technology and Applications XIX and Atmospheric Propagation XI, Baltimore, Md., 5–9 May 2014, Proceedings of SPIE Vol. 9080: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 90800I, at <https://doi.org/10.1117/12.2050577>.
- Ceamanos, X., Douté, S., Fernando, J., Schmidt, F., Pinet, P., and Lyapustin, A.I., 2013, Surface reflectance of Mars observed by CRISM/MRO—1. Multi-angle Approach for Retrieval of Surface Reflectance from CRISM observations (MARS-ReCO): *Journal of Geophysical Research Planets*, v. 118, no. 3, p. 514–533, at <https://doi.org/10.1029/2012JE004195>.
- Ceamanos, X., Douté, S., and Lyapustin, A.I., 2011, Atmospheric correction of multi-angle CRISM/MRO hyperspectral data—Retrieval of aerosol optical thickness and surface reflectance, *in* 2011 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Vancouver, Canada, 24–29 July 2011, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4168–4171, at <https://doi.org/10.1109/IGARSS.2011.6050149>.
- Ceamanos, X., Six, B., Moparthy, S., Carrer, D., Georgeot, A., Gasteiger, J., Riedi, J., Attie, J.L., Lyapustin, A., and Katsev, I., 2023, Instantaneous aerosol and surface retrieval using satellites in geostationary orbit (iAERUS-GEO)—Estimation of 15min aerosol optical depth from MSG/SEVIRI and evaluation with reference data: *Atmospheric Measurement Techniques*, v. 16, no. 10, p. 2575–2599, at <https://doi.org/10.5194/amt-16-2575-2023>.
- Cendrero-Mateo, M.P., Carmo-Silva, A.E., Porcar-Castell, A., Hamerlynck, E.P., Papuga, S.A., and Moran, M.S., 2015, Dynamic response of plant chlorophyll fluorescence to light, water and nutrient

- availability: *Functional Plant Biology*, v. 42, no. 8, p. 746–757, at <https://doi.org/10.1071/FP15002>.
- Cendrero-Mateo, M.P., Moran, M.S., Papuga, S.A., Thorp, K.R., Alonso, L., Moreno, J., Ponce-Campos, G., Rascher, U., and Wang, G., 2016, Plant chlorophyll fluorescence—Active and passive measurements at canopy and leaf scales with different nitrogen treatments: *Journal of Experimental Botany*, v. 67, no. 1, p. 275–286, at <https://doi.org/10.1093/jxb/erv456>.
- Cescatti, A., Marcolla, B., Santhana Vannan, S.K., Pan, J.Y., Román, M.O., Yang, X., Ciais, P., Cook, R.B., Law, B.E., et al., 2012, Intercomparison of MODIS albedo retrievals and in situ measurements across the global FLUXNET network: *Remote Sensing of Environment*, v. 121, p. 323–334, at <https://doi.org/10.1016/j.rse.2012.02.019>.
- Chabrilat, S., Goetz, A.F.H., Krosley, L., and Olsen, H.W., 2002, Use of hyperspectral images in the identification and mapping of expansive clay soils and the role of spatial resolution: *Remote Sensing of Environment*, v. 82, no. 2–3, p. 431–445, at [https://doi.org/10.1016/S0034-4257\(02\)00060-3](https://doi.org/10.1016/S0034-4257(02)00060-3).
- Champagne, C., McNairn, H., Shang, J., and Johnson, D.M., 2007, Evaluation of Resourcesat-1 AWiFS data for producing an agricultural crop inventory for Canada, *in* Our common borders—Safety, security, and the environment through remote sensing, Canadian Symposium on Remote Sensing, 28th and ASPRS Fall Specialty Conference, Ottawa, Canada, 28 October–1 November 2007, Proceedings: Bethesda, Md., American Society for Photogrammetry and Remote Sensing p. 11–18, at http://www.asprs.org/a/conference-archive/ottawa07/ottawa_proceedings/2.pdf.
- Chander, G., Angal, A., Xiong, X., Helder, D.L., Mishra, N., Choi, T., and Wu, A., 2010, Preliminary assessment of several parameters to measure and compare usefulness of the CEOS reference pseudo-invariant calibration sites, *in* Sensors, Systems, and Next-Generation Satellites XIV, Toulouse, France, 20–23 September 2010, Proceedings of SPIE Vol. 7826: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 78262I, at <https://doi.org/10.1117/12.865166>.
- Chander, G., Helder, D.L., Aaron, D.B., Mishra, N., and Shrestha, A.K., 2013, Assessment of spectral, misregistration, and spatial uncertainties inherent in the cross-calibration study: *IEEE Transactions on Geoscience and Remote Sensing*, v. 51, no. 3, p. 1282–1296, at <https://doi.org/10.1109/TGRS.2012.2228008>.
- Chander, G., Helder, D.L., and Boncyk, W.C., 2002, Landsat—4/5 band 6 relative radiometry: *IEEE Transactions on Geoscience and Remote Sensing*, v. 40, no. 1, p. 206–209, at <https://doi.org/10.1109/36.981362>.
- Chander, G., Helder, D.L., Malla, R., Micijevic, E., and Mettler, C.J., 2007, Consistency of L4 TM absolute calibration with respect to the L5 TM sensor based on near-simultaneous image acquisition, *in* Earth Observing Systems XII, San Diego, Calif., 26–28 August 2007, Proceedings of SPIE Vol. 6677: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 66770F, at <https://doi.org/10.1117/12.734208>.
- Chander, G., Helder, D.L., Markham, B.L., Dewald, J.D., Kaita, E., Thome, K.J., Micijevic, E., and Ruggles, T.A., 2004, Landsat-5 TM reflective-band absolute radiometric calibration: *IEEE Transactions on Geoscience and Remote Sensing*, v. 42, no. 12, p. 2747–2760, at <https://doi.org/10.1109/TGRS.2004.836388>.

- Chander, G., Markham, B.L., and Helder, D.L., 2009, Summary of current radiometric calibration coefficients for Landsat MSS, TM, ETM+, and EO-1 ALI sensors: *Remote Sensing of Environment*, v. 113, no. 5, p. 893–903, at <https://doi.org/10.1016/j.rse.2009.01.007>.
- Chander, G., Markham, B.L., Micijevic, E., Teillet, P.M., and Helder, D.L., 2005, Improvement in absolute calibration accuracy of Landsat-5 TM with Landsat-7 ETM+ data, *in* Earth Observing Systems X, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5882: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 588209, at <https://doi.org/10.1117/12.620136>.
- Chander, G., Meyer, D.J., and Helder, D.L., 2004, Cross calibration of the Landsat-7 ETM+ and EO-1 ALI sensor: *IEEE Transactions on Geoscience and Remote Sensing*, v. 42, no. 12, p. 2821–2831, at <https://doi.org/10.1109/TGRS.2004.836387>.
- Chander, G., Mishra, N., Helder, D.L., Aaron, D.B., Angal, A., Choi, T., Xiong, X., and Doelling, D.R., 2013, Applications of spectral band adjustment factors (SBAF) for cross-calibration: *IEEE Transactions on Geoscience and Remote Sensing*, v. 51, no. 3, p. 1267–1281, at <https://doi.org/10.1109/TGRS.2012.2228007>.
- Chander, G., Mishra, N., Helder, D.L., Aaron, D.B., Choi, T., Angal, A., and Xiong, X., 2010, Use of EO-1 Hyperion data to calculate spectral band adjustment factors (SBAF) between the L7 ETM+ and Terra MODIS sensors, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1667–1670, at <https://doi.org/10.1109/IGARSS.2010.5652746>.
- Chang, J., Clay, D.E., Leigh, L., Aaron, D.B., Dalsted, K., and Volz, M., 2008, Evaluating modified atmospheric correction methods for Landsat imagery—Image-based and model-based calibration methods: *Communications in Soil Science and Plant Analysis*, v. 39, no. 9-10, p. 1532–1545, at <https://doi.org/10.1080/00103620802006669>.
- Chang, J., Clay, S.A., Clay, D.E., Aaron, D.B., Helder, D.L., and Dalsted, K., 2005, Clouds influence precision and accuracy of ground-based spectroradiometers: *Communications in Soil Science and Plant Analysis*, v. 36, no. 13–14, p. 1799–1807, at <https://doi.org/10.1081/CSS-200062449>.
- Chang, J., Hansen, M.C., Pittman, K., Carroll, M., and DiMiceli, C., 2007, Corn and soybean mapping in the United States using MODIS time-series data sets: *Agronomy Journal*, v. 99, no. 6, p. 1654–1664, at <https://doi.org/10.2134/agronj2007.0170>.
- Chantraket, R., Uttarak, P., Klinhom, U., Skole, D.L., Samek, J.H., and Castaneda, O., 2014, Internet-based development of medicinal plants geospatial system in Phu Phan Forest Complex—Northeastern Thailand: *Kasetsart Journal - Natural Science*, v. 48, no. 2, p. 227–240, at <https://li01.tci-thaijo.org/index.php/anres/article/view/243251>.
- Chao, B.F., Farr, T., LaBrecque, J., Bindschadler, R.A., Douglas, B., Rignot, E., Shum, C.K., and Wahr, J., 2002, Understanding sea level changes, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 125–127, at <https://doi.org/10.1109/IGARSS.2002.1024962>.
- Chase, T.N., Pielke, R.A., Kittel, T.G.F., Nemani, R.R., and Running, S.W., 1996, Sensitivity of a general circulation model to global changes in leaf area index: *Journal of Geophysical Research Atmospheres*, v. 101, no. D3, p. 7393–7408, at <https://doi.org/10.1029/95JD02417>.

- Chase, T.N., Pielke Sr, R.A., Kittel, T.G.F., Nemani, R.R., and Running, S.W., 2000, Simulated impacts of historical land cover changes on global climate in northern winter: *Climate Dynamics*, v. 16, no. 2–3, p. 93–105, at <https://doi.org/10.1007/s003820050007>.
- Chase, T.N., Pielke Sr, R.A., Kittel, T.G.F., Zhao, M., Pitman, A.J., Running, S.W., and Nemani, R.R., 2001, Relative climatic effects of landcover change and elevated carbon dioxide combined with aerosols—A comparison of model results and observations: *Journal of Geophysical Research Atmospheres*, v. 106, no. D23, p. 31685–31691, at <https://doi.org/10.1029/2000JD000129>.
- Chatfield, R.B., Sorek-Hamer, M., Esswein, R.F., and Lyapustin, A., 2020, Satellite mapping of PM2.5 episodes in the wintertime San Joaquin Valley—A “static” model using column water vapor: *Atmospheric Chemistry and Physics*, v. 20, no. 7, p. 4379–4397, at <https://doi.org/10.5194/acp-20-4379-2020>.
- Chatfield, R.B., Sorek-Hamer, M., Lyapustin, A.I., and Wang, Y., 2017, Daily kilometer-scale MODIS satellite maps of PM2.5 describe wintertime episodes, *in* Bridging Environment, Energy and Health—Air and Waste Management Association’s 110th Annual Conference and Exhibition, Pittsburgh, Pa., 5–8 June 2017, Proceedings: Pittsburgh, Pa., Air and Waste Management Association, paper no. 263193, at <https://ntrs.nasa.gov/search.jsp?R=20170006028>.
- Chatterjee, S., Irmak, S., Payero, J.O., Kilic, A., Odhiambo, L.O., Rudnick, D., Sharma, V., and Billesbach, D., 2019, Correction to—On the magnitude and dynamics of eddy covariance system residual energy (energy balance closure error) in subsurface drip-irrigated maize field during growing and non-growing (dormant) seasons (*Irrigation Science*, (2014), 32, 6, (471-483), 10.1007/s00271-014-0443-3): *Irrigation Science*, v. 37, no. 6, p. 761–761, at <https://doi.org/10.1007/s00271-019-00645-3>.
- Chavula, G., Brezonik, P., Thenkabail, P.S., Johnson, T., and Bauer, M., 2009, Estimating chlorophyll concentration in Lake Malawi from MODIS satellite imagery: *Physics and Chemistry of the Earth*, v. 34, no. 13-16, p. 755–760, at <https://doi.org/10.1016/j.pce.2009.07.015>.
- Chavula, G., Brezonik, P., Thenkabail, P.S., Johnson, T., and Bauer, M., 2009, Estimating the surface temperature of Lake Malawi using AVHRR and MODIS satellite imagery: *Physics and Chemistry of the Earth*, v. 34, no. 13-16, p. 749–754, at <https://doi.org/10.1016/j.pce.2009.08.001>.
- Cheeseman, M., Ford, B., Volckens, J., Lyapustin, A., and Pierce, J.R., 2020, The relationship between MAIAC smoke plume heights and surface PM: *Geophysical Research Letters*, v. 47, no. 17, article e2020GL088949, at <https://doi.org/10.1029/2020GL088949>.
- Chegoonian, A.M., Pahlevan, N., Zolfaghari, K., Leavitt, P.R., Davies, J.M., Baulch, H.M., and Duguay, C.R., 2023, Comparative analysis of empirical and machine learning models for chl_a extraction using Sentinel-2 and Landsat OLI Data—Opportunities, limitations, and challenges: *Canadian Journal of Remote Sensing*, v. 49, no. 1, article 2215333, at <https://doi.org/10.1080/07038992.2023.2215333>.
- Chebouni, A., Goodrich, D.C., Moran, M.S., Watts, C.J., Kerr, Y.H., Dedieu, G., Kepner, W.G., Shuttleworth, W.J., and Sorooshian, S., 2000, A preliminary synthesis of major scientific results during the SALSA program: *Agricultural and Forest Meteorology*, v. 105, no. 1–3, p. 311–323, at [https://doi.org/10.1016/S0168-1923\(00\)00179-9](https://doi.org/10.1016/S0168-1923(00)00179-9).
- Chebouni, A., Nouvellon, Y., Kerr, Y.H., Moran, M.S., Watts, C., Prevot, L., Goodrich, D.C., and Rambal, S., 2001, Directional effect on radiative surface temperature measurements over a semiarid

- grassland site: *Remote Sensing of Environment*, v. 76, no. 3, p. 360–372, at [https://doi.org/10.1016/S0034-4257\(01\)00183-3](https://doi.org/10.1016/S0034-4257(01)00183-3).
- Chehbouni, A., Nouvellon, Y., Lhomme, J.P., Watts, C., Boulet, G., Kerr, Y.H., Moran, M.S., and Goodrich, D.C., 2001, Estimation of surface sensible heat flux using dual angle observations of radiative surface temperature: *Agricultural and Forest Meteorology*, v. 108, no. 1, p. 55–65, at [https://doi.org/10.1016/S0168-1923\(01\)00221-0](https://doi.org/10.1016/S0168-1923(01)00221-0).
- Chehbouni, A.G., Nouvellon, Y., Boulet, G., Kerr, Y., Watts, C., Moran, M.S., and Goodrich, D., 2001, Derivation of the energy balance components using dual angle observations of radiative surface temperature, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2602–2604, at <https://doi.org/10.1109/IGARSS.2001.978102>.
- Chehbouni, A.G., Watts, C.J., Goodrich, D.C., Moran, M.S., Kerr, Y., Dedieu, G., Kepner, W.G., Shuttleworth, W.J., and Sorooshian, S., 2000, Some scientific results from the SALSA programme, in *Remote Sensing and Hydrology 2000*, Sante Fe, N. Mex., April 2000, IAHS Publication 267: Wallingford, UK, International Association of Hydrological Sciences, p. 156–161, at https://iahs.info/uploads/dms/iahs_267_0156.pdf.
- Chen, A., Lantz, T.C., Hermosilla, T., and Wulder, M.A., 2021, Biophysical controls of increased tundra productivity in the western Canadian Arctic: *Remote Sensing of Environment*, v. 258, article 112358, at <https://doi.org/10.1016/j.rse.2021.112358>.
- Chen, C., Knyazikhin, Y., Park, T., Yan, K., Lyapustin, A.I., Wang, Y., Yang, B., and Myneni, R.B., 2017, Prototyping of LAI and FPAR retrievals from MODIS Multi-Angle Implementation of Atmospheric Correction (MAIAC) data: *Remote Sensing*, v. 9, no. 4, article 370, at <https://doi.org/10.3390/rs9040370>.
- Chen, C., Li, D., Li, Y., Piao, S., Wang, X., Huang, M., Gentine, P., Nemani, R.R., and Myneni, R.B., 2020, Biophysical impacts of Earth greening largely controlled by aerodynamic resistance: *Science Advances*, v. 6, no. 47, article eabb1981, at <https://doi.org/10.1126/sciadv.abb1981>.
- Chen, C., Park, T., Wang, X., Piao, S., Xu, B., Chaturvedi, R.K., Fuchs, R., Brovkin, V., Ciais, P., et al., 2019, China and India lead in greening of the world through land-use management: *Nature Sustainability*, v. 2, no. 2, p. 122–129, at <https://doi.org/10.1038/s41893-019-0220-7>.
- Chen, D., Jackson, T.J., Li, F., Cosh, M.H., Walthall, C., and Anderson, M.C., 2003, Estimation of vegetation water content for corn and soybeans with a Normalized Difference Water Index (NDWI) using Landsat Thematic Mapper data, in 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2853–2856, at <https://doi.org/10.1109/IGARSS.2003.1294609>.
- Chen, G., Hay, G.J., Carvalho, L.M.T., and Wulder, M.A., 2012, Object-based change detection: *International Journal of Remote Sensing*, v. 33, no. 14, p. 4434–4457, at <https://doi.org/10.1080/01431161.2011.648285>.
- Chen, G., Wulder, M.A., White, J.C., Hilker, T., and Coops, N.C., 2012, Lidar calibration and validation for geometric-optical modeling with Landsat imagery: *Remote Sensing of Environment*, v. 124, p. 384–393, at <https://doi.org/10.1016/j.rse.2012.05.026>.

- Chen, J., John, R., Shao, C., Ouyang, Z., Mack, E.A., Henebry, G.M., Dong, G., Allington, G.R.H., Pearson, A.L., et al., 2021, Towards a single integrative metric on the dynamics of social-environmental systems: *Sustainability*, v. 13, no. 20, article 11246, at <https://doi.org/10.3390/su132011246>.
- Chen, J., Sciusco, P., Ouyang, Z., Zhang, R., Henebry, G.M., John, R., and Roy, D.P., 2019, Linear downscaling from MODIS to Landsat—Connecting landscape composition with ecosystem functions: *Landscape Ecology*, v. 34, no. 12, p. 2917–2934, at <https://doi.org/10.1007/s10980-019-00928-2>.
- Chen, J., Zhu, X., Vogelmann, J.E., Gao, F., and Jin, S., 2011, A simple and effective method for filling gaps in Landsat ETM+ SLC-off images: *Remote Sensing of Environment*, v. 115, no. 4, p. 1053–1064, at <https://doi.org/10.1016/j.rse.2010.12.010>.
- Chen, S., Olofsson, P., Saphangthong, T., and Woodcock, C.E., 2023, Monitoring shifting cultivation in Laos with Landsat time series: *Remote Sensing of Environment*, v. 288, article 113507, at <https://doi.org/10.1016/j.rse.2023.113507>.
- Chen, S., Woodcock, C.E., Bullock, E.L., Arévalo, P., Torchinava, P., Peng, S., and Olofsson, P., 2021, Monitoring temperate forest degradation on Google Earth Engine using Landsat time series analysis: *Remote Sensing of Environment*, v. 265, article 112648, at <https://doi.org/10.1016/j.rse.2021.112648>.
- Chen, S., Woodcock, C.E., Saphangthong, T., and Olofsson, P., 2023, Satellite data reveals a recent increase in shifting cultivation and associated carbon emissions in Laos: *Environmental Research Letters*, v. 18, no. 11, article 114012, at <https://doi.org/10.1088/1748-9326/acffdd>.
- Chen, X., Bindschadler, R.A., and Vornberger, P.L., 1996, Preliminary determination of ice flow velocity in West Antarctica using high precision GPS measurements, *in* ION GPS, Kansas City, Mo., 17–20 September 1996, *Proceedings: Institute of Navigation*, p. 1853–1861.
- Chen, X., Bindschadler, R.A., and Vornberger, P.L., 1998, Determination of velocity field and strain-rate field in West Antarctica using high precision GPS measurements: *Surveying and Land Information Systems*, v. 58, no. 4, p. 247–255.
- Chen, X., Giri, C.P., and Vogelmann, J.E., 2012, Land-cover change detection, *in* Giri, C.P., ed., *Remote sensing of land use and land cover—Principles and applications*: Boca Raton, Fla., CRC Press, p. 153–176, at <https://doi.org/10.1201/b11964-14>.
- Chen, X., Liu, S., Zhu, Z., Vogelmann, J.E., Li, Z., and Ohlen, D., 2011, Estimating aboveground forest biomass carbon and fire consumption in the U.S. Utah High Plateaus using data from the Forest Inventory and Analysis program, Landsat, and LANDFIRE: *Ecological Indicators*, v. 11, no. 1, p. 140–148, at <https://doi.org/10.1016/j.ecolind.2009.03.013>.
- Chen, X., Vogelmann, J.E., Chander, G., Ji, L., Tolk, B., Huang, C., and Rollins, M., 2013, Cross-sensor comparisons between Landsat 5 TM and IRS-P6 AWiFS and disturbance detection using integrated Landsat and AWiFS time-series images: *International Journal of Remote Sensing*, v. 34, no. 7, p. 2432–2453, at <https://doi.org/10.1080/01431161.2012.743690>.
- Chen, X., Vogelmann, J.E., Rollins, M., Ohlen, D., Key, C.H., Yang, L., Huang, C., and Shi, H., 2011, Detecting post-fire burn severity and vegetation recovery using multitemporal remote sensing spectral indices and field-collected composite burn index data in a ponderosa pine forest: *International Journal of Remote Sensing*, v. 32, no. 23, p. 7905–7927, at <https://doi.org/10.1080/01431161.2010.524678>.

- Chen, Y., Haywood, J., Wang, Y., Malavelle, F., Jordan, G., Partridge, D., Fieldsend, J., De Leeuw, J., Schmidt, A., et al., 2022, Machine learning reveals climate forcing from aerosols is dominated by increased cloud cover: *Nature Geoscience*, v. 15, no. 8, p. 609–614, article 609, at <https://doi.org/10.1038/s41561-022-00991-6>.
- Chen, Y., Haywood, J., Wang, Y., Malavelle, F., Jordan, G., Partridge, D., Fieldsend, J., De Leeuw, J., Schmidt, A., et al., 2022, Publisher Correction—Machine learning reveals climate forcing from aerosols is dominated by increased cloud cover (*Nature Geoscience*, (2022), 15, 8, (609-614), 10.1038/s41561-022-00991-6): *Nature Geoscience*, at <https://doi.org/10.1038/s41561-022-01027-9>.
- Chen, Y., Sun, K., Chen, C., Bai, T., Park, T., Wang, W., Nemani, R.R., and Myneni, R.B., 2019, Generation and evaluation of LAI and FPAR products from Himawari-8 advanced Himawari imager (AHI) data: *Remote Sensing*, v. 11, no. 13, article 1517, at <https://doi.org/10.3390/rs11131517>.
- Chen, Y., Sun, K., Li, W., Chen, C., Li, P., Bai, T., Park, T., Wang, W., Nemani, R.R., and Myneni, R.B., 2021, Prototyping of LAI and FPAR retrievals from GOES-16 Advanced Baseline Imager data using global optimizing algorithm: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 14, p. 6937–6950, at <https://doi.org/10.1109/JSTARS.2021.3094647>.
- Cheng, Y.B., Zhang, Q., Lyapustin, A.I., Wang, Y., and Middleton, E.M., 2014, Impacts of light use efficiency and fPAR parameterization on gross primary production modeling: *Agricultural and Forest Meteorology*, v. 189–190, p. 187–197, at <https://doi.org/10.1016/j.agrformet.2014.01.006>.
- Chien, S., Cichy, B., Davies, A., Tran, D., Rabideau, G., Castano, R., Sherwood, R., Nghiem, S., Greeley, R., et al., 2005, Autonomous response in an autonomous Earth observing sensorweb, *in* i- SAIRAS 2005—The 8th International Symposium on Artificial Intelligence, Robotics and Automation in Space, Munich, Germany, 5–8 September 2005, ESA-SP 603: Munich, Germany, European Space Agency, p. 325–331.
- Chien, S., Cichy, B., Davies, A., Tran, D., Rabideau, G., Castano, R., Sherwood, R., Nghiem, S., Greeley, R., et al., 2005, An autonomous Earth observing sensorWeb, *in* 2005 International Conference on Systems, Man and Cybernetics, Waikoloa, Hawaii, 10–12 October 2005, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3944–3951, at <https://doi.org/10.1109/MIS.2005.40>.
- Chinea, J.D., and Helmer, E.H., 2003, Diversity and composition of tropical secondary forests recovering from large-scale clearing—Results from the 1990 inventory in Puerto Rico: *Forest Ecology and Management*, v. 180, no. 1–3, p. 227–240, at [https://doi.org/10.1016/S0378-1127\(02\)00565-0](https://doi.org/10.1016/S0378-1127(02)00565-0).
- Cho, N., Tan, J., and Oreopoulos, L., 2021, Classifying planetary cloudiness with an updated set of modis cloud regimes: *Journal of Applied Meteorology and Climatology*, v. 60, no. 7, p. 981–997, at <https://doi.org/10.1175/JAMC-D-20-0247.1>.
- Choi, H., and Bindschadler, R.A., 2004, Cloud detection in Landsat imagery of ice sheets using shadow matching technique and automatic normalized difference snow index threshold value decision: *Remote Sensing of Environment*, v. 91, no. 2, p. 237–242, at <https://doi.org/10.1016/j.rse.2004.03.007>.
- Choi, M., Jacobs, J.M., Anderson, M.C., and Bosch, D.D., 2013, Evaluation of drought indices via remotely sensed data with hydrological variables: *Journal of Hydrology*, v. 476, p. 265–273, at <https://doi.org/10.1016/j.jhydrol.2012.10.042>.

- Choi, M., Kustas, W.P., Anderson, M.C., Allen, R.G., Li, F., and Kjaersgaard, J.H., 2009, An intercomparison of three remote sensing-based surface energy balance algorithms over a corn and soybean production region (Iowa, U.S.) during SMACEX: *Agricultural and Forest Meteorology*, v. 149, no. 12, p. 2082–2097, at <https://doi.org/10.1016/j.agrformet.2009.07.002>.
- Choi, S., Kempes, C.P., Park, T., Ganguly, S., Wang, W., Xu, L., Basu, S., Dungan, J.L., Simard, M., et al., 2016, Application of the metabolic scaling theory and water–energy balance equation to model large-scale patterns of maximum forest canopy height: *Global Ecology and Biogeography*, v. 25, no. 12, p. 1428–1442, at <https://doi.org/10.1111/geb.12503>.
- Choi, S., Ni, X., Shi, Y., Ganguly, S., Zhang, G., Duong, H.V., Lefsky, M.A., Simard, M., Saatchi, S.S., et al., 2013, Allometric scaling and resource limitations model of tree heights—Part 2. Site based testing of the model: *Remote Sensing*, v. 5, no. 1, p. 202–223, at <https://doi.org/10.3390/rs5010202>.
- Chopping, M., North, M., Chen, J., Schaaf, C.B., Blair, J.B., Martonchik, J.V., and Bull, M.A., 2012, Forest canopy cover and height from MISR in topographically complex southwestern US landscapes assessed with high quality reference data: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 5, no. 1, p. 44–58, at <https://doi.org/10.1109/JSTARS.2012.2184270>.
- Chopping, M., Schaaf, C.B., Zhao, F., Wang, Z., Nolin, A.W., Moisen, G.G., Martonchik, J.V., and Bull, M., 2011, Forest structure and aboveground biomass in the southwestern United States from MODIS and MISR: *Remote Sensing of Environment*, v. 115, no. 11, p. 2943–2953, at <https://doi.org/10.1016/j.rse.2010.08.031>.
- Chopping, M., Wang, Z., Schaaf, C., Bull, M.A., and Duchesne, R.R., 2022, Forest aboveground biomass in the southwestern United States from a MISR multi-angle index, 2000–2015: *Remote Sensing of Environment*, v. 275, article 112964, at <https://doi.org/10.1016/j.rse.2022.112964>.
- Chowdhury, S., Chao, D.K., Shipman, T.C., and Wulder, M.A., 2017, Utilization of Landsat data to quantify land-use and land-cover changes related to oil and gas activities in West-Central Alberta from 2005 to 2013: *GIScience and Remote Sensing*, v. 54, p. 1–21, at <https://doi.org/10.1080/15481603.2017.1317453>.
- Chowdhury, S., Dey, S., Di Girolamo, L., Smith, K.R., Pillarisetti, A., and Lyapustin, A., 2019, Tracking ambient PM 2.5 build-up in Delhi national capital region during the dry season over 15 years using a high-resolution (1 km) satellite aerosol dataset: *Atmospheric Environment*, v. 204, p. 142–150, at <https://doi.org/10.1016/j.atmosenv.2019.02.029>.
- Chowdhury, S., Peddle, D.R., Wulder, M.A., Heckbert, S., Shipman, T.C., and Chao, D.K., 2021, Estimation of land-use/land-cover changes associated with energy footprints and other disturbance agents in the Upper Peace Region of Alberta Canada from 1985 to 2015 using Landsat data: *International Journal of Applied Earth Observation and Geoinformation*, v. 94, article 102224, at <https://doi.org/10.1016/j.jag.2020.102224>.
- Chrisp, M.P., Lockwood, R.B., Smith, M.A., Holtsberg, C., Balonek, G., Thome, K.J., Babu, S.R., and Ghuman, P., 2018, A novel imaging spectrometer form for the solar reflective spectral range for size, weight, and power limited applications, *in* *Multispectral, Hyperspectral, and Ultraspectral Remote Sensing Technology, Techniques and Applications VII*, Honolulu, Hawaii, 24–26 September 2018, *Proceedings of SPIE Vol. 10780*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 107800L, at <https://doi.org/10.1117/12.2324453>.

- Christ, A.J., Talaia-Murray, M., Elking, N., Domack, E.W., Leventer, A., Lavoie, C., Brachfeld, S., Yoo, K.C., Gilbert, R., et al., 2015, Late Holocene glacial advance and ice shelf growth in Barilari Bay, Graham Land, West Antarctic Peninsula: *Bulletin of the Geological Society of America*, v. 127, no. 1-2, p. 297–315, at <https://doi.org/10.1130/B31035.1>.
- Christensen, P.R., Bandfield, J.L., Bell, J.F., Gorelick, N.S., Hamilton, V.E., Ivanov, A., Jakosky, B.M., Kieffer, H.H., Lane, M.D., et al., 2003, Morphology and composition of the surface of Mars—Mars Odyssey THEMIS results: *Science*, v. 300, no. 5628, p. 2056–2061, at <https://doi.org/10.1126/science.1080885>.
- Christensen, P.R., Bandfield, J.L., Hamilton, V.E., Ruff, S.W., Kieffer, H.H., Titus, T.N., Malin, M.C., Morris, R.V., Lane, M.D., et al., 2001, Mars Global Surveyor Thermal Emission Spectrometer experiment—Investigation description and surface science results: *Journal of Geophysical Research Planets*, v. 106, no. E10, p. 23823–23871, at <https://doi.org/10.1029/2000JE001370>.
- Christensen, P.R., McSween Jr, H.Y., Bandfield, J.L., Ruff, S.W., Rogers, A.D., Hamilton, V.E., Gorelick, N.S., Wyatt, M.B., Jakosky, B.M., et al., 2005, Erratum—Evidence for magmatic evolution and diversity on Mars from infrared observations (*Nature* (July 6, 2005) 436 (504-509) doi—10.1038/nature03639): *Nature*, v. 436, no. 7052, p. 882–882, at <https://doi.org/10.1038/nature04075>.
- Christensen, P.R., McSween Jr, H.Y., Bandfield, J.L., Ruff, S.W., Rogers, A.D., Hamilton, V.E., Gorelick, N.S., Wyatt, M.B., Jakosky, B.M., et al., 2005, Evidence for magmatic evolution and diversity on Mars from infrared observations: *Nature*, v. 436, no. 7050, p. 504–509, at <https://doi.org/10.1038/nature03639>.
- Christensen, P.R., Mehall, G.L., Silverman, S.H., Anwar, S., Cannon, G., Gorelick, N.S., Kheen, R., Tourville, T., Bates, D., et al., 2003, Miniature Thermal Emission Spectrometer for the Mars Exploration Rovers: *Journal of Geophysical Research Planets*, v. 108, no. 12, p. ROV 5–1 – ROV 5–23, at <https://doi.org/10.1029/2003je002117>.
- Christensen, P.R., Ruff, S.W., Fergason, R., Gorelick, N.S., Jakosky, B.M., Lane, M.D., McEwen, A.S., McSween, H.Y., Mehall, G.L., et al., 2005, Mars Exploration Rover candidate landing sites as viewed by THEMIS: *Icarus*, v. 176, no. 1, p. 12–43, at <https://doi.org/10.1016/j.icarus.2005.01.004>.
- Christensen, P.R., Ruff, S.W., Fergason, R.L., Knudson, A.T., Anwar, S., Arvidson, R.E., Bandfield, J.L., Blaney, D.L., Budney, C., et al., 2004, Initial results from the Mini-TES experiment in Gusev crater from the Spirit rover: *Science*, v. 305, no. 5685, p. 837–842, at <https://doi.org/10.1126/science.1100564>.
- Christensen, P.R., Wyatt, M.B., Glotch, T.D., Rogers, A.D., Anwar, S., Arvidson, R.E., Bandfield, J.L., Blaney, D.L., Budney, C., et al., 2004, Mineralogy at Meridiani Planum from the Mini-TES experiment on the opportunity rover: *Science*, v. 306, no. 5702, p. 1733–1739, at <https://doi.org/10.1126/science.1104909>.
- Christian, B., Joshi, N., Saini, M., Mehta, N., Goroshi, S., Nidamanuri, R.R., Thenkabail, P.S., Desai, A.R., and Krishnayya, N.S.R., 2015, Seasonal variations in phenology and productivity of a tropical dry deciduous forest from MODIS and Hyperion: *Agricultural and Forest Meteorology*, v. 214–215, p. 91–105, at <https://doi.org/10.1016/j.agrformet.2015.08.246>.
- Christianson, K., Bushuk, M., Dutrieux, P., Parizek, B.R., Joughin, I.R., Alley, R.B., Shean, D.E., Abrahamsen, E.P., Anandkrishnan, S., et al., 2016, Sensitivity of Pine Island Glacier to observed ocean forcing:

- Geophysical Research Letters, v. 43, no. 20, p. 10817–10825, at <https://doi.org/10.1002/2016GL070500>.
- Chrysoulakis, N., Mitraka, Z., and Gorelick, N.S., 2019, Exploiting satellite observations for global surface albedo trends monitoring: Theoretical and Applied Climatology, v. 137, no. 1–2, p. 1171–1179, at <https://doi.org/10.1007/s00704-018-2663-6>.
- Chubey, M.S., Franklin, S.E., and Wulder, M.A., 2006, Object-based analysis of Ikonos-2 imagery for extraction of forest inventory parameters: Photogrammetric Engineering and Remote Sensing, v. 72, no. 4, p. 383–394, at <https://doi.org/10.14358/PERS.72.4.383>.
- Chudnovsky, A., Lyapustin, A.I., Wang, Y., Schwartz, J., and Koutrakis, P., 2013, Analyses of high resolution aerosol data from MODIS satellite—A MAIAC retrieval, southern New England, US, in 1st International Conference on Remote Sensing and Geoinformation of the Environment, RSCy 2013, Paphos, Cyprus, 8–10 April 2013, Proceedings of SPIE Vol. 8795: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 87951e, at <https://doi.org/10.1117/12.2030278>.
- Chudnovsky, A., Lyapustin, A.I., Wang, Y., Tang, C., Schwartz, J., and Koutrakis, P., 2014, High resolution aerosol data from MODIS satellite for urban air quality studies: Central European Journal of Geosciences, v. 6, no. 1, p. 17–26, at <https://doi.org/10.2478/s13533-012-0145-4>.
- Chudnovsky, A., Tang, C., Lyapustin, A.I., Wang, Y., Schwartz, J., and Koutrakis, P., 2013, A critical assessment of high-resolution aerosol optical depth retrievals for fine particulate matter predictions: Atmospheric Chemistry and Physics, v. 13, no. 21, p. 10907–10917, at <https://doi.org/10.5194/acp-13-10907-2013>.
- Chudnovsky, A.A., Kostinski, A., Lyapustin, A.I., and Koutrakis, P., 2013, Spatial scales of pollution from variable resolution satellite imaging: Environmental Pollution, v. 172, p. 131–138, at <https://doi.org/10.1016/j.envpol.2012.08.016>.
- Chudnovsky, A.A., Koutrakis, P., Kloog, I., Melly, S., Nordio, F., Lyapustin, A.I., Wang, Y., and Schwartz, J., 2014, Fine particulate matter predictions using high resolution Aerosol Optical Depth (AOD) retrievals: Atmospheric Environment, v. 89, p. 189–198, at <https://doi.org/10.1016/j.atmosenv.2014.02.019>.
- Chuvieco, E., Giglio, L., and Justice, C.O., 2008, Global characterization of fire activity—Toward defining fire regimes from Earth observation data: Global Change Biology, v. 14, no. 7, p. 1488–1502, at <https://doi.org/10.1111/j.1365-2486.2008.01585.x>.
- Chuvieco, E., and Justice, C.O., 2004, Editorial for the RSE Special Edition from the Ghent workshop: Remote Sensing of Environment, v. 92, no. 3, p. 295–296, at <https://doi.org/10.1016/j.rse.2004.05.012>.
- Chuvieco, E., and Justice, C.O., 2008, NASA Earth observation satellite missions for global change research, in Chuvieco, E., ed., Earth observation of global change—The role of satellite remote sensing in monitoring the global environment: Dordrecht, Netherlands, Springer, p. 23–47, at https://doi.org/10.1007/978-1-4020-6358-9_2.
- Chuvieco, E., and Justice, C.O., 2010, Relations between human factors and global fire activity, in Chuvieco, E., Li, J., and Yang, X., eds., Advances in earth observation of global change: Dordrecht, Netherlands, Springer, p. 187–199, at https://doi.org/10.1007/978-90-481-9085-0_14.

- Cihlar, J., Denning, S., Ahern, F., Arino, O., Belward, A.S., Bretherton, F., Cramer, W., Dedieu, G., Field, C., et al., 2002, Initiative to quantify terrestrial carbon sources and sinks: *Eos*, v. 83, no. 1, p. 1–7, at <https://doi.org/10.1029/2002EO000002>.
- Cihlar, J., Guindon, B., Beaubien, J., Latifovic, R., Peddle, D., Wulder, M.A., Fernandes, R., and Kerr, J., 2003, From need to product—A methodology for completing a land cover map of Canada with Landsat data: *Canadian Journal of Remote Sensing*, v. 29, no. 2, p. 171–186, at <https://doi.org/10.5589/m02-090>.
- Cisz, A.P., and Schott, J.R., 2005, Performance comparison of hyperspectral target detection algorithms in altitude varying scenes, in *Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI*, Orlando, Fla., 28 March–1 April 2005, *Proceedings of SPIE Vol. 5806*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 839–849, at <https://doi.org/10.1117/12.603768>.
- Clark, N.A., Wynne, R.H., and Schmoldt, D.L., 2000, A review of past research on dendrometers: *Forest Science*, v. 46, no. 4, p. 570–576, at <https://doi.org/10.1093/forestscience/46.4.570>.
- Clark, N.A., Wynne, R.H., Schmoldt, D.L., and Winn, M., 2000, An assessment of the utility of a non-metric digital camera for measuring standing trees: *Computers and Electronics in Agriculture*, v. 28, no. 2, p. 151–169, at [https://doi.org/10.1016/S0168-1699\(00\)00125-3](https://doi.org/10.1016/S0168-1699(00)00125-3).
- Clarke, T.R., Moran, M.S., Barnes, E.M., Pinter Jr, P.J., and Qi, J., 2001, Planar domain indices—A method for measuring a quality of a single component in two-component pixels, in *2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Sydney, Australia, 9–13 July 2001, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 1279–1281, at <https://doi.org/10.1109/IGARSS.2001.976818>.
- Claverie, M., Ju, J., Masek, J.G., Dungan, J.L., Vermote, E.F., Roger, J.C., Skakun, S.V., and Justice, C., 2018, The Harmonized Landsat and Sentinel-2 surface reflectance data set: *Remote Sensing of Environment*, v. 219, p. 145–161, at <https://doi.org/10.1016/j.rse.2018.09.002>.
- Claverie, M., Matthews, J.L., Vermote, E.F., and Justice, C.O., 2016, A 30+ year AVHRR LAI and FAPAR climate data record—Algorithm description and validation: *Remote Sensing*, v. 8, no. 3, article 263, at <https://doi.org/10.3390/rs8030263>.
- Claverie, M., Vermote, E.F., Franch, B., He, T., Hagolle, O., Kadiri, M., and Masek, J.G., 2015, Evaluation of medium spatial resolution BRDF-adjustment techniques using multi-angular SPOT4 (Take5) acquisitions: *Remote Sensing*, v. 7, no. 9, p. 12057–12075, at <https://doi.org/10.3390/rs70912057>.
- Claverie, M., Vermote, E.F., Franch, B., and Masek, J.G., 2015, Evaluation of the Landsat-5 TM and Landsat-7 ETM+ surface reflectance products: *Remote Sensing of Environment*, v. 169, p. 390–403, at <https://doi.org/10.1016/j.rse.2015.08.030>.
- Claverie, M., Vermote, E.F., Weiss, M., Baret, F., Hagolle, O., and Demarez, V., 2013, Validation of coarse spatial resolution LAI and FAPAR time series over cropland in southwest France: *Remote Sensing of Environment*, v. 139, p. 216–230, at <https://doi.org/10.1016/j.rse.2013.07.027>.
- Clayton, G.C., Wolff, M.J., Allen, R.G., Babler, B.L., Meade, M.R., Nordsieck, K.H., Anderson, C.M., Martin, P.G., and Whittet, D.C.B., 1997, Ultraviolet interstellar linear polarization. IV. Cross-calibration between the wisconsin ultraviolet photo-polarimeter experiment and the faint object spectrograph: *Astronomical Journal*, v. 114, no. 3, p. 1132–1137, at <https://doi.org/10.1086/118544>.

- Clements, J., Doody, C., Schott, J.R., and Walli, K., 2010, The advanced analyst exploitation environment, *in* Imaging and Applied Optics Congress, New York, N.Y., 7–8 June 2010, OSA Technical Digest: Washington, D.C., Optical Society of America, paper no. OTuB5, at <https://doi.org/10.1364/ORSE.2010.OTuB5>.
- Clemmens, A.J., and Allen, R.G., 2005, Impact of agricultural water conservation on water availability, *in* World Water and Environmental Resources Congress, Anchorage, Alaska, 15–19 May 2005, Proceedings: Reston, Va., American Society of Civil Engineers, p. 535–549, at [https://doi.org/10.1061/40792\(173\)535](https://doi.org/10.1061/40792(173)535).
- Clemmens, A.J., Allen, R.G., and Burt, C.M., 2008, Technical concepts related to conservation of irrigation and rainwater in agricultural systems: *Water Resources Research*, v. 44, no. 7, article W00E03, at <https://doi.org/10.1029/2007WR006095>.
- Clerici, M., Combal, B., Pekel, J.F., Dubois, G., van't Klooster, J., Skøien, J.O., and Bartholomé, E., 2013, The estation, an Earth observation processing service in support to ecological monitoring: *Ecological Informatics*, v. 18, p. 162–170, at <https://doi.org/10.1016/j.ecoinf.2013.08.004>.
- Clerici, N., Weissteiner, C.J., Paracchini, M.L., Boschetti, L., Baraldi, A., and Strobl, P., 2013, Pan-European distribution modelling of stream riparian zones based on multi-source Earth Observation data: *Ecological Indicators*, v. 24, p. 211–223, at <https://doi.org/10.1016/j.ecolind.2012.06.002>.
- Close, L.M., Wildi, F., Lloyd-Hart, M., Brusa, G., Fisher, D., Miller, D., Riccardi, A., Salinari, P., McCarthy, D.W., et al., 2003, High-resolution images of orbital motion in the trapezium cluster—First scientific results from the multiple mirror telescope deformable secondary mirror adaptive optics system: *Astrophysical Journal*, v. 599, no. 1, p. 537–547, at <https://doi.org/10.1086/379150>.
- Coddington, O., Schmidt, K.S., Pilewskie, P., Gore, W.J., Bergstrom, R.W., Román, M., Redemann, J., Russell, P.B., Liu, J., and Schaaf, C.C., 2008, Aircraft measurements of spectral surface albedo and its consistency with ground-based space-borne observations: *Journal of Geophysical Research Atmospheres*, v. 113, no. 17, article D17209, at <https://doi.org/10.1029/2008JD010089>.
- Coggins, S., Coops, N.C., and Wulder, M.A., 2008, Initialization of an insect infestation spread model using tree structure and spatial characteristics derived from high spatial resolution digital aerial imagery: *Canadian Journal of Remote Sensing*, v. 34, no. 6, p. 485–502, at <https://doi.org/10.5589/m08-073>.
- Coggins, S.B., Coops, N.C., Hilker, T., and Wulder, M.A., 2012, Augmenting forest inventory attributes with geometric optical modelling in support of regional susceptibility assessments to bark beetle infestations: *International Journal of Applied Earth Observation and Geoinformation*, v. 21, no. 1, p. 444–452, at <https://doi.org/10.1016/j.jag.2012.06.007>.
- Coggins, S.B., Coops, N.C., and Wulder, M.A., 2010, Improvement of low level bark beetle damage estimates with adaptive cluster sampling: *Silva Fennica*, v. 44, no. 2, p. 289–301, at <https://doi.org/10.14214/sf.456>.
- Coggins, S.B., Coops, N.C., and Wulder, M.A., 2011, Estimates of bark beetle infestation expansion factors with adaptive cluster sampling: *International Journal of Pest Management*, v. 57, no. 1, p. 11–21, at <https://doi.org/10.1080/09670874.2010.505667>.
- Coggins, S.B., Coops, N.C., Wulder, M.A., Bater, C.W., and Ortlepp, S.M., 2011, Comparing the impacts of mitigation and non-mitigation on mountain pine beetle populations: *Journal of Environmental Management*, v. 92, no. 1, p. 112–120, at <https://doi.org/10.1016/j.jenvman.2010.08.016>.

- Coggins, S.B., Wulder, M.A., Coops, N.C., and White, J.C., 2008, Linking survey detection accuracy with ability to mitigate populations of mountain pine beetle: *Forestry Chronicle*, v. 84, no. 6, p. 900–909, at <https://doi.org/10.5558/tfc84900-6>.
- Cohen, W.B., 2004, Integrating remote sensing and ecology: *BioScience*, v. 54, no. 6, p. 483–483, at [https://doi.org/10.1641/0006-3568\(2004\)054\[0483:IRSAE\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2004)054[0483:IRSAE]2.0.CO;2).
- Cohen, W.B., Fiorella, M., Gray, J., Helmer, E.L., and Anderson, K., 1998, An efficient and accurate method for mapping forest clearcuts in the Pacific Northwest using Landsat imagery: *Photogrammetric Engineering and Remote Sensing*, v. 64, no. 4, p. 293–300, at https://www.asprs.org/wp-content/uploads/pers/1998journal/apr/1998_apr_293-300.pdf.
- Cohen, W.B., and Goward, S.N., 2004, Landsat's role in ecological applications of remote sensing: *BioScience*, v. 54, no. 6, p. 535–545, at [https://doi.org/10.1641/0006-3568\(2004\)054\[0535:LRIEAO\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2004)054[0535:LRIEAO]2.0.CO;2).
- Cohen, W.B., Harmon, M.E., Wallin, D.O., and Fiorella, M., 1996, Two decades of carbon flux from forests of the Pacific Northwest—Estimates from a new modeling strategy: *BioScience*, v. 46, no. 11, p. 836–844, at <https://doi.org/10.2307/1312969>.
- Cohen, W.B., Healey, S.P., Yang, Z., Stehman, S.V., Brewer, C.K., Brooks, E.B., Gorelick, N.S., Huang, C., Hughes, M.J., et al., 2017, How similar are forest disturbance maps derived from different Landsat time series algorithms?: *Forests*, v. 8, no. 4, article 98, at <https://doi.org/10.3390/f8040098>.
- Cohen, W.B., Healey, S.P., Yang, Z., Zhu, Z., and Gorelick, N., 2020, Diversity of algorithm and spectral band inputs improves Landsat monitoring of forest disturbance: *Remote Sensing*, v. 12, no. 10, article 1673, at <https://doi.org/10.3390/rs12101673>.
- Cohen, W.B., and Justice, C.O., 1999, Validating MODIS terrestrial ecology products—Linking in situ and satellite measurements: *Remote Sensing of Environment*, v. 70, no. 1, p. 1–3, at [https://doi.org/10.1016/S0034-4257\(99\)00053-X](https://doi.org/10.1016/S0034-4257(99)00053-X).
- Cohen, W.B., Kushla, J.D., Ripple, W.J., and Garman, S.L., 1996, An introduction to digital methods in remote sensing of forested ecosystems—Focus on the Pacific Northwest, USA: *Environmental Management*, v. 20, no. 3, p. 421–435, at <https://doi.org/10.1007/BF01203849>.
- Cohen, W.B., Maersperger, T.K., Gower, S.T., and Turner, D.P., 2003, An improved strategy for regression of biophysical variables and Landsat ETM+ data: *Remote Sensing of Environment*, v. 84, no. 4, p. 561–571, at [https://doi.org/10.1016/S0034-4257\(02\)00173-6](https://doi.org/10.1016/S0034-4257(02)00173-6).
- Cohen, W.B., Maersperger, T.K., Turner, D.P., Ritts, W.D., Pflugmacher, D., Kennedy, R.E., Kirschbaum, A., Running, S.W., Costa, M., and Gower, S.T., 2006, MODIS land cover and LAI collection 4 product quality across nine sites in the western hemisphere: *IEEE Transactions on Geoscience and Remote Sensing*, v. 44, no. 7, p. 1843–1857, at <https://doi.org/10.1109/TGRS.2006.876026>.
- Cohen, W.B., Maersperger, T.K., Yang, Z., Gower, S.T., Turner, D.P., Ritts, W.D., Berterretche, M., and Running, S.W., 2003, Comparisons of land cover and LAI estimates derived from ETM+ and MODIS for four sites in North America—A quality assessment of 2000/2001 provisional MODIS products: *Remote Sensing of Environment*, v. 88, no. 3, p. 233–255, at <https://doi.org/10.1016/j.rse.2003.06.006>.

- Cohen, W.B., Maerspergers, T.K., Spies, T.A., and Oetter, D.R., 2001, Modelling forest cover attributes as continuous variables in a regional context with Thematic Mapper data: *International Journal of Remote Sensing*, v. 22, no. 12, p. 2279–2310, at <https://doi.org/10.1080/01431160121472>.
- Cohen, W.B., Spies, T.A., Alig, R.J., Oetter, D.R., Maersperger, T.K., and Fiorella, M., 2002, Characterizing 23 years (1972–95) of stand replacement disturbance in western Oregon forests with Landsat imagery: *Ecosystems*, v. 5, no. 2, p. 122–137, at <https://doi.org/10.1007/s10021-001-0060-X>.
- Cohen, W.B., Yang, Z., Healey, S.P., Kennedy, R.E., and Gorelick, N.S., 2018, A LandTrendr multispectral ensemble for forest disturbance detection: *Remote Sensing of Environment*, v. 205, p. 131–140, at <https://doi.org/10.1016/j.rse.2017.11.015>.
- Cohen, W.B., Yang, Z., and Kennedy, R.E., 2010, Detecting trends in forest disturbance and recovery using yearly Landsat time series—2. TimeSync - Tools for calibration and validation: *Remote Sensing of Environment*, v. 114, no. 12, p. 2911–2924, at <https://doi.org/10.1016/j.rse.2010.07.010>.
- Cohen, W.B., Yang, Z., Stehman, S.V., Schroeder, T.A., Bell, D.M., Masek, J.G., Huang, C., and Meigs, G.W., 2016, Forest disturbance across the conterminous United States from 1985–2012—The emerging dominance of forest decline: *Forest Ecology and Management*, v. 360, p. 242–252, at <https://doi.org/10.1016/j.foreco.2015.10.042>.
- Colaizzi, P.D., Agam, N., Tolck, J.A., Evett, S.R., Howell, T.A., Gowda, P.H., O’Shaughnessy, S.A., Kustas, W.P., and Anderson, M.C., 2014, Two-source energy balance model to calculate E, T, and ET—comparison of Priestley-Taylor and Penman-Monteith formulations and two time scaling methods: *Transactions of the ASABE*, v. 57, no. 2, p. 479–498, at <https://doi.org/10.13031/trans.57.10423>.
- Colaizzi, P.D., Agam, N., Tolck, J.A., Evett, S.R., Howell, T.A., Sr., O’Shaughnessy, S.A., Gowda, P.H., Kustas, W.P., and Anderson, M.C., 2016, Advances in a two-source energy balance model—Partitioning of evaporation and transpiration for cotton: *Transactions of the ASABE*, v. 59, no. 1, p. 181–197, at <https://doi.org/10.13031/trans.59.11215>.
- Colaizzi, P.D., Evett, S.R., Howell, T.A., Gowda, P.H., O’Shaughnessy, S.A., Tolck, J.A., Kustas, W.P., and Anderson, M.C., 2012, Two-source energy balance model—Refinements and lysimeter tests in the southern high plains: *Transactions of the ASABE*, v. 55, no. 2, p. 551–562, at <https://doi.org/10.13031/2013.41385>.
- Colaizzi, P.D., Evett, S.R., Howell, T.A., Li, F., Kustas, W.P., and Anderson, M.C., 2012, Radiation model for row crops—I. Geometric view factors and parameter optimization: *Agronomy Journal*, v. 104, no. 2, p. 225–240, at <https://doi.org/10.2134/agronj2011.0082>.
- Colaizzi, P.D., Kustas, W.P., Anderson, M.C., Agam, N., Tolck, J.A., Evett, S.R., Howell, T.A., Gowda, P.H., and O’Shaughnessy, S.A., 2012, Two-source energy balance model estimates of evapotranspiration using component and composite surface temperatures: *Advances in Water Resources*, v. 50, p. 134–151, at <https://doi.org/10.1016/j.advwatres.2012.06.004>.
- Colaizzi, P.D., O’Shaughnessy, S.A., Gowda, P.H., Evett, S.R., Howell, T.A., Kustas, W.P., and Anderson, M.C., 2010, Radiometer footprint model to estimate sunlit and shaded components for row crops: *Agronomy Journal*, v. 102, no. 3, p. 942–955, at <https://doi.org/10.2134/agronj2009.0393>.
- Colditz, R.R., Schmidt, M., Conrad, C., Hansen, M.C., and Dech, S., 2011, Land cover classification with coarse spatial resolution data to derive continuous and discrete maps for complex regions: *Remote Sensing of Environment*, v. 115, no. 12, p. 3264–3275, at <https://doi.org/10.1016/j.rse.2011.07.010>.

- Colin, J., Hagolle, O., Landier, L., Coustance, S., Kettig, P., Meygret, A., Osman, J., and Vermote, E., 2023, Assessment of the performance of the atmospheric correction algorithm MAJA for Sentinel-2 surface reflectance estimates: *Remote Sensing*, v. 15, no. 10, at <https://doi.org/10.3390/rs15102665>.
- Collier, E., Duffy, K., Ganguly, S., Madanguit, G., Kalia, S., Shreekanth, G., Nemani, R., Michaelis, A., Li, S., et al., 2019, Progressively growing generative adversarial networks for high resolution semantic segmentation of satellite images, *in* ICDMW 2018, International Conference on Data Mining Workshops, 18th, Singapore, 17–20 November 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 763–769, at <https://doi.org/10.1109/ICDMW.2018.00115>.
- Collier, E., Mukhopadhyay, S., Duffy, K., Ganguly, S., Madanguit, G., Kalia, S., Shreekanth, G., Nemani, R., Michaelis, A., et al., 2021, Semantic segmentation of high resolution satellite imagery using generative adversarial networks with progressive growing: *Remote Sensing Letters*, v. 12, no. 5, p. 439–448, at <https://doi.org/10.1080/2150704X.2021.1895444>.
- Collins, J.B., and Woodcock, C.E., 1996, An assessment of several linear change detection techniques for mapping forest mortality using multitemporal Landsat TM data: *Remote Sensing of Environment*, v. 56, no. 1, p. 66–77, at [https://doi.org/10.1016/0034-4257\(95\)00233-2](https://doi.org/10.1016/0034-4257(95)00233-2).
- Collins, J.B., and Woodcock, C.E., 1999, Geostatistical estimation of resolution-dependent variance in remotely sensed images: *Photogrammetric Engineering and Remote Sensing*, v. 65, no. 1, p. 41–50, at https://www.asprs.org/wp-content/uploads/pers/1999journal/jan/1999_jan_41-50.pdf.
- Collins, J.B., and Woodcock, C.E., 2000, Combining geostatistical methods and hierarchical scene models for analysis of multiscale variation in spatial data: *Geographical Analysis*, v. 32, no. 1, p. 50–63, at <https://doi.org/10.1111/j.1538-4632.2000.tb00415.x>.
- Comber, A., and Wulder, M., 2019, Considering spatiotemporal processes in big data analysis—Insights from remote sensing of land cover and land use: *Transactions in GIS*, v. 23, no. 5, p. 879–891, at <https://doi.org/10.1111/tgis.12559>.
- Comini de Andrade, B., Laipelt, L., Fleischmann, A., Huntington, J., Morton, C., Melton, F., Erickson, T., Roberti, D.R., de Arruda Souza, V., et al., 2024, geeSEBAL-MODIS—Continental-scale evapotranspiration based on the surface energy balance for South America: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 207, p. 141–163, at <https://doi.org/10.1016/j.isprsjprs.2023.12.001>.
- Concha, J.A., and Schott, J.R., 2014, In-water component retrieval over Case 2 water using Landsat 8—Initial results, *in* Joint 2014 IEEE International Geoscience and Remote Sensing Symposium (IGARSS) and the 35th Canadian Symposium on Remote Sensing (CSRS 2014), Quebec City, Canada, 13–18 July 2014, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4458–4461, at <https://doi.org/10.1109/IGARSS.2014.6947481>.
- Concha, J.A., and Schott, J.R., 2014, A model-based ELM for atmospheric correction over Case 2 water with Landsat 8, *in* Ocean sensing and monitoring VI, Baltimore, Md., 5–9 May 2014, Proceedings of SPIE Vol. 9111: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 911112, at <https://doi.org/10.1117/12.2050589>.
- Concha, J.A., and Schott, J.R., 2015, Atmospheric correction for Landsat 8 over case 2 waters, *in* Earth Observing Systems XX, San Diego, Calif., 10–13 August 2015, Proceedings of SPIE Vol. 9607:

- Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 96070r, at <https://doi.org/10.1117/12.2188345>.
- Concha, J.A., and Schott, J.R., 2016, Retrieval of color producing agents in Case 2 waters using Landsat 8: Remote Sensing of Environment, v. 185, p. 95–107, at <https://doi.org/10.1016/j.rse.2016.03.018>.
- Congalton, R.G., Gu, J., Yadav, K., Thenkabail, P.S., and Ozdogan, M., 2014, Global land cover mapping—A review and uncertainty analysis: Remote Sensing, v. 6, no. 12, p. 12070–12093, at <https://doi.org/10.3390/rs61212070>.
- Convey, P., Bindschadler, R.A., Di Prisco, G., Fahrbach, E., Gutt, J., Hodgson, D.A., Mayewski, P.A., Summerhayes, C.P., and Turner, J., 2009, Antarctic climate change and the environment: Antarctic Science, v. 21, no. 6, p. 541–563, at <https://doi.org/10.1017/S0954102009990642>.
- Conway, H., Catania, G., Raymond, C.F., Gades, A.M., Scambos, T.A., and Engelhardt, H., 2002, Switch of flow direction in an antarctic ice stream: Nature, v. 419, no. 6906, p. 465–467, at <https://doi.org/10.1038/nature01081>.
- Cook, B., Corp, L., Clemens, P., Paynter, I., Nagol, J., and McCorkel, J., 2018, Characterization of FIREFLY, an imaging spectrometer designed for airborne measurements of Solar-Induced Fluorescence, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3943–3946, at <https://doi.org/10.1109/IGARSS.2018.8518303>.
- Cook, B.D., Corp, L.A., Nelson, R.F., Middleton, E.M., Morton, D.C., McCorkel, J.T., Masek, J.G., Ranson, K.J., Ly, V., and Montesano, P.M., 2013, NASA goddard's LiDAR, hyperspectral and thermal (G-LiHT) airborne imager: Remote Sensing, v. 5, no. 8, p. 4045–4066, at <https://doi.org/10.3390/rs5084045>.
- Cook, M., Padula, F., Pogorzala, D., Pearlman, A., McCorkel, J., and Krimchansky, A., 2020, Reflective solar band striping mitigation method for the GOES-R series advanced baseline imager using special scans: Journal of Applied Remote Sensing, v. 14, no. 3, article 032409, at <https://doi.org/10.1117/1.JRS.14.032409>.
- Cook, M., Schott, J.R., Mandel, J., and Raqueno, N., 2014, Development of an operational calibration methodology for the Landsat thermal data archive and initial testing of the atmospheric compensation component of a land surface temperature (LST) product from the archive: Remote Sensing, v. 6, no. 11, p. 11244–11266, at <https://doi.org/10.3390/rs6111244>.
- Cook, M.J., and Schott, J.R., 2013, Initial validation of atmospheric compensation for a Landsat land surface temperature product, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XIX, Baltimore, Md., 29 April–2 May 2013, Proceedings of SPIE Vol. 8743: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 874314, at <https://doi.org/10.1117/12.2015320>.
- Cook, M.J., and Schott, J.R., 2014, The atmospheric compensation component of a Landsat land surface temperature (LST) product—Assessment of errors expected for a North American test product, *in* ISPRS Technical Commission I Symposium, Denver, Colo., 17–20 November 2014, International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, XL-1: Bethesda, Md., International Society for Photogrammetry and Remote Sensing, p. 73–79, at <https://doi.org/10.5194/isprsarchives-XL-1-73-2014>.
- Cook, M.J., and Schott, J.R., 2014, A novel confidence metric approach for a Landsat land surface temperature product, *in* Geospatial power in our pockets, ASPRS Annual Conference, Co-Located

- with Joint Agency Commercial Imagery Evaluation Workshop, JACIE 2014, Louisville, Ky., 23–28 March 2014, Proceedings: Bethesda, Md., American Society for Photogrammetry and Remote Sensing, p. 1–11, at <http://www.asprs.org/a/publications/proceedings/Louisville2014/cook.pdf>.
- Cooper, C., Kennedy, R.E., and Renberg, M., 1998, On certain sums of functions of base b expansions: *Fibonacci Quarterly*, v. 36, no. 5, p. 407–415, at <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.497.5570>.
- Cooper, M.J., Martin, R.V., Lyapustin, A.I., and McLinden, C.A., 2018, Assessing snow extent data sets over North America to inform and improve trace gas retrievals from solar backscatter: *Atmospheric Measurement Techniques*, v. 11, no. 5, p. 2983–2994, at <https://doi.org/10.5194/amt-11-2983-2018>.
- Cooper, N.W., Ewert, D.N., Wunderle, J.M., Jr., Helmer, E.H., and Marra, P.P., 2019, Revising the wintering distribution and habitat use of the Kirtland's warbler using playback surveys, citizen scientists, and geolocators: *Endangered Species Research*, v. 38, p. 79–89, at <https://doi.org/10.3354/ESR00937>.
- Cooper, S., Okujeni, A., Jänicke, C., Clark, M., van der Linden, S., and Hostert, P., 2020, Disentangling fractional vegetation cover—Regression-based unmixing of simulated spaceborne imaging spectroscopy data: *Remote Sensing of Environment*, v. 246, article 111856, at <https://doi.org/10.1016/j.rse.2020.111856>.
- Cooper, S.D., Roy, D.P., Schaaf, C.B., and Paynter, I., 2017, Examination of the potential of terrestrial laser scanning and structure-from-motion photogrammetry for rapid nondestructive field measurement of grass biomass: *Remote Sensing*, v. 9, no. 6, article 531, at <https://doi.org/10.3390/rs9060531>.
- Coops, N.C., Bolton, D.K., Hobi, M.L., and Radeloff, V.C., 2019, Untangling multiple species richness hypothesis globally using remote sensing habitat indices: *Ecological Indicators*, v. 107, article 105567, at <https://doi.org/10.1016/j.ecolind.2019.105567>.
- Coops, N.C., Duro, D.C., Wulder, M.A., and Han, T., 2007, Estimating afternoon MODIS land surface temperatures (LST) based on morning MODIS overpass, location and elevation information: *International Journal of Remote Sensing*, v. 28, no. 10, p. 2391–2396, at <https://doi.org/10.1080/01431160701294653>.
- Coops, N.C., Fontana, F.M.A., Harvey, G.K.A., Nelson, T.A., and Wulder, M.A., 2014, Monitoring of a national-scale indirect indicator of biodiversity using a long time-series of remotely sensed imagery: *Canadian Journal of Remote Sensing*, v. 40, no. 3, p. 179–191, at <https://doi.org/10.1080/07038992.2014.945826>.
- Coops, N.C., Gillanders, S.N., Wulder, M.A., Gergel, S.E., Nelson, T., and Goodwin, N.R., 2010, Assessing changes in forest fragmentation following infestation using time series Landsat imagery: *Forest Ecology and Management*, v. 259, no. 12, p. 2355–2365, at <https://doi.org/10.1016/j.foreco.2010.03.008>.
- Coops, N.C., Hermosilla, T., Wulder, M.A., White, J.C., and Bolton, D.K., 2018, A thirty year, fine-scale, characterization of area burned in Canadian forests shows evidence of regionally increasing trends in the last decade: *PLoS ONE*, v. 13, no. 5, article e0197218, at <https://doi.org/10.1371/journal.pone.0197218>.
- Coops, N.C., Hilker, T., Bater, C.W., Wulder, M.A., Nielsen, S.E., McDermid, G., and Stenhouse, G., 2012, Linking ground-based to satellite-derived phenological metrics in support of habitat assessment:

- Remote Sensing Letters, v. 3, no. 3, p. 191–200, at <https://doi.org/10.1080/01431161.2010.550330>.
- Coops, N.C., Hilker, T., Wulder, M.A., St-Onge, B., Newnham, G., Siggins, A., and Trofymow, J.A., 2007, Estimating canopy structure of Douglas-fir forest stands from discrete-return LiDAR: Trees - Structure and Function, v. 21, no. 3, p. 295–310, at <https://doi.org/10.1007/s00468-006-0119-6>.
- Coops, N.C., Johnson, M., Wulder, M.A., and White, J.C., 2006, Assessment of QuickBird high spatial resolution imagery to detect red attack damage due to mountain pine beetle infestation: Remote Sensing of Environment, v. 103, no. 1, p. 67–80, at <https://doi.org/10.1016/j.rse.2006.03.012>.
- Coops, N.C., Kearney, S.P., Bolton, D.K., and Radeloff, V.C., 2018, Remotely-sensed productivity clusters capture global biodiversity patterns: Scientific Reports, v. 8, no. 1, article 16261, at <https://doi.org/10.1038/s41598-018-34162-8>.
- Coops, N.C., Shang, C., Wulder, M.A., White, J.C., and Hermosilla, T., 2020, Change in forest condition—Characterizing non-stand replacing disturbances using time series satellite imagery: Forest Ecology and Management, v. 474, article 118370, at <https://doi.org/10.1016/j.foreco.2020.118370>.
- Coops, N.C., Timko, J.A., Wulder, M.A., White, J.C., and Ortlepp, S.M., 2008, Investigating the effectiveness of Mountain Pine Beetle mitigation strategies: International Journal of Pest Management, v. 54, no. 2, p. 151–165, at <https://doi.org/10.1080/09670870701805737>.
- Coops, N.C., Tompalski, P., Goodbody, T.R.H., Queinnec, M., Luther, J.E., Bolton, D.K., White, J.C., Wulder, M.A., van Lier, O.R., and Hermosilla, T., 2021, Modelling lidar-derived estimates of forest attributes over space and time—A review of approaches and future trends: Remote Sensing of Environment, v. 260, article 112477, at <https://doi.org/10.1016/j.rse.2021.112477>.
- Coops, N.C., Waring, R.H., Wulder, M.A., Pidgeon, A.M., and Radeloff, V.C., 2009, Bird diversity—A predictable function of satellite-derived estimates of seasonal variation in canopy light absorbance across the United States: Journal of Biogeography, v. 36, no. 5, p. 905–918, at <https://doi.org/10.1111/j.1365-2699.2008.02053.x>.
- Coops, N.C., Waring, R.H., Wulder, M.A., and White, J.C., 2009, Prediction and assessment of bark beetle-induced mortality of lodgepole pine using estimates of stand vigor derived from remotely sensed data: Remote Sensing of Environment, v. 113, no. 5, p. 1058–1066, at <https://doi.org/10.1016/j.rse.2009.01.013>.
- Coops, N.C., and Wulder, M.A., 2010, Estimating the reduction in gross primary production due to mountain pine beetle infestation using satellite observations: International Journal of Remote Sensing, v. 31, no. 8, p. 2129–2138, at <https://doi.org/10.1080/01431160903474947>.
- Coops, N.C., and Wulder, M.A., 2019, Breaking the Habit(at): Trends in Ecology and Evolution, v. 34, no. 7, p. 585–587, at <https://doi.org/10.1016/j.tree.2019.04.013>.
- Coops, N.C., Wulder, M.A., Culvenor, D.S., and St-Onge, B., 2004, Comparison of forest attributes extracted from fine spatial resolution multispectral and lidar data: Canadian Journal of Remote Sensing, v. 30, no. 6, p. 855–866, at <https://doi.org/10.5589/m04-045>.
- Coops, N.C., Wulder, M.A., Duro, D.C., Han, T., and Berry, S., 2008, The development of a Canadian dynamic habitat index using multi-temporal satellite estimates of canopy light absorbance: Ecological Indicators, v. 8, no. 5, p. 754–766, at <https://doi.org/10.1016/j.ecolind.2008.01.007>.

- Coops, N.C., Wulder, M.A., and Iwanicka, D., 2009, Demonstration of a satellite-based index to monitor habitat at continental-scales: *Ecological Indicators*, v. 9, no. 5, p. 948–958, at <https://doi.org/10.1016/j.ecolind.2008.11.003>.
- Coops, N.C., Wulder, M.A., and Iwanicka, D., 2009, An environmental domain classification of Canada using Earth observation data for biodiversity assessment: *Ecological Informatics*, v. 4, no. 1, p. 8–22, at <https://doi.org/10.1016/j.ecoinf.2008.09.005>.
- Coops, N.C., Wulder, M.A., and Iwanicka, D., 2009, Exploring the relative importance of satellite-derived descriptors of production, topography and land cover for predicting breeding bird species richness over Ontario, Canada: *Remote Sensing of Environment*, v. 113, no. 3, p. 668–679, at <https://doi.org/10.1016/j.rse.2008.11.012>.
- Coops, N.C., Wulder, M.A., and Iwanicka, D., 2009, Large area monitoring with a MODIS-based Disturbance Index (DI) sensitive to annual and seasonal variations: *Remote Sensing of Environment*, v. 113, no. 6, p. 1250–1261, at <https://doi.org/10.1016/j.rse.2009.02.015>.
- Coops, N.C., Wulder, M.A., and Waring, R.H., 2012, Modeling lodgepole and jack pine vulnerability to mountain pine beetle expansion into the western Canadian boreal forest: *Forest Ecology and Management*, v. 274, p. 161–171, at <https://doi.org/10.1016/j.foreco.2012.02.011>.
- Coops, N.C., Wulder, M.A., and White, J.C., 2006, Integrating remotely sensed and ancillary data sources to characterize a mountain pine beetle infestation: *Remote Sensing of Environment*, v. 105, no. 2, p. 83–97, at <https://doi.org/10.1016/j.rse.2006.06.007>.
- Copass, C., Antonova, N., and Kennedy, R., 2019, Comparison of office and field techniques for validating landscape change classification in pacific Northwest national parks: *Remote Sensing*, v. 11, no. 1, article 3, at <https://doi.org/10.3390/rs11010003>.
- Copenheaver, C.A., Crawford, C.J., and Fearer, T.M., 2011, Age-specific responses to climate identified in the growth of *Quercus alba*: *Trees - Structure and Function*, v. 25, no. 4, p. 647–653, at <https://doi.org/10.1007/s00468-011-0541-2>.
- Corbelle-Rico, E., Butsic, V., Enríquez-García, M.J., and Radeloff, V.C., 2015, Technology or policy? Drivers of land cover change in northwestern Spain before and after the accession to European Economic Community: *Land Use Policy*, v. 45, p. 18–25, at <https://doi.org/10.1016/j.landusepol.2015.01.004>.
- Corp, L.A., Cook, B.D., McCorkel, J.T., and Middleton, E.M., 2015, Data products of NASA Goddard's LiDAR, Hyperspectral, and Thermal airborne imager (G-LiHT), in *Next-Generation Spectroscopic Technologies VIII*, Baltimore, Md., 20–23 April 2015, Proceedings of SPIE Vol. 9482: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 2319226, at <https://doi.org/10.1117/12.2177083>.
- Cosh, M.H., Jackson, T.J., Moran, M.S., and Bindlish, R., 2006, Surface soil moisture temporal persistence and stability in a semi-arid watershed, in *2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Denver, Colo., 31 July–4 August 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1724–1727, at <https://doi.org/10.1109/IGARSS.2006.446>.
- Cosh, M.H., Jackson, T.J., Moran, M.S., and Bindlish, R., 2008, Temporal persistence and stability of surface soil moisture in a semi-arid watershed: *Remote Sensing of Environment*, v. 112, no. 2, p. 304–313, at <https://doi.org/10.1016/j.rse.2007.07.001>.

- Coulston, J.W., Blinn, C.E., Thomas, V.A., and Wynne, R.H., 2016, Approximating prediction uncertainty for random forest regression models: *Photogrammetric Engineering and Remote Sensing*, v. 82, no. 3, p. 189–197, at <https://doi.org/10.14358/PERS.82.3.189>.
- Coulston, J.W., Moisen, G.G., Wilson, B.T., Finco, M.V., Cohen, W.B., and Brewer, C.K., 2012, Modeling percent tree canopy cover—A pilot study: *Photogrammetric Engineering and Remote Sensing*, v. 78, no. 7, p. 715–727, at <https://doi.org/10.14358/PERS.78.7.715>.
- Coutu, S., Becker-Reshef, I., Whitcraft, A.K., and Justice, C., 2020, Food security—Underpin with public and private data sharing: *Nature*, v. 578, no. 7796, p. 515–515, at <https://doi.org/10.1038/d41586-020-00241-y>.
- Coward, S.N., and Williams, D.L., 1997, Landsat and Earth systems science—Development of terrestrial monitoring: *Photogrammetric Engineering and Remote Sensing*, v. 63, no. 7, p. 887–900, at https://www.asprs.org/wp-content/uploads/pers/1997journal/jul/1997_jul_887-900.pdf.
- Crago, R., Qualls, R., Szilagyi, J., and Huntington, J.L., 2017, Reply to comment by Ma and Zhang on “Rescaling the complementary relationship for land surface evaporation”: *Water Resources Research*, v. 53, no. 7, p. 6343–6344, at <https://doi.org/10.1002/2017WR021021>.
- Crago, R., Szilagyi, J., Qualls, R., and Huntington, J.L., 2016, Rescaling the complementary relationship for land surface evaporation: *Water Resources Research*, v. 52, no. 11, p. 8461–8471, at <https://doi.org/10.1002/2016WR019753>.
- Crawford, C.J., 2012, Do high-elevation northern red oak tree-rings share a common climate-driven growth signal?: *Arctic, Antarctic, and Alpine Research*, v. 44, no. 1, p. 26–35, at <https://doi.org/10.1657/1938-4246-44.1.26>.
- Crawford, C.J., 2015, MODIS Terra Collection 6 fractional snow cover validation in mountainous terrain during spring snowmelt using Landsat TM and ETM+: *Hydrological Processes*, v. 29, no. 1, p. 128–138, at <https://doi.org/10.1002/hyp.10134>.
- Crawford, C.J., Griffin, D., and Kipfmüller, K.F., 2015, Capturing season-specific precipitation signals in the northern Rocky Mountains, USA, using earlywood and latewood tree rings: *Journal of Geophysical Research Biogeosciences*, v. 120, no. 3, p. 428–440, at <https://doi.org/10.1002/2014JG002740>.
- Crawford, C.J., and Kennedy, L.M., 2009, Spatial and temporal patterns of tree encroachment into a southern appalachian grass/heath bald using tree rings: *Natural Areas Journal*, v. 29, no. 4, p. 367–375, at <https://doi.org/10.3375/043.029.0403>.
- Crawford, C.J., Manson, S.M., Bauer, M.E., and Hall, D.K., 2013, Multitemporal snow cover mapping in mountainous terrain for Landsat climate data record development: *Remote Sensing of Environment*, v. 135, p. 224–233, at <https://doi.org/10.1016/j.rse.2013.04.004>.
- Crawford, C.J., Roy, D.P., Arab, S., Barnes, C., Vermote, E., Hulley, G., Gerace, A., Choate, M., Engebretson, C., et al., 2023, The 50-year Landsat Collection 2 Archive: *Science of Remote Sensing*, v. 8, article 100103, at <https://doi.org/10.1016/j.srs.2023.100103>.
- Crawford, C.J., Van Den Bosch, J., Brunt, K.M., Hom, M.G., Cooper, J.W., Harding, D.J., Butler, J.J., Dabney, P.W., Neumann, T.A., et al., 2019, Radiometric calibration of a non-imaging airborne spectrometer to measure the Greenland ice sheet surface: *Atmospheric Measurement Techniques*, v. 12, no. 3, p. 1913–1933, at <https://doi.org/10.5194/amt-12-1913-2019>.

- Crawford, C.L., Yin, H., Radeloff, V.C., and Wilcove, D.S., 2022, Rural land abandonment is too ephemeral to provide major benefits for biodiversity and climate: *Science Advances*, v. 8, no. 21, article eabm8999, at <https://doi.org/10.1126/sciadv.abm8999>.
- Cristóbal, J., and Anderson, M.C., 2013, Validation of a Meteosat Second Generation solar radiation dataset over the northeastern Iberian Peninsula: *Hydrology and Earth System Sciences*, v. 17, no. 1, p. 163–175, at <https://doi.org/10.5194/hess-17-163-2013>.
- Cristóbal, J., Prakash, A., Anderson, M.C., Kustas, W.P., Alfieri, J.G., and Gens, R., 2020, Surface energy flux estimation in two boreal settings in Alaska using a thermal-based remote sensing model: *Remote Sensing*, v. 12, no. 24, article 4108, at <https://doi.org/10.3390/rs12244108>.
- Cristóbal, J., Prakash, A., Anderson, M.C., Kustas, W.P., Euskirchen, E.S., and Kane, D.L., 2017, Estimation of surface energy fluxes in the Arctic tundra using the remote sensing thermal-based Two-Source Energy Balance model: *Hydrology and Earth System Sciences*, v. 21, no. 3, p. 1339–1358, at <https://doi.org/10.5194/hess-21-1339-2017>.
- Crocetti, L., Forkel, M., Fischer, M., Jurečka, F., Grlj, A., Salentinig, A., Trnka, M., Anderson, M., Ng, W.T., et al., 2020, Earth Observation for agricultural drought monitoring in the Pannonian Basin (southeastern Europe)—Current state and future directions: *Regional Environmental Change*, v. 20, no. 4, article 123, at <https://doi.org/10.1007/s10113-020-01710-w>.
- Croke, J.C., Purvis-Smith, D., Thompson, C.J., and Lymburner, L., 2008, The effect of local-scale valley constrictions on flood inundation and catchment-scale sediment delivery in the Fitzroy River Basin, Australia, *in* Symposium of the International Commission on Continental Erosion, Christchurch, New Zealand, 1–5 December 2008, Sediment dynamics in changing environments, Proceedings: Wallingford, UK, International Association of Hydrological Sciences, p. 200–207, at <http://iahs.info/uploads/dms/14514.31-200-207-25-325-Croke.pdf>.
- Cross, M., and Scambos, T., 2018, Tropical forest tree species classification using meter-scale image data, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8999–9002, at <https://doi.org/10.1109/IGARSS.2018.8517738>.
- Cross, M., Scambos, T., Pacifici, F., Vargas-Ramirez, O., Moreno-Sanchez, R., and Marshall, W., 2019, Classification of tropical forest tree species using meter-scale image data: *Remote Sensing*, v. 11, no. 12, article 1411, at <https://doi.org/10.3390/rs11121411>.
- Cross, M.D., Scambos, T., Pacifici, F., and Marshall, W.E., 2019, Determining effective meter-scale image data and spectral vegetation indices for tropical forest tree species differentiation: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 12, no. 8, p. 2934–2943, at <https://doi.org/10.1109/JSTARS.2019.2918487>.
- Cross, M.D., Scambos, T.A., Pacifici, F., and Marshall, W.E., 2018, Validating the use of metre-scale multi-spectral satellite image data for identifying tropical forest tree species: *International Journal of Remote Sensing*, v. 39, no. 11, p. 3723–3752, at <https://doi.org/10.1080/01431161.2018.1448482>.
- Crossley, M.S., Burke, K.D., Schoville, S.D., and Radeloff, V.C., 2021, Recent collapse of crop belts and declining diversity of US agriculture since 1840: *Global Change Biology*, v. 27, no. 1, p. 151–164, at <https://doi.org/10.1111/gcb.15396>.
- Crow, W.T., Gomez, C.A., Sabater, J.M., Holmes, T., Hain, C.R., Lei, F., Dong, J., Alfieri, J.G., and Anderson, M.C., 2020, Soil moisture–evapotranspiration overcoupling and L-band brightness temperature

- assimilation—Sources and forecast implications: *Journal of Hydrometeorology*, v. 21, no. 10, p. 2359–2374, at <https://doi.org/10.1175/JHM-D-20-0088.1>.
- Crow, W.T., Han, E., Ryu, D., Hain, C.R., and Anderson, M.C., 2017, Estimating annual water storage variations in medium-scale (2000-10000km²) basins using microwave-based soil moisture retrievals: *Hydrology and Earth System Sciences*, v. 21, no. 3, p. 1849–1862, at <https://doi.org/10.5194/hess-21-1849-2017>.
- Crow, W.T., Lei, F., Hain, C., Anderson, M.C., Scott, R.L., Billesbach, D., and Arkebauer, T., 2015, Robust estimates of soil moisture and latent heat flux coupling strength obtained from triple collocation: *Geophysical Research Letters*, v. 42, no. 20, p. 8415–8423, at <https://doi.org/10.1002/2015GL065929>.
- Crowley, M.A., Cardille, J.A., White, J.C., and Wulder, M.A., 2019, Generating intra-year metrics of wildfire progression using multiple open-access satellite data streams: *Remote Sensing of Environment*, v. 232, article 111295, at <https://doi.org/10.1016/j.rse.2019.111295>.
- Crowley, M.A., Cardille, J.A., White, J.C., and Wulder, M.A., 2019, Multi-sensor, multi-scale, Bayesian data synthesis for mapping within-year wildfire progression: *Remote Sensing Letters*, v. 10, no. 3, p. 302–311, at <https://doi.org/10.1080/2150704X.2018.1536300>.
- Crowley, M.A., Stockdale, C.A., Johnston, J.M., Wulder, M.A., Liu, T., McCarty, J.L., Rieb, J.T., Cardille, J.A., and White, J.C., 2023, Towards a whole-system framework for wildfire monitoring using Earth observations: *Global Change Biology*, v. 29, no. 6, p. 1423–1436, at <https://doi.org/10.1111/gcb.16567>.
- Crowther, B.G., Thome, K.J., Biggar, S.F., and Burkhart, C.J., 1997, Internally baffled integrating sphere cosine collector, *in* *Earth Observing Systems II*, San Diego, Calif., 27 July–1 August 1997, *Proceedings of SPIE Vol. 3117*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 246–252, at <https://doi.org/10.1117/12.283811>.
- Csiszar, I., Denis, L., Giglio, L., Justice, C.O., and Hewson, J., 2005, Global fire activity from two years of MODIS data: *International Journal of Wildland Fire*, v. 14, no. 2, p. 117–130, at <https://doi.org/10.1071/WF03078>.
- Csiszar, I., Justice, C.O., and Goldammer, J.G., 2007, The GOF-C-GOLD-Fire program—A mechanism for international cooperation in fire mapping and monitoring, *in* *Sustainable development through global Earth observations*, International Symposium on Remote Sensing of Environment, 32nd, San Jose, Costa Rica, 25–29 June 2007, *Proceedings: Tucson, Ariz., International Center for Remote Sensing of Environment*, p. 1–12, at http://www.fire.uni-freiburg.de/sevilla-2007/contributions/doc/cd/INTRODUCTORIAS_ST/Justice_ST4.pdf.
- Csiszar, I., Justice, C.O., Prins, E., Schroeder, W., Schmidt, C., and Giglio, L., 2011, Evolution of active fire monitoring capabilities from the US geostationary and polar orbiting satellite series, *in* *Towards operational environmental monitoring*, International Symposium on Remote Sensing of Environment—The GEOSS Era, 34th, Sydney, Australia, 10–15 April 2011, *Proceedings: Tucson, Ariz., International Center for Remote Sensing of Environment*, p. 1–4, at <https://www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00336.pdf>.
- Csiszar, I., Schroeder, W., Giglio, L., Ellicott, E., Vadrevu, K.P., Justice, C.O., and Wind, B., 2014, Active fires from the suomi NPP visible infrared imaging radiometer suite—Product status and first evaluation results: *Journal of Geophysical Research*, v. 119, no. 2, p. 803–816, at <https://doi.org/10.1002/2013JD020453>.

- Cui, Z., Kerekes, J., and Schott, J.R., 2017, Validation of Landsat-8 OLI image simulation, *in* 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, Tex., 23–28 July 2017, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3186–3189, at <https://doi.org/10.1109/IGARSS.2017.8127674>.
- Cui, Z., Montanaro, M., Gerace, A., Schott, J.R., and Markham, B., 2015, Requirement sensitivity studies for a future Landsat sensor, *in* Earth Observing Systems XX, San Diego, Calif., 10–13 August 2015, Proceedings of SPIE Vol. 9607: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 96070s, at <https://doi.org/10.1117/12.2188482>.
- Culbert, P.D., Pidgeon, A.M., St. Louis, V., Radeloff, V.C., and Bash, D., 2009, The impact of phenological variation on texture measures of remotely sensed imagery: IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, v. 2, no. 4, p. 299–309, at <https://doi.org/10.1109/JSTARS.2009.2021959>.
- Culbert, P.D., Radeloff, V.C., Flather, C.H., Kellendorfer, J.M., Rittenhouse, C.D., and Pidgeon, A.M., 2013, The Influence of vertical and horizontal habitat structure on nationwide patterns of avian biodiversity: Auk, v. 130, no. 4, p. 656–665, at <https://doi.org/10.1525/auk.2013.13007>.
- Culbert, P.D., Radeloff, V.C., St-Louis, V., Flather, C.H., Rittenhouse, C.D., Albright, T.P., and Pidgeon, A.M., 2012, Modeling broad-scale patterns of avian species richness across the Midwestern United States with measures of satellite image texture: Remote Sensing of Environment, v. 118, p. 140–150, at <https://doi.org/10.1016/j.rse.2011.11.004>.
- Curtis, P.G., Slay, C.M., Harris, N.L., Tyukavina, A., and Hansen, M.C., 2018, Classifying drivers of global forest loss: Science, v. 361, no. 6407, p. 1108–1111, at <https://doi.org/10.1126/science.aau3445>.
- Curtiss, B., and Goetz, A.F.H., 2012, Collection and quality control of spectral signatures in the field, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVIII, Baltimore, Md., 23–27 April 2012, Proceedings of SPIE Vol. 8390: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 839011, at <https://doi.org/10.1117/12.919484>.
- Czajkowski, K.P., Goward, S.N., and Ouaidrari, H., 1998, Impact of avhrr filter functions on surface temperature estimation from the split window approach: International Journal of Remote Sensing, v. 19, no. 10, p. 2007–2012, at <https://doi.org/10.1080/014311698215126>.
- Czajkowski, K.P., Goward, S.N., Shirey, D., and Walz, A., 2002, Thermal remote sensing of near-surface water vapor: Remote Sensing of Environment, v. 79, no. 2–3, p. 253–265, at [https://doi.org/10.1016/S0034-4257\(01\)00277-2](https://doi.org/10.1016/S0034-4257(01)00277-2).
- Czajkowski, K.P., Goward, S.N., Stadler, S.J., and Walz, A., 2000, Thermal Remote Sensing of Near Surface Environmental Variables—Application Over the Oklahoma Mesonet: Professional Geographer, v. 52, no. 2, p. 345–357, at <https://doi.org/10.1111/0033-0124.00230>.
- Czajkowski, K.P., Mulhern, T., Goward, S.N., and Cihlar, J., 1997, Validation of the Geocoding and Compositing System (GEOCOMP) using contextual analysis for AVHRR images: International Journal of Remote Sensing, v. 18, no. 14, p. 3055–3068, at <https://doi.org/10.1080/014311697217206>.
- Czajkowski, K.P., Mulhern, T., Goward, S.N., Cihlar, J., Dubayah, R.O., and Prince, S.D., 1997, Biospheric environmental monitoring at BOREAS with AVHRR observations: Journal of Geophysical Research Atmospheres, v. 102, no. 24, p. 29651–29662, at <https://doi.org/10.1029/97JD01327>.

- Czapla-Myers, J., Anderson, N., Thome, K.J., and Biggar, S., 2014, The absolute radiometric calibration of the Landsat 8 operational land imager using the reflectance-based approach and the radiometric calibration test site (RadCaTS), *in* Earth Observing Systems XIX, San Diego, Calif., 18–20 August 2014, Proceedings of SPIE Vol. 9218: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 921819, at <https://doi.org/10.1117/12.2063321>.
- Czapla-Myers, J., McCorkel, J.T., Anderson, N., and Biggar, S., 2018, Earth-observing satellite intercomparison using the Radiometric Calibration Test Site at Railroad Valley: *Journal of Applied Remote Sensing*, v. 12, no. 1, article 012004, at <https://doi.org/10.1117/1.JRS.12.012004>.
- Czapla-Myers, J., McCorkel, J.T., Anderson, N., Thome, K.J., Biggar, S., Helder, D.L., Aaron, D.B., Leigh, L., and Mishra, N., 2015, The ground-based absolute radiometric calibration of Landsat 8 OLI: *Remote Sensing*, v. 7, no. 1, p. 600–626, at <https://doi.org/10.3390/rs70100600>.
- Czapla-Myers, J., Ong, L., Thome, K.J., and McCorkel, J.T., 2016, Validation of EO-1 Hyperion and Advanced Land Imager using the radiometric calibration test site at Railroad Valley, Nevada: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 9, no. 2, p. 816–826, at <https://doi.org/10.1109/JSTARS.2015.2463101>.
- Czapla-Myers, J., Thome, K., Wenny, B., and Anderson, N., 2020, Railroad valley radiometric calibration test site (RadCaTS) as part of a global radiometric calibration network (RadCalNet), *in* 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), online virtual meeting, 26 September–2 October 2020, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6413–6416, at <https://doi.org/10.1109/IGARSS39084.2020.9323665>.
- Czapla-Myers, J., Thome, K.J., Anderson, N., and Biggar, S., 2014, The absolute radiometric calibration of terra imaging sensors—MODIS, MISR, and ASTER, *in* Earth Observing Systems XIX, San Diego, Calif., 18–20 August 2014, Proceedings of SPIE Vol. 9218: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 92180y, at <https://doi.org/10.1117/12.2062529>.
- Czapla-Myers, J., Thome, K.J., Anderson, N., McCorkel, J.T., Leisso, N., Good, W., and Collins, S., 2009, Transmittance measurement of a heliostat facility used in the preflight radiometric calibration of Earth-observing sensors, *in* Earth Observing Systems XIV, San Diego, Calif., 3–5 August 2009, Proceedings of SPIE Vol. 7452: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 74520P, at <https://doi.org/10.1117/12.828873>.
- Czapla-Myers, J., Thome, K.J., and Biggar, S., 2005, Unmanned vicarious calibration for large-footprint sensors, *in* Earth Observing Systems X, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5882: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 588218, at <https://doi.org/10.1117/12.618152>.
- Czapla-Myers, J.S., Coburn, C.A., Thome, K.J., Wenny, B.N., and Anderson, N.J., 2018, Directional reflectance studies in support of the Radiometric Calibration Test Site (RadCaTS) at Railroad Valley, *in* Earth Observing Systems XXIII, San Diego, Calif., 12–23 August 2018, Proceedings of SPIE Vol. 10764: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 107640Z, at <https://doi.org/10.1117/12.2320756>.
- Czapla-Myers, J.S., Thome, K.J., and Biggar, S.F., 2002, Optical sensor package for multiangle measurements of surface reflectance, *in* Imaging Spectrometry VII, San Diego, Calif., 1–3 August 2001, Proceedings of SPIE Vol. 4480: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 326–333, at <https://doi.org/10.1117/12.453356>.

- Czapla-Myers, J.S., Thome, K.J., and Biggar, S.F., 2008, Design, calibration, and characterization of a field radiometer using light-emitting diodes as detectors: *Applied Optics*, v. 47, no. 36, p. 6753–6762, at <https://doi.org/10.1364/AO.47.006753>.
- Czapla-Myers, J.S., Thome, K.J., and Biggar, S.F., 2009, Calibration and characterization of a digital camera for bidirectional reflectance distribution function retrieval of vicarious calibration sites: *Journal of Applied Remote Sensing*, v. 3, no. 1, article 033519, at <https://doi.org/10.1117/1.3116662>.
- Czapla-Myers, J.S., Thome, K.J., and Buchanan, J.H., 2007, Implication of spatial uniformity on vicarious calibration using automated test sites, in *Earth Observing Systems XII*, San Diego, Calif., 26–28 August 2007, *Proceedings of SPIE Vol. 6677*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 66770u, at <https://doi.org/10.1117/12.732661>.
- Czapla-Myers, J.S., Thome, K.J., Cocilovo, B.R., McCorkel, J.T., and Buchanan, J.H., 2008, Temporal, spectral, and spatial study of the automated vicarious calibration test site at Railroad Valley, Nevada, in *Earth Observing Systems XIII*, San Diego, Calif., 11–13 August 2008, *Proceedings of SPIE Vol. 7081*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 70810I, at <https://doi.org/10.1117/12.795551>.
- Czapla-Myers, J.S., Thome, K.J., and Leisso, N.P., 2007, Calibration of AVHRR sensors using the reflectance-based method, in *Atmospheric and Environmental Remote Sensing Data Processing and Utilization III—Readiness for GEOSS*, San Diego, Calif., 27–30 August 2007, *Proceedings of SPIE Vol. 6684*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 668407, at <https://doi.org/10.1117/12.734587>.
- Czapla-Myers, J.S., Thome, K.J., and Leisso, N.P., 2010, Radiometric calibration of Earth-Observing sensors using an automated test site at Railroad Valley, Nevada: *Canadian Journal of Remote Sensing*, v. 36, no. 5, p. 474–487, at <https://doi.org/10.5589/m10-076>.
- Czekajlo, A., Coops, N.C., Wulder, M.A., Hermosilla, T., White, J.C., and van den Bosch, M., 2021, Mapping dynamic peri-urban land use transitions across Canada using Landsat time series—Spatial and temporal trends and associations with socio-demographic factors: *Computers, Environment and Urban Systems*, v. 88, article 101653, at <https://doi.org/10.1016/j.compenvurbsys.2021.101653>.
- D’urso, G., Bolognesi, S.F., Kustas, W.P., Knipper, K.R., Anderson, M.C., Alsina, M.M., Hain, C.R., Alfieri, J.G., Prueger, J.H., et al., 2021, Determining evapotranspiration by using combination equation models with Sentinel-2 data and comparison with thermal-based energy balance in a California irrigated vineyard: *Remote Sensing*, v. 13, no. 18, article 3720, at <https://doi.org/10.3390/rs13183720>.
- Dabney, P.W., Kovalick, W.M., Bur, M.J.C., Russell, C.A., Tierney, M.R., and Irons, J.R., 1999, Inter-comparison of sensor calibration techniques for the Advanced Solid-state Array Spectroradiometer (ASAS) as a performance validation tool, in *Earth Observing Systems IV*, Denver, Colo., 18–20 July 1999, *Proceedings of SPIE Vol. 3750*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 442–452, at <https://doi.org/10.1117/12.363540>.
- Dalagnol, R., Galvão, L.S., Wagner, F.H., De Moura, Y.M., Gonçalves, N., Wang, Y., Lyapustin, A., Yang, Y., Saatchi, S., and Aragão, L.E.O.C., 2023, AnisoVeg—Anisotropy and nadir-normalized MODIS multi-angle implementation atmospheric correction (MAIAC) datasets for satellite vegetation studies in South America: *Earth System Science Data*, v. 15, no. 1, p. 345–358, at <https://doi.org/10.5194/essd-15-345-2023>.

- Daley, N.M.A., Burnett, C.N., Wulder, M.A., Olaf Niemann, K., and Goodenough, D.G., 1998, Comparison of fixed-size and variable-sized windows for the estimation of tree crown position, *in* 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1323–1325, at <https://doi.org/10.1109/IGARSS.1998.691394>.
- Daly, C., Helmer, E.H., and Quinones, M., 2003, Mapping the climate of Puerto Rico, Vieques and Culebra: *International Journal of Climatology*, v. 23, no. 11, p. 1359–1381, at <https://doi.org/10.1002/joc.937>.
- D'Amico, J., Thome, K.J., and Czaplá-Myers, J., 2006, Validation of large-footprint, reflectance-based calibration using coincident MODIS and ASTER data, *in* Earth Observing Systems XI, San Diego, Calif., 14–16 August 2006, Proceedings of SPIE Vol. 6296: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 629612, at <https://doi.org/10.1117/12.680168>.
- Damm, A., Elber, J., Erler, A., Gioli, B., Hamdi, K., Hutjes, R., Kosvancova, M., Meroni, M., Miglietta, F., et al., 2010, Remote sensing of sun-induced fluorescence to improve modeling of diurnal courses of gross primary production (GPP): *Global Change Biology*, v. 16, no. 1, p. 171–186, at <https://doi.org/10.1111/j.1365-2486.2009.01908.x>.
- Damm, A., and Hostert, P., 2007, Modeling reflectance of urban chestnut trees—A sensitivity analysis of model inversion for single trees, *in* 10th International Symposium on Physical Measurements and Signatures in Remote Sensing, ISPMSRS 2007, Davos, Switzerland, 12–14 March 2007, International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, XXXVI, pt. 7/C50: Lemmer, Netherlands, International Society for Photogrammetry and Remote Sensing, p. 1–6, at <https://www.isprs.org/proceedings/XXXVI/7-C50/papers/P51.pdf>.
- D'Andrimont, R., Verhegghen, A., Meroni, M., Lemoine, G., Strobl, P., Eiselt, B., Yordanov, M., Martinez-Sanchez, L., and Van Der Velde, M., 2021, LUCAS Copernicus 2018—Earth-observation-relevant in situ data on land cover and use throughout the European Union: *Earth System Science Data*, v. 13, no. 3, p. 1119–1133, at <https://doi.org/10.5194/essd-13-1119-2021>.
- Daniel, B.J., Bolcar, M.R., Schott, J.R., and Fienup, J.R., 2008, Phase retrieval in sparse aperture systems with phase diversity—a trade space study, *in* Sensors and Systems for Space Applications II, Orlando, Fla., 17–18 March 2008, Proceedings of SPIE Vol. 6958: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 69580K, at <https://doi.org/10.1117/12.782191>.
- Danner, E.M., Melton, F.S., Pike, A., Hashimoto, H., Michaelis, A., Rajagopalan, B., Caldwell, J., Dewitt, L., Lindley, S., and Nemani, R.R., 2012, River temperature forecasting—A coupled-modeling framework for management of river habitat: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 5, no. 6, p. 1752–1760, at <https://doi.org/10.1109/JSTARS.2012.2229968>.
- Danson, F.M., Disney, M.I., Gaulton, R., Schaaf, C.B., and Strahler, A., 2018, The terrestrial laser scanning revolution in forest ecology: *Interface Focus*, v. 8, no. 2, article 20180001, at <https://doi.org/10.1098/rsfs.2018.0001>.
- Dara, A., Baumann, M., Freitag, M., Hölzel, N., Hostert, P., Kamp, J., Müller, D., Prishchepov, A.V., and Kuemmerle, T., 2020, Annual Landsat time series reveal post-Soviet changes in grazing pressure: *Remote Sensing of Environment*, v. 239, article 111667, at <https://doi.org/10.1016/j.rse.2020.111667>.

- Dara, A., Baumann, M., Hölzel, N., Hostert, P., Kamp, J., Müller, D., Ullrich, B., and Kuemmerle, T., 2020, Post-Soviet land-use change affected fire regimes on the Eurasian steppes: *Ecosystems*, v. 23, p. 943–956, at <https://doi.org/10.1007/s10021-019-00447-w>.
- Dara, A., Baumann, M., Kuemmerle, T., Pflugmacher, D., Rabe, A., Griffiths, P., Hölzel, N., Kamp, J., Freitag, M., and Hostert, P., 2018, Mapping the timing of cropland abandonment and recultivation in northern Kazakhstan using annual Landsat time series: *Remote Sensing of Environment*, v. 213, p. 49–60, at <https://doi.org/10.1016/j.rse.2018.05.005>.
- Das, I., Bell, R.E., Scambos, T.A., Wolovick, M., Creyts, T.T., Studinger, M., Frearson, N., Nicolas, J.P., Lenaerts, J.T.M., and Van Den Broeke, M.R., 2013, Influence of persistent wind scour on the surface mass balance of Antarctica: *Nature Geoscience*, v. 6, no. 5, p. 367–371, at <https://doi.org/10.1038/ngeo1766>.
- Das, I., Scambos, T.A., Koenig, L.S., Van Den Broeke, M.R., and Lenaerts, J.T.M., 2015, Extreme wind-ice interaction over Recovery Ice Stream, East Antarctica: *Geophysical Research Letters*, v. 42, no. 19, p. 8064–8071, at <https://doi.org/10.1002/2015GL065544>.
- Datla, R.U., Rice, J., Cooksey, C., Thome, K.J., Barnes, R.A., and Cao, C., 2010, Report on the NIST workshop of December 10, 2009—Calibration strategies for bridging possible climate data gaps, *in* Atmospheric and Environmental Remote Sensing Data Processing and Utilization VI—Readiness for GEOSS IV, San Diego, Calif., 1–5 August 2010, Proceedings of SPIE Vol. 7811: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 781105, at <https://doi.org/10.1117/12.861517>.
- David, E.T., Chhin, S., and Skole, D.L., 2014, Dendrochronological potential and productivity of tropical tree species in Western Kenya: *Tree-Ring Research*, v. 70, no. 2, p. 119–135, at <https://doi.org/10.3959/1536-1098-70.2.119>.
- Davidson, A.D., Shoemaker, K.T., Weinstein, B., Costa, G.C., Brooks, T.M., Ceballos, G., Radeloff, V.C., Rondinini, C., and Graham, C.H., 2017, Geography of current and future global mammal extinction risk: *PLoS ONE*, v. 12, no. 11, article e0186934, at <https://doi.org/10.1371/journal.pone.0186934>.
- Davies, D.K., Ilavajhala, S., Wong, M.M., and Justice, C.O., 2009, Erratum—Near real-time fire alert system in South Africa—From desktop to mobile service (*IEEE Transactions on Geoscience and Remote Sensing* (2009) (315-322)): *IEEE Transactions on Geoscience and Remote Sensing*, v. 47, no. 9, p. 3298–3298, at <https://doi.org/10.1109/TGRS.2009.2030133>.
- Davies, D.K., Ilavajhala, S., Wong, M.M., and Justice, C.O., 2009, Fire information for resource management system—Archiving and distributing MODIS active fire data: *IEEE Transactions on Geoscience and Remote Sensing*, v. 47, no. 1, p. 72–79, at <https://doi.org/10.1109/TGRS.2008.2002076>.
- Davies, D.K., Murphy, K.J., Michael, K., Becker-Reshef, I., Justice, C.O., Boller, R., Braun, S.A., Schmaltz, J.E., Wong, M.M., et al., 2015, The use of NASA LANCE imagery and data for near real-time applications, *in* Lippitt, C., Stow, D., and Coulter, L., eds., *Time-sensitive remote sensing*: New York, N.Y., Springer, p. 165–182, at https://doi.org/10.1007/978-1-4939-2602-2_11.
- Davis, A., Marshak, A., Cahalan, R.F., and Wiscombe, W., 1997, The Landsat scale break in stratocumulus as a three-dimensional radiative transfer effect—Implications for cloud remote sensing: *Journal of the Atmospheric Sciences*, v. 54, no. 2, p. 241–260, at [https://doi.org/10.1175/1520-0469\(1997\)054<0241:TLBSIS>2.0.CO;2](https://doi.org/10.1175/1520-0469(1997)054<0241:TLBSIS>2.0.CO;2).

- Davis, A., Marshak, A., Wiscombe, W., and Cahalan, R.F., 1996, Scale invariance of liquid water distributions in marine stratocumulus. Part I—Spectral properties and stationarity issues: *Journal of the Atmospheric Sciences*, v. 53, no. 11, p. 1538–1558, at [https://doi.org/10.1175/1520-0469\(1996\)053<1538:SIOLWD>2.0.CO;2](https://doi.org/10.1175/1520-0469(1996)053<1538:SIOLWD>2.0.CO;2).
- Davis, A.B., Cahalan, R.F., Spinehirne, D., McGill, M.J., and Love, S.P., 1999, Off-beam lidar—An emerging technique in cloud remote sensing based on radiative Green-function theory in the diffusion domain: *Physics and Chemistry of the Earth, Part B—Hydrology, Oceans and Atmosphere*, v. 24, no. 3, p. 177–185, at [https://doi.org/10.1016/S1464-1909\(98\)00034-3](https://doi.org/10.1016/S1464-1909(98)00034-3).
- Davis, A.B., Love, S.P., Cahalan, R.F., and McGill, M.J., 2002, Off-beam lidar senses cloud thickness and density: *Laser Focus World*, v. 38, no. 10, p. 101–104, at <https://www.laserfocusworld.com/test-measurement/test-measurement/article/16552420/offbeam-lidar-senses-cloud-thickness-and-density>.
- Davis, A.B., Love, S.P., Cahalan, R.F., McGill, M.J., and Winker, D.M., 2002, Active optical remote sensing of dense clouds with diffusing light—Early results, present implementations, and the challenges ahead, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 545–547, at <https://doi.org/10.1109/IGARSS.2002.1025101>.
- Davis, A.B., Marshak, A., and Cahalan, R.F., 2001, Green functions for multiple scattering as mathematical tools for dense-cloud remote sensing—Theory, with passive and active applications, *in* Laser Radar Technology and Applications VI, Orlando, Fla., 16–20 April 2001, Proceedings of SPIE Vol. 4377: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 294–306, at <https://doi.org/10.1117/12.440117>.
- Davis, A.B., Marshak, A., Cahalan, R.F., and Wiscombe, W.J., 1997, Interactions—Solar and laser beams in stratus clouds, fractals & multifractals in climate & remote-sensing studies: *Fractals*, v. 5, no. S2, p. 129–166, at <https://doi.org/10.1142/S0218348X97000875>.
- Davis, C.O., and Carder, K.L., 1997, Requirements-driven design of an imaging spectrometer system for characterization of the coastal environment, *in* Imaging Spectrometry III, San Diego, Calif., 27 July–1 August 1997, Proceedings of SPIE Vol. 3118: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 322–329, at <https://doi.org/10.1117/12.283837>.
- Davis, C.O., Carder, K.L., Gao, B.C., Lee, Z.P., and Paul Bissett, W., 2006, The development of imaging spectrometry of the coastal ocean, *in* 2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Denver, Colo., 31 July–4 August 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1982–1985, at <https://doi.org/10.1109/IGARSS.2006.513>.
- Davis, C.O., Carder, K.L., and Lee, Z.P., 2002, Using hyperspectral imaging to characterize the coastal environment, *in* 2002 IEEE Aerospace Conference, Big Sky, Mont., 9–16 March 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1515–1521, at <https://doi.org/10.1109/AERO.2002.1035289>.
- Davis, R., Yang, Z., Yost, A., Belongie, C., and Cohen, W.B., 2017, The normal fire environment—Modeling environmental suitability for large forest wildfires using past, present, and future climate normals: *Forest Ecology and Management*, v. 390, p. 173–186, at <https://doi.org/10.1016/j.foreco.2017.01.027>.

- Davis, R.E., Hardy, J.P., Ni, W., Woodcock, C.E., McKenzie, J.C., Jordan, R., and Li, X., 1997, Variation of snow cover ablation in the boreal forest—A sensitivity study on the effects of conifer canopy: *Journal of Geophysical Research Atmospheres*, v. 102, no. 24, p. 29389–29395, at <https://doi.org/10.1029/97JD01335>.
- Davis, R.J., Gray, A.N., Kim, J.B., and Cohen, W.B., 2017, Patterns of change across the forested landscape, in Olson, D.H., and Van Horne, B., eds., *People, forests, and change—Lessons from the Pacific Northwest*: Washington, D.C., Island Press, p. 91–101, at https://doi.org/10.5822/978-1-61091-768-1_7.
- De Andrade, C.D.L.T., and Allen, R.G., 1998, SPRINKMOD - Pressure and discharge simulation model for pressurized irrigation systems. 1. Model development and description: *Irrigation Science*, v. 18, no. 3, p. 141–148, at <https://doi.org/10.1007/s002710050055>.
- De Andrade, C.D.L.T., Allen, R.G., and Wells, R.D., 1998, SPRINKMOD - Pressure and discharge simulation model for pressurized irrigation systems. 3. Sensitivity to lateral hydraulic parameters and leakage: *Irrigation Science*, v. 18, no. 3, p. 157–161, at <https://doi.org/10.1007/s002710050057>.
- De Andrade, C.D.L.T., Wells, R.D., and Allen, R.G., 1998, SPRINKMOD - Pressure and discharge simulation model for pressurized irrigation systems. 2. Case study: *Irrigation Science*, v. 18, no. 3, p. 149–156, at <https://doi.org/10.1007/s002710050056>.
- De Bruin, H.A.R., Hartogensis, O.K., Allen, R.G., and Kramer, J.W.J.L., 2005, Regional advection perturbations in an irrigated desert (RAPID) experiment: *Theoretical and Applied Climatology*, v. 80, no. 2–4, p. 143–152, at <https://doi.org/10.1007/s00704-004-0096-x>.
- De Colstoun, E.B., Story, M.H., Thompson, C., Smith, T.G., and Irons, J.R., 2002, Vegetation mapping using multi-temporal ETM+ data and a decision tree classifier, in 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2890–2892, at <https://doi.org/10.1109/IGARSS.2002.1026812>.
- de la Fuente-Sáiz, D., Ortega-Farías, S., Fonseca, D., Ortega-Salazar, S., Kilic, A., and Allen, R.G., 2017, Calibration of METRIC model to estimate energy balance over a drip-irrigated apple orchard: *Remote Sensing*, v. 9, no. 7, article 670, at <https://doi.org/10.3390/rs9070670>.
- De La Fuente-Sáiz, D., Ortega-Farías, S., Ortega-Salazar, S., Carrasco-Benavides, M., Kilic, A., and Allen, R.G., 2017, Estimation of water requirements for a drip-irrigated apple orchard using Landsat 7 satellite images: *Acta Horticulturae*, v. 1150, p. 181–188, at <https://doi.org/10.17660/ActaHortic.2017.1150.26>.
- de Moura, Y.M., Hilker, T., Lyapustin, A.I., Galvão, L.S., dos Santos, J.R., Anderson, L.O., de Sousa, C.H.R., and Arai, E., 2015, Seasonality and drought effects of Amazonian forests observed from multi-angle satellite data: *Remote Sensing of Environment*, v. 171, p. 278–290, at <https://doi.org/10.1016/j.rse.2015.10.015>.
- de Sousa, C.H.R., Hilker, T., Waring, R., de Moura, Y.M., and Lyapustin, A.I., 2017, Progress in remote sensing of photosynthetic activity over the amazon basin: *Remote Sensing*, v. 9, no. 1, article 48, at <https://doi.org/10.3390/rs9010048>.
- Defourny, P., Bicheron, P., Brockman, C., Bontemps, S., Van Bogaert, E., Vancutsem, C., Pekel, J.F., Huc, M., Henry, C.C., et al., 2009, The first 300 m global land cover map for 2005 using ENVISAT MERIS time series—A product of the GlobCover system, in 33rd International Symposium on Remote

- Sensing of Environment, ISRSE 2009, Stresa, Italy, 4–8 May 2009, Proceedings: Joint Research Centre of the European Commission, p. 205–208.
- DeFries, R., Hansen, A., Newton, A.C., and Hansen, M.C., 2005, Increasing isolation of protected areas in tropical forests over the past twenty years: *Ecological Applications*, v. 15, no. 1, p. 19–26, at <https://doi.org/10.1890/03-5258>.
- DeFries, R., Hansen, M.C., Steininger, M., Dubayah, R., Sohlberg, R., and Townshend, J., 1997, Subpixel forest cover in central Africa from multisensor, multitemporal data: *Remote Sensing of Environment*, v. 60, no. 3, p. 228–246, at [https://doi.org/10.1016/S0034-4257\(96\)00119-8](https://doi.org/10.1016/S0034-4257(96)00119-8).
- DeFries, R., Hansen, M.C., and Townshend, J., 1996, Proportional estimation of land cover characteristics from satellite data, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 535–537, at <https://doi.org/10.1109/IGARSS.1996.516395>.
- Defries, R., Zhan, X., Defries, R., Townshend, J.R.G., Dimiceli, C., Hansen, M.C., Huang, C., and Sohlberg, R., 2000, The 250 m global land cover change product from the moderate resolution imaging spectroradiometer of NASA's Earth observing system: *International Journal of Remote Sensing*, v. 21, no. 6–7, p. 1433–1460, at <https://doi.org/10.1080/014311600210254>.
- Defries, R.S., and Belward, A.S., 2000, Global and regional land cover characterization from satellite data—An introduction to the Special Issue: *International Journal of Remote Sensing*, v. 21, no. 6–7, p. 1083–1092, at <https://doi.org/10.1080/014311600210083>.
- Defries, R.S., Hansen, M.C., and Townshend, J.R.G., 2000, Global continuous fields of vegetation characteristics—A linear mixture model applied to multi-year 8 km AVHRR data: *International Journal of Remote Sensing*, v. 21, no. 6–7, p. 1389–1414, at <https://doi.org/10.1080/014311600210236>.
- DeFries, R.S., Hansen, M.C., Townshend, J.R.G., Janetos, A.C., and Loveland, T.R., 2000, A new global 1-km dataset of percentage tree cover derived from remote sensing: *Global Change Biology*, v. 6, no. 2, p. 247–254, at <https://doi.org/10.1046/j.1365-2486.2000.00296.x>.
- DeFries, R.S., Hansen, M.C., Townshend, J.R.G., and Sohlberg, R., 1998, Global land cover classifications at 8 km spatial resolution—The use of training data derived from Landsat imagery in decision tree classifiers: *International Journal of Remote Sensing*, v. 19, no. 16, p. 3141–3168, at <https://doi.org/10.1080/014311698214235>.
- DeFries, R.S., Houghton, R.A., Hansen, M.C., Field, C.B., Skole, D.L., and Townshend, J., 2002, Carbon emissions from tropical deforestation and regrowth based on satellite observations for the 1980s and 1990s: *Proceedings of the National Academy of Sciences of the United States of America*, v. 99, no. 22, p. 14256–14261, at <https://doi.org/10.1073/pnas.182560099>.
- Defries, R.S., Rudel, T., Uriarte, M., and Hansen, M.C., 2010, Deforestation driven by urban population growth and agricultural trade in the twenty-first century: *Nature Geoscience*, v. 3, no. 3, p. 178–181, at <https://doi.org/10.1038/ngeo756>.
- DeFries, R.S., Townshend, J.R.G., and Hansen, M.C., 1999, Continuous fields of vegetation characteristics at the global scale at 1-km resolution: *Journal of Geophysical Research Atmospheres*, v. 104, no. D14, p. 16911–16923, at <https://doi.org/10.1029/1999JD900057>.
- Dekker, A.G., Gege, P., Pinnel, N., Briottet, X., Peters, S.W.M., Sterkx, S., Turpie, K., Giardino, C., Botha, E., et al., 2017, Design considerations for an aquatic ecosystem imaging spectrometer—Results of a

- CEOS feasibility study, *in* *Unlocking Imagination, Fostering Innovation and Strengthening Security—68th International Astronautical Congress, IAC 2017, Adelaide, Australia, 25–29 September 2017*, Proceedings: Paris, France, International Astronautical Federation, p. 4421–4424, at <https://iafastro.directory/iac/paper/id/39607/summary/>.
- Delgado-Bonal, A., Marshak, A., Yang, Y., and Oreopoulos, L., 2020, Daytime variability of cloud fraction from DSCOVR/EPIC observations: *Journal of Geophysical Research Atmospheres*, v. 125, no. 10, article e2019JD031488, at <https://doi.org/10.1029/2019JD031488>.
- Delgado-Bonal, A., Marshak, A., Yang, Y., and Oreopoulos, L., 2021, Global daytime variability of clouds from DSCOVR/EPIC observations: *Geophysical Research Letters*, v. 48, no. 4, article e2020GL091511, at <https://doi.org/10.1029/2020GL091511>.
- Della Ceca, L.S., García Ferreyra, M.F., Lyapustin, A., Chudnovsky, A., Otero, L., Carreras, H., and Barnaba, F., 2018, Satellite-based view of the aerosol spatial and temporal variability in the Córdoba region (Argentina) using over ten years of high-resolution data: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 145, p. 250–267, at <https://doi.org/10.1016/j.isprsjprs.2018.08.016>.
- Dempewolf, J., Adusei, B., Becker-Reshef, I., Barker, B., Potapov, P., Hansen, M.C., and Justice, C.O., 2013, Wheat production forecasting for Pakistan from satellite data, *in* *2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Melbourne, Australia, 21–26 July 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3239–3242, at <https://doi.org/10.1109/IGARSS.2013.6723517>.
- Dempewolf, J., Adusei, B., Becker-Reshef, I., Hansen, M.C., Potapov, P., Khan, A., and Barker, B., 2014, Wheat yield forecasting for Punjab Province from vegetation index time series and historic crop statistics: *Remote Sensing*, v. 6, no. 10, p. 9653–9675, at <https://doi.org/10.3390/rs6109653>.
- Dempsey, J.A., Plantinga, A.J., Kline, J.D., Lawler, J.J., Martinuzzi, S., Radeloff, V.C., and Bigelow, D.P., 2017, Effects of local land-use planning on development and disturbance in riparian areas: *Land Use Policy*, v. 60, p. 16–25, at <https://doi.org/10.1016/j.landusepol.2016.10.011>.
- Deng, C., Li, C., Zhu, Z., Lin, W., and Xi, L., 2017, Evaluating the impacts of atmospheric correction, seasonality, environmental settings, and multi-temporal images on subpixel urban impervious surface area mapping with Landsat data: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 133, p. 89–103, at <https://doi.org/10.1016/j.isprsjprs.2017.09.015>.
- Deng, C., and Zhu, Z., 2020, Continuous subpixel monitoring of urban impervious surface using Landsat time series: *Remote Sensing of Environment*, v. 238, article 110929, at <https://doi.org/10.1016/j.rse.2018.10.011>.
- Dennison, P.E., Lamb, B.T., Campbell, M.J., Kokaly, R.F., Hively, W.D., Vermote, E., Dabney, P., Serbin, G., Quemada, M., et al., 2023, Modeling global indices for estimating non-photosynthetic vegetation cover: *Remote Sensing of Environment*, v. 295, article 113715, at <https://doi.org/10.1016/j.rse.2023.113715>.
- D'Entremont, R.P., Schaaf, C.B., Lucht, W., and Strahler, A.H., 1999, Retrieval of red spectral albedo and bidirectional reflectance using AVHRR HRPT and GOES satellite observations of the New England region: *Journal of Geophysical Research Atmospheres*, v. 104, no. D6, p. 6229–6239, at <https://doi.org/10.1029/1998JD200104>.
- Deo, R.K., Russell, M.B., Domke, G.M., Andersen, H.E., Cohen, W.B., and Woodall, C.W., 2017, Evaluating site-specific and generic spatial models of aboveground forest biomass based on Landsat Time-

- Series and LiDAR strip samples in the Eastern USA: *Remote Sensing*, v. 9, no. 6, article 598, at <https://doi.org/10.3390/rs9060598>.
- Deo, R.K., Russell, M.B., Domke, G.M., Woodall, C.W., Falkowski, M.J., and Cohen, W.B., 2017, Using Landsat time-series and LiDAR to inform aboveground forest biomass baselines in northern Minnesota, USA: *Canadian Journal of Remote Sensing*, v. 43, no. 1, p. 28–47, at <https://doi.org/10.1080/07038992.2017.1259556>.
- Derksen, C., Wulder, M.A., LeDrew, E., and Goodison, B., 1998, Application of the Getis statistic to hemispheric and regional scale passive microwave derived snow water equivalent imagery, *in* 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 977–979, at <https://doi.org/10.1109/IGARSS.1998.699645>.
- Derksen, C., Wulder, M.A., LeDrew, E., and Goodison, B., 1998, Associations between spatially autocorrelated patterns of SSM/I-derived prairie snow cover and atmospheric circulation: *Hydrological Processes*, v. 12, no. 15, p. 2307–2316, at [https://doi.org/10.1002/\(SICI\)1099-1085\(199812\)12:15<2307::AID-HYP798>3.0.CO;2-0](https://doi.org/10.1002/(SICI)1099-1085(199812)12:15<2307::AID-HYP798>3.0.CO;2-0).
- Desanker, P.V., and Justice, C.O., 2001, Africa and global climate change—Critical issues and suggestions for further research and integrated assessment modeling: *Climate Research*, v. 17, no. 2, p. 93–103, at <https://doi.org/10.3354/cr017093>.
- Desanker, P.V., Justice, C.O., Munthali, G., and Masamvu, K., 2005, Requirements for integrated assessment modelling at the regional and national levels in Africa to address climate change, *in* Low, P.S., ed., *Climate change and Africa*: New York, N.Y., Cambridge University Press, p. 260–270, at <https://doi.org/10.1017/CBO9780511535864.034>.
- Descals, A., Szantoi, Z., Beck, P.S.A., Brink, A., and Strobl, P., 2017, Automated detection of selective logging using SmallSat imagery: *IEEE Geoscience and Remote Sensing Letters*, v. 14, no. 12, p. 2180–2184, at <https://doi.org/10.1109/LGRS.2017.2720841>.
- Descheemaeker, K., Raes, D., Allen, R.G., Nyssen, J., Poesen, J., Muys, B., Haile, M., and Deckers, J., 2011, Two rapid appraisals of FAO-56 crop coefficients for semiarid natural vegetation of the northern Ethiopian highlands: *Journal of Arid Environments*, v. 75, no. 4, p. 353–359, at <https://doi.org/10.1016/j.jaridenv.2010.12.002>.
- Descloitres, J., Roy, D.P., and Couvert, P., 2000, Evidence and implications of solar eclipses in short wavelength global remotely sensed data: *International Journal of Remote Sensing*, v. 21, no. 9, p. 1961–1967, at <https://doi.org/10.1080/014311600209887>.
- Descloitres, J., Sohlberg, R., Owens, J., Giglio, L., Justice, C.O., Carroll, M., Seaton, J., Crisologo, M., Finco, M., et al., 2002, The MODIS rapid response project, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1191–1192, at <https://doi.org/10.1109/IGARSS.2002.1025879>.
- Descour, M.R., Volin, C.E., Dereniak, E.L., Thome, K.J., Schumacher, A.B., Wilson, D.W., and Maker, P.D., 1997, Demonstration of a high-speed non-scanning imaging spectrometer: *Optics Letters*, v. 22, no. 16, p. 1271–1273, at <https://doi.org/10.1364/OL.22.001271>.
- Descour, M.R., Volin, C.E., Sabatke, D.S., Dereniak, E.L., Thome, K.J., Schumacher, A.B., Wilson, D.W., and Maker, P.D., 1998, Demonstration of a high speed non-scanning imaging spectrometer, *in* *Infrared Detectors and Focal Plane Arrays V*, Orlando, Fla., 13–17 April 1998, Proceedings of SPIE

- Vol. 3379: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 250–258, at <https://doi.org/10.1117/12.317633>.
- Devaraj, C., Gartley, M., and Schott, J.R., 2013, Influence of polarization phenomenology on material discriminability using multi-view polarimetric imagery, *in* Polarization Science and Remote Sensing VI, San Diego, Calif., 26–29 August 2013, Proceedings of SPIE Vol. 8873: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 88730c, at <https://doi.org/10.1117/12.2022605>.
- Devaraju, N., Bala, G., Caldeira, K., and Nemani, R.R., 2016, A model based investigation of the relative importance of CO₂-fertilization, climate warming, nitrogen deposition and land use change on the global terrestrial carbon uptake in the historical period: *Climate Dynamics*, v. 47, no. 1–2, p. 173–190, at <https://doi.org/10.1007/s00382-015-2830-8>.
- Devaraju, N., Bala, G., and Nemani, R.R., 2015, Modelling the influence of land-use changes on biophysical and biochemical interactions at regional and global scales: *Plant, Cell and Environment*, v. 38, no. 9, p. 1931–1946, at <https://doi.org/10.1111/pce.12488>.
- Devaraju, N., Cao, L., Bala, G., Caldeira, K., and Nemani, R.R., 2011, A model investigation of vegetation-atmosphere interactions on a millennial timescale: *Biogeosciences*, v. 8, no. 12, p. 3677–3686, at <https://doi.org/10.5194/bg-8-3677-2011>.
- Dheeravath, V., Thenkabail, P.S., Chandrakantha, G., Noojipady, P., Reddy, G.P.O., Biradar, C.M., Gumma, M.K., and Velpuri, M., 2010, Irrigated areas of India derived using MODIS 500 m time series for the years 2001-2003: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 65, no. 1, p. 42–59, at <https://doi.org/10.1016/j.isprsjprs.2009.08.004>.
- Dhu, T., Sagar, S., Mueller, N., Dunn, B., Lewis, A., Lymburner, L., McIntyre, A., Minchin, S., Oliver, S., et al., 2017, Applications of digital Earth Australia—From satellite data to better decisions, *in* Unlocking Imagination, Fostering Innovation and Strengthening Security—68th International Astronautical Congress, IAC 2017, Adelaide, Australia, 25–29 September 2017, Proceedings: Paris, France, International Astronautical Federation, p. 4678–4681, at <https://iafastro.directory/iac/paper/id/39411/summary/>.
- Dhungel, R., Allen, R.G., and Trezza, R., 2016, Improving iterative surface energy balance convergence for remote sensing based flux calculation: *Journal of Applied Remote Sensing*, v. 10, no. 2, article 026033, at <https://doi.org/10.1117/1.JRS.10.026033>.
- Dhungel, R., Allen, R.G., Trezza, R., and Robison, C.W., 2014, Comparison of latent heat flux using aerodynamic methods and using the penman-monteith method with satellite-based surface energy balance: *Remote Sensing*, v. 6, no. 9, p. 8844–8877, at <https://doi.org/10.3390/rs6098844>.
- Dhungel, R., Allen, R.G., Trezza, R., and Robison, C.W., 2016, Evapotranspiration between satellite overpasses—Methodology and case study in agricultural dominant semi-arid areas: *Meteorological Applications*, v. 23, no. 4, p. 714–730, at <https://doi.org/10.1002/met.1596>.
- Di, Q., Amini, H., Shi, L., Kloog, I., Silvern, R., Kelly, J., Sabath, M.B., Choirat, C., Koutrakis, P., et al., 2019, An ensemble-based model of PM_{2.5} concentration across the contiguous United States with high spatiotemporal resolution: *Environment International*, v. 130, article 104909, at <https://doi.org/10.1016/j.envint.2019.104909>.
- Di, Q., Amini, H., Shi, L., Kloog, I., Silvern, R., Kelly, J., Sabath, M.B., Choirat, C., Koutrakis, P., et al., 2020, Assessing NO₂ concentration and model uncertainty with high spatiotemporal resolution across

- the contiguous United States using ensemble model averaging: *Environmental Science and Technology*, v. 54, no. 3, p. 1372–1384, at <https://doi.org/10.1021/acs.est.9b03358>.
- Di, Q., Kloog, I., Koutrakis, P., Lyapustin, A.I., Wang, Y., and Schwartz, J., 2016, Assessing PM_{2.5} exposures with high spatiotemporal resolution across the continental United States: *Environmental Science and Technology*, v. 50, no. 9, p. 4712–4721, at <https://doi.org/10.1021/acs.est.5b06121>.
- Di Tommaso, S., Wang, S., Vajipey, V., Gorelick, N., Strey, R., and Lobell, D.B., 2023, Annual field-scale maps of tall and short crops at the global scale using GEDI and Sentinel-2: *Remote Sensing*, v. 15, no. 17, article 4123, at <https://doi.org/10.3390/rs15174123>.
- Diak, G.R., Anderson, M.C., Bland, W.L., Norman, J.M., Mecikalski, J.M., and Aune, R.M., 1998, Agricultural-Management Decision Aids Driven by Real-Time Satellite Data: *Bulletin of the American Meteorological Society*, v. 79, no. 7, p. 1345–1355, at [https://doi.org/10.1175/1520-0477\(1998\)079<1345:AMDADB>2.0.CO;2](https://doi.org/10.1175/1520-0477(1998)079<1345:AMDADB>2.0.CO;2).
- Diak, G.R., Bland, W.L., Mecikalski, J.R., and Anderson, M.C., 2000, Satellite-based estimates of longwave radiation for agricultural applications: *Agricultural and Forest Meteorology*, v. 103, no. 4, p. 349–355, at [https://doi.org/10.1016/S0168-1923\(00\)00141-6](https://doi.org/10.1016/S0168-1923(00)00141-6).
- Diak, G.R., Mecikalski, J.R., Anderson, M.C., Norman, J.M., Kustas, W.P., Torn, R.D., and DeWolf, R.L., 2004, Estimating Land Surface Energy Budgets from Space—Review and Current Efforts at the University of Wisconsin - Madison and USDA-ARS: *Bulletin of the American Meteorological Society*, v. 85, no. 1, p. 65–78, at <https://doi.org/10.1175/BAMS-85-1-65>.
- Diao, C., Yang, Z., Gao, F., Zhang, X., and Yang, Z., 2021, Hybrid phenology matching model for robust crop phenological retrieval: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 181, p. 308–326, at <https://doi.org/10.1016/j.isprsjprs.2021.09.011>.
- Dickinson, R.E., Zhou, L., Tian, Y., Liu, Q., Lavergne, T., Pinty, B., Schaaf, C.B., and Knyazikhin, Y., 2008, A three-dimensional analytic model for the scattering of a spherical bush: *Journal of Geophysical Research Atmospheres*, v. 113, no. 20, article D20113, at <https://doi.org/10.1029/2007JD009564>.
- Dieng, M., Mbow, C., Skole, D.L., and Ba, B., 2023, Sustainable land management policy to address land degradation—Linking old forest management practices in Senegal with new REDD+ requirements: *Frontiers in Environmental Science*, v. 11, article 1088726, at <https://doi.org/10.3389/fenvs.2023.1088726>.
- Diermayer, E., and Hostert, P., 2007, Assessing post-socialist urban change with Landsat data case study Berlin, Germany, in *Urban Remote Sensing Joint Event, Paris, France, 11–13 April 2007*, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), paper no. 4234470, at <https://doi.org/10.1109/URS.2007.371871>.
- Dieye, A.M., and Roy, D.P., 2012, A study of rural senegalese attitudes and perceptions of their behavior to changes in the climate: *Environmental Management*, v. 50, no. 5, p. 929–941, at <https://doi.org/10.1007/s00267-012-9932-4>.
- Dieye, A.M., Roy, D.P., Hanan, N.P., Liu, S., Hansen, M.C., and Touré, A., 2012, Sensitivity analysis of the GEMS soil organic carbon model to land cover land use classification uncertainties under different climate scenarios in senegal: *Biogeosciences*, v. 9, no. 2, p. 631–648, at <https://doi.org/10.5194/bg-9-631-2012>.

- Dikshit, O., and Roy, D.P., 1996, An empirical investigation of image resampling effects upon the spectral and textural supervised classification of a high spatial resolution multispectral image: *Photogrammetric Engineering and Remote Sensing*, v. 62, no. 9, p. 1085–1092, at https://www.asprs.org/wp-content/uploads/pers/1996journal/sep/1996_sep_1085-1092.pdf.
- Dimitrijevic, A.M., and Strobl, P.A., 2020, Continuous 2D maps based on spherical cube datasets, *in* 55th International Scientific Conference on Information, Communication and Energy Systems and Technologies, ICEST 2020, Niš, Serbia, 10–12 September 2020, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 19–22, at <https://doi.org/10.1109/ICEST49890.2020.9232678>.
- Diner, D.J., Asner, G.P., Davies, R., Knyazikhin, Y., Muller, J.P., Nolin, A.W., Pinty, B., Schaaf, C.B., and Stroeve, J., 1999, New Directions in Earth Observing—Scientific Applications of Multiangle Remote Sensing: *Bulletin of the American Meteorological Society*, v. 80, no. 11, p. 2209–2228, at [https://doi.org/10.1175/1520-0477\(1999\)080<2209:NDIEOS>2.0.CO;2](https://doi.org/10.1175/1520-0477(1999)080<2209:NDIEOS>2.0.CO;2).
- Diner, D.J., Boland, S.W., Brauer, M., Bruegge, C., Burke, K.A., Chipman, R., Di Girolamo, L., Garay, M.J., Hasheminassab, S., et al., 2018, Advances in multiangle satellite remote sensing of speciated airborne particulate matter and association with adverse health effects—From MISR to MAIA: *Journal of Applied Remote Sensing*, v. 12, no. 4, article 042603, at <https://doi.org/10.1117/1.JRS.12.042603>.
- Diner, D.J., Braswell, B.H., Davies, R., Gobron, N., Hu, J., Jin, Y., Kahn, R.A., Knyazikhin, Y., Loeb, N., et al., 2005, The value of multiangle measurements for retrieving structurally and radiatively consistent properties of clouds, aerosols, and surfaces: *Remote Sensing of Environment*, v. 97, no. 4, p. 495–518, at <https://doi.org/10.1016/j.rse.2005.06.006>.
- Dinerstein, E., Olson, D., Joshi, A., Vynne, C., Burgess, N.D., Wikramanayake, E., Hahn, N., Palminteri, S., Hedao, P., et al., 2017, An ecoregion-based approach to protecting half the terrestrial realm: *BioScience*, v. 67, no. 6, p. 534–545, at <https://doi.org/10.1093/biosci/bix014>.
- Disney, M., Burt, A., Calders, K., Schaaf, C., and Stovall, A., 2019, Innovations in ground and airborne technologies as reference and for training and validation—Terrestrial laser scanning (TLS): *Surveys in Geophysics*, v. 40, no. 4, p. 937–958, at <https://doi.org/10.1007/s10712-019-09527-x>.
- Disney, M.I., Lewis, P., Gomez-Dans, J., Roy, D.P., Wooster, M.J., and Lajas, D., 2011, 3D radiative transfer modelling of fire impacts on a two-layer savanna system: *Remote Sensing of Environment*, v. 115, no. 8, p. 1866–1881, at <https://doi.org/10.1016/j.rse.2011.03.010>.
- Dobbs, B.M., Sanders, N.J., and Schott, J.R., 2006, The incorporation of atmospheric variability in hyperspectral synthetic scene simulation, *in* *Imaging Spectrometry XI*, San Diego, Calif., 14–16 August 2006, Proceedings of SPIE Vol. 6302: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 63020C, at <http://www.spie.org/Publications/Proceedings/Paper/10.1117/12.682733>.
- Dolan, K., Masek, J.G., Huang, C., and Sun, G., 2009, Regional forest growth rates measured by combining ICESat GLAS and Landsat data: *Journal of Geophysical Research Biogeosciences*, v. 114, no. 4, article G00E05, at <https://doi.org/10.1029/2008JG000893>.
- Dolan, K.A., Hurtt, G.C., Chambers, J.Q., Dubayah, R.O., Frolking, S., and Masek, J.G., 2011, Using ICESat's Geoscience Laser Altimeter System (GLAS) to assess large-scale forest disturbance caused by hurricane Katrina: *Remote Sensing of Environment*, v. 115, no. 1, p. 86–96, at <https://doi.org/10.1016/j.rse.2010.08.007>.

- Dolan, K.A., Hurtt, G.C., Flanagan, S.A., Fisk, J.P., Sahajpal, R., Huang, C., Page, Y.L., Dubayah, R., and Masek, J.G., 2017, Disturbance distance—Quantifying forests' vulnerability to disturbance under current and future conditions: *Environmental Research Letters*, v. 12, no. 11, article 114015, at <https://doi.org/10.1088/1748-9326/aa8ea9>.
- Doll, C.N.H., Muller, J.P., Schaaf, C.B., Strahler, A.H., and Gao, F., 2001, Mapping urban landcover using the bidirectional reflectance distribution function BRDF/Albedo product from the Moderate Resolution Imaging Spectroradiometer (MODIS), in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2680–2682, at <https://doi.org/10.1109/IGARSS.2001.978128>.
- Dolman, A.J., Belward, A.S., Briggs, S., Dowell, M., Eggleston, S., Hill, K., Richter, C., and Simmons, A., 2016, A post-Paris look at climate observations: *Nature Geoscience*, v. 9, no. 9, p. 646–646, at <https://doi.org/10.1038/ngeo2785>.
- Donchyts, G., Baart, F., Winsemius, H., Gorelick, N.S., Kwadijk, J., and Van De Giesen, N., 2016, Earth's surface water change over the past 30 years: *Nature Climate Change*, v. 6, no. 9, p. 810–813, at <https://doi.org/10.1038/nclimate3111>.
- Donchyts, G., Winsemius, H., Baart, F., Dahm, R., Schellekens, J., Gorelick, N., Iceland, C., and Schmeier, S., 2022, Author Correction—High-resolution surface water dynamics in Earth's small and medium-sized reservoirs (*Scientific Reports*, (2022), 12, 1, (13776), 10.1038/s41598-022-17074-6): *Scientific Reports*, v. 12, no. 1, article 15710, at <https://doi.org/10.1038/s41598-022-20467-2>.
- Donchyts, G., Winsemius, H., Baart, F., Dahm, R., Schellekens, J., Gorelick, N., Iceland, C., and Schmeier, S., 2022, High-resolution surface water dynamics in Earth's small and medium-sized reservoirs: *Scientific Reports*, v. 12, no. 1, article 13776, at <https://doi.org/10.1038/s41598-022-17074-6>.
- Donegan, S.J., and Flynn, L.P., 2004, Comparison of the response of the Landsat 7 Enhanced Thematic Mapper Plus and the Earth Observing-1 Advanced Land Imager over active lava flows: *Journal of Volcanology and Geothermal Research*, v. 135, no. 1–2, p. 105–126, at <https://doi.org/10.1016/j.jvolgeores.2003.12.010>.
- Dong, J., Metternicht, G., Hostert, P., Fensholt, R., and Chowdhury, R.R., 2019, Remote sensing and geospatial technologies in support of a normative land system science—Status and prospects: *Current Opinion in Environmental Sustainability*, v. 38, p. 44–52, at <https://doi.org/10.1016/j.cosust.2019.05.003>.
- Donnellan, A., Bills, B., Green, J.J., Goullioud, R., Jones, S., Knight, R., Underhill, M., Goguen, J., De Jong, E.M., et al., 2014, Studying mountain glacier processes using a staring instrument, in IEEE Aerospace Conference, Big Sky, Mont., 1–8 March 2014, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1–17, at <https://doi.org/10.1109/AERO.2014.6836284>.
- Dotto, T.S., Heywood, K.J., Hall, R.A., Scambos, T.A., Zheng, Y., Nakayama, Y., Hyogo, S., Snow, T., Wåhlin, A.K., et al., 2022, Ocean variability beneath Thwaites Eastern Ice Shelf driven by the Pine Island Bay Gyre strength: *Nature Communications*, v. 13, no. 1, article 7840, at <https://doi.org/10.1038/s41467-022-35499-5>.
- Douglas, E.S., Martel, J., Li, Z., Howe, G., Hewawasam, K., Marshall, R.A., Schaaf, C.L., Cook, T.A., Newnham, G.J., et al., 2015, Finding leaves in the forest—The dual-wavelength Echidna lidar:

- IEEE Geoscience and Remote Sensing Letters, v. 12, no. 4, p. 776–780, at <https://doi.org/10.1109/LGRS.2014.2361812>.
- Douglas, E.S., Strahler, A., Martel, J., Cook, T., Mendillo, C., Marshall, R., Chakrabarti, S., Schaaf, C.B., Woodcock, C.E., et al., 2012, DWEL—A Dual-Wavelength Echidna Lidar for ground-based forest scanning, *in* 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Munich, Germany, 22–27 July 2012, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4998–5001, at <https://doi.org/10.1109/IGARSS.2012.6352489>.
- Douglas McCuiston, J., Wende, C.D., and Irons, J.R., 2003, Landsat Data Continuity Mission—Creating a unique government-industry partnership for global research, *in* 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1891–1893, at <https://doi.org/10.1109/IGARSS.2003.1294284>.
- Doxani, G., Vermote, E.F., Roger, J.C., Gascon, F., Adriaensen, S., Frantz, D., Hagolle, O., Hollstein, A., Kirches, G., et al., 2018, Atmospheric correction inter-comparison exercise: Remote Sensing, v. 10, no. 2, article 352, at <https://doi.org/10.3390/rs10020352>.
- Doxani, G., Vermote, E.F., Roger, J.C., Skakun, S., Gascon, F., Collison, A., De Keukelaere, L., Desjardins, C., Frantz, D., et al., 2023, Atmospheric Correction Inter-comparison eXercise, ACIX-II Land—An assessment of atmospheric correction processors for Landsat 8 and Sentinel-2 over land: Remote Sensing of Environment, v. 285, article 113412, at <https://doi.org/10.1016/j.rse.2022.113412>.
- Droogers, P., and Allen, R.G., 2002, Estimating reference evapotranspiration under inaccurate data conditions: Irrigation and Drainage Systems, v. 16, no. 1, p. 33–45, at <https://doi.org/10.1023/A:1015508322413>.
- Drummond, M.A., Auch, R.F., Karstensen, K.A., Saylor, K.L., Taylor, J.L., and Loveland, T.R., 2012, Land change variability and human-environment dynamics in the United States Great Plains: Land Use Policy, v. 29, no. 3, p. 710–723, at <https://doi.org/10.1016/j.landusepol.2011.11.007>.
- Drummond, M.A., and Loveland, T.R., 2010, Land-use pressure and a transition to forest-cover loss in the eastern United States: BioScience, v. 60, no. 4, p. 286–298, at <https://doi.org/10.1525/bio.2010.60.4.7>.
- D'Sa, E.J., Hu, C., Muller-Karger, F.E., and Carder, K.L., 2002, Estimation of colored dissolved organic matter and salinity fields in case 2 waters using Sea WiFS—Examples from Florida Bay and Florida Shelf: Journal of Earth System Science, v. 111, no. 3, p. 197–207, at <https://doi.org/10.1007/BF02701966>.
- D'Souza, G., Belward, A.S., and Malingreau, J.-P., 1996, Advances in the use of NOAA AVHRR data for land applications: Dordrecht, Netherlands, Springer, 481 p., at <https://doi.org/10.1007/978-94-009-0203-9>.
- Du, K., Lee, Z., and Carder, K.L., 2006, Closure between remote sensing reflectance and inherent optical properties, *in* Remote Sensing of the Marine Environment, Goa, India, 15–17 November 2006, Proceedings of SPIE Vol. 6406: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 64061k, at <https://doi.org/10.1117/12.693696>.
- Du, K., Zhao, F., ZhongPing, L., He, M., Liu, Z., and Carder, K.L., 2004, Angular variation of remote-sensing reflectance and the influence of particle phase functions, *in* 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004,

- Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 845–848, at <https://doi.org/10.1109/IGARSS.2004.1368537>.
- Duane, M.V., Cohen, W.B., Campbell, J.L., Hudiburg, T., Turner, D.P., and Weyermann, D.L., 2010, Implications of alternative field-sampling designs on Landsat-based mapping of stand age and carbon stocks in Oregon forests: *Forest Science*, v. 56, no. 4, p. 405–416, at <https://doi.org/10.1093/forestscience/56.4.405>.
- Dubayah, R., Armston, J., Healey, S.P., Bruening, J.M., Patterson, P.L., Kellner, J.R., Duncanson, L., Saarela, S., Ståhl, G., et al., 2022, GEDI launches a new era of biomass inference from space: *Environmental Research Letters*, v. 17, no. 9, article 095001, at <https://doi.org/10.1088/1748-9326/ac8694>.
- Dubinin, M., Lushchekina, A., and Radeloff, V.C., 2011, Climate, livestock, and vegetation—What drives fire increase in the arid ecosystems of southern Russia?: *Ecosystems*, v. 14, no. 4, p. 547–562, at <https://doi.org/10.1007/s10021-011-9427-9>.
- Dubinin, M., Lushchekina, A., and Radeloff, V.C., 2010, Performance and accuracy of Argos transmitters for wildlife monitoring in Southern Russia: *European Journal of Wildlife Research*, v. 56, no. 3, p. 459–463, at <https://doi.org/10.1007/s10344-009-0354-4>.
- Dubinin, M., Potapov, P., Lushchekina, A., and Radeloff, V.C., 2010, Reconstructing long time series of burned areas in arid grasslands of southern Russia by satellite remote sensing: *Remote Sensing of Environment*, v. 114, no. 8, p. 1638–1648, at <https://doi.org/10.1016/j.rse.2010.02.010>.
- Dubinin, M.Y., Lushchekina, A.A., and Radeloff, V.C., 2011, Assessment of the present dynamics of fires in arid ecosystems by use of remote sensing data—The case of chernye zemli: *Arid Ecosystems*, v. 1, no. 3, p. 184–192, at <https://doi.org/10.1134/S2079096111030061>.
- Dubois, G., Clerici, M., Pekel, J.F., Brink, A., Palumbo, I., Gross, D., Peedell, S., Simonetti, D., and Punga, M., 2011, On the contribution of remote sensing to DOPA, a digital observatory for protected areas, in *The GEOSS Era, Towards Operational Environmental Monitoring—34th International Symposium on Remote Sensing of Environment*, Sydney, Australia, 10–15 April 2011, Proceedings: International Society for Photogrammetry and Remote Sensing, p. 1–4, at <http://www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00044.pdf>.
- Duchesne, R.R., Chopping, M.J., Tape, K.D., Wang, Z., and Schaaf, C.L.B., 2018, Changes in tall shrub abundance on the North Slope of Alaska, 2000–2010: *Remote Sensing of Environment*, v. 219, p. 221–232, at <https://doi.org/10.1016/j.rse.2018.10.009>.
- Duffy, K., Vandal, T.J., and Nemani, R.R., 2022, Multisensor machine learning to retrieve high spatiotemporal resolution land surface temperature: *IEEE Access*, v. 10, p. 89221–89231, at <https://doi.org/10.1109/ACCESS.2022.3198673>.
- Duffy, K., Vandal, T.J., Wang, W., Nemani, R.R., and Ganguly, A.R., 2023, A framework for deep learning emulation of numerical models with a case study in satellite remote sensing: *IEEE Transactions on Neural Networks and Learning Systems*, v. 34, no. 7, p. 3345–3356, at <https://doi.org/10.1109/TNNLS.2022.3169958>.
- Dugan, A.J., Birdsey, R., Healey, S.P., Pan, Y., Zhang, F., Mo, G., Chen, J., Woodall, C.W., Hernandez, A.J., et al., 2017, Forest sector carbon analyses support land management planning and projects—Assessing the influence of anthropogenic and natural factors: *Climatic Change*, v. 144, no. 2, p. 207–220, at <https://doi.org/10.1007/s10584-017-2038-5>.

- Duncan, C., Masek, J.G., and Fielding, E., 2003, How steep are the Himalaya? Characteristics and implications of along-strike topographic variations: *Geology*, v. 31, no. 1, p. 75–78, at [https://doi.org/10.1130/0091-7613\(2003\)031<0075:HSATHC>2.0.CO;2](https://doi.org/10.1130/0091-7613(2003)031<0075:HSATHC>2.0.CO;2).
- Duncan, C.C., Klein, A.J., Masek, J.G., and Isacks, B.L., 1998, Comparison of late Pleistocene and modern glacier extents in central Nepal based on digital elevation data and satellite imagery: *Quaternary Research*, v. 49, no. 3, p. 241–254, at <https://doi.org/10.1006/qres.1998.1958>.
- Duncanson, L., Kellner, J.R., Armston, J., Dubayah, R., Minor, D.M., Hancock, S., Healey, S.P., Patterson, P.L., Saarela, S., et al., 2022, Aboveground biomass density models for NASA's Global Ecosystem Dynamics Investigation (GEDI) lidar mission: *Remote Sensing of Environment*, v. 270, article 112845, at <https://doi.org/10.1016/j.rse.2021.112845>.
- Duncanson, L., Neuenschwander, A., Silva, C.A., Montesano, P., Guenther, E., Thomas, N., Hancock, S., Minor, D., White, J., et al., 2021, Forest aboveground biomass estimation with GEDI and ICESat-2 in boreal forests, in 2021 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Brussels, Belgium, 12–16 July 2021, Proceedings: Piscataway, N.J., Piscataway, N.J., p. 670–672, at <https://doi.org/10.1109/IGARSS47720.2021.9553209>.
- Duncanson, L.I., Niemann, K.O., and Wulder, M.A., 2010, Estimating forest canopy height and terrain relief from GLAS waveform metrics: *Remote Sensing of Environment*, v. 114, no. 1, p. 138–154, at <https://doi.org/10.1016/j.rse.2009.08.018>.
- Duncanson, L.I., Niemann, K.O., and Wulder, M.A., 2010, Integration of GLAS and Landsat TM data for aboveground biomass estimation: *Canadian Journal of Remote Sensing*, v. 36, no. 2, p. 129–141, at <https://doi.org/10.5589/m10-037>.
- Dungan, J.L., Wang, W., Michaelis, A., Votava, P., and Nemani, R.R., 2010, Sources of uncertainty in predicting land surface fluxes using diverse data and models, in 9th International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences, Accuracy 2010, Leicester, UK, 20–23 July 2010, Proceedings: Moffett Field, Calif., NASA Ames Research Center, p. 69–72, at <https://ntrs.nasa.gov/search.jsp?R=20100036784>.
- Dunn, B., Ai, E., Alger, M.J., Fanson, B., Fickas, K.C., Krause, C.E., Lymburner, L., Nanson, R., Papas, P., et al., 2023, Wetlands insight tool—Characterising the surface water and vegetation cover dynamics of individual wetlands using multidecadal Landsat satellite data: *Wetlands*, v. 43, no. 4, at <https://doi.org/10.1007/s13157-023-01682-7>.
- Dunn, B., Lymburner, L., Newey, V., Hicks, A., and Carey, H., 2019, Developing a tool for wetland characterization using fractional cover, tasseled cap wetness and water observations from space, in 2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6095–6097, at <https://doi.org/10.1109/IGARSS.2019.8897806>.
- Duro, D.C., Coops, N.C., Wulder, M.A., and Han, T., 2007, Development of a large area biodiversity monitoring system driven by remote sensing: *Progress in Physical Geography*, v. 31, no. 3, p. 235–260, at <https://doi.org/10.1177/0309133307079054>.
- Dwyer, J.L., 2006, Remotely sensed data available from the US Geological Survey EROS Data Center, in Qu, J.J., Gao, W., Kafatos, M., Murphy, R.E., and Salomonson, V.V., eds., *Earth science satellite remote sensing—Data, computational processing, and tools*: Berlin, Germany, Springer, p. 18–51, at https://doi.org/10.1007/978-3-540-37294-3_3.

- Dwyer, J.L., Dinardo, T., and Muchoney, D., 2011, Developing climate data records and essential climate variables from Landsat data, *in* Towards operational environmental monitoring, International Symposium on Remote Sensing of Environment—The GEOSS Era, 34th, Sydney, Australia, 10–15 April 2011, Proceedings: Tuscon, Ariz., International Center for Remote Sensing of Environment, p. 1–3, at <https://www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00685.pdf>.
- Dwyer, J.L., Roy, D.P., Sauer, B., Jenkerson, C.B., Zhang, H.K., and Lymburner, L., 2018, Analysis ready data—Enabling analysis of the Landsat archive: *Remote Sensing*, v. 10, no. 9, article 1363, at <https://doi.org/10.3390/rs10091363>.
- Dwyer, J.L., Saylor, K.L., and Zylstra, G.J., 1996, Landsat pathfinder data sets for landscape change analysis, *in* 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 547–550, at <https://doi.org/10.1109/IGARSS.1996.516399>.
- Dwyer, J.L., and Schmidt, G.L., 2006, The MODIS reprojection tool, *in* Qu, J.J., Gao, W., Kafatos, M., Murphy, R.E., and Salomonson, V.V., eds., *Earth science satellite remote sensing—Data, computational processing, and tools*: Berlin, Germany, Springer, p. 162–177, at https://doi.org/10.1007/978-3-540-37294-3_9.
- Dymond, C.C., Mladenoff, D.J., and Radeloff, V.C., 2002, Phenological differences in Tasseled Cap indices improve deciduous forest classification: *Remote Sensing of Environment*, v. 80, no. 3, p. 460–472, at [https://doi.org/10.1016/S0034-4257\(01\)00324-8](https://doi.org/10.1016/S0034-4257(01)00324-8).
- Dymond, C.C., Wulder, M.A., Shore, T.L., Nelson, T., Boots, B., and Riel, B.G., 2006, Evaluation of risk assessment of mountain pine beetle infestations: *Western Journal of Applied Forestry*, v. 21, no. 1, p. 5–13, at <https://doi.org/10.1093/wjaf/21.1.5>.
- Eck, T.F., Holben, B.N., Giles, D.M., Slutsker, I., Sinyuk, A., Schafer, J.S., Smirnov, A., Sorokin, M., Reid, J.S., et al., 2019, AERONET remotely sensed measurements and retrievals of biomass burning aerosol optical properties during the 2015 Indonesian burning season: *Journal of Geophysical Research Atmospheres*, v. 124, no. 8, p. 4722–4740, at <https://doi.org/10.1029/2018JD030182>.
- Eck, T.F., Holben, B.N., Reid, J.S., Arola, A., Ferrare, R.A., Hostetler, C.A., Crumeyrolle, S.N., Berkoff, T.A., Welton, E.J., et al., 2014, Observations of rapid aerosol optical depth enhancements in the vicinity of polluted cumulus clouds: *Atmospheric Chemistry and Physics*, v. 14, no. 21, p. 11633–11656, at <https://doi.org/10.5194/acp-14-11633-2014>.
- Eck, T.F., Holben, B.N., Reid, J.S., Sinyuk, A., Hyer, E.J., O'Neill, N.T., Shaw, G.E., Vande Castle, J.R., Chapin, F.S., et al., 2009, Optical properties of boreal region biomass burning aerosols in central Alaska and seasonal variation of aerosol optical depth at an Arctic coastal site: *Journal of Geophysical Research Atmospheres*, v. 114, no. 11, article D11201, at <https://doi.org/10.1029/2008JD010870>.
- Eck, T.F., Holben, B.N., Reid, J.S., Xian, P., Giles, D.M., Sinyuk, A., Smirnov, A., Schafer, J.S., Slutsker, I., et al., 2018, Observations of the interaction and transport of fine mode aerosols with cloud and/or fog in Northeast Asia from aerosol robotic network and satellite remote sensing: *Journal of Geophysical Research Atmospheres*, v. 123, no. 10, p. 5560–5587, at <https://doi.org/10.1029/2018JD028313>.
- Edwards, A., Hauser, P., Anderson, M.C., McCartney, J., Armstrong, M., Thackway, R., Allan, G., Hempel, C., and Russell-Smith, J., 2001, A tale of two parks—Contemporary fire regimes of Litchfield and

- Nitmiluk National Parks, monsoonal northern Australia: *International Journal of Wildland Fire*, v. 10, no. 1, p. 79–89, at <https://doi.org/10.1071/WF01002>.
- Edwards, C.S., Nowicki, K.J., Christensen, P.R., Hill, J., Gorelick, N.S., and Murray, K., 2011, Mosaicking of global planetary image datasets—1. Techniques and data processing for Thermal Emission Imaging System (THEMIS) multi-spectral data: *Journal of Geophysical Research Planets*, v. 116, no. 10, article E10008, at <https://doi.org/10.1029/2010JE003755>.
- Efremova, B., McCorkel, J., Krimchansky, A., Hair, J., and Andrade, M., 2020, Validation of GOES-17 ABI reflective channels performance—Salar de Uyuni 2018 field campaign results, *in Earth Observing Systems XXV 2020*, online virtual meeting, 24 August–4 September 2020, *Proceedings of SPIE Vol. 11501*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 115011b, at <https://doi.org/10.1117/12.2568601>.
- Efremova, B., Pearlman, A.J., McCorkel, J., Montanaro, M., Hickey, M., Lunsford, A., and Reuter, D., 2018, Landsat 9 thermal infrared sensor 2 subsystem-level spectral test results, *in 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Valencia, Spain, 22–27 July 2018, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 8849–8852, at <https://doi.org/10.1109/IGARSS.2018.8518669>.
- Eftekhazadeh, S., Wenny, B.N., and Thome, K.J., 2023, On-orbit spatial calibration performance of Landsat 8 and 9 thermal infrared sensors, *in Infrared Remote Sensing and Instrumentation XXXI*, San Diego, Calif., 20–25 August 2023, *Proceedings of SPIE Vol. 12686*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1268603, at <https://doi.org/10.1117/12.2675861>.
- Egorov, A., Roy, D.P., and Boschetti, L., 2023, Generation and comprehensive validation of 30 m conterminous United States Landsat percent tree cover and forest cover loss annual products: *Science of Remote Sensing*, v. 7, article 100084, at <https://doi.org/10.1016/j.srs.2023.100084>.
- Egorov, A.V., Hansen, M.C., Roy, D.P., Kommareddy, A., and Potapov, P.V., 2015, Image interpretation-guided supervised classification using nested segmentation: *Remote Sensing of Environment*, v. 165, p. 135–147, at <https://doi.org/10.1016/j.rse.2015.04.022>.
- Egorov, A.V., Roy, D.P., Zhang, H.K., Hansen, M.C., and Kommareddy, A., 2018, Demonstration of percent tree cover mapping using Landsat Analysis Ready Data (ARD) and sensitivity with respect to Landsat ARD processing level: *Remote Sensing*, v. 10, no. 2, article 209, at <https://doi.org/10.3390/rs10020209>.
- Egorov, A.V., Roy, D.P., Zhang, H.K., Li, Z., Yan, L., and Huang, H., 2019, Landsat 4, 5 and 7 (1982 to 2017) Analysis Ready Data (ARD) observation coverage over the conterminous United States and implications for terrestrial monitoring: *Remote Sensing*, v. 11, no. 4, article 447, at <https://doi.org/10.3390/rs11040447>.
- Ehlers, D., Wang, C., Coulston, J., Zhang, Y., Pavelsky, T., Frankenberg, E., Woodcock, C., and Song, C., 2022, Mapping forest aboveground biomass using multisource remotely sensed data: *Remote Sensing*, v. 14, no. 5, article 1115, at <https://doi.org/10.3390/rs14051115>.
- Eisele, A., Chabrilat, S., Hecker, C., Hewson, R., Lau, I.C., Rogass, C., Segl, K., Cudahy, T.J., Udelhoven, T., et al., 2015, Advantages using the thermal infrared (TIR) to detect and quantify semi-arid soil properties: *Remote Sensing of Environment*, v. 163, p. 296–311, at <https://doi.org/10.1016/j.rse.2015.04.001>.

- El Saleous, N.Z., Vermote, E.F., Townshend, J.R.G., Goward, S.N., El Saleous, N.Z., Vermote, E.F., Tucker, C.J., Justice, C.O., and Townshend, J.R.G., 2000, Improvements in the global biospheric record from the advanced very high resolution radiometer (AVHRR): *International Journal of Remote Sensing*, v. 21, no. 6–7, p. 1251–1277, at <https://doi.org/10.1080/014311600210164>.
- El Serafy, G.Y.H., Schaeffer, B.A., Neely, M.B., Spinosa, A., Odermatt, D., Weathers, K.C., Baracchini, T., Bouffard, D., Carvalho, L., et al., 2021, Integrating inland and coastal water quality data for actionable knowledge: *Remote Sensing*, v. 13, no. 15, article 2899, at <https://doi.org/10.3390/rs13152899>.
- Elias, E., Tsegaye, T., Hapeman, C., Mankin, K., Kleinman, P., Cosh, M.H., Peck, D., Coffin, A., Archer, D., et al., 2023, A vision for integrated, collaborative solutions to critical water and food challenges: *Journal of Soil and Water Conservation*, v. 78, no. 3, p. 63A–68A, at <https://doi.org/10.2489/jswc.2023.1220A>.
- Ellicott, E., Vermote, E.F., Giglio, L., and Roberts, G., 2009, Estimating biomass consumed from fire using MODIS FRE: *Geophysical Research Letters*, v. 36, no. 13, article L13401, at <https://doi.org/10.1029/2009GL038581>.
- Ellicott, E., Vermote, E.F., Petitcolin, F., and Hook, S.J., 2009, Validation of a new parametric model for atmospheric correction of thermal infrared data: *IEEE Transactions on Geoscience and Remote Sensing*, v. 47, no. 1, p. 295–311, at <https://doi.org/10.1109/TGRS.2008.2006182>.
- Elmes, A., Levy, C., Erb, A., Hall, D.K., Scambos, T.A., Digirolamo, N., and Schaaf, C., 2021, Consequences of the 2019 Greenland ice sheet melt episode on albedo: *Remote Sensing*, v. 13, no. 2, article 227, at <https://doi.org/10.3390/rs13020227>.
- Elsen, P.R., Farwell, L.S., Pidgeon, A.M., and Radeloff, V.C., 2020, Landsat 8 TIRS-derived relative temperature and thermal heterogeneity predict winter bird species richness patterns across the conterminous United States: *Remote Sensing of Environment*, v. 236, article 111514, at <https://doi.org/10.1016/j.rse.2019.111514>.
- Elsen, P.R., Farwell, L.S., Pidgeon, A.M., and Radeloff, V.C., 2021, Contrasting seasonal patterns of relative temperature and thermal heterogeneity and their influence on breeding and winter bird richness patterns across the conterminous United States: *Ecography*, v. 44, no. 6, p. 953–965, at <https://doi.org/10.1111/ecog.05520>.
- Elvidge, C., Pettit, D., Imhoff, M., Nemani, R.R., Pack, D., and Cinzano, P., 2008, Observational considerations for moderate resolution nighttime lights, in *Earth Observing Systems XIII*, San Diego, Calif., 11–13 August 2008, *Proceedings of SPIE Vol. 7081*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 70810V, at <https://doi.org/10.1117/12.795537>.
- Elvidge, C.D., Cinzano, P., Pettit, D.R., Arvesen, J., Sutton, P., Small, C., Nemani, R.R., Longcore, T., Rich, C., et al., 2007, The nightsat mission concept: *International Journal of Remote Sensing*, v. 28, no. 12, p. 2645–2670, at <https://doi.org/10.1080/01431160600981525>.
- Elvidge, C.D., Milesi, C., Dietz, J.B., Tuttle, B.T., Sutton, P.C., Nemani, R.R., and Vogelmann, J.E., 2004, Paving paradise: *GeoSpatial Solutions*, v. 14, no. 9, p. 58–58.
- Elvidge, C.D., Milesi, C., Dietz, J.B., Tuttle, B.T., Sutton, P.C., Nemani, R.R., and Vogelmann, J.E., 2004, U.S. constructed area approaches the size of Ohio: *Eos*, v. 85, no. 24, p. 233–233, at <https://doi.org/10.1029/2004EO240001>.

- Elvidge, C.D., Tuttle, B.T., Sutton, P.S., Baugh, K.E., Howard, A.T., Milesi, C., Bhaduri, B.L., and Nemani, R.R., 2007, Global distribution and density of constructed impervious surfaces: *Sensors*, v. 7, no. 9, p. 1962–1979, at <https://doi.org/10.3390/s7091962>.
- Emde, C., Barlakas, V., Cornet, C., Evans, F., Korkin, S., Ota, Y., Labonnote, L.C., Lyapustin, A.I., Macke, A., et al., 2015, IPRT polarized radiative transfer model intercomparison project - Phase A: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 164, p. 8–36, at <https://doi.org/10.1016/j.jqsrt.2015.05.007>.
- Emili, E., Lyapustin, A.I., Wang, Y., Popp, C., Korkin, S., Zebisch, M., Wunderle, S., and Petitta, M., 2011, High spatial resolution aerosol retrieval with MAIAC—Application to mountain regions: *Journal of Geophysical Research Atmospheres*, v. 116, no. 23, article D23211, at <https://doi.org/10.1029/2011JD016297>.
- Enclona, E.A., Thenkabail, P.S., Celis, D., and Diekmann, J., 2004, Within-field wheat yield prediction from IKONOS data—A new matrix approach: *International Journal of Remote Sensing*, v. 25, no. 2, p. 377–388, at <https://doi.org/10.1080/0143116031000102485>.
- Enenkel, M., Brown, M.E., Vogt, J.V., McCarty, J.L., Reid Bell, A., Guha-Sapir, D., Dorigo, W., Vasilaky, K., Svoboda, M., et al., 2020, Why predict climate hazards if we need to understand impacts? Putting humans back into the drought equation: *Climatic Change*, v. 162, no. 3, p. 1161–1176, at <https://doi.org/10.1007/s10584-020-02878-0>.
- Enenkel, M., Farah, C., Hain, C., White, A., Anderson, M., You, L., Wagner, W., and Osgood, D., 2018, What rainfall does not tell us—enhancing financial instruments with satellite-derived soil moisture and evaporative stress: *Remote Sensing*, v. 10, no. 11, article 1819, at <https://doi.org/10.3390/rs10111819>.
- Enenkel, M., Osgood, D., Anderson, M., Powell, B., McCarty, J., Neigh, C., Carroll, M., Wooten, M., Husak, G., et al., 2019, Exploiting the convergence of evidence in satellite data for advanced weather index insurance design: *Weather, Climate, and Society*, v. 11, no. 1, p. 65–93, at <https://doi.org/10.1175/WCAS-D-17-0111.1>.
- Enenkel, M., See, L., Bonifacio, R., Boken, V., Chaney, N., Vinck, P., You, L., Dutra, E., and Anderson, M.C., 2015, Drought and food security - Improving decision-support via new technologies and innovative collaboration: *Global Food Security*, v. 4, p. 51–55, at <https://doi.org/10.1016/j.gfs.2014.08.005>.
- English, D.C., and Carder, K.L., 2006, Determining bottom reflectance and water optical properties using unmanned underwater vehicles under clear or cloudy skies: *Journal of Atmospheric and Oceanic Technology*, v. 23, no. 2, p. 314–324, at <https://doi.org/10.1175/JTECH1842.1>.
- Entcheva Campbell, P.K., Rock, B.N., Martin, M.E., Neefus, C.D., Irons, J.R., Middleton, E.M., and Albrechtova, J., 2004, Detection of initial damage in Norway spruce canopies using hyperspectral airborne data: *International Journal of Remote Sensing*, v. 25, no. 24, p. 5557–5583, at <https://doi.org/10.1080/01431160410001726058>.
- Entekhabi, D., Njoku, E.G., O’Neill, P.E., Kellogg, K.H., Crow, W.T., Edelstein, W.N., Entin, J.K., Goodman, S.D., Jackson, T.J., et al., 2010, The soil moisture active passive (SMAP) mission: *Proceedings of the IEEE*, v. 98, no. 5, p. 704–716, at <https://doi.org/10.1109/JPROC.2010.2043918>.
- Eon, R.S., Gerace, A.D., Montanaro, M., Ambeau, B.L., and McCorkel, J.T., 2018, Development of a simulation environment to support intercalibration studies over the Algodones Dunes system:

- Journal of Applied Remote Sensing, v. 12, no. 1, article 012008, at <https://doi.org/10.1117/1.JRS.12.012008>.
- Erb, A.M., Li, Z., Sun, Q., Paynter, I., Wang, Z., and Schaaf, C., 2022, Evaluation of the Landsat-8 albedo product across the circumpolar domain: Remote Sensing, v. 14, no. 21, article 5320, at <https://doi.org/10.3390/rs14215320>.
- Erickson, H.E., Helmer, E.H., Brandeis, T.J., and Lugo, A.E., 2014, Controls on fallen leaf chemistry and forest floor element masses in native and novel forests across a tropical island: Ecosphere, v. 5, no. 4, article 48, at <https://doi.org/10.1890/ES13-00263.1>.
- Ernst, S., Lymburner, L., and Sixsmith, J., 2018, Implications of pixel quality flags on the observation density of a continental Landsat archive: Remote Sensing, v. 10, no. 10, article 1570, at <https://doi.org/10.3390/rs10101570>.
- Er-Raki, S., Chehbouni, A., Khabba, S., Simonneaux, V., Jarlan, L., Ouldbba, A., Rodriguez, J.C., and Allen, R.G., 2010, Assessment of reference evapotranspiration methods in semi-arid regions—Can weather forecast data be used as alternate of ground meteorological parameters?: Journal of Arid Environments, v. 74, no. 12, p. 1587–1596, at <https://doi.org/10.1016/j.jaridenv.2010.07.002>.
- Esaias, W.E., Abbott, M.R., Barton, I., Brown, O.B., Campbell, J.W., Carder, K.L., Clark, D.K., Evans, R.H., Hoge, F.E., et al., 1998, An overview of MODIS capabilities for ocean science observations: IEEE Transactions on Geoscience and Remote Sensing, v. 36, no. 4, p. 1250–1265, at <https://doi.org/10.1109/36.701076>.
- Esch, T., Bachofer, F., Heldens, W., Hirner, A., Marconcini, M., Palacios-Lopez, D., Roth, A., üreyen, S., Zeidler, J., et al., 2018, Where we live—A summary of the achievements and planned evolution of the global urban footprint: Remote Sensing, v. 10, no. 6, article 895, at <https://doi.org/10.3390/rs10060895>.
- Esche, H.A., Franklin, S.E., and Wulder, M.A., 2002, Assessing cloud contamination effects on K-means unsupervised classifications of Landsat data, in 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3387–3389, at <https://doi.org/10.1109/IGARSS.2002.1027191>.
- Escobar, V.M., Delgado Arias, S., Moran, M.S., Nearing, G., Entekhabi, D., Njoku, E., Yueh, S., Doorn, B., and Reichle, R., 2016, Overview of the SMAP Applications and the SMAP Early Adopters program - NASA's first mission-directed outreach effort, in 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5225–5228, at <https://doi.org/10.1109/IGARSS.2016.7730361>.
- Estel, S., Kuemmerle, T., Alcántara, C., Levers, C., Prishchepov, A., and Hostert, P., 2015, Mapping farmland abandonment and recultivation across Europe using MODIS NDVI time series: Remote Sensing of Environment, v. 163, p. 312–325, at <https://doi.org/10.1016/j.rse.2015.03.028>.
- Estel, S., Kuemmerle, T., Levers, C., Baumann, M., and Hostert, P., 2016, Mapping cropland-use intensity across Europe using MODIS NDVI time series: Environmental Research Letters, v. 11, no. 2, article 024015, at <https://doi.org/10.1088/1748-9326/11/2/024015>.

- Estes, A.B., Kuemmerle, T., Kushnir, H., Radeloff, V.C., and Shugart, H.H., 2012, Land-cover change and human population trends in the greater Serengeti ecosystem from 1984-2003: *Biological Conservation*, v. 147, no. 1, p. 255–263, at <https://doi.org/10.1016/j.biocon.2012.01.010>.
- Estes, J., Belward, A.S., Loveland, T.R., Scean, J., Strahler, A., Townshend, J., and Justice, C.O., 1999, The way forward: Photogrammetric Engineering and Remote Sensing, v. 65, no. 9, p. 1089–1093, at https://www.asprs.org/wp-content/uploads/pers/1999journal/sep/1999_sept_1089-1093.pdf.
- Estes, J.E., and Loveland, T.R., 1999, Toward the use of remote sensing and other data to delineate functional types in terrestrial and aquatic systems: *Developments in Atmospheric Science*, v. 24, p. 125–150, at [https://doi.org/10.1016/S0167-5117\(98\)80027-X](https://doi.org/10.1016/S0167-5117(98)80027-X).
- Euliss Jr, N.H., Smith, L.M., Liu, S., Feng, M., Mushet, D.M., Auch, R.F., and Loveland, T.R., 2010, The need for simultaneous evaluation of ecosystem services and land use change: *Environmental Science and Technology*, v. 44, no. 20, p. 7761–7763, at <https://doi.org/10.1021/es102761c>.
- Eva, H.D., Belward, A.S., De Miranda, E.E., Di Bella, C.M., Gond, V., Huber, O., Jones, S., Sgrenzaroli, M., and Fritz, S., 2004, A land cover map of South America: *Global Change Biology*, v. 10, no. 5, p. 731–744, at <https://doi.org/10.1111/j.1529-8817.2003.00774.x>.
- Eva, H.D., Malingreau, J.P., Gregoire, J.M., Belward, A.S., and Mutlow, C.T., 1998, Cover The advance of burnt areas in Central Africa as detected by ERS-1 ATSR-1: *International Journal of Remote Sensing*, v. 19, no. 9, p. 1635–1637, at <https://doi.org/10.1080/014311698215144>.
- Evelt, S.R., Kustas, W.P., Gowda, P.H., Anderson, M.C., Prueger, J.H., and Howell, T.A., 2012, Overview of the Bushland Evapotranspiration and Agricultural Remote sensing EXperiment 2008 (BEAREX08)—A field experiment evaluating methods for quantifying ET at multiple scales: *Advances in Water Resources*, v. 50, p. 4–19, at <https://doi.org/10.1016/j.advwatres.2012.03.010>.
- Evelt, S.R., O’Shaughnessy, S.A., Andrade, M.A., Kustas, W.P., Anderson, M.C., Schomberg, H.H., and Thompson, A., 2020, Precision agriculture and irrigation—Current U.S. Perspectives: *Transactions of the ASABE*, v. 63, no. 1, p. 57–67, at <https://doi.org/10.13031/trans.13355>.
- Fagan, M.E., Morton, D.C., Cook, B.D., Masek, J.G., Zhao, F., Nelson, R.F., and Huang, C., 2018, Mapping pine plantations in the southeastern U.S. using structural, spectral, and temporal remote sensing data: *Remote Sensing of Environment*, v. 216, p. 415–426, at <https://doi.org/10.1016/j.rse.2018.07.007>.
- Fahnestock, M., Scambos, T.A., Moon, T., Gardner, A., Haran, T., and Klinger, M., 2016, Rapid large-area mapping of ice flow using Landsat 8: *Remote Sensing of Environment*, v. 185, p. 84–94, at <https://doi.org/10.1016/j.rse.2015.11.023>.
- Fahnestock, M.A., Joughin, I., Scambos, T.A., Kwok, R., Krabill, W.B., and Gogineni, S., 2001, Ice-stream-related patterns of ice flow in the interior of northeast Greenland: *Journal of Geophysical Research Atmospheres*, v. 106, no. D24, p. 34035–34045, at <https://doi.org/10.1029/2001JD900194>.
- Fahnestock, M.A., Scambos, T.A., Bindschadler, R.A., and Kvaran, G., 2000, A millennium of variable ice flow recorded by the ross ice shelf, Antarctica: *Journal of Glaciology*, v. 46, no. 155, p. 652–664, at <https://doi.org/10.3189/172756500781832693>.
- Fahnestock, M.A., Scambos, T.A., Shuman, C.A., Arthern, R.J., Winebrenner, D.P., and Kwok, R., 2000, Snow megadune fields on the East Antarctic Plateau—Extreme atmosphere-ice interaction:

Geophysical Research Letters, v. 27, no. 22, p. 3719–3722, at <https://doi.org/10.1029/1999GL011248>.

- Fairbanks, R.R., Schott, J.R., and Vodacek, A., 2000, Impact of clouds on SeaWiFS derived water quality, in 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 252–254, at <https://doi.org/10.1109/IGARSS.2000.860483>.
- Fajardo Rueda, J., Leigh, L., Teixeira Pinto, C., Kaewmanee, M., and Helder, D., 2021, Classification and evaluation of extended pics (Epics) on a global scale for calibration and stability monitoring of optical satellite sensors: Remote Sensing, v. 13, no. 17, article 3350, at <https://doi.org/10.3390/rs13173350>.
- Falah, S., Mhawish, A., Omar, A.H., Sorek-Hamer, M., Lyapustin, A.I., Banerjee, T., Kizel, F., and Broday, D.M., 2022, Intercomparison of aerosol types reported as part of aerosol product retrieval over diverse geographic regions: Remote Sensing, v. 14, no. 15, article 3667, at <https://doi.org/10.3390/rs14153667>.
- Falah, S., Mhawish, A., Sorek-Hamer, M., Lyapustin, A.I., Kloog, I., Banerjee, T., Kizel, F., and Broday, D.M., 2021, Impact of environmental attributes on the uncertainty in MAIAC/MODIS AOD retrievals—A comparative analysis: Atmospheric Environment, v. 262, article 118659, at <https://doi.org/10.1016/j.atmosenv.2021.118659>.
- Falkowski, M.J., Wulder, M.A., White, J.C., and Gillis, M.D., 2009, Supporting large-area, sample-based forest inventories with very high spatial resolution satellite imagery: Progress in Physical Geography, v. 33, no. 3, p. 403–423, at <https://doi.org/10.1177/0309133309342643>.
- Fang, H., Liang, S., Kim, H.Y., Townshend, J.R., Schaaf, C.B.L., Strahler, A.H., and Dickinson, R.E., 2007, Developing a spatially continuous 1 km surface albedo data set over North America from Terra MODIS products: Journal of Geophysical Research Atmospheres, v. 112, no. 20, article D20206, at <https://doi.org/10.1029/2006JD008377>.
- Fang, L., Hain, C.R., Zhan, X., and Anderson, M.C., 2016, An inter-comparison of soil moisture data products from satellite remote sensing and a land surface model: International Journal of Applied Earth Observation and Geoinformation, v. 48, p. 37–50, at <https://doi.org/10.1016/j.jag.2015.10.006>.
- Fang, L., Zhan, X., Kalluri, S., Yu, P., Hain, C., Anderson, M., and Laszlo, I., 2022, Application of a machine learning algorithm in generating an evapotranspiration data product from coupled thermal infrared and microwave satellite observations: Frontiers in Big Data, v. 5, article 768676, at <https://doi.org/10.3389/fdata.2022.768676>.
- Fang, L., Zhan, X., Schull, M., Kalluri, S., Hain, C., Anderson, M., and Laszlo, I., 2021, All-weather daily evapotranspiration data product based on microwave and thermal infrared satellite observations, in 2021 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Brussels, Belgium, 12–16 July 2021, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6451–6454, at <https://doi.org/10.1109/IGARSS47720.2021.9554948>.
- Fang, L., Zhan, X., Schull, M., Kalluri, S., Laszlo, I., Yu, P., Carter, C., Hain, C., and Anderson, M., 2019, Evapotranspiration data product from NESDIS GET-D system upgraded for GOES-16 ABI observations: Remote Sensing, v. 11, no. 22, article 2639, at <https://doi.org/10.3390/rs11222639>.

- Farhad, M.M., Kaewmanee, M., Leigh, L., and Helder, D., 2020, Radiometric cross calibration and validation using 4 angle BRDF model between Landsat 8 and Sentinel 2A: *Remote Sensing*, v. 12, no. 5, article 806, at <https://doi.org/10.3390/rs12050806>.
- Farmer, C.J.Q., Nelson, T.A., Wulder, M.A., and Derksen, C., 2009, Spatial-temporal patterns of snow cover in western Canada: *Canadian Geographer*, v. 53, no. 4, p. 473–487, at <https://doi.org/10.1111/j.1541-0064.2009.00283.x>.
- Farmer, C.J.Q., Nelson, T.A., Wulder, M.A., and Derksen, C., 2010, Identification of snow cover regimes through spatial and temporal clustering of satellite microwave brightness temperatures: *Remote Sensing of Environment*, v. 114, no. 1, p. 199–210, at <https://doi.org/10.1016/j.rse.2009.09.002>.
- Farwell, L.S., Elsen, P.R., Razenkova, E., Pidgeon, A.M., and Radeloff, V.C., 2020, Habitat heterogeneity captured by 30-m resolution satellite image texture predicts bird richness across the United States: *Ecological Applications*, v. 30, no. 8, article e02157, at <https://doi.org/10.1002/eap.2157>.
- Fassnacht, K.S., Cohen, W.B., and Spies, T.A., 2006, Key issues in making and using satellite-based maps in ecology—A primer: *Forest Ecology and Management*, v. 222, no. 1-3, p. 167–181, at <https://doi.org/10.1016/j.foreco.2005.09.026>.
- Faulkner Burkhardt, J., Kylling, A., Schaaf, C.B., Wang, Z., Bogren, W., Storvold, R., Solbø, S., Pedersen, C.A., and Gerland, S., 2017, Unmanned aerial system nadir reflectance and MODIS nadir BRDF-adjusted surface reflectances intercompared over Greenland: *Cryosphere*, v. 11, no. 4, p. 1575–1589, at <https://doi.org/10.5194/tc-11-1575-2017>.
- Feng, D., Zhao, Y., Yu, L., Li, C., Wang, J., Clinton, N., Bai, Y., Belward, A.S., Zhu, Z., and Gong, P., 2016, Circa 2014 African land-cover maps compatible with FROM-GLC and GLC2000 classification schemes based on multi-seasonal Landsat data: *International Journal of Remote Sensing*, v. 37, no. 19, p. 4648–4664, at <https://doi.org/10.1080/01431161.2016.1218090>.
- Feng, M., Huang, C., Channan, S., Vermote, E.F., Masek, J.G., and Townshend, J.R., 2012, Quality assessment of Landsat surface reflectance products using MODIS data: *Computers and Geosciences*, v. 38, no. 1, p. 9–22, at <https://doi.org/10.1016/j.cageo.2011.04.011>.
- Feng, M., Sexton, J.O., Huang, C., Masek, J.G., Vermote, E.F., Gao, F., Narasimhan, R., Channan, S., Wolfe, R.E., and Townshend, J.R., 2013, Global surface reflectance products from Landsat—Assessment using coincident MODIS observations: *Remote Sensing of Environment*, v. 134, p. 276–293, at <https://doi.org/10.1016/j.rse.2013.02.031>.
- Ferrada, G.A., Zhou, M., Wang, J., Lyapustin, A., Wang, Y., Freitas, S.R., and Carmichael, G.R., 2022, Introducing the VIIRS-based Fire Emission Inventory version 0 (VFEIv0): *Geoscientific Model Development*, v. 15, no. 21, p. 8085–8109, at <https://doi.org/10.5194/gmd-15-8085-2022>.
- Fetene, A., Hilker, T., Yeshitela, K., Prasse, R., Cohen, W.B., and Yang, Z., 2016, Detecting trends in landuse and landcover change of Nech Sar National Park, Ethiopia: *Environmental Management*, v. 57, no. 1, p. 137–147, at <https://doi.org/10.1007/s00267-015-0603-0>.
- Fickas, K.C., Cohen, W.B., and Yang, Z., 2016, Landsat-based monitoring of annual wetland change in the Willamette Valley of Oregon, USA from 1972 to 2012: *Wetlands Ecology and Management*, v. 24, no. 1, p. 73–92, at <https://doi.org/10.1007/s11273-015-9452-0>.
- Field, D.R., Voss, P.R., Kuczenski, T.K., Hammer, R.B., and Radeloff, V.C., 2003, Reaffirming social landscape analysis in landscape ecology—A conceptual framework: *Society and Natural Resources*, v. 16, no. 4, p. 349–361, at <https://doi.org/10.1080/08941920390178900>.

- Filippi, A.M., Carder, K.L., and Davis, C.O., 2006, Vicarious calibration of the Ocean PHILLS hyperspectral sensor using a coastal tree-shadow method: *Geophysical Research Letters*, v. 33, no. 22, article L22605, at <https://doi.org/10.1029/2006GL027073>.
- Fisher, J.B., Dohlen, M.B., Halverson, G.H., Collison, J.W., Pearson, C., and Huntington, J.L., 2023, Remotely sensed terrestrial open water evaporation: *Scientific Reports*, v. 13, no. 1, at <https://doi.org/10.1038/s41598-023-34921-2>.
- Fisher, J.B., Lee, B., Purdy, A.J., Halverson, G.H., Dohlen, M.B., Cawse-Nicholson, K., Wang, A., Anderson, R.G., Aragon, B., et al., 2020, ECOSTRESS—NASA's Next Generation Mission to Measure Evapotranspiration From the International Space Station: *Water Resources Research*, v. 56, no. 4, article e2019WR026058, at <https://doi.org/10.1029/2019WR026058>.
- Fisher, J.B., Melton, F., Middleton, E., Hain, C., Anderson, M.C., Allen, R.G., McCabe, M.F., Hook, S., Baldocchi, D., et al., 2017, The future of evapotranspiration—Global requirements for ecosystem functioning, carbon and climate feedbacks, agricultural management, and water resources: *Water Resources Research*, v. 53, no. 4, p. 2618–2626, at <https://doi.org/10.1002/2016WR020175>.
- Fitterer, J.L., Nelson, T.A., Coops, N.C., and Wulder, M.A., 2012, Modelling the ecosystem indicators of British Columbia using Earth observation data and terrain indices: *Ecological Indicators*, v. 20, p. 151–162, at <https://doi.org/10.1016/j.ecolind.2012.02.024>.
- Fitterer, J.L., Nelson, T.A., Coops, N.C., Wulder, M.A., and Mahony, N.A., 2013, Exploring the ecological processes driving geographical patterns of breeding bird richness in British Columbia, Canada: *Ecological Applications*, v. 23, no. 4, p. 888–903, at <https://doi.org/10.1890/12-1225.1>.
- Flanagan, S.A., Hurtt, G.C., Fisk, J.P., Sahajpal, R., Hansen, M.C., Dolan, K.A., Sullivan, J.H., and Zhao, M., 2016, Potential vegetation and carbon redistribution in northern North America from climate change: *Climate*, v. 4, no. 1, article 2, at <https://doi.org/10.3390/cli4010002>.
- Flanagan, S.A., Hurtt, G.C., Fisk, J.P., Sahajpal, R., Zhao, M., Dubayah, R., Hansen, M.C., Sullivan, J.H., and Collatz, G.J., 2019, Potential transient response of terrestrial vegetation and carbon in northern North America from climate change: *Climate*, v. 7, no. 9, article 113, at <https://doi.org/10.3390/cli7090113>.
- Fleming, G.M., Wunderle, J.M., Ewert, D.N., O'Brien, J.J., and Helmer, E.H., 2014, Functional attributes of two subtropical shrubs and implications for the distribution and management of endangered bird habitat: *Journal of Plant Ecology*, v. 8, no. 6, p. 578–592, at <https://doi.org/10.1093/jpe/rtu036>.
- Flusche, B.M., Gartley, M.G., and Schott, J.R., 2010, Assessing the impact of spectral and polarimetric data fusion via simulation to support multimodal sensor system design requirements: *Journal of Applied Remote Sensing*, v. 4, no. 1, article 043562, at <https://doi.org/10.1117/1.3525590>.
- Flusche, B.M., Gartley, M.G., and Schott, J.R., 2010, Defining a process to fuse polarimetric and spectral data for target detection and explore the trade space via simulation: *Journal of Applied Remote Sensing*, v. 4, no. 1, article 043550, at <https://doi.org/10.1117/1.3516616>.
- Flynn, L.P., Harris, A.J.L., Rothery, D.A., and Oppenheimer, C., 2000, High-spatial-resolution thermal remote sensing of active volcanic features using Landsat and hyperspectral data, in Mougini-Mark, P.J., Crisp, J.A., and Fink, J.H., eds., *Remote sensing of active volcanism*, Geophysical monograph 116: Washington, D.C., American Geophysical Union, p. 161–177, at <https://doi.org/10.1029/GM116p0161>.

- Flynn, L.P., Harris, A.J.L., and Wright, R., 2001, Improved identification of volcanic features using Landsat 7 ETM+: Remote Sensing of Environment, v. 78, no. 1–2, p. 180–193, at [https://doi.org/10.1016/S0034-4257\(01\)00258-9](https://doi.org/10.1016/S0034-4257(01)00258-9).
- Foga, S., Scaramuzza, P.L., Guo, S., Zhu, Z., Dilley, R.D., Jr., Beckmann, T., Schmidt, G.L., Dwyer, J.L., Joseph Hughes, M., and Laue, B., 2017, Cloud detection algorithm comparison and validation for operational Landsat data products: Remote Sensing of Environment, v. 194, p. 379–390, at <https://doi.org/10.1016/j.rse.2017.03.026>.
- Foley, D., Thenkabail, P., Oliphant, A., Aneece, I., and Teluguntla, P., 2023, Crop water productivity from cloud-based Landsat helps assess California’s water savings: Remote Sensing, v. 15, no. 19, article 4894, at <https://doi.org/10.3390/rs15194894>.
- Foley, D.J., Thenkabail, P.S., Aneece, I.P., Teluguntla, P.G., and Oliphant, A.J., 2020, A meta-analysis of global crop water productivity of three leading world crops (wheat, corn, and rice) in the irrigated areas over three decades: International Journal of Digital Earth, v. 13, no. 8, p. 939–979, at <https://doi.org/10.1080/17538947.2019.1651912>.
- Fontana, F.M.A., Coops, N.C., Khlopenkov, K.V., Trishchenko, A.P., Riffler, M., and Wulder, M.A., 2012, Generation of a novel 1km NDVI data set over Canada, the northern United States, and Greenland based on historical AVHRR data: Remote Sensing of Environment, v. 121, p. 171–185, at <https://doi.org/10.1016/j.rse.2012.01.007>.
- Foolad, F., Franz, T.E., Wang, T., Gibson, J., Kilic, A., Allen, R.G., and Suyker, A., 2017, Feasibility analysis of using inverse modeling for estimating field-scale evapotranspiration in maize and soybean fields from soil water content monitoring networks: Hydrology and Earth System Sciences, v. 21, no. 2, p. 1263–1277, at <https://doi.org/10.5194/hess-21-1263-2017>.
- Förster, M., Schmidt, T., Gärtner, P., Kleinschmit, B., Gao, F., and Möller, M., 2015, Evaluating the temporal stability of synthetically generated time-series for crop types in Central Germany, *in* Analysis of Multitemporal Remote Sensing Images (Multi-Temp), International Workshop, 8th, Annecy, France, 22–24 July 2015, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), paper no. 7245811, at <https://doi.org/10.1109/Multi-Temp.2015.7245811>.
- Fortier, J., Rogan, J., Woodcock, C.E., and Runfola, D.M., 2011, Utilizing temporally invariant calibration sites to classify multiple dates and types of satellite imagery: Photogrammetric Engineering and Remote Sensing, v. 77, no. 2, p. 181–189, at <https://doi.org/10.14358/PERS.77.2.181>.
- Foster, M.S., Schott, J.R., and Messinger, D.W., 2008, Spin-image target detection algorithm applied to low density 3D point clouds: Journal of Applied Remote Sensing, v. 2, no. 1, article 023539, at <https://doi.org/10.1117/1.3002398>.
- Foster, M.S., Schott, J.R., Messinger, D.W., and Raqueño, R., 2007, Use of lidar data to geometrically-constrain radiance spaces for physics-based target detection, *in* Imaging Spectrometry, XII, San Diego, Calif., 28–29 August 2007, Proceedings of SPIE Vol. 6661: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 66610J, at <https://doi.org/10.1117/12.729488>.
- Fountain, A.G., Glenn, B., and Scambos, T.A., 2017, The changing extent of the glaciers along the western Ross Sea, Antarctica: Geology, v. 45, no. 10, p. 927–930, at <https://doi.org/10.1130/G39240.1>.
- Fournier, R.A., Luther, J.E., Guindon, L., Lambert, M.C., Piercey, D., Hall, R.J., and Wulder, M.A., 2003, Mapping aboveground tree biomass at the stand level from inventory information—Test cases in

- Newfoundland and Quebec: *Canadian Journal of Forest Research*, v. 33, no. 10, p. 1846–1863, at <https://doi.org/10.1139/x03-099>.
- Fox, N., Aiken, J., Barnett, J.J., Briottet, X., Carvell, R., Frohlich, C., Groom, S.B., Hagolle, O., Haigh, J.D., et al., 2002, Traceable Radiometry Underpinning Terrestrial- and Helio- Studies (TRUTHS), *in* Sensors, Systems, and Next-Generation Satellites VI, Agia Pelagia, Crete, 23–26 September 2002, Proceedings of SPIE Vol. 4881: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 395–406, at <https://doi.org/10.1117/12.462438>.
- Fox, N., Kaiser-Weiss, A., Schmutz, W., Thome, K.J., Young, D., Wielicki, B., Winkler, R., and Woolliams, E., 2011, Accurate radiometry from space—An essential tool for climate studies: *Philosophical Transactions of the Royal Society A—Mathematical, Physical and Engineering Sciences*, v. 369, no. 1953, p. 4028–4063, at <https://doi.org/10.1098/rsta.2011.0246>.
- Franch, B., San Bautista, A., Fita, D., Rubio, C., Tarrazó-Serrano, D., Sánchez, A., Skakun, S., Vermote, E., Becker-Reshef, I., and Uris, A., 2021, Within-field rice yield estimation based on sentinel-2 satellite data: *Remote Sensing*, v. 13, no. 20, article 4095, at <https://doi.org/10.3390/rs13204095>.
- Franch, B., Vermote, E., Skakun, S., Roger, J.C., Becker-Reshef, I., and Justice, C., 2018, Enhancing remote sensing based yield forecasting—Application to winter wheat in United States, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8177–8180, at <https://doi.org/10.1109/IGARSS.2018.8517604>.
- Franch, B., Vermote, E., Skakun, S., Roger, J.C., Masek, J., Ju, J., Villaescusa-Nadal, J.L., and Santamaria-Artigas, A., 2019, A method for Landsat and Sentinel 2 (HLS) BRDF normalization: *Remote Sensing*, v. 11, no. 6, article 632, at <https://doi.org/10.3390/rs11060632>.
- Franch, B., Vermote, E., Skakun, S., Roger, J.C., Santamaria-Artigas, A., Villaescusa-Nadal, J.L., and Masek, J., 2018, Toward Landsat and Sentinel-2 BRDF normalization and albedo estimation—A case study in the Peruvian Amazon Forest: *Frontiers in Earth Science*, v. 6, article 185, at <https://doi.org/10.3389/feart.2018.00185>.
- Franch, B., Vermote, E., Skakun, S., Santamaria-Artigas, A., Kalecinski, N., Roger, J.C., Becker-Reshef, I., Barker, B., Justice, C., and Sobrino, J.A., 2021, The ARYA crop yield forecasting algorithm—Application to the main wheat exporting countries: *International Journal of Applied Earth Observation and Geoinformation*, v. 104, article 102552, at <https://doi.org/10.1016/j.jag.2021.102552>.
- Franch, B., Vermote, E., Skakun, S., Santamaria-Artigas, A., Kalecinski, N., Roger, J.C., Becker-Reshef, I., Barker, B., Sobrino, J.A., and Justice, C., 2021, Forecasting wheat yield using remote sensing—The ARYA forecasting system, *in* 2021 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Brussels, Belgium, 12–16 July 2021, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6419–6422, at <https://doi.org/10.1109/IGARSS47720.2021.9554274>.
- Franch, B., Vermote, E.F., Becker-Reshef, I., Claverie, M., Huang, J., Zhang, J., Justice, C.O., and Sobrino, J.A., 2015, Improving the timeliness of winter wheat production forecast in the United States of America, Ukraine and China using MODIS data and NCAR Growing Degree Day information: *Remote Sensing of Environment*, v. 161, p. 131–148, at <https://doi.org/10.1016/j.rse.2015.02.014>.

- Franch, B., Vermote, E.F., and Claverie, M., 2014, Intercomparison of Landsat albedo retrieval techniques and evaluation against in situ measurements across the US SURFRAD network: *Remote Sensing of Environment*, v. 152, p. 627–637, at <https://doi.org/10.1016/j.rse.2014.07.019>.
- Franch, B., Vermote, E.F., Roger, J.C., Murphy, E., Becker-reshef, I., Justice, C.O., Claverie, M., Nagol, J., Csizar, I., et al., 2017, A 30+ year AVHRR land surface reflectance climate data record and its application to wheat yield monitoring: *Remote Sensing*, v. 9, no. 3, article 296, at <https://doi.org/10.3390/rs9030296>.
- Franch, B., Vermote, E.F., Skakun, S., Roger, J.C., Becker-Reshef, I., Murphy, E., and Justice, C., 2019, Remote sensing based yield monitoring—Application to winter wheat in United States and Ukraine: *International Journal of Applied Earth Observation and Geoinformation*, v. 76, p. 112–127, at <https://doi.org/10.1016/j.jag.2018.11.012>.
- Franch, B., Vermote, E.F., Sobrino, J.A., and Fédèle, E., 2013, Analysis of directional effects on atmospheric correction: *Remote Sensing of Environment*, v. 128, p. 276–288, at <https://doi.org/10.1016/j.rse.2012.10.018>.
- Franch, B., Vermote, E.F., Sobrino, J.A., and Julien, Y., 2014, Retrieval of surface albedo on a daily basis—application to MODIS data: *IEEE Transactions on Geoscience and Remote Sensing*, v. 52, no. 12, p. 7549 – 7558, at <https://doi.org/10.1109/TGRS.2014.2313842>.
- Francini, S., Hermosilla, T., Coops, N.C., Wulder, M.A., White, J.C., and Chirici, G., 2023, An assessment approach for pixel-based image composites: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 202, p. 1-12, at <https://doi.org/10.1016/j.isprsjprs.2023.06.002>.
- Francini, S., McRoberts, R.E., D’Amico, G., Coops, N.C., Hermosilla, T., White, J.C., Wulder, M.A., Marchetti, M., Mugnozza, G.S., and Chirici, G., 2022, An open science and open data approach for the statistically robust estimation of forest disturbance areas: *International Journal of Applied Earth Observation and Geoinformation*, v. 106, article 102663, at <https://doi.org/10.1016/j.jag.2021.102663>.
- Francis, J., Scambos, T., and Tedesco, M., 2021, How are reduced Arctic sea ice and increased Greenland melting connected?: *Arctic, Antarctic, and Alpine Research*, v. 53, no. 1, p. 225–226, at <https://doi.org/10.1080/15230430.2021.1946243>.
- Franklin, J., Woodcock, C.E., and Warbington, R., 2000, Multi-attribute vegetation maps of Forest Service lands in California supporting resource management decisions: *Photogrammetric Engineering and Remote Sensing*, v. 66, no. 10, p. 1209–1217, at https://www.asprs.org/wp-content/uploads/pers/2000journal/october/2000_oct_1209-1217.pdf.
- Franklin, S.E., Ahmed, O.S., Wulder, M.A., White, J.C., Hermosilla, T., and Coops, N.C., 2015, Large area mapping of annual land cover dynamics using multitemporal change detection and classification of Landsat time series data: *Canadian Journal of Remote Sensing*, v. 41, no. 4, p. 293–314, at <https://doi.org/10.1080/07038992.2015.1089401>.
- Franklin, S.E., Gerylo, G.R., and Wulder, M.A., 2001, Texture analysis of IKONOS panchromatic data for Douglas-fir forest age class separability in British Columbia: *International Journal of Remote Sensing*, v. 22, no. 13, p. 2627–2632, at <https://doi.org/10.1080/01431160120769>.
- Franklin, S.E., Lavigne, M.B., Deuling, M.A., Wulder, M.A., and Hunt, E.R., Jr., 1997, Landsat TM derived forest covertypes for modelling net primary production: *Canadian Journal of Remote Sensing*, v. 23, no. 3, p. 243–251, at <https://doi.org/10.1080/07038992.1997.10855206>.

- Franklin, S.E., Lavigne, M.B., Deuling, M.J., Wulder, M.A., and Hunt, E.R., 1997, Estimation of forest leaf area index using remote sensing and GIS data for modelling net primary production: *International Journal of Remote Sensing*, v. 18, no. 16, p. 3459–3471, at <https://doi.org/10.1080/014311697216973>.
- Franklin, S.E., Lavigne, M.B., Wulder, M.A., and Mc Caffrey, T.M., 2002, Large-area forest structure change detection—An example: *Canadian Journal of Remote Sensing*, v. 28, no. 4, p. 588–592, at <https://doi.org/10.5589/m02-048>.
- Franklin, S.E., Lavigne, M.B., Wulder, M.A., and Stenhouse, G.B., 2002, Change detection and landscape structure mapping using remote sensing: *Forestry Chronicle*, v. 78, no. 5, p. 618–625, at <https://doi.org/10.5558/tfc78618-5>.
- Franklin, S.E., McCaffrey, T.M., Lavigne, M.B., Wulder, M.A., and Moskal, L.M., 2000, An ARC/INFO Macro Language (AML) polygon update program (PUP) integrating forest inventory and remotely-sensed data: *Canadian Journal of Remote Sensing*, v. 26, no. 6, p. 566–575, at <https://doi.org/10.1080/07038992.2000.10874797>.
- Franklin, S.E., Moskal, L.M., McCaffrey, T.M., Lavigne, M.B., and Wulder, M.A., 2001, Interpretation of forest harvest conditions in New Brunswick using Landsat TM enhanced wetness difference imagery (EWDI): *Canadian Journal of Remote Sensing*, v. 27, no. 2, p. 118–128, at <https://doi.org/10.1080/07038992.2001.10854926>.
- Franklin, S.E., and Wulder, M.A., 2002, Remote sensing methods in medium spatial resolution satellite data land cover classification of large areas: *Progress in Physical Geography*, v. 26, no. 2, p. 173–205, at <https://doi.org/10.1191/0309133302pp332ra>.
- Franklin, S.E., Wulder, M.A., and Lavigne, M.B., 1996, Automated derivation of geographic window sizes for use in remote sensing digital image texture analysis: *Computers and Geosciences*, v. 22, no. 6, p. 665–673, at [https://doi.org/10.1016/0098-3004\(96\)00009-X](https://doi.org/10.1016/0098-3004(96)00009-X).
- Franklin, S.E., Wulder, M.A., Skakun, R.S., and Carroll, A.L., 2003, Mountain pine beetle red-attack forest damage classification using stratified Landsat TM data in British Columbia, Canada: *Photogrammetric Engineering and Remote Sensing*, v. 69, no. 3, p. 283–288, at <https://doi.org/10.14358/PERS.69.3.283>.
- Franks, S., and Masek, J.G., 2007, How many bits? Radiometric resolution as a factor in obtaining forestry information with remotely sensed measurements, *in* 2007 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Barcelona, Spain, 23–28 July 2007, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1291–1294, at <https://doi.org/10.1109/IGARSS.2007.4423042>.
- Franks, S., Masek, J.G., Headley, R.M.K., Gasch, J., and Arvidson, T., 2009, Large area scene selection interface (LASSI)—Methodology of selecting Landsat imagery for The Global Land Survey 2005: *Photogrammetric Engineering and Remote Sensing*, v. 75, no. 11, p. 1287–1296, at <https://doi.org/10.14358/PERS.75.11.1287>.
- Franks, S., Masek, J.G., and Turner, M.G., 2013, Monitoring forest regrowth following large scale fire using satellite data—A case study of Yellowstone National Park, USA: *European Journal of Remote Sensing*, v. 46, no. 1, p. 561–569, at <https://doi.org/10.5721/EuJRS20134632>.
- Frantz, D., Hostert, P., Rufin, P., Ernst, S., Röder, A., and van der Linden, S., 2022, Revisiting the past—Replicability of a historic long-term vegetation dynamics assessment in the era of big data analytics: *Remote Sensing*, v. 14, no. 3, article 597, at <https://doi.org/10.3390/rs14030597>.

- Frantz, D., Rufin, P., Janz, A., Ernst, S., Pflugmacher, D., Schug, F., and Hostert, P., 2023, Understanding the robustness of spectral-temporal metrics across the global Landsat archive from 1984 to 2019 – a quantitative evaluation: *Remote Sensing of Environment*, v. 298, article 113823, at <https://doi.org/10.1016/j.rse.2023.113823>.
- Frantz, D., Schug, F., Okujeni, A., Navacchi, C., Wagner, W., van der Linden, S., and Hostert, P., 2021, National-scale mapping of building height using Sentinel-1 and Sentinel-2 time series: *Remote Sensing of Environment*, v. 252, article 112128, at <https://doi.org/10.1016/j.rse.2020.112128>.
- Frantz, D., Stellmes, M., and Hostert, P., 2019, A global MODIS water vapor database for the operational atmospheric correction of historic and recent Landsat imagery: *Remote Sensing*, v. 11, no. 3, article 257, at <https://doi.org/10.3390/rs11030257>.
- Frazer, G.W., Magnussen, S., Wulder, M.A., and Niemann, K.O., 2011, Simulated impact of sample plot size and co-registration error on the accuracy and uncertainty of LiDAR-derived estimates of forest stand biomass: *Remote Sensing of Environment*, v. 115, no. 2, p. 636–649, at <https://doi.org/10.1016/j.rse.2010.10.008>.
- Frazer, G.W., Wulder, M.A., and Niemann, K.O., 2005, Simulation and quantification of the fine-scale spatial pattern and heterogeneity of forest canopy structure—A lacunarity-based method designed for analysis of continuous canopy heights: *Forest Ecology and Management*, v. 214, no. 1–3, p. 65–90, at <https://doi.org/10.1016/j.foreco.2005.03.056>.
- Frazier, R.J., Coops, N.C., and Wulder, M.A., 2015, Boreal Shield forest disturbance and recovery trends using Landsat time series: *Remote Sensing of Environment*, v. 170, p. 317–327, at <https://doi.org/10.1016/j.rse.2015.09.015>.
- Frazier, R.J., Coops, N.C., Wulder, M.A., Hermosilla, T., and White, J.C., 2018, Analyzing spatial and temporal variability in short-term rates of post-fire vegetation return from Landsat time series: *Remote Sensing of Environment*, v. 205, p. 32–45, at <https://doi.org/10.1016/j.rse.2017.11.007>.
- Frazier, R.J., Coops, N.C., Wulder, M.A., and Kennedy, R.E., 2014, Characterization of aboveground biomass in an unmanaged boreal forest using Landsat temporal segmentation metrics: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 92, p. 137–146, at <https://doi.org/10.1016/j.isprsjrs.2014.03.003>.
- Frederiksen, H.D., and Allen, R.G., 2011, A common basis for analysis, evaluation and comparison of offstream water uses: *Water International*, v. 36, no. 3, p. 266–282, at <https://doi.org/10.1080/02508060.2011.580449>.
- Freeborn, P.H., Wooster, M.J., Roy, D.P., and Cochrane, M.A., 2014, Quantification of MODIS fire radiative power (FRP) measurement uncertainty for use in satellite-based active fire characterization and biomass burning estimation: *Geophysical Research Letters*, v. 41, no. 6, p. 1988–1994, at <https://doi.org/10.1002/2013GL059086>.
- French, A.N., Jacob, F., Anderson, M.C., Kustas, W.P., Timmermans, W., Gieske, A., Su, Z., Su, H., McCabe, M.F., et al., 2005, Erratum—Surface energy fluxes with the Advanced Spaceborne Thermal Emission and Reflection radiometer (ASTER) at the Iowa 2002 SMACEX site (USA) (*Remote Sensing of Environment* (2005) 99:1 (55-65) DOI—10.1016/j.rse.2005.05.015): *Remote Sensing of Environment*, v. 99, no. 4, p. 471–471, at <https://doi.org/10.1016/j.rse.2005.10.001>.
- French, A.N., Jacob, F., Anderson, M.C., Kustas, W.P., Timmermans, W., Gieske, A., Su, Z., Su, H., McCabe, M.F., et al., 2005, Surface energy fluxes with the Advanced Spaceborne Thermal Emission and

- Reflection radiometer (ASTER) at the Iowa 2002 SMACEX site (USA): *Remote Sensing of Environment*, v. 99, no. 1–2, p. 55–65, at <https://doi.org/10.1016/j.rse.2005.05.015>.
- French, A.N., Norman, J.M., and Anderson, M.C., 2003, A simple and fast atmospheric correction for spaceborne remote sensing of surface temperature: *Remote Sensing of Environment*, v. 87, no. 2–3, p. 326–333, at <https://doi.org/10.1016/j.rse.2003.08.001>.
- Fricker, G.A., Saatchi, S.S., Meyer, V., Gillespie, T.W., and Sheng, Y., 2012, Application of semi-automated filter to improve waveform lidar sub-canopy elevation model: *Remote Sensing*, v. 4, no. 6, p. 1494–1518, at <https://doi.org/10.3390/rs4061494>.
- Fricker, H.A., Carter, S.P., Bell, R.E., and Scambos, T.A., 2014, Active lakes of recovery ice stream, East Antarctica—A bedrock-controlled subglacial hydrological system: *Journal of Glaciology*, v. 60, no. 223, p. 1015–1030, at <https://doi.org/10.3189/2014JoG14J063>.
- Fricker, H.A., Coleman, R., Padman, L., Scambos, T.A., Bohlander, J., and Brunt, K.M., 2009, Mapping the grounding zone of the Amery Ice Shelf, East Antarctica using InSAR, MODIS and ICESat: *Antarctic Science*, v. 21, no. 5, p. 515–532, at <https://doi.org/10.1017/S095410200999023X>.
- Fricker, H.A., and Scambos, T.A., 2009, Connected subglacial lake activity on lower Mercer and Whillans Ice Streams, West Antarctica, 2003–2008: *Journal of Glaciology*, v. 55, no. 190, p. 303–315, at <https://doi.org/10.3189/002214309788608813>.
- Fricker, H.A., Scambos, T.A., Bindschadler, R.A., and Padman, L., 2007, An active subglacial water system in West Antarctica mapped from space: *Science*, v. 315, no. 5818, p. 1544–1548, at <https://doi.org/10.1126/science.1136897>.
- Fricker, H.A., Scambos, T.A., Carter, S., Davis, C., Haran, T., and Joughin, I., 2010, Synthesizing multiple remote-sensing techniques for subglacial hydrologic mapping—Application to a lake system beneath MacAyeal Ice Stream, West Antarctica: *Journal of Glaciology*, v. 56, no. 196, p. 187–199, at <https://doi.org/10.3189/002214310791968557>.
- Fricker, H.A., Siegfried, M.R., Carter, S.P., and Scambos, T.A., 2016, A decade of progress in observing and modeling Antarctic subglacial water systems: *Philosophical Transactions of the Royal Society A—Mathematical, Physical and Engineering Sciences*, v. 374, no. 2059, article 20140294, at <https://doi.org/10.1098/rsta.2014.0294>.
- Friedl, M.A., McIver, D.K., Hodges, J.C.F., Zhang, X.Y., Muchoney, D., Strahler, A.H., Woodcock, C.E., Gopal, S., Schneider, A., et al., 2002, Global land cover mapping from MODIS—Algorithms and early results: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 287–302, at [https://doi.org/10.1016/S0034-4257\(02\)00078-0](https://doi.org/10.1016/S0034-4257(02)00078-0).
- Friedl, M.A., McIver, D.K., Zhang, X.Y., Hodges, J.C.F., Schneider, A., Bacinni, A., Strahler, A.H., Cooper, A., Gao, F., et al., 2001, Global land cover classification results from MODIS, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 733–735, at <https://doi.org/10.1109/IGARSS.2001.976618>.
- Friedl, M.A., Woodcock, C.E., Gopal, S., Muchoney, D., Strahler, A.H., and Barker-Schaaf, C.B., 2000, A note on procedures used for accuracy assessment in land cover maps derived from AVHRR data: *International Journal of Remote Sensing*, v. 21, no. 5, p. 1073–1077, at <https://doi.org/10.1080/014311600210434>.

- Friedrich, K., Grossman, R.L., Huntington, J.L., Blanken, P.D., Lenters, J., Holman, K.D., Gochis, D., Livneh, B., Prairie, J., et al., 2018, Reservoir evaporation in the Western United States: *Bulletin of the American Meteorological Society*, v. 99, no. 1, p. 167–187, at <https://doi.org/10.1175/BAMS-D-15-00224.1>.
- Friis, C., Nielsen, J.Ø., Otero, I., Haberl, H., Niewöhner, J., and Hostert, P., 2016, From teleconnection to telecoupling—Taking stock of an emerging framework in land system science: *Journal of Land Use Science*, v. 11, no. 2, p. 131–153, at <https://doi.org/10.1080/1747423X.2015.1096423>.
- Fritz, S., See, L., McCallum, I., You, L., Bun, A., Moltchanova, E., Duerauer, M., Albrecht, F., Schill, C., et al., 2015, Mapping global cropland and field size: *Global Change Biology*, v. 21, no. 5, p. 1980–1992, at <https://doi.org/10.1111/gcb.12838>.
- Fritz, S., See, L., You, L., Justice, C.O., Becker-Reshef, I., Bydekerke, L., Cumani, R., Defourny, P., Erb, K., et al., 2013, The need for improved maps of global Cropland: *Eos*, v. 94, no. 3, p. 31–32, at <https://doi.org/10.1002/2013EO030006>.
- Fritz, S., You, L., Bun, A., See, L., McCallum, I., Schill, C., Perger, C., Liu, J., Hansen, M.C., and Obersteiner, M., 2011, Cropland for sub-Saharan Africa—A synergistic approach using five land cover data sets: *Geophysical Research Letters*, v. 38, no. 4, article L04404, at <https://doi.org/10.1029/2010GL046213>.
- Fuentes, M.M.P.B., Gredzens, C., Bateman, B.L., Boettcher, R., Ceriani, S.A., Godfrey, M.H., Helmers, D., Ingram, D.K., Kamrowski, R.L., et al., 2016, Conservation hotspots for marine turtle nesting in the United States based on coastal development: *Ecological Applications*, v. 26, no. 8, p. 2706–2717, at <https://doi.org/10.1002/eap.1386>.
- Gaffney, R., Porensky, L.M., Gao, F., Irisarri, J.G., Durante, M., Derner, J.D., and Augustine, D.J., 2018, Using APAR to predict aboveground plant productivity in semi-arid rangelands—Spatial and temporal relationships differ: *Remote Sensing*, v. 10, no. 9, article 1474, at <https://doi.org/10.3390/rs10091474>.
- Galbraith, A.E., Theiler, J., Thome, K.J., and Ziolkowski, R.W., 2005, Resolution enhancement of multilook imagery for the multispectral thermal imager: *IEEE Transactions on Geoscience and Remote Sensing*, v. 43, no. 9, p. 1964–1976, at <https://doi.org/10.1109/TGRS.2005.853569>.
- Galiatsatos, N., Donoghue, D.N.M., Watt, P., Bholanath, P., Pickering, J., Hansen, M.C., and Mahmood, A.R.J., 2020, An assessment of global forest change datasets for national forest monitoring and reporting: *Remote Sensing*, v. 12, no. 11, article 1790, at <https://doi.org/10.3390/rs12111790>.
- Gallant, A.L., Loveland, T.R., Sohl, T.L., and Napton, D.E., 2004, Using an ecoregion framework to analyze land-cover and land-use dynamics: *Environmental Management*, v. 34, no. 5, p. S89–110, at <https://doi.org/10.1007/s00267-003-0145-3>.
- Gallo, K., Ji, L., Reed, B., Dwyer, J.L., and Eidenshink, J., 2004, Comparison of MODIS and AVHRR 16-day normalized difference vegetation index composite data: *Geophysical Research Letters*, v. 31, no. 7, p. L07502 1–4, at <https://doi.org/10.1029/2003GL019385>.
- Gallo, K., Ji, L., Reed, B., Eidenshink, J., and Dwyer, J.L., 2005, Multi-platform comparisons of MODIS and AVHRR normalized difference vegetation index data: *Remote Sensing of Environment*, v. 99, no. 3, p. 221–231, at <https://doi.org/10.1016/j.rse.2005.08.014>.

- Gallo, K., Stensaas, G., Dwyer, J.L., and Longhenry, R., 2018, A Land Product Characterization System for comparative analysis of satellite data and products: *Remote Sensing*, v. 10, no. 1, article 48, at <https://doi.org/10.3390/rs10010048>.
- Ganguly, S., Basu, S., Nemani, R.R., Mukhopadhyay, S., Michaelis, A., Votava, P., Milesi, C., and Kumar, U., 2017, Deep learning for very high-resolution imagery classification, in Srivastava, A.N., Nemani, R., and Steinhäuser, K., eds., *Large-scale machine learning in the Earth sciences*: New York, N.Y., Chapman and Hall/CRC, p. 113–130, at <https://doi.org/10.4324%2F9781315371740-7>.
- Ganguly, S., Nemani, R.R., Knyazikhin, Y., Wang, W., Hashimoto, H., Votava, P., Michaelis, A., Milesi, C., Dungan, J.L., et al., 2010, A physically based approach in retrieving vegetation leaf area index from Landsat surface reflectance data, in *Evolution in remote sensing, Workshop on Hyperspectral Image and Signal Processing, 2nd*, Reykjavik, Iceland, 14–16 June 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), paper no. 5594875, at <https://doi.org/10.1109/WHISPERS.2010.5594875>.
- Ganguly, S., Nemani, R.R., Zhang, G., Hashimoto, H., Milesi, C., Michaelis, A., Wang, W., Votava, P., Samanta, A., et al., 2012, Generating global Leaf Area Index from Landsat—Algorithm formulation and demonstration: *Remote Sensing of Environment*, v. 122, p. 185–202, at <https://doi.org/10.1016/j.rse.2011.10.032>.
- Ganguly, S., Samanta, A., Schull, M.A., Shabanov, N.V., Milesi, C., Nemani, R.R., Knyazikhin, Y., and Myneni, R.B., 2008, Generating vegetation leaf area index Earth system data record from multiple sensors. Part 2—Implementation, analysis and validation: *Remote Sensing of Environment*, v. 112, no. 12, p. 4318–4332, at <https://doi.org/10.1016/j.rse.2008.07.013>.
- Ganguly, S., Schull, M.A., Samanta, A., Shabanov, N.V., Milesi, C., Nemani, R.R., Knyazikhin, Y., and Myneni, R.B., 2008, Generating vegetation leaf area index Earth system data record from multiple sensors. Part 1—Theory: *Remote Sensing of Environment*, v. 112, no. 12, p. 4333–4343, at <https://doi.org/10.1016/j.rse.2008.07.014>.
- Gao, B.C., Davis, C.O., and Goetz, A.F.H., 2006, A review of atmospheric correction techniques for hyperspectral remote sensing of land surfaces and ocean color, in *2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Denver, Colo., 31 July–4 August 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1979–1981, at <https://doi.org/10.1109/IGARSS.2006.512>.
- Gao, B.C., Montes, M.J., Davis, C.O., and Goetz, A.F.H., 2009, Atmospheric correction algorithms for hyperspectral remote sensing data of land and ocean: *Remote Sensing of Environment*, v. 113, no. S1, p. S17–S24, at <https://doi.org/10.1016/j.rse.2007.12.015>.
- Gao, F., 2013, Integrating Landsat with MODIS products for vegetation monitoring, in Qu, J., Powell, A., and Sivakumar, M.V.K., eds., *Satellite-based applications on climate change*: Dordrecht, Netherlands, Springer, p. 247–261, at https://doi.org/10.1007/978-94-007-5872-8_16.
- Gao, F., and Anderson, M., 2019, Evaluating yield variability of corn and soybean using Landsat-8, Sentinel-2 and MODIS in Google Earth Engine, in *2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 7286–7289, at <https://doi.org/10.1109/IGARSS.2019.8897990>.

- Gao, F., Anderson, M., Daughtry, C., and Johnson, D., 2018, Assessing the variability of corn and soybean yields in central Iowa using high spatiotemporal resolution multi-satellite imagery: *Remote Sensing*, v. 10, no. 9, article 1489, at <https://doi.org/10.3390/rs10091489>.
- Gao, F., Anderson, M., Daughtry, C., Karnieli, A., Hively, D., and Kustas, W., 2020, A within-season approach for detecting early growth stages in corn and soybean using high temporal and spatial resolution imagery: *Remote Sensing of Environment*, v. 242, article 111752, at <https://doi.org/10.1016/j.rse.2020.111752>.
- Gao, F., Anderson, M.C., and Hively, W.D., 2020, Detecting cover crop end-of-season using VEN μ S and Sentinel-2 satellite imagery: *Remote Sensing*, v. 12, no. 21, article 3524, at <https://doi.org/10.3390/rs12213524>.
- Gao, F., Anderson, M.C., Johnson, D.M., Seffrin, R., Wardlow, B., Suyker, A., Diao, C., and Browning, D.M., 2021, Towards routine mapping of crop emergence within the season using the harmonized Landsat and Sentinel-2 dataset: *Remote Sensing*, v. 13, no. 24, article 5074, at <https://doi.org/10.3390/rs13245074>.
- Gao, F., Anderson, M.C., Kustas, W.P., and Houborg, R., 2014, Retrieving leaf area index from Landsat using MODIS LAI products and field measurements: *IEEE Geoscience and Remote Sensing Letters*, v. 11, no. 4, p. 773–777, at <https://doi.org/10.1109/LGRS.2013.2278782>.
- Gao, F., Anderson, M.C., and Xie, D., 2016, Spatial and temporal information fusion for crop condition monitoring, in 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3579–3582, at <https://doi.org/10.1109/IGARSS.2016.7729927>.
- Gao, F., Anderson, M.C., Zhang, X., Yang, Z., Alfieri, J.G., Kustas, W.P., Mueller, R., Johnson, D.M., and Prueger, J.H., 2017, Toward mapping crop progress at field scales through fusion of Landsat and MODIS imagery: *Remote Sensing of Environment*, v. 188, p. 9–25, at <https://doi.org/10.1016/j.rse.2016.11.004>.
- Gao, F., de Colstoun, E.B., Ma, R., Weng, Q., Masek, J.G., Chen, J., Pan, Y., and Song, C., 2012, Mapping impervious surface expansion using medium-resolution satellite image time series—A case study in the Yangtze River Delta, China: *International Journal of Remote Sensing*, v. 33, no. 24, p. 7609–7628, at <https://doi.org/10.1080/01431161.2012.700424>.
- Gao, F., He, T., Masek, J.G., Shuai, Y., Schaaf, C.B., and Wang, Z., 2014, Angular effects and correction for medium resolution sensors to support crop monitoring: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 7, no. 11, article 2343592, at <https://doi.org/10.1109/JSTARS.2014.2343592>.
- Gao, F., Hilker, T., Zhu, X., Anderson, M.C., Masek, J.G., Wang, P., and Yang, Y., 2015, Fusing Landsat and MODIS data for vegetation monitoring: *IEEE Geoscience and Remote Sensing Magazine*, v. 3, no. 3, p. 47–60, at <https://doi.org/10.1109/MGRS.2015.2434351>.
- Gao, F., Jennewein, J., Hively, W.D., Soroka, A., Thieme, A., Bradley, D., Keppler, J., Mirsky, S., and Akumaga, U., 2023, Near real-time detection of winter cover crop termination using harmonized Landsat and Sentinel-2 (HLS) to support ecosystem assessment: *Science of Remote Sensing*, v. 7, article 100073, at <https://doi.org/10.1016/j.srs.2022.100073>.
- Gao, F., Jin, Y., Li, X., Schaaf, C.B., and Strahler, A.H., 2002, Bidirectional NDVI and atmospherically resistant BRDF inversion for vegetation canopy: *IEEE Transactions on Geoscience and Remote Sensing*, v. 40, no. 6, p. 1269–1278, at <https://doi.org/10.1109/TGRS.2002.800241>.

- Gao, F., Kustas, W.P., and Anderson, M.C., 2012, A data mining approach for sharpening thermal satellite imagery over land: *Remote Sensing*, v. 4, no. 11, p. 3287–3319, at <https://doi.org/10.3390/rs4113287>.
- Gao, F., Li, X., Strahler, A., and Schaaf, C.B., 2000, Acquiring a priori knowledge from ground and spaceborne BRDF measurements, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 718–720, at <https://doi.org/10.1109/IGARSS.2000.861681>.
- Gao, F., Li, X., Strahler, A., and Schaaf, C.B., 2000, Evaluation of the litransit kernel for BRDF modeling: *Remote Sensing Reviews*, v. 19, no. 1–4, p. 205–224, at <https://doi.org/10.1080/02757250009532419>.
- Gao, F., and Masek, J.G., 2006, Mapping wildland fire scar using fused Landsat and MODIS surface reflectance, *in* 2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Denver, Colo., 31 July–4 August 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4172–4175, at <https://doi.org/10.1109/IGARSS.2006.1070>.
- Gao, F., and Masek, J.G., 2008, Normalizing ASTER data using MODIS products for land cover classification, *in* 21st Congress of the International Society for Photogrammetry and Remote Sensing, ISPRS 2008, Beijing, China, 3–11 July 2008, ISPRS Archives Vol. XXXVII, Pt. B7: Lemmer, Netherlands, International Society for Photogrammetry and Remote Sensing, p. 1209–1213, at http://www.isprs.org/proceedings/XXXVII/congress/7_pdf/6_WG-VII-6/28.pdf.
- Gao, F., Masek, J.G., Pan, Y., Wu, L., and Bounoua, L., 2009, Mapping continuous urbanization from multi-temporal moderate resolution sensors—A case study on Yangtze Delta, China, *in* 5th International Workshop on the Analysis of Multi-Temporal Remote Sensing Images 2009, MultiTemp 2009, Groton, Conn., 28–30 July 2009, Proceedings, p. 291–298.
- Gao, F., Masek, J.G., Schwaller, M., and Hall, F., 2006, On the blending of the Landsat and MODIS surface reflectance—Predicting daily Landsat surface reflectance: *IEEE Transactions on Geoscience and Remote Sensing*, v. 44, no. 8, p. 2207–2218, at <https://doi.org/10.1109/TGRS.2006.872081>.
- Gao, F., Masek, J.G., and Wolfe, R.E., 2009, Automated registration and orthorectification package for Landsat and Landsat-like data processing: *Journal of Applied Remote Sensing*, v. 3, no. 1, article 033515, at <https://doi.org/10.1117/1.3104620>.
- Gao, F., Masek, J.G., Wolfe, R.E., and Huang, C., 2010, Building a consistent medium resolution satellite data set using moderate resolution imaging spectroradiometer products as reference: *Journal of Applied Remote Sensing*, v. 4, no. 1, article 043526, at <https://doi.org/10.1117/1.3430002>.
- Gao, F., Masek, J.G., Wolfe, R.E., and Tan, B., 2010, Normalizing Landsat and ASTER data using MODIS data products for forest change detection, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3206–3209, at <https://doi.org/10.1109/IGARSS.2010.5650978>.
- Gao, F., Schaaf, C.B., Jin, Y., Lucht, W., and Strahler, A., 2004, Deriving albedo from coupled MERIS and MODIS surface products, *in* MERIS User Workshop, Frascati, Italy, 10–14 November 2003, Proceedings: Frascati, Italy, European Space Agency, p. 191–206, at <https://ntrs.nasa.gov/search.jsp?R=20040070915>.

- Gao, F., Schaaf, C.B., Strahler, A.H., Jin, Y., and Li, X., 2003, Detecting vegetation structure using a kernel-based BRDF model: *Remote Sensing of Environment*, v. 86, no. 2, p. 198–205, at [https://doi.org/10.1016/S0034-4257\(03\)00100-7](https://doi.org/10.1016/S0034-4257(03)00100-7).
- Gao, F., Schaaf, C.B., Strahler, A.H., and Lucht, W., 2001, Using a multikernel least-variance approach to retrieve and evaluate albedo from limited bidirectional measurements: *Remote Sensing of Environment*, v. 76, no. 1, p. 57–66, at [https://doi.org/10.1016/S0034-4257\(00\)00192-9](https://doi.org/10.1016/S0034-4257(00)00192-9).
- Gao, F., Schaaf, C.B., Strahler, A.H., Roesch, A., Lucht, W., and Dickinson, R., 2005, MODIS bidirectional reflectance distribution function and albedo Climate Modeling Grid products and the variability of albedo major global vegetation types: *Journal of Geophysical Research Atmospheres*, v. 110, no. 1, p. 1–13, at <https://doi.org/10.1029/2004JD005190>.
- Gao, F., Shuai, Y., He, T., Schaaf, C.B., Masek, J.G., and Wang, Z., 2013, Influence of angular effects and adjustment on medium resolution sensors for crop monitoring, *in* International Conference on Agro-Geoinformatics, 2nd, Fairfax, Va., 12–16 August 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 296–301, at <https://doi.org/10.1109/Argo-Geoinformatics.2013.6621925>.
- Gao, F., Wang, P., and Masek, J.G., 2013, Integrating remote sensing data from multiple optical sensors for ecological and crop condition monitoring, *in* Remote Sensing and Modeling of Ecosystems for Sustainability X, San Diego, Calif., 26–29 August 2013, Proceedings of SPIE Vol. 8869: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 886903, at <https://doi.org/10.1117/12.2023417>.
- Gao, F., Wang, Y., and Zhang, Y., 2020, Evaluation of the Crosta method for the retrieval of water quality parameters from remote sensing data in the Pearl River Estuary: *Water Quality Research Journal of Canada*, v. 55, no. 2, p. 209–220, at <https://doi.org/10.2166/wqrj.2020.024>.
- Gao, R., Alsina, M.M., Torres-Rua, A.F., Hipps, L., Kustas, W.P., White, W.A., Anderson, M., Alfieri, J., Dokoozlian, N., et al., 2022, Exploratory analysis of vineyard leaf water potential against sUAS multispectral and temperature information, *in* Autonomous Air and Ground Sensing Systems for Agricultural Optimization and Phenotyping VII 2022, Orlando, Fla., 6–12 June 2022, Proceedings of SPIE Vol. 12114: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 121140k, at <https://doi.org/10.1117/12.2622995>.
- Gao, W., Hu, J., Li, Y., Qiu, H., Yuan, Z., Gao, F., Duan, Z., Suzuki, T., and Ohishi, Y., 2014, Supercontinuum generation in two kinds of chalcogenide microstructured optical fibers, *in* Optoelectronic Devices and Integration V, Beijing, China, 9–11 October 2014, Proceedings of SPIE Vol. 9270: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 92701o, at <https://doi.org/10.1117/12.2073353>.
- Garcia, M., Raes, D., Allen, R.G., and Herbas, C., 2004, Dynamics of reference evapotranspiration in the Bolivian highlands (Altiplano): *Agricultural and Forest Meteorology*, v. 125, no. 1–2, p. 67–82, at <https://doi.org/10.1016/j.agrformet.2004.03.005>.
- Gardner, A.S., Moholdt, G., Scambos, T.A., Fahnestock, M., Ligtenberg, S., Van Den Broeke, M., and Nilsson, J., 2018, Increased West Antarctic and unchanged East Antarctic ice discharge over the last 7 years: *Cryosphere*, v. 12, no. 2, p. 521–547, at <https://doi.org/10.5194/tc-12-521-2018>.
- Gardner, M.A., Morton, C.G., Huntington, J.L., Niswonger, R.G., and Henson, W.R., 2018, Input data processing tools for the integrated hydrologic model GSFLOW: *Environmental Modelling and Software*, v. 109, p. 41–53, at <https://doi.org/10.1016/j.envsoft.2018.07.020>.

- Garland, W.C., Biggar, S.F., Zalewski, E.F., and Thome, K.J., 2004, Optical correction for multiple back reflections in an automated spectroradiometric measurement system, *in* Imaging Spectrometry IX, San Diego, Calif., 6–7 August 2003, Proceedings of SPIE Vol. 5159: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 82–90, at <https://doi.org/10.1117/12.505082>.
- Garma, R.J.D., Schott, J.R., Fiete, R.D., Qiao, J., and McKeown, D., 2017, Image quality modeling and characterization of Nyquist-sampled framing sensors with operational considerations for remote sensing: *Optical Engineering*, v. 56, no. 1, article 013102, at <https://doi.org/10.1117/1.OE.56.1.013102>.
- Gartley, M., and Schott, J.R., 2013, Serendipitous imaging of space objects with the advanced land imager: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 6, no. 2, p. 440–445, at <https://doi.org/10.1109/JSTARS.2012.2222874>.
- Gartley, M.G., Brown, S.D., Goodenough, A.D., Sanders, N.J., and Schott, J.R., 2007, Polarimetric scene modeling in the thermal infrared, *in* Polarization Science and Remote Sensing III, San Diego, Calif., 29–30 August 2007, Proceedings of SPIE Vol. 6682: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 66820C, at <https://doi.org/10.1117/12.740528>.
- Gartley, M.G., Brown, S.D., and Schott, J.R., 2008, Micro-scale surface and contaminate modeling for polarimetric signature prediction, *in* Polarization—Measurement, Analysis, and Remote Sensing VIII, Orlando, Fla., 18–19 March 2008, Proceedings of SPIE Vol. 6972: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 697213, at <https://doi.org/10.1117/12.801904>.
- Gartley, M.G., Schott, J.R., and Brown, S.D., 2008, Micro-scale modeling of contaminant effects on surface optical properties, *in* Imaging Spectrometry XIII, San Diego, Calif., 12–13 August 2008, Proceedings of SPIE Vol. 7086: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 70860H, at <https://doi.org/10.1117/12.796428>.
- Gartley, M.G., and Schott, J.R.R., 2009, Longwave infrared pBRDF principles, *in* Schott, J.R., ed., *Fundamentals of Polarimetric Remote Sensing*: Bellingham, Wash., SPIE Press, p. 191–210, at <https://doi.org/10.1117/3.817304.ch11>.
- Gartley, M.G., and Schott, J.R.R., 2009, LWIR pBRDF measurements and modelling, *in* Schott, J.R., ed., *Fundamentals of Polarimetric Remote Sensing*: Bellingham, Wash., SPIE Press, p. 211–240, at <https://doi.org/10.1117/3.817304.ch12>.
- Gasch, J., Arvidson, T., and Goward, S.N., 2000, Fire and ice—An assessment of Landsat 7/ETM+ acquisitions over glaciers, volcanoes, Antarctica and sea ice, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 457–459, at <https://doi.org/10.1109/IGARSS.2000.861595>.
- Gasch, J., Arvidson, T., Goward, S.N., Andrefouet, S., Hu, C., and Muller-Karger, F.E., 2000, Assessment of Landsat 7/ETM+ coverage of coral reefs worldwide, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2687–2689, at <https://doi.org/10.1109/IGARSS.2000.859682>.

- Gatebe, C.K., King, M.D., Lyapustin, A.I., Arnold, G.T., and Redemann, J., 2005, Airborne spectral measurements of ocean directional reflectance: *Journal of the Atmospheric Sciences*, v. 62, no. 4, p. 1072–1092, at <https://doi.org/10.1175/JAS3386.1>.
- Gatebe, C.K., King, M.D., Platnick, S., Arnold, G.T., Vermote, E.F., and Schmid, B., 2003, Airborne spectral measurements of surface-atmosphere anisotropy for several surfaces and ecosystems over southern Africa: *Journal of Geophysical Research Atmospheres*, v. 108, no. 13, p. SAF 25–1 – SAF 25–16, at <https://doi.org/10.1029/2002JD002397>
- Gaulton, R., Hilker, T., Wulder, M.A., Coops, N.C., and Stenhouse, G., 2011, Characterizing stand-replacing disturbance in western Alberta grizzly bear habitat, using a satellite-derived high temporal and spatial resolution change sequence: *Forest Ecology and Management*, v. 261, no. 4, p. 865–877, at <https://doi.org/10.1016/j.foreco.2010.12.020>.
- Gaveau, D.L.A., Kshatriya, M., Sheil, D., Sloan, S., Molidena, E., Wijaya, A., Wich, S., Ancrenaz, M., Hansen, M.C., et al., 2013, Reconciling forest conservation and logging in Indonesian Borneo: *PLoS ONE*, v. 8, no. 8, article e69887, at <https://doi.org/10.1371/journal.pone.0069887>.
- Gavier-Pizarro, G.I., Kuemmerle, T., Hoyos, L.E., Stewart, S.I., Huebner, C.D., Keuler, N.S., and Radeloff, V.C., 2012, Monitoring the invasion of an exotic tree (*Ligustrum lucidum*) from 1983 to 2006 with Landsat TM/ETM+ satellite data and Support Vector Machines in Córdoba, Argentina: *Remote Sensing of Environment*, v. 122, p. 134–145, at <https://doi.org/10.1016/j.rse.2011.09.023>.
- Gavier-Pizarro, G.I., Radeloff, V.C., Stewart, S.I., Huebner, C.D., and Keuler, N.S., 2010, Housing is positively associated with invasive exotic plant species richness in New England, USA: *Ecological Applications*, v. 20, no. 7, p. 1913–1925, at <https://doi.org/10.1890/09-2168.1>.
- Gavier-Pizarro, G.I., Radeloff, V.C., Stewart, S.I., Huebner, C.D., and Keuler, N.S., 2010, Rural housing is related to plant invasions in forests of southern Wisconsin, USA: *Landscape Ecology*, v. 25, no. 10, p. 1505–1518, at <https://doi.org/10.1007/s10980-010-9516-8>.
- Gavilán, P., Berengena, J., and Allen, R.G., 2007, Measuring versus estimating net radiation and soil heat flux—Impact on Penman-Monteith reference ET estimates in semiarid regions: *Agricultural Water Management*, v. 89, no. 3, p. 275–286, at <https://doi.org/10.1016/j.agwat.2007.01.014>.
- Gavin, D., Dhu, T., Sagar, S., Mueller, N., Dunn, B., Lewis, A., Lymburner, L., Minchin, S., Oliver, S., et al., 2018, Digital Earth Australia—From satellite data to better decisions, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8633–8635, at <https://doi.org/10.1109/IGARSS.2018.8518160>.
- Gege, P., Fries, J., Haschberger, P., Schötz, P., Schwarzer, H., Strobl, P., Suhr, B., Ulbrich, G., and Jan Vreeling, W., 2009, Calibration facility for airborne imaging spectrometers: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 64, no. 4, p. 387–397, at <https://doi.org/10.1016/j.isprsjprs.2009.01.006>.
- Gentile, A., Pierce, L., Ciraolo, G., Zhang, G., La Loggia, G., and Nemani, R.R., 2009, Comparison between energy balance and mass balance models for actual evapotranspiration assessment, *in* Remote Sensing for Agriculture, Ecosystems, and Hydrology XI, Berlin, Germany, 1–3 September 2009, Proceedings of SPIE Vol. 7472: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 747212, at <https://doi.org/10.1117/12.830229>.
- Georgiev, G.T., Butler, J.J., Cooksey, C., Ding, L., and Thome, K.J., 2011, SWIR calibration of spectralon reflectance factor, *in* Sensors, Systems, and Next-Generation Satellites XV, Prague, Czech

- Republic, 19–22 September 2011, Proceedings of SPIE Vol. 8176: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 81760W, at <https://doi.org/10.1117/12.898325>.
- Georgiev, G.T., Butler, J.J., Thome, K.J., Cooksey, C., and Ding, L., 2016, Preliminary results of BTDF calibration of transmissive solar diffusers for remote sensing, *in* Earth Observing Systems XXI, San Diego, Calif., 30 August–1 September 2016, Proceedings of SPIE Vol. 9972: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 997205, at <https://doi.org/10.1117/12.2235802>.
- Georgiev, G.T., Butler, J.J., Thome, K.J., Cooksey, C., and Ding, L., 2017, Establishing BRDF calibration capabilities through shortwave infrared, *in* Earth Observing Systems XXII, San Diego, Calif., 6–10 August 2017, Proceedings of SPIE Vol. 10402: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 104021n, at <https://doi.org/10.1117/12.2273007>.
- Georgiev, G.T., Butler, J.J., Thome, K.J., Ramos-Izquierdo, L.A., Ding, L., Graziani, L.J., and Meadows, G.A., 2014, Initial studies of the directional reflectance changes in pressed and sintered PTFE diffusers following exposure to contamination and ionizing radiation: *Metrologia*, v. 51, no. 6, article S319, at <https://doi.org/10.1088/0026-1394/51/6/S319>.
- Georgiev, G.T., Butler, J.J., Thome, K.J., Ranson, K.J., and King, M.D., 2010, The effect of incident light polarization on vegetation Bidirectional Reflectance Factor, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1652–1655, at <https://doi.org/10.1109/IGARSS.2010.5652893>.
- Georgiev, G.T., Butler, J.J., Thome, K.J., Ranson, K.J., and King, M.D., 2011, Assessment of multiangular polarization contribution to the bidirectional reflectance of natural samples, *in* 2011 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Vancouver, Canada, 24–29 July 2011, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1017–1020, at <https://doi.org/10.1109/IGARSS.2011.6049306>.
- Gerace, A., Gartley, M., Schott, J.R., Raqueño, N., and Raqueño, R., 2011, Data-driven simulations of the Landsat Data Continuity Mission (LDCM) platform, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVII, Orlando, Fla., 25–28 April 2011, Proceedings of SPIE Vol. 8048: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 804815, at <https://doi.org/10.1117/12.885561>.
- Gerace, A., and Schott, J.R., 2008, An increased potential for the Landsat data continuity mission to contribute to water quality studies for inland, case 2 waters, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. IV379–IV382, at <https://doi.org/10.1109/IGARSS.2008.4779737>.
- Gerace, A., and Schott, J.R., 2009, The increased potential for the Landsat Data Continuity Mission to contribute to case 2 water quality studies, *in* Earth Observing Systems XIV, San Diego, Calif., 3–5 August 2009, Proceedings of SPIE Vol. 7452: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 74520U, at <https://doi.org/10.1117/12.825271>.
- Gerace, A., Schott, J.R., Gartley, M., and Montanaro, M., 2014, An analysis of the side slither on-orbit calibration technique using the DIRSIG model: *Remote Sensing*, v. 6, no. 11, p. 10523–10545, at <https://doi.org/10.3390/rs61110523>.

- Gerace, A.D., Goodenough, A.A., Montanaro, M., Yang, J., and McCorkel, J.T., 2015, The development of a DIRSIG simulation environment to support instrument trade studies for the SOLARIS sensor, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXI, Baltimore, Md., 20–23 April 2015, Proceedings of SPIE Vol. 9472: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 947214, at <https://doi.org/10.1117/12.2177507>.
- Gerace, A.D., and Schott, J.R., 2012, Over-water atmospheric correction for Landsat's new OLI sensor, *in* Ocean Sensing and Monitoring IV, Baltimore, Md., 24–26 April 2012, Proceedings of SPIE Vol. 8372: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 837211, at <https://doi.org/10.1117/12.919304>.
- Gerace, A.D., Schott, J.R., Brown, S.D., and Gartley, M.G., 2012, Using DIRSIG to identify uniform sites and demonstrate the utility of the side-slit calibration technique for Landsat's new pushbroom instruments, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVIII, Baltimore, Md., 23–27 April 2012, Proceedings of SPIE Vol. 8390: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 83902a, at <https://doi.org/10.1117/12.919327>.
- Gerace, A.D., Schott, J.R., and Nevins, R., 2013, Increased potential to monitor water quality in the near-shore environment with Landsat's next-generation satellite: *Journal of Applied Remote Sensing*, v. 7, no. 1, article 12428, at <https://doi.org/10.1117/1.JRS.7.073558>.
- Getirana, A., Boone, A., Peugeot, C., Ait-Mesbah, S., Polcher, J., Anderson, M.C., Balsamo, G., Boussetta, S., Dutra, E., et al., 2017, Streamflows over a West African basin from the ALMIP2 model ensemble: *Journal of Hydrometeorology*, v. 18, no. 7, p. 1831–1845, at <https://doi.org/10.1175/JHM-D-16-0233.1>.
- Ghannam, S., Awadallah, M., Abbott, A.L., and Wynne, R.H., 2014, Multisensor multitemporal data fusion using the wavelet transform, *in* ISPRS Technical Commission I Symposium, Denver, Colo., 17–20 November 2014, International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XL-1: Bethesda, Md., International Society for Photogrammetry and Remote Sensing, p. 121–128, at <https://doi.org/10.5194/isprsarchives-XL-1-121-2014>.
- Ghatak, D., Zaitchik, B., Hain, C., and Anderson, M.C., 2017, The role of local heating in the 2015 Indian Heat Wave: *Scientific Reports*, v. 7, no. 1, article 7707, at <https://doi.org/10.1038/s41598-017-07956-5>.
- Ghatak, D., Zaitchik, B., Kumar, S., Matin, M.A., Bajracharya, B., Hain, C., and Anderson, M., 2018, Influence of precipitation forcing uncertainty on hydrological simulations with the NASA South Asia Land Data Assimilation System: *Hydrology*, v. 5, no. 4, article 57, at <https://doi.org/10.3390/hydrology5040057>.
- Ghimire, B., Williams, C.A., Collatz, G.J., Vanderhoof, M., Rogan, J., Kulakowski, D., and Masek, J.G., 2015, Large carbon release legacy from bark beetle outbreaks across Western United States: *Global Change Biology*, v. 21, no. 8, p. 3087–3101, at <https://doi.org/10.1111/gcb.12933>.
- Ghimire, B., Williams, C.A., Masek, J.G., Gao, F., Wang, Z., Schaaf, C.B., and He, T., 2014, Global albedo change and radiative cooling from anthropogenic land cover change, 1700 to 2005 based on MODIS, land use harmonization, radiative kernels, and reanalysis: *Geophysical Research Letters*, v. 41, no. 24, p. 9087–9096, at <https://doi.org/10.1002/2014GL061671>.

- Gibb, R.G., Purss, M.B.J., Sabeur, Z., Strobl, P., and Qu, T., 2022, Global reference grids for big Earth data: *Big Earth Data*, v. 6, no. 3, p. 251–255, article 251, at <https://doi.org/10.1080/20964471.2022.2113037>.
- Gibson, G.R., Campbell, J.B., and Wynne, R.H., 2012, Three decades of war and food insecurity in Iraq: *Photogrammetric Engineering and Remote Sensing*, v. 78, no. 8, p. 885–895, at <https://doi.org/10.14358/PERS.78.8.895>.
- Giglio, L., Boschetti, L., Roy, D.P., Humber, M.L., and Justice, C.O., 2018, The Collection 6 MODIS burned area mapping algorithm and product: *Remote Sensing of Environment*, v. 217, p. 72–85, at <https://doi.org/10.1016/j.rse.2018.08.005>.
- Giglio, L., Csiszar, I., and Justice, C.O., 2006, Global distribution and seasonality of active fires as observed with the Terra and Aqua Moderate Resolution Imaging Spectroradiometer (MODIS) sensors: *Journal of Geophysical Research Biogeosciences*, v. 111, no. 2, article G02016, at <https://doi.org/10.1029/2005JG000142>.
- Giglio, L., Csiszar, I., Restás, Á., Morissette, J.T., Schroeder, W., Morton, D., and Justice, C.O., 2008, Active fire detection and characterization with the advanced spaceborne thermal emission and reflection radiometer (ASTER): *Remote Sensing of Environment*, v. 112, no. 6, p. 3055–3063, at <https://doi.org/10.1016/j.rse.2008.03.003>.
- Giglio, L., Descloitres, J., Justice, C.O., and Kaufman, Y.J., 2003, An enhanced contextual fire detection algorithm for MODIS: *Remote Sensing of Environment*, v. 87, no. 2–3, p. 273–282, at [https://doi.org/10.1016/S0034-4257\(03\)00184-6](https://doi.org/10.1016/S0034-4257(03)00184-6).
- Giglio, L., and Justice, C.O., 2003, Effect of wavelength selection on characterization of fire size and temperature: *International Journal of Remote Sensing*, v. 24, no. 17, p. 3515–3520, at <https://doi.org/10.1080/0143116031000117056>.
- Giglio, L., Kendall, J.D., and Justice, C.O., 1999, Evaluation of global fire detection algorithms using simulated avhrr infrared data: *International Journal of Remote Sensing*, v. 20, no. 10, p. 1947–1985, at <https://doi.org/10.1080/014311699212290>.
- Giglio, L., Loboda, T., Roy, D.P., Quayle, B., and Justice, C.O., 2009, An active-fire based burned area mapping algorithm for the MODIS sensor: *Remote Sensing of Environment*, v. 113, no. 2, p. 408–420, at <https://doi.org/10.1016/j.rse.2008.10.006>.
- Giglio, L., Schroeder, W., and Justice, C.O., 2016, The Collection 6 MODIS active fire detection algorithm and fire products: *Remote Sensing of Environment*, v. 178, p. 31–41, at <https://doi.org/10.1016/j.rse.2016.02.054>.
- Giglio, L., Zubkova, M., and Roy, D.P., 2022, Comment on Otón et al. Analysis of trends in the FireCCI Global Long Term Burned Area Product (1982–2018). *Fire* 2021, 4, 74: *Fire*, v. 5, no. 2, article 52, at <https://doi.org/10.3390/fire5020052>.
- Giles, D.M., Sinyuk, A., Sorokin, M.G., Schafer, J.S., Smirnov, A., Slutsker, I., Eck, T.F., Holben, B.N., Lewis, J.R., et al., 2019, Advancements in the Aerosol Robotic Network (AERONET) Version 3 database - Automated near-real-time quality control algorithm with improved cloud screening for Sun photometer aerosol optical depth (AOD) measurements: *Atmospheric Measurement Techniques*, v. 12, no. 1, p. 169–209, at <https://doi.org/10.5194/amt-12-169-2019>.
- Gillanders, S.N., Coops, N.C., Wulder, M.A., Gergel, S.E., and Nelson, T., 2008, Multitemporal remote sensing of landscape dynamics and pattern change—Describing natural and anthropogenic

- trends: *Progress in Physical Geography*, v. 32, no. 5, p. 503–528, at <https://doi.org/10.1177/0309133308098363>.
- Gillanders, S.N., Coops, N.C., Wulder, M.A., and Goodwin, N.R., 2008, Application of Landsat satellite imagery to monitor land-cover changes at the Athabasca Oil Sands, Alberta, Canada: *Canadian Geographer*, v. 52, no. 4, p. 466–485, at <https://doi.org/10.1111/j.1541-0064.2008.00225.x>.
- Gimmi, U., and Radeloff, V.C., 2013, Assessing naturalness in northern great lakes forests based on historical land-cover and vegetation changes: *Environmental Management*, v. 52, no. 2, p. 481–492, at <https://doi.org/10.1007/s00267-013-0102-0>.
- Gimmi, U., Schmidt, S.L., Hawbaker, T.J., Alcántara, C., Gafvert, U., and Radeloff, V.C., 2011, Increasing development in the surroundings of U.S. National Park Service holdings jeopardizes park effectiveness: *Journal of Environmental Management*, v. 92, no. 1, p. 229–239, at <https://doi.org/10.1016/j.jenvman.2010.09.006>.
- Giree, N., Stehman, S.V., Potapov, P., and Hansen, M.C., 2013, A sample-based forest monitoring strategy using Landsat, AVHRR and MODIS data to estimate gross forest cover loss in malaysia between 1990 and 2005: *Remote Sensing*, v. 5, no. 4, p. 1842–1855, at <https://doi.org/10.3390/rs5041842>.
- Giri, C., Ochieng, E., Tieszen, L.L., Zhu, Z., Singh, A., Loveland, T.R., Masek, J.G., and Duke, N., 2011, Status and distribution of mangrove forests of the world using Earth observation satellite data: *Global Ecology and Biogeography*, v. 20, no. 1, p. 154–159, at <https://doi.org/10.1111/j.1466-8238.2010.00584.x>.
- Giri, C., Pengra, B., Long, J., and Loveland, T.R., 2013, Next generation of global land cover characterization, mapping, and monitoring: *International Journal of Applied Earth Observation and Geoinformation*, v. 25, no. 1, p. 30–37, at <https://doi.org/10.1016/j.jag.2013.03.005>.
- Gitas, I.Z., Chuvieco, E., and Justice, C.O., 2008, Introduction to the issue on wildland fires and biomass burning: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 1, no. 4, p. 218–219, at <https://doi.org/10.1109/JSTARS.2009.2014093>.
- Gitelson, A.A., Peng, Y., Masek, J.G., Rundquist, D.C., Verma, S., Suyker, A., Baker, J.M., Hatfield, J.L., and Meyers, T., 2012, Remote estimation of crop gross primary production with Landsat data: *Remote Sensing of Environment*, v. 121, p. 404–414, at <https://doi.org/10.1016/j.rse.2012.02.017>.
- Gitelson, A.A., Viña, A., Masek, J.G., Verma, S.B., and Suyker, A.E., 2008, Synoptic monitoring of gross primary productivity of maize using Landsat data: *IEEE Geoscience and Remote Sensing Letters*, v. 5, no. 2, p. 133–137, at <https://doi.org/10.1109/LGRS.2008.915598>.
- Glasser, N.F., Kulesa, B., Luckman, A., Jansen, D., King, E.C., Sammonds, P.R., Scambos, T.A., and Jezek, K.C., 2009, Surface structure and stability of the Larsen C ice shelf, Antarctic Peninsula: *Journal of Glaciology*, v. 55, no. 191, p. 400–410, at <https://doi.org/10.3189/002214309788816597>.
- Glasser, N.F., and Scambos, T.A., 2008, A structural glaciological analysis of the 2002 Larsen B ice-shelf collapse: *Journal of Glaciology*, v. 54, no. 184, p. 3–16, at <https://doi.org/10.3189/002214308784409017>.
- Glasser, N.F., Scambos, T.A., Bohlander, J., Truffer, M., Pettit, E., and Davies, B.J., 2011, From ice-shelf tributary to tidewater glacier—Continued rapid recession, acceleration and thinning of Röhss Glacier following the 1995 collapse of the Prince Gustav Ice Shelf, Antarctic Peninsula: *Journal of*

- Glaciology, v. 57, no. 203, p. 397–406, at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.453.3484&rep=rep1&type=pdf>.
- Gleason, S., Cherniak, I., Zakharenkova, I., Hunt, D., Sokolovskiy, S., Freesland, D., Krimchansky, A., McCorkel, J., Coulter, L., et al., 2022, The first atmospheric radio occultation profiles from a GPS receiver in geostationary orbit: IEEE Geoscience and Remote Sensing Letters, v. 19, article 1005605, at <https://doi.org/10.1109/LGRS.2022.3185828>.
- Go, S., Lyapustin, A., Schuster, G.L., Choi, M., Ginoux, P., Chin, M., Kalashnikova, O., Dubovik, O., Kim, J., et al., 2022, Inferring iron-oxide species content in atmospheric mineral dust from DSCOVR EPIC observations: Atmospheric Chemistry and Physics, v. 22, no. 2, p. 1395–1423, at <https://doi.org/10.5194/acp-22-1395-2022>.
- Gobron, N., Belward, A.S., Pinty, B., and Knorr, W., 2010, Monitoring biosphere vegetation 1998-2009: Geophysical Research Letters, v. 37, no. 15, article L15402, at <https://doi.org/10.1029/2010GL043870>.
- Gobron, N., Jung, M., Belward, A.S., Mélin, F., Pinty, B., Robustelli, M., and Taberner, M., 2009, Overview and relevance of the ESA-JRC FAPAR products for land applications, in Sustaining the millennium development goals, International Symposium on Remote Sensing of Environment, 33rd, Stresa, Italy, 4–9 May 2009, Proceedings: Tuscon, Ariz., International Center for Remote Sensing of Environment, p. 21–24.
- Gobron, N., Marioni, M., Robustelli, M., and Vermote, E., 2019, Can we use the QA4ECV black-sky fraction of absorbed photosynthetically active radiation (FAPAR) using AVHRR surface reflectance to assess terrestrial global change?: Remote Sensing, v. 11, no. 24, article 3055, at <https://doi.org/10.3390/rs11243055>.
- Gobron, N., Pinty, B., Ausedat, O., Chen, J.M., Cohen, W.B., Fensholt, R., Gond, V., Huemmrich, K.F., Lavergne, T., et al., 2006, Evaluation of fraction of absorbed photosynthetically active radiation products for different canopy radiation transfer regimes—Methodology and results using Joint Research Center products derived from SeaWiFS against ground-based estimations: Journal of Geophysical Research Atmospheres, v. 111, no. 13, article D13110, at <https://doi.org/10.1029/2005JD006511>.
- Gobron, N., Pinty, B., Mélin, F., Taberner, M., Verstraete, M.M., Belward, A.S., Lavergne, T., and Widlowski, J.L., 2005, The state of vegetation in Europe following the 2003 drought: International Journal of Remote Sensing, v. 26, no. 9, p. 2013–2020, at <https://doi.org/10.1080/01431160412331330293>.
- Godoy, M.M., Martinuzzi, S., Kramer, H.A., Defossé, G.E., Argañaraz, J., and Radeloff, V.C., 2019, Rapid WUI growth in a natural amenity-rich region in central-western Patagonia, Argentina: International Journal of Wildland Fire, v. 28, no. 7, p. 473–484, at <https://doi.org/10.1071/WF18097>.
- Goetz, A.F.H., 2001, Progress in hyperspectral imaging of vegetation, in Optics in Agriculture, 1990-2000—A Critical Review, Boston, Mass., 5–8 November 2000, Proceedings of SPIE Vol. 10301: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1030103, at <https://doi.org/10.1117/12.420098>.
- Goetz, A.F.H., 2009, Three decades of hyperspectral remote sensing of the Earth—A personal view: Remote Sensing of Environment, v. 113, no. S1, p. S5–S16, at <https://doi.org/10.1016/j.rse.2007.12.014>.

- Goetz, A.F.H., 2011, Measuring the Earth from above—30 years (and counting) of hyperspectral imaging: *Photonics Spectra*, v. 45, no. 6, p. 42–47, at <https://www.photonicsspectra-digital.com/photonicsspectra/201106?pg=42#pg42>.
- Goetz, A.F.H., Boardman, J.W., Kindel, B.C., and Heidebrecht, K.B., 1997, Atmospheric corrections—On deriving surface reflectance from hyperspectral imagers, *in* *Imaging Spectrometry III*, San Diego, Calif., 27 July–1 August 1997, *Proceedings of SPIE Vol. 3118*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 14–22, at <https://doi.org/10.1117/12.283831>.
- Goetz, A.F.H., Chabrilat, S., and Lu, Z., 2001, Field reflectance spectrometry for detection of swelling clays at construction sites: *Field Analytical Chemistry and Technology*, v. 5, no. 3, p. 143–155, at <https://doi.org/10.1002/fact.1015>.
- Goetz, A.F.H., and Curtiss, B., 1996, Hyperspectral imaging of the Earth—Remote analytical chemistry in an uncontrolled environment: *Field Analytical Chemistry and Technology*, v. 1, no. 2, p. 67–76, at [https://doi.org/10.1002/\(SICI\)1520-6521\(1996\)1:2<67::AID-FACT2>3.0.CO;2-B](https://doi.org/10.1002/(SICI)1520-6521(1996)1:2<67::AID-FACT2>3.0.CO;2-B).
- Goetz, A.F.H., Curtiss, B., and Shiley, D.A., 2009, Rapid gangue mineral concentration measurement over conveyors by NIR reflectance spectroscopy: *Minerals Engineering*, v. 22, no. 5, p. 490–499, at <https://doi.org/10.1016/j.mineng.2008.12.013>.
- Goetz, A.F.H., Ferri, M., Kindel, B., and Qu, Z., 2002, Atmospheric correction of Hyperion data and techniques for dynamic scene correction, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 1408–1410, at <https://doi.org/10.1109/IGARSS.2002.1026132>.
- Goetz, A.F.H., Franklin Evans, K., and Ferri, M., 2003, Removing thin cirrus cloud effects in Hyperion data using the 1.38 and 1.87 μm water vapor absorption bands, *in* 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 83–85, at <https://doi.org/10.1109/IGARSS.2003.1293686>.
- Goetz, A.F.H., Heidebrecht, K.B., and Kindel, B., 1997, Effect of atmospheric correction on AVIRIS data to obtain consistent multiyear foliage chemistry results, *in* 1997 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Singapore, 3–8 August 1997, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 1385–1388, at <https://doi.org/10.1109/IGARSS.1997.606454>.
- Goetz, A.F.H., Kindel, B.C., Ferri, M., and Qu, Z., 2003, HATCH—Results from simulated radiances, AVIRIS and Hyperion: *IEEE Transactions on Geoscience and Remote Sensing*, v. 41, no. 6 pt. 1, p. 1215–1222, at <https://doi.org/10.1109/TGRS.2003.812905>.
- Goetz, A.F.H., Olsen, H.W., Noe, D.C., Koehler, J.R., Humble, J.P., Fuschino, J., Johnson, E.L., and Johnson, B.J., 2007, Spectral reflectance as a rapid technique for field determination of soil engineering properties, *in* *Geo-volution*, Denver, Colo., 10 November 2006, *Proceedings: Reston, Va., American Society of Civil Engineers*, p. 33–61, at [https://doi.org/10.1061/40890\(219\)3](https://doi.org/10.1061/40890(219)3).
- Goetz, S.J., Hansen, M.C., Houghton, R.A., Walker, W., Laporte, N., and Busch, J., 2015, Measurement and monitoring needs, capabilities and potential for addressing reduced emissions from deforestation and forest degradation under REDD+: *Environmental Research Letters*, v. 10, no. 12, article 123001, at <https://doi.org/10.1088/1748-9326/10/12/123001>.

- Goetz, S.J., Prince, S.D., Goward, S.N., Thawley, M.M., and Small, J., 1999, Satellite remote sensing of primary production—An improved production efficiency modeling approach: *Ecological Modelling*, v. 122, no. 3, p. 239–255, at [https://doi.org/10.1016/S0304-3800\(99\)00140-4](https://doi.org/10.1016/S0304-3800(99)00140-4).
- Goetz, S.J., Prince, S.D., Goward, S.N., Thawley, M.M., Small, J., and Johnston, A., 1999, Mapping net primary production and related biophysical variables with remote sensing—Application to the BOREAS region: *Journal of Geophysical Research Atmospheres*, v. 104, no. D22, p. 27719–27734, at <https://doi.org/10.1029/1999JD900269>.
- Goldberg, H.R., Ratto, C.R., Banerjee, A., Kelbaugh, M.T., Giglio, M., and Vermote, E.F., 2023, Automated global-scale detection and characterization of anthropogenic activity using multi-source satellite-based remote sensing imagery, in *Geospatial Informatics XIII 2023*, Orlando, Fla., 30 April–5 May 2023, *Proceedings of SPIE Vol. 12525*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1252502, at <https://doi.org/10.1117/12.2663071>.
- Golden, K., Nemani, R.R., Pang, W., and Votava, P., 2005, An intelligent agent for on-demand mission data products, in *i- SAIRAS 2005—The 8th International Symposium on Artificial Intelligence, Robotics and Automation in Space*, Munich, Germany, 5–8 September 2005, ESA-SP 603: Munich, Germany, European Space Agency, p. 745–752, at <http://adsabs.harvard.edu/abs/2005aira.confE..96G>.
- Golowich, S., Lockwood, R., Klein, S., and Thome, K.J., 2015, Toward an optical fiber spectral radiometer for surface reflectance measurements, in *2015 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Milan, Italy, 26–31 July 2015, *Proceedings*: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3902–3905, at <https://doi.org/10.1109/IGARSS.2015.7326677>.
- Gómez, C., White, J.C., and Wulder, M.A., 2011, Characterizing the state and processes of change in a dynamic forest environment using hierarchical spatio-temporal segmentation: *Remote Sensing of Environment*, v. 115, no. 7, p. 1665–1679, at <https://doi.org/10.1016/j.rse.2011.02.025>.
- Gómez, C., White, J.C., and Wulder, M.A., 2016, Optical remotely sensed time series data for land cover classification—A review: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 116, p. 55–72, at <https://doi.org/10.1016/j.isprsjprs.2016.03.008>.
- Gómez, C., White, J.C., Wulder, M.A., and Alejandro, P., 2014, Historical forest biomass dynamics modelled with Landsat spectral trajectories: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 93, p. 14–28, at <https://doi.org/10.1016/j.isprsjprs.2014.03.008>.
- Gómez, C., White, J.C., Wulder, M.A., and Alejandro, P., 2015, Integrated object-based spatiotemporal characterization of forest change from an annual time series of Landsat image composites: *Canadian Journal of Remote Sensing*, v. 41, no. 4, p. 271–292, at <https://doi.org/10.1080/07038992.2015.1089162>.
- Gómez, C., Wulder, M.A., Dawson, A.G., Ritchie, W., and Green, D.R., 2014, Shoreline change and coastal vulnerability characterization with Landsat imagery—a case study in the Outer Hebrides, Scotland: *Scottish Geographical Journal*, v. 130, no. 4, p. 279–299, at <https://doi.org/10.1080/14702541.2014.923579>.
- Gómez, C., Wulder, M.A., Montes, F., and Delgado, J.A., 2011, Forest structural diversity characterization in Mediterranean pines of central Spain with quickbird-2 imagery and canonical correlation analysis: *Canadian Journal of Remote Sensing*, v. 37, no. 6, p. 628–642, at <https://doi.org/10.5589/m12-005>.

- Gómez, C., Wulder, M.A., Montes, F., and Delgado, J.A., 2012, Modeling forest structural parameters in the mediterranean pines of central Spain using QuickBird-2 imagery and classification and regression tree analysis (CART): *Remote Sensing*, v. 4, no. 1, p. 135–159, at <https://doi.org/10.3390/rs4010135>.
- Gómez, C., Wulder, M.A., White, J.C., Montes, F., and Delgado, J.A., 2012, Characterizing 25 years of change in the area, distribution, and carbon stock of Mediterranean pines in central Spain: *International Journal of Remote Sensing*, v. 33, no. 17, p. 5546–5573, at <https://doi.org/10.1080/01431161.2012.663115>.
- Gond, V., Freycon, V., Molino, J.F., Brunaux, O., Ingrassia, F., Joubert, P., Pekel, J.F., Prévost, M.F., Thierron, V., et al., 2011, Broad-scale spatial pattern of forest landscape types in the Guiana Shield: *International Journal of Applied Earth Observation and Geoinformation*, v. 13, no. 3, p. 357–367, at <https://doi.org/10.1016/j.jag.2011.01.004>.
- Gong, P., Biging, G.S., Lee, S.M., Mei, X., Sheng, Y., Pu, R., Xu, B., Schwarzr, K.P., and Mostafa, M., 1999, Photo ecometrics for forest inventory: *Geographic Information Sciences*, v. 5, no. 1, p. 9–14, at <https://doi.org/10.1080/10824009909480508>.
- Gong, P., Sheng, Y., and Biging, G.S., 2002, 3D model-based tree measurement from high-resolution aerial imagery: *Photogrammetric Engineering and Remote Sensing*, v. 68, no. 11, p. 1203–1212, at https://www.asprs.org/wp-content/uploads/pers/2002journal/november/2002_nov_1203-1212.pdf.
- Gonzalez-Abraham, C.E., Radeloff, V.C., Hammer, R.B., Hawbaker, T.J., Stewart, S.I., and Clayton, M.K., 2007, Building patterns and landscape fragmentation in northern Wisconsin, USA: *Landscape Ecology*, v. 22, no. 2, p. 217–230, at <https://doi.org/10.1007/s10980-006-9016-z>.
- Gonzalez-Abraham, C.E., Radeloff, V.C., Hawbaker, T.J., Hammer, R.B., Stewart, S.I., and Clayton, M.K., 2007, Patterns of houses and habitat loss from 1937 to 1999 in northern Wisconsin, USA: *Ecological Applications*, v. 17, no. 7, p. 2011–2023, at <https://doi.org/10.1890/06-1963.1>.
- González-Dugo, M.P., Moran, M.S., Mateos, L., and Bryant, R., 2006, Canopy temperature variability as an indicator of crop water stress severity: *Irrigation Science*, v. 24, no. 4, p. 233–240, at <https://doi.org/10.1007/s00271-005-0022-8>.
- Gonzalez-Dugo, M.P., Neale, C.M.U., Mateos, L., Kustas, W.P., Prueger, J.H., Anderson, M.C., and Li, F., 2009, A comparison of operational remote sensing-based models for estimating crop evapotranspiration: *Agricultural and Forest Meteorology*, v. 149, no. 11, p. 1843–1853, at <https://doi.org/10.1016/j.agrformet.2009.06.012>.
- Goodbody, T.R.H., Tompalski, P., Coops, N.C., White, J.C., Wulder, M.A., and Sanelli, M., 2020, Uncovering spatial and ecological variability in gap size frequency distributions in the Canadian boreal forest: *Scientific Reports*, v. 10, no. 1, article 6069, at <https://doi.org/10.1038/s41598-020-62878-z>.
- Goodenough, A., Raqueño, R., Bellandi, M., Brown, S., and Schott, J.R., 2006, A flexible hyperspectral simulation tool for complex littoral environments, *in* *Photonics for Port and Harbor Security II*, Orlando, Fla., 18–19 April 2006, *Proceedings of SPIE Vol. 6204*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 62040F, at <https://doi.org/10.1117/12.665827>.
- Goodrich, D.C., Chehbouni, A., Goff, B., MacNish, B., Maddock, T., Moran, M.S., Shuttleworth, W.J., Williams, D.G., Watts, C., et al., 2000, Preface paper to the Semi-Arid Land-Surface-Atmosphere

- (SALSA) Program special issue: Agricultural and Forest Meteorology, v. 105, no. 1–3, p. 3–20, at [https://doi.org/10.1016/S0168-1923\(00\)00178-7](https://doi.org/10.1016/S0168-1923(00)00178-7).
- Goodrich, D.C., Heilman, P., Anderson, M., Baffaut, C., Bonta, J., Bosch, D., Bryant, R., Cosh, M., Endale, D., et al., 2021, The USDA-ARS Experimental Watershed Network—Evolution, lessons learned, societal benefits, and moving forward: *Water Resources Research*, v. 57, no. 2, article e2019WR026473, at <https://doi.org/10.1029/2019WR026473>.
- Goodrich, D.C., Scott, R., Qi, J., Goff, B., Unkrich, C.L., Moran, M.S., Williams, D.L., Schaeffer, S., Snyder, K., et al., 2000, Seasonal estimates of riparian evapotranspiration using remote and in situ measurements: *Agricultural and Forest Meteorology*, v. 105, no. 1–3, p. 281–309, at [https://doi.org/10.1016/S0168-1923\(00\)00197-0](https://doi.org/10.1016/S0168-1923(00)00197-0).
- Goodwin, N.R., Coops, N.C., Wulder, M.A., Gillanders, S., Schroeder, T.A., and Nelson, T., 2008, Estimation of insect infestation dynamics using a temporal sequence of Landsat data: *Remote Sensing of Environment*, v. 112, no. 9, p. 3680–3689, at <https://doi.org/10.1016/j.rse.2008.05.005>.
- Goodwin, N.R., Magnussen, S., Coops, N.C., and Wulder, M.A., 2010, Curve fitting of time-series Landsat imagery for characterizing a mountain pine beetle infestation: *International Journal of Remote Sensing*, v. 31, no. 12, p. 3263–3271, at <https://doi.org/10.1080/01431160903186277>.
- Gopal, S., and Woodcock, C.E., 1996, Remote sensing of forest change using artificial neural networks: *IEEE Transactions on Geoscience and Remote Sensing*, v. 34, no. 2, p. 398–404, at <https://doi.org/10.1109/36.485117>.
- Gopal, S., Woodcock, C.E., and Strahler, A.H., 1996, Fuzzy ARTMAP classification of global land cover from AVHRR data set, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 538–540, at <https://doi.org/10.1109/IGARSS.1996.516396>.
- Gopal, S., Woodcock, C.E., and Strahler, A.H., 1999, Fuzzy neural network classification of global land cover from a 1°AVHRR data set: *Remote Sensing of Environment*, v. 67, no. 2, p. 230–243, at [https://doi.org/10.1016/S0034-4257\(98\)00088-1](https://doi.org/10.1016/S0034-4257(98)00088-1).
- Gopal, S., Woodcock, C.E., and Unis, G., 1996, Labeling map polygons using remote sensing—Calibrating decision rules: *Geographical Systems*, v. 3, no. 4, p. 243–258.
- Gopalakrishnan, R., Bala, G., Jayaraman, M., Cao, L., Nemani, R.R., and Ravindranath, N.H., 2011, Sensitivity of terrestrial water and energy budgets to CO₂-physiological forcing—An investigation using an offline land model: *Environmental Research Letters*, v. 6, no. 4, article 044013, at <https://doi.org/10.1088/1748-9326/6/4/044013>.
- Gopalakrishnan, R., Kauffman, J.S., Fagan, M.E., Coulston, J.W., Thomas, V.A., Wynne, R.H., Fox, T.R., and Quirino, V.F., 2019, Creating landscape-scale site index maps for the southeastern US is possible with airborne LiDAR and Landsat imagery: *Forests*, v. 10, no. 3, article 234, at <https://doi.org/10.3390/f10030234>.
- Gopalakrishnan, R., Thomas, V.A., Coulston, J.W., and Wynne, R.H., 2015, Generation of wall-to-wall canopy height maps using heterogeneous lidar datasets over a large region, in *Imaging Geospatial Technology Forum, IGTF - ASPRS, Annual Conference, Tampa, Fla., 4–8 May 2015*, Proceedings: Bethesda, Md., American Society for Photogrammetry and Remote Sensing, p. 60–64, at <https://www.asprs.org/wp-content/uploads/2015/05/2C%5BLD11%5D-paper.pdf>.

- Gopalakrishnan, R., Thomas, V.A., Coulston, J.W., and Wynne, R.H., 2015, Prediction of canopy heights over a large region using heterogeneous lidar datasets—Efficacy and challenges: *Remote Sensing*, v. 7, no. 9, p. 11036–11060, at <https://doi.org/10.3390/rs70911036>.
- Gopalakrishnan, R., Thomas, V.A., Wynne, R.H., Coulston, J.W., and Fox, T.R., 2018, Shrub detection using disparate airborne laser scanning acquisitions over varied forest cover types: *International Journal of Remote Sensing*, v. 39, no. 4, p. 1220–1242, at <https://doi.org/10.1080/01431161.2017.1399476>.
- Gorelick, N., Yang, Z., Arévalo, P., Bullock, E.L., Insfrán, K.P., and Healey, S.P., 2023, A global time series dataset to facilitate forest greenhouse gas reporting: *Environmental Research Letters*, v. 18, no. 8, article 084001, at <https://doi.org/10.1088/1748-9326/ace2da>.
- Gorelick, N.S., Hancher, M., Dixon, M., Ilyushchenko, S., Thau, D., and Moore, R., 2017, Google Earth Engine—Planetary-scale geospatial analysis for everyone: *Remote Sensing of Environment*, v. 202, p. 18–27, at <https://doi.org/10.1016/j.rse.2017.06.031>.
- Gorooh, V.A., Kalia, S., Nguyen, P., Hsu, K.L., Sorooshian, S., Ganguly, S., and Nemani, R.R., 2020, Deep Neural Network Cloud-Type Classification (DeepCTC) model and its application in evaluating PERSIANN-CCS: *Remote Sensing*, v. 12, no. 2, article 316, at <https://doi.org/10.3390/rs12020316>.
- Gorzo, J.M., Pidgeon, A.M., Thogmartin, W.E., Allstadt, A.J., Radeloff, V.C., Heglund, P.J., and Vavrus, S.J., 2016, Using the North American Breeding Bird Survey to assess broad-scale response of the continent’s most imperiled avian community, grassland birds, to weather variability: *Condor*, v. 118, no. 3, p. 502–512, at <https://doi.org/10.1650/CONDOR-15-180.1>.
- Gosnell, H., Kennedy, R., Harris, T., and Abrams, J., 2020, A land systems science approach to assessing forest governance and characterizing the emergence of social forestry in the Western Cascades of Oregon: *Environmental Research Letters*, v. 15, no. 5, article 055003, at <https://doi.org/10.1088/1748-9326/ab666b>.
- Goward, S.N., 2005, Albedo and reflectivity, in Oliver, J.E., ed., *Encyclopedia of Earth sciences series*: Dordrecht, Netherlands, Springer, p. 32–35, at https://doi.org/10.1007/1-4020-3266-8_8.
- Goward, S.N., 2022, Landsat@50—Perspective from a Landsat Program veteran: *Frontiers in Ecology and the Environment*, v. 20, no. 9, p. 498–499, at <https://doi.org/10.1002/fee.2567>.
- Goward, S.N., Arvidson, T., Williams, D.L., Faundeen, J., Irons, J.R., and Franks, S., 2006, Historical record of Landsat global coverage—Mission operations, NSLRSDA, and international cooperator stations: *Photogrammetric Engineering and Remote Sensing*, v. 72, no. 10, p. 1155–1169, at <https://doi.org/10.14358/PERS.72.10.1155>.
- Goward, S.N., Arvidson, T., Williams, D.L., Irish, R., and Irons, J.R., 2008, Moderate spatial resolution optical sensors, in Warner, T.A., Nellis, M.D., and Foody, G.M., eds., *The SAGE handbook of remote sensing*: Thousand Oaks, Calif., SAGE, p. 123–138, at <https://doi.org/10.4135/9780857021052.n9>.
- Goward, S.N., Bauer, M.E., Biehl, L.L., Hall, F.G., Hoffer, R.M., Richards, J.A., Rocchio, L.E.P., Salomonson, V.V., and Williams, D.L., 2022, David A. Landgrebe—Evolution of digital remote sensing and Landsat: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 15, p. 4835–4860, at <https://doi.org/10.1109/JSTARS.2022.3176804>.

- Goward, S.N., Chander, G., Pagnutti, M., Marx, A., Ryan, R., Thomas, N., and Tetrault, R., 2012, Complementarity of ResourceSat-1 AWiFS and Landsat TM/ETM+ sensors: Remote Sensing of Environment, v. 123, p. 41–56, at <https://doi.org/10.1016/j.rse.2012.03.002>.
- Goward, S.N., Davis, P.E., Fleming, D., Miller, L., and Townshend, J.R., 2003, Empirical comparison of Landsat 7 and IKONOS multispectral measurements for selected Earth Observation System (EOS) validation sites: Remote Sensing of Environment, v. 88, no. 1–2, p. 80–99, at <https://doi.org/10.1016/j.rse.2003.07.009>.
- Goward, S.N., Loboda, T.V., Williams, D.L., and Huang, C., 2019, Landsat orbital repeat frequency and cloud contamination—A case study for eastern United States: Photogrammetric Engineering and Remote Sensing, v. 85, no. 2, p. 109–118, at <https://doi.org/10.14358/PERS.85.2.109>.
- Goward, S.N., and Masek, J.G., 2001, Landsat—30 Years and counting: Remote Sensing of Environment, v. 78, no. 1–2, p. 1–2, at [https://doi.org/10.1016/S0034-4257\(01\)00306-6](https://doi.org/10.1016/S0034-4257(01)00306-6).
- Goward, S.N., Masek, J.G., Cohen, W.B., Moisen, G., Collatz, G.J., Healey, S.P., Houghton, R.A., Huang, C., Kennedy, R.E., et al., 2008, Forest disturbance and North American carbon flux: Eos, v. 89, no. 11, p. 105–106, at <https://doi.org/10.1029/2008EO110001>.
- Goward, S.N., Masek, J.G., Irons, J.R., and Williams, D.L., 1999, Monitoring contemporary trends in the earth's environment. Landsat-7 science mission: Geomatics Info Magazine, v. 13, no. 12, p. 43–45.
- Goward, S.N., Masek, J.G., Loveland, T.R., Dwyer, J.L., Williams, D.L., Arvidson, T., Rocchio, L.E.P., and Irons, J.R., 2021, Semi-centennial of Landsat observations & pending Landsat 9 launch: Photogrammetric Engineering and Remote Sensing, v. 87, no. 8, p. 533–539, at <https://doi.org/10.14358/PERS.87.8.533>.
- Goward, S.N., Masek, J.G., Williams, D.L., Irons, J.R., and Thompson, R.J., 2001, The Landsat 7 mission—Terrestrial research and applications for the 21st century: Remote Sensing of Environment, v. 78, no. 1–2, p. 3–12, at [https://doi.org/10.1016/S0034-4257\(01\)00262-0](https://doi.org/10.1016/S0034-4257(01)00262-0).
- Goward, S.N., Townshend, J.R.G., Zanoni, V., Policelli, F., Stanley, T., Ryan, R., Holekamp, K., Underwood, L., Pagnutti, M., and Fletcher, R., 2003, Acquisition of Earth science remote sensing observations from commercial sources—Lessons learned from the Space Imaging IKONOS example: Remote Sensing of Environment, v. 88, no. 1–2, p. 209–219, at <https://doi.org/10.1016/j.rse.2003.06.007>.
- Goward, S.N., Underwood, L.W., Fearon, M.G., Fletcher, R., Garvin, J.B., Hurtt, G., Jensen, J., Nolan, M., Holekamp, K., et al., 2008, NASA's Earth science use of commercially available remote sensing datasets: Photogrammetric Engineering and Remote Sensing, v. 74, no. 2, p. 139–146.
- Goward, S.N., Williams, D.L., Arvidson, T., and Irons, J.R., 2011, The future of Landsat-class remote sensing, in Ramachandran, B., Justice, C., and Abrams, M.J., eds., Remote sensing and digital image processing: New York, N.Y., Springer, p. 807–834, at https://doi.org/10.1007/978-1-4419-6749-7_35.
- Goward, S.N., Xue, Y., and Czajkowski, K.P., 2002, Evaluating land surface moisture conditions from the remotely sensed temperature/vegetation index measurements—An exploration with the simplified simple biosphere model: Remote Sensing of Environment, v. 79, no. 2–3, p. 225–242, at [https://doi.org/10.1016/S0034-4257\(01\)00275-9](https://doi.org/10.1016/S0034-4257(01)00275-9).

- Goward, S.N.N., Haskett, J., Williams, D.L., Arvidson, T., Gasch, J., Lonigro, R., Reeley, M., Irons, J.R., Dubayah, R., et al., 1999, Enhanced Landsat capturing all the earth's land areas: *Eos*, v. 80, no. 26, p. 289–293, at <https://doi.org/10.1029/99EO00208>.
- Grabska, E., Hostert, P., Pflugmacher, D., and Ostapowicz, K., 2019, Forest stand species mapping using the sentinel-2 time series: *Remote Sensing*, v. 11, no. 10, article 1197, at <https://doi.org/10.3390/rs11101197>.
- Grafton, R.Q., Williams, J., Perry, C.J., Molle, F., Ringler, C., Steduto, P., Udall, B., Wheeler, S.A., Wang, Y., et al., 2018, The paradox of irrigation efficiency: *Science*, v. 361, no. 6404, p. 748–750, at <https://doi.org/10.1126/science.aat9314>.
- Gralewicz, N.J., Nelson, T.A., and Wulder, M.A., 2012, Factors influencing national scale wildfire susceptibility in Canada: *Forest Ecology and Management*, v. 265, p. 20–29, at <https://doi.org/10.1016/j.foreco.2011.10.031>.
- Gralewicz, N.J., Nelson, T.A., and Wulder, M.A., 2012, Spatial and temporal patterns of wildfire ignitions in Canada from 1980 to 2006: *International Journal of Wildland Fire*, v. 21, no. 3, p. 230–242, at <https://doi.org/10.1071/WF10095>.
- Grasso, L., Hillger, D.W., Schaaf, C.B., Wang, Z., Brummer, R., and Demaria, R., 2013, Use of MODIS 16-day albedos in generating GOES-R advanced baseline imager imagery: *Journal of Applied Remote Sensing*, v. 7, no. 1, article 12210, at <https://doi.org/10.1117/1.JRS.7.073584>.
- Grau, H.R., Aide, T.M., Zimmerman, J.K., Thomlinson, J.R., Helmer, E.L., and Zou, X., 2003, The Ecological Consequences of Socioeconomic and Land-Use Changes in Postagriculture Puerto Rico: *BioScience*, v. 53, no. 12, p. 1159–1168, at [https://doi.org/10.1641/0006-3568\(2003\)053\[1159:TECOSA\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2003)053[1159:TECOSA]2.0.CO;2).
- Gray, A.L., Mattar, K.E., Vachon, P.W., Bindschadler, R.A., Jezek, K.C., Forster, R., and Crawford, J.P., 1998, InSAR results from the RADARSAT Antarctic mapping mission data—Estimation of glacier motion using a simple registration procedure, in 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1638–1640, at <https://doi.org/10.1109/IGARSS.1998.691662>.
- Gray, A.N., Cohen, W.B., Yang, Z., and Pfaff, E., 2019, Integrating TimeSync disturbance detection and repeat forest inventory to predict carbon flux: *Forests*, v. 10, no. 11, article 984, at <https://doi.org/10.3390/f10110984>.
- Gray, L., Joughin, I., Tulaczyk, S., Spikes, V.B., Bindschadler, R.A., and Jezek, K., 2005, Evidence for subglacial water transport in the West Antarctic Ice Sheet through three-dimensional satellite radar interferometry: *Geophysical Research Letters*, v. 32, no. 3, p. 1–4, at <https://doi.org/10.1029/2004GL021387>.
- Gray, L., Short, N., Bindschadler, R.A., Joughin, I., Padman, L., Vornberger, P., and Khananian, A., 2002, RADARSAT interferometry for Antarctic grounding-zone mapping: *Annals of Glaciology*, v. 34, p. 269–276, at <https://doi.org/10.3189/172756402781817879>.
- Grégoire, J.M., Eva, H.D., Belward, A.S., Palumbo, I., Simonetti, D., and Brink, A., 2013, Effect of land-cover change on Africa's burnt area: *International Journal of Wildland Fire*, v. 22, no. 2, p. 107–120, at <https://doi.org/10.1071/WF11142>.

- Griffith, D.M., Byrd, K.B., Anderegg, L.D.L., Allan, E., Gatziolis, D., Roberts, D., Yacoub, R., and Nemani, R.R., 2023, Capturing patterns of evolutionary relatedness with reflectance spectra to model and monitor biodiversity: *Proceedings of the National Academy of Sciences of the United States of America*, v. 120, no. 24, at <https://doi.org/10.1073/pnas.2215533120>.
- Griffith, D.M., Byrd, K.B., Taylor, N., Allan, E., Bittner, L., O'Brien, B., Parker, V.T., Vasey, M.C., Pavlick, R., and Nemani, R.R., 2023, Variation in leaf reflectance spectra across the California flora partitioned by evolutionary history, geographic origin, and deep time: *Journal of Geophysical Research Biogeosciences*, v. 128, no. 2, article e2022JG007160, at <https://doi.org/10.1029/2022JG007160>.
- Griffith, J.A., Stehman, S.V., and Loveland, T.R., 2003, Landscape trends in Mid-Atlantic and Southeastern United States ecoregions: *Environmental Management*, v. 32, no. 5, p. 572–588, at <https://doi.org/10.1007/s00267-003-0078-2>.
- Griffith, J.A., Stehman, S.V., Sohl, T.L., and Loveland, T.R., 2003, Detecting trends in landscape pattern metrics over a 20-year period using a sampling-based monitoring programme: *International Journal of Remote Sensing*, v. 24, no. 1, p. 175–181, at <https://doi.org/10.1080/01431160305009>.
- Griffiths, P., and Hostert, P., 2015, Forest cover dynamics during massive ownership changes—Annual disturbance mapping using annual Landsat time-series, *in* Ramachandran, B., Justice, C.O., and Abrams, M.J., eds., *Land remote sensing and global environmental change*: New York, N.Y., Springer, p. 307–322, at https://doi.org/10.1007/978-3-319-15967-6_15.
- Griffiths, P., Hostert, P., Gruebner, O., and der Linden, S.v., 2010, Mapping megacity growth with multi-sensor data: *Remote Sensing of Environment*, v. 114, no. 2, p. 426–439, at <https://doi.org/10.1016/j.rse.2009.09.012>.
- Griffiths, P., Hostert, P., and Van Der Linden, S., 2012, Beyond Landsat—Pixel-based large area composites for added value Sentinel-2 products, *in* 1st Sentinel-2 Preparatory Symposium, Frascati, Italy, 23–27 April 2012, ESA-SP 707: Frascati, Italy, European Space Agency, p. 1–4, at <http://adsabs.harvard.edu/abs/2012ESASP.707E..19G>.
- Griffiths, P., Jakimow, B., and Hostert, P., 2018, Reconstructing long term annual deforestation dynamics in Pará and Mato Grosso using the Landsat archive: *Remote Sensing of Environment*, v. 216, p. 497–513, at <https://doi.org/10.1016/j.rse.2018.07.010>.
- Griffiths, P., Kuemmerle, T., Baumann, M., Radeloff, V.C., Abrudan, I.V., Lieskovsky, J., Munteanu, C., Ostapowicz, K., and Hostert, P., 2014, Forest disturbances, forest recovery, and changes in forest types across the Carpathian ecoregion from 1985 to 2010 based on Landsat image composites: *Remote Sensing of Environment*, v. 151, p. 72–88, at <https://doi.org/10.1016/j.rse.2013.04.022>.
- Griffiths, P., Kuemmerle, T., Kennedy, R.E., Abrudan, I.V., Knorn, J., and Hostert, P., 2012, Using annual time-series of Landsat images to assess the effects of forest restitution in post-socialist Romania: *Remote Sensing of Environment*, v. 118, p. 199–214, at <https://doi.org/10.1016/j.rse.2011.11.006>.
- Griffiths, P., Müller, D., Kuemmerle, T., and Hostert, P., 2013, Agricultural land change in the Carpathian ecoregion after the breakdown of socialism and expansion of the European Union: *Environmental Research Letters*, v. 8, no. 4, article 045024, at <https://doi.org/10.1088/1748-9326/8/4/045024>.

- Griffiths, P., Nendel, C., and Hostert, P., 2019, Intra-annual reflectance composites from Sentinel-2 and Landsat for national-scale crop and land cover mapping: *Remote Sensing of Environment*, v. 220, p. 135–151, at <https://doi.org/10.1016/j.rse.2018.10.031>.
- Griffiths, P., Nendel, C., Pickert, J., and Hostert, P., 2020, Towards national-scale characterization of grassland use intensity from integrated Sentinel-2 and Landsat time series: *Remote Sensing of Environment*, v. 238, article 111124, at <https://doi.org/10.1016/j.rse.2019.03.017>.
- Griffiths, P., Van Der Linden, S., Kuemmerle, T., and Hostert, P., 2013, Erratum—A pixel-based Landsat compositing algorithm for large area land cover mapping (*IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*): *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 6, no. 5, p. 2088–2101, at <https://doi.org/10.1109/JSTARS.2012.2228167>.
- Grimm, D.C., Messinger, D.W., Kerekes, J.P., and Schott, J.R., 2005, Hybridization of hyperspectral imaging target detection algorithm chains, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI, Orlando, Fla., 28 March–1 April 2005, Proceedings of SPIE Vol. 5806: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 753–763, at <https://doi.org/10.1117/12.605889>.
- Grippa, M., Kergoat, L., Boone, A., Peugeot, C., Demarty, J., Cappelaere, B., Gal, L., Hiernaux, P., Mougin, E., et al., 2017, Modeling Surface runoff and water fluxes over contrasted soils in the pastoral sahel—Evaluation of the ALMIP2 land surface models over the Gourma Region in Mali: *Journal of Hydrometeorology*, v. 18, no. 7, p. 1847–1866, at <https://doi.org/10.1175/JHM-D-16-0170.1>.
- Groeneveld, D.P., Huntington, J.L., and Barz, D.D., 2010, Floating brine crusts, reduction of evaporation and possible replacement of fresh water to control dust from Owens Lake bed, California: *Journal of Hydrology*, v. 392, no. 3-4, p. 211–218, at <https://doi.org/10.1016/j.jhydrol.2010.08.010>.
- Grogan, K., Pflugmacher, D., Hostert, P., Kennedy, R.E., and Fensholt, R., 2015, Cross-border forest disturbance and the role of natural rubber in mainland Southeast Asia using annual Landsat time series: *Remote Sensing of Environment*, v. 169, p. 438–453, at <https://doi.org/10.1016/j.rse.2015.03.001>.
- Grogan, K., Pflugmacher, D., Hostert, P., Mertz, O., and Fensholt, R., 2019, Unravelling the link between global rubber price and tropical deforestation in Cambodia: *Nature Plants*, v. 5, no. 1, p. 47–53, at <https://doi.org/10.1038/s41477-018-0325-4>.
- Grogan, K., Pflugmacher, D., Hostert, P., Verbesselt, J., and Fensholt, R., 2016, Mapping clearances in tropical dry forests using breakpoints, trend, and seasonal components from modis time series—Does forest type matter?: *Remote Sensing*, v. 8, no. 8, article 657, at <https://doi.org/10.3390/rs8080657>.
- Groot, A., Cortini, F., and Wulder, M.A., 2015, Crown-fibre attribute relationships for enhanced forest inventory—Progress and prospects: *Forestry Chronicle*, v. 91, no. 3, p. 266–279, at <https://doi.org/10.5558/tfc2015-048>.
- Gross, D., Dubois, G., Pekel, J.F., Mayaux, P., Holmgren, M., Prins, H.H.T., Rondinini, C., and Boitani, L., 2013, Monitoring land cover changes in African protected areas in the 21st century: *Ecological Informatics*, v. 14, p. 31–37, at <https://doi.org/10.1016/j.ecoinf.2012.12.002>.
- Gross, G., Helder, D., and Leigh, L., 2023, Extended cross-calibration analysis using data from the Landsat 8 and 9 underfly event: *Remote Sensing*, v. 15, no. 7, at <https://doi.org/10.3390/rs15071788>.

- Gross, H.N., and Schott, J.R., 1998, Application of spectral mixture analysis and image fusion techniques for image sharpening: *Remote Sensing of Environment*, v. 63, no. 2, p. 85–94, at [https://doi.org/10.1016/S0034-4257\(97\)00090-4](https://doi.org/10.1016/S0034-4257(97)00090-4).
- Gross, J.E., Nemani, R.R., Turner, W., and Melton, F., 2006, Remote sensing for the national parks: *Park Science*, v. 24, no. 1, p. 30–36, at <https://irma.nps.gov/DataStore/Reference/Profile/2201395>.
- Gruebner, O., Khan, M.H., Lautenbach, S., Müller, D., Krämer, A., Lakes, T., Hostert, P., and Galea, S., 2016, The spatial epidemiology of mental well-being in Dhaka's Slums, in Kanaroglou, P., and Delmelle, E., eds., *Spatial analysis in health geography*: London, UK, Routledge, p. 139–160, at <https://doi.org/10.4324/9781315610252>.
- Gruebner, O., Khan, M.M.H., Lautenbach, S., Müller, D., Kraemer, A., Lakes, T., and Hostert, P., 2011, A spatial epidemiological analysis of self-rated mental health in the slums of Dhaka: *International Journal of Health Geographics*, v. 10, no. 36, p. 1–15, at <https://doi.org/10.1186/1476-072X-10-36>.
- Gruebner, O., Khan, M.M.H., Lautenbach, S., Müller, D., Krämer, A., Lakes, T., and Hostert, P., 2012, Mental health in the slums of Dhaka—A geoepidemiological study: *BMC Public Health*, v. 12, no. 177, p. 1–14, at <https://doi.org/10.1186/1471-2458-12-177>.
- Gu, D., Gillespie, A.R., Kahle, A.B., and Palluconi, F.D., 2000, Autonomous atmospheric compensation (AAC) of high resolution hyperspectral thermal infrared remote-sensing imagery: *IEEE Transactions on Geoscience and Remote Sensing*, v. 38, no. 6, p. 2557–2570, at <https://doi.org/10.1109/36.885203>.
- Gu, L., Hanson, P.J., Post, W.M., Kaiser, D.P., Yang, B., Nemani, R.R., Pallardy, S.G., and Meyers, T., 2008, The 2007 eastern US spring freeze—Increased cold damage in a warming world?: *BioScience*, v. 58, no. 3, p. 253–262, at <https://doi.org/10.1641/B580311>.
- Guan, K., Li, Z., Rao, L.N., Gao, F., Xie, D., Hien, N.T., and Zeng, Z., 2018, Mapping paddy rice area and yields over Thai Binh Province in Viet Nam from MODIS, Landsat, and ALOS-2/PALSAR-2: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 11, no. 7, p. 2238–2252, at <https://doi.org/10.1109/JSTARS.2018.2834383>.
- Guan, K., Pan, M., Li, H., Wolf, A., Wu, J., Medvigy, D., Caylor, K.K., Sheffield, J., Wood, E.F., et al., 2015, Photosynthetic seasonality of global tropical forests constrained by hydroclimate: *Nature Geoscience*, v. 8, no. 4, p. 284–289, at <https://doi.org/10.1038/ngeo2382>.
- Guan, K., Wu, J., Kimball, J.S., Anderson, M.C., Frohling, S., Li, B., Hain, C.R., and Lobell, D.B., 2017, The shared and unique values of optical, fluorescence, thermal and microwave satellite data for estimating large-scale crop yields: *Remote Sensing of Environment*, v. 199, p. 333–349, at <https://doi.org/10.1016/j.rse.2017.06.043>.
- Guanter, L., Kaufmann, H., Segl, K., Foerster, S., Rogass, C., Chabrillat, S., Kuester, T., Hollstein, A., Rossner, G., et al., 2015, The EnMAP spaceborne imaging spectroscopy mission for Earth observation: *Remote Sensing*, v. 7, no. 7, p. 8830–8857, at <https://doi.org/10.3390/rs70708830>.
- Guanter, L., Zhang, Y., Jung, M., Joiner, J., Voigt, M., Berry, J.A., Frankenberg, C., Huete, A.R., Zarco-Tejada, P., et al., 2014, Global and time-resolved monitoring of crop photosynthesis with chlorophyll fluorescence: *Proceedings of the National Academy of Sciences of the United States of America*, v. 111, no. 14, p. E1327–E1333, at <https://doi.org/10.1073/pnas.1320008111>.

- Guanter, L., Zhang, Y., Jung, M., Joiner, J., Voigt, M., Berry, J.A., Frankenberg, C., Huete, A.R., Zarco-Tejada, P., et al., 2014, Reply to Magnani et al.—Linking large-scale chlorophyll fluorescence observations with cropland gross primary production: *Proceedings of the National Academy of Sciences of the United States of America*, v. 111, no. 25, article E2511, at <https://doi.org/10.1073/pnas.1406996111>.
- Gudex-Cross, D., Keyser, S.R., Zuckerman, B., Fink, D., Zhu, L., Pauli, J.N., and Radeloff, V.C., 2021, Winter Habitat Indices (WHIs) for the contiguous US and their relationship with winter bird diversity: *Remote Sensing of Environment*, v. 255, article 112309, at <https://doi.org/10.1016/j.rse.2021.112309>.
- Gudex-Cross, D., Zhu, L., Keyser, S.R., Zuckerman, B., Pauli, J.N., and Radeloff, V.C., 2022, Winter conditions structure extratropical patterns of species richness of amphibians, birds and mammals globally: *Global Ecology and Biogeography*, v. 31, no. 7, p. 1366–1380, at <https://doi.org/10.1111/geb.13511>.
- Gudmundsson, G.H., Raymond, C.F., and Bindschadler, R.A., 1998, The origin and longevity of flow stripes on Antarctic ice streams: *Annals of Glaciology*, v. 27, p. 145–152, at <https://doi.org/10.3189/1998AoG27-1-145-152>.
- Guild, L.S., Boone Kauffman, J., Cohen, W.B., Hlavka, C.A., and Ward, D.E., 2004, Modeling biomass burning emissions for Amazon forest and pastures in Rondônia, Brazil: *Ecological Applications*, v. 14, no. SP 4, p. S232–S246, at <https://doi.org/10.1890/01-6009>.
- Guild, L.S., Cohen, W.B., and Kauffman, J.B., 2004, Detection of deforestation and land conversion in Rondônia, Brazil using change detection techniques: *International Journal of Remote Sensing*, v. 25, no. 4, p. 731–750, at <https://doi.org/10.1080/01431160310001598935>.
- Guillevic, P.C., Olioso, A., Hook, S.J., Fisher, J.B., Lagouarde, J.P., and Vermote, E.F., 2019, Impact of the revisit of thermal infrared remote sensing observations on evapotranspiration uncertainty—A sensitivity study using AmeriFlux Data: *Remote Sensing*, v. 11, no. 5, article 573, at <https://doi.org/10.3390/rs11050573>.
- Gumbrecht, T., McCarthy, T.S., McCarthy, J., Roy, D.P., Frost, P.E., and Wessels, K., 2002, Remote sensing to detect sub-surface peat fires and peat +fire scars in the Okavango Delta, Botswana: *South African Journal of Science*, v. 98, no. 7–8, p. 351–358, at <https://hdl.handle.net/10520/EJC97510>.
- Gumma, K.M., van Rooijen, D., Nelson, A., Thenkabail, P.S., Aakuraju, R.V., and Amerasinghe, P., 2011, Expansion of urban area and wastewater irrigated rice area in Hyderabad, India: *Irrigation and Drainage Systems*, v. 25, no. 3, p. 135–149, at <https://doi.org/10.1007/s10795-011-9117-y>.
- Gumma, M., Thenkabail, P.S., Fujii, H., and Namara, R., 2009, Spatial models for selecting the most suitable areas of rice cultivation in the Inland valley wetlands of Ghana using remote sensing and geographic information systems: *Journal of Applied Remote Sensing*, v. 3, no. 1, article 033537, at <https://doi.org/10.1117/1.3182847>.
- Gumma, M.K., Nelson, A., Thenkabail, P.S., and Singh, A.N., 2011, Mapping rice areas of South Asia using MODIS multitemporal data: *Journal of Applied Remote Sensing*, v. 5, no. 1, article 053547, at <https://doi.org/10.1117/1.3619838>.
- Gumma, M.K., Thenkabail, P.S., Deevi, K.C., Mohammed, I.A., Teluguntla, P., Oliphant, A., Xiong, J., Aye, T., and Whitbread, A.M., 2018, Mapping cropland fallow areas in Myanmar to scale up sustainable intensification of pulse crops in the farming system: *GIScience and Remote Sensing*, v. 55, no. 6, p. 926–949, at <https://doi.org/10.1080/15481603.2018.1482855>.

- Gumma, M.K., Thenkabail, P.S., Hideto, F., Nelson, A., Dheeravath, V., Busia, D., and Rala, A., 2011, Mapping irrigated areas of Ghana using fusion of 30 m and 250 m resolution remote-sensing data: *Remote Sensing*, v. 3, no. 4, p. 816–835, at <https://doi.org/10.3390/rs3040816>.
- Gumma, M.K., Thenkabail, P.S., Maunahan, A., Islam, S., and Nelson, A., 2014, Mapping seasonal rice cropland extent and area in the high cropping intensity environment of Bangladesh using MODIS 500m data for the year 2010: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 91, p. 98–113, at <https://doi.org/10.1016/j.isprsjprs.2014.02.007>.
- Gumma, M.K., Thenkabail, P.S., Mohammed, I.A., Teluguntla, P., and Dheeravath, V., 2015, Inland valley wetland cultivation and preservation for africa’s green and blue revolution using multisensor remote sensing, *in* Thenkabail, P.S., ed., *Remote sensing of water resources, disasters, and urban studies*: Boca Raton, Fla., CRC Press, p. 227–256, at <https://doi.org/10.1201/b19321>.
- Gumma, M.K., Thenkabail, P.S., Muralikrishna, I.V., Velpuri, M.N., Gangadhararao, P.T., Dheeravath, V., Biradar, C.M., Nalan, S.A., and Gaur, A., 2011, Changes in agricultural cropland areas between a water-surplus year and a water-deficit year impacting food security, determined using MODIS 250 m time-series data and spectral matching techniques, in the Krishna river basin (India): *International Journal of Remote Sensing*, v. 32, no. 12, p. 3495–3520, at <https://doi.org/10.1080/01431161003749485>.
- Gumma, M.K., Thenkabail, P.S., Panjala, P., Teluguntla, P., Yamano, T., and Mohammed, I., 2022, Multiple agricultural cropland products of South Asia developed using Landsat-8 30 m and MODIS 250 m data using machine learning on the Google Earth Engine (GEE) cloud and spectral matching techniques (SMTs) in support of food and water security: *GIScience and Remote Sensing*, v. 59, no. 1, p. 1048–1077, at <https://doi.org/10.1080/15481603.2022.2088651>.
- Gumma, M.K., Thenkabail, P.S., Teluguntla, P., Rao, M.N., Mohammed, I.A., and Whitbread, A.M., 2016, Mapping rice-fallow cropland areas for short-season grain legumes intensification in South Asia using MODIS 250 m time-series data: *International Journal of Digital Earth*, v. 9, no. 10, p. 981–1003, at <https://doi.org/10.1080/17538947.2016.1168489>.
- Gumma, M.K., Thenkabail, P.S., Teluguntla, P., and Whitbread, A.M., 2019, Indo-Ganges River Basin land use/land cover (LULC) and irrigated area mapping, *in* Kahn, S.I., and Adams III, T.E., eds., *Indus River Basin—Water security and sustainability*: Amsterdam, Netherlands, Elsevier, p. 203–228, at <https://doi.org/10.1016/B978-0-12-812782-7.00010-2>.
- Gumma, M.K., Thenkabail, P.S., and Velpuri, N.M., 2009, Vegetation phenology to partition groundwater from surface water-irrigated areas using MODIS 250-m time series data for the Krishna River Basin, India, *in* *Improving integrated surface and groundwater resources management in a vulnerable and changing world*, Symposium JS.3 at the Joint Convention of the International Association of Hydrological Sciences, IAHS and the International Association of Hydrogeologists, IAHS, Hyderabad, India, 6–12 September 2009, *Proceedings: Wallingford, UK, International Association of Hydrological Sciences*, p. 271–281.
- Gunapala, S., Ting, D., Rafol, S., Soibel, A., Khoshakhlagh, A., Keo, S., Pepper, B., Fisher, A., Hill, C., et al., 2022, Mid-wavelength and long-wavelength infrared focal planes for smallsat applications, *in* *Image Sensing Technologies—Materials, Devices, Systems, and Applications IX 2022*, Orlando, Fla., 6–12 June 2022, *Proceedings of SPIE Vol. 12091*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1209102, at <https://doi.org/10.1117/12.2619573>.

- Gunapala, S., Ting, D., Rafol, S., Soibel, A., Khoshakhlagh, A., Keo, S., Pepper, B., Fisher, A., Hill, C., et al., 2021, T2SL focal planes for compact remote sensing instruments, *in* Image Sensing Technologies—Materials, Devices, Systems, and Applications VIII 2021, online virtual meeting, 12–16 April 2021, Proceedings of SPIE Vol. 11723: Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1172302, at <https://doi.org/10.1117/12.2595798>.
- Gunapala, S., Ting, D., Rafol, S., Soibel, A., Khoshakhlagh, A., Keo, S., Pepper, B., Fisher, A., Hill, C., et al., 2021, Digital mid-wavelength and long-wavelength infrared focal planes for SmallSat applications, *in* Sensors, Systems, and Next-Generation Satellites XXV 2021, online virtual meeting, 12–18 September 2021, Proceedings of SPIE Vol. 11858: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 118580y, at <https://doi.org/10.1117/12.2596653>.
- Gunapala, S., Ting, D., Rafol, S., Soibel, A., Khoshakhlagh, A., Keo, S., Pepper, B., Fisher, A., Hill, C., et al., 2021, High operating temperature T2SL digital focal plane arrays for Earth remote sensing instruments, *in* Infrared Technology and Applications XLVII 2021, online virtual meeting, 12-16 April 2021, Proceedings of SPIE Vol. 11741: Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 117410U, at <https://doi.org/10.1117/12.2589648>.
- Gustafson, E.J., Hammer, R.B., Radeloff, V.C., and Potts, R.S., 2005, The relationship between environmental amenities and changing human settlement patterns between 1980 and 2000 in the Midwestern USA: *Landscape Ecology*, v. 20, no. 7, p. 773–789, at <https://doi.org/10.1007/s10980-005-2149-7>.
- Gustafson-Bold, C.L., and Thome, K.J., 1996, Cross-calibration of two small footprint sensors, *in* 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1283–1285, at <https://doi.org/10.1109/IGARSS.1996.516638>.
- Guth, P.L., Van Niekerk, A., Grohmann, C.H., Muller, J.P., Hawker, L., Florinsky, I.V., Gesch, D., Reuter, H.I., Herrera-Cruz, V., et al., 2021, Digital elevation models—Terminology and definitions: *Remote Sensing*, v. 13, no. 18, article 3581, at <https://doi.org/10.3390/rs13183581>.
- Gutiérrez, R.J., Jones, G., Redpath, S.M., Franklin, A.B., Simberloff, D., Turner, M.G., Radeloff, V.C., White, G.C., and Peery, M.Z., 2019, Reinforcing the concept of agenda-driven science—A response to Rohlf: *Frontiers in Ecology and the Environment*, v. 17, no. 10, p. 556–557, at <https://doi.org/10.1002/fee.2131>.
- Gutman, G., Byrnes, R., Masek, J.G., Covington, S., Justice, C.O., Franks, S., and Headley, R., 2008, Towards monitoring land-cover and land-use changes at a global scale—The global land survey 2005: *Photogrammetric Engineering and Remote Sensing*, v. 74, no. 1, p. 6–10, at <https://www.asprs.org/wp-content/uploads/pers/2008journal/january/highlight.pdf>.
- Gutman, G., Huang, C., Chander, G., Noojipady, P., and Masek, J.G., 2013, Assessment of the NASA-USGS Global Land Survey (GLS) datasets: *Remote Sensing of Environment*, v. 134, p. 249–265, at <https://doi.org/10.1016/j.rse.2013.02.026>.
- Gutman, G., Justice, C., and King, L.A., 2016, The NASA land-cover and land-use change program research agenda and progress (2005-2011), *in* Giri, C.P., ed., *Remote sensing of land use and land cover—Principles and applications*: Boca Raton, Fla., CRC Press, p. 379–396, at <https://doi.org/10.1201/b11964-31>.

- Gutman, G., and Justice, C.O., 2011, Summary and outstanding scientific challenges for land-cover and land-use research in the arctic region, *in* Gutman, G., and Reissell, A., eds., *Eurasian arctic land cover and land use in a changing climate*: Dordrecht, Netherlands, Springer, p. 291–300, at https://doi.org/10.1007/978-90-481-9118-5_12.
- Gutman, G., Justice, C.O., Karnieli, A., and Arkin, Y., 2002, Cover—MODIS image of the Middle East: *International Journal of Remote Sensing*, v. 23, no. 19, p. 3905–3907, at <https://doi.org/10.1080/01431160110115898>.
- Gutman, G., and Masek, J.G., 2012, Long-term time series of the Earth's land-surface observations from space: *International Journal of Remote Sensing*, v. 33, no. 15, p. 4700–4719, at <https://doi.org/10.1080/01431161.2011.638341>.
- Gutman, G., and Radeloff, V.C., eds., 2016, *Land-cover and land-use changes in Eastern Europe after the collapse of the Soviet Union in 1991*: Cham, Switzerland, Springer, 247 p., at <https://doi.org/10.1007/978-3-319-42638-9>.
- Guzinski, R., Anderson, M.C., Kustas, W.P., Nieto, H., and Sandholt, I., 2013, Using a thermal-based two source energy balance model with time-differencing to estimate surface energy fluxes with day-night MODIS observations: *Hydrology and Earth System Sciences*, v. 17, no. 7, p. 2809–2825, at <https://doi.org/10.5194/hess-17-2809-2013>.
- Guzmán-Colón, D.K., Pidgeon, A.M., Martinuzzi, S., and Radeloff, V.C., 2020, Conservation planning for island nations—Using a network analysis model to find novel opportunities for landscape connectivity in Puerto Rico: *Global Ecology and Conservation*, v. 23, article e01075, at <https://doi.org/10.1016/j.gecco.2020.e01075>.
- Gwenzi, D., Helmer, E.H., Zhu, X., Lefsky, M.A., and Marcano-Vega, H., 2017, Predictions of tropical forest biomass and biomass growth based on stand height or canopy area are improved by Landsat-scale phenology across Puerto Rico and the U.S. Virgin Islands: *Remote Sensing*, v. 9, no. 2, article 123, at <https://doi.org/10.3390/rs90201023>.
- Haberl, H., Wiedenhofer, D., Schug, F., Frantz, D., Virág, D., Plutzer, C., Gruhler, K., Lederer, J., Schiller, G., et al., 2021, High-resolution maps of material stocks in buildings and infrastructures in Austria and Germany: *Environmental Science and Technology*, v. 55, no. 5, p. 3368–3379, at <https://doi.org/10.1021/acs.est.0c05642>.
- Habib, S., Zaitchik, B., Alo, C., Ozdogan, M., Anderson, M.C., and Policelli, F., 2011, An integrated hydrological and water management study of the entire Nile river system - Lake Victoria to Nile delta, *in* 2011 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Vancouver, Canada, 24–29 July 2011, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 4359–4362, at <https://doi.org/10.1109/IGARSS.2011.6050197>.
- Haight, R.G., Cleland, D.T., Hammer, R.B., Radeloff, V.C., and Rupp, T.S., 2004, Assessing fire risk in the wildland-urban interface: *Journal of Forestry*, v. 102, no. 7, p. 41–47, at <https://doi.org/10.1093/jof/102.7.41>.
- Hain, C.R., and Anderson, M.C., 2017, Estimating morning change in land surface temperature from MODIS day/night observations—Applications for surface energy balance modeling: *Geophysical Research Letters*, v. 44, p. 9723–9733, at <https://doi.org/10.1002/2017GL074952>.
- Hain, C.R., Crow, W.T., Anderson, M.C., and Mecikalski, J.R., 2012, An ensemble Kalman filter dual assimilation of thermal infrared and microwave satellite observations of soil moisture into the

- Noah land surface model: *Water Resources Research*, v. 48, no. 11, article W11517, at <https://doi.org/10.1029/2011WR011268>.
- Hain, C.R., Crow, W.T., Anderson, M.C., and Tugrul Yilmaz, M., 2015, Diagnosing neglected soil moisture source-sink processes via a thermal infrared-based two-source energy balance model: *Journal of Hydrometeorology*, v. 16, no. 3, p. 1070–1086, at <https://doi.org/10.1175/JHM-D-14-0017.1>.
- Hain, C.R., Crow, W.T., Mecikalski, J.R., Anderson, M.C., and Holmes, T., 2011, An intercomparison of available soil moisture estimates from thermal infrared and passive microwave remote sensing and land surface modeling: *Journal of Geophysical Research Atmospheres*, v. 116, no. 15, article D15107, at <https://doi.org/10.1029/2011JD015633>.
- Hain, C.R., Mecikalski, J.R., and Anderson, M.C., 2009, Retrieval of an available water-based soil moisture proxy from thermal infrared remote sensing. Part I—Methodology and validation: *Journal of Hydrometeorology*, v. 10, no. 3, p. 665–683, at <https://doi.org/10.1175/2008JHM1024.1>.
- Hair, J.H., Reuter, D.C., Tonn, S.L., McCorkel, J., Amy, A.S., Djam, M., Alexander, D., Ballou, K., Barclay, R., et al., 2018, Landsat 9 thermal infrared sensor 2 architecture and design, in 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8841–8844, at <https://doi.org/10.1109/IGARSS.2018.8518269>.
- Hais, M., Wild, J., Berec, L., Brůna, J., Kennedy, R.E., Braaten, J., and Brož, Z., 2016, Landsat imagery spectral trajectories-important variables for spatially predicting the risks of bark beetle disturbance: *Remote Sensing*, v. 8, no. 8, article 687, at <https://doi.org/10.3390/rs8080687>.
- Haithcoat, T.L., Song, W., and Hipple, J.D., 2001, Building footprint extraction and 3-D reconstruction from LIDAR data, in IEEE/ISPRS Joint Workshop on Remote Sensing and Data Fusion over Urban Areas, DFUA 2001, Rome, Italy, 8–9 November 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 74–78, at <https://doi.org/10.1109/DFUA.2001.985730>.
- Hakimdavar, R., Hubbard, A., Policelli, F., Pickens, A., Hansen, M., Fatoyinbo, T., Lagomasino, D., Pahlevan, N., Unninayar, S., et al., 2020, Monitoring water-related ecosystems with Earth observation data in support of Sustainable Development Goal (SDG) 6 reporting: *Remote Sensing*, v. 12, no. 10, article 1634, at <https://doi.org/10.3390/rs12101634>.
- Halama, J.J., Barnhart, B.L., Kennedy, R.E., McKane, R.B., Graham, J.J., Pettus, P.P., Brookes, A.F., Djang, K.S., and Waschmann, R.S., 2018, Improved soil temperature modeling using spatially explicit solar energy drivers: *Water*, v. 10, no. 10, article 1398, at <https://doi.org/10.3390/w10101398>.
- Halama, J.J., Kennedy, R.E., Graham, J.J., McKane, R.B., Barnhart, B.L., Djang, K.S., Pettus, P.B., Brookes, A.F., and Wingo, P.C., 2018, Penumbra—A spatially distributed, mechanistic model for simulating ground-level incident solar energy across heterogeneous landscapes: *PLoS ONE*, v. 13, no. 12, article e0206439, at <https://doi.org/10.1371/journal.pone.0206439>.
- Hale, R.C., Gallo, K.P., and Loveland, T.R., 2008, Influences of specific land use/land cover conversions on climatological normals of near-surface temperature: *Journal of Geophysical Research Atmospheres*, v. 113, no. 14, article D14113, at <https://doi.org/10.1029/2007JD009548>.
- Hale, R.C., Gallo, K.P., Owen, T.W., and Loveland, T.R., 2006, Land use/land cover change effects on temperature trends at U.S. Climate Normals stations: *Geophysical Research Letters*, v. 33, no. 11, article L11703, at <https://doi.org/10.1029/2006GL026358>.

- Hall, D.K., Bayr, K.J., Schöner, W., Bindschadler, R.A., and Chien, J.Y.L., 2003, Consideration of the errors inherent in mapping historical glacier positions in Austria from the ground and space (1893-2001): *Remote Sensing of Environment*, v. 86, no. 4, p. 566–577, at [https://doi.org/10.1016/S0034-4257\(03\)00134-2](https://doi.org/10.1016/S0034-4257(03)00134-2).
- Hall, D.K., Chickadel, C.C., Crawford, C.J., Demarco, E.L., Jennings, D.E., Jhabvala, M.D., Kim, E.J., Lundquist, J.D., and Lunsford, A.W., 2017, The infrared sensor suite for SnowEx 2017, *in* 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, Tex., 23–28 July 2017, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1406–1408, at <https://doi.org/10.1109/IGARSS.2017.8127228>.
- Hall, D.K., Crawford, C.J., DiGirolamo, N.E., Riggs, G.A., and Foster, J.L., 2015, Detection of earlier snowmelt in the Wind River Range, Wyoming, using Landsat imagery, 1972-2013: *Remote Sensing of Environment*, v. 162, p. 45–54, at <https://doi.org/10.1016/j.rse.2015.01.032>.
- Hall, D.K., Nghiem, S.V., Schaaf, C.B., DiGirolamo, N.E., and Neumann, G., 2009, Evaluation of surface and near-surface melt characteristics on the Greenland ice sheet using MODIS and QuikSCAT data: *Journal of Geophysical Research Earth Surface*, v. 114, no. 4, article F04006, at <https://doi.org/10.1029/2009JF001287>.
- Hall, F., Masek, J.G., and Collatz, G.J., 2006, Evaluation of ISLSCP Initiative II FASIR and GIMMS NDVI products and implications for carbon cycle science: *Journal of Geophysical Research Atmospheres*, v. 111, no. 22, article D22S08, at <https://doi.org/10.1029/2006JD007438>.
- Hall, F.G., Hilker, T., Coops, N.C., Lyapustin, A.I., Huemmrich, K.F., Middleton, E., Margolis, H., Drolet, G., and Black, T.A., 2008, Multi-angle remote sensing of forest light use efficiency by observing PRI variation with canopy shadow fraction: *Remote Sensing of Environment*, v. 112, no. 7, p. 3201–3211, at <https://doi.org/10.1016/j.rse.2008.03.015>.
- Hall, F.G., Sellers, P.J., and Williams, D.L., 1996, Initial results from the boreal ecosystem-atmosphere experiment, *BOREAS: Silva Fennica*, v. 30, no. 2–3, p. 109–121, at <https://doi.org/10.14214/sf.a9224>.
- Hall, R.J., Skakun, R.S., Beaudoin, A., Wulder, M.A., Arsenault, E.J., Bernier, P.Y., Guindon, L., Luther, J.E., and Gillis, M.D., 2010, Approaches for forest biomass estimation and mapping in Canada, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1988–1991, at <https://doi.org/10.1109/IGARSS.2010.5650777>.
- Hamerlynck, E.P., Scott, R.L., Barron-Gafford, G.A., Cavanaugh, M.L., Moran, M.S., and Huxman, T.E., 2012, Cool-season whole-plant gas exchange of exotic and native semiarid bunchgrasses: *Plant Ecology*, v. 213, no. 8, p. 1229–1239, at <https://doi.org/10.1007/s11258-012-0081-x>.
- Hamerlynck, E.P., Scott, R.L., Moran, M.S., Keefer, T.O., and Huxman, T.E., 2010, Growing season ecosystem and leaf-level gas exchange of an exotic and native semiarid bunchgrass: *Oecologia*, v. 163, no. 3, p. 561–570, at <https://doi.org/10.1007/s00442-009-1560-1>.
- Hamerlynck, E.P., Scott, R.L., Moran, M.S., Schwander, A.M., Connor, E., and Huxman, T.E., 2011, Inter- and under-canopy soil water, leaf-level and whole-plant gas exchange dynamics of a semi-arid perennial C4 grass: *Oecologia*, v. 165, no. 1, p. 17–29, at <https://doi.org/10.1007/s00442-010-1757-3>.
- Hamilton, C.M., Bateman, B.L., Gorzo, J.M., Reid, B., Thogmartin, W.E., Peery, M.Z., Heglund, P.J., Radeloff, V.C., and Pidgeon, A.M., 2018, Slow and steady wins the race? Future climate and land

- use change leaves the imperiled Blanding's turtle (*Emydoidea blandingii*) behind: *Biological Conservation*, v. 222, p. 75–85, at <https://doi.org/10.1016/j.biocon.2018.03.026>.
- Hamilton, C.M., Baumann, M., Pidgeon, A.M., Helmers, D.P., Thogmartin, W.E., Heglund, P.J., and Radeloff, V.C., 2016, Past and predicted future effects of housing growth on open space conservation opportunity areas and habitat connectivity around National Wildlife Refuges: *Landscape Ecology*, v. 31, no. 9, p. 2175–2186, at <https://doi.org/10.1007/s10980-016-0392-8>.
- Hamilton, C.M., Martinuzzi, S., Plantinga, A.J., Radeloff, V.C., Lewis, D.J., Thogmartin, W.E., Heglund, P.J., and Pidgeon, A.M., 2013, Current and Future Land Use around a Nationwide Protected Area Network: *PLoS ONE*, v. 8, no. 1, article e55737, at <https://doi.org/10.1371/journal.pone.0055737>.
- Hamilton, C.M., Thogmartin, W.E., Radeloff, V.C., Plantinga, A.J., Heglund, P.J., Martinuzzi, S., and Pidgeon, A.M., 2015, Change in agricultural land use constrains adaptation of national wildlife refuges to climate change: *Environmental Conservation*, v. 42, no. 1, p. 12–19, at <https://doi.org/10.1017/S0376892914000174>.
- Hammer, M.S., Donkelaar, A.V., Martin, R.V., McDuffie, E.E., Lyapustin, A., Sayer, A.M., Hsu, N.C., Levy, R.C., Garay, M.J., et al., 2021, Effects of COVID-19 lockdowns on fine particulate matter concentrations: *Science Advances*, v. 7, no. 26, article eabg7670, at <https://doi.org/10.1126/sciadv.abg7670>.
- Hammer, M.S., van Donkelaar, A., Bindle, L., Sayer, A.M., Lee, J., Hsu, N.C., Levy, R.C., Sawyer, V., Garay, M.J., et al., 2023, Assessment of the impact of discontinuity in satellite instruments and retrievals on global PM_{2.5} estimates: *Remote Sensing of Environment*, v. 294, at <https://doi.org/10.1016/j.rse.2023.113624>.
- Hammer, M.S., Van Donkelaar, A., Li, C., Lyapustin, A., Sayer, A.M., Hsu, N.C., Levy, R.C., Garay, M.J., Kalashnikova, O.V., et al., 2020, Global estimates and long-term trends of fine particulate matter concentrations (1998-2018): *Environmental Science and Technology*, v. 54, no. 13, p. 7879–7890, at <https://doi.org/10.1021/acs.est.0c01764>.
- Hammer, R.B., Radeloff, V.C., Fried, J.S., and Stewart, S.I., 2007, Wildland-urban interface housing growth during the 1990s in California, Oregon, and Washington: *International Journal of Wildland Fire*, v. 16, no. 3, p. 255–265, at <https://doi.org/10.1071/WF05077>.
- Hammer, R.B., Stewart, S.I., Hawbaker, T.J., and Radeloff, V.C., 2009, Housing growth, forests, and public lands in Northern Wisconsin from 1940 to 2000: *Journal of Environmental Management*, v. 90, no. 8, p. 2690–2698, at <https://doi.org/10.1016/j.jenvman.2009.02.012>.
- Hammer, R.B., Stewart, S.I., and Radeloff, V.C., 2009, Demographic trends, the wildland-urban interface, and wildfire management: *Society and Natural Resources*, v. 22, no. 8, p. 777–782, at <https://doi.org/10.1080/08941920802714042>.
- Hammer, R.B., Stewart, S.I., Winkler, R.L., Radeloff, V.C., and Voss, P.R., 2004, Characterizing dynamic spatial and temporal residential density patterns from 1940-1990 across the North Central United States: *Landscape and Urban Planning*, v. 69, no. 2–3, p. 183–199, at <https://doi.org/10.1016/j.landurbplan.2003.08.011>.
- Han, E., Crow, W.T., Hain, C.R., and Anderson, M.C., 2015, On the use of a water balance to evaluate interannual terrestrial ET variability: *Journal of Hydrometeorology*, v. 16, no. 3, p. 1102–1108, at <https://doi.org/10.1175/JHM-D-14-0175.1>.

- Han, T., Wulder, M.A., White, J.C., Coops, N.C., Alvarez, M.F., and Butson, C., 2007, An efficient protocol to process Landsat images for change detection with tasselled cap transformation: IEEE Geoscience and Remote Sensing Letters, v. 4, no. 1, p. 147–151, at <https://doi.org/10.1109/LGRS.2006.887066>.
- Han, X., Smyth, R.L., Young, B.E., Brooks, T.M., De Lozada, A.S., Bubb, P., Butchart, S.H.M., Larsen, F.W., Hamilton, H., et al., 2014, A biodiversity indicators dashboard—Addressing challenges to monitoring progress towards the Aichi biodiversity targets using disaggregated global data: PLoS ONE, v. 9, no. 11, article e112046, at <https://doi.org/10.1371/journal.pone.0112046>.
- Hancock, S., Armston, J., Li, Z., Gaulton, R., Lewis, P., Disney, M., Mark Danson, F., Strahler, A., Schaaf, C.B., et al., 2015, Waveform lidar over vegetation—An evaluation of inversion methods for estimating return energy: Remote Sensing of Environment, v. 164, p. 208–224, at <https://doi.org/10.1016/j.rse.2015.04.013>.
- Hansen, A., Barnett, K., Jantz, P., Phillips, L., Goetz, S.J., Hansen, M., Venter, O., Watson, J.E.M., Burns, P., et al., 2019, Global humid tropics forest structural condition and forest structural integrity maps: Scientific Data, v. 6, no. 1, article 232, at <https://doi.org/10.1038/s41597-019-0214-3>.
- Hansen, A.J., Burns, P., Ervin, J., Goetz, S.J., Hansen, M., Venter, O., Watson, J.E.M., Jantz, P.A., Virnig, A.L.S., et al., 2020, A policy-driven framework for conserving the best of Earth’s remaining moist tropical forests: Nature Ecology and Evolution, v. 4, p. 1377–1384, at <https://doi.org/10.1038/s41559-020-1274-7>.
- Hansen, A.J., Rasker, R., Maxwell, B., Rotella, J.J., Johnson, J.D., Wright Parmenter, A., Langner, U., Cohen, W.B., Lawrence, R.L., and Kraska, M.P.V., 2002, Ecological causes and consequences of demographic change in the new west: BioScience, v. 52, no. 2, p. 151–162, at [https://doi.org/10.1641/0006-3568\(2002\)052\[0151:ECACOD\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2002)052[0151:ECACOD]2.0.CO;2).
- Hansen, M.C., 2012, Classification trees and mixed pixel training data, in Giri, C.P., ed., Remote sensing of land use and land cover—Principles and applications: Boca Raton, Fla., CRC Press, p. 127–136, at <https://doi.org/10.1201/b11964-12>.
- Hansen, M.C., DeFries, R., Dimiceli, C., Huang, C., Sohlberg, R., Zhan, X., and Townshend, J., 1998, Red and infrared space partitioning for detecting land cover change, in 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2512–2514, at <https://doi.org/10.1109/IGARSS.1998.702262>.
- Hansen, M.C., and DeFries, R.S., 2004, Detecting long-term global forest change using continuous fields of tree-cover maps from 8-km Advanced Very High Resolution Radiometer (AVHRR) data for the years 1982-99: Ecosystems, v. 7, no. 7, p. 695–716, at <https://doi.org/10.1007/s10021-004-0243-3>.
- Hansen, M.C., DeFries, R.S., Townshend, J.R.G., Carroll, M., Dimiceli, C., and Sohlberg, R.A., 2003, Development of 500 meter vegetation continuous field maps using MODIS data, in 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 264–266, at <https://doi.org/10.1109/IGARSS.2003.1293745>.
- Hansen, M.C., DeFries, R.S., Townshend, J.R.G., Marufu, L., and Sohlberg, R., 2002, Development of a MODIS tree cover validation data set for Western Province, Zambia: Remote Sensing of Environment, v. 83, no. 1–2, p. 320–335, at [https://doi.org/10.1016/S0034-4257\(02\)00080-9](https://doi.org/10.1016/S0034-4257(02)00080-9).

- Hansen, M.C., DeFries, R.S., Townshend, J.R.G., Sohlberg, R., Dimiceli, C., and Carroll, M., 2002, Towards an operational MODIS continuous field of percent tree cover algorithm—Examples using AVHRR and MODIS data: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 303–319, at [https://doi.org/10.1016/S0034-4257\(02\)00079-2](https://doi.org/10.1016/S0034-4257(02)00079-2).
- Hansen, M.C., Dubayah, R., and Defries, R., 1996, Classification trees—An alternative to traditional land cover classifiers: *International Journal of Remote Sensing*, v. 17, no. 5, p. 1075–1081, at <https://doi.org/10.1080/01431169608949069>.
- Hansen, M.C., Egorov, A., Potapov, P.V., Stehman, S.V., Tyukavina, A., Turubanova, S.A., Roy, D.P., Goetz, S.J., Loveland, T.R., et al., 2014, Monitoring conterminous United States (CONUS) land cover change with Web-Enabled Landsat Data (WELD): *Remote Sensing of Environment*, v. 140, p. 466–484, at <https://doi.org/10.1016/j.rse.2013.08.014>.
- Hansen, M.C., Egorov, A., Roy, D.P., Potapov, P., Ju, J., Turubanova, S., Kommareddy, I., and Loveland, T.R., 2011, Continuous fields of land cover for the conterminous United States using Landsat data—First results from the Web-Enabled Landsat Data (WELD) project: *Remote Sensing Letters*, v. 2, no. 4, p. 279–288, at <https://doi.org/10.1080/01431161.2010.519002>.
- Hansen, M.C., Krylov, A., Tyukavina, A., Potapov, P.V., Turubanova, S., Zutta, B., Ifo, S., Margono, B., Stolle, F., and Moore, R., 2016, Humid tropical forest disturbance alerts using Landsat data: *Environmental Research Letters*, v. 11, no. 3, article 034008, at <https://doi.org/10.1088/1748-9326/11/3/034008>.
- Hansen, M.C., and Loveland, T.R., 2012, A review of large area monitoring of land cover change using Landsat data: *Remote Sensing of Environment*, v. 122, p. 66–74, at <https://doi.org/10.1016/j.rse.2011.08.024>.
- Hansen, M.C., Potapov, P., Margono, B., Stehman, S., Turubanova, S., and Tyukavina, A., 2014, Response to comment on “High-resolution global maps of 21st-century forest cover change”: *Science*, v. 344, no. 6187, p. 981–981, at <https://doi.org/10.1126/science.1248817>.
- Hansen, M.C., Potapov, P., and Tyukavina, A., 2019, Comment on “Tropical forests are a net carbon source based on aboveground measurements of gain and loss”: *Science*, v. 363, no. 6423, article eaar3629, at <https://doi.org/10.1126/science.aar3629>.
- Hansen, M.C., Potapov, P.V., Broich, M., Turubanova, S., Arunarwati, B., and Adusei, B., 2011, Towards global monitoring of forest cover, *in* The GEOSS Era, Towards Operational Environmental Monitoring—34th International Symposium on Remote Sensing of Environment, Sydney, Australia, 10–15 April 2011, Proceedings: International Society for Photogrammetry and Remote Sensing, p. 1–3, at <http://www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00258.pdf>.
- Hansen, M.C., Potapov, P.V., Goetz, S.J., Turubanova, S., Tyukavina, A., Krylov, A., Kommareddy, A., and Egorov, A., 2016, Mapping tree height distributions in Sub-Saharan Africa using Landsat 7 and 8 data: *Remote Sensing of Environment*, v. 185, p. 221–232, at <https://doi.org/10.1016/j.rse.2016.02.023>.
- Hansen, M.C., Potapov, P.V., Moore, R., Hancher, M., Turubanova, S.A., Tyukavina, A., Thau, D., Stehman, S.V., Goetz, S.J., et al., 2013, High-resolution global maps of 21st-century forest cover change: *Science*, v. 342, no. 6160, p. 850–853, at <https://doi.org/10.1126/science.1244693>.
- Hansen, M.C., Potapov, P.V., Pickens, A.H., Tyukavina, A., Hernandez-Serna, A., Zalles, V., Turubanova, S., Kommareddy, I., Stehman, S.V., et al., 2022, Global land use extent and dispersion within natural

- land cover using Landsat data: *Environmental Research Letters*, v. 17, no. 3, article 034050, at <https://doi.org/10.1088/1748-9326/ac46ec>.
- Hansen, M.C., and Reed, B., 2000, A comparison of the IGBP DISCover and university of maryland 1 km global land cover products: *International Journal of Remote Sensing*, v. 21, no. 6–7, p. 1365–1373, at <https://doi.org/10.1080/014311600210218>.
- Hansen, M.C., Roy, D.P., Lindquist, E., Adusei, B., Justice, C.O., and Altstatt, A., 2008, A method for integrating MODIS and Landsat data for systematic monitoring of forest cover and change in the Congo Basin: *Remote Sensing of Environment*, v. 112, no. 5, p. 2495–2513, at <https://doi.org/10.1016/j.rse.2007.11.012>.
- Hansen, M.C., Shimabukuro, Y.E., Potapov, P., and Pittman, K., 2008, Comparing annual MODIS and PRODES forest cover change data for advancing monitoring of Brazilian forest cover: *Remote Sensing of Environment*, v. 112, no. 10, p. 3784–3793, at <https://doi.org/10.1016/j.rse.2008.05.012>.
- Hansen, M.C., Sohlberg, R., Defries, R.S., and Townshend, J.R.G., 2000, Global land cover classification at 1 km spatial resolution using a classification tree approach: *International Journal of Remote Sensing*, v. 21, no. 6–7, p. 1331–1364, at <https://doi.org/10.1080/014311600210209>.
- Hansen, M.C., Stehman, S.V., and Potapov, P.V., 2010, Quantification of global gross forest cover loss: *Proceedings of the National Academy of Sciences of the United States of America*, v. 107, no. 19, p. 8650–8655, at <https://doi.org/10.1073/pnas.0912668107>.
- Hansen, M.C., Stehman, S.V., and Potapov, P.V., 2010, Reply to Reams et al.—Quantifying forest cover change at local and global scales: *Proceedings of the National Academy of Sciences of the United States of America*, v. 107, no. 38, article E146, at <https://doi.org/10.1073/pnas.1008842107>.
- Hansen, M.C., Stehman, S.V., and Potapov, P.V., 2010, Reply to Wernick et al.—Global scale quantification of forest change: *Proceedings of the National Academy of Sciences of the United States of America*, v. 107, no. 38, article E148, at <https://doi.org/10.1073/pnas.1009103107>.
- Hansen, M.C., Stehman, S.V., Potapov, P.V., Arunarwati, B., Stolle, F., and Pittman, K., 2009, Quantifying changes in the rates of forest clearing in Indonesia from 1990 to 2005 using remotely sensed data sets: *Environmental Research Letters*, v. 4, no. 3, article 034001, at <https://doi.org/10.1088/1748-9326/4/3/034001>.
- Hansen, M.C., Stehman, S.V., Potapov, P.V., Loveland, T.R., Townshend, J.R.G., DeFries, R.S., Pittman, K.W., Arunarwati, B., Stolle, F., et al., 2008, Humid tropical forest clearing from 2000 to 2005 quantified by using multitemporal and multiresolution remotely sensed data: *Proceedings of the National Academy of Sciences of the United States of America*, v. 105, no. 27, p. 9439–9444, at <https://doi.org/10.1073/pnas.0804042105>.
- Hansen, M.C., Townshend, J.R.G., DeFries, R.S., and Carroll, M., 2005, Estimation of tree cover using MODIS data at global, continental and regional/local scales: *International Journal of Remote Sensing*, v. 26, no. 19, p. 4359–4380, at <https://doi.org/10.1080/01431160500113435>.
- Hansen, M.C., Wang, L., Song, X.P., Tyukavina, A., Turubanova, S., Potapov, P.V., and Stehman, S.V., 2020, The fate of tropical forest fragments: *Science Advances*, v. 6, no. 11, article eaax8574, at <https://doi.org/10.1126/sciadv.aax8574>.
- Haque, B.M.O., Rengarajan, R., Lubke, M., Hasan, M.N., Shrestha, A., Tuli, F.T.Z., Shaw, J.L., Denevan, A., Franks, S., et al., 2023, ECCOE Landsat Quarterly Calibration and Validation Report—Quarter 2,

- 2023, U.S. Geological Survey Open-File Report 2023–1075, 39 p., at <https://doi.org/10.3133/ofr20231075>.
- Haque, M.O., Rengarajan, R., Lubke, M., Hasan, M.N., Shrestha, A., Tuli, F.T.Z., Shaw, J.L., Denevan, A., Franks, S., et al., 2023, ECCOE Landsat Quarterly Calibration and Validation Report—Quarter 3, 2022, U.S. Geological Survey Open-File Report 2023–1013, 38 p., at <https://doi.org/10.3133/ofr20231013>.
- Haque, M.O., Rengarajan, R., Lubke, M., Hasan, M.N., Shrestha, A., Zafrin Tuli, F.T., Shaw, J.L., Denevan, A., Franks, S., et al., 2023, ECCOE Landsat Quarterly Calibration and Validation Report—Quarter 1, 2023, U.S. Geological Survey Open-File Report 2023–1050, 39 p., at <https://doi.org/10.3133/ofr20231050>.
- Hardy, J.P., Davis, R.E., Jordan, R., Li, X., Woodcock, C.E., Ni, W., and McKenzie, J.C., 1997, Snow ablation modeling at the stand scale in a boreal jack pine forest: *Journal of Geophysical Research Atmospheres*, v. 102, no. 24, p. 29397–29405, at <https://doi.org/10.1029/96JD03096>.
- Hardy, J.P., Davis, R.E., Jordan, R., Ni, W., and Woodcock, C.E., 1998, Snow ablation modelling in a mature aspen stand of the boreal forest: *Hydrological Processes*, v. 12, no. 10–11, p. 1763–1778, at [https://doi.org/10.1002/\(SICI\)1099-1085\(199808/09\)12:10/11<1763::AID-HYP693>3.0.CO;2-T](https://doi.org/10.1002/(SICI)1099-1085(199808/09)12:10/11<1763::AID-HYP693>3.0.CO;2-T).
- Hardy, M.A., Broadway, M.S., Pollentier, C.D., Radeloff, V.C., Riddle, J.D., Hull, S.D., and Zuckerberg, B., 2020, Responses to land cover and grassland management vary across life-history stages for a grassland specialist: *Ecology and Evolution*, v. 10, no. 23, p. 12777–12791, at <https://doi.org/10.1002/ece3.6805>.
- Hardy, S., Duncan, C., Masek, J.G., and Brown, D., 1998, Minimum work, fault activity and the growth of critical wedges in fold and thrust belts: *Basin Research*, v. 10, no. 3, p. 365–373, at <https://doi.org/10.1046/j.1365-2117.1998.00073.x>.
- Hargreaves, G.H., and Allen, R.G., 2002, History and evaluation of hargreaves evapotranspiration equation: *Journal of Irrigation and Drainage Engineering*, v. 129, no. 1, p. 53–63, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2003\)129:1\(53\)](https://doi.org/10.1061/(ASCE)0733-9437(2003)129:1(53)).
- Hargreaves, G.H., and Allen, R.G., 2004, Closure to “history and evaluation of hargreaves evapotranspiration equation: *Journal of Irrigation and Drainage Engineering*, v. 130, no. 5, p. 448–448, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2004\)130:5\(448\)](https://doi.org/10.1061/(ASCE)0733-9437(2004)130:5(448)).
- Harris, A., Johnson, J., Horton, K., Garbeil, H., Ramm, H., Pilger, E., Flynn, L.P., Mouginiis-Mark, P., Pirie, D., et al., 2003, Ground-based infrared monitoring provides new tool for remote tracking of volcanic activity: *Eos*, v. 84, no. 40, p. 409–418, at <https://doi.org/10.1029/2003EO400001>.
- Harris, A.J.L., Flynn, L.P., Dean, K., Pilger, E., Wooster, M., Okubo, C., Mouginiis-Mark, P., Garbeil, H., Thornber, C., et al., 2000, Real-time satellite monitoring of volcanic hot spots, *in* Mouginiis-Mark, P.J., Crisp, J.A., and Fink, J.H., eds., *Remote sensing of active volcanism*, Geophysical monograph 116: Washington, D.C., American Geophysical Union, p. 139–159, at <https://doi.org/10.1029/GM116p0139>.
- Harris, A.J.L., Flynn, L.P., Keszthelyi, L., Mouginiis-Mark, P.J., Rowland, S.K., and Resing, J.A., 1998, Calculation of lava effusion rates from Landstat TM data: *Bulletin of Volcanology*, v. 60, no. 1, p. 52–71, at <https://doi.org/10.1007/s004450050216>.
- Harris, A.J.L., Flynn, L.P., Matías, O., and Rose, W.I., 2002, The thermal stealth flows of Santiaguito dome, Guatemala—Implications for the cooling and emplacement of dacitic block-lava flows: *Bulletin of*

- the Geological Society of America, v. 114, no. 5, p. 533–546, at [https://doi.org/10.1130/0016-7606\(2002\)114<0533:TTSFOS>2.0.CO;2](https://doi.org/10.1130/0016-7606(2002)114<0533:TTSFOS>2.0.CO;2).
- Harris, A.J.L., Flynn, L.P., Matias, O., Rose, W.I., and Cornejo, J., 2004, The evolution of an active silicic lava flow field—An ETM+ perspective: *Journal of Volcanology and Geothermal Research*, v. 135, no. 1–2, p. 147–168, at <https://doi.org/10.1016/j.jvolgeores.2003.12.011>.
- Harris, A.J.L., Flynn, L.P., Rothery, D.A., Oppenheimer, C., and Sherman, S.B., 1999, Mass flux measurements at active lava lakes—Implications for magma recycling: *Journal of Geophysical Research Solid Earth*, v. 104, no. B4, p. 7117–7136, at <https://doi.org/10.1029/98JB02731>.
- Harris, A.J.L., Keszthelyi, L., Flynn, L.P., Mougini-Mark, P.J., Thornber, C., Kauahikaua, J., Sherrod, D., Trusdell, F., Sawyer, M.W., and Flament, P., 1997, Chronology of the episode 54 eruption at Kilauea Volcano, Hawaii, from GOES-9 satellite data: *Geophysical Research Letters*, v. 24, no. 24, p. 3281–3284, at <https://doi.org/10.1029/97GL03165>.
- Harris, A.J.L., Murray, J.B., Aries, S.E., Davies, M.A., Flynn, L.P., Wooster, M.J., Wright, R., and Rothery, D.A., 2000, Effusion rate trends at Etna and Krafla and their implications for eruptive mechanisms: *Journal of Volcanology and Geothermal Research*, v. 102, no. 3–4, p. 237–270, at [https://doi.org/10.1016/S0377-0273\(00\)00190-6](https://doi.org/10.1016/S0377-0273(00)00190-6).
- Harris, A.J.L., Pilger, E., Flynn, L.P., Garbeil, H., Mougini-Mark, P.J., Kauahikaua, J., and Thornber, C., 2001, Automated, high temporal resolution thermal analysis of Kilauea volcano, Hawai'i, using GOES satellite data: *International Journal of Remote Sensing*, v. 22, no. 6, p. 945–967, at <https://doi.org/10.1080/014311601300074487>.
- Harris, A.J.L., Rose, W.I., and Flynn, L.P., 2003, Temporal trends in lava dome extrusion at Santiaguito 1922–2000: *Bulletin of Volcanology*, v. 65, no. 2–3, p. 77–89, at <https://doi.org/10.1007/s00445-002-0243-0>.
- Harris, A.J.L., Vallance, J.W., Kimberly, P., Rose, W.I., Matías, O., Bunzendahl, E., Flynn, L.P., and Garbeil, H., 2006, Downstream aggradation owing to lava dome extrusion and rainfall runoff at Volcán Santiaguito, Guatemala, Special paper 412, *in* Rose, W.I., Bluth, G.J.S., Carr, M.J., Ewert, J.W., Patino, L.C., and Vallance, J.W., eds., *Volcanic hazards in Central America*: Boulder, Colo., Geological Society of America, p. 85–104, at [https://doi.org/10.1130/2006.2412\(05\)](https://doi.org/10.1130/2006.2412(05)).
- Harris, A.J.L., Wright, R., and Flynn, L.P., 1999, Remote monitoring of mount erebus volcano, Antarctica, using polar orbiters—Progress and prospects: *International Journal of Remote Sensing*, v. 20, no. 15–16, p. 3051–3071, at <https://doi.org/10.1080/014311699211615>.
- Harris, N.L., Brown, S., Hagen, S.C., Saatchi, S.S., Petrova, S., Salas, W., Hansen, M.C., Potapov, P.V., and Lotsch, A., 2012, Baseline map of carbon emissions from deforestation in tropical regions: *Science*, v. 336, no. 6088, p. 1573–1576, at <https://doi.org/10.1126/science.1217962>.
- Harris, N.L., Gibbs, D.A., Baccini, A., Birdsey, R.A., de Bruin, S., Farina, M., Fatoyinbo, L., Hansen, M.C., Herold, M., et al., 2021, Global maps of twenty-first century forest carbon fluxes: *Nature Climate Change*, v. 11, p. 234–240, at <https://doi.org/10.1038/s41558-020-00976-6>.
- Harris, N.L., Goldman, E., Gabris, C., Nordling, J., Minnemeyer, S., Ansari, S., Lippmann, M., Bennett, L., Raad, M., et al., 2017, Using spatial statistics to identify emerging hot spots of forest loss: *Environmental Research Letters*, v. 12, no. 2, article 024012, at <https://doi.org/10.1088/1748-9326/aa5a2f>.

- Harrower, M.J., Nathan, S., Mazzariello, J.C., Zerue, K., Dumitru, I.A., Meresa, Y., Bongers, J.L., Gebreegziabher, G., Zaitchik, B.F., and Anderson, M.C., 2020, Water, geography, and Aksumite civilization—The Southern Red Sea Archaeological Histories (SRSAH) Project Survey (2009–2016): *African Archaeological Review*, v. 37, no. 1, p. 51–67, article 51, at <https://doi.org/10.1007/s10437-020-09369-8>.
- Hartmann, H., Schuldt, B., Sanders, T.G.M., Macinnis-Ng, C., Boehmer, H.J., Allen, C.D., Bolte, A., Crowther, T.W., Hansen, M.C., et al., 2018, Monitoring global tree mortality patterns and trends. Report from the VW symposium ‘Crossing scales and disciplines to identify global trends of tree mortality as indicators of forest health’: *New Phytologist*, v. 217, no. 3, p. 984–987, at <https://doi.org/10.1111/nph.14988>.
- Hasan, M.N., Shrestha, M., Leigh, L., and Helder, D., 2019, Evaluation of an extended PICS (EPICS) for Calibration and stability monitoring of optical satellite sensors: *Remote Sensing*, v. 11, no. 15, article 1755, at <https://doi.org/10.3390/rs11151755>.
- Hasenauer, H., Nemani, R.R., Schadauer, K., and Running, S.W., 1999, Forest growth response to changing climate between 1961 and 1990 in Austria: *Forest Ecology and Management*, v. 122, no. 3, p. 209–219, at [https://doi.org/10.1016/S0378-1127\(99\)00010-9](https://doi.org/10.1016/S0378-1127(99)00010-9).
- Hashimoto, H., Dungan, J.L., White, M.A., Yang, F., Michaelis, A.R., Running, S.W., and Nemani, R.R., 2008, Satellite-based estimation of surface vapor pressure deficits using MODIS land surface temperature data: *Remote Sensing of Environment*, v. 112, no. 1, p. 142–155, at <https://doi.org/10.1016/j.rse.2007.04.016>.
- Hashimoto, H., Nemani, R.R., Bala, G., Cao, L., Michaelis, A.R., Ganguly, S., Wang, W., Milesi, C., Eastman, R., et al., 2019, Constraints to vegetation growth reduced by region-specific changes in seasonal climate: *Climate*, v. 7, no. 2, article 27, at <https://doi.org/10.3390/cli7020027>.
- Hashimoto, H., Nemani, R.R., White, M.A., Jolly, W.M., Piper, S.C., Keeling, C.D., Myneni, R.B., and Running, S.W., 2004, El Niño-Southern Oscillation-induced variability in terrestrial carbon cycling: *Journal of Geophysical Research Atmospheres*, v. 109, no. 23, p. 1–8, at <https://doi.org/10.1029/2004JD004959>.
- Hashimoto, H., Wang, W., Dungan, J.L., Li, S., Michaelis, A.R., Takenaka, H., Higuchi, A., Myneni, R.B., and Nemani, R.R., 2021, New generation geostationary satellite observations support seasonality in greenness of the Amazon evergreen forests: *Nature Communications*, v. 12, no. 1, article 684, at <https://doi.org/10.1038/s41467-021-20994-y>.
- Hashimoto, H., Wang, W., Melton, F.S., Moreno, A.L., Ganguly, S., Michaelis, A.R., and Nemani, R.R., 2019, High-resolution mapping of daily climate variables by aggregating multiple spatial data sets with the random forest algorithm over the conterminous United States: *International Journal of Climatology*, v. 39, no. 6, p. 2964–2983, at <https://doi.org/10.1002/joc.5995>.
- Hashimoto, H., Wang, W., Michaelis, A., Takenaka, H., Higuchi, A., and Nemani, R.R., 2020, Hourly GPP estimation in Australia using Himawari-8 AHI products, in 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), online virtual meeting, 26 September–2 October 2020, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4513–4515, at <https://doi.org/10.1109/IGARSS39084.2020.9323462>.
- Hashimoto, H., Wang, W., Milesi, C., White, M.A., Ganguly, S., Gamo, M., Hirata, R., Myneni, R.B., and Nemani, R.R., 2012, Exploring simple algorithms for estimating gross primary production in

- forested areas from satellite data: *Remote Sensing*, v. 4, no. 1, p. 303–326, at <https://doi.org/10.3390/rs4010303>.
- Hashimoto, H., Wang, W., Milesi, C., Xiong, J., Ganguly, S., Zhu, Z., and Nemani, R.R., 2013, Structural uncertainty in model-simulated trends of global gross primary production: *Remote Sensing*, v. 5, no. 3, p. 1258–1273, at <https://doi.org/10.3390/rs5031258>.
- Hatfield, J.L., and Allen, R.G., 1996, Evapotranspiration estimates under deficient water supplies: *Journal of Irrigation and Drainage Engineering*, v. 122, no. 5, p. 301–308, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(1996\)122:5\(301\)](https://doi.org/10.1061/(ASCE)0733-9437(1996)122:5(301)).
- Haubrock, S.N., Chabrillat, S., Kuhnert, M., Hostert, P., and Kaufmann, H., 2008, Surface soil moisture quantification and validation based on hyperspectral data and field measurements: *Journal of Applied Remote Sensing*, v. 2, no. 1, article 023552, at <https://doi.org/10.1117/1.3059191>.
- Haugen, B.D., Scambos, T.A., Pfeffer, W.T., and Anderson, R.S., 2010, Twentieth-century changes in the thickness and extent of Arapaho Glacier, Front Range, Colorado: *Arctic, Antarctic, and Alpine Research*, v. 42, no. 2, p. 198–209, at <https://doi.org/10.1657/1938-4246-42.2.198>.
- Hausamann, D., Zirinig, W., Schreier, G., and Strobl, P., 2005, Monitoring of gas pipelines – A civil UAV application: *Aircraft Engineering and Aerospace Technology*, v. 77, no. 5, p. 352–360, at <https://doi.org/10.1108/00022660510617077>.
- Hausner, M.B., Huntington, J.L., Nash, C., Morton, C., McEvoy, D.J., Pilliod, D.S., Hegewisch, K.C., Daudert, B., Abatzoglou, J.T., and Grant, G., 2018, Assessing the effectiveness of riparian restoration projects using Landsat and precipitation data from the cloud-computing application ClimateEngine.org: *Ecological Engineering*, v. 120, p. 432–440, at <https://doi.org/10.1016/j.ecoleng.2018.06.024>.
- Hawbaker, T.J., Gobakken, T., Lesak, A., Trømborg, E., Contrucci, K., and Radeloff, V.C., 2010, Light detection and ranging-based measures of mixed hardwood forest structure: *Forest Science*, v. 56, no. 3, p. 313–326, at <https://doi.org/10.1093/forestscience/56.3.313>.
- Hawbaker, T.J., Henne, P.D., Vanderhoof, M.K., Carlson, A.R., Mockrin, M.H., and Radeloff, V.C., 2023, Changes in wildfire occurrence and risk to homes from 1990 through 2019 in the Southern Rocky Mountains, USA: *Ecosphere*, v. 14, no. 2, article e4403, at <https://doi.org/10.1002/ecs2.4403>.
- Hawbaker, T.J., Keuler, N.S., Lesak, A.A., Gobakken, T., Contrucci, K., and Radeloff, V.C., 2009, Improved estimates of forest vegetation structure and biomass with a LiDAR-optimized sampling design: *Journal of Geophysical Research Biogeosciences*, v. 114, no. 3, article G00e04, at <https://doi.org/10.1029/2008JG000870>.
- Hawbaker, T.J., and Radeloff, V.C., 2004, Roads and landscape pattern in northern Wisconsin based on a comparison of four road data sources: *Conservation Biology*, v. 18, no. 5, p. 1233–1244, at <https://doi.org/10.1111/j.1523-1739.2004.00231.x>.
- Hawbaker, T.J., Radeloff, V.C., Clayton, M.K., Hammer, R.B., and Gonzalez-Abraham, C.E., 2006, Road development, housing growth, and landscape fragmentation in northern Wisconsin—1937-1999: *Ecological Applications*, v. 16, no. 3, p. 1222–1237, at [https://doi.org/10.1890/1051-0761\(2006\)016\[1222:RDHGAL\]2.0.CO;2](https://doi.org/10.1890/1051-0761(2006)016[1222:RDHGAL]2.0.CO;2).
- Hawbaker, T.J., Radeloff, V.C., Hammer, R.B., and Clayton, M.K., 2005, Road density and landscape pattern in relation to housing density, and ownership, land cover, and soils: *Landscape Ecology*, v. 20, no. 5, p. 609–625, at <https://doi.org/10.1007/s10980-004-5647-0>.

- Hawbaker, T.J., Radeloff, V.C., Stewart, S.I., Hammer, R.B., Keuler, N.S., and Clayton, M.K., 2013, Human and biophysical influences on fire occurrence in the United States: *Ecological Applications*, v. 23, no. 3, p. 565–582, at <https://doi.org/10.1890/12-1816.1>.
- Hawbaker, T.J., Radeloff, V.C., Syphard, A.D., Zhu, Z., and Stewart, S.I., 2008, Detection rates of the MODIS active fire product in the United States: *Remote Sensing of Environment*, v. 112, no. 5, p. 2656–2664, at <https://doi.org/10.1016/j.rse.2007.12.008>.
- Hawbaker, T.J., Vanderhoof, M.K., Beal, Y.J., Takacs, J.D., Schmidt, G.L., Falgout, J.T., Williams, B., Fairaux, N.M., Caldwell, M.K., et al., 2017, Mapping burned areas using dense time-series of Landsat data: *Remote Sensing of Environment*, v. 198, p. 504–522, at <https://doi.org/10.1016/j.rse.2017.06.027>.
- Hawbaker, T.J., Vanderhoof, M.K., Schmidt, G.L., Beal, Y.J., Picotte, J.J., Takacs, J.D., Falgout, J.T., and Dwyer, J.L., 2020, The Landsat Burned Area algorithm and products for the conterminous United States: *Remote Sensing of Environment*, v. 244, article 111801, at <https://doi.org/10.1016/j.rse.2020.111801>.
- Hawes, S.K., Carder, K.L., and Evans, R.H., 2000, MODIS CDOM and chlorophyll—A first look using SeaWiFS and AVHRR data, in *Earth Observing Systems V*, San Diego, Calif., 30 July–4 August 2000, Proceedings of SPIE Vol. 4135: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 403–410, at <https://doi.org/10.1117/12.494221>.
- Hay, G.J., Castilla, G., Wulder, M.A., and Ruiz, J.R., 2005, An automated object-based approach for the multiscale image segmentation of forest scenes: *International Journal of Applied Earth Observation and Geoinformation*, v. 7, no. 4, p. 339–359, at <https://doi.org/10.1016/j.jag.2005.06.005>.
- Hayatbini, N., Kong, B., Hsu, K.L., Nguyen, P., Sorooshian, S., Stephens, G., Fowlkes, C., Nemani, R., and Ganguly, S., 2019, Conditional generative adversarial networks (cGANs) for near real-time precipitation estimation from multispectral GOES-16 satellite imageries-PERSIANN-cGAN: *Remote Sensing*, v. 11, no. 19, article 2193, at <https://doi.org/10.3390/rs11192193>.
- Hayes, D.J., and Cohen, W.B., 2007, Spatial, spectral and temporal patterns of tropical forest cover change as observed with multiple scales of optical satellite data: *Remote Sensing of Environment*, v. 106, no. 1, p. 1–16, at <https://doi.org/10.1016/j.rse.2006.07.002>.
- Hayes, D.J., Cohen, W.B., Sader, S.A., and Irwin, D.E., 2008, Estimating proportional change in forest cover as a continuous variable from multi-year MODIS data: *Remote Sensing of Environment*, v. 112, no. 3, p. 735–749, at <https://doi.org/10.1016/j.rse.2007.06.003>.
- Hayes, M.J., Svoboda, M.D., Wardlow, B.D., Anderson, M.C., and Kogan, F., 2012, Drought monitoring—Historical and current perspectives, in Wardlow, B.D., Anderson, M.C., and Verdin, J.P., eds., *Remote sensing of drought—Innovative monitoring approaches*: Boca Raton, Fla., CRC Press, p. 1–19, at <https://doi.org/10.1201/b11863-8>.
- He, H.S., Mladenoff, D.J., Radeloff, V.C., and Crow, T.R., 1998, Integration of gis data and classified satellite imagery for regional forest assessment: *Ecological Applications*, v. 8, no. 4, p. 1072–1083, at [https://doi.org/10.1890/1051-0761\(1998\)008\[1072:IOGDAC\]2.0.CO;2](https://doi.org/10.1890/1051-0761(1998)008[1072:IOGDAC]2.0.CO;2).
- He, L., Chen, J.M., Pisek, J., Schaaf, C.B., and Strahler, A.H., 2011, Global clumping index map derived from modis BRDF products, in *2011 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Vancouver, Canada, 24–29 July 2011, Proceedings: Piscataway, N.J.,

- Institute of Electrical and Electronics Engineers (IEEE), p. 1255–1258, at <https://doi.org/10.1109/IGARSS.2011.6049427>.
- He, L., Chen, J.M., Pisek, J., Schaaf, C.B., and Strahler, A.H., 2012, Global clumping index map derived from the MODIS BRDF product: *Remote Sensing of Environment*, v. 119, p. 118–130, at <https://doi.org/10.1016/j.rse.2011.12.008>.
- He, L., Chen, J.M., Zhang, S., Gomez, G., Pan, Y., McCullough, K., Birdsey, R., and Masek, J.G., 2011, Normalized algorithm for mapping and dating forest disturbances and regrowth for the United States: *International Journal of Applied Earth Observation and Geoinformation*, v. 13, no. 2, p. 236–245, at <https://doi.org/10.1016/j.jag.2010.12.003>.
- He, M.X., Liu, Z.S., Du, K.P., Li, L.P., Chen, R., Carder, K.L., and Lee, Z.P., 2000, Retrieval of chlorophyll from remote-sensing reflectance in the China seas: *Applied Optics*, v. 39, no. 15, p. 2467–2474, at <https://doi.org/10.1364/AO.39.002467>.
- He, T., Liang, S., Wang, D., Cao, Y., Gao, F., Yu, Y., and Feng, M., 2017, Evaluating land surface albedo estimation from Landsat MSS, TM, ETM+, and OLI data based on the unified direct estimation approach: *Remote Sensing of Environment*, v. 204, p. 181–196, at <https://doi.org/10.1016/j.rse.2017.10.031>.
- He, T., Liang, S., Yu, Y., Wang, D., Gao, F., and Liu, Q., 2013, Greenland surface albedo changes in July 1981–2012 from satellite observations: *Environmental Research Letters*, v. 8, no. 4, article 044043, at <https://doi.org/10.1088/1748-9326/8/4/044043>.
- Healey, N.C., Irmak, A., Arkebauer, T.J., Billesbach, D.P., Lenters, J.D., Hubbard, K.G., Allen, R.G., and Kjaersgaard, J., 2011, Remote sensing and in situ-based estimates of evapotranspiration for subirrigated meadow, dry valley, and upland dune ecosystems in the semi-arid sand hills of Nebraska, USA: *Irrigation and Drainage Systems*, v. 25, no. 3, p. 151–178, at <https://doi.org/10.1007/s10795-011-9118-x>.
- Healey, S.P., 2010, There is more to GIS than making maps: *Journal of Forestry*, v. 108, no. 7, p. 368–369, at <https://doi.org/10.1093/jof/108.7.368>.
- Healey, S.P., 2020, Long-term forest health implications of roadlessness: *Environmental Research Letters*, v. 15, no. 10, article 104023, at <https://doi.org/10.1088/1748-9326/aba031>.
- Healey, S.P., Blackard, J.A., Morgan, T.A., Loeffler, D., Jones, G., Songster, J., Brandt, J.P., Moisen, G.G., and DeBlender, L.T., 2009, Changes in timber haul emissions in the context of shifting forest management and infrastructure: *Carbon Balance and Management*, v. 4, article 9, at <https://doi.org/10.1186/1750-0680-4-9>.
- Healey, S.P., Cohen, W.B., Spies, T.A., Moeur, M., Pflugmacher, D., Whitley, M.G., and Lefsky, M., 2008, The relative impact of harvest and fire upon landscape-level dynamics of older forests—lessons from the Northwest Forest Plan: *Ecosystems*, v. 11, no. 7, p. 1106–1119, at <https://doi.org/10.1007/s10021-008-9182-8>.
- Healey, S.P., Cohen, W.B., Yang, Z., Kenneth Brewer, C., Brooks, E.B., Gorelick, N.S., Hernandez, A.J., Huang, C., Joseph Hughes, M., et al., 2018, Mapping forest change using stacked generalization—An ensemble approach: *Remote Sensing of Environment*, v. 204, p. 717–728, at <https://doi.org/10.1016/j.rse.2017.09.029>.

- Healey, S.P., Cohen, W.B., Zhiqiang, Y., and Krankina, O.N., 2005, Comparison of Tasseled Cap-based Landsat data structures for use in forest disturbance detection: *Remote Sensing of Environment*, v. 97, no. 3, p. 301–310, at <https://doi.org/10.1016/j.rse.2005.05.009>.
- Healey, S.P., and Gara, R.I., 2003, The effect of a teak (*Tectona grandis*) plantation on the establishment of native species in an abandoned pasture in Costa Rica: *Forest Ecology and Management*, v. 176, no. 1–3, p. 497–507, at [https://doi.org/10.1016/S0378-1127\(02\)00235-9](https://doi.org/10.1016/S0378-1127(02)00235-9).
- Healey, S.P., Lapoint, E., Moisen, G.G., and Powell, S.L., 2011, Maintaining the confidentiality of plot locations by exploiting the low sensitivity of forest structure models to different spectral extraction kernels: *International Journal of Remote Sensing*, v. 32, no. 1, p. 287–297, at <https://doi.org/10.1080/01431160903464120>.
- Healey, S.P., and Menlove, J., 2019, The stability of mean wood specific gravity across stand age in US forests despite species turnover: *Forests*, v. 10, no. 2, article 114, at <https://doi.org/10.3390/f10020114>.
- Healey, S.P., Patterson, P.L., Saatchi, S., Lefsky, M.A., Lister, A.J., and Freeman, E.A., 2012, A sample design for globally consistent biomass estimation using lidar data from the Geoscience Laser Altimeter System (GLAS): *Carbon Balance and Management*, v. 7, article 10, at <https://doi.org/10.1186/1750-0680-7-10>.
- Healey, S.P., Raymond, C.L., Lockman, I.B., Hernandez, A.J., Garrard, C., and Huang, C., 2016, Root disease can rival fire and harvest in reducing forest carbon storage: *Ecosphere*, v. 7, no. 11, article e01569, at <https://doi.org/10.1002/ecs2.1569>.
- Healey, S.P., Urbanski, S.P., Patterson, P.L., and Garrard, C., 2014, A framework for simulating map error in ecosystem models: *Remote Sensing of Environment*, v. 150, p. 207–217, at <https://doi.org/10.1016/j.rse.2014.04.028>.
- Healey, S.P., Yang, Z., Cohen, W.B., and Pierce, D.J., 2006, Application of two regression-based methods to estimate the effects of partial harvest on forest structure using Landsat data: *Remote Sensing of Environment*, v. 101, no. 1, p. 115–126, at <https://doi.org/10.1016/j.rse.2005.12.006>.
- Healey, S.P., Yang, Z., Gorelick, N., and Ilyushchenko, S., 2020, Highly local model calibration with a new GEDI LIDAR asset on Google Earth Engine reduces Landsat forest height signal saturation: *Remote Sensing*, v. 12, no. 17, article 2840, at <https://doi.org/10.3390/rs12172840>.
- Hedges, S.B., Cohen, W.B., Timyan, J., and Yang, Z., 2018, Haiti's biodiversity threatened by nearly complete loss of primary forest: *Proceedings of the National Academy of Sciences of the United States of America*, v. 115, no. 46, p. 11850–11855, at <https://doi.org/10.1073/pnas.1809753115>.
- Hedges, S.B., Cohen, W.B., Timyan, J., and Yang, Z., 2019, Reply to Wampler et al.—Deforestation and biodiversity loss should not be sugarcoated: *Proceedings of the National Academy of Sciences of the United States of America*, v. 116, no. 12, p. 5204–5204, at <https://doi.org/10.1073/pnas.1901879116>.
- Heinimann, A., Mertz, O., Frohling, S., Christensen, A.E., Hurni, K., Sedano, F., Chini, L.P., Sahajpal, R., Hansen, M.C., and Hurtt, G., 2017, A global view of shifting cultivation—Recent, current, and future extent: *PLoS ONE*, v. 12, no. 9, article e0184479, at <https://doi.org/10.1371/journal.pone.0184479>.
- Heinsch, F.A., Zhao, M., Running, S.W., Kimball, J.S., Nemani, R.R., Davis, K.J., Bolstad, P.V., Cook, B.D., Desai, A.R., et al., 2006, Evaluation of remote sensing based terrestrial productivity from MODIS

- using regional tower eddy flux network observations: *IEEE Transactions on Geoscience and Remote Sensing*, v. 44, no. 7, p. 1908–1923, at <https://doi.org/10.1109/TGRS.2005.853936>.
- Held, A., Ticehurst, C., Lymburner, L., Phinn, S., Scarth, P., Stanford, M., and Hartini, S., 2001, Hyperspectral mapping of rainforests and mangroves, *in* 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2787–2789, at <https://doi.org/10.1109/IGARSS.2001.978163>.
- Held, A., Ticehurst, C., Lymburner, L., and Williams, N., 2003, High resolution mapping of tropical mangrove ecosystems using hyperspectral and radar remote sensing: *International Journal of Remote Sensing*, v. 24, no. 13, p. 2739–2759, at <https://doi.org/10.1080/0143116031000066323>.
- Held, M., Rabe, A., Senf, C., Van Der Linden, S., and Hostert, P., 2015, Analyzing hyperspectral and hypertemporal data by decoupling feature redundancy and feature relevance: *IEEE Geoscience and Remote Sensing Letters*, v. 12, no. 5, p. 983–987, at <https://doi.org/10.1109/LGRS.2014.2371242>.
- Helder, D., Anderson, C., Beckett, K., Houborg, R., Zuleta, I., Boccia, V., Clerc, S., Kuester, M., Markham, B., and Pagnutti, M., 2020, Observations and recommendations for coordinated calibration activities of government and commercial optical satellite systems: *Remote Sensing*, v. 12, no. 15, article 2468, at <https://doi.org/10.3390/RS12152468>.
- Helder, D., Doelling, D., Bhatt, R., Choi, T., and Barsi, J., 2020, Calibrating geosynchronous and polar orbiting satellites—Sharing best practices: *Remote Sensing*, v. 12, no. 17, article 1634, at <https://doi.org/10.3390/RS12172786>.
- Helder, D.L., 1996, Radiometric calibration archive for Landsat Thematic Mapper™, *in* Algorithms for Multispectral and Hyperspectral Imagery II, Orlando, Fla., 8–12 April 1996, Proceedings of SPIE Vol. 2758: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 273–284, at <https://doi.org/10.1117/12.243222>.
- Helder, D.L., 2012, Calibration best practices—25 years experience from Landsat, *in* 33rd Asian Conference on Remote Sensing 2012, ACRS 2012, Pattaya, Thailand, 26–30 November 2012, Proceedings: Tokyo, Japan, Asian Association on Remote Sensing, p. 746–754.
- Helder, D.L., Barker, J.L., Boncyk, W.C., and Markham, B.L., 1996, Short term calibration of Landsat TM—Recent findings and suggested techniques, *in* 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1276–1278, at <https://doi.org/10.1109/IGARSS.1996.516636>.
- Helder, D.L., Basnet, B., and Morstad, D.L., 2010, Optimized identification of worldwide radiometric pseudo-invariant calibration sites: *Canadian Journal of Remote Sensing*, v. 36, no. 5, p. 527–539, at <https://doi.org/10.5589/m10-085>.
- Helder, D.L., Behnken, J., and Aulich, T., 2000, Design of ethanol based fuels for aviation, *in* SAE Technical Papers, SAE General Aviation Technology Conference and Exposition, Wichita, Kans., 9–11 May 2000, Proceedings: Society of Automotive Engineers, paper no. 2000-01-1712, at <https://doi.org/10.4271/2000-01-1712>.

- Helder, D.L., Boncyk, W., and Morfitt, R., 1997, Landsat tm memory effect characterization and correction: *Canadian Journal of Remote Sensing*, v. 23, no. 4, p. 299–308, at <https://doi.org/10.1080/07038992.1997.10855215>.
- Helder, D.L., Boncyk, W., and Morfitt, R., 1998, Absolute calibration of the Landsat Thematic Mapper using the internal calibrator, *in* 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2716–2718, at <https://doi.org/10.1109/IGARSS.1998.702328>.
- Helder, D.L., Coan, M., Patrick, K., and Gaska, P., 2003, IKONOS geometric characterization: *Remote Sensing of Environment*, v. 88, no. 1–2, p. 69–79, at <https://doi.org/10.1016/j.rse.2003.04.002>.
- Helder, D.L., Hijazi, S., and Ruggles, T., 2002, A radiometric evaluation of the Advanced Land Imager, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 576–578, at <https://doi.org/10.1109/IGARSS.2002.1025110>.
- Helder, D.L., Karki, S., Bhatt, R., Micijevic, E., Aaron, D.B., and Jasinski, B., 2012, Radiometric calibration of the landsat MSS sensor series: *IEEE Transactions on Geoscience and Remote Sensing*, v. 50, no. 6, p. 2380–2399, at <https://doi.org/10.1109/TGRS.2011.2171351>.
- Helder, D.L., Malla, R., Mettler, C.J., Markham, B.L., and Micijevic, E., 2012, Landsat 4 thematic mapper calibration update: *IEEE Transactions on Geoscience and Remote Sensing*, v. 50, no. 6, p. 2400–2408, at <https://doi.org/10.1109/TGRS.2011.2171350>.
- Helder, D.L., Markham, B., Morfitt, R., Storey, J., Barsi, J., Gascon, F., Clerc, S., LaFrance, B., Masek, J.G., et al., 2018, Observations and recommendations for the calibration of Landsat 8 OLI and Sentinel 2 MSI for improved data interoperability: *Remote Sensing*, v. 10, no. 9, article 1340, at <https://doi.org/10.3390/rs10091340>.
- Helder, D.L., Markham, B.L., Thome, K.J., Barsi, J.A., Chander, G., and Malla, R., 2008, Updated radiometric calibration for the Landsat-5 thematic mapper reflective bands: *IEEE Transactions on Geoscience and Remote Sensing*, v. 46, no. 10, p. 3309–3325, at <https://doi.org/10.1109/TGRS.2008.920966>.
- Helder, D.L., and Micijevic, E., 2004, Landsat-5 Thematic Mapper outgassing effects: *IEEE Transactions on Geoscience and Remote Sensing*, v. 42, no. 12, p. 2717–2729, at <https://doi.org/10.1109/TGRS.2004.839086>.
- Helder, D.L., and Mishra, N., 2013, Absolute calibration of optical satellite sensors using Libya 4 pseudo invariant calibration sites, *in* Asian Conference on Remote Sensing, 34th, Bali, Indonesia, 20–24 October 2013, Proceedings: Klong Luang, Thailand, Asian Association on Remote Sensing, p. 898–905.
- Helder, D.L., and Ruggles, T.A., 2004, Landsat Thematic Mapper reflective-band radiometric artifacts: *IEEE Transactions on Geoscience and Remote Sensing*, v. 42, no. 12, p. 2704–2716, at <https://doi.org/10.1109/TGRS.2004.839087>.
- Helder, D.L., Ruggles, T.A., Dewald, J.D., and Madhavan, S., 2004, Landsat-5 Thematic Mapper reflective-band radiometric stability: *IEEE Transactions on Geoscience and Remote Sensing*, v. 42, no. 12, p. 2730–2746, at <https://doi.org/10.1109/TGRS.2004.839088>.

- Helder, D.L., Schiller, S., and Malo, R., 1998, Experimental and model-based derivation of atmospheric point spread functions, *in* 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2719–2721, at <https://doi.org/10.1109/IGARSS.1998.702329>.
- Helder, D.L., Thome, K.J., Aaron, D.B., Leigh, L., Czapla-Myers, J., Leisso, N., Biggar, S., and Anderson, N., 2012, Recent surface reflectance measurement campaigns with emphasis on best practices, SI traceability and uncertainty estimation: *Metrologia*, v. 49, no. 2, p. S21–S28, at <https://doi.org/10.1088/0026-1394/49/2/S21>.
- Helder, D.L., Thome, K.J., Mishra, N., Chander, G., Xiong, X., Angal, A., and Choi, T., 2013, Absolute radiometric calibration of Landsat using a pseudo invariant calibration site: *IEEE Transactions on Geoscience and Remote Sensing*, v. 51, no. 3, p. 1360–1369, at <https://doi.org/10.1109/TGRS.2013.2243738>.
- Helmer, E.H., 2000, The landscape ecology of tropical secondary forest in montane Costa Rica: *Ecosystems*, v. 3, no. 1, p. 98–114, at <https://doi.org/10.1007/s100210000013>.
- Helmer, E.H., 2004, Forest conservation and land development in Puerto Rico: *Landscape Ecology*, v. 19, no. 1, p. 29–40, at <https://doi.org/10.1023/B:LAND.0000018364.68514.fb>.
- Helmer, E.H., Brandeis, T.J., Lugo, A.E., and Kennaway, T., 2008, Factors influencing spatial pattern in tropical forest clearance and stand age—Implications for carbon storage and species diversity: *Journal of Geophysical Research Biogeosciences*, v. 113, no. 2, article G02S04, at <https://doi.org/10.1029/2007JG000568>.
- Helmer, E.H., Brown, S., and Cohen, W.B., 2000, Mapping montane tropical forest successional stage and land use with multi-date Landsat imagery: *International Journal of Remote Sensing*, v. 21, no. 11, p. 2163–2183, at <https://doi.org/10.1080/01431160050029495>.
- Helmer, E.H., Gerson, E.A., Scott Baggett, L., Bird, B.J., Ruzycki, T.S., and Voggesser, S.M., 2019, Neotropical cloud forests and páramo to contract and dry from declines in cloud immersion and frost: *PLoS ONE*, v. 14, no. 4, article e0213155, at <https://doi.org/10.1371/journal.pone.0213155>.
- Helmer, E.H., Goodwin, N.R., Gond, V., Souza, C.M., Jr., and Asner, G.P., 2015, Characterizing tropical forests with multispectral imagery, *in* Thenkabail, P.S., ed., *Land resources monitoring, modeling, and mapping with remote sensing*: Boca Raton, Fla., CRC Press, p. 3–22, at <https://doi.org/10.1201/b19322-25>.
- Helmer, E.H., Kay, S., Marcano-Vega, H., Powers, J.S., Wood, T.E., Zhu, X., Gwenzi, D., and Ruzycki, T.S., 2023, Multiscale predictors of small tree survival across a heterogeneous tropical landscape: *PLoS ONE*, v. 18, no. 3, article e0280322, at <https://doi.org/10.1371/journal.pone.0280322>.
- Helmer, E.H., Kennaway, T.A., Pedreros, D.H., Clark, M.L., Marcano-Vega, H., Tieszen, L.L., Ruzycki, T.R., Schill, S.R., and Carrington, C.M.S., 2008, Land cover and forest formation distributions for St. Kitts, Nevis, St. Eustatius, Grenada and Barbados from decision tree classification of cloud-cleared satellite imagery: *Caribbean Journal of Science*, v. 44, no. 2, p. 175–198, at <https://doi.org/10.18475/cjos.v44i2.a6>.
- Helmer, E.H., Lefsky, M.A., and Roberts, D.A., 2009, Biomass accumulation rates of Amazonian secondary forest and biomass of old-growth forests from Landsat time series and the Geoscience Laser Altimeter System: *Journal of Applied Remote Sensing*, v. 3, no. 1, article 033505, at <https://doi.org/10.1117/1.3082116>.

- Helmer, E.H., Ramos, O., López, T.D.M., Quinones, M., and Diaz, W., 2002, Mapping the forest type and land cover of Puerto Rico, a component of the Caribbean biodiversity hotspot: *Caribbean Journal of Science*, v. 38, no. 3–4, p. 165–183, at https://data.fs.usda.gov/research/pubs/iitf/ja_iitf_2002_helmer001.pdf.
- Helmer, E.H., and Ruefenacht, B., 2005, Cloud-free satellite image mosaics with regression trees and histogram matching: *Photogrammetric Engineering and Remote Sensing*, v. 71, no. 9, p. 1079–1089, at <https://doi.org/10.14358/PERS.71.9.1079>.
- Helmer, E.H., and Ruefenacht, B., 2006, Erratum—Cloud-free satellite image mosaics with regression trees and histogram matching (*Photogrammetric Engineering and Remote Sensing* (2005) 71, 9 (1079-1089)): *Photogrammetric Engineering and Remote Sensing*, v. 72, no. 6, p. 622–622.
- Helmer, E.H., and Ruefenacht, B., 2007, A comparison of radiometric normalization methods when filling cloud gaps in Landsat imagery: *Canadian Journal of Remote Sensing*, v. 33, no. 1-4, p. 325–340, at <https://doi.org/10.5589/m07-028>.
- Helmer, E.H., and Ruefenacht, B., 2007, Erratum—A comparison of radiometric normalization methods when filling cloud gaps in Landsat imagery (*Canadian Journal of Remote Sensing* 33:4 (325-340)): *Canadian Journal of Remote Sensing*, v. 33, no. 5, p. 457–458, at <https://doi.org/10.5589/m07-909>.
- Helmer, E.H., Ruzycki, T.S., Benner, J., Voggeser, S.M., Scobie, B.P., Park, C., Fanning, D.W., and Ramnarine, S., 2012, Detailed maps of tropical forest types are within reach—Forest tree communities for Trinidad and Tobago mapped with multiseason Landsat and multiseason fine-resolution imagery: *Forest Ecology and Management*, v. 279, p. 147–166, at <https://doi.org/10.1016/j.foreco.2012.05.016>.
- Helmer, E.H., Ruzycki, T.S., Wilson, B.T., Sherrill, K.R., Lefsky, M.A., Marcano-Vega, H., Brandeis, T.J., Erickson, H.E., and Ruefenacht, B., 2018, Tropical deforestation and recolonization by exotic and native trees—Spatial patterns of tropical forest biomass, functional groups, and species counts and links to stand age, geoclimate, and sustainability goals: *Remote Sensing*, v. 10, no. 11, article 1724, at <https://doi.org/10.3390/rs10111724>.
- Helmer, E.H., Ruzycki, T.S., Wunderle, J.M., Voggeser, S., Ruefenacht, B., Kwit, C., Brandeis, T.J., and Ewert, D.N., 2010, Mapping tropical dry forest height, foliage height profiles and disturbance type and age with a time series of cloud-cleared Landsat and ALL image mosaics to characterize avian habitat: *Remote Sensing of Environment*, v. 114, no. 11, p. 2457–2473, at <https://doi.org/10.1016/j.rse.2010.05.021>.
- Hély, C., Alleaume, S., Swap, R.J., Shugart, H.H., and Justice, C.O., 2003, SAFARI-2000 characterization of fuels, fire behavior, combustion completeness, and emissions from experimental burns in infertile grass savannas in western Zambia: *Journal of Arid Environments*, v. 54, no. 2, p. 381–394, at <https://doi.org/10.1006/jare.2002.1097>.
- Hély, C., Caylor, K.K., Dowty, P., Alleaume, S., Swap, R.J., Shugart, H.H., and Justice, C.O., 2007, A temporally explicit production efficiency model for fuel load allocation in southern Africa: *Ecosystems*, v. 10, no. 7, p. 1116–1132, at <https://doi.org/10.1007/s10021-007-9082-3>.
- Hély, C., Dowty, P.R., Alleaume, S., Caylor, K.K., Korontzi, S., Swap, R.J., Shugart, H.H., and Justice, C.O., 2003, Regional fuel load for two climatically contrasting years in southern Africa: *Journal of Geophysical Research Atmospheres*, v. 108, no. 13, p. SAF 11–1 – SAF 11–17, at <https://doi.org/10.1029/2002JD002341>

- Hemmerling, J., Pflugmacher, D., and Hostert, P., 2021, Mapping temperate forest tree species using dense Sentinel-2 time series: *Remote Sensing of Environment*, v. 267, article 112743, at <https://doi.org/10.1016/j.rse.2021.112743>.
- Hendrickx, J.M.H., Allen, R.G., Brower, A., Byrd, A.R., Hong, S.H., Ogden, F.L., Pradhan, N.R., Robison, C.W., Toll, D., et al., 2016, Benchmarking optical/thermal satellite imagery for estimating evapotranspiration and soil moisture in decision support tools: *Journal of the American Water Resources Association*, v. 52, no. 1, p. 89–119, at <https://doi.org/10.1111/1752-1688.12371>.
- Herman, M.R., Nejadhashemi, A.P., Abouali, M., Hernandez-Suarez, J.S., Daneshvar, F., Zhang, Z., Anderson, M.C., Sadeghi, A.M., Hain, C.R., and Sharifi, A., 2018, Evaluating the role of evapotranspiration remote sensing data in improving hydrological modeling predictability: *Journal of Hydrology*, v. 556, p. 39–49, at <https://doi.org/10.1016/j.jhydrol.2017.11.009>.
- Hermosilla, T., Bastyr, A., Coops, N.C., White, J.C., and Wulder, M.A., 2022, Mapping the presence and distribution of tree species in Canada's forested ecosystems: *Remote Sensing of Environment*, v. 282, article 113276, at <https://doi.org/10.1016/j.rse.2022.113276>.
- Hermosilla, T., Wulder, M.A., White, J.C., and Coops, N.C., 2019, Prevalence of multiple forest disturbances and impact on vegetation regrowth from interannual Landsat time series (1985–2015): *Remote Sensing of Environment*, v. 233, article 111403, at <https://doi.org/10.1016/j.rse.2019.111403>.
- Hermosilla, T., Wulder, M.A., White, J.C., and Coops, N.C., 2022, Land cover classification in an era of big and open data—Optimizing localized implementation and training data selection to improve mapping outcomes: *Remote Sensing of Environment*, v. 268, article 112780, at <https://doi.org/10.1016/j.rse.2021.112780>.
- Hermosilla, T., Wulder, M.A., White, J.C., Coops, N.C., and Hobart, G.W., 2015, An integrated Landsat time series protocol for change detection and generation of annual gap-free surface reflectance composites: *Remote Sensing of Environment*, v. 158, p. 220–234, at <https://doi.org/10.1016/j.rse.2014.11.005>.
- Hermosilla, T., Wulder, M.A., White, J.C., Coops, N.C., and Hobart, G.W., 2015, Regional detection, characterization, and attribution of annual forest change from 1984 to 2012 using Landsat-derived time-series metrics: *Remote Sensing of Environment*, v. 170, p. 121–132, at <https://doi.org/10.1016/j.rse.2015.09.004>.
- Hermosilla, T., Wulder, M.A., White, J.C., Coops, N.C., and Hobart, G.W., 2017, Updating Landsat time series of surface-reflectance composites and forest change products with new observations: *International Journal of Applied Earth Observation and Geoinformation*, v. 63, p. 104–111, at <https://doi.org/10.1016/j.jag.2017.07.013>.
- Hermosilla, T., Wulder, M.A., White, J.C., Coops, N.C., and Hobart, G.W., 2018, Disturbance-informed annual land cover classification maps of Canada's forested ecosystems for a 29-year Landsat time series: *Canadian Journal of Remote Sensing*, v. 44, no. 1, p. 67–87, at <https://doi.org/10.1080/07038992.2018.1437719>.
- Hermosilla, T., Wulder, M.A., White, J.C., Coops, N.C., Hobart, G.W., and Campbell, L.B., 2016, Mass data processing of time series Landsat imagery—Pixels to data products for forest monitoring: *International Journal of Digital Earth*, v. 9, no. 11, p. 1035–1054, at <https://doi.org/10.1080/17538947.2016.1187673>.

- Hermosilla, T., Wulder, M.A., White, J.C., Coops, N.C., Pickell, P.D., and Bolton, D.K., 2019, Impact of time on interpretations of forest fragmentation—Three-decades of fragmentation dynamics over Canada: *Remote Sensing of Environment*, v. 222, p. 65–77, at <https://doi.org/10.1016/j.rse.2018.12.027>.
- Hernandez, A.J., Healey, S.P., Huang, H., and Ramsey, R.D., 2018, Improved prediction of stream flow based on updating land cover maps with remotely sensed forest change detection: *Forests*, v. 9, no. 6, article 317, at <https://doi.org/10.3390/f9060317>.
- Hernandez-Baquero, E.D., and Schott, J.R., 2000, Atmospheric and surface parameter retrievals from multispectral thermal imagery via reduced-rank multivariate regression, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1525–1527, at <https://doi.org/10.1109/IGARSS.2000.857261>.
- Hernandez-Baquero, E.D., and Schott, J.R., 2000, Atmospheric compensation for surface temperature and emissivity separation, *in* Algorithms for Multispectral, Hyperspectral, and Ultraspectral Imagery VI, Orlando, Fla., 24–26 April 2000, Proceedings of SPIE Vol. 4049: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 400–410, at <https://doi.org/10.1117/12.410364>.
- Herold, M., Mayaux, P., Woodcock, C.E., Baccini, A., and Schmullius, C., 2008, Some challenges in global land cover mapping—An assessment of agreement and accuracy in existing 1 km datasets: *Remote Sensing of Environment*, v. 112, no. 5, p. 2538–2556, at <https://doi.org/10.1016/j.rse.2007.11.013>.
- Herold, M., Schiefer, S., Hostert, P., and Roberts, D.A., 2006, Applying imaging spectrometry in urban areas, *in* Weng, Q., and Quattrochi, D.A., eds., *Urban remote sensing*: Boca Raton, Fla., CRC Press, p. 137–161, at <https://doi.org/10.1201/b15917-10>.
- Herold, M., Woodcock, C.E., Di Gregorio, A., Mayaux, P., Belward, A.S., Latham, J., and Schmullius, C.C., 2006, A joint initiative for harmonization and validation of land cover datasets: *IEEE Transactions on Geoscience and Remote Sensing*, v. 44, no. 7, p. 1719–1727, at <https://doi.org/10.1109/TGRS.2006.871219>.
- Herold, M., Woodcock, C.E., Loveland, T.R., Townshend, J., Brady, M., Steenmans, C., and Schmullius, C.C., 2008, Land-cover observations as part of a global Earth observation system of systems (GEOS)—Progress, activities, and prospects: *IEEE Systems Journal*, v. 2, no. 3, p. 414–423, at <https://doi.org/10.1109/JSYST.2008.925983>.
- Herold, M., Woodcock, C.E., Stehman, S., Baret, F., Wulder, M.A., and Schmullius, C., 2009, The GOC-GOLD/CEOS land cover harmonization and validation initiative—Technical design and implementation framework, *in* Sustaining the millennium development goals, International Symposium on Remote Sensing of Environment, 33rd, Stresa, Italy, 4–8 May 2009, Proceedings: Tuscon, Ariz., International Center for Remote Sensing of Environment, p. 396–399, at <http://adsabs.harvard.edu/abs/2010ESASP.686E.268H>.
- Hess, T.M., Sumberg, J., Biggs, T., Georgescu, M., Haro-Monteagudo, D., Jewitt, G., Ozdogan, M., Marshall, M., Thenkabail, P.S., et al., 2016, A sweet deal? Sugarcane, water and agricultural transformation in Sub-Saharan Africa: *Global Environmental Change*, v. 39, p. 181–194, at <https://doi.org/10.1016/j.gloenvcha.2016.05.003>.

- Heward, H., Smith, A.M.S., Roy, D.P., Tinkham, W.T., Hoffman, C.M., Morgan, P., and Lannom, K.O., 2013, Is burn severity related to fire intensity? Observations from landscape scale remote sensing: *International Journal of Wildland Fire*, v. 22, no. 7, p. 910–918, at <https://doi.org/10.1071/WF12087>.
- Hicke, J.A., Allen, C.D., Desai, A.R., Dietze, M.C., Hall, R.J., Hogg, E.H.T., Kashian, D.M., Moore, D., Raffa, K.F., et al., 2012, Effects of biotic disturbances on forest carbon cycling in the United States and Canada: *Global Change Biology*, v. 18, no. 1, p. 7–34, at <https://doi.org/10.1111/j.1365-2486.2011.02543.x>.
- Hilker, T., Coops, N.C., Coggins, S.B., Wulder, M.A., Brown, M., Black, T.A., Nestic, Z., and Lessard, D., 2009, Detection of foliage conditions and disturbance from multi-angular high spectral resolution remote sensing: *Remote Sensing of Environment*, v. 113, no. 2, p. 421–434, at <https://doi.org/10.1016/j.rse.2008.10.003>.
- Hilker, T., Coops, N.C., Culvenor, D.S., Newnham, G., Wulder, M.A., Bater, C.W., and Siggins, A., 2012, A simple technique for co-registration of terrestrial LiDAR observations for forestry applications: *Remote Sensing Letters*, v. 3, no. 3, p. 239–247, at <https://doi.org/10.1080/01431161.2011.565815>.
- Hilker, T., Coops, N.C., Gaulton, R., Wulder, M.A., Cranston, J., and Stenhouse, G., 2011, Biweekly disturbance capture and attribution—Case study in western Alberta grizzly bear habitat: *Journal of Applied Remote Sensing*, v. 5, no. 1, article 053568, at <https://doi.org/10.1117/1.3664342>.
- Hilker, T., Coops, N.C., Hall, F.G., Andrew Black, T., Chen, B., Krishnan, P., Wulder, M.A., Seilers, P.J., Middleton, E.M., and Huemmrich, K.F., 2008, A modeling approach for upscaling gross ecosystem production to the landscape scale using remote sensing data: *Journal of Geophysical Research Biogeosciences*, v. 113, no. 3, article G03006, at <https://doi.org/10.1029/2007JG000666>.
- Hilker, T., Coops, N.C., Hall, F.G., Black, T.A., Wulder, M.A., Nestic, Z., and Krishnan, P., 2008, Separating physiologically and directionally induced changes in PRI using BRDF models: *Remote Sensing of Environment*, v. 112, no. 6, p. 2777–2788, at <https://doi.org/10.1016/j.rse.2008.01.011>.
- Hilker, T., Coops, N.C., Hall, F.G., Nichol, C.J., Lyapustin, A.I., Black, T.A., Wulder, M.A., Leuning, R., Barr, A., et al., 2011, Inferring terrestrial photosynthetic light use efficiency of temperate ecosystems from space: *Journal of Geophysical Research Biogeosciences*, v. 116, no. 3, article G03014, at <https://doi.org/10.1029/2011JG001692>.
- Hilker, T., Coops, N.C., Nestic, Z., Wulder, M.A., and Black, A.T., 2007, Instrumentation and approach for unattended year round tower based measurements of spectral reflectance: *Computers and Electronics in Agriculture*, v. 56, no. 1, p. 72–84, at <https://doi.org/10.1016/j.compag.2007.01.003>.
- Hilker, T., Coops, N.C., Newnham, G.J., van Leeuwen, M., Wulder, M.A., Stewart, J., and Culvenor, D.S., 2012, Comparison of terrestrial and airborne LiDAR in describing stand structure of a thinned lodgepole pine forest: *Journal of Forestry*, v. 110, no. 2, p. 97–104, at <https://doi.org/10.5849/jof.11-003>.
- Hilker, T., Coops, N.C., Wulder, M.A., Black, T.A., and Guy, R.D., 2008, The use of remote sensing in light use efficiency based models of gross primary production—A review of current status and future requirements: *Science of the Total Environment*, v. 404, no. 2-3, p. 411–423, at <https://doi.org/10.1016/j.scitotenv.2007.11.007>.

- Hilker, T., Frazer, G.W., Coops, N.C., Wulder, M.A., Newnham, G.J., Stewart, J.D., van Leeuwen, M., and Culvenor, D.S., 2013, Prediction of wood fiber attributes from LiDAR-derived forest canopy indicators: *Forest Science*, v. 59, no. 2, p. 231–242, at <https://doi.org/10.5849/forsci.11-074>.
- Hilker, T., Galvão, L.S., Aragão, L.E.O.C., de Moura, Y.M., do Amaral, C.H., Lyapustin, A.I., Wu, J., Albert, L.P., Ferreira, M.J., et al., 2017, Vegetation chlorophyll estimates in the Amazon from multi-angle MODIS observations and canopy reflectance model: *International Journal of Applied Earth Observation and Geoinformation*, v. 58, p. 278–287, at <https://doi.org/10.1016/j.jag.2017.01.014>.
- Hilker, T., Hall, F.G., Coops, N.C., Lyapustin, A.I., Wang, Y., Nesic, Z., Grant, N., Black, T.A., Wulder, M.A., et al., 2010, Remote sensing of photosynthetic light-use efficiency across two forested biomes—Spatial scaling: *Remote Sensing of Environment*, v. 114, no. 12, p. 2863–2874, at <https://doi.org/10.1016/j.rse.2010.07.004>.
- Hilker, T., Lepine, L., Coops, N.C., Jassal, R.S., Black, T.A., Wulder, M.A., Ollinger, S., Tsui, O., and Day, M., 2012, Assessing the impact of N-fertilization on biochemical composition and biomass of a Douglas-fir canopy—A remote sensing approach: *Agricultural and Forest Meteorology*, v. 153, p. 124–133, at <https://doi.org/10.1016/j.agrformet.2011.03.014>.
- Hilker, T., Lyapustin, A.I., Hall, F.G., Myneni, R., Knyazikhin, Y., Wang, Y., Tucker, C.J., and Sellers, P.J., 2015, On the measurability of change in Amazon vegetation from MODIS: *Remote Sensing of Environment*, v. 166, p. 233–242, at <https://doi.org/10.1016/j.rse.2015.05.020>.
- Hilker, T., Lyapustin, A.I., Hall, F.G., Wang, Y., Coops, N.C., Drolet, G., and Black, T.A., 2009, An assessment of photosynthetic light use efficiency from space—Modeling the atmospheric and directional impacts on PRI reflectance: *Remote Sensing of Environment*, v. 113, no. 11, p. 2463–2475, at <https://doi.org/10.1016/j.rse.2009.07.012>.
- Hilker, T., Lyapustin, A.I., Tucker, C.J., Hall, F.G., Myneni, R.B., Wang, Y., Bi, J., De Moura, Y.M., and Sellers, P.J., 2014, Vegetation dynamics and rainfall sensitivity of the Amazon: *Proceedings of the National Academy of Sciences of the United States of America*, v. 111, no. 45, p. 16041–16046, at <https://doi.org/10.1073/pnas.1404870111>.
- Hilker, T., Lyapustin, A.I., Tucker, C.J., Hall, F.G., Myneni, R.B., Wang, Y., Bi, J., De Moura, Y.M., and Sellers, P.J., 2015, Reply to Gonsamo et al.—Effect of the eastern Atlantic-West Russia pattern on Amazon vegetation has not been demonstrated: *Proceedings of the National Academy of Sciences of the United States of America*, v. 112, no. 10, p. E1056–E1056, at <https://doi.org/10.1073/pnas.1423471112>.
- Hilker, T., Lyapustin, A.I., Tucker, C.J., Sellers, P.J., Hall, F.G., and Wang, Y., 2012, Remote sensing of tropical ecosystems—Atmospheric correction and cloud masking matter: *Remote Sensing of Environment*, v. 127, p. 370–384, at <https://doi.org/10.1016/j.rse.2012.08.035>.
- Hilker, T., Natsagdorj, E., Waring, R.H., Lyapustin, A.I., and Wang, Y., 2014, Satellite observed widespread decline in Mongolian grasslands largely due to overgrazing: *Global Change Biology*, v. 20, no. 2, p. 418–428, at <https://doi.org/10.1111/gcb.12365>.
- Hilker, T., van Leeuwen, M., Coops, N.C., Wulder, M.A., Newnham, G.J., Jupp, D.L.B., and Culvenor, D.S., 2010, Comparing canopy metrics derived from terrestrial and airborne laser scanning in a Douglas-fir dominated forest stand: *Trees - Structure and Function*, v. 24, no. 5, p. 819–832, at <https://doi.org/10.1007/s00468-010-0452-7>.

- Hilker, T., Wulder, M.A., and Coops, N.C., 2008, Update of forest inventory data with lidar and high spatial resolution satellite imagery: *Canadian Journal of Remote Sensing*, v. 34, no. 1-2, p. 5–12, at <https://doi.org/10.5589/m08-004>.
- Hilker, T., Wulder, M.A., Coops, N.C., Linke, J., McDermid, G., Masek, J.G., Gao, F., and White, J.C., 2009, A new data fusion model for high spatial- and temporal-resolution mapping of forest disturbance based on Landsat and MODIS: *Remote Sensing of Environment*, v. 113, no. 8, p. 1613–1627, at <https://doi.org/10.1016/j.rse.2009.03.007>.
- Hilker, T., Wulder, M.A., Coops, N.C., Seitz, N., White, J.C., Gao, F., Masek, J.G., and Stenhouse, G., 2009, Generation of dense time series synthetic Landsat data through data blending with MODIS using a spatial and temporal adaptive reflectance fusion model: *Remote Sensing of Environment*, v. 113, no. 9, p. 1988–1999, at <https://doi.org/10.1016/j.rse.2009.05.011>.
- Hill, J., Hostert, P., and Röder, A., 2003, Observation and long-term monitoring of Mediterranean ecosystems with satellite remote sensing and GIS: *Management of Environmental Quality—An International Journal*, v. 14, no. 1, p. 51–68, at <https://doi.org/10.1108/14777830310460388>.
- Hill, J., Hostert, P., and Röder, A., 2005, Long-term observation of mediterranean ecosystems with satellite remote sensing, in Mazzoleni, S., Pasquale, G.D., Mulligan, M., Martino, P.D., and Rego, F., eds., *Recent dynamics of the Mediterranean vegetation and landscape*: Chichester, UK, John Wiley & Sons, p. 33–43, at <https://doi.org/10.1002/0470093714.ch4>.
- Hill, J., Hostert, P., Tsiourlis, G., Kasapidis, P., Udelhoven, T., and Diemer, C., 1998, Monitoring 20 years of increased grazing impact on the Greek island of Crete with Earth observation satellites: *Journal of Arid Environments*, v. 39, no. 2, p. 165–178, at <https://doi.org/10.1006/jare.1998.0392>.
- Hill, M.J., Averill, C., Jiao, Z., Schaaf, C.B., and Armston, J.D., 2008, Relationship of MISR RPV parameters and MODIS BRDF shape indicators to surface vegetation patterns in an Australian tropical savanna: *Canadian Journal of Remote Sensing*, v. 34, no. Suppl. 2, p. S247–S267, at <https://doi.org/10.5589/m08-042>.
- Hill, M.J., Román, M.O., and Schaaf, C.B., 2010, Biogeography and dynamics of global tropical and subtropical Savannas—A spatiotemporal view, in Hill, M.J., and Hanan, N.P., eds., *Ecosystem function in savannas—Measurement and modeling at landscape to global scales*: Boca Raton, Fla., CRC Press, p. 3–37, at <https://doi.org/10.1201/b10275-9>.
- Hill, M.J., Román, M.O., and Schaaf, C.B., 2012, Dynamics of vegetation indices in tropical and subtropical savannas defined by ecoregions and Moderate Resolution Imaging Spectroradiometer (MODIS) land cover: *Geocarto International*, v. 27, no. 2, p. 153–191, at <https://doi.org/10.1080/10106049.2011.626529>.
- Hill, M.J., Román, M.O., Schaaf, C.B., Hutley, L., Brannstrom, C., Etter, A., and Hanan, N.P., 2011, Characterizing vegetation cover in global savannas with an annual foliage clumping index derived from the MODIS BRDF product: *Remote Sensing of Environment*, v. 115, no. 8, p. 2008–2024, at <https://doi.org/10.1016/j.rse.2011.04.003>.
- Hill, M.J., Zhou, Q., Sun, Q., Schaaf, C.B., and Palace, M., 2017, Relationships between vegetation indices, fractional cover retrievals and the structure and composition of Brazilian Cerrado natural vegetation: *International Journal of Remote Sensing*, v. 38, no. 3, p. 874–905, at <https://doi.org/10.1080/01431161.2016.1271959>.
- Hill, M.J., Zhou, Q., Sun, Q., Schaaf, C.B., Southworth, J., Mishra, N.B., Gibbes, C., Bunting, E., Christiansen, T.B., and Crews, K.A., 2016, Dynamics of the relationship between NDVI and

- SWIR32 vegetation indices in southern Africa—Implications for retrieval of fractional cover from MODIS data: *International Journal of Remote Sensing*, v. 37, no. 6, p. 1476–1503, at <https://doi.org/10.1080/01431161.2016.1154225>.
- Hill, R.W., and Allen, R.G., 1996, Simple irrigation scheduling calendars: *Journal of Irrigation and Drainage Engineering*, v. 122, no. 2, p. 107–111, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(1996\)122:2\(107\)](https://doi.org/10.1061/(ASCE)0733-9437(1996)122:2(107)).
- Hines, D.C., Schmidt, G.D., Gordon, K.D., Smith, P.S., Wills, B.J., Allen, R.G., and Sitko, M.L., 2001, Hubble Space Telescope ultraviolet and ground-based optical spectropolarimetry of IRAS quasi-stellar objects—Dusty scattering in luminous active galactic nuclei: *Astrophysical Journal*, v. 563, no. 2 pt. 1, p. 512–526, at <https://doi.org/10.1086/323954>.
- Hinkel, K.M., Lenters, J.D., Sheng, Y., Lyons, E.A., Beck, R.A., Eisner, W.R., Maurer, E.F., Wang, J., and Potter, B.L., 2012, Thermokarst lakes on the arctic coastal plain of Alaska—Spatial and temporal variability in summer water temperature: *Permafrost and Periglacial Processes*, v. 23, no. 3, p. 207–217, at <https://doi.org/10.1002/ppp.1743>.
- Hinkel, K.M., Lin, Z., Sheng, Y., and Lyons, E.A., 2012, Regional lake ice meltout patterns near Barrow, Alaska: *Polar Geography*, v. 35, no. 1, p. 1–18, at <https://doi.org/10.1080/1088937X.2011.654355>.
- Hinkel, K.M., Sheng, Y., Lenters, J.D., Lyons, E.A., Beck, R.A., Eisner, W.R., and Wang, J., 2012, Thermokarst lakes on the arctic coastal plain of Alaska—Geomorphic controls on bathymetry: *Permafrost and Periglacial Processes*, v. 23, no. 3, p. 218–230, at <https://doi.org/10.1002/ppp.1744>.
- Hipple, J.D., 2007, Assessment of risk in urban environments using geo-spatial analysis, in Jensen, R.R., Gatrell, J.D., and McLean, D., eds., *Geo-spatial technologies in urban environments*: Berlin, Germany, Springer, p. 33–46, at https://doi.org/10.1007/978-3-540-69417-5_3.
- Hipple, J.D., and Daugherty, D.J., 2000, Urban validation site for testing impervious surface models derived from remotely sensed imagery, in 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2074–2076, at <https://doi.org/10.1109/IGARSS.2000.858277>.
- Hipple, J.D., Daugherty, D.J., and Dunajcik, J.M., 2000, Long-term growth visualization and change detection for urban planning applications—A Springfield MO urbanized watershed, in 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2875–2878, at <https://doi.org/10.1109/IGARSS.2000.860276>.
- Hipple, J.D., Drazkowski, B., and Thorsell, P.M., 2005, Development in the Upper Mississippi Basin—10 Years after the Great Flood of 1993: *Landscape and Urban Planning*, v. 72, no. 4, p. 313–323, at <https://doi.org/10.1016/j.landurbplan.2004.03.012>.
- Hipskind, S., Elvidge, C., Gurney, K., Imhoff, M., Bounoua, L., Sheffner, E., Nemani, R.R., Pettit, D., and Fischer, M., 2011, Global night-time lights for observing human activity, in *Towards operational environmental monitoring, International Symposium on Remote Sensing of Environment—The GEOSS Era, 34th, Sydney, Australia, 10–15 April 2011*, Proceedings: Tuscon, Ariz., International Center for Remote Sensing of Environment, p. 1–5, at <https://www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00376.pdf>.

- Hissa, L.D.B.V., Müller, H., Aguiar, A.P.D., Hostert, P., and Lakes, T., 2018, Historical carbon fluxes in the expanding deforestation frontier of Southern Brazilian Amazonia (1985–2012): *Regional Environmental Change*, v. 18, no. 1, p. 77–89, at <https://doi.org/10.1007/s10113-016-1076-2>.
- Hively, W.D., Lamb, B.T., Daughtry, C.S.T., Serbin, G., Dennison, P., Kokaly, R.F., Wu, Z., and Masek, J.G., 2021, Evaluation of SWIR crop residue bands for the Landsat next mission: *Remote Sensing*, v. 13, no. 18, article 3718, at <https://doi.org/10.3390/rs13183718>.
- Hmielowski, T.L., Carter, S.K., Spaul, H., Helmers, D., Radeloff, V.C., and Zedler, P., 2016, Prioritizing land management efforts at a landscape scale—A case study using prescribed fire in Wisconsin: *Ecological Applications*, v. 26, no. 4, p. 1018–1029, at <https://doi.org/10.5061/dryad.s18gk>.
- Ho, J.C., Michalak, A.M., and Pahlevan, N., 2019, Widespread global increase in intense lake phytoplankton blooms since the 1980s: *Nature*, v. 574, no. 7780, p. 667–670, at <https://doi.org/10.1038/s41586-019-1648-7>.
- Ho, J.C., Michalak, A.M., and Pahlevan, N., 2021, Reply to—Concerns about phytoplankton bloom trends in global lakes: *Nature*, v. 590, no. 7846, p. E48–E50, at <https://doi.org/10.1038/s41586-021-03255-2>.
- Hobbins, M.T., Wood, A., McEvoy, D.J., Huntington, J.L., Morton, C., Anderson, M.C., and Hain, C., 2016, The evaporative demand drought index. Part I—Linking drought evolution to variations in evaporative demand: *Journal of Hydrometeorology*, v. 17, no. 6, p. 1745–1761, at <https://doi.org/10.1175/JHM-D-15-0121.1>.
- Hobi, M.L., Dubinin, M., Graham, C.H., Coops, N.C., Clayton, M.K., Pidgeon, A.M., and Radeloff, V.C., 2017, A comparison of Dynamic Habitat Indices derived from different MODIS products as predictors of avian species richness: *Remote Sensing of Environment*, v. 195, p. 142–152, at <https://doi.org/10.1016/j.rse.2017.04.018>.
- Hobi, M.L., Farwell, L.S., Dubinin, M., Kolesov, D., Pidgeon, A.M., Coops, N.C., and Radeloff, V.C., 2021, Patterns of bird species richness explained by annual variation in remotely sensed Dynamic Habitat Indices: *Ecological Indicators*, v. 127, article 107774, at <https://doi.org/10.1016/j.ecolind.2021.107774>.
- Hodges, J.C.F., Schaaf, C.B., Muchoney, D.M., McIver, D., Friedl, M., Chi, H., and Strahler, A.H., 1999, Data simulation impacts on modis land cover classification development, in 2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Hamburg, Germany, 28 June–2 July 1999, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 904–906, at <https://doi.org/10.1109/IGARSS.1999.774480>.
- Hoerling, M.P., Dettinger, M., Wolter, K., Lukas, J., Eischeid, J., Nemani, R.R., Liebmann, B., Kunkel, K.E., and Kumar, A., 2013, Present weather and climate—Evolving conditions, in Garfin, G., Jardine, A., Merideth, R., Black, M., and LeRoy, S., eds., *Assessment of climate change in the southwest United States—A report prepared for the national climate assessment*: Washington, D.C., Island Press, p. 74–100, at https://doi.org/10.5822/978-1-61091-484-0_5.
- Hojas-Gascón, L., Belward, A.S., Eva, H., Ceccherini, G., Hagolle, O., Garcia, J., and Cerutti, P., 2015, Potential improvement for forest cover and forest degradation mapping with the forthcoming Sentinel-2 program, in *International Symposium on Remote Sensing of Environment*, 36th, Berlin, Germany, 11–15 May 2015, *International Archives of the Photogrammetry, Spatial Information Sciences*, XL-7/W3: Bethesda, Md., International Society for Photogrammetry and Remote Sensing p. 417–423, at <https://doi.org/10.5194/isprsarchives-XL-7-W3-417-2015>.

- Holben, B.N., Eck, T.F., Slutsker, I., Tanré, D., Buis, J.P., Setzer, A., Vermote, E.F., Reagan, J.A., Kaufman, Y.J., et al., 1998, AERONET—A federated instrument network and data archive for aerosol characterization: *Remote Sensing of Environment*, v. 66, no. 1, p. 1–16, at [https://doi.org/10.1016/S0034-4257\(98\)00031-5](https://doi.org/10.1016/S0034-4257(98)00031-5).
- Holden, C.E., and Woodcock, C.E., 2016, An analysis of Landsat 7 and Landsat 8 underflight data and the implications for time series investigations: *Remote Sensing of Environment*, v. 185, p. 16–36, at <https://doi.org/10.1016/j.rse.2016.02.052>.
- Holden, H., Derksen, C., LeDrew, E., and Wulder, M.A., 2001, An examination of spatial autocorrelation as a means of monitoring coral reef ecosystems, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 622–624, at <https://doi.org/10.1109/IGARSS.2001.976568>.
- Holifield, C.D., Mc Elroy, S., Moran, M.S., Bryant, R., Miura, T., and Emmerich, W.E., 2003, Temporal and spatial changes in grassland transpiration detected using Landsat TM and ETM+ imagery: *Canadian Journal of Remote Sensing*, v. 29, no. 2, p. 259–270, at <https://doi.org/10.5589/m02-093>.
- Holifield Collins, C.D., Emmerich, W.E., Moran, M.S., Hernandez, M., Scott, R.L., Bryant, R.B., King, D.M., and Verdugo, C.L., 2008, A remote sensing approach for estimating distributed daily net carbon dioxide flux in semiarid grasslands: *Water Resources Research*, v. 44, no. 5, article W05s17, at <https://doi.org/10.1029/2006WR005699>.
- Holmes, J.M., and Thome, K.J., 2001, Comparison of modeled and measured downwelling, diffuse irradiance at a ground-reference calibration test site, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 78–80, at <https://doi.org/10.1109/IGARSS.2001.976062>.
- Holmes, K.R., Coops, N.C., Nelson, T.A., Fontana, F.M.A., and Wulder, M.A., 2015, Indicators of vegetation productivity under a changing climate in British Columbia, Canada: *Applied Geography*, v. 56, p. 135–144, at <https://doi.org/10.1016/j.apgeog.2014.11.020>.
- Holmes, K.R., Nelson, T.A., Coops, N.C., and Wulder, M.A., 2013, Biodiversity indicators show climate change will alter vegetation in parks and protected areas: *Diversity*, v. 5, no. 2, p. 352–373, at <https://doi.org/10.3390/d5020352>.
- Holmes, T.R.H., Crow, W.T., Hain, C., Anderson, M.C., and Kustas, W.P., 2015, Diurnal temperature cycle as observed by thermal infrared and microwave radiometers: *Remote Sensing of Environment*, v. 158, p. 110–125, at <https://doi.org/10.1016/j.rse.2014.10.031>.
- Holmes, T.R.H., Hain, C.R., Anderson, M.C., and Crow, W.T., 2016, Cloud tolerance of remote-sensing technologies to measure land surface temperature: *Hydrology and Earth System Sciences*, v. 20, no. 8, p. 3263–3275, at <https://doi.org/10.5194/hess-20-3263-2016>.
- Holmes, T.R.H., Hain, C.R., Crow, W.T., Anderson, M.C., and Kustas, W.P., 2018, Microwave implementation of two-source energy balance approach for estimating evapotranspiration: *Hydrology and Earth System Sciences*, v. 22, no. 2, p. 1351–1369, at <https://doi.org/10.5194/hess-22-1351-2018>.
- Holt, B.G., Costa, G.C., Penone, C., Lessard, J.P., Brooks, T.M., Davidson, A.D., Blair Hedges, S., Radeloff, V.C., Rahbek, C., et al., 2018, Environmental variation is a major predictor of global trait turnover

- in mammals: *Journal of Biogeography*, v. 45, no. 1, p. 225–237, at <https://doi.org/10.1111/jbi.13091>.
- Homer, C.G., Xian, G., Aldridge, C.L., Meyer, D.K., Loveland, T.R., and O'Donnell, M.S., 2015, Forecasting sagebrush ecosystem components and greater sage-grouse habitat for 2050—Learning from past climate patterns and Landsat imagery to predict the future: *Ecological Indicators*, v. 55, p. 131–145, at <https://doi.org/10.1016/j.ecolind.2015.03.002>.
- Hook, S.J., Chander, G., Barsi, J.A., Alley, R.E., Abtahi, A., Palluconi, F.D., Markham, B.L., Richards, R.C., Schladow, S.G., and Helder, D.L., 2004, In-flight validation and recovery of water surface temperature with Landsat-5 thermal infrared data using an automated high-altitude lake validation site at Lake Tahoe: *IEEE Transactions on Geoscience and Remote Sensing*, v. 42, no. 12, p. 2767–2776, at <https://doi.org/10.1109/TGRS.2004.839092>.
- Hook, S.J., Myers, J.J., Thome, K.J., Fitzgerald, M., and Kahle, A.B., 2001, The MODIS/ASTER airborne simulator (MASTER) - A new instrument for Earth science studies: *Remote Sensing of Environment*, v. 76, no. 1, p. 93–102, at [https://doi.org/10.1016/S0034-4257\(00\)00195-4](https://doi.org/10.1016/S0034-4257(00)00195-4).
- Hooper, S., and Kennedy, R.E., 2018, A spatial ensemble approach for broad-area mapping of land surface properties: *Remote Sensing of Environment*, v. 210, p. 473–489, at <https://doi.org/10.1016/j.rse.2018.03.032>.
- Horn, R., Papathanassiou, K.P., Reigber, A., Scheiber, R., Hausknecht, P., Strobl, P., Boehl, R., Scheele, M., Reulke, R., et al., 1997, Mount Etna case study—A multisensor view, in 1997 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Singapore, 3–8 August 1997, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1022–1024, at <https://doi.org/10.1109/IGARSS.1997.615330>.
- Hornbuckle, B.K., England, A.W., and Anderson, M.C., 2007, The effect of intercepted precipitation on the microwave emission of maize at 1.4 GHz: *IEEE Transactions on Geoscience and Remote Sensing*, v. 45, no. 7, p. 1988–1995, at <https://doi.org/10.1109/TGRS.2007.894057>.
- Hornbuckle, B.K., England, A.W., Anderson, M.C., and Viner, B.J., 2006, The effect of free water in a maize canopy on microwave emission at 1.4 GHz: *Agricultural and Forest Meteorology*, v. 138, no. 1-4, p. 180–191, at <https://doi.org/10.1016/j.agrformet.2006.05.003>.
- Hoscilo, A., Balzter, H., Bartholomé, E., Boschetti, M., Brivio, P.A., Brink, A., Clerici, M., and Pekel, J.F., 2015, A conceptual model for assessing rainfall and vegetation trends in sub-Saharan Africa from satellite data: *International Journal of Climatology*, v. 35, no. 12, p. 3582–3592, at <https://doi.org/10.1002/joc.4231>.
- Hosseini, M., Becker-Reshef, I., and Justice, C., 2020, Crop harvest monitoring using polarimetric SAR parameters, in 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), online virtual meeting, 26 September–2 October 2020, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4175–4178, at <https://doi.org/10.1109/IGARSS39084.2020.9324199>.
- Hosseini, M., Becker-Reshef, I., Sahajpal, R., Fontana, L., Lafluf, P., Leale, G., Puricelli, E., Varela, M., and Justice, C., 2020, Crop yield prediction using integration of polarimetric synthetic aperture radar and optical data, in 2020 IEEE India Geoscience and Remote Sensing Symposium, InGARSS 2020, Ahmedabad, India, 1–4 December 2020, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 17–20, at <https://doi.org/10.1109/InGARSS48198.2020.9358978>.

- Hostert, P., 2007, Advances in urban remote sensing—Examples from Berlin (Germany), *in* Netzband, M., Stefanov, W.L., and Redman, C., eds., *Applied remote sensing for urban planning, governance and sustainability: Berlin, Germany*, Springer, p. 37–51, at https://doi.org/10.1007/978-3-540-68009-3_3.
- Hostert, P., 2010, Processing techniques for hyperspectral data, *in* Rashed, R., and Jurgens, C., eds., *Remote sensing of urban and suburban areas: Dordrecht, Netherlands*, Springer, p. 165–179, at https://doi.org/10.1007/978-1-4020-4385-7_9.
- Hostert, P., and Damm, A., 2005, Off the beaten track: GEO—Connexion, v. 4, no. 9, p. 18–20.
- Hostert, P., Griffiths, P., Van Der Linden, S., and Pflugmacher, D., 2015, Time series analyses in a new era of optical satellite data, *in* Kuenzer, D., Dech, S., and Wagner, W., eds., *Remote sensing time series—Revealing land surface dynamics: Cham, Switzerland*, Springer, p. 25–42, at https://doi.org/10.1007/978-3-319-15967-6_2.
- Hostert, P., Kuemmerle, T., Prishchepov, A., Sieber, A., Lambin, E.F., and Radeloff, V.C., 2011, Rapid land use change after socio-economic disturbances—The collapse of the Soviet Union versus Chernobyl: *Environmental Research Letters*, v. 6, no. 4, article 045201, at <https://doi.org/10.1088/1748-9326/6/4/045201>.
- Hostert, P., and Petkov, A., 2004, Sensitivity study for urban change analysis comparing Landsat-ETM+ and Terra-ASTER data, *in* *Remote Sensing for Environmental Monitoring, GIS Applications, and Geology III*, Barcelona, Spain, 9–11 September 2003, *Proceedings of SPIE Vol. 5239*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 285–295, at <https://doi.org/10.1117/12.513302>.
- Hostert, P., Röder, A., and Hill, J., 2003, Coupling spectral unmixing and trend analysis for monitoring of long-term vegetation dynamics in Mediterranean rangelands: *Remote Sensing of Environment*, v. 87, no. 2–3, p. 183–197, at [https://doi.org/10.1016/80034-4257\(03\)00145-7](https://doi.org/10.1016/80034-4257(03)00145-7).
- Hostert, P., Röder, A., Hill, J., Udelhoven, T., and Tsiourlis, G., 2003, Retrospective studies of grazing-induced land degradation—A case study in central Crete, Greece: *International Journal of Remote Sensing*, v. 24, no. 20, p. 4019–4034, at <https://doi.org/10.1080/0143116031000103844>.
- Hostert, P., Röder, A., Jarmer, T., Udelhoven, T., and Hill, J., 2001, The potential of remote sensing and GIS for desertification monitoring and assessment: *Annals of Arid Zone*, v. 40, no. 2, p. 103–140, at <https://epubs.icar.org.in/index.php/AAZ/article/view/65788>.
- Hostert, P., Swayne, F., Cohen, W.B., and Chipman, J., 2010, The role of remote sensing in LTER projects, *in* Müller, F., Baessler, C., Schubert, H., and Klotz, S., eds., *Long-term ecological research—Between theory and application: Dordrecht, Netherlands*, Springer, p. 131–142, at https://doi.org/10.1007/978-90-481-8782-9_9.
- Hostetler, S., Reker, R., Alder, J., Loveland, T., Willard, D., Bernhardt, C., Sundquist, E., and Thompson, R., 2019, Application of a regional climate model to assess changes in the climatology of the Eastern United States and Cuba associated with historic land cover change: *Journal of Geophysical Research Atmospheres*, v. 124, no. 22, p. 11722–11745, at <https://doi.org/10.1029/2019JD030965>.
- Hou, W., Carder, K.L., and Costello, D.K., 1997, Scattering phase function of very large particles in the ocean, *in* *Ocean Optics XIII*, Halifax, NS, Canada, 22–25 October 1996, *Proceedings of SPIE Vol.*

- 2963: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 579–584, at <https://doi.org/10.1117/12.266505>.
- Houborg, R., and Anderson, M.C., 2008, Utility of an image-based canopy reflectance modeling tool for remote estimation of LAI and leaf chlorophyll content in crop systems, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. II141–II144, at <https://doi.org/10.1109/IGARSS.2008.4778947>.
- Houborg, R., and Anderson, M.C., 2009, Utility of an image-based canopy reflectance modeling tool for remote estimation of LAI and leaf chlorophyll content at regional scales: *Journal of Applied Remote Sensing*, v. 3, no. 1, article 033529, at <https://doi.org/10.1117/1.3141522>.
- Houborg, R., Anderson, M.C., and Daughtry, C., 2009, Utility of an image-based canopy reflectance modeling tool for remote estimation of LAI and leaf chlorophyll content at the field scale: *Remote Sensing of Environment*, v. 113, no. 1, p. 259–274, at <https://doi.org/10.1016/j.rse.2008.09.014>.
- Houborg, R., Anderson, M.C., Daughtry, C.S.T., Kustas, W.P., and Rodell, M., 2011, Using leaf chlorophyll to parameterize light-use-efficiency within a thermal-based carbon, water and energy exchange model: *Remote Sensing of Environment*, v. 115, no. 7, p. 1694–1705, at <https://doi.org/10.1016/j.rse.2011.02.027>.
- Houborg, R., Anderson, M.C., Gao, F., Schull, M., and Cammalleri, C., 2012, Monitoring water and carbon fluxes at fine spatial scales using HypSPIRI-like measurements, *in* 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Munich, Germany, 22–27 July 2012, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 7302–7305, at <https://doi.org/10.1109/IGARSS.2012.6351975>.
- Houborg, R., Anderson, M.C., Kustas, B., and Rodell, M., 2010, Combining observations in the reflective solar and thermal domains for improved mapping of carbon, water and energy fluxes, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2648–2651, at <https://doi.org/10.1109/IGARSS.2010.5651597>.
- Houborg, R., Anderson, M.C., and Kustas, W.P., 2010, Combining observations in the reflective solar and thermal domains for improved carbon and energy flux estimation, *in* Opportunities for Emerging Geospatial Technologies—American Society for Photogrammetry and Remote Sensing Annual Conference 2010, San Diego, Calif., 26–30 April 2010, Proceedings: American Society for Photogrammetry and Remote Sensing, p. 301–307, at http://www.asprs.org/wp-content/uploads/2013/08/Houborg_1.pdf.
- Houborg, R., Anderson, M.C., Norman, J.M., Wilson, T., and Meyers, T., 2009, Intercomparison of a ‘bottom-up’ and ‘top-down’ modeling paradigm for estimating carbon and energy fluxes over a variety of vegetative regimes across the U.S: *Agricultural and Forest Meteorology*, v. 149, no. 12, p. 2162–2182, at <https://doi.org/10.1016/j.agrformet.2009.10.002>.
- Houborg, R., McCabe, M., Cescatti, A., Gao, F., Schull, M., and Gitelson, A., 2015, Joint leaf chlorophyll content and leaf area index retrieval from Landsat data using a regularized model inversion system (REGFLEC): *Remote Sensing of Environment*, v. 159, p. 203–221, at <https://doi.org/10.1016/j.rse.2014.12.008>.

- Houborg, R., McCabe, M.F., and Gao, F., 2015, Downscaling of coarse resolution LAI products to achieve both high spatial and temporal resolution for regions of interest, *in* 2015 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Milan, Italy, 26–31 July 2015, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3317–3320, at <https://doi.org/10.1109/IGARSS.2015.7326528>.
- Houborg, R., McCabe, M.F., and Gao, F., 2016, A spatio-temporal enhancement method for medium resolution LAI (STEM-LAI): *International Journal of Applied Earth Observation and Geoinformation*, v. 47, p. 15–29, at <https://doi.org/10.1016/j.jag.2015.11.013>.
- Houborg, R., Soegaard, H., Emmerich, W., and Moran, M.S., 2007, Inferences of all-sky solar irradiance using Terra and Aqua MODIS satellite data: *International Journal of Remote Sensing*, v. 28, no. 20, p. 4509–4535, at <https://doi.org/10.1080/01431160701241902>.
- Houet, T., Loveland, T.R., Hubert-Moy, L., Gaucherel, C., Napton, D., Barnes, C.A., and Saylor, K., 2010, Exploring subtle land use and land cover changes—A framework for future landscape studies: *Landscape Ecology*, v. 25, no. 2, p. 249–266, at <https://doi.org/10.1007/s10980-009-9362-8>.
- Houet, T., Verburg, P.H., and Loveland, T.R., 2010, Monitoring and modelling landscape dynamics: *Landscape Ecology*, v. 25, no. 2, p. 163–167, at <https://doi.org/10.1007/s10980-009-9417-x>.
- Houghton, R.A., House, J.I., Pongratz, J., Van Der Werf, G.R., Defries, R.S., Hansen, M.C., Le Quéré, C., and Ramankutty, N., 2012, Carbon emissions from land use and land-cover change: *Biogeosciences*, v. 9, no. 12, p. 5125–5142, at <https://doi.org/10.5194/bg-9-5125-2012>.
- Houghton, R.A., Skole, D.L., Nobre, C.A., Hackler, J.L., Lawrence, K.T., and Chomentowski, W.H., 2000, Annual fluxes of carbon from deforestation and regrowth in the Brazilian Amazon: *Nature*, v. 403, no. 6767, p. 301–304, at <https://doi.org/10.1038/35002062>.
- House, M.N., and Wynne, R.H., 2018, Identifying forest impacted by development in the Commonwealth of Virginia through the use of Landsat and known change indicators: *Remote Sensing*, v. 10, no. 1, article 135, at <https://doi.org/10.3390/rs10010135>.
- Howat, I.M., Joughin, I., Fahnestock, M., Smith, B.E., and Scambos, T.A., 2008, Synchronous retreat and acceleration of southeast Greenland outlet glaciers 2000–06—Ice dynamics and coupling to climate: *Journal of Glaciology*, v. 54, no. 187, p. 646–660, at <https://doi.org/10.3189/002214308786570908>.
- Howat, I.M., Joughin, I., and Scambos, T.A., 2007, Rapid changes in ice discharge from Greenland outlet glaciers: *Science*, v. 315, no. 5818, p. 1559–1561, at <https://doi.org/10.1126/science.1138478>.
- Howat, I.M., Smith, B.E., Joughin, I., and Scambos, T.A., 2008, Rates of southeast Greenland ice volume loss from combined ICESat and ASTER observations: *Geophysical Research Letters*, v. 35, no. 17, article L17505, at <https://doi.org/10.1029/2008GL034496>.
- Howe, G.A., Hewawasam, K., Douglas, E.S., Martel, J., Li, Z., Strahler, A., Schaaf, C.B., Cook, T.A., and Chakrabarti, S., 2015, Capabilities and performance of dual-wavelength Echidna® lidar: *Journal of Applied Remote Sensing*, v. 9, no. 1, article 095979, at <https://doi.org/10.1117/1.JRS.9.095979>.
- Hoyos, L.E., Gavier-Pizarro, G.I., Kuemmerle, T., Bucher, E.H., Radeloff, V.C., and Tecco, P.A., 2010, Invasion of glossy privet (*Ligustrum lucidum*) and native forest loss in the Sierras Chicas of Córdoba, Argentina: *Biological Invasions*, v. 12, no. 9, p. 3261–3275, at <https://doi.org/10.1007/s10530-010-9720-0>.

- Hu, B., Lucht, W., Schaaf, C.B., Strahler, A.H., and Smith, M., 1998, Albedos and angle-corrected NDVI for the Brazilian LBA study area from AVHRR multiangle reflectance inversions, *in* 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1292–1294, at <https://doi.org/10.1109/IGARSS.1998.691381>.
- Hu, B., Lucht, W., Strahler, A.H., Barker Schaaf, C.B., and Smith, M., 2000, Surface albedos and angle-corrected NDVI from AVHRR observations of South America: *Remote Sensing of Environment*, v. 71, no. 2, p. 119–132, at [https://doi.org/10.1016/S0034-4257\(99\)00050-4](https://doi.org/10.1016/S0034-4257(99)00050-4).
- Hu, C., Cannizzaro, J., Carder, K.L., Muller-Karger, F.E., and Hardy, R., 2010, Remote detection of Trichodesmium blooms in optically complex coastal waters—Examples with MODIS full-spectral data: *Remote Sensing of Environment*, v. 114, no. 9, p. 2048–2058, at <https://doi.org/10.1016/j.rse.2010.04.011>.
- Hu, C., and Carder, K.L., 2002, Atmospheric correction for airborne sensors—Comment on a scheme used for CASI: *Remote Sensing of Environment*, v. 79, no. 1, p. 134–137, at [https://doi.org/10.1016/S0034-4257\(01\)00232-2](https://doi.org/10.1016/S0034-4257(01)00232-2).
- Hu, C., Carder, K.L., and Muller-Karger, F.E., 2000, Atmospheric correction of SeaWiFS imagery over turbid coastal waters—A practical method: *Remote Sensing of Environment*, v. 74, no. 2, p. 195–206, at [https://doi.org/10.1016/S0034-4257\(00\)00080-8](https://doi.org/10.1016/S0034-4257(00)00080-8).
- Hu, C., Carder, K.L., and Muller-Karger, F.E., 2000, Atmospheric correction of SeaWiFS imagery—Assessment of the use of alternative bands: *Applied Optics*, v. 39, no. 21, p. 3573–3581, at <https://doi.org/10.1364/AO.39.003573>.
- Hu, C., Carder, K.L., and Muller-Karger, F.E., 2001, Erratum—“Atmospheric correction of SeaWiFS imagery over turbid coastal waters—A practical method” (*Remote Sensing of Environment* 74:2 (195–206)): *Remote Sensing of Environment*, v. 75, no. 3, p. 447–447, at [https://doi.org/10.1016/S0034-4257\(01\)00196-1](https://doi.org/10.1016/S0034-4257(01)00196-1).
- Hu, C., Carder, K.L., and Muller-Karger, F.E., 2001, How precise are SeaWiFS ocean color estimates? Implications of digitization-noise errors: *Remote Sensing of Environment*, v. 76, no. 2, p. 239–249, at [https://doi.org/10.1016/S0034-4257\(00\)00206-6](https://doi.org/10.1016/S0034-4257(00)00206-6).
- Hu, C., Lee, Z., Muller-Karger, F.E., and Carder, K.L., 2003, Application of an optimization algorithm to satellite ocean color imagery—A case study in Southwest Florida coastal waters, *in* *Ocean Remote Sensing and Applications*, Hangzhou, China, 24–26 October 2002, Proceedings of SPIE Vol. 4892: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 70–79, at <https://doi.org/10.1117/12.466826>.
- Hu, C., Luerssen, R., Muller-Karger, F.E., Carder, K.L., and Heil, C.A., 2008, On the remote monitoring of *Karenia brevis* blooms of the west Florida shelf: *Continental Shelf Research*, v. 28, no. 1, p. 159–176, at <https://doi.org/10.1016/j.csr.2007.04.014>.
- Hu, C., Muller-Karger, F.E., Andrefouet, S., and Carder, K.L., 2001, Atmospheric correction and cross-calibration of Landsat-7/ETM+ imagery over aquatic environments—A multiplatform approach using SeaWiFS/MODIS: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 99–107, at [https://doi.org/10.1016/S0034-4257\(01\)00252-8](https://doi.org/10.1016/S0034-4257(01)00252-8).
- Hu, C., Muller-Karger, F.E., Biggs, D.C., Carder, K.L., Nababan, B., Nadeau, D., and Vanderbloeman, J., 2003, Comparison of ship and satellite bio-optical measurements on the continental margin of

- the NE Gulf of Mexico: *International Journal of Remote Sensing*, v. 24, no. 13, p. 2597–2612, at <https://doi.org/10.1080/0143116031000067007>.
- Hu, C., Muller-Karger, F.E., Taylor, C., Carder, K.L., Kelble, C., Johns, E., and Heil, C.A., 2005, Red tide detection and tracing using MODIS fluorescence data—A regional example in SW Florida coastal waters: *Remote Sensing of Environment*, v. 97, no. 3, p. 311–321, at <https://doi.org/10.1016/j.rse.2005.05.013>.
- Hu, J., Hartemink, A.E., Desai, A.R., Townsend, P.A., Abramoff, R.Z., Zhu, Z., Sihi, D., and Huang, J., 2023, A continental-scale estimate of soil organic carbon change at NEON sites and their environmental and edaphic controls: *Journal of Geophysical Research Biogeosciences*, v. 128, no. 5, at <https://doi.org/10.1029/2022JG006981>.
- Hu, X., Waller, L.A., Lyapustin, A.I., Wang, Y., Al-Hamdan, M.Z., Crosson, W.L., Estes, M.G., Estes, S.M., Quattrochi, D.A., et al., 2014, Estimating ground-level PM_{2.5} concentrations in the Southeastern United States using MAIAC AOD retrievals and a two-stage model: *Remote Sensing of Environment*, v. 140, p. 220–232, at <https://doi.org/10.1016/j.rse.2013.08.032>.
- Hu, X., Waller, L.A., Lyapustin, A.I., Wang, Y., and Liu, Y., 2014, 10-year spatial and temporal trends of PM_{2.5} concentrations in the southeastern US estimated using high-resolution satellite data: *Atmospheric Chemistry and Physics*, v. 14, no. 12, p. 6301–6314, at <https://doi.org/10.5194/acp-14-6301-2014>.
- Hu, X., Waller, L.A., Lyapustin, A.I., Wang, Y., and Liu, Y., 2014, Improving satellite-driven PM_{2.5} models with moderate resolution imaging spectroradiometer fire counts in the southeastern U.S.: *Journal of Geophysical Research*, v. 119, no. 19, p. 11375–11386, at <https://doi.org/10.1002/2014JD021920>.
- Hua, X.M., Pan, J., Ouzounov, D., Lyapustin, A.I., Wang, Y., Tewari, K., Leptoukh, G., and Vollmer, B., 2007, A spatial prescreening technique for Earth observation data: *IEEE Geoscience and Remote Sensing Letters*, v. 4, no. 1, p. 152–156, at <https://doi.org/10.1109/LGRS.2006.886421>.
- Huang, C., Goward, S.N., Masek, J.G., Gao, F., Vermote, E.F., Thomas, N., Schleeweis, K., Kennedy, R.E., Zhu, Z., et al., 2009, Development of time series stacks of Landsat images for reconstructing forest disturbance history: *International Journal of Digital Earth*, v. 2, no. 3, p. 195–218, at <https://doi.org/10.1080/17538940902801614>.
- Huang, C., Goward, S.N., Masek, J.G., Thomas, N., Zhu, Z., and Vogelmann, J.E., 2010, An automated approach for reconstructing recent forest disturbance history using dense Landsat time series stacks: *Remote Sensing of Environment*, v. 114, no. 1, p. 183–198, at <https://doi.org/10.1016/j.rse.2009.08.017>.
- Huang, C., Goward, S.N., Schleeweis, K., Thomas, N., Masek, J.G., and Zhu, Z., 2009, Dynamics of national forests assessed using the Landsat record—Case studies in eastern United States: *Remote Sensing of Environment*, v. 113, no. 7, p. 1430–1442, at <https://doi.org/10.1016/j.rse.2008.06.016>.
- Huang, C., Song, K., Kim, S., Townshend, J.R.G., Davis, P., Masek, J.G., and Goward, S.N., 2008, Use of a dark object concept and support vector machines to automate forest cover change analysis: *Remote Sensing of Environment*, v. 112, no. 3, p. 970–985, at <https://doi.org/10.1016/j.rse.2007.07.023>.
- Huang, C., Thomas, N., Goward, S.N., Masek, J.G., Zhu, Z., Townshend, J.R.G., and Vogelmann, J.E., 2010, Automated masking of cloud and cloud shadow for forest change analysis using Landsat images:

- International Journal of Remote Sensing, v. 31, no. 20, p. 5449–5464, at <https://doi.org/10.1080/01431160903369642>.
- Huang, C., Townshend, J.R.G., Zhan, X., Hansen, M.C., DeFries, R., and Sohlberg, R., 2000, Detecting land cover changes based on their trajectories in the spectral space, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1984–1986, at <https://doi.org/10.1109/IGARSS.2000.858210>.
- Huang, C., Townshend, J.R.G., Zhan, X., Hansen, M.C., DeFries, R., and Solhberg, R., 1998, Developing the spectral trajectories of major land cover change processes, *in* Hyperspectral Remote Sensing and Application, Beijing, China, 15–16 September 1998, Proceedings of SPIE Vol. 3502: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 155–162, at <https://doi.org/10.1117/12.317807>.
- Huang, H., Roy, D.P., Boschetti, L., Zhang, H.K., Yan, L., Kumar, S.S., Gomez-Dans, J., and Li, J., 2016, Separability analysis of Sentinel-2A Multi-Spectral Instrument (MSI) data for burned area discrimination: Remote Sensing, v. 8, no. 10, article 873, at <https://doi.org/10.3390/rs8100873>.
- Huang, H., and Wynne, R.H., 2013, Simulation of lidar waveforms with a time-dependent radiosity algorithm: Canadian Journal of Remote Sensing, v. 39, no. Suppl. 1, p. S126–S138, at <https://doi.org/10.5589/m13-035>.
- Huang, K., Bi, J., Meng, X., Geng, G., Lyapustin, A., Lane, K.J., Gu, D., Kinney, P.L., and Liu, Y., 2019, Estimating daily PM_{2.5} concentrations in New York City at the neighborhood-scale—Implications for integrating non-regulatory measurements: Science of the Total Environment, v. 697, article 134094, at <https://doi.org/10.1016/j.scitotenv.2019.134094>.
- Huang, K., Xiao, Q., Meng, X., Geng, G., Wang, Y., Lyapustin, A., Gu, D., and Liu, Y., 2018, Predicting monthly high-resolution PM_{2.5} concentrations with random forest model in the North China Plain: Environmental Pollution, v. 242, p. 675–683, at <https://doi.org/10.1016/j.envpol.2018.07.016>.
- Huang, Q., Bateman, B.L., Michel, N.L., Pidgeon, A.M., Radeloff, V.C., Heglund, P., Allstadt, A.J., Nowakowski, A.J., Wong, J., and Sauer, J.R., 2023, Modeled distribution shifts of North American birds over four decades based on suitable climate alone do not predict observed shifts: Science of the Total Environment, v. 857, article 159603, at <https://doi.org/10.1016/j.scitotenv.2022.159603>.
- Huang, Q., Xu, J., Wong, J.P., Radeloff, V.C., and Songer, M., in press, Prioritizing global tall forests toward the 30 × 30 goals: Conservation Biology, article e14135, at <https://doi.org/10.1111/cobi.14135>.
- Huang, X., Chen, X., Potter, G.L., Oreopoulos, L., Cole, J.N.S., Lee, D., and Loeb, N.G., 2014, A global climatology of outgoing Longwave spectral cloud radiative effect and associated effective cloud properties: Journal of Climate, v. 27, no. 19, p. 7475–7492, at <https://doi.org/10.1175/JCLI-D-13-00663.1>.
- Huang, X., Cole, J.N.S., He, F., Potter, G.L., Oreopoulos, L., Lee, D., Suarez, M., and Loeb, N.G., 2013, Longwave band-by-band cloud radiative effect and its application in GCM evaluation: Journal of Climate, v. 26, no. 2, p. 450–467, at <https://doi.org/10.1175/JCLI-D-12-00112.1>.
- Huang, Y., Song, Y., Huang, J., Xi, Y., Johnson, D., and Liu, H., 2018, Selenium alleviates phytotoxicity of phenanthrene and pyrene in *Alternanthera Philoxeroides*: International Journal of

- Phytoremediation, v. 20, no. 14, p. 1438–1445, at <https://doi.org/10.1080/15226514.2018.1501335>.
- Huang, Y., Xi, Y., Gan, L., Johnson, D., Wu, Y., Ren, D., and Liu, H., 2019, Effects of lead and cadmium on photosynthesis in *Amaranthus spinosus* and assessment of phytoremediation potential: *International Journal of Phytoremediation*, v. 21, no. 10, p. 1041–1049, at <https://doi.org/10.1080/15226514.2019.1594686>.
- Hudak, A.T., Bright, B.C., and Kennedy, R.E., 2013, Predicting live and dead basal area from LandTrendr variables in beetle-affected forests, *in* International Conference and Workshop on the Analysis of Multi-Temporal Remote Sensing Images, 7th, Alberta, Canada, 25–27 June 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1–4, at <https://doi.org/10.1109/Multi-Temp.2013.6866024>.
- Hudak, A.T., Lefsky, M.A., Cohen, W.B., and Berterretche, M., 2002, Integration of lidar and Landsat ETM+ data for estimating and mapping forest canopy height: *Remote Sensing of Environment*, v. 82, no. 2–3, p. 397–416, at [https://doi.org/10.1016/S0034-4257\(02\)00056-1](https://doi.org/10.1016/S0034-4257(02)00056-1).
- Hudspeth, W., Nickovic, S., Yin, D., Chandy, B., Barbaris, B., Budge, A., Budge, T., Baros, S., Benedict, K., et al., 2005, PHAIRS, A public health decision support system—Initial results, *in* Global Monitoring for Sustainability and Security—31st International Symposium on Remote Sensing of Environment, ISRSE 2005, St. Petersburg, Russian Federation, 20–24 June 2005, Proceedings: International Society for Photogrammetry and Remote Sensing, paper no. 268, at <http://www.isprs.org/proceedings/2005/isrse/html/papers/268.pdf>.
- Huemmrich, K.F., and Goward, S.N., 1997, Vegetation canopy PAR absorptance and NDVI—An assessment for ten tree species with the SAIL model: *Remote Sensing of Environment*, v. 61, no. 2, p. 254–269, at [https://doi.org/10.1016/S0034-4257\(97\)00042-4](https://doi.org/10.1016/S0034-4257(97)00042-4).
- Huete, A., Didan, K., van Leeuwen, W., and Vermote, E.F., 1999, Global-scale analysis of vegetation indices for moderate resolution monitoring of terrestrial vegetation, *in* Remote Sensing for Earth Science, Ocean, and Sea Ice Applications, Florence, Italy, 20–24 September 1999, Proceedings of SPIE Vol. 3868: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 141–151, at <https://doi.org/10.1117/12.373090>.
- Huete, A.R., Didan, K., Shimabukuro, Y.E., Ratana, P., Saleska, S.R., Hutyrá, L.R., Yang, W., Nemani, R.R., and Myneni, R., 2006, Amazon rainforests green-up with sunlight in dry season: *Geophysical Research Letters*, v. 33, no. 6, article L06405, at <https://doi.org/10.1029/2005GL025583>.
- Hugelius, G., Bockheim, J.G., Camill, P., Elberling, B., Grosse, G., Harden, J.W., Johnson, K., Jorgenson, T., Koven, C.D., et al., 2013, A new data set for estimating organic carbon storage to 3 m depth in soils of the northern circumpolar permafrost region: *Earth System Science Data*, v. 5, no. 2, p. 393–402, at <https://doi.org/10.5194/essd-5-393-2013>.
- Hughes, M.J., and Kennedy, R., 2019, High-quality cloud masking of Landsat 8 imagery using convolutional neural networks: *Remote Sensing*, v. 11, no. 21, article 2591, at <https://doi.org/10.3390/rs11212591>.
- Hui, F., Ci, T., Cheng, X., Scambos, T.A., Liu, Y., Zhang, Y., Chi, Z., Huang, H., Wang, X., et al., 2014, Mapping blue-ice areas in Antarctica using ETM+ and MODIS data: *Annals of Glaciology*, v. 55, no. 66, p. 129–137, at <https://doi.org/10.3189/2014AoG66A069>.

- Hulbe, C.L., Johnston, R., Joughin, I., and Scambos, T.A., 2005, Marine ice modification of fringing Ice Shelf flow: Arctic, Antarctic, and Alpine Research, v. 37, no. 3, p. 323–330, at [https://doi.org/10.1657/1523-0430\(2005\)037\[0323:MIMOFI\]2.0.CO;2](https://doi.org/10.1657/1523-0430(2005)037[0323:MIMOFI]2.0.CO;2).
- Hulbe, C.L., Joughin, I.R., Morse, D.L., and Bindschadler, R.A., 2000, Tributaries to West Antarctica ice streams—Characteristics deduced from numerical modelling of ice flow: Annals of Glaciology, v. 31, p. 184–188, at <https://doi.org/10.3189/172756400781819969>.
- Hulbe, C.L., Scambos, T.A., Klingler, M., and Fahnestock, M.A., 2016, Flow variability and ongoing margin shifts on Bindschadler and MacAyeal Ice Streams, West Antarctica: Journal of Geophysical Research Earth Surface, v. 121, no. 2, p. 273–293, at <https://doi.org/10.1002/2015JF003670>.
- Hulbe, C.L., Scambos, T.A., Lee, C.K., Bohlander, J., and Haran, T., 2013, Recent changes in the flow of the Ross Ice Shelf, West Antarctica: Earth and Planetary Science Letters, v. 376, p. 54–62, at <https://doi.org/10.1016/j.epsl.2013.06.013>.
- Hulbe, C.L., Scambos, T.A., Youngberg, T., and Lamb, A.K., 2008, Patterns of glacier response to disintegration of the Larsen B ice shelf, Antarctic Peninsula: Global and Planetary Change, v. 63, no. 1, p. 1–8, at <https://doi.org/10.1016/j.gloplacha.2008.04.001>.
- Humber, M.L., Boschetti, L., Giglio, L., and Justice, C.O., 2019, Spatial and temporal intercomparison of four global burned area products: International Journal of Digital Earth, v. 12, no. 4, p. 460–484, at <https://doi.org/10.1080/17538947.2018.1433727>.
- Hunt, E., Femia, F., Werrell, C., Christian, J.I., Otkin, J.A., Basara, J., Anderson, M., White, T., Hain, C., et al., 2021, Agricultural and food security impacts from the 2010 Russia flash drought: Weather and Climate Extremes, v. 34, article 100383, at <https://doi.org/10.1016/j.wace.2021.100383>.
- Hunt, E.R., Jr., Piper, S.C., Nemani, R.R., Keeling, C.D., Otto, R.D., and Running, S.W., 1996, Global net carbon exchange and intra-annual atmospheric CO₂ concentrations predicted by an ecosystem process model and three-dimensional atmospheric transport model: Global Biogeochemical Cycles, v. 10, no. 3, p. 431–456, at <https://doi.org/10.1029/96GB01691>.
- Hunt Jr, E.R., Everitt, J.H., Ritchie, J.C., Moran, M.S., Booth, D.T., Anderson, G.L., Clark, P.E., and Seyfried, M.S., 2003, Applications and research using remote sensing for rangeland management: Photogrammetric Engineering and Remote Sensing, v. 69, no. 6, p. 675–693, at <https://doi.org/10.14358/PERS.69.6.675>.
- Huntington, J.L., and Allen, R.G., 2009, Evapotranspiration and net irrigation water requirements for Nevada, in Great rivers, World Environmental and Water Resources Congress, Kansas City, Mo., 17–21 May 2009, Proceedings: Reston, Va., American Society of Civil Engineers, p. 4172–4186, at [https://doi.org/10.1061/41036\(342\)420](https://doi.org/10.1061/41036(342)420).
- Huntington, J.L., Hegewisch, K.C., Daudert, B., Morton, C.G., Abatzoglou, J.T., McEvoy, D.J., and Erickson, T., 2017, Climate engine—Cloud computing and visualization of climate and remote sensing data for advanced natural resource monitoring and process understanding: Bulletin of the American Meteorological Society, v. 98, no. 11, p. 2397–2409, at <https://doi.org/10.1175/BAMS-D-15-00324.1>.
- Huntington, J.L., McGwire, K., Morton, C., Snyder, K., Peterson, S., Erickson, T., Niswonger, R., Carroll, R., Smith, G., and Allen, R.G., 2016, Assessing the role of climate and resource management on groundwater dependent ecosystem changes in arid environments with the Landsat archive: Remote Sensing of Environment, v. 185, p. 186–197, at <https://doi.org/10.1016/j.rse.2016.07.004>.

- Huntington, J.L., and Niswonger, R.G., 2012, Role of surface-water and groundwater interactions on projected summertime streamflow in snow dominated regions—An integrated modeling approach: *Water Resources Research*, v. 48, no. 11, article W11524, at <https://doi.org/10.1029/2012WR012319>.
- Huntington, J.L., Szilagyi, J., Tyler, S.W., and Pohl, G.M., 2011, Evaluating the complementary relationship for estimating evapotranspiration from arid shrublands: *Water Resources Research*, v. 47, no. 5, article W05533, at <https://doi.org/10.1029/2010WR009874>.
- Hurt, G.C., Andrews, A., Bowman, K., Brown, M.E., Chatterjee, A., Escobar, V., Fatoyinbo, L., Griffith, P., Guy, M., et al., 2022, The NASA Carbon Monitoring System Phase 2 synthesis—Scope, findings, gaps and recommended next steps: *Environmental Research Letters*, v. 17, no. 6, article 063010, at <https://doi.org/10.1088/1748-9326/ac7407>.
- Hutchison, K.D., Mahoney, R.L., Vermote, E.F., Kopp, T.J., Jackson, J.M., Sei, A., and Isager, B.D., 2009, A geometry-based approach to identifying cloud shadows in the VIIRS cloud mask algorithm for NPOESS: *Journal of Atmospheric and Oceanic Technology*, v. 26, no. 7, p. 1388–1397, at <https://doi.org/10.1175/2009JTECHA1198.1>.
- Hymer, D.C., Moran, M.S., and Keefer, T.O., 2000, Soil water evaluation using a hydrologic model and calibrated sensor network: *Soil Science Society of America Journal*, v. 64, no. 1, p. 319–326, at <https://doi.org/10.2136/sssaj2000.641319x>.
- Hyypä, E., Hyypä, J., Hakala, T., Kukko, A., Wulder, M.A., White, J.C., Pyörälä, J., Yu, X., Wang, Y., et al., 2020, Under-canopy UAV laser scanning for accurate forest field measurements: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 164, p. 41–60, at <https://doi.org/10.1016/j.isprsjprs.2020.03.021>.
- Hyypä, E., Kukko, A., Kaijaluoto, R., White, J.C., Wulder, M.A., Pyörälä, J., Liang, X., Yu, X., Wang, Y., et al., 2020, Accurate derivation of stem curve and volume using backpack mobile laser scanning: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 161, p. 246–262, at <https://doi.org/10.1016/j.isprsjprs.2020.01.018>.
- Hyypä, J., Karjalainen, M., Liang, X., Jaakkola, A., Yu, X., Wulder, M., Hollaus, M., White, J.C., Vastaranta, M., et al., 2015, Remote sensing of forests from lidar and radar, *in* Thenkabail, P.S., ed., *Land resources monitoring, modeling, and mapping with remote sensing*: Boca Raton, Fla., CRC Press, p. 397–427, at <https://doi.org/10.1201/b19322-26>.
- Ibrahim, E.S., Rufin, P., Nill, L., Kamali, B., Nendel, C., and Hostert, P., 2021, Mapping crop types and cropping systems in Nigeria with Sentinel-2 imagery: *Remote Sensing*, v. 13, no. 17, article 3523, at <https://doi.org/10.3390/rs13173523>.
- Ichii, K., Hashimoto, H., Nemani, R.R., and White, M., 2005, Modeling the interannual variability and trends in gross and net primary productivity of tropical forests from 1982 to 1999: *Global and Planetary Change*, v. 48, no. 4, p. 274–286, at <https://doi.org/10.1016/j.gloplacha.2005.02.005>.
- Ichii, K., Hashimoto, H., White, M.A., Potter, C., Hutya, L.R., Huete, A.R., Myneni, R.B., and Nemani, R.R., 2007, Constraining rooting depths in tropical rainforests using satellite data and ecosystem modeling for accurate simulation of gross primary production seasonality: *Global Change Biology*, v. 13, no. 1, p. 67–77, at <https://doi.org/10.1111/j.1365-2486.2006.01277.x>.
- Ichii, K., Wang, W., Hashimoto, H., Yang, F., Votava, P., Michaelis, A.R., and Nemani, R.R., 2009, Refinement of rooting depths using satellite-based evapotranspiration seasonality for ecosystem

- modeling in California: Agricultural and Forest Meteorology, v. 149, no. 11, p. 1907–1918, at <https://doi.org/10.1016/j.agrformet.2009.06.019>.
- Ichii, K., White, M.A., Votava, P., Michaelis, A., and Nemani, R.R., 2008, Evaluation of snow models in terrestrial biosphere models using ground observation and satellite data—Impact on terrestrial ecosystem processes: Hydrological Processes, v. 22, no. 3, p. 347–355, at <https://doi.org/10.1002/hyp.6616>.
- lentilucci, E.J., Brown, S.D., Schott, J.R., and Raqueño, R.V., 1998, Multispectral simulation environment for modeling low-light-level sensor systems, *in* Image Intensifiers and Applications; and Characteristics and Consequences of Space Debris and Near-Earth Objects, San Diego, Calif., 19–24 July 1998, Proceedings of SPIE Vol. 3434: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 10–19, at <https://doi.org/10.1117/12.331229>.
- lentilucci, E.J., and Schott, J.R., 2005, Target detection in a structured background environment using an infeasibility metric in an invariant space, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI, Orlando, Fla., 28 March–1 April 2005, Proceedings of SPIE Vol. 5806: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 491–502, at <https://doi.org/10.1117/12.605850>.
- lentilucci, E.J., and Schott, J.R., 2006, Physics based target detection using a hybrid algorithm with an infeasibility metric, *in* Acoustics, Speech and Signal Processing, Toulouse, France, 14–19 May 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. V1193–V1196, at <https://doi.org/10.1109/ICASSP.2006.1661495>.
- Illeperuma, N.D., Dixon, M.D., Elliott, C.M., Magnuson, K.I., Hikkaduwa Withanage, M.H., and Vogelmann, J.E., 2023, Spatiotemporal patterns and environmental drivers of eastern redcedar (*Juniperus virginiana*) abundance along the Missouri River, USA: Landscape Ecology, v. 38, no. 7, p. 1677–1695, at <https://doi.org/10.1007/s10980-023-01632-y>.
- llori, C.O., Pahlevan, N., and Knudby, A., 2019, Analyzing performances of different atmospheric correction techniques for Landsat 8—Application for coastal remote sensing: Remote Sensing, v. 11, no. 4, article 469, at <https://doi.org/10.3390/rs11040469>.
- Imoto, H.H.H., Melton, F., Ichii, K., Milesi, C., Wang, W., and Nemani, R.R., 2010, Evaluating the impacts of climate and elevated carbon dioxide on tropical rainforests of the western Amazon basin using ecosystem models and satellite data: Global Change Biology, v. 16, no. 1, p. 255–271, at <https://doi.org/10.1111/j.1365-2486.2009.01921.x>.
- Inoue, Y., and Moran, M.S., 1997, A simplified method for remote sensing of daily canopy transpiration—A case study with direct measurements of canopy transpiration in soybean canopies: International Journal of Remote Sensing, v. 18, no. 1, p. 139–152, at <https://doi.org/10.1080/014311697219321>.
- Inoue, Y., Penueus, J., Nouevllon, Y., and Moran, M.S., 2001, Hyperspectral reflectance measurements for estimating eco-physiological status of plants, *in* Hyperspectral Remote Sensing of the Land and Atmosphere, Sendai, Japan, 9–12 October 2000, Proceedings of SPIE Vol. 4151: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 153–163, at <https://doi.org/10.1117/12.417003>.
- Inoue, Y., Qi, J., Nouevllon, Y., and Moran, M.S., 2000, Hyperspectral and directional remote sensing measurements of rice canopies for estimation of plant growth variables, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28

- July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1471–1473, at <https://doi.org/10.1109/IGARSS.2000.857243>.
- Introne, R.E., Block, N.R., and Schott, J.R., 2005, Comparison of monochromatic and polychromatic modeling of sparse-aperture image quality, *in* 2005 IEEE Aerospace Conference, Big Sky, Mont., 5–12 March 2005, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1–19, at <https://doi.org/10.1109/AERO.2005.1559485>.
- Ioannidis, Y., Livny, M., Ailamaki, A., Ranganathan, A., Therber, A., Yuin, M., Anderson, M.C., and Norman, J., 1997, Managing soil science experiments using ZOO (<http://www.cs.wisc.edu/splsim/ZOO>), *in* 9th International Conference on Scientific and Statistical Database Management, Olympia, Wash., 11–13 August 1997, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 121–124, at <https://doi.org/10.1109/SSDM.1997.621171>.
- Irish, R.R., Barker, J.L., Goward, S.N., and Arvidson, T., 2006, Characterization of the Landsat-7 ETM+ automated cloud-cover assessment (ACCA) algorithm: *Photogrammetric Engineering and Remote Sensing*, v. 72, no. 10, p. 1179–1188, at <https://doi.org/10.14358/PERS.72.10.1179>.
- Irmak, A., Ratcliffe, I., Ranade, P., Irmak, J.S., Allen, R.G., Kjaersgaard, J., Kamble, B., Choragudi, R., Hubbard, K.G., et al., 2012, Seasonal evapotranspiration mapping using Landsat visible and thermal data with an energy balance approach in central Nebraska, *in* Remote Sensing and Hydrology 2010, Jackson Hole, Wyo., 27–30 September 2010, IAHS Publication 352: Wallingford, UK, International Association of Hydrological Sciences, p. 84–88.
- Irmak, S., Allen, R.G., and Whitty, E.B., 2003, Daily grass and alfalfa-reference evapotranspiration estimates and alfalfa-to-grass evapotranspiration ratios in Florida: *Journal of Irrigation and Drainage Engineering*, v. 129, no. 5, p. 360–370, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2003\)129:5\(360\)](https://doi.org/10.1061/(ASCE)0733-9437(2003)129:5(360)).
- Irmak, S., Howell, T.A., Allen, R.G., Payero, J.O., and Martin, D.L., 2005, Standardized ASCE Penman-Monteith—Impact of sum-of-hourly vs. 24-hour timestep computations at reference weather station sites: *Transactions of the American Society of Agricultural Engineers*, v. 48, no. 3, p. 1063–1077, at <https://doi.org/10.13031/2013.18517>.
- Irmak, S., Irmak, A., Allen, R.G., and Jones, J.W., 2003, Solar and net radiation-based equations to estimate reference evapotranspiration in humid climates: *Journal of Irrigation and Drainage Engineering*, v. 129, no. 5, p. 336–347, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2003\)129:5\(336\)](https://doi.org/10.1061/(ASCE)0733-9437(2003)129:5(336)).
- Irmak, S., Irmak, A., Jones, J.W., Howell, T.A., Jacobs, J.M., Allen, R.G., and Hoogenboom, G., 2003, Predicting daily net radiation using minimum climatological data: *Journal of Irrigation and Drainage Engineering*, v. 129, no. 4, p. 256–269, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2003\)129:4\(256\)](https://doi.org/10.1061/(ASCE)0733-9437(2003)129:4(256)).
- Irmak, S., Kilic, A., and Chatterjee, S., 2014, On the equality assumption of latent and sensible heat energy transfer coefficients of the bowen ratio theory for evapotranspiration estimations—Another look at the potential causes of inequalities: *Climate*, v. 2, no. 3, p. 181–205, at <https://doi.org/10.3390/cli2030181>.
- Irmak, S., Payero, J.O., Kilic, A., Odhiambo, L.O., Rudnick, D., Sharma, V., and Billesbach, D., 2014, On the magnitude and dynamics of eddy covariance system residual energy (energy balance closure error) in subsurface drip-irrigated maize field during growing and non-growing (dormant)

- seasons: *Irrigation Science*, v. 32, no. 6, p. 471–483, at <https://doi.org/10.1007/s00271-014-0443-3>.
- Irons, J.R., 2000, Present and future of the Landsat program, *in* Algorithms for Multispectral, Hyperspectral, and Ultraspectral Imagery VI, Orlando, Fla., 24–26 April 2000, Proceedings of SPIE Vol. 4049: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 122–133, at <https://doi.org/10.1117/12.410333>.
- Irons, J.R., and Dwyer, J.L., 2010, An overview of the Landsat Data Continuity Mission, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVI, Orlando, Fla., 5–8 April 2010, Proceedings of SPIE Vol. 7695: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 769508, at <https://doi.org/10.1117/12.850416>.
- Irons, J.R., Dwyer, J.L., and Barsi, J.A., 2012, The next Landsat satellite—The Landsat Data Continuity Mission: Remote Sensing of Environment, v. 122, p. 11–21, at <https://doi.org/10.1016/j.rse.2011.08.026>.
- Irons, J.R., and Loveland, T.R., 2013, Eighth Landsat satellite becomes operational: Photogrammetric Engineering and Remote Sensing, v. 79, no. 5, p. 399–401, at <http://digitaleditions.walworthprintgroup.com/may-2013?m=9573&i=156782&p=8&ver=html5>.
- Irons, J.R., and Masek, J.G., 2006, Requirements for a Landsat data continuity mission: Photogrammetric Engineering and Remote Sensing, v. 72, no. 10, p. 1102–1108, at <https://www.asprs.org/wp-content/uploads/pers/2006journal/october/highlight.pdf>.
- Irons, J.R., and Murphy-Morris, J., 2007, An operational land imager for the Landsat data continuity mission, *in* 2007 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Barcelona, Spain, 23–28 July 2007, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2808–2810, at <https://doi.org/10.1109/IGARSS.2007.4423426>.
- Irons, J.R., and Ochs, W.R., 2004, Status of the Landsat Data Continuity Mission, *in* 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1183–1185, at <https://doi.org/10.1109/IGARSS.2004.1368626>.
- Irons, J.R., Speciale, N.J., Douglas McCuiston, J., Masek, J.G., Markham, B.L., Storey, J.C., Lencioni, D.E., and Ryan, R.E., 2003, Data specifications for the Landsat Data Continuity Mission, *in* 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1335–1337, at <https://doi.org/10.1109/IGARSS.2003.1294100>.
- Irons, J.R., Williams, D.L., and Markham, B.L., 1996, Landsat 7 and beyond, *in* 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2161–2163, at <https://doi.org/10.1109/IGARSS.1996.516922>.
- Isaacson, B.N., Yang, Y., Anderson, M.C., Clark, K.L., and Grabosky, J.C., 2023, The effects of forest composition and management on evapotranspiration in the New Jersey Pinelands: Agricultural and Forest Meteorology, v. 339, article 109588, at <https://doi.org/10.1016/j.agrformet.2023.109588>.

- Ishida, T., and Price, J.C., 1996, A procedure to infer complex refractive index and mean particle radius of soils from visible and near-infrared reflectance data: *International Journal of Remote Sensing*, v. 17, no. 11, p. 2145–2164, at <https://doi.org/10.1080/01431169608948763>.
- Islam, M.A., Thenkabail, P.S., Kulawardhana, R.W., Alankara, R., Gunasinghe, S., Edussriya, C., and Gunawardana, A., 2008, Semi-automated methods for mapping wetlands using Landsat ETM+ and SRTM data: *International Journal of Remote Sensing*, v. 29, no. 24, p. 7077–7106, at <https://doi.org/10.1080/01431160802235878>.
- Itenfisu, D., Elliott, R.L., Allen, R.G., and Walter, I.A., 2003, Comparison of reference evapotranspiration calculations as part of the ASCE standardization effort: *Journal of Irrigation and Drainage Engineering*, v. 129, no. 6, p. 440–448, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2003\)129:6\(440\)](https://doi.org/10.1061/(ASCE)0733-9437(2003)129:6(440)).
- Ives, A.R., Barton, B.T., Penczykowski, R.M., Harmon, J.P., Kim, K.L., Oliver, K., and Radeloff, V.C., 2020, Self-perpetuating ecological–evolutionary dynamics in an agricultural host–parasite system: *Nature Ecology and Evolution*, v. 4, no. 5, p. 702–711, at <https://doi.org/10.1038/s41559-020-1155-0>.
- Ives, A.R., Zhu, L., Wang, F., Zhu, J., Morrow, C.J., and Radeloff, V.C., 2021, Statistical inference for trends in spatiotemporal data: *Remote Sensing of Environment*, v. 266, article 112678, at <https://doi.org/10.1016/j.rse.2021.112678>.
- Ives, A.R., Zhu, L., Wang, F., Zhu, J., Morrow, C.J., and Radeloff, V.C., 2022, Statistical tests for non-independent partitions of large autocorrelated datasets: *MethodsX*, v. 9, article 101660, at <https://doi.org/10.1016/j.mex.2022.101660>.
- Jaafar, H.H., Mourad, R.M., Kustas, W.P., and Anderson, M.C., 2022, A global implementation of single- and dual-source surface energy balance models for estimating actual evapotranspiration at 30-m resolution using Google Earth Engine: *Water Resources Research*, v. 58, no. 11, article e2022WR032800, at <https://doi.org/10.1029/2022WR032800>.
- Jackson, T.J., Bindlish, R., Cosh, M.H., Zhao, T., Starks, P.J., Bosch, D.D., Seyfried, M., Moran, M.S., Goodrich, D.C., et al., 2012, Validation of soil moisture and Ocean Salinity (SMOS) soil moisture over watershed networks in the U.S: *IEEE Transactions on Geoscience and Remote Sensing*, v. 50, no. 5 pt. 1, p. 1530–1543, at <https://doi.org/10.1109/TGRS.2011.2168533>.
- Jackson, T.J., Chen, D., Cosh, M., Li, F., Anderson, M.C., Walthall, C., Doriaswamy, P., and Hunt, E.R., 2004, Vegetation water content mapping using Landsat data derived normalized difference water index for corn and soybeans: *Remote Sensing of Environment*, v. 92, no. 4, p. 475–482, at <https://doi.org/10.1016/j.rse.2003.10.021>.
- Jackson, T.J., Cosh, M.H., Bindlish, R., Starks, P.J., Bosch, D.D., Seyfried, M., Goodrich, D.C., Moran, M.S., and Du, J., 2010, Validation of advanced microwave scanning radiometer soil moisture products: *IEEE Transactions on Geoscience and Remote Sensing*, v. 48, no. 12, p. 4256–4272, at <https://doi.org/10.1109/TGRS.2010.2051035>.
- Jackson, T.J., Moran, M.S., and O’Neill, P.E., 2008, Introduction to Soil Moisture Experiments 2004 (SMEX04) Special Issue: *Remote Sensing of Environment*, v. 112, no. 2, p. 301–303, at <https://doi.org/10.1016/j.rse.2007.01.021>.
- Jacob, F., Petitcolin, F., Schmugge, T., Vermote, E.F., French, A., and Ogawa, K., 2004, Comparison of land surface emissivity and radiometric temperature derived from MODIS and ASTER sensors: *Remote Sensing of Environment*, v. 90, no. 2, p. 137–152, at <https://doi.org/10.1016/j.rse.2003.11.015>.

- Jacobel, R.W., Scambos, T.A., Nereson, N.A., and Raymond, C.F., 2000, Changes in the margin of Ice Stream C, Antarctica: *Journal of Glaciology*, v. 46, no. 152, p. 102–110, at <https://doi.org/10.3189/172756500781833485>.
- Jacobel, R.W., Scambos, T.A., Raymond, C.F., and Gades, A.M., 1996, Changes in the configuration of ice stream flow from the West Antarctic Ice Sheet: *Journal of Geophysical Research Solid Earth*, v. 101, no. 3, p. 5499–5504, at <https://doi.org/10.1029/95JB03735>.
- Jacobs, J.M., Anderson, M.C., Friess, L.C., and Diak, G.R., 2004, Solar radiation, longwave radiation and emergent wetland evapotranspiration estimates from satellite data in Florida, USA: *Hydrological Sciences Journal*, v. 49, no. 3, p. 461–476, at <https://doi.org/10.1623/hysj.49.3.461.54352>.
- Jacobs, J.M., Myers, D.A., Anderson, M.C., and Diak, G.R., 2002, GOES surface insolation to estimate wetlands evapotranspiration: *Journal of Hydrology*, v. 266, no. 1–2, p. 53–65, at [https://doi.org/10.1016/S0022-1694\(02\)00117-8](https://doi.org/10.1016/S0022-1694(02)00117-8).
- Jacobsen, A., Heidebrecht, K.B., and Goetz, A.F.H., 2000, Assessing the quality of the radiometric and spectral calibration of casi data and retrieval of surface reflectance factors: *Photogrammetric Engineering and Remote Sensing*, v. 66, no. 9, p. 1083–1091, at https://www.asprs.org/wp-content/uploads/pers/2000journal/september/2000_sept_1083-1091.pdf.
- Jägermeyr, J., Gerten, D., Lucht, W., Hostert, P., Migliavacca, M., and Nemani, R.R., 2013, A high-resolution approach to estimating ecosystem respiration at continental scales using operational satellite data: *Global Change Biology*, v. 20, no. 4, p. 1191–1210, at <https://doi.org/10.1111/gcb.12443>.
- Jakimow, B., Baumann, M., Salomão, C., Bendini, H., and Hostert, P., 2023, Deforestation and agricultural fires in South-West Pará, Brazil, under political changes from 2014 to 2020: *Journal of Land Use Science*, v. 18, no. 1, p. 176-195, at <https://doi.org/10.1080/1747423X.2023.2195420>.
- Jakimow, B., Griffiths, P., van der Linden, S., and Hostert, P., 2018, Mapping pasture management in the Brazilian Amazon from dense Landsat time series: *Remote Sensing of Environment*, v. 205, p. 453–468, at <https://doi.org/10.1016/j.rse.2017.10.009>.
- Jakimow, B., Janz, A., Thiel, F., Okujeni, A., Hostert, P., and van der Linden, S., 2023, EnMAP-Box—Imaging spectroscopy in QGIS: *SoftwareX*, v. 23, article 101507, at <https://doi.org/10.1016/j.softx.2023.101507>.
- Jakimow, B., van der Linden, S., Thiel, F., Frantz, D., and Hostert, P., 2020, Visualizing and labeling dense multi-sensor Earth observation time series—The EO Time Series Viewer: *Environmental Modelling and Software*, v. 125, article 104631, at <https://doi.org/10.1016/j.envsoft.2020.104631>.
- Jaksa, W.T., Sridhar, V., Huntington, J.L., and Khanal, M., 2013, Evaluation of the complementary relationship using noah land surface model and North American regional reanalysis (NARR) data to estimate evapotranspiration in semiarid ecosystems: *Journal of Hydrometeorology*, v. 14, no. 1, p. 345–359, at <https://doi.org/10.1175/JHM-D-11-067.1>.
- Jakubowski, M.K., Pogorzala, D., Hattenberger, T.J., Brown, S.D., and Schott, J.R., 2007, Synthetic data generation of high resolution, hyperspectral data using DIRSIG, *in* *Imaging Spectrometry XII*, San Diego, Calif., 28–29 August 2007, *Proceedings of SPIE Vol. 6661*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 66610G, at <https://doi.org/10.1117/12.735264>.

- Janetos, A.C., and Justice, C.O., 2000, Land cover and global productivity—A measurement strategy for the NASA programme: *International Journal of Remote Sensing*, v. 21, no. 6–7, p. 1491–1512, at <https://doi.org/10.1080/014311600210281>.
- Jänicke, C., Okujeni, A., Cooper, S., Clark, M., Hostert, P., and van der Linden, S., 2020, Brightness gradient-corrected hyperspectral image mosaics for fractional vegetation cover mapping in northern California: *Remote Sensing Letters*, v. 11, no. 1, p. 1–10, at <https://doi.org/10.1080/2150704X.2019.1670518>.
- Jantz, S.M., Pinteá, L., Nackoney, J., and Hansen, M.C., 2016, Landsat ETM+ and SRTM data provide near real-time monitoring of Chimpanzee (*Pan troglodytes*) habitats in Africa: *Remote Sensing*, v. 8, no. 5, article 427, at <https://doi.org/10.3390/rs8050427>.
- Januchowski-Hartley, S.R., Holtz, L.A., Martinuzzi, S., McIntyre, P.B., Radeloff, V.C., and Pracheil, B.M., 2016, Future land use threats to range-restricted fish species in the United States: *Diversity and Distributions*, v. 22, no. 6, p. 663–671, at <https://doi.org/10.1111/ddi.12431>.
- Jarron, L.R., Hermosilla, T., Coops, N.C., Wulder, M.A., White, J.C., Hobart, G.W., and Leckie, D.G., 2017, Differentiation of alternate harvesting practices using annual time series of Landsat data: *Forests*, v. 8, no. 1, article 15, at <https://doi.org/10.3390/f8010015>.
- Jasinski, E., Morton, D., DeFries, R., Shimabukuro, Y., Anderson, L., and Hansen, M.C., 2005, Physical landscape correlates of the expansion of mechanized agriculture in Mato Grosso, Brazil: *Earth Interactions*, v. 9, no. 16, article 16, at <https://doi.org/10.1175/EI143.1>.
- Jean-Claude, R., Vermote, E., Skakun, S., Murphy, E., Holben, B., and Justice, C., 2017, Evaluation of the land surface reflectance fundamental climate data record, in 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, Tex., 23–28 July 2017, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 44–47, at <https://doi.org/10.1109/IGARSS.2017.8126889>.
- Jensen, D.T., Hargreaves, G.H., Temesgen, B., and Allen, R.G., 1997, Computation of ETo under nonideal conditions: *Journal of Irrigation and Drainage Engineering*, v. 123, no. 5, p. 394–400, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(1997\)123:5\(394\)](https://doi.org/10.1061/(ASCE)0733-9437(1997)123:5(394)).
- Jensen, M.E., and Allen, R.G., eds., 2016, *Evaporation, evapotranspiration, and irrigation water requirements*, 2nd, ASCE manuals and reports on engineering practice no. 70: Reston, Va., American Society of Civil Engineers, 767 p., at <https://doi.org/10.1061/9780784414057>.
- Jeon, S.B., Olofsson, P., and Woodcock, C.E., 2014, Land use change in New England—A reversal of the forest transition: *Journal of Land Use Science*, v. 9, no. 1, p. 105–130, at <https://doi.org/10.1080/1747423X.2012.754962>.
- Jeon, S.B., Woodcock, C.E., Zhao, F., Yang, X., Houghton, R.A., and Hackler, J.L., 2008, The effects of land use change on the terrestrial carbon budgets of new england, in 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. V204–V207, at <https://doi.org/10.1109/IGARSS.2008.4780063>.
- Jethva, H., Chand, D., Torres, O., Gupta, P., Lyapustin, A., and Patadia, F., 2018, Agricultural burning and air quality over northern India—A synergistic analysis using NASA’s a-train satellite data and ground measurements: *Aerosol and Air Quality Research*, v. 18, no. 7, p. 1756–1773, at <https://doi.org/10.4209/aaqr.2017.12.0583>.

- Jethva, H., Torres, O., Field, R.D., Lyapustin, A., Gautam, R., and Kayetha, V., 2019, Connecting crop productivity, residue fires, and air quality over northern India: *Scientific Reports*, v. 9, no. 1, article 16594, at <https://doi.org/10.1038/s41598-019-52799-x>.
- Jhabvala, M., Jennings, D., Turck, K., Tucker, C., Lunsford, A., Jhabvala, C., Cillis, A., McCorkel, J., Hair, J., et al., 2023, Dual and multi-spectral band SLS infrared camera systems, in *Image Sensing Technologies—Materials, Devices, Systems, and Applications X 2023*, Orlando, Fla., 30 April–5 May 2023, *Proceedings of SPIE Vol. 12514*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1251404, at <https://doi.org/10.1117/12.2666075>.
- Ji, L., Gallo, K., Eidenshink, J.C., and Dwyer, J.L., 2008, Agreement evaluation of AVHRR and MODIS 16-day composite NDVI data sets: *International Journal of Remote Sensing*, v. 29, no. 16, p. 4839–4861, at <https://doi.org/10.1080/01431160801927194>.
- Jia, G.J., Burke, I.C., Goetz, A.F.H., Kaufmann, M.R., and Kindel, B.C., 2006, Assessing spatial patterns of forest fuel using AVIRIS data: *Remote Sensing of Environment*, v. 102, no. 3–4, p. 318–327, at <https://doi.org/10.1016/j.rse.2006.02.025>.
- Jia, G.J., Burke, I.C., Kaufmann, M.R., Goetz, A.F.H., Kindel, B.C., and Pu, Y., 2006, Estimates of forest canopy fuel attributes using hyperspectral data: *Forest Ecology and Management*, v. 229, no. 1–3, p. 27–38, at <https://doi.org/10.1016/j.foreco.2006.03.021>.
- Jia, X., Dey, C., Fraser, D., Lymburner, L., and Lewis, A., 2010, Controlled spectral unmixing using extended support vector machines, in *2nd Workshop on Hyperspectral Image and Signal Processing—Evolution in Remote Sensing, WHISPERS 2010*, Reykjavik, Iceland, 14–16 June 2010, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, paper no. 5594843, at <https://doi.org/10.1109/WHISPERS.2010.5594843>.
- Jiang, D., Matsushita, B., Pahlevan, N., Gurlin, D., Fichot, C.G., Harringmeyer, J., Sent, G., Brito, A.C., Brotas, V., et al., 2023, Estimating the concentration of total suspended solids in inland and coastal waters from Sentinel-2 MSI—A semi-analytical approach: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 204, p. 362–377, at <https://doi.org/10.1016/j.isprsjprs.2023.09.020>.
- Jiang, D., Matsushita, B., Pahlevan, N., Gurlin, D., Lehmann, M.K., Fichot, C.G., Schalles, J., Loisel, H., Binding, C., et al., 2021, Remotely estimating total suspended solids concentration in clear to extremely turbid waters using a novel semi-analytical method: *Remote Sensing of Environment*, v. 258, article 112386, at <https://doi.org/10.1016/j.rse.2021.112386>.
- Jiang, Z., Huete, A., Wang, Y., and Lyapustin, A.I., 2011, Evaluation of MODIS VI products using the AERONET-based surface reflectance validation network dataset, in *The GEOSS Era, Towards Operational Environmental Monitoring—34th International Symposium on Remote Sensing of Environment*, Sydney, Australia, 10–15 April 2011, *Proceedings: Bethesda, Md., International Society for Photogrammetry and Remote Sensing*, paper no. 00786, at <http://www.isprs.org/proceedings/2011/isrse-34/211104015final00786.pdf>.
- Jiao, T., Williams, C.A., Ghimire, B., Masek, J.G., Gao, F., and Schaaf, C.B., 2017, Global climate forcing from albedo change caused by large-scale deforestation and reforestation—Quantification and attribution of geographic variation: *Climatic Change*, v. 142, no. 3, p. 463–476, at <https://doi.org/10.1007/s10584-017-1962-8>.
- Jiao, Z., Ding, A., Kokhanovsky, A., Schaaf, C., Bréon, F.M., Dong, Y., Wang, Z., Liu, Y., Zhang, X., et al., 2019, Development of a snow kernel to better model the anisotropic reflectance of pure snow in

- a kernel-driven BRDF model framework: *Remote Sensing of Environment*, v. 221, p. 198–209, at <https://doi.org/10.1016/j.rse.2018.11.001>.
- Jiao, Z., Dong, Y., Schaaf, C.B., Chen, J.M., Román, M., Wang, Z., Zhang, H., Ding, A., Erb, A., et al., 2018, An algorithm for the retrieval of the clumping index (CI) from the MODIS BRDF product using an adjusted version of the kernel-driven BRDF model: *Remote Sensing of Environment*, v. 209, p. 594–611, at <https://doi.org/10.1016/j.rse.2018.02.041>.
- Jiao, Z., Hill, M.J., Schaaf, C.B., Zhang, H., Wang, Z., and Li, X., 2014, An anisotropic flat index (AFX) to derive BRDF archetypes from MODIS: *Remote Sensing of Environment*, v. 141, p. 168–187, at <https://doi.org/10.1016/j.rse.2013.10.017>.
- Jiao, Z., Schaaf, C.B., Dong, Y., Román, M., Hill, M.J., Chen, J.M., Wang, Z., Zhang, H., Saenz, E., et al., 2016, A method for improving hotspot directional signatures in BRDF models used for MODIS: *Remote Sensing of Environment*, v. 186, p. 135–151, at <https://doi.org/10.1016/j.rse.2016.08.007>.
- Jiao, Z., Schaaf, C.B., Gao, F., Strahler, A.H., Li, X., Wang, J., and Liu, J., 2008, An angular index to indicate surface heterogeneous behaviors from MODIS, in 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. III770–III773, at <https://doi.org/10.1109/IGARSS.2008.4779462>.
- Jiao, Z., Schaaf, C.B., Strahler, A.H., Gao, F., Woodcock, C.E., Li, X., Wang, J., Liu, J., and Tan, B., 2008, Classification of MODIS spectral and angular signatures using decision tree algorithm, in 21st Congress of the International Society for Photogrammetry and Remote Sensing, ISPRS 2008, Beijing, China, 3–11 July 2008, ISPRS Archives, Vol. XXXVII, Pt. B7: International Society for Photogrammetry and Remote Sensing, p. 713–718, at http://www.isprs.org/proceedings/XXXVII/congress/7_pdf/4_WG-VII-4/43.pdf.
- Jiao, Z., Woodcock, C.E., Schaaf, C.B., Tan, B., Liu, J., Gao, F., Strahler, A., Li, X., and Wang, J., 2011, Improving MODIS land cover classification by combining MODIS spectral and angular signatures in a Canadian boreal forest: *Canadian Journal of Remote Sensing*, v. 37, no. 2, p. 184–203, at <https://doi.org/10.5589/m11-030>.
- Jiao, Z., Zhang, X., Bréon, F.M., Dong, Y., Schaaf, C.B., Román, M., Wang, Z., Cui, L., Yin, S., et al., 2018, The influence of spatial resolution on the angular variation patterns of optical reflectance as retrieved from MODIS and POLDER measurements: *Remote Sensing of Environment*, v. 215, p. 371–385, at <https://doi.org/10.1016/j.rse.2018.06.025>.
- Jin, D., Kim, D., Son, S.W., and Oreopoulos, L., 2023, QBO deepens MJO convection: *Nature Communications*, v. 14, no. 1, article 4088, at <https://doi.org/10.1038/s41467-023-39465-7>.
- Jin, D., Oreopoulos, L., and Lee, D., 2017, Regime-based evaluation of cloudiness in CMIP5 models: *Climate Dynamics*, v. 48, no. 1–2, p. 89–112, at <https://doi.org/10.1007/s00382-016-3064-0>.
- Jin, D., Oreopoulos, L., and Lee, D., 2017, Simplified ISCCP cloud regimes for evaluating cloudiness in CMIP5 models: *Climate Dynamics*, v. 48, no. 1–2, p. 113–130, at <https://doi.org/10.1007/s00382-016-3107-6>.
- Jin, D., Oreopoulos, L., Lee, D., Cho, N., and Tan, J., 2018, Contrasting the co-variability of daytime cloud and precipitation over tropical land and ocean: *Atmospheric Chemistry and Physics*, v. 18, no. 4, p. 3065–3082, at <https://doi.org/10.5194/acp-18-3065-2018>.

- Jin, D., Oreopoulos, L., Lee, D., Tan, J., and Cho, N., 2021, Cloud–precipitation hybrid regimes and their projection onto imerg precipitation data: *Journal of Applied Meteorology and Climatology*, v. 60, no. 6, p. 733–748, at <https://doi.org/10.1175/JAMC-D-20-0253.1>.
- Jin, D., Oreopoulos, L., Lee, D., Tan, J., and Kim, K.M., 2020, Large-scale characteristics of tropical convective systems through the prism of cloud regime: *Journal of Geophysical Research Atmospheres*, v. 125, no. 6, article e2019JD031157, at <https://doi.org/10.1029/2019JD031157>.
- Jin, D., Oreopoulos, L., Lee, D., Tan, J., and Kim, K.M., 2022, A new organization metric for synoptic scale tropical convective aggregation: *Journal of Geophysical Research Atmospheres*, v. 127, no. 13, article e2022JD036665, at <https://doi.org/10.1029/2022JD036665>.
- Jin, S., Dewitz, J., Li, C., Sorenson, D., Zhu, Z., Shogib, M.R.I., Danielson, P., Granneman, B., Costello, C., et al., 2023, National Land Cover Database 2019—A comprehensive strategy for creating the 1986–2019 forest disturbance product: *Journal of Remote Sensing*, v. 3, article 0021, at <https://doi.org/10.34133/remotesensing.0021>.
- Jin, S., Homer, C., Yang, L., Danielson, P., Dewitz, J., Li, C., Zhu, Z., Xian, G., and Howard, D., 2019, Overall methodology design for the United States National Land Cover Database 2016 products: *Remote Sensing*, v. 11, no. 24, article 2971, at <https://doi.org/10.3390/rs11242971>.
- Jin, S., Yang, L., Zhu, Z., and Homer, C., 2017, A land cover change detection and classification protocol for updating Alaska NLCD 2001 to 2011: *Remote Sensing of Environment*, v. 195, p. 44–55, at <https://doi.org/10.1016/j.rse.2017.04.021>.
- Jin, X., Fiore, A.M., Curci, G., Lyapustin, A., Civerolo, K., Ku, M., Van Donkelaar, A., and Martin, R.V., 2019, Assessing uncertainties of a geophysical approach to estimate surface fine particulate matter distributions from satellite-observed aerosol optical depth: *Atmospheric Chemistry and Physics*, v. 19, no. 1, p. 295–313, at <https://doi.org/10.5194/acp-19-295-2019>.
- Jin, Y., Gao, F., Schaaf, C.B., Li, X., Strahler, A.H., Bruegge, C.J., and Martonchik, J.V., 2002, Improving MODIS surface BRDF/albedo retrieval with MISR multiangle observations: *IEEE Transactions on Geoscience and Remote Sensing*, v. 40, no. 7, p. 1593–1604, at <https://doi.org/10.1109/TGRS.2002.801145>.
- Jin, Y., and Roy, D.P., 2005, Fire-induced albedo change and its radiative forcing at the surface in northern Australia: *Geophysical Research Letters*, v. 32, no. 13, p. 1–4, at <https://doi.org/10.1029/2005GL022822>.
- Jin, Y., Schaaf, C.B., Gao, F., Li, X., Strahler, A.H., Lucht, W., and Liang, S., 2003, Consistency of MODIS surface bidirectional reflectance distribution function and albedo retrievals—1. Algorithm performance: *Journal of Geophysical Research Atmospheres*, v. 108, no. 5, p. ACL 2–1 ACL 2–13, at <https://doi.org/10.1029/2002JD002803>.
- Jin, Y., Schaaf, C.B., Gao, F., Li, X., Strahler, A.H., Zeng, X., and Dickinson, R.E., 2002, How does snow impact the albedo of vegetated land surfaces as analyzed with MODIS data?: *Geophysical Research Letters*, v. 29, no. 10, p. 12–1 – 12–4, at <https://doi.org/10.1029/2001GL014132>.
- Jin, Y., Schaaf, C.B., Woodcock, C.E., Gao, F., Li, X., Strahler, A.H., Lucht, W., and Liang, S., 2003, Consistency of MODIS surface bidirectional reflectance distribution function and albedo retrievals—2. Validation: *Journal of Geophysical Research Atmospheres*, v. 108, no. 5, p. ACL 3–1 ACL 3–15, at <https://doi.org/10.1029/2002JD002804>.

- Jing, X., Leigh, L., Helder, D.L., Pinto, C.T., and Aaron, D., 2019, Lifetime absolute calibration of the EO-1 hyperion sensor and its validation: *IEEE Transactions on Geoscience and Remote Sensing*, v. 57, no. 11, p. 9466–9475, at <https://doi.org/10.1109/TGRS.2019.2926663>.
- Jing, X., Leigh, L., Pinto, C.T., and Helder, D., 2019, Evaluation of RadCalNet output data using Landsat 7, Landsat 8, Sentinel 2A, and Sentinel 2B sensors: *Remote Sensing*, v. 11, no. 5, article 541, at <https://doi.org/10.3390/rs11050541>.
- Job, C., Ochoa, C.G., Jarvis, W.T., and Kennedy, R.E., 2023, A spatiotemporal characterization of water resource conditions and demands as influenced by the hydrogeologic framework of the Willcox Groundwater Basin, southeastern Arizona, USA: *Geosciences*, v. 13, no. 6, article 176, at <https://doi.org/10.3390/geosciences13060176>.
- Johnson, D.M., 2007, Classifier shootout—A quantitative assessment of three popular image classification methodologies, *in* *Identifying Geospatial Solutions*, Tampa, Fla., 7–11 May 2007, Proceedings: Bethesda, Md., American Society for Photogrammetry and Remote Sensing, p. 321–325, at <http://www.asprs.org/wp-content/uploads/2011/01/0032.pdf>.
- Johnson, D.M., 2008, A comparison of coincident Landsat-5 TM and Resourcesat-1 AWiFS imagery for classifying croplands: *Photogrammetric Engineering and Remote Sensing*, v. 74, no. 11, p. 1413–1423, at <https://doi.org/10.14358/PERS.74.11.1413>.
- Johnson, D.M., 2008, An evaluation of Resourcesat-1 LISS-III versus AWiFS imagery for identifying croplands, *in* *Bridging the horizons—New frontiers in geospatial collaboration*, Annual Conference, Portland, Oreg., 28 April–2 May 2008, Proceedings: Bethesda, Md., American Society for Photogrammetry and Remote Sensing p. 309–316, at <https://www.asprs.org/a/publications/proceedings/portland08/0035.pdf>.
- Johnson, D.M., 2013, A 2010 map estimate of annually tilled cropland within the conterminous United States: *Agricultural Systems*, v. 114, p. 95–105, at <https://doi.org/10.1016/j.agsy.2012.08.004>.
- Johnson, D.M., 2014, An assessment of pre- and within-season remotely sensed variables for forecasting corn and soybean yields in the United States: *Remote Sensing of Environment*, v. 141, p. 116–128, at <https://doi.org/10.1016/j.rse.2013.10.027>.
- Johnson, D.M., 2016, A comprehensive assessment of the correlations between field crop yields and commonly used MODIS products: *International Journal of Applied Earth Observation and Geoinformation*, v. 52, p. 65–81, at <https://doi.org/10.1016/j.jag.2016.05.010>.
- Johnson, D.M., 2019, Using the Landsat archive to map crop cover history across the United States: *Remote Sensing of Environment*, v. 232, article 111286, at <https://doi.org/10.1016/j.rse.2019.111286>.
- Johnson, D.M., and Murray, N.A., 2019, Two new species of *Xylopi* (Annonaceae) from peninsular Thailand: *Thai Forest Bulletin*, v. 47, no. 2, p. 264–269, at <https://doi.org/10.20531/tfb.2019.47.2.16>.
- Johnson, L., Nemani, R.R., Melton, F., Michaelis, A., Votava, P., Wang, D., and Trout, T., 2010, Information technology supports integration of satellite imagery with irrigation management in California's Central Valley, *in* *National Decennial Irrigation Conference*, 5th, Phoenix, Ariz., 5–8 December 2010, Proceedings: St. Joseph, Mich., American Society of Agricultural and Biological Engineers, p. 790–797, at <https://doi.org/10.13031/2013.35877>.

- Johnson, L., Pierce, L., Michaelis, A., Scholasch, T., and Nemani, R.R., 2007, Remote sensing and water balance modeling in California drip-irrigated vineyards, *in* Examining the confluence of environmental and water concerns, World Environmental and Water Resources Congress, Omaha, Nebr., 21–25 May 2006, Proceedings: Reston, Va., American Society of Civil Engineers, p. 1–9, at [https://doi.org/10.1061/40856\(200\)293](https://doi.org/10.1061/40856(200)293).
- Johnson, L.F., Nemani, R.R., Hornbuckle, J., Bastiaanssen, W., Thoreson, B., Tisseyre, B., and Pierce, L., 2012, Remote sensing for viticultural research and production, *in* Dougherty, P.H., ed., The geography of wine—Regions, terroir and techniques: Dordrecht, Netherlands, Springer, p. 209–226, at https://doi.org/10.1007/978-94-007-0464-0_12.
- Johnson, L.F., Nemani, R.R., Pierce, L.L., Bobo, M.R., and Bosch, D., 2000, Toward the improved use of remote sensing and process modeling in California's premium wine industry, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 363–365, at <https://doi.org/10.1109/IGARSS.2000.860520>.
- Johnson, L.F., Roczen, D.E., Youkhana, S.K., Nemani, R.R., and Bosch, D.F., 2003, Mapping vineyard leaf area with multispectral satellite imagery: Computers and Electronics in Agriculture, v. 38, no. 1, p. 33–44, at [https://doi.org/10.1016/S0168-1699\(02\)00106-0](https://doi.org/10.1016/S0168-1699(02)00106-0).
- Johnson, R., Martin, H., and Allen, R.G., 2002, Calibrating the wavefront sensor for the 6.5 m MMT with a phase-shifting interferometer, *in* Adaptive Optical System Technologies II, Waikoloa, Hawaii, 22–26 August 2002, Proceedings of SPIE Vol. 4839: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 206–216, at <https://doi.org/10.1117/12.459797>.
- Johnston, C.M.T., and Radeloff, V.C., 2019, Global mitigation potential of carbon stored in harvested wood products: Proceedings of the National Academy of Sciences of the United States of America, v. 116, no. 29, p. 14526–14531, at <https://doi.org/10.1073/pnas.1904231116>.
- Johnston, J.D., Kilbride, J.B., Meigs, G.W., Dunn, C.J., and Kennedy, R.E., 2021, Does conserving roadless wildland increase wildfire activity in western US national forests?: Environmental Research Letters, v. 16, no. 8, article 084040, at <https://doi.org/10.1088/1748-9326/ac13ee>.
- Joiner, J., Schoeberl, M.R., Vasilkov, A.P., Oreopoulos, L., Platnick, S., Livesey, N.J., and Levelt, P.F., 2009, Accurate satellite-derived estimates of the tropospheric ozone impact on the global radiation budget: Atmospheric Chemistry and Physics, v. 9, no. 13, p. 4447–4465, at <https://doi.org/10.5194/acp-9-4447-2009>.
- Joiner, J., Yoshida, Y., Anderson, M., Holmes, T., Hain, C., Reichle, R., Koster, R., Middleton, E., and Zeng, F.W., 2018, Global relationships among traditional reflectance vegetation indices (NDVI and NDII), evapotranspiration (ET), and soil moisture variability on weekly timescales: Remote Sensing of Environment, v. 219, p. 339–352, at <https://doi.org/10.1016/j.rse.2018.10.020>.
- Joiner, J., Yoshida, Y., Zhang, Y., Duveiller, G., Jung, M., Lyapustin, A., Wang, Y., and Tucker, C.J., 2018, Estimation of terrestrial global gross primary production (GPP) with satellite data-driven models and eddy covariance flux data: Remote Sensing, v. 10, no. 9, article 1346, at <https://doi.org/10.3390/rs10091346>.
- Jolly, W.M., Graham, J.M., Michaelis, A., Nemani, R.R., and Running, S.W., 2005, A flexible, integrated system for generating meteorological surfaces derived from point sources across multiple geographic scales: Environmental Modelling and Software, v. 20, no. 7, p. 873–882, at <https://doi.org/10.1016/j.envsoft.2004.05.003>.

- Jolly, W.M., Nemani, R.R., and Running, S.W., 2004, Enhancement of understory productivity by asynchronous phenology with overstory competitors in a temperate deciduous forest: *Tree Physiology*, v. 24, no. 9, p. 1069–1071, at <https://doi.org/10.1093/treephys/24.9.1069>.
- Jolly, W.M., Nemani, R.R., and Running, S.W., 2005, A generalized, bioclimatic index to predict foliar phenology in response to climate: *Global Change Biology*, v. 11, no. 4, p. 619–632, at <https://doi.org/10.1111/j.1365-2486.2005.00930.x>.
- Jones, G.M., Shirk, A.J., Yang, Z., Davis, R.J., Ganey, J.L., Gutiérrez, R.J., Healey, S.P., Hedwall, S.J., Hoagland, S.J., et al., 2023, Correction to—Spatial and temporal dynamics of Mexican spotted owl habitat in the southwestern US (*Landscape Ecology*, (2023), 38, 1, (23-37), 10.1007/s10980-022-01418-8): *Landscape Ecology*, v. 38, no. 1, p. 39–40, at <https://doi.org/10.1007/s10980-022-01576-9>.
- Jones, G.M., Shirk, A.J., Yang, Z., Davis, R.J., Ganey, J.L., Gutiérrez, R.J., Healey, S.P., Hedwall, S.J., Hoagland, S.J., et al., 2023, Spatial and temporal dynamics of Mexican spotted owl habitat in the southwestern US: *Landscape Ecology*, v. 38, p. 23–37, at <https://doi.org/10.1007/s10980-022-01418-8>.
- Jones, K.B., Neale, A.C., Wade, T.G., Wickham, J.D., Cross, C.L., Edmonds, C.M., Loveland, T.R., Nash, M.S., Riitters, K.H., and Smith, E.R., 2001, The consequences of landscape change on ecological resources—An assessment of the United States mid-Atlantic region, 1973-1993: *Ecosystem Health*, v. 7, no. 4, p. 229–242, at <https://doi.org/10.1046/j.1526-0992.2001.01047.x>.
- Jones, M.O., Kimball, J.S., and Nemani, R.R., 2014, Asynchronous Amazon forest canopy phenology indicates adaptation to both water and light availability: *Environmental Research Letters*, v. 9, no. 12, article 124021, at <https://doi.org/10.1088/1748-9326/9/12/124021>.
- Joshi, A.R., Dinerstein, E., Wikramanayake, E., Anderson, M.C.L., Olson, D., Jones, B.S., Seidensticker, J., Lumpkin, S., Hansen, M.C., et al., 2016, Tracking changes and preventing loss in critical tiger habitat: *Science Advances*, v. 2, no. 4, article e1501675, at <https://doi.org/10.1126/sciadv.1501675>.
- Joshi, N., Baumann, M., Ehammer, A., Fensholt, R., Grogan, K., Hostert, P., Jepsen, M.R., Kuemmerle, T., Meyfroidt, P., et al., 2016, A review of the application of optical and radar remote sensing data fusion to land use mapping and monitoring: *Remote Sensing*, v. 8, no. 1, article 70, at <https://doi.org/10.3390/rs8010070>.
- Joughin, I., Bamber, J.L., Scambos, T.A., Tulaczyk, S., Fahnestock, M., and MacAyeal, D.R., 2006, Integrating satellite observations with modelling—Basal shear stress of the Filcher-Ronne ice streams, Antarctica: *Philosophical Transactions of the Royal Society A—Mathematical, Physical and Engineering Sciences*, v. 364, no. 1844, p. 1795–1814, at <https://doi.org/10.1098/rsta.2006.1799>.
- Joughin, I., Bindschadler, R.A., King, M.A., Voigt, D., Alley, R.B., Anandakrishnan, S., Horgan, H., Peters, L., Winberry, P., et al., 2005, Continued deceleration of Whillans ice stream West Antarctica: *Geophysical Research Letters*, v. 32, no. 22, p. 1–4, at <https://doi.org/10.1029/2005GL024319>.
- Joughin, I., Gray, L., Bindschadler, R.A., Price, S., Morse, D., Hulbe, C., Mattar, K., and Werner, C., 1999, Tributaries of West Antarctic ice streams revealed by RADARSAT interferometry: *Science*, v. 286, no. 5438, p. 283–286, at <https://doi.org/10.1126/science.286.5438.283>.

- Joughin, I., Smith, B.E., Howat, I.M., Moon, T., and Scambos, T.A., 2016, A SAR record of early 21st century change in Greenland: *Journal of Glaciology*, v. 62, no. 231, p. 62–71, at <https://doi.org/10.1017/jog.2016.10>.
- Joughin, I., Smith, B.E., Howat, I.M., Scambos, T.A., and Moon, T., 2010, Greenland flow variability from ice-sheet-wide velocity mapping: *Journal of Glaciology*, v. 56, no. 197, p. 415–430, at <https://doi.org/10.3189/002214310792447734>.
- Joughin, I., Tulaczyk, S., Bamber, J.L., Blankenship, D., Holt, J.W., Scambos, T.A., and Vaughan, D.G., 2009, Basal conditions for Pine Island and Thwaites Glaciers, West Antarctica, determined using satellite and airborne data: *Journal of Glaciology*, v. 55, no. 190, p. 245–257, at <https://doi.org/10.3189/002214309788608705>.
- Joughin, I., Tulaczyk, S., Bindschadler, R.A., and Price, S.F., 2002, Changes in west Antarctic ice stream velocities—Observation and analysis: *Journal of Geophysical Research Solid Earth*, v. 107, no. 11, p. EPM 3–1 – 3–22, at <https://doi.org/10.1029/2001JB001029>
- Ju, J., and Masek, J.G., 2016, The vegetation greenness trend in Canada and US Alaska from 1984–2012 Landsat data: *Remote Sensing of Environment*, v. 176, p. 1–16, at <https://doi.org/10.1016/j.rse.2016.01.001>.
- Ju, J., and Roy, D.P., 2008, The availability of cloud-free Landsat ETM+ data over the conterminous United States and globally: *Remote Sensing of Environment*, v. 112, no. 3, p. 1196–1211, at <https://doi.org/10.1016/j.rse.2007.08.011>.
- Ju, J., Roy, D.P., Shuai, Y., and Schaaf, C.B., 2010, Development of an approach for generation of temporally complete daily nadir MODIS reflectance time series: *Remote Sensing of Environment*, v. 114, no. 1, p. 1–20, at <https://doi.org/10.1016/j.rse.2009.05.022>.
- Ju, J., Roy, D.P., Vermote, E.F., Masek, J.G., and Kovalskyy, V., 2012, Continental-scale validation of MODIS-based and LEDAPS Landsat ETM+ atmospheric correction methods: *Remote Sensing of Environment*, v. 122, p. 175–184, at <https://doi.org/10.1016/j.rse.2011.12.025>.
- Ju, J., Vermote, E.F., Roy, D.P., and Masek, J.G., 2011, Continental scale validation of MODIS-based and LEDAPS Landsat ETM+ atmospheric correction methods, *in* Towards operational environmental monitoring, International Symposium on Remote Sensing of Environment—The GEOSS Era, 34th, Sydney, Australia, 10–15 April 2011, Proceedings: Tuscon, Ariz., International Center for Remote Sensing of Environment, p. 1–3, at <https://www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00677.pdf>.
- Jupp, D.L.B., Culvenor, D.S., Lovell, J.L., Newnham, G.J., Strahler, A.H., and Woodcock, C.E., 2009, Estimating forest LAI profiles and structural parameters using a ground-based laser called 'Echidna®': *Tree Physiology*, v. 29, no. 2, p. 171–181, at <https://doi.org/10.1093/treephys/tpn022>.
- Jurečka, F., Fischer, M., Hlavinka, P., Balek, J., Semerádová, D., Bláhová, M., Anderson, M.C., Hain, C., Žalud, Z., and Trnka, M., 2021, Potential of water balance and remote sensing-based evapotranspiration models to predict yields of spring barley and winter wheat in the Czech Republic: *Agricultural Water Management*, v. 256, article 107064, at <https://doi.org/10.1016/j.agwat.2021.107064>.
- Just, A.C., Arfer, K.B., Rush, J., Dorman, M., Shtein, A., Lyapustin, A., and Kloog, I., 2020, Advancing methodologies for applying machine learning and evaluating spatiotemporal models of fine particulate matter (PM_{2.5}) using satellite data over large regions: *Atmospheric Environment*, v. 239, article 117649, at <https://doi.org/10.1016/j.atmosenv.2020.117649>.

- Just, A.C., De Carli, M.M., Shtein, A., Dorman, M., Lyapustin, A.I., and Kloog, I., 2018, Correcting measurement error in satellite aerosol optical depth with machine learning for modeling PM2.5 in the Northeastern USA: *Remote Sensing*, v. 10, no. 5, article 803, at <https://doi.org/10.3390/rs10050803>.
- Just, A.C., Liu, Y., Sorek-Hamer, M., Rush, J., Dorman, M., Chatfield, R., Wang, Y., Lyapustin, A., and Kloog, I., 2020, Gradient boosting machine learning to improve satellite-derived column water vapor measurement error: *Atmospheric Measurement Techniques*, v. 13, no. 9, p. 4669–4681, at <https://doi.org/10.5194/amt-13-4669-2020>.
- Just, A.C., Wright, R.O., Schwartz, J., Coull, B.A., Baccarelli, A.A., Tellez-Rojo, M.M., Moody, E., Wang, Y., Lyapustin, A.I., and Kloog, I., 2015, Using high-resolution satellite aerosol optical depth to estimate daily PM2.5 geographical distribution in Mexico City: *Environmental Science and Technology*, v. 49, no. 14, p. 8576–8584, at <https://doi.org/10.1021/acs.est.5b00859>.
- Justice, C., and Gutman, G., 2022, Foreword, *in* Vadrevu, K.P., Le Toan, T., Ray, S.S., and Justice, C., eds., *Remote sensing of agriculture and land cover/land use changes in South and Southeast Asian countries*: Cham, Switzerland, Springer, p. v-vii, at <https://doi.org/10.1007/978-3-030-92365-5>.
- Justice, C.O., Becker-Reshef, I., Parihar, J.S., DeLince, J., Leo, O., Binfang, W., Defourny, P., Townshend, J., and Fan, J., 2009, The GEO global agricultural monitoring system of systems task—An overview, *in* *Sustaining the millennium development goals*, International Symposium on Remote Sensing of Environment, 33rd, Stresa, Italy, 4–8 May 2009, Proceedings: Tuscon, Ariz., International Center for Remote Sensing of Environment, p. 95–98.
- Justice, C.O., Belward, A.S., Morisette, J., Lewis, P., Privette, J., and Baret, F., 2000, Developments in the ‘validation’ of satellite sensor products for the study of the land surface: *International Journal of Remote Sensing*, v. 21, no. 17, p. 3383–3390, at <https://doi.org/10.1080/014311600750020000>.
- Justice, C.O., Brix, A., Freimark, D., Kraume, M., Pfromm, P., Eichenmueller, B., and Czermak, P., 2011, Process control in cell culture technology using dielectric spectroscopy: *Biotechnology Advances*, v. 29, no. 4, p. 391–401, at <https://doi.org/10.1016/j.biotechadv.2011.03.002>.
- Justice, C.O., Giglio, L., Korontzi, S., Owens, J., Morisette, J.T., Roy, D.P., Descloitres, J., Alleaume, S., Petitcolin, F., and Kaufman, Y., 2002, The MODIS fire products: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 244–262, at [https://doi.org/10.1016/S0034-4257\(02\)00076-7](https://doi.org/10.1016/S0034-4257(02)00076-7).
- Justice, C.O., Giglio, L., Roy, D.P., Boschetti, L., Csiszar, I., Davies, D., Korontzi, S., Schroeder, W., O’Neal, K., and Morisette, J., 2011, MODIS-derived global fire products, *in* Ramachandran, B., Justice, C.O., and Abrams, M.J., eds., *Land remote sensing and global environmental change*: New York, N.Y., Springer, p. 661–679, at https://doi.org/10.1007/978-1-4419-6749-7_29.
- Justice, C.O., Gutman, G., and Vadrevu, K.P., 2015, NASA Land Cover and Land Use Change (LCLUC)—An interdisciplinary research program: *Journal of Environmental Management*, v. 148, p. 4–9, at <https://doi.org/10.1016/j.jenvman.2014.12.004>.
- Justice, C.O., Kendall, J.D., Dowty, P.R., and Scholes, R.J., 1996, Satellite remote sensing of fires during the SAFARI campaign using NOAA advanced very high resolution radiometer data: *Journal of Geophysical Research Atmospheres*, v. 101, no. 19, p. 23851–23863, at <https://doi.org/10.1029/95JD00623>.
- Justice, C.O., Leber, J., Freimark, D., Pino Grace, P., Kraume, M., and Czermak, P., 2011, Online- and offline- monitoring of stem cell expansion on microcarrier: *Cytotechnology*, v. 63, no. 4, p. 325–335, at <https://doi.org/10.1007/s10616-011-9359-4>.

- Justice, C.O., Román, M.O., Csiszar, I., Vermote, E.F., Wolfe, R.E., Hook, S.J., Friedl, M., Wang, Z., Schaaf, C.B., et al., 2013, Land and cryosphere products from Suomi NPP VIIRS—Overview and status: *Journal of Geophysical Research Atmospheres*, v. 118, no. 17, p. 9753–9765, at <https://doi.org/10.1002/jgrd.50771>.
- Justice, C.O., Smith, R., Malcolm Gill, A., and Csiszar, I., 2003, A review of current space-based fire monitoring in Australia and the GOFIC/GOLD program for international coordination: *International Journal of Wildland Fire*, v. 12, no. 3–4, p. 247–258, at <https://doi.org/10.1071/WF03013>.
- Justice, C.O., and Townshend, J., 2002, Special issue on the moderate resolution imaging spectroradiometer (MODIS)—A new generation of land surface monitoring: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 1–2, at [https://doi.org/10.1016/S0034-4257\(02\)00083-4](https://doi.org/10.1016/S0034-4257(02)00083-4).
- Justice, C.O., Townshend, J., Vermote, E.F., Sohlberg, R., Descloitres, J., Roy, D.P., Hall, D., Salomonson, V., Riggs, G., et al., 2000, Preliminary land surface products from the NASA Moderate Resolution Imaging Spectroradiometer (MODIS), in 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1157–1162, at <https://doi.org/10.1109/IGARSS.2000.858054>.
- Justice, C.O., Townshend, J.R.G., Vermote, E.F., Masuoka, E., Wolfe, R.E., Saleous, N., Roy, D.P., and Morisette, J.T., 2002, An overview of MODIS Land data processing and product status: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 3–15, at [https://doi.org/10.1016/S0034-4257\(02\)00084-6](https://doi.org/10.1016/S0034-4257(02)00084-6).
- Justice, C.O., and Tucker III, C.J., 2008, Coarse spatial resolution optical sensors, in Warner, T.A., Nellis, M.D., and Foody, G.M., eds., *The SAGE handbook of remote sensing: Thousand Oaks, Calif.*, SAGE, p. 139–150, at <https://doi.org/10.4135/9780857021052.n10>.
- Justice, C.O., Vermote, E.F., Privette, J., and Sei, A., 2011, The evolution of U.S. moderate resolution optical land remote sensing from AVHRR to VIIRS, in Ramachandran, B., Justice, C.O., and Abrams, M.J., eds., *Land remote sensing and global environmental change: New York, N.Y.*, Springer, p. 781–806, at https://doi.org/10.1007/978-1-4419-6749-7_34.
- Justice, C.O., Vermote, E.F., Townshend, J.R.G., Defries, R., Roy, D.P., Hall, D.K., Salomonson, V.V., Privette, J.L., Riggs, G., et al., 1998, The moderate resolution imaging spectroradiometer (MODIS)—Land remote sensing for global change research: *IEEE Transactions on Geoscience and Remote Sensing*, v. 36, no. 4, p. 1228–1249, at <https://doi.org/10.1109/36.701075>.
- Justice, C.O., Wilkie, D., Putz, F.E., and Brunner, J., 2005, Climate change in sub-Saharan Africa—Assumptions, realities and future investments, in Low, P.S., ed., *Climate change and Africa: New York, N.Y.*, Cambridge University Press, p. 172–181, at <https://doi.org/10.1017/CBO9780511535864.026>.
- Justice, C.O., Wilkie, D., Zhang, Q., Brunner, J., and Donoghue, C., 2001, Central African forests, carbon and climate change: *Climate Research*, v. 17, no. 2, p. 229–246, at <https://doi.org/10.3354/cr017229>.
- Kabela, E.D., Hornbuckle, B.K., Cosh, M.H., Anderson, M.C., and Gleason, M.L., 2009, Dew frequency, duration, amount, and distribution in corn and soybean during SMEX05: *Agricultural and Forest Meteorology*, v. 149, no. 1, p. 11–24, at <https://doi.org/10.1016/j.agrformet.2008.07.002>.

- Kabir, S., Leigh, L., and Helder, D., 2020, Vicarious methodologies to assess and improve the quality of the optical remote sensing images—A critical review: *Remote Sensing*, v. 12, no. 24, article 4029, at <https://doi.org/10.3390/rs12244029>.
- Kabir, S., Pahlevan, N., O’Shea, R.E., and Barnes, B.B., 2023, Leveraging Landsat-8/-9 underfly observations to evaluate consistency in reflectance products over aquatic environments: *Remote Sensing of Environment*, v. 296, article 113755, at <https://doi.org/10.1016/j.rse.2023.113755>.
- Kaim, D., Helmers, D.P., Jakiel, M., Pavlačka, D., and Radeloff, V.C., 2023, The wildland-urban interface in Poland reflects legacies of historical national borders: *Landscape Ecology*, v. 38, no. 9, p. 2399–2415, at <https://doi.org/10.1007/s10980-023-01722-x>.
- Kaim, D., Kozak, J., Kolecka, N., Ziólkowska, E., Ostafin, K., Ostapowicz, K., Gimmi, U., Munteanu, C., and Radeloff, V.C., 2016, Broad scale forest cover reconstruction from historical topographic maps: *Applied Geography*, v. 67, p. 39–48, at <https://doi.org/10.1016/j.apgeog.2015.12.003>.
- Kaim, D., Radeloff, V.C., Szwagrzyk, M., Dobosz, M., and Ostafin, K., 2018, Long-term changes of the wildland–urban interface in the polish carpathians: *ISPRS International Journal of Geo-Information*, v. 7, no. 4, article 137, at <https://doi.org/10.3390/ijgi7040137>.
- Kaiser, J.W., Schläpfer, D., Brazile, J., Strobl, P., Schaepman, M.E., and Itten, K.I., 2004, Assimilation of heterogeneous calibration measurements for the APEX spectrometer, *in* *Sensors, Systems and Next-Generation Satellites VII*, Barcelona, Spain, 8–10 September 2003, *Proceedings of SPIE Vol. 5234*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 211–220, at <https://doi.org/10.1117/12.511126>.
- Kaita, E., Markham, B., Haque, M.O., Dichmann, D., Gerace, A., Leigh, L., Good, S., Schmidt, M., and Crawford, C.J., 2022, Landsat 9 cross calibration under-fly of Landsat 8—Planning, and execution: *Remote Sensing*, v. 14, no. 21, article 5414, at <https://doi.org/10.3390/rs14215414>.
- Kala, J., Evans, J.P., Pitman, A.J., Schaaf, C.B., Decker, M., Carouge, C., Mocko, D., and Sun, Q., 2014, Erratum—“Implementation of a soil albedo scheme in the CABLEv1.4b land surface model and evaluation against MODIS estimates over Australia” (*Geosci. Model Dev.* (2014) 7 (2121-2140)): *Geoscientific Model Development*, v. 7, no. 5, p. 2501–2501, at <https://doi.org/10.5194/gmd-7-2501-2014>.
- Kala, J., Evans, J.P., Pitman, A.J., Schaaf, C.B., Decker, M., Carouge, C., Mocko, D., and Sun, Q., 2014, Implementation of a soil albedo scheme in the CABLEv1.4b land surface model and evaluation against MODIS estimates over Australia: *Geoscientific Model Development*, v. 7, no. 5, p. 2121–2140, at <https://doi.org/10.5194/gmd-7-2121-2014>.
- Kalashnikova, O.V., Garay, M.J., Bates, K.H., Kenseth, C.M., Kong, W., Cappa, C.D., Lyapustin, A.I., Jonsson, H.H., Seidel, F.C., et al., 2018, Photopolarimetric sensitivity to black carbon content of wildfire smoke—Results from the 2016 ImPACT-PM field campaign: *Journal of Geophysical Research Atmospheres*, v. 123, no. 10, p. 5376–5396, at <https://doi.org/10.1029/2017JD028032>.
- Kalia, S., Mohan, C.K., and Nemani, R., 2022, Evolutionary training of deep neural networks on heterogeneous computing environments, *in* *2022 Genetic and Evolutionary Computation Conference, GECCO 2022*, Boston, Mass., 9–13 July 2022, *Proceedings*: New York, N.Y., Association for Computing Machinery, p. 2318–2321, at <https://doi.org/10.1145/3520304.3533954>.
- Kalluri, S.N.V., Zhang, Z., Jaja, J., Bader, D.A., Song, H., El Saleous, N., Vermote, E.F., and Townshend, J.R.G., 1999, Hierarchical data archiving and processing system to generate custom tailored

- products from AVHRR data, *in* 2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Hamburg, Germany, 28 June–2 July 1999, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2374–2376, at <https://doi.org/10.1109/IGARSS.1999.771514>.
- Kamble, B., Kilic, A., and Hubbard, K., 2013, Estimating crop coefficients using remote sensing-based vegetation index: *Remote Sensing*, v. 5, no. 4, p. 1588–1602, at <https://doi.org/10.3390/rs5041588>.
- Kampe, T.U., Johnson, B.R., Kuester, M., and McCorkel, J.T., 2011, Airborne remote sensing instrumentation for NEON—Status and development, *in* 2011 IEEE Aerospace Conference, AERO 2011, Big Sky, Mont., 5–12 March 2011, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1–13, at <https://doi.org/10.1109/AERO.2011.5747398>.
- Kampe, T.U., McCorkel, J.T., Hamlin, L., Green, R.O., Krause, K.S., and Johnson, B.R., 2011, Progress in the development of airborne remote sensing instrumentation for the National Ecological Observatory Network, *in* Remote Sensing and Modeling of Ecosystems for Sustainability VIII, San Diego, Calif., 22–23 August 2011, Proceedings of SPIE Vol. 8156: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 81560a, at <https://doi.org/10.1117/12.892572>.
- Kang, Y., Ozdogan, M., Gao, F., Anderson, M.C., White, W.A., Yang, Y., Yang, Y., and Erickson, T.A., 2021, A data-driven approach to estimate leaf area index for Landsat images over the contiguous US: *Remote Sensing of Environment*, v. 258, article 112383, at <https://doi.org/10.1016/j.rse.2021.112383>.
- Kang, Y., Ozdogan, M., Zhu, X., Ye, Z., Hain, C., and Anderson, M., 2020, Comparative assessment of environmental variables and machine learning algorithms for maize yield prediction in the US Midwest: *Environmental Research Letters*, v. 15, no. 6, article 064005, at <https://doi.org/10.1088/1748-9326/ab7df9>.
- Karagulian, F., Temimi, M., Ghebreyesus, D., Weston, M., Kondapalli, N.K., Valappil, V.K., Aldababesh, A., Lyapustin, A., Chaouch, N., et al., 2019, Analysis of a severe dust storm and its impact on air quality conditions using WRF-Chem modeling, satellite imagery, and ground observations: *Air Quality, Atmosphere and Health*, v. 12, no. 4, p. 453–470, at <https://doi.org/10.1007/s11869-019-00674-z>.
- Kargel, J.S., Ahlstrøm, A.P., Alley, R.B., Bamber, J.L., Benham, T.J., Box, J.E., Chen, C., Christoffersen, P., Citterio, M., et al., 2012, Brief communication—Greenland’s shrinking ice cover—“Fast times” but not that fast: *Cryosphere*, v. 6, no. 3, p. 533–537, at <https://doi.org/10.5194/tc-6-533-2012>.
- Karnieli, A., Agam, N., Anderson, M.C., Pinker, R.T., Imhoff, M.L., and Gutman, G.G., 2009, Merits and limitations in assessing droughts by using long-term NDVI and 1st time series, *in* 5th International Workshop on the Analysis of Multi-Temporal Remote Sensing Images 2009, MultiTemp 2009, Groton, Conn., 28–30 July 2009, Proceedings, p. 194–204.
- Karnieli, A., Agam, N., Pinker, R.T., Anderson, M.C., Imhoff, M.L., Gutman, G.G., Panov, N., and Goldberg, A., 2010, Use of NDVI and land surface temperature for drought assessment—Merits and limitations: *Journal of Climate*, v. 23, no. 3, p. 618–633, at <https://doi.org/10.1175/2009JCLI2900.1>.
- Karplus, M.S., Young, T.J., Anandkrishnan, S., Bassis, J.N., Case, E.H., Crawford, A.J., Gold, A., Henry, L., Kingslake, J., et al., 2022, Strategies to build a positive and inclusive Antarctic field work

- environment: *Annals of Glaciology*, v. 63, no. 87-89, p. 125–131, at <https://doi.org/10.1017/aog.2023.32>.
- Karstensen, K.A., and Loveland, T.R., 2009, Monitoring land use on military installations: *Military Engineer*, v. 101, no. 657, p. 47–48.
- Kashongwe, H.B., Roy, D.P., and Bwangoy, J.R.B., 2020, Democratic Republic of the Congo tropical forest canopy height and aboveground biomass estimation with Landsat-8 Operational Land Imager (OLI) and airborne LiDAR data—The effect of seasonal Landsat image selection: *Remote Sensing*, v. 12, no. 9, article 1360, at <https://doi.org/10.3390/RS12091360>.
- Kashongwe, H.B., Roy, D.P., and Skole, D.L., 2023, Examination of the amount of GEDI data required to characterize central Africa tropical forest aboveground biomass at REDD+ project scale in Mai Ndombe province: *Science of Remote Sensing*, v. 7, article 100091, at <https://doi.org/10.1016/j.srs.2023.100091>.
- Kasischke, E.S., Amiro, B.D., Barger, N.N., French, N.H.F., Goetz, S.J., Grosse, G., Harmon, M.E., Hicke, J.A., Liu, S., and Masek, J.G., 2013, Impacts of disturbance on the terrestrial carbon budget of North America: *Journal of Geophysical Research Biogeosciences*, v. 118, no. 1, p. 303–316, at <https://doi.org/10.1002/jgrg.20027>.
- Kasraee, N.K., Hawbaker, T.J., and Radeloff, V.C., 2023, Identifying building locations in the wildland-urban interface before and after fires with convolutional neural networks: *International Journal of Wildland Fire*, v. 32, no. 4, p. 610–621, at <https://doi.org/10.1071/WF22181>.
- Kathuroju, N., White, M.A., Symanzik, J., Schwartz, M.D., Powell, J.A., and Nemani, R.R., 2007, On the use of the advanced very high resolution radiometer for development of prognostic land surface phenology models: *Ecological Modelling*, v. 201, no. 2, p. 144–156, at <https://doi.org/10.1016/j.ecolmodel.2006.09.011>.
- Kaufman, Y.J., Ichoku, C., Giglio, L., Korontzi, S., Chu, D.A., Hao, W.M., Li, R.R., and Justice, C.O., 2003, Fire and smoke observed from the Earth observing system MODIS instrument—Products, validation, and operational use: *International Journal of Remote Sensing*, v. 24, no. 8, p. 1765–1781, at <https://doi.org/10.1080/01431160210144741>.
- Kaufman, Y.J., Justice, C.O., Flynn, L.P., Kendall, J.D., Prins, E.M., Giglio, L., Ward, D.E., Menzel, W.P., and Setzer, A.W., 1998, Potential global fire monitoring from EOS-MODIS: *Journal of Geophysical Research Atmospheres*, v. 103, no. D24, p. 32215–32238, at <https://doi.org/10.1029/98JD01644>.
- Kaufman, Y.J., Tanré, D., Remer, L.A., Vermote, E.F., Chu, A., and Holben, B.N., 1997, Operational remote sensing of tropospheric aerosol over land from EOS moderate resolution imaging spectroradiometer: *Journal of Geophysical Research Atmospheres*, v. 102, no. 14, p. 17051–17067, at <https://doi.org/10.1029/96JD03988>.
- Kaufmann, H., Segl, K., Guanter, L., Hofer, S., Foerster, K.P., Stuffer, T., Mueller, A., Richter, R., Bach, H., et al., 2008, Environmental mapping and analysis program (ENMAP)—recent advances and status, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. IV109–IV112, at <https://doi.org/10.1109/IGARSS.2008.4779668>.
- Kawamura, K., Severinghaus, J.P., Albert, M.R., Courville, Z.R., Fahnstock, M.A., Scambos, T.A., Shields, E., and Shuman, C.A., 2013, Kinetic fractionation of gases by deep air convection in polar firn: *Atmospheric Chemistry and Physics*, v. 13, no. 21, p. 11141–11155, at <https://doi.org/10.5194/acp-13-11141-2013>.

- Kearney, S.P., Coops, N.C., Stenhouse, G.B., Nielsen, S.E., Hermosilla, T., White, J.C., and Wulder, M.A., 2019, Grizzly bear selection of recently harvested forests is dependent on forest recovery rate and landscape composition: *Forest Ecology and Management*, v. 449, article 117459, at <https://doi.org/10.1016/j.foreco.2019.117459>.
- Keef, J.L., Clare, J.F., and Thome, K.J., 2008, Analytical solution for integrating sphere spectral efficiency inclusive of atmospheric attenuation: *Applied Optics*, v. 47, no. 2, p. 253–262, at <https://doi.org/10.1364/AO.47.000253>.
- Keef, J.L., and Thome, K.J., 2009, Hyperspectral source prediction based on an optimal selection of multispectral data: *Journal of Applied Remote Sensing*, v. 3, no. 1, article 033518, at <https://doi.org/10.1117/1.3112773>.
- Keefer, T.O., Unkrich, C.L., Smith, J.R., Goodrich, D.C., Moran, M.S., and Simanton, J.R., 2008, An event-based comparison of two types of automated-recording, weighing bucket rain gauges: *Water Resources Research*, v. 44, no. 5, article W05s12, at <https://doi.org/10.1029/2006WR005841>.
- Kelley, N.E., McCorkel, J., Wanzek, E., Georgiev, G., Barsi, J., McAndrew, B., and Efremova, B., 2023, GSFC calibration laboratory capabilities and future plans overview, *in* Earth Observing Systems XXVIII, San Diego, Calif., 22–24 August 2023, Proceedings of SPIE Vol. 12685: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 126850b, at <https://doi.org/10.1117/12.2681380>.
- Kempeneers, P., McInerney, D., Sedano, F., Gallego, J., Strobl, P., Kay, S., Korhonen, K.T., and San-Miguel-Ayanz, J., 2013, Accuracy assessment of a remote sensing-based, pan-european forest cover map using multi-country national forest inventory data: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 6, no. 1, p. 54–65, at <https://doi.org/10.1109/JSTARS.2012.2236079>.
- Kempeneers, P., Sedano, F., Seebach, L., Strobl, P., and San-Miguel-Ayanz, J., 2011, Data fusion of different spatial resolution remote sensing images applied to forest-type mapping: *IEEE Transactions on Geoscience and Remote Sensing*, v. 49, no. 12 pt. 2, p. 4977–4986, at <https://doi.org/10.1109/TGRS.2011.2158548>.
- Kempeneers, P., Sedano, F., Strobl, P., McInerney, D.O., and San-Miguel-Ayanz, J., 2012, Increasing robustness of postclassification change detection using time series of land cover maps: *IEEE Transactions on Geoscience and Remote Sensing*, v. 50, no. 9, p. 3327–3339, at <https://doi.org/10.1109/TGRS.2011.2181854>.
- Kempler, S., Leptoukh, G.G., Kiang, R.K., Soebiyanto, R.P., Tong, D.Q., Ceccato, P., Maxwell, S., Rommel, R.G., Jacques, G.M., et al., 2012, Data discovery, access and retrieval, *in* Morain, S.A., and Budge, A., eds., *Environmental tracking for public health surveillance*: Boca Raton, Fla., CRC Press, p. 229–291, at <https://doi.org/10.1201/b12680>.
- Kennaway, T., and Helmer, E.H., 2007, The forest types and ages cleared for land development in Puerto Rico: *GIScience and Remote Sensing*, v. 44, no. 4, p. 356–382, at <https://doi.org/10.2747/1548-1603.44.4.356>.
- Kennaway, T.A., Helmer, E.H., Lefsky, M.A., Brandeis, T.A., and Sherrill, K.R., 2008, Mapping land cover and estimating forest structure using satellite imagery and coarse resolution lidar in the Virgin Islands: *Journal of Applied Remote Sensing*, v. 2, no. 1, article 023551, at <https://doi.org/10.1117/1.3063939>.

- Kennedy, R.E., 2012, New views on changing Arctic vegetation: *Environmental Research Letters*, v. 7, no. 1, article 011001, at <https://doi.org/10.1088/1748-9326/7/1/011001>.
- Kennedy, R.E., Andréfouët, S., Cohen, W.B., Gómez, C., Griffiths, P., Hais, M., Healey, S.P., Helmer, E.H., Hostert, P., et al., 2014, Bringing an ecological view of change to Landsat-based remote sensing: *Frontiers in Ecology and the Environment*, v. 12, no. 6, p. 339–346, at <https://doi.org/10.1890/130066>.
- Kennedy, R.E., and Cohen, W.B., 2003, Automated designation of tie-points for image-to-image coregistration: *International Journal of Remote Sensing*, v. 24, no. 17, p. 3467–3490, at <https://doi.org/10.1080/0143116021000024249>.
- Kennedy, R.E., Cohen, W.B., and Schroeder, T.A., 2007, Trajectory-based change detection for automated characterization of forest disturbance dynamics: *Remote Sensing of Environment*, v. 110, no. 3, p. 370–386, at <https://doi.org/10.1016/j.rse.2007.03.010>.
- Kennedy, R.E., Ohmann, J., Gregory, M., Roberts, H., Yang, Z., Bell, D.M., Kane, V., Hughes, M.J., Cohen, W.B., et al., 2018, An empirical, integrated forest biomass monitoring system: *Environmental Research Letters*, v. 13, no. 2, article 025004, at <https://doi.org/10.1088/1748-9326/aa9d9e>.
- Kennedy, R.E., Townsend, P.A., Gross, J.E., Cohen, W.B., Bolstad, P., Wang, Y.Q., and Adams, P., 2009, Remote sensing change detection tools for natural resource managers—Understanding concepts and tradeoffs in the design of landscape monitoring projects: *Remote Sensing of Environment*, v. 113, no. 7, p. 1382–1396, at <https://doi.org/10.1016/j.rse.2008.07.018>.
- Kennedy, R.E., Turner, D.P., Cohen, W.B., and Guzy, M., 2006, A method to efficiently apply a biogeochemical model to a landscape: *Landscape Ecology*, v. 21, no. 2, p. 213–224, at <https://doi.org/10.1007/s10980-005-0827-0>.
- Kennedy, R.E., Yang, Z., Braaten, J., Cohen, W.B., Nelson, P., and Pfaff, E., 2013, A satellite's view of recent trends in forest harvest intensity in the Pacific Northwest, *in* Anderson, P.D., and Ronnenberg, K.L., eds., *Density management in the 21st century—West side story*, General Technical Report, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, PNW-GTR 880, p. 38–40, at <https://doi.org/10.2737/PNW-GTR-880>.
- Kennedy, R.E., Yang, Z., Braaten, J., Copass, C., Antonova, N., Jordan, C., and Nelson, P., 2015, Attribution of disturbance change agent from Landsat time-series in support of habitat monitoring in the Puget Sound region, USA: *Remote Sensing of Environment*, v. 166, p. 271–285, at <https://doi.org/10.1016/j.rse.2015.05.005>.
- Kennedy, R.E., Yang, Z., and Cohen, W.B., 2010, Detecting trends in forest disturbance and recovery using yearly Landsat time series—1. LandTrendr - Temporal segmentation algorithms: *Remote Sensing of Environment*, v. 114, no. 12, p. 2897–2910, at <https://doi.org/10.1016/j.rse.2010.07.008>.
- Kennedy, R.E., Yang, Z., Cohen, W.B., Pfaff, E., Braaten, J., and Nelson, P., 2012, Spatial and temporal patterns of forest disturbance and regrowth within the area of the Northwest Forest Plan: *Remote Sensing of Environment*, v. 122, p. 117–133, at <https://doi.org/10.1016/j.rse.2011.09.024>.
- Kennedy, R.E., Yang, Z., Gorelick, N.S., Braaten, J., Cavalcante, L., Cohen, W.B., and Healey, S.P., 2018, Implementation of the LandTrendr algorithm on Google Earth Engine: *Remote Sensing*, v. 10, no. 5, article 691, at <https://doi.org/10.3390/rs10050691>.

- Kennicutt, M.C., Chown, S.L., Cassano, J.J., Liggett, D., Peck, L.S., Massom, R., Rintoul, S.R., Storey, J., Vaughan, D.G., et al., 2014, A roadmap for Antarctic and Southern Ocean science for the next two decades and beyond: *Antarctic Science*, v. 27, no. 1, p. 3–18, at <https://doi.org/10.1017/S0954102014000674>.
- Keohane, J.W., Rudnick, L., and Anderson, M.C., 1996, A comparison of X-ray and radio emission from the supernova remnant Cassiopeia A: *Astrophysical Journal*, v. 466, no. 1 pt. 1, p. 309–316, at <https://doi.org/10.1086/177511>.
- Kerekes, J.P., and Schott, J.R., 2006, Hyperspectral imaging systems, in Chang, C.I., ed., *Hyperspectral data exploitation—Theory and applications*: Hoboken, N.J., John Wiley & Sons, p. 17–45, at <https://doi.org/10.1002/9780470124628.ch2>.
- Ketchum, D., Hoylman, Z.H., Huntington, J., Brinkerhoff, D., and Jencso, K.G., 2023, Irrigation intensification impacts sustainability of streamflow in the western United States: *Communications Earth and Environment*, v. 4, no. 1, article 479, at <https://doi.org/10.1038/s43247-023-01152-2>.
- Ketchum, D., Jencso, K., Maneta, M.P., Melton, F., Jones, M.O., and Huntington, J., 2020, IrrMapper—A machine learning approach for high resolution mapping of irrigated agriculture across the Western U.S: *Remote Sensing*, v. 12, no. 14, article 2328, at <https://doi.org/10.3390/rs12142328>.
- Keyser, A.R., Kimball, J.S., Nemani, R.R., and Running, S.W., 2000, Simulating the effects of climate change on the carbon balance of North American high-latitude forests: *Global Change Biology*, v. 6, no. 5, p. 185–195, at <https://doi.org/10.1046/j.1365-2486.2000.06020.x>.
- Keyser, S.R., Fink, D., Gudex-Cross, D., Radeloff, V.C., Pauli, J.N., and Zuckerberg, B., 2023, Snow cover dynamics—An overlooked yet important feature of winter bird occurrence and abundance across the United States: *Ecography*, v. 1, article e03678, at <https://doi.org/10.1111/ecog.06378>.
- Khan, A., Hansen, M.C., Potapov, P., Adusei, B., Stehman, S.V., and Steininger, M.K., 2021, An operational automated mapping algorithm for in-season estimation of wheat area for Punjab, Pakistan: *International Journal of Remote Sensing*, v. 42, no. 10, p. 3833–3849, at <https://doi.org/10.1080/01431161.2021.1883200>.
- Khan, A., Hansen, M.C., Potapov, P., Stehman, S.V., and Chatta, A.A., 2016, Landsat-based wheat mapping in the heterogeneous cropping system of Punjab, Pakistan: *International Journal of Remote Sensing*, v. 37, no. 6, p. 1391–1410, at <https://doi.org/10.1080/01431161.2016.1151572>.
- Khan, A., Hansen, M.C., Potapov, P.V., Adusei, B., Pickens, A., Krylov, A., and Stehman, S.V., 2018, Evaluating Landsat and RapidEye data for winter wheat mapping and area estimation in Punjab, Pakistan: *Remote Sensing*, v. 10, no. 4, article 489, at <https://doi.org/10.3390/rs10040489>.
- Khan, A.L., Dierssen, H.M., Scambos, T.A., Höfer, J., and Cordero, R.R., 2021, Spectral characterization, radiative forcing and pigment content of coastal Antarctic snow algae—Approaches to spectrally discriminate red and green communities and their impact on snowmelt: *Cryosphere*, v. 15, no. 1, p. 133–148, at <https://doi.org/10.5194/tc-15-133-2021>.
- Khan, A.M., Stoy, P.C., Douglas, J.T., Anderson, M., Diak, G., Otkin, J.A., Hain, C., Rehbein, E.M., and McCorkel, J., 2021, Reviews and syntheses—Ongoing and emerging opportunities to improve environmental science using observations from the Advanced Baseline Imager on the Geostationary Operational Environmental Satellites: *Biogeosciences*, v. 18, no. 13, p. 4117–4141, at <https://doi.org/10.5194/bg-18-4117-2021>.

- Kieffer, H., Kargel, J.S., Barry, R., Bindschadler, R.A., Bishop, M., MacKinnon, D., Ohmura, A., Raup, B., Antoninetti, M., et al., 2000, New eyes in the sky measure glaciers and ice sheets: *Eos*, v. 81, no. 24, p. 265–271, at <https://doi.org/10.1029/00EO00187>.
- Kilbride, J.B., Poortinga, A., Bhandari, B., Thwal, N.S., Quyen, N.H., Silverman, J., Tenneson, K., Bell, D., Gregory, M., et al., 2023, A near real-time mapping of tropical forest disturbance using SAR and semantic segmentation in Google Earth Engine: *Remote Sensing*, v. 15, no. 21, article 5223, at <https://doi.org/10.3390/rs15215223>.
- Kilic, A., Allen, R.G., Trezza, R., Ratcliffe, I., Kamble, B., Robison, C., and Ozturk, D., 2016, Sensitivity of evapotranspiration retrievals from the METRIC processing algorithm to improved radiometric resolution of Landsat 8 thermal data and to calibration bias in Landsat 7 and 8 surface temperature: *Remote Sensing of Environment*, v. 185, p. 198–209, at <https://doi.org/10.1016/j.rse.2016.07.011>.
- Kim, B.H., Lee, C.K., Seo, K.W., Lee, W.S., and Scambos, T.A., 2016, Active subglacial lakes and channelized water flow beneath the Kamb Ice Stream: *Cryosphere*, v. 10, no. 6, p. 2971–2980, at <https://doi.org/10.5194/tc-10-2971-2016>.
- Kim, E., Gatebe, C., Hall, D., Newlin, J., Misakonis, A., Elder, K., Marshall, H.P., Hiemstra, C., Brucker, L., et al., 2017, NASA's snowex campaign—Observing seasonal snow in a forested environment, in 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, Tex., 23–28 July 2017, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1388–1390, at <https://doi.org/10.1109/IGARSS.2017.8127222>.
- Kim, J., Hwang, T., Schaaf, C.L., Kljun, N., and Munger, J.W., 2018, Seasonal variation of source contributions to eddy-covariance CO₂ measurements in a mixed hardwood-conifer forest: *Agricultural and Forest Meteorology*, v. 253–254, p. 71–83, at <https://doi.org/10.1016/j.agrformet.2018.02.004>.
- Kim, J., Hwang, T., Schaaf, C.L., Orwig, D.A., Boose, E., and Munger, J.W., 2017, Increased water yield due to the hemlock woolly adelgid infestation in New England: *Geophysical Research Letters*, v. 44, no. 5, p. 2327–2335, at <https://doi.org/10.1002/2016GL072327>.
- Kim, J.H., Hwang, T., Yang, Y., Schaaf, C.L., Boose, E., and Munger, J.W., 2018, Warming-Induced Earlier Greenup Leads to Reduced Stream Discharge in a Temperate Mixed Forest Catchment: *Journal of Geophysical Research Biogeosciences*, v. 123, no. 6, p. 1960–1975, at <https://doi.org/10.1029/2018JG004438>.
- Kim, Y., Kimball, J.S., Du, J., Schaaf, C.L.B., and Kirchner, P.B., 2018, Quantifying the effects of freeze-thaw transitions and snowpack melt on land surface albedo and energy exchange over Alaska and Western Canada: *Environmental Research Letters*, v. 13, no. 7, article 075009, at <https://doi.org/10.1088/1748-9326/aacf72>.
- Kim, Y., Yang, Z., Cohen, W.B., Pflugmacher, D., Lauver, C.L., and Vankat, J.L., 2009, Distinguishing between live and dead standing tree biomass on the North Rim of Grand Canyon National Park, USA using small-footprint lidar data: *Remote Sensing of Environment*, v. 113, no. 11, p. 2499–2510, at <https://doi.org/10.1016/j.rse.2009.07.010>.
- Kimambo, N.E., L'Roe, J., Naughton-Treves, L., and Radeloff, V.C., 2020, The role of smallholder woodlots in global restoration pledges—Lessons from Tanzania: *Forest Policy and Economics*, v. 115, article 102144, at <https://doi.org/10.1016/j.forpol.2020.102144>.

- Kimambo, N.E., and Radeloff, V.C., 2023, Using Landsat and Sentinel-2 spectral time series to detect East African small woodlots: *Science of Remote Sensing*, v. 8, article 100096, at <https://doi.org/10.1016/j.srs.2023.100096>.
- Kimball, J.S., Running, S.W., and Nemani, R.R., 1997, An improved method for estimating surface humidity from daily minimum temperature: *Agricultural and Forest Meteorology*, v. 85, no. 1–2, p. 87–98, at [https://doi.org/10.1016/S0168-1923\(96\)02366-0](https://doi.org/10.1016/S0168-1923(96)02366-0).
- Kimes, D.S., Nelson, R.F., Salas, W.A., and Skole, D.L., 1999, Mapping secondary tropical forest and forest age from SPOT HRV data: *International Journal of Remote Sensing*, v. 20, no. 18, p. 3625–3640, at <https://doi.org/10.1080/014311699211246>.
- Kimes, D.S., Nelson, R.F., Skole, D.L., and Salas, W.A., 1998, Accuracies in mapping secondary tropical forest age from sequential satellite imagery: *Remote Sensing of Environment*, v. 65, no. 1, p. 112–120, at [https://doi.org/10.1016/S0034-4257\(98\)00021-2](https://doi.org/10.1016/S0034-4257(98)00021-2).
- Kindel, B.C., Qu, Z., and Goetz, A.F.H., 2001, Direct solar spectral irradiance and transmittance measurements from 350 to 2500 nm: *Applied Optics*, v. 40, no. 21, p. 3483–3494, at <https://doi.org/10.1364/AO.40.003483>.
- King, D.M., Skirvin, S.M., Holifield Collins, C.D., Moran, M.S., Biedenbender, S.H., Kidwell, M.R., Weltz, M.A., and Diaz-Gutierrez, A., 2008, Assessing vegetation change temporally and spatially in southeastern Arizona: *Water Resources Research*, v. 44, no. 5, article W05s15, at <https://doi.org/10.1029/2006WR005850>.
- King, L., Adusei, B., Stehman, S.V., Potapov, P.V., Song, X.P., Krylov, A., Di Bella, C., Loveland, T.R., Johnson, D.M., and Hansen, M.C., 2017, A multi-resolution approach to national-scale cultivated area estimation of soybean: *Remote Sensing of Environment*, v. 195, p. 13–29, at <https://doi.org/10.1016/j.rse.2017.03.047>.
- Kjaersgaard, J., Allen, R.G., and Irmak, A., 2011, Improved methods for estimating monthly and growing season ET using METRIC applied to moderate resolution satellite imagery: *Hydrological Processes*, v. 25, no. 26, p. 4028–4036, at <https://doi.org/10.1002/hyp.8394>.
- Kjaersgaard, J., Allen, R.G., Robison, C., Irmak, A., Ratcliffe, I., Ranade, P., Trezza, R., Dhungel, R., and Kra, E., 2012, Adjusting for background soil evaporation when interpolating evapotranspiration between satellite overpass dates, *in Remote Sensing and Hydrology 2010*, Jackson Hole, Wyo., 27–30 September 2010, IAHS Publication 352: Wallingford, UK, International Association of Hydrological Sciences, p. 94–97.
- Kjaersgaard, J., Allen, R.G., Trezza, R., Robison, C., Oliveira, A., Dhungel, R., and Kra, E., 2012, Filling satellite image cloud gaps to create complete images of evapotranspiration, *in Remote Sensing and Hydrology 2010*, Jackson Hole, Wyo., 27–30 September 2010, IAHS Publication 352: Wallingford, UK, International Association of Hydrological Sciences, p. 102–105.
- Kjaersgaard, J.H., Allen, R.G., Aggett, G.R., Schneider, C.A., Hattendorf, M.J., Irmak, A., Hergert, G.W., and Robison, C., 2008, Computation of Landsat based evapotranspiration maps along the South Platte and North Platte Rivers, *in World Environmental and Water Resources Congress*, Honolulu, Hawaii, 12–16 May 2008, Proceedings: Reston, Va., American Society of Civil Engineers, p. 1–10, at [https://doi.org/10.1061/40976\(316\)97](https://doi.org/10.1061/40976(316)97).
- Kjaersgaard, J.H., Allen, R.G., Garcia, M., Kramber, W., and Trezza, R., 2009, Automated selection of anchor pixels for Landsat based evapotranspiration estimation, *in Great rivers*, World Environmental and Water Resources Congress, Kansas City, Mo., 17–21 May 2009, Proceedings:

- Reston, Va., American Society of Civil Engineers, p. 4400–4410, at [https://doi.org/10.1061/41036\(342\)442](https://doi.org/10.1061/41036(342)442).
- Kjaersgaard, J.H., Gowda, P.H., Allen, R.G., and Howell, T.A., 2009, Independent comparisons among calibration and output of energy balance components estimated by the METRIC procedure, *in* Great rivers, World Environmental and Water Resources Congress, Kansas City, Mo., 17–21 May 2009, Proceedings: Reston, Va., American Society of Civil Engineers, p. 4362–4371, at [https://doi.org/10.1061/41036\(342\)438](https://doi.org/10.1061/41036(342)438).
- Klaus, M., Holsten, A., Hostert, P., and Kropp, J.P., 2011, Integrated methodology to assess windthrow impacts on forest stands under climate change: *Forest Ecology and Management*, v. 261, no. 11, p. 1799–1810, at <https://doi.org/10.1016/j.foreco.2011.02.002>.
- Klempner, S.L., Bartlett, B., and Schott, J.R., 2006, Ground truth-based variability analysis of atmospheric inversion in the presence of clouds, *in* Atmospheric and Environmental Remote Sensing Data Processing and Utilization II—Perspective on Calibration/Validation Initiatives and Strategies, San Diego, Calif., 16–17 August 2006, Proceedings of SPIE Vol. 6301: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 630109, at <https://doi.org/10.1117/12.682590>.
- Klink, K., Wiersma, J.J., Crawford, C.J., and Stuthman, D.D., 2014, Impacts of temperature and precipitation variability in the Northern Plains of the United States and Canada on the productivity of spring barley and oat: *International Journal of Climatology*, v. 34, no. 8, p. 2805–2818, at <https://doi.org/10.1002/joc.3877>.
- Kloog, I., Chudnovsky, A.A., Just, A.C., Nordio, F., Koutrakis, P., Coull, B.A., Lyapustin, A.I., Wang, Y., and Schwartz, J., 2014, A new hybrid spatio-temporal model for estimating daily multi-year PM_{2.5} concentrations across northeastern USA using high resolution aerosol optical depth data: *Atmospheric Environment*, v. 95, p. 581–590, at <https://doi.org/10.1016/j.atmosenv.2014.07.014>.
- Kloog, I., Sorek-Hamer, M., Lyapustin, A.I., Coull, B., Wang, Y., Just, A.C., Schwartz, J., and Broday, D.M., 2015, Estimating daily PM_{2.5} and PM₁₀ across the complex geo-climate region of Israel using MAIAC satellite-based AOD data: *Atmospheric Environment*, v. 122, p. 409–416, at <https://doi.org/10.1016/j.atmosenv.2015.10.004>.
- Klosterman, S., Melaas, E., Wang, J., Martinez, A., Frederick, S., O’Keefe, J., Orwig, D.A., Wang, Z., Sun, Q., et al., 2018, Fine-scale perspectives on landscape phenology from unmanned aerial vehicle (UAV) photography: *Agricultural and Forest Meteorology*, v. 248, p. 397–407, at <https://doi.org/10.1016/j.agrformet.2017.10.015>.
- Kneubühler, M., Schaepman, M., and Thome, K.J., 2006, Long-term vicarious calibration efforts of MERIS at railroad valley playa (NV)—An update, *in* 2nd Working Meeting on MERIS and AATSR Calibration and Geophysical Validation, MAVT-2006, Frascati, Italy, 20–24 March 2006, ESA-SP 615: Frascati, Italy, European Space Agency, paper no. 77949, at <https://doi.org/10.5167/uzh-77949>.
- Kneubühler, M., Schaepman, M.E., Thome, K.J., and Schläpfer, D., 2004, MERIS / ENVISAT Vicarious Calibration Over Land, *in* Sensors, Systems and Next-Generation Satellites VII, Barcelona, Spain, 8–10 September 2003, Proceedings of SPIE Vol. 5234: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 614–623, at <https://doi.org/10.1117/12.510449>.

- Knipper, K.R., Kustas, W.P., Anderson, M.C., Alfieri, J.G., Prueger, J.H., Hain, C.R., Gao, F., Yang, Y., McKee, L.G., et al., 2019, Evapotranspiration estimates derived using thermal-based satellite remote sensing and data fusion for irrigation management in California vineyards: *Irrigation Science*, v. 37, no. 3, p. 431–449, at <https://doi.org/10.1007/s00271-018-0591-y>.
- Knipper, K.R., Kustas, W.P., Anderson, M.C., Alsina, M.M., Hain, C.R., Alfieri, J.G., Prueger, J.H., Gao, F., McKee, L.G., and Sanchez, L.A., 2019, Using high-spatiotemporal thermal satellite ET retrievals for operational water use and stress monitoring in a California vineyard: *Remote Sensing*, v. 11, no. 18, article 2124, at <https://doi.org/10.3390/rs11182124>.
- Knipper, K.R., Kustas, W.P., Anderson, M.C., Nieto, H., Alfieri, J.G., Prueger, J.H., Hain, C.R., Gao, F., McKee, L.G., et al., 2020, Using high-spatiotemporal thermal satellite ET retrievals to monitor water use over California vineyards of different climate, vine variety and trellis design: *Agricultural Water Management*, v. 241, article 106361, at <https://doi.org/10.1016/j.agwat.2020.106361>.
- Knobelspiesse, K.D., Cairns, B., Schmid, B., Román, M.O., and Schaaf, C.B., 2008, Surface BRDF estimation from an aircraft compared to MODIS and ground estimates at the Southern Great Plains site: *Journal of Geophysical Research Atmospheres*, v. 113, no. 20, article D20105, at <https://doi.org/10.1029/2008JD010062>.
- Knorn, J., Kuemmerle, T., Radeloff, V.C., Keeton, W.S., Gancz, V., Biriş, I.A., Svoboda, M., Griffiths, P., Hagatis, A., and Hostert, P., 2013, Continued loss of temperate old-growth forests in the Romanian Carpathians despite an increasing protected area network: *Environmental Conservation*, v. 40, no. 2, p. 182–193, at <https://doi.org/10.1017/S0376892912000355>.
- Knorn, J., Kuemmerle, T., Radeloff, V.C., Szabo, A., Mindrescu, M., Keeton, W.S., Abrudan, I., Griffiths, P., Gancz, V., and Hostert, P., 2012, Forest restitution and protected area effectiveness in post-socialist Romania: *Biological Conservation*, v. 146, no. 1, p. 204–212, at <https://doi.org/10.1016/j.biocon.2011.12.020>.
- Knorn, J., Rabe, A., Radeloff, V.C., Kuemmerle, T., Kozak, J., and Hostert, P., 2009, Land cover mapping of large areas using chain classification of neighboring Landsat satellite images: *Remote Sensing of Environment*, v. 113, no. 5, p. 957–964, at <https://doi.org/10.1016/j.rse.2009.01.010>.
- Knyazikhin, Y., Lewis, P., Disney, M.I., Möttus, M., Rautiainen, M., Stenberg, P., Kaufmann, R.K., Marshak, A., Schull, M.A., et al., 2013, Reply to Ollinger et al.—Remote sensing of leaf nitrogen and emergent ecosystem properties: *Proceedings of the National Academy of Sciences of the United States of America*, v. 110, no. 27, article E2438, at <https://doi.org/10.1073/pnas.1305930110>.
- Knyazikhin, Y., Lewis, P., Disney, M.I., Stenberg, P., Möttus, M., Rautiainen, M., Kaufmann, R.K., Marshak, A., Schull, M.A., et al., 2013, Reply to Townsend et al.—Decoupling contributions from canopy structure and leaf optics is critical for remote sensing leaf biochemistry: *Proceedings of the National Academy of Sciences of the United States of America*, v. 110, no. 12, article E1075, at <https://doi.org/10.1073/pnas.1301247110>.
- Knyazikhin, Y., Schull, M.A., Stenberg, P., Möttus, M., Rautiainen, M., Yang, Y., Marshak, A., Carmona, P.L., Kaufmann, R.K., et al., 2013, Hyperspectral remote sensing of foliar nitrogen content: *Proceedings of the National Academy of Sciences of the United States of America*, v. 110, no. 3, p. E185–E192, at <https://doi.org/10.1073/pnas.1210196109>.
- Kochtitzky, W., Copland, L., Van Wychen, W., Hock, R., Rounce, D.R., Jiskoot, H., Scambos, T.A., Morlighem, M., King, M., et al., 2022, Progress toward globally complete frontal ablation

- estimates of marine-terminating glaciers: *Annals of Glaciology*, v. 63, no. 87-89, p. 143–152, at <https://doi.org/10.1017/aog.2023.35>.
- Koetz, B., Bastiaanssen, W., Berger, M., Defourney, P., Bello, U.D., Drusch, M., Drinkwater, M., Duca, R., Fernandez, V., et al., 2018, High spatio-temporal resolution land surface temperature mission—A Copernicus candidate mission in support of agricultural monitoring, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8160–8162, at <https://doi.org/10.1109/IGARSS.2018.8517433>.
- Koh, L.P., Gibbs, H.K., Potapov, P.V., and Hansen, M.C., 2012, REDDcalculator.com—A web-based decision-support tool for implementing Indonesia’s forest moratorium: *Methods in Ecology and Evolution*, v. 3, no. 2, p. 310–316, at <https://doi.org/10.1111/j.2041-210X.2011.00147.x>.
- Kokkinidis, I., Hodges, S.C., and Wynne, R.H., 2017, Thematic accuracy of agriculture in land cover layers of select Virginia counties: *Photogrammetric Engineering and Remote Sensing*, v. 83, no. 10, p. 679–692, at <https://doi.org/10.14358/PERS.83.10.679>.
- Kongoli, C., Kustas, W.P., Anderson, M.C., Norman, J.M., Alfieri, J.G., Flerchinger, G.N., and Marks, D., 2014, Evaluation of a two-source snow-vegetation energy balance model for estimating surface energy fluxes in a rangeland ecosystem: *Journal of Hydrometeorology*, v. 15, no. 1, p. 143–158, at <https://doi.org/10.1175/JHM-D-12-0153.1>.
- Konrad Turlej, C., Ozdogan, M., and Radeloff, V.C., 2022, Mapping forest types over large areas with Landsat imagery partially affected by clouds and SLC gaps: *International Journal of Applied Earth Observation and Geoinformation*, v. 107, article 102689, at <https://doi.org/10.1016/j.jag.2022.102689>.
- Koren, I., Oreopoulos, L., Feingold, G., Remer, L.A., and Altaratz, O., 2008, How small is a small cloud?: *Atmospheric Chemistry and Physics*, v. 8, no. 14, p. 3855–3864, at <https://doi.org/10.5194/acp-8-3855-2008>.
- Korkin, S., and Lyapustin, A., 2019, Matrix exponential in C/C++ version of vector radiative transfer code IPL: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 227, p. 106–110, at <https://doi.org/10.1016/j.jqsrt.2019.02.009>.
- Korkin, S., and Lyapustin, A., 2019, Surface polarized reflectance analysis for aerosol remote sensing, *in* Remote Sensing of Clouds and the Atmosphere XXIV 2019, Strasbourg, France, 11–12 September 2019, Proceedings of SPIE Vol. 11152: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 111520i, at <https://doi.org/10.1117/12.2531426>.
- Korkin, S., and Lyapustin, A., 2023, Radiative interaction of atmosphere and surface—Write-up with elements of code: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 309, at <https://doi.org/10.1016/j.jqsrt.2023.108663>.
- Korkin, S., Lyapustin, A.I., Sinyuk, A., and Holben, B., 2016, Accuracy of RT code SORD for realistic atmospheric profiles, *in* Remote Sensing of Clouds and the Atmosphere XXI, Edinburgh, Scotland, UK, 28–29 September 2016, Proceedings of SPIE Vol. 10001: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 100010b, at <https://doi.org/10.1117/12.2241411>.
- Korkin, S., Lyapustin, A.I., Sinyuk, A., and Holben, B., 2016, A new code SORD for simulation of polarized light scattering in the Earth atmosphere, *in* Polarization—Measurement, Analysis, and Remote Sensing XII, Baltimore, Md., 18–19 April 2016, Proceedings of SPIE Vol. 9853: Bellingham, Wash.,

- Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 985305, at <https://doi.org/10.1117/12.2223423>.
- Korkin, S., Lyapustin, A.I., Sinyuk, A., and Holben, B., 2016, Performance of the dot product function in radiative transfer code SORD, *in* High-Performance Computing in Geoscience and Remote Sensing VI, Edinburgh, Scotland, UK, 26–29 September 2016, Proceedings of SPIE Vol. 10007: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1000705, at <https://doi.org/10.1117/12.2240592>.
- Korkin, S., Lyapustin, A.I., Sinyuk, A., Holben, B., and Kokhanovsky, A., 2017, Vector radiative transfer code SORD—Performance analysis and quick start guide: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 200, p. 295–310, at <https://doi.org/10.1016/j.jqsrt.2017.04.035>.
- Korkin, S., Sayer, A.M., Ibrahim, A., and Lyapustin, A., 2022, A practical guide to writing a radiative transfer code: *Computer Physics Communications*, v. 271, article 108198, at <https://doi.org/10.1016/j.cpc.2021.108198>.
- Korkin, S., Yang, E.S., Spurr, R., Emde, C., Krotkov, N., Vasilkov, A., Haffner, D., Mok, J., and Lyapustin, A., 2020, Revised and extended benchmark results for Rayleigh scattering of sunlight in spherical atmospheres: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 254, article 107181, at <https://doi.org/10.1016/j.jqsrt.2020.107181>.
- Korkin, S.V., Budak, V.P., and Lyapustin, A.I., 2010, Comparison of efficiency of algorithms for polarization computation in turbid media, *in* Optical Remote Sensing of the Environment, ORSE 2010, Tucson, Ariz., 7–8 June 2010, OSA Technical Digest: Washington, D.C., Optical Society of America, paper no. OMD4, at <https://doi.org/10.1364/ORSE.2010.OMD4>.
- Korkin, S.V., Lyapustin, A.I., and Marshak, A.L., 2012, On the accuracy of double scattering approximation for atmospheric polarization computations: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 113, no. 2, p. 172–181, at <https://doi.org/10.1016/j.jqsrt.2011.10.008>.
- Korkin, S.V., Lyapustin, A.I., and Rozanov, V.V., 2011, Analysis of the radiative transfer equation with highly asymmetric phase function: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 112, no. 10, p. 1595–1608, at <https://doi.org/10.1016/j.jqsrt.2011.03.016>.
- Korkin, S.V., Lyapustin, A.I., and Rozanov, V.V., 2012, Modifications of discrete ordinate method for computations with high scattering anisotropy—Comparative analysis: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 113, no. 16, p. 2040–2048, at <https://doi.org/10.1016/j.jqsrt.2012.07.022>.
- Korkin, S.V., Lyapustin, A.I., and Rozanov, V.V., 2013, APC—A new code for Atmospheric Polarization Computations: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 127, p. 1–11, at <https://doi.org/10.1016/j.jqsrt.2013.06.019>.
- Korontzi, S., Justice, C.O., and Scholes, R.J., 2003, Influence of timing and spatial extent of savanna fires in southern Africa on atmospheric emissions: *Journal of Arid Environments*, v. 54, no. 2, p. 395–404, at <https://doi.org/10.1006/jare.2002.1098>.
- Korontzi, S., McCarty, J., and Justice, C.O., 2008, Monitoring agricultural burning in the Mississippi River Valley region from the Moderate Resolution Imaging Spectroradiometer (MODIS): *Journal of the Air and Waste Management Association*, v. 58, no. 9, p. 1235–1239, at <https://doi.org/10.3155/1047-3289.58.9.1235>.

- Korontzi, S., McCarty, J., Loboda, T., Kumar, S., and Justice, C.O., 2006, Global distribution of agricultural fires in croplands from 3 years of Moderate Resolution Imaging Spectroradiometer (MODIS) data: *Global Biogeochemical Cycles*, v. 20, no. 2, article GB2021, at <https://doi.org/10.1029/2005GB002529>.
- Korontzi, S., Roy, D.P., Justice, C.O., and Ward, D.E., 2004, Modeling and sensitivity analysis of fire emissions in southern Africa during SAFARI 2000: *Remote Sensing of Environment*, v. 92, no. 3, p. 376–396, at <https://doi.org/10.1016/j.rse.2004.06.023>.
- Korontzi, S., Ward, D.E., Susott, R.A., Yokelson, R.J., Justice, C.O., Hobbs, P.V., Smithwick, E.A.H., and Hao, W.M., 2003, Seasonal variation and ecosystem dependence of emission factors for selected trace gases and PM_{2.5} for southern African savanna fires: *Journal of Geophysical Research Atmospheres*, v. 108, no. 24, p. ACH 7–1 – ACH 7–14, at <https://doi.org/10.1029/2003JD003730>
- Kotchenova, S.Y., Vermote, E.F., Levy, R., and Lyapustin, A.I., 2008, Radiative transfer codes for atmospheric correction and aerosol retrieval—Intercomparison study: *Applied Optics*, v. 47, no. 13, p. 2215–2226, at <https://doi.org/10.1364/AO.47.002215>.
- Kotchenova, S.Y., Vermote, E.F., Matarrese, R., and Klemm Jr, F.J., 2006, Validation of a vector version of the 6S radiative transfer code for atmospheric correction of satellite data. Part I—Path radiance: *Applied Optics*, v. 45, no. 26, p. 6762–6774, at <https://doi.org/10.1364/AO.45.006762>.
- Kotchenova, S.Y., and Vermote, E.F., 2007, Validation of a vector version of the 6S radiative transfer code for atmospheric correction of satellite data. Part II. Homogeneous Lambertian and anisotropic surfaces: *Applied Optics*, v. 46, no. 20, p. 4455–4464, at <https://doi.org/10.1364/AO.46.004455>.
- Kovalskyy, V., Henebry, G.M., Roy, D.P., Adusei, B., Hansen, M.C., Senay, G., and Mocko, D.M., 2013, Evaluation of a coupled event-driven phenology and evapotranspiration model for croplands in the United States northern Great Plains: *Journal of Geophysical Research Atmospheres*, v. 118, no. 11, p. 5065–5081, at <https://doi.org/10.1002/jgrd.50387>.
- Kovalskyy, V., and Roy, D.P., 2012, The availability of cloud-free Landsat TM and ETM+ land observations and implications for global Landsat data production, *in* International Conference on Geoinformatics—Theoretical and Applied Aspects, 11th, Kiev, Ukraine, 14–17 May 2012, Proceedings: Houton, Netherlands, European Association of Geoscientists and Engineers, paper no. 14475, at <https://www.earthdoc.org/deliver/fulltext/2214-4609/334/14475.pdf?itemId=/content/papers/10.3997/2214-4609.201403003&mimeType=application/pdf>.
- Kovalskyy, V., and Roy, D.P., 2013, The global availability of Landsat 5 TM and Landsat 7 ETM+ land surface observations and implications for global 30m Landsat data product generation: *Remote Sensing of Environment*, v. 130, p. 280–293, at <https://doi.org/10.1016/j.rse.2012.12.003>.
- Kovalskyy, V., and Roy, D.P., 2015, A one year Landsat 8 conterminous United States study of cirrus and non-cirrus clouds: *Remote Sensing*, v. 7, no. 1, p. 564–578, at <https://doi.org/10.3390/rs70100564>.
- Kovalskyy, V., Roy, D.P., Zhang, X.Y., and Ju, J., 2012, The suitability of multi-temporal web-enabled Landsat data NDVI for phenological monitoring - A comparison with flux tower and MODIS NDVI: *Remote Sensing Letters*, v. 3, no. 4, p. 325–334, at <https://doi.org/10.1080/01431161.2011.593581>.

- Kowalski, K., Okujeni, A., Brell, M., and Hostert, P., 2022, Quantifying drought effects in Central European grasslands through regression-based unmixing of intra-annual Sentinel-2 time series: Remote Sensing of Environment, v. 268, article 112781, at <https://doi.org/10.1016/j.rse.2021.112781>.
- Kowalski, K., Okujeni, A., and Hostert, P., 2023, A generalized framework for drought monitoring across Central European grassland gradients with Sentinel-2 time series: Remote Sensing of Environment, v. 286, article 113449, at <https://doi.org/10.1016/j.rse.2022.113449>.
- Kraatz, S., Lamb, B.T., Hively, W.D., Jennewein, J.S., Gao, F., Cosh, M.H., and Siqueira, P., 2023, Comparing NISAR (using Sentinel-1), USDA/NASS CDL, and ground truth crop/non-crop areas in an urban agricultural region: Sensors, v. 23, no. 20, article 8595, at <https://doi.org/10.3390/s23208595>.
- Kraemer, R., Prishchepov, A.V., Müller, D., Kuemmerle, T., Radeloff, V.C., Dara, A., Terekhov, A., and Frühauf, M., 2015, Long-term agricultural land-cover change and potential for cropland expansion in the former Virgin Lands area of Kazakhstan: Environmental Research Letters, v. 10, no. 5, article 054012, at <https://doi.org/10.1088/1748-9326/10/5/054012>.
- Krajewski, W.F., Anderson, M.C., Eichinger, W.E., Entekhabi, D., Hornbuckle, B.K., Houser, P.R., Katul, G.G., Kustas, W.P., Norman, J.M., et al., 2006, A remote sensing observatory for hydrologic sciences—A genesis for scaling to continental hydrology: Water Resources Research, v. 42, no. 7, article W07301, at <https://doi.org/10.1029/2005WR004435>.
- Kramber, W.J., Morse, A., and Allen, R.G., 2010, Mapping evapotranspiration—A remote sensing innovation: Photogrammetric Engineering and Remote Sensing, v. 76, no. 1, p. 6–10, at http://onlinedigitalpublishing.com/publication/?m=7922&i=29101&view=articleBrowser&article_id=292211&ver=html5.
- Kramber, W.J., Morse, A., Allen, R.G., Tasumi, M., Trezza, R., and Wright, J.L., 2002, Developing surrogate pixels for comparing SEBAL ET with Lysimeter ET measurements, in 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 119–121, at <https://doi.org/10.1109/IGARSS.2002.1024960>.
- Kramber, W.J., Morse, A., Allen, R.G., and Trezza, R., 2008, Landsat thermal data for water resources management in Idaho, in Bridging the horizons—New frontiers in geospatial collaboration, Annual Conference, Portland, Oreg., 28 April–2 May 2008, Proceedings: Bethesda, Md., American Society for Photogrammetry and Remote Sensing p. 394–398, at <http://www.asprs.org/a/publications/proceedings/portland08/0044.pdf>.
- Kramer, H.A., Butsic, V., Mockrin, M.H., Ramirez-Reyes, C., Alexandre, P.M., and Radeloff, V.C., 2021, Post-wildfire rebuilding and new development in California indicates minimal adaptation to fire risk: Land Use Policy, v. 107, article 105502, at <https://doi.org/10.1016/j.landusepol.2021.105502>.
- Kramer, H.A., Mockrin, M.H., Alexandre, P.M., and Radeloff, V.C., 2019, High wildfire damage in interface communities in California: International Journal of Wildland Fire, v. 28, no. 9, p. 641–650, at <https://doi.org/10.1071/WF18108>.
- Kramer, H.A., Mockrin, M.H., Alexandre, P.M., Stewart, S.I., and Radeloff, V.C., 2018, Where wildfires destroy buildings in the US relative to the wildland-urban interface and national fire outreach programs: International Journal of Wildland Fire, v. 27, no. 5, p. 329–341, at <https://doi.org/10.1071/WF17135>.

- Kramer, R.J., Bounoua, L., Zhang, P., Wolfe, R.E., Huntington, T.G., Imhoff, M.L., Thome, K., and Noyce, G.L., 2015, Evapotranspiration trends over the Eastern United States during the 20th century: *Hydrology*, v. 2, no. 2, p. 93–111, at <https://doi.org/10.3390/hydrology2020093>.
- Kramer, R.J., He, H., Soden, B.J., Oreopoulos, L., Myhre, G., Forster, P.M., and Smith, C.J., 2021, Observational evidence of increasing global radiative forcing: *Geophysical Research Letters*, v. 48, no. 7, article e2020GL091585, at <https://doi.org/10.1029/2020GL091585>.
- Krankina, O.N., Harmon, M.E., Cohen, W.B., Oetter, D.R., Olga, Z., and Duane, M.V., 2004, Carbon stores, sinks, and sources in forests of northwestern Russia—Can we reconcile forest inventories with remote sensing results?: *Climatic Change*, v. 67, no. 2–3, p. 257–272, at <https://doi.org/10.1007/s10584-004-3154-6>.
- Krankina, O.N., Pflugmacher, D., Friedl, M., Cohen, W.B., Nelson, P., and Baccini, A., 2008, Meeting the challenge of mapping peatlands with remotely sensed data: *Biogeosciences*, v. 5, no. 6, p. 1809–1820, at <https://doi.org/10.5194/bg-5-1809-2008>.
- Krankina, O.N., Pflugmacher, D., Hayes, D.J., McGuire, A.D., Hansen, M.C., Häme, T., Elsakov, V., and Nelson, P., 2011, Vegetation cover in the Eurasian Arctic—Distribution, monitoring, and role in carbon cycling, *in* Gutman, G., and Reissell, A., eds., *Eurasian arctic land cover and land use in a changing climate*: Dordrecht, Netherlands, Springer, p. 79–108, at https://doi.org/10.1007/978-90-481-9118-5_5.
- Krause, C.E., Newey, V., Alger, M.J., and Lymburner, L., 2021, Mapping and monitoring the multi-decadal dynamics of Australia’s open waterbodies using Landsat: *Remote Sensing*, v. 13, no. 8, article 1437, at <https://doi.org/10.3390/rs13081437>.
- Krause, K., Biggar, S., Thome, K.J., Eagen, J., and Kenyon, D., 2002, On-orbit radiometric calibration using a solar diffuser, *in* *Earth Observing Systems VI*, San Diego, Calif., 29 July–3 August 2001, *Proceedings of SPIE Vol. 4483*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 135–145, at <https://doi.org/10.1117/12.453447>.
- Krause, K., Hinckley, E.L., Meier, C., Barnett, D., Leisso, N., Kampe, T., Tazik, D., Van Aardt, J., Cawse-Nicholson, K., et al., 2013, Neon airborne observation platform test flights—Validation of airborne lidar and hyperspectral data, *in* *Annual Conference*, Baltimore, Md., 26–28 March 2013, *Proceedings*: Bethesda, Md., American Society for Photogrammetry and Remote Sensing, p. 357–368.
- Krause, K.S., Kuester, M.A., Johnson, B.R., McCorkel, J.T., and Kampe, T.U., 2011, Early algorithm development efforts for the National Ecological Observatory Network Airborne Observation Platform imaging spectrometer and waveform LiDAR instruments, *in* *Imaging Spectrometry XVI*, San Diego, Calif., 22–23 August 2011, *Proceedings of SPIE Vol. 8158*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 81580d, at <https://doi.org/10.1117/12.894178>.
- Krylov, A., McCarty, J.L., Potapov, P., Loboda, T., Tyukavina, A., Turubanova, S., and Hansen, M.C., 2014, Remote sensing estimates of stand-replacement fires in Russia, 2002-2011: *Environmental Research Letters*, v. 9, no. 10, article 105007, at <https://doi.org/10.1088/1748-9326/9/10/105007>.
- Krylov, A., Steining, M.K., Hansen, M.C., Potapov, P.V., Stehman, S.V., Gost, A., Noel, J., Talero Ramirez, Y., Tyukavina, A., et al., 2018, Contrasting tree-cover loss and subsequent land cover in two neotropical forest regions—Sample-based assessment of the Mexican Yucatán and Argentine

- Chaco: *Journal of Land Use Science*, v. 13, no. 6, p. 549–564, at <https://doi.org/10.1080/1747423X.2019.1569169>.
- Kučera, J., Barbosa, P., and Strobl, P., 2007, Cumulative sum charts—A novel technique for processing daily time series of MODIS data for burnt area mapping in Portugal, *in* 2007 International Workshop on the Analysis of Multi-Temporal Remote Sensing Images, MultiTemp 2007, Leuven, Belgium, 18–20 July 2007, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), paper no. 4293051, at <https://doi.org/10.1109/MULTITEMP.2007.4293051>.
- Kuczynski, T.K., Field, D.R., Voss, P.R., Radeloff, V.C., and Hagen, A.E., 2000, Integrating demographic and Landsat™ data at a watershed scale: *Journal of the American Water Resources Association*, v. 36, no. 1, p. 215–228, at <https://doi.org/10.1111/j.1752-1688.2000.tb04261.x>.
- Kuemmerle, T., Baskin, L., Leitão, P.J., Prishchepov, A.V., Thonicke, K., and Radeloff, V.C., 2014, Potential impacts of oil and gas development and climate change on migratory reindeer calving grounds across the Russian Arctic: *Diversity and Distributions*, v. 20, no. 4, p. 416–429, at <https://doi.org/10.1111/ddi.12167>.
- Kuemmerle, T., Chaskovskyy, O., Knorn, J., Radeloff, V.C., Kruhlov, I., Keeton, W.S., and Hostert, P., 2009, Forest cover change and illegal logging in the Ukrainian Carpathians in the transition period from 1988 to 2007: *Remote Sensing of Environment*, v. 113, no. 6, p. 1194–1207, at <https://doi.org/10.1016/j.rse.2009.02.006>.
- Kuemmerle, T., Damm, A., and Hostert, P., 2008, A method to detect and correct single-band missing pixels in Landsat TM and ETM+ data: *Computers and Geosciences*, v. 34, no. 5, p. 445–455, at <https://doi.org/10.1016/j.cageo.2007.05.016>.
- Kuemmerle, T., Erb, K., Meyfroidt, P., Müller, D., Verburg, P.H., Estel, S., Haberl, H., Hostert, P., Jepsen, M.R., et al., 2013, Challenges and opportunities in mapping land use intensity globally: *Current Opinion in Environmental Sustainability*, v. 5, no. 5, p. 484–493, at <https://doi.org/10.1016/j.cosust.2013.06.002>.
- Kuemmerle, T., Hickler, T., Olofsson, J., Schurgers, G., and Radeloff, V.C., 2012, Reconstructing range dynamics and range fragmentation of European bison for the last 8000 years: *Diversity and Distributions*, v. 18, no. 1, p. 47–59, at <https://doi.org/10.1111/j.1472-4642.2011.00849.x>.
- Kuemmerle, T., Hickler, T., Olofsson, J., Schurgers, G., and Radeloff, V.C., 2012, Refugee species—Which historic baseline should inform conservation planning?: *Diversity and Distributions*, v. 18, no. 12, p. 1258–1261, at <https://doi.org/10.1111/ddi.12013>.
- Kuemmerle, T., Hostert, P., Radeloff, V.C., Perzanowski, K., and Kruhlov, I., 2007, Post-socialist forest disturbance in the Carpathian border region of Poland, Slovakia, and Ukraine: *Ecological Applications*, v. 17, no. 5, p. 1279–1295, at <https://doi.org/10.1890/06-1661.1>.
- Kuemmerle, T., Hostert, P., Radeloff, V.C., Van Der Linden, S., Perzanowski, K., and Kruhlov, I., 2008, Cross-border comparison of post-socialist farmland abandonment in the Carpathians: *Ecosystems*, v. 11, no. 4, p. 614–628, at <https://doi.org/10.1007/s10021-008-9146-z>.
- Kuemmerle, T., Hostert, P., St-Louis, V., and Radeloff, V.C., 2009, Using image texture to map farmland field size—A case study in Eastern Europe: *Journal of Land Use Science*, v. 4, no. 1-2, p. 85–107, at <https://doi.org/10.1080/17474230802648786>.

- Kuemmerle, T., Kozak, J., Radeloff, V.C., and Hostert, P., 2009, Differences in forest disturbance among land ownership types in Poland during and after socialism: *Journal of Land Use Science*, v. 4, no. 1-2, p. 73–83, at <https://doi.org/10.1080/17474230802645857>.
- Kuemmerle, T., Olofsson, P., Chaskovskyy, O., Baumann, M., Ostapowicz, K., Woodcock, C.E., Houghton, R.A., Hostert, P., Keeton, W.S., and Radeloff, V.C., 2011, Post-Soviet farmland abandonment, forest recovery, and carbon sequestration in western Ukraine: *Global Change Biology*, v. 17, no. 3, p. 1335–1349, at <https://doi.org/10.1111/j.1365-2486.2010.02333.x>.
- Kuemmerle, T., Perzanowski, K., Akçakaya, H.R., Beaudry, F., Van Deelen, T.R., Parnikoza, I., Khojetsky, P., Waller, D.M., and Radeloff, V.C., 2011, Cost-effectiveness of strategies to establish a European bison metapopulation in the Carpathians: *Journal of Applied Ecology*, v. 48, no. 2, p. 317–329, at <https://doi.org/10.1111/j.1365-2664.2010.01954.x>.
- Kuemmerle, T., Perzanowski, K., Chaskovskyy, O., Ostapowicz, K., Halada, L., Bashta, A.T., Kruhlov, I., Hostert, P., Waller, D.M., and Radeloff, V.C., 2010, European Bison habitat in the Carpathian Mountains: *Biological Conservation*, v. 143, no. 4, p. 908–916, at <https://doi.org/10.1016/j.biocon.2009.12.038>.
- Kuemmerle, T., Radeloff, V.C., Perzanowski, K., and Hostert, P., 2006, Cross-border comparison of land cover and landscape pattern in Eastern Europe using a hybrid classification technique: *Remote Sensing of Environment*, v. 103, no. 4, p. 449–464, at <https://doi.org/10.1016/j.rse.2006.04.015>.
- Kuester, M., McCorkel, J.T., Johnson, B., Kampe, T., Johnson, P., Kaptchen, P., Good, B., Smith, K., and Lasnik, J., 2007, A prototype airborne visible imaging spectrometer (PAVIS), *in* Aerospace Conference, Big Sky, Mont., 3–10 March 2007, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1–7, at <https://doi.org/10.1109/AERO.2007.352688>.
- Kuester, M., Thome, K.J., Krause, K., Canham, K., and Whittington, E., 2001, Comparison of surface reflectance measurements from three ASD FieldSpec FR spectroradiometers and one ASD FieldSpec VNIR spectroradiometer, *in* 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 72–74, at <https://doi.org/10.1109/IGARSS.2001.976060>.
- Kuester, M.A., Czapla-Myers, J., Kaptchen, P., Good, W., Lin, T., To, R., Biggar, S., and Thome, K.J., 2008, Development of a heliostat facility for solar-radiation-based calibration of Earth observing sensors, *in* Earth Observing Systems XIII, San Diego, Calif., 11–13 August 2008, Proceedings of SPIE Vol. 7081: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 708119, at <https://doi.org/10.1117/12.794228>.
- Kuester, M.A., Johnson, B.R., Kampe, T.U., and McCorkel, J.T., 2010, Calibration system stability plans for a long-term ecological airborne remote sensing project, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 593–595, at <https://doi.org/10.1109/IGARSS.2010.5651535>.
- Kuester, M.A., Thome, K.J., Biggar, S.F., and Krause, K.S., 2002, Solar radiation based calibration of an airborne radiometer for vicarious calibration of Earth observing sensors, *in* Earth Observing Systems VI, San Diego, Calif., 29 July–3 August 2001, Proceedings of SPIE Vol. 4483: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 85–92, at <https://doi.org/10.1117/12.453475>.

- Kuester, M.A., Thome, K.J., and Reagan, J.A., 2003, Automated statistical approach to Langley evaluation for a solar radiometer: *Applied Optics*, v. 42, no. 24, p. 4914–4921, at <https://doi.org/10.1364/AO.42.004914>.
- Kuester, T., Spengler, D., Barczy, J.F., Segl, K., Hostert, P., and Kaufmann, H., 2013, Simulation of multitemporal and hyperspectral vegetation canopy bidirectional reflectance using detailed virtual 3-D canopy models: *IEEE Transactions on Geoscience and Remote Sensing*, v. 52, no. 4, p. 2096–2108, at <https://doi.org/10.1109/TGRS.2013.2258162>.
- Kuhn, C., de Matos Valerio, A., Ward, N., Loken, L., Sawakuchi, H.O., Kampel, M., Richey, J., Stadler, P., Crawford, J., et al., 2019, Performance of Landsat-8 and Sentinel-2 surface reflectance products for river remote sensing retrievals of chlorophyll-a and turbidity: *Remote Sensing of Environment*, v. 224, p. 104–118, at <https://doi.org/10.1016/j.rse.2019.01.023>.
- Kukal, M., Irmak, S., and Kilic, A., 2017, Long-term spatial and temporal maize and soybean evapotranspiration trends derived from ground-based and satellite-based datasets over the great plains: *Journal of Irrigation and Drainage Engineering*, v. 143, no. 9, article 04017031, at [https://doi.org/10.1061/\(ASCE\)IR.1943-4774.0001212](https://doi.org/10.1061/(ASCE)IR.1943-4774.0001212).
- Kulawardhana, R.W., Thenkabail, P.S., Masiyandima, M., Biradar, C.M., Vithanage, J.C., Finlayson, M., Gunasinghe, S., and Alankara, R., 2006, Evaluation of different methods for delineation of wetlands in Limpopo River Basin using Landsat ETM+ and SRTM data, *in* Looking at wetlands from space, International Symposium on GlobWetland, 1st, Frascati, Rome, 19–20 October 2006, Proceedings: Noordwijk, Netherlands, European Space Agency, p. 1–4, at <http://hdl.handle.net/10568/38515>.
- Kulawardhana, R.W., Thenkabail, P.S., Vithanage, J., Biradar, C., Islam, M.A., Gunasinghe, S., and Alankara, R., 2007, Evaluation of the wetland mapping methods using Landsat ETM+ and SRTM data: *Journal of Spatial Hydrology*, v. 7, no. 2, p. 62–96, at <http://hdl.handle.net/10568/21603>.
- Kumar, K.K., Kamala, K., Rajagopalan, B., Hoerling, M.P., Eischeid, J.K., Patwardhan, S.K., Srinivasan, G., Goswami, B.N., and Nemani, R.R., 2011, The once and future pulse of Indian monsoonal climate: *Climate Dynamics*, v. 36, no. 11-12, p. 2159–2170, at <https://doi.org/10.1007/s00382-010-0974-0>.
- Kumar, S.S., and Roy, D.P., 2018, Global operational land imager Landsat-8 reflectance-based active fire detection algorithm: *International Journal of Digital Earth*, v. 11, no. 2, p. 154–178, at <https://doi.org/10.1080/17538947.2017.1391341>.
- Kumar, S.S., Roy, D.P., Boschetti, L., and Kremens, R., 2011, Exploiting the power law distribution properties of satellite fire radiative power retrievals—A method to estimate fire radiative energy and biomass burned from sparse satellite observations: *Journal of Geophysical Research Atmospheres*, v. 116, no. 19, article D19203, at <https://doi.org/10.1029/2011JD015676>.
- Kumar, S.S., Roy, D.P., Cochrane, M.A., Souza Jr, C.M., Barber, C.P., and Boschetti, L., 2014, A quantitative study of the proximity of satellite detected active fires to roads and rivers in the Brazilian tropical moist forest biome: *International Journal of Wildland Fire*, v. 23, no. 4, p. 532–543, at <https://doi.org/10.1071/WF13106>.
- Kumar, S.V., Zaitchik, B.F., Peters-Lidard, C.D., Rodell, M., Reichle, R., Li, B., Jasinski, M., Mocko, D., Getirana, A., et al., 2016, Assimilation of Gridded GRACE terrestrial water storage estimates in the North American land data assimilation system: *Journal of Hydrometeorology*, v. 17, no. 7, p. 1951–1972, at <https://doi.org/10.1175/JHM-D-15-0157.1>.

- Kumar, U., Ganguly, S., Milesi, C., and Nemani, R.R., 2015, Fully constrained linear subpixel classification algorithms—A comparative analysis based on heuristic, *in* World Congress on Engineering and Computer Science, WCECS 2015, San Francisco, Calif., 21–23 October 2015, Proceedings: Hong Kong, International Association of Engineers, p. 764–769, at http://www.iaeng.org/publication/WCECS2015/WCECS2015_pp764-769.pdf.
- Kumar, U., Ganguly, S., Nemani, R.R., Raja, K.S., Milesi, C., Sinha, R., Michaelis, A., Votava, P., Hashimoto, H., et al., 2017, Exploring subpixel learning algorithms for estimating global land cover fractions from satellite data using high performance computing: *Remote Sensing*, v. 9, no. 11, article 1105, at <https://doi.org/10.3390/rs9111105>.
- Kumar, U., Milesi, C., Ganguly, S., Raja, S.K., and Nemani, R.R., 2015, Simplex projection for land cover information mining from Landsat-5 TM data, *in* 16th IEEE International Conference on Information Reuse and Integration, IRI 2015, San Francisco, Calif., 13–15 August 2015, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 244–251, at <https://doi.org/10.1109/IRI.2015.48>.
- Kumar, U., Milesi, C., Nemani, R.R., and Basu, S., 2015, Multi-sensor multi-resolution image fusion for improved vegetation and urban area classification, *in* ISPRS International Workshop on Image and Data Fusion, IWIDF 2015, Kona, Hawaii, 21–23 July 2015, ISPRS Archives Vol. XL-7/W4: International Society for Photogrammetry and Remote Sensing, p. 51–58, at <https://doi.org/10.5194/isprsarchives-XL-7-W4-51-2015>.
- Kumar, U., Milesi, C., Nemani, R.R., Raja, S.K., Ganguly, S., and Wang, E., 2015, Sparse unmixing via variable splitting and augmented lagrangian for vegetation and urban area classification using Landsat data, *in* ISPRS International Workshop on Image and Data Fusion, IWIDF 2015, Kona, Hawaii, 21–23 July 2015, ISPRS Archives Vol. XL-7/W4: International Society for Photogrammetry and Remote Sensing, p. 59–65, at <https://doi.org/10.5194/isprsarchives-XL-7-W4-59-2015>.
- Kumar, U., Milesi, C., Raja, S.K., Ganguly, S., and Nemani, R.R., 2015, Unconstrained linear spectral mixture models for spatial information extraction—A comparative study, *in* 16th IEEE International Conference on Information Reuse and Integration, IRI 2015, San Francisco, Calif., 13–15 August 2015, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 574–581, at <https://doi.org/10.1109/IRI.2015.91>.
- Kumar, U., Milesi, C., Raja, S.K., Nemani, R.R., Ganguly, S., and Wang, W., 2015, Land cover fraction estimation with global endmembers using collaborative SUNSAL, *in* Remote Sensing and Modeling of Ecosystems for Sustainability XII, San Diego, Calif., 11–12 August 2015, Proceedings of SPIE Vol. 9610: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 96100b, at <https://doi.org/10.1117/12.2192173>.
- Kumar, U., Milesi, C., Raja, S.K., Nemani, R.R., Ganguly, S., Wang, W., Votava, P., Michaelis, A., and Basu, S., 2017, Unmixing algorithms—A review of techniques for spectral detection and classification of land cover from mixed pixels on NASA Earth exchange, *in* Srivastava, A.N., Nemani, R., and Steinhäuser, K., eds., *Large-scale machine learning in the Earth sciences*: New York, N.Y., Chapman and Hall/CRC, p. 131–174, at <https://doi.org/10.4324%2F9781315371740-8>.
- Kundurthy, P., Barnes, R., Becker, A.C., Agol, E., Williams, B.F., Gorelick, N.S., and Rose, A., 2013, Apostle—Longterm transit monitoring and stability analysis of XO-2b: *Astrophysical Journal*, v. 770, no. 1, article 36, at <https://doi.org/10.1088/0004-637X/770/1/36>.

- Kuo, S.D., and Schott, J.R., 1997, Synthetic image generation of factory stack and cooling tower plumes, *in* *Electro-Optical Technology for Remote Chemical Detection and Identification II*, Orlando, Fla., 21–25 April 1997, Proceedings of SPIE Vol. 3082: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 175–186, at <https://doi.org/10.1117/12.280928>.
- Kustas, W., and Anderson, M.C., 2009, Advances in thermal infrared remote sensing for land surface modeling: *Agricultural and Forest Meteorology*, v. 149, no. 12, p. 2071–2081, at <https://doi.org/10.1016/j.agrformet.2009.05.016>.
- Kustas, W.P., Agam, N., Anderson, M.C., Li, F., and Colaizzi, P.D., 2007, Potential errors in the application of thermal-based energy balance models with coarse resolution data, *in* *Remote Sensing for Agriculture, Ecosystems, and Hydrology IX*, Florence, Italy, 18–20 September 2007, Proceedings of SPIE Vol. 6742: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 674208, at <https://doi.org/10.1117/12.737776>.
- Kustas, W.P., Alfieri, J.G., Anderson, M.C., Colaizzi, P.D., Prueger, J.H., Chavez, J.L., Neale, C.M.U., Dulaney, W., Evett, S.R., et al., 2012, Utility of the thermal-based Dual-Temperature-Difference technique under strongly advective conditions during BEAREX08, *in* *Remote Sensing and Hydrology 2010*, Jackson Hole, Wyo., 27–30 September 2010, IAHS Publication 352: Wallingford, UK, International Association of Hydrological Sciences, p. 145–148.
- Kustas, W.P., Alfieri, J.G., Anderson, M.C., Colaizzi, P.D., Prueger, J.H., Evett, S.R., Neale, C.M.U., French, A.N., Hipps, L.E., et al., 2012, Evaluating the two-source energy balance model using local thermal and surface flux observations in a strongly advective irrigated agricultural area: *Advances in Water Resources*, v. 50, p. 120–133, at <https://doi.org/10.1016/j.advwatres.2012.07.005>.
- Kustas, W.P., Alfieri, J.G., Nieto, H., Wilson, T.G., Gao, F., and Anderson, M.C., 2019, Utility of the two-source energy balance (TSEB) model in vine and interrow flux partitioning over the growing season: *Irrigation Science*, v. 37, no. 3, p. 375–388, at <https://doi.org/10.1007/s00271-018-0586-8>.
- Kustas, W.P., Anderson, M.C., Alfieri, J.G., Knipppper, K., Torres-Rua, A., Parry, C.K., Nieto, H., Agam, N., White, W.A., et al., 2018, The grape remote sensing atmospheric profile and evapotranspiration experiment: *Bulletin of the American Meteorological Society*, v. 99, no. 9, p. 1791–1812, at <https://doi.org/10.1175/BAMS-D-16-0244.1>.
- Kustas, W.P., Anderson, M.C., French, A.N., and Vickers, D., 2006, Using a remote sensing field experiment to investigate flux-footprint relations and flux sampling distributions for tower and aircraft-based observations: *Advances in Water Resources*, v. 29, no. 2, p. 355–368, at <https://doi.org/10.1016/j.advwatres.2005.05.003>.
- Kustas, W.P., Anderson, M.C., Norman, J.M., and Li, F., 2007, Utility of radiometric-aerodynamic temperature relations for heat flux estimation: *Boundary-Layer Meteorology*, v. 122, no. 1, p. 167–187, at <https://doi.org/10.1007/s10546-006-9093-1>.
- Kustas, W.P., Anderson, M.C., Semmens, K.A., Alfieri, J.G., Gao, F., Hain, C.R., and Cammalleri, C., 2016, A thermal-based remote sensing modelling system for estimating crop water use and stress from field to regional scales: *Acta Horticulturae*, v. 1112, p. 71–80, at <https://doi.org/10.17660/ActaHortic.2016.1112.10>.

- Kustas, W.P., French, A.N., Hatfield, J.L., Jackson, T.J., Moran, M.S., Rango, A., Ritchie, J.C., and Schmugge, T.J., 2003, Remote sensing research in hydrometeorology: Photogrammetric Engineering and Remote Sensing, v. 69, no. 6, p. 631–646, at <https://doi.org/10.14358/PERS.69.6.631>.
- Kustas, W.P., Humes, K.S., Norman, J.M., and Moran, M.S., 1996, Single- and dual-source modeling of surface energy fluxes with radiometric surface temperature: Journal of Applied Meteorology, v. 35, no. 1, p. 110–121, at [https://doi.org/10.1175/1520-0450\(1996\)035<0110:SADSMO>2.0.CO;2](https://doi.org/10.1175/1520-0450(1996)035<0110:SADSMO>2.0.CO;2).
- Kustas, W.P., Jackson, T.J., Prueger, J.H., Hatfield, J.L., and Anderson, M.C., 2003, Remote sensing field experiments evaluate retrieval algorithms and land-atmosphere modeling: Eos, v. 84, no. 45, p. 485–493, at <https://doi.org/10.1029/2003EO450002>.
- Kustas, W.P., Moran, M.S., and Meyers, T.P., 2012, The Bushland Evapotranspiration and Agricultural Remote Sensing Experiment 2008 (BEAREX08) Special Issue: Advances in Water Resources, v. 50, p. 1–3, at <https://doi.org/10.1016/j.advwatres.2012.11.006>.
- Kustas, W.P., Nieto, H., Morillas, L., Anderson, M.C., Alfieri, J.G., Hipps, L.E., Villagarcía, L., Domingo, F., and Garcia, M., 2016, Revisiting the paper “Using radiometric surface temperature for surface energy flux estimation in Mediterranean drylands from a two-source perspective”: Remote Sensing of Environment, v. 184, p. 645–653, at <https://doi.org/10.1016/j.rse.2016.07.024>.
- Kustas, W.P., Norman, J.M., Anderson, M.C., and French, A.N., 2003, Estimating subpixel surface temperatures and energy fluxes from the vegetation index-radiometric temperature relationship: Remote Sensing of Environment, v. 85, no. 4, p. 429–440, at [https://doi.org/10.1016/S0034-4257\(03\)00036-1](https://doi.org/10.1016/S0034-4257(03)00036-1).
- Kwan, C., Budavari, B., Gao, F., and Zhu, X., 2018, A hybrid color mapping approach to fusing MODIS and Landsat images for forward prediction: Remote Sensing, v. 10, no. 4, article 520, at <https://doi.org/10.3390/rs10040520>.
- Kwan, C., Zhu, X., Gao, F., Chou, B., Perez, D., Li, J., Shen, Y., Koperski, K., and Marchisio, G., 2018, Assessment of spatiotemporal fusion algorithms for planet and worldview images: Sensors, v. 18, no. 4, article 1051, at <https://doi.org/10.3390/s18041051>.
- la Cecilia, D., Toffolon, M., Woodcock, C.E., and Fagherazzi, S., 2016, Interactions between river stage and wetland vegetation detected with a Seasonality Index derived from LANDSAT images in the Apalachicola delta, Florida: Advances in Water Resources, v. 89, p. 10–23, at <https://doi.org/10.1016/j.advwatres.2015.12.019>.
- Lachir, A., Bounoua, L., Zhang, P., Thome, K.J., and Messouli, M., 2016, Modeling the urban impact on semiarid surface climate—A case study in Marrakech, Morocco: Canadian Journal of Remote Sensing, v. 42, no. 4, p. 379–395, at <https://doi.org/10.1080/07038992.2016.1194746>.
- Lakshmi, V., Alsdorf, D., Anderson, M.C., Biancamaria, S., Cosh, M., Entin, J., Huffman, G., Kustas, W., Van Oevelen, P., et al., 2014, Remote sensing of the terrestrial water cycle: Washington, D.C., AGU and John Wiley & Sons, 556 p., at <https://doi.org/10.1002/9781118872086>.
- LaMarr, J.H., Thome, K.J., and Spyak, P.R., 1997, Verification and characterization of an autotracking solar radiometer, in Earth Observing Systems II, San Diego, Calif., 27 July–1 August 1997, Proceedings of SPIE Vol. 3117: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 262–268, at <https://doi.org/10.1117/12.283812>.
- Lamb, B.T., Dennison, P.E., Hively, W.D., Kokaly, R.F., Serbin, G., Wu, Z., Dabney, P.W., Masek, J.G., Campbell, M., and Daughtry, C.S.T., 2022, Optimizing Landsat next shortwave infrared bands for

- crop residue characterization: *Remote Sensing*, v. 14, no. 23, article 6128, at <https://doi.org/10.3390/rs14236128>.
- Lamquin, N., Woolliams, E., Bruniquel, V., Gascon, F., Gorroño, J., Govaerts, Y., Leroy, V., Lonjou, V., Alhammoud, B., et al., 2019, An inter-comparison exercise of Sentinel-2 radiometric validations assessed by independent expert groups: *Remote Sensing of Environment*, v. 233, article 111369, at <https://doi.org/10.1016/j.rse.2019.111369>.
- Lang, M.W., McCarty, G.W., and Anderson, M.C., 2008, Wetland hydrology at a watershed scale—Dynamic information for adaptive management: *Journal of Soil and Water Conservation*, v. 63, no. 2, article 49A, at <https://doi.org/10.2489/jswc.63.2.49A>.
- Langford, J., Niemann, O., Frazer, G.W., Wulder, M.A., and Nelson, T., 2006, Exploring small footprint lidar intensity data in a forested environment, in 2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Denver, Colo., 31 July–4 August 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2416–2419, at <https://doi.org/10.1109/IGARSS.2006.626>.
- Langford, W.T., Gergel, S.E., Dietterich, T.G., and Cohen, W.B., 2006, Map misclassification can cause large errors in landscape pattern indices—Examples from habitat fragmentation: *Ecosystems*, v. 9, no. 3, p. 474–488, at <https://doi.org/10.1007/s10021-005-0119-1>.
- Langley, K., Kohler, J., Matsuoka, K., Sinisalo, A., Scambos, T.A., Neumann, T., Muto, A., Winther, J.G., and Albert, M., 2011, Recovery Lakes, East Antarctica—Radar assessment of sub-glacial water extent: *Geophysical Research Letters*, v. 38, no. 5, article L05501, at <https://doi.org/10.1029/2010GL046094>.
- Langley, K., Tinto, K., Block, A., Bell, R., Kohler, J., and Scambos, T.A., 2014, Onset of fast ice flow in recovery ice stream, east Antarctica—A comparison of potential causes: *Journal of Glaciology*, v. 60, no. 223, p. 1007–1014, at <https://doi.org/10.3189/2014JoG14J067>.
- Langner, A., Achard, F., Vancutsem, C., Pekel, J.F., and Simonetti, D., 2015, Harmonization of pan-tropical biomass maps using an R2-weighted data fusion approach - A case study for the Amazon biome, in 2015 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Milan, Italy, 26–31 July 2015, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2056–2059, at <https://doi.org/10.1109/IGARSS.2015.7326205>.
- Langner, A., Achard, F., Vancutsem, C., Pekel, J.F., Simonetti, D., Grassi, G., Kitayama, K., and Nakayama, M., 2015, Assessment of above-ground biomass of Borneo forests through a new data-fusion approach combining two pan-tropical biomass maps: *Land*, v. 4, no. 3, p. 656–669, at <https://doi.org/10.3390/land4030656>.
- Laosuwan, T., Uttaruk, P., Klinhom, U., Bntthep, C., Samek, J.H., and Skole, D.L.L., 2011, The development of web-based GIS application for agroforestry carbon sequestration offset project in Thailand: *International Journal of Geoinformatics*, v. 7, no. 2, p. 41–47, at <https://creativecommons.gsc.osaka-cu.ac.jp/IJG/article/view/540>.
- Laporte, N.T., Goetz, S.J., Justice, C.O., and Heinicke, M., 1998, A new land cover map of central africa derived from multi-resolution, multi-temporal avhrr data: *International Journal of Remote Sensing*, v. 19, no. 18, p. 3537–3550, at <https://doi.org/10.1080/014311698213803>.
- Laraby, K.G., and Schott, J.R., 2018, Uncertainty estimation method and Landsat 7 global validation for the Landsat surface temperature product: *Remote Sensing of Environment*, v. 216, p. 472–481, at <https://doi.org/10.1016/j.rse.2018.06.026>.

- Laraby, K.G., Schott, J.R., and Raqueno, N., 2016, Developing a confidence metric for the Landsat land surface temperature product, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXII, Baltimore, Md., 18–21 April 2016, Proceedings of SPIE Vol. 9840: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 98400c, at <https://doi.org/10.1117/12.2222582>.
- Lark, T.J., Mueller, R.M., Johnson, D.M., and Gibbs, H.K., 2017, Measuring land-use and land-cover change using the U.S. department of agriculture's cropland data layer—Cautions and recommendations: *International Journal of Applied Earth Observation and Geoinformation*, v. 62, p. 224–235, at <https://doi.org/10.1016/j.jag.2017.06.007>.
- Larkin, C.C., Kwit, C., Wunderle, J.M., Helmer, E.H., Stevens, M.H.H., Roberts, M.T.K., and Ewert, D.N., 2012, Disturbance type and plant successional communities in Bahamian dry forests: *Biotropica*, v. 44, no. 1, p. 10–18, at <https://doi.org/10.1111/j.1744-7429.2011.00771.x>.
- Lasko, K., Vadrevu, K.P., Tran, V.T., Ellicott, E., Nguyen, T.T.N., Bui, H.Q., and Justice, C.O., 2017, Satellites may underestimate rice residue and associated burning emissions in Vietnam: *Environmental Research Letters*, v. 12, no. 8, article 085006, at <https://doi.org/10.1088/1748-9326/aa751d>.
- Lasko, K., Vadrevu, K.P., Tran, V.T., and Justice, C.O., 2018, Mapping double and single crop paddy rice with Sentinel-1A at varying spatial scales and polarizations in Hanoi, Vietnam: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 11, no. 2, p. 498–512, at <https://doi.org/10.1109/JSTARS.2017.2784784>.
- Latorre Carmona, P., Alonso, L., Pla, F., Moreno, J.E., and Schaaf, C.B., 2011, Affine illumination compensation on hyperspectral/multiangular remote sensing images, *in* Image Analysis and Recognition—8th International Conference, ICIAR 2011, Burnaby, BC, Canada, 22–24 June 2011, Proceedings, Part II: Berlin, Germany, Springer, p. 360–369, at https://doi.org/10.1007/978-3-642-21596-4_36.
- Lau, I.C., Ong, C.C.H., Thome, K.J., Mueller, A., Heiden, U., Czapla-Myers, J., Biggar, S., Anderson, N., McGonigle, L., et al., 2018, Intercomparison of field methods for acquiring ground reflectance at Railroad Valley playa for spectral calibration of satellite data, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 186–188, at <https://doi.org/10.1109/IGARSS.2018.8519109>.
- Lauf, S., Haase, D., Hostert, P., Lakes, T., and Kleinschmit, B., 2012, Uncovering land-use dynamics driven by human decision-making—A combined model approach using cellular automata and system dynamics: *Environmental Modelling and Software*, v. 27-28, p. 71–82, at <https://doi.org/10.1016/j.envsoft.2011.09.005>.
- Laurent, M., Thome, K.J., and Cattrall, C., 2004, MODTRAN-based retrieval of column water vapor from solar transmittance, *in* Imaging Spectrometry X, Denver, Colo., 2–4 August 2004, Proceedings of SPIE Vol. 5546: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 115–125, at <https://doi.org/10.1117/12.559958>.
- Lavoie, C., Domack, E.W., Pettit, E.C., Scambos, T.A., Larter, R.D., Schenke, H.W., Yoo, K.C., Gutt, J., Wellner, J., et al., 2015, Configuration of the Northern Antarctic Peninsula Ice Sheet at LGM based on a new synthesis of seabed imagery: *Cryosphere*, v. 9, no. 2, p. 613–629, at <https://doi.org/10.5194/tc-9-613-2015>.

- Law, B.E., Turner, D., Campbell, J., Lefsky, M., Guzy, M., Sun, O., Van Tuyl, S., and Cohen, W.B.B., 2006, Carbon fluxes across regions—Observational constraints at multiple scales, *in* Wu, J., Jones, K.B., Li, H., and Loucks, O.L., eds., *Scaling and uncertainty analysis in ecology—Methods and applications*: Dordrecht, Netherlands, Springer, p. 167–190, at https://doi.org/10.1007/1-4020-4663-4_9.
- Law, B.E., Turner, D., Campbell, J., Sun, O.J., Van Tuyl, S., Ritts, W.D., and Cohen, W.B., 2004, Disturbance and climate effects on carbon stocks and fluxes across Western Oregon USA: *Global Change Biology*, v. 10, no. 9, p. 1429–1444, at <https://doi.org/10.1111/j.1365-2486.2004.00822.x>.
- Lawler, J.J., Lewis, D.J., Nelson, E., Plantinga, A.J., Polasky, S., Withey, J.C., Helmers, D.P., Martinuzzi, S., Pennington, D., and Radeloff, V.C., 2014, Projected land-use change impacts on ecosystem services in the United States: *Proceedings of the National Academy of Sciences of the United States of America*, v. 111, no. 20, p. 7492–7497, at <https://doi.org/10.1073/pnas.1405557111>.
- Lawler, J.J., O'Connor, R.J., Hunsaker, C.T., Jones, K.B., Loveland, T.R., and White, D., 2004, The effects of habitat resolution on models of avian diversity and distributions—A comparison of two land-cover classifications: *Landscape Ecology*, v. 19, no. 5, p. 517–532, at <https://doi.org/10.1023/B:LAND.0000036151.28327.01>.
- Lazzara, M.A., Jezek, K.C., Scambos, T.A., MacAyeal, D.R., and Van Der Veen, C.J., 2008, On the recent calving of icebergs from the Ross ice shelf: *Polar Geography*, v. 31, no. 1-2, p. 15–26, at <https://doi.org/10.1080/10889370802175937>.
- Le, C., Hu, C., English, D., Cannizzaro, J., Chen, Z., Kovach, C., Anastasiou, C.J., Zhao, J., and Carder, K.L., 2013, Inherent and apparent optical properties of the complex estuarine waters of Tampa Bay—What controls light?: *Estuarine, Coastal and Shelf Science*, v. 117, p. 54–69, at <https://doi.org/10.1016/j.ecss.2012.09.017>.
- Le Moigne, J., Netanyahu, N.S., Masek, J.G., Mount, D.M., and Goward, S.N., 2001, Robust matching of wavelet features for sub-pixel registration of Landsat data, *in* 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 706–708, at <https://doi.org/10.1109/IGARSS.2001.976609>.
- Le Moigne, J., Netanyahu, N.S., Masek, J.G., Mount, D.M., Goward, S.N., and Honzak, M., 2000, Geo-registration of Landsat data by robust matching of wavelet features, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 1610–1612, at <https://doi.org/10.1109/IGARSS.2000.857287>.
- Le, T.H., Thanh Nguyen, T.N., Lasko, K., Ilavajhala, S., Vadrevu, K.P., and Justice, C.O., 2014, Vegetation fires and air pollution in Vietnam: *Environmental Pollution*, v. 195, p. 267–275, at <https://doi.org/10.1016/j.envpol.2014.07.023>.
- Lebsock, M., Takahashi, H., Roy, R., Kurowski, M.J., and Oreopoulos, L., 2022, Understanding errors in cloud liquid water path retrievals derived from CloudSat path-integrated attenuation: *Journal of Applied Meteorology and Climatology*, v. 61, no. 8, p. 955–967, at <https://doi.org/10.1175/JAMC-D-21-0235.1>.
- Leckie, D.G., Gillis, M.D., and Wulder, M.A., 2002, Deforestation estimation for Canada under the Kyoto protocol—A design study: *Canadian Journal of Remote Sensing*, v. 28, no. 5, p. 672–678, at <https://doi.org/10.5589/m02-062>.

- Leckie, D.G., Walsworth, N., Dechka, J., and Wulder, M.A., 2002, An investigation of two date unsupervised classification in the context of a national program for Landsat based forest change mapping, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1307–1311, at <https://doi.org/10.1109/IGARSS.2002.1026099>.
- LeCompte, M., Bindschadler, R.A., Hayden, L.B., Jefferson, M., Bridgers, Y.S., Lawrence, R., Bevins, J., Brownlow, J., Evans, R., et al., 2013, Reduction and loss of an ice shelf in elizabeth city state university bay, antarctica—1972-2003: IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, v. 6, no. 3, p. 1509–1515, at <https://doi.org/10.1109/JSTARS.2013.2258325>.
- LeDoux, C.M., Hulbe, C.L., Forbes, M.P., Scambos, T.A., and Alley, K., 2017, Structural provinces of the Ross Ice Shelf, Antarctica: Annals of Glaciology, v. 58, no. 75, pt. 1, p. 88–998, at <https://doi.org/10.1017/aog.2017.24>.
- LeDrew, E.F., Holden, H., Wulder, M.A., Derksen, C., and Newman, C., 2004, A spatial statistical operator applied to multirate satellite imagery for identification of coral reef stress: Remote Sensing of Environment, v. 91, no. 3–4, p. 271–279, at <https://doi.org/10.1016/j.rse.2003.10.007>.
- LeDrew, E.F., Wulder, M.A., and Holden, H., 2000, Change detection of satellite imagery for reconnaissance of stressed tropical corals, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2678–2680, at <https://doi.org/10.1109/IGARSS.2000.859679>.
- Lee, C.K., Seo, K.W., Han, S.C., Yu, J., and Scambos, T.A., 2012, Ice velocity mapping of Ross Ice Shelf, Antarctica by matching surface undulations measured by ICESat laser altimetry: Remote Sensing of Environment, v. 124, p. 251–258, at <https://doi.org/10.1016/j.rse.2012.05.017>.
- Lee, D., Oreopoulos, L., and Cho, N., 2020, An evaluation of clouds and radiation in a large-scale atmospheric model using a cloud vertical structure classification: Geoscientific Model Development, v. 13, no. 2, p. 673–684, at <https://doi.org/10.5194/gmd-13-673-2020>.
- Lee, D., Oreopoulos, L., Huffman, G.J., Rossow, W.B., and Kang, I.S., 2013, The precipitation characteristics of isccp tropical weather states: Journal of Climate, v. 26, no. 3, p. 772–788, at <https://doi.org/10.1175/JCLI-D-11-00718.1>.
- Lee, D., Sud, Y.C., Oreopoulos, L., Kim, K.M., Lau, W.K., and Kang, I.S., 2014, Modeling the influences of aerosols on pre-monsoon circulation and rainfall over Southeast Asia: Atmospheric Chemistry and Physics, v. 14, no. 13, p. 6853–6866, at <https://doi.org/10.5194/acp-14-6853-2014>.
- Lee, H., Durand, M., Jung, H.C., Alsdorf, D., Shum, C.K., and Sheng, Y., 2010, Characterization of surface water storage changes in Arctic lakes using simulated SWOT measurements: International Journal of Remote Sensing, v. 31, no. 14, p. 3931–3953, at <https://doi.org/10.1080/01431161.2010.483494>.
- Lee, J.N., Cahalan, R.F., and Wu, D.L., 2015, The 27-day rotational variations in total solar irradiance observations—From SORCE/TIM, ACRIMSAT/ACRIM III, and SOHO/VIRGO: Journal of Atmospheric and Solar-Terrestrial Physics, v. 132, p. 64–73, at <https://doi.org/10.1016/j.jastp.2015.07.001>.

- Lee, J.N., Cahalan, R.F., and Wu, D.L., 2016, Solar rotational modulations of spectral irradiance and correlations with the variability of total solar irradiance: *Journal of Space Weather and Space Climate*, v. 6, article A33, at <https://doi.org/10.1051/swsc/2016028>.
- Lee, K.S., Cohen, W.B., Kennedy, R.E., Maersperger, T.K., and Gower, S.T., 2004, Hyperspectral versus multispectral data for estimating leaf area index in four different biomes: *Remote Sensing of Environment*, v. 91, no. 3–4, p. 508–520, at <https://doi.org/10.1016/j.rse.2004.04.010>.
- Lee, M., Kloog, I., Chudnovsky, A., Lyapustin, A.I., Wang, Y., Melly, S., Coull, B., Koutrakis, P., and Schwartz, J., 2016, Spatiotemporal prediction of fine particulate matter using high-resolution satellite images in the Southeastern US 2003–2011: *Journal of Exposure Science and Environmental Epidemiology*, v. 26, no. 4, p. 377–384, at <https://doi.org/10.1038/jes.2015.41>.
- Lee, S., McCarty, G.W., Moglen, G.E., Lang, M.W., Nathan Jones, C., Palmer, M., Yeo, I.Y., Anderson, M., Sadeghi, A.M., and Rabenhorst, M.C., 2020, Seasonal drivers of geographically isolated wetland hydrology in a low-gradient, Coastal Plain landscape: *Journal of Hydrology*, v. 583, article 124608, at <https://doi.org/10.1016/j.jhydrol.2020.124608>.
- Lee, S., Qi, J., Kim, H., McCarty, G.W., Moglen, G.E., Anderson, M., Zhang, X., and Du, L., 2021, Utility of remotely sensed evapotranspiration products to assess an improved model structure: *Sustainability*, v. 13, no. 4, article 2375, at <https://doi.org/10.3390/su13042375>.
- Lee, Z., Arnone, R., Carder, K.L., and He, M., 2007, Determination of primary bands for global ocean-color remote sensing, *in* Coastal Ocean Remote Sensing, San Diego, Calif., 26–27 August 2007, Proceedings of SPIE Vol. 6680: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 66800d, at <https://doi.org/10.1117/12.731940>.
- Lee, Z., and Carder, K.L., 2000, Band-ratio or spectral-curvature algorithms for satellite remote sensing?: *Applied Optics*, v. 39, no. 24, p. 4377–4380, at <https://doi.org/10.1364/AO.39.004377>.
- Lee, Z., and Carder, K.L., 2001, Hyperspectral remote sensing of shallow water environments—A review, *in* Hyperspectral Remote Sensing of the Ocean, Sendai, Japan, 9–11 October 2000, Proceedings of SPIE Vol. 4154: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 83–94, at <https://doi.org/10.1117/12.411661>.
- Lee, Z., and Carder, K.L., 2002, Effect of spectral band numbers on the retrieval of water column and bottom properties from ocean color data: *Applied Optics*, v. 41, no. 12, p. 2191–2201, at <https://doi.org/10.1364/AO.41.002191>.
- Lee, Z., and Carder, K.L., 2004, Absorption spectrum of phytoplankton pigments derived from hyperspectral remote-sensing reflectance: *Remote Sensing of Environment*, v. 89, no. 3, p. 361–368, at <https://doi.org/10.1016/j.rse.2003.10.013>.
- Lee, Z., and Carder, K.L., 2005, Hyperspectral remote sensing, *in* Miller, R.L., Del Castillo, C.E., and Mckee, B.A., eds., *Remote sensing of coastal aquatic environments*: Dordrecht, Netherlands, Springer, p. 181–204, at https://doi.org/10.1007/978-1-4020-3100-7_8.
- Lee, Z., Carder, K.L., Arnone, R., and He, M., 2007, Determination of primary spectral bands for remote sensing of aquatic environments: *Sensors*, v. 7, no. 12, p. 3428–3441, at <https://doi.org/10.3390/s7123428>.
- Lee, Z., Carder, K.L., Chen, R.F., and Peacock, T.G., 2001, Properties of the water column and bottom derived from Airborne Visible Infrared Imaging Spectrometer (AVIRIS) data: *Journal of*

- Geophysical Research Oceans, v. 106, no. C6, p. 11639–11651, at <https://doi.org/10.1029/2000jc000554>.
- Lee, Z., Carder, K.L., and Du, K., 2004, Effects of molecular and particle scatterings on the model parameter for remote-sensing reflectance: *Applied Optics*, v. 43, no. 25, p. 4957–4964, at <https://doi.org/10.1364/AO.43.004957>.
- Lee, Z., Carder, K.L., Mobley, C.D., Steward, R.G., and Patch, J.S., 1998, Hyperspectral remote sensing for shallow waters. I. A semianalytical model: *Applied Optics*, v. 37, no. 27, p. 6329–6338, at <https://doi.org/10.1364/AO.37.006329>.
- Lee, Z., Carder, K.L., Mobley, C.D., Steward, R.G., and Patch, J.S., 1999, Hyperspectral remote sensing for shallow waters. II. Deriving bottom depths and water properties by optimization: *Applied Optics*, v. 38, no. 18, p. 3831–3843, at <https://doi.org/10.1364/AO.38.003831>.
- Lee, Z., Carder, K.L., Patch, J., Barnard, A., Otis, D., and Trees, C.C., 2003, Water properties derived from water color versus measured from water sample—Application of a new color-inversion algorithm, in *Ocean Remote Sensing and Applications*, Hangzhou, China, 24–26 October 2002, Proceedings of SPIE Vol. 4892: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 143–152, at <https://doi.org/10.1117/12.466048>.
- Lee, Z., Carder, K.L., Peacock, T.G., and Steward, R.G., 1997, Remote sensing reflectance measured with and without a vertical polarizer, in *Ocean Optics XIII*, Halifax, NS, Canada, 22–25 October 1996, Proceedings of SPIE Vol. 2963: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 483–488, at <https://doi.org/10.1117/12.266489>.
- Lee, Z., Carder, K.L., Steward, R.G., Peacock, T.G., Davis, C.O., and Mueller, J.L., 1997, Remote sensing reflectance and inherent optical properties of oceanic waters derived from above-water measurements, in *Ocean Optics XIII*, Halifax, NS, Canada, 22–25 October 1996, Proceedings of SPIE Vol. 2963: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 160–166, at <https://doi.org/10.1117/12.266436>.
- Lee, Z., Pahlevan, N., Ahn, Y.H., Greb, S., and O'Donnell, D., 2013, Robust approach to directly measuring water-leaving radiance in the field: *Applied Optics*, v. 52, no. 8, p. 1693–1701, at <https://doi.org/10.1364/AO.52.001693>.
- Lee, Z.P., Carder, K.L., and Arnone, R.A., 2002, Deriving inherent optical properties from water color—A multiband quasi-analytical algorithm for optically deep waters: *Applied Optics*, v. 41, no. 27, p. 5755–5772, at <https://doi.org/10.1364/AO.41.005755>.
- Lee, Z.P., Carder, K.L., Marra, J., Steward, R.G., and Perry, M.J., 1996, Estimating primary production at depth from remote sensing: *Applied Optics*, v. 35, no. 3, p. 463–474, at <https://doi.org/10.1364/AO.35.000463>.
- Lee, Z.P., Carder, K.L., Peacock, T.G., Davis, C.O., and Mueller, J.L., 1996, Method to derive ocean absorption coefficients from remote-sensing reflectance: *Applied Optics*, v. 35, no. 3, p. 453–462, at <https://doi.org/10.1364/AO.35.000453>.
- Lee, Z.P., Carder, K.L., Steward, R.G., Peacock, T.G., Davis, C.O., and Patch, J.S., 1998, An empirical algorithm for light absorption by ocean water based on color: *Journal of Geophysical Research Oceans*, v. 103, no. C12, p. 22967–22978, at <https://doi.org/10.1029/98JC01946>.

- Lee, Z.P., Darecki, M., Carder, K.L., Davis, C.O., Stramski, D., and Rhea, W.J., 2005, Diffuse attenuation coefficient of downwelling irradiance—An evaluation of remote sensing methods: *Journal of Geophysical Research Oceans*, v. 110, no. 2, p. 1–9, at <https://doi.org/10.1029/2004JC002573>.
- Lee, Z.P., Jiang, M., Davis, C., Pahlevan, N., Ahn, Y.H., and Ma, R., 2012, Impact of multiple satellite ocean color samplings in a day on assessing phytoplankton dynamics: *Ocean Science Journal*, v. 47, no. 3, p. 323–329, at <https://doi.org/10.1007/s12601-012-0031-5>.
- Lee, Z.P., Weidemann, A., Kindle, J., Arnone, R., Carder, K.L., and Davis, C., 2007, Euphotic zone depth—Its derivation and implication to ocean-color remote sensing: *Journal of Geophysical Research Oceans*, v. 112, no. 3, article C03009, at <https://doi.org/10.1029/2006JC003802>.
- Lefsky, M.A., Cohen, W.B., Acker, S.A., Parker, G.G., Spies, T.A., and Harding, D., 1999, Lidar remote sensing of the canopy structure and biophysical properties of Douglas-fir western hemlock forests: *Remote Sensing of Environment*, v. 70, no. 3, p. 339–361, at [https://doi.org/10.1016/S0034-4257\(99\)00052-8](https://doi.org/10.1016/S0034-4257(99)00052-8).
- Lefsky, M.A., Cohen, W.B., Acker, S.A., Spies, T.A., Parker, G.G., and Harding, D., 1998, Lidar remote sensing of forest canopy structure and related biophysical parameters at H.J. Andrews experimental forest, Oregon, USA, in 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1252–1254, at <https://doi.org/10.1109/IGARSS.1998.691367>.
- Lefsky, M.A., Cohen, W.B., Harding, D.J., Parker, G.G., Acker, S.A., and Gower, S.T., 2002, Lidar remote sensing of above-ground biomass in three biomes: *Global Ecology and Biogeography*, v. 11, no. 5, p. 393–399, at <https://doi.org/10.1046/j.1466-822x.2002.00303.x>.
- Lefsky, M.A., Cohen, W.B., Parker, G.G., and Harding, D.J., 2002, Lidar remote sensing for ecosystem studies: *BioScience*, v. 52, no. 1, p. 19–30, at [https://doi.org/10.1641/0006-3568\(2002\)052\[0019:LRSFES\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2002)052[0019:LRSFES]2.0.CO;2).
- Lefsky, M.A., Cohen, W.B., and Spies, T.A., 2001, An evaluation of alternate remote sensing products for forest inventory, monitoring, and mapping of Douglas-fir forests in western Oregon: *Canadian Journal of Forest Research*, v. 31, no. 1, p. 78–87, at <https://doi.org/10.1139/cjfr-31-1-78>.
- Lefsky, M.A., Harding, D., Cohen, W.B., Parker, G., and Shugart, H.H., 1999, Surface lidar remote sensing of basal area and biomass in deciduous forests of eastern Maryland, USA: *Remote Sensing of Environment*, v. 67, no. 1, p. 83–98, at [https://doi.org/10.1016/S0034-4257\(98\)00071-6](https://doi.org/10.1016/S0034-4257(98)00071-6).
- Lefsky, M.A., Harding, D.J., Keller, M., Cohen, W.B., Carabajal, C.C., Del Bom Espirito-Santo, F., Hunter, M.O., and de Oliveira Jr, R., 2005, Estimates of forest canopy height and aboveground biomass using ICESat: *Geophysical Research Letters*, v. 32, no. 22, p. 1–4, at <https://doi.org/10.1029/2005GL023971>.
- Lefsky, M.A., Harding, D.J., Keller, M., Cohen, W.B., Carabajal, C.C., Del Bom Espirito-Santo, F., Hunter, M.O., de Oliveira Jr, R., and de Camargo, P.B., 2006, Erratum—“Estimates of forest canopy height and aboveground biomass using ICESat” (*Geophysical Research Letters* (2005) vol. 32 10.1029/2005GL023971): *Geophysical Research Letters*, v. 33, no. 5, article L05501, at <https://doi.org/10.1029/2005GL025518>.
- Lefsky, M.A., Hudak, A.T., Cohen, W.B., and Acker, S.A., 2005, Geographic variability in lidar predictions of forest stand structure in the Pacific Northwest: *Remote Sensing of Environment*, v. 95, no. 4, p. 532–548, at <https://doi.org/10.1016/j.rse.2005.01.010>.

- Lefsky, M.A., Hudak, A.T., Cohen, W.B., and Acker, S.A., 2005, Patterns of covariance between forest stand and canopy structure in the Pacific Northwest: *Remote Sensing of Environment*, v. 95, no. 4, p. 517–531, at <https://doi.org/10.1016/j.rse.2005.01.004>.
- Lefsky, M.A., Turner, D.P., Guzy, M., and Cohen, W.B., 2005, Combining lidar estimates of aboveground biomass and Landsat estimates of stand age for spatially extensive validation of modeled forest productivity: *Remote Sensing of Environment*, v. 95, no. 4, p. 549–558, at <https://doi.org/10.1016/j.rse.2004.12.022>.
- Lehmann, F., Frantz, D., Becker, S., Leser, U., and Hostert, P., 2021, FORCE on Nextflow—Scalable analysis of Earth observation data on commodity clusters, in *CIKM 2021 Workshops (CIKMW 2021) co-located with 30th ACM International Conference on Information and Knowledge Management (CIKM 2021)*, online virtual and Queensland, Australia, 1–5 November 2021, CEUR Workshop Proceedings, v. 352, at <http://ceur-ws.org/Vol-3052/>.
- Lehmann, M.K., Gurlin, D., Pahlevan, N., Alikas, K., Anstee, J., Balasubramanian, S.V., Barbosa, C.C.F., Binding, C., Bracher, A., et al., 2023, GLORIA - A globally representative hyperspectral in situ dataset for optical sensing of water quality: *Scientific Data*, v. 10, no. 1, article 100, at <https://doi.org/10.1038/s41597-023-01973-y>.
- Lehmann, M.K., Gurlin, D., Pahlevan, N., Alikas, K., Conroy, T., Anstee, J., Balasubramanian, S.V., Barbosa, C.C.F., Binding, C., et al., 2023, Author Correction, GLORIA—A globally representative hyperspectral in situ dataset for optical sensing of water quality (*Scientific Data*, (2023), 10, 1, (100), 10.1038/s41597-023-01973-y): *Scientific Data*, v. 10, no. 1, at <https://doi.org/10.1038/s41597-023-02069-3>.
- Lei, F., Crow, W.T., Holmes, T.R.H., Hain, C., and Anderson, M.C., 2018, Global Investigation of Soil Moisture and Latent Heat Flux Coupling Strength: *Water Resources Research*, v. 54, no. 10, p. 8196–8215, at <https://doi.org/10.1029/2018WR023469>.
- Lei, Y., Yang, K., Wang, B., Sheng, Y., Bird, B.W., Zhang, G., and Tian, L., 2014, Response of inland lake dynamics over the Tibetan Plateau to climate change: *Climatic Change*, v. 125, no. 2, p. 281–290, at <https://doi.org/10.1007/s10584-014-1175-3>.
- Lei, Y., Yao, T., Bird, B.W., Yang, K., Zhai, J., and Sheng, Y., 2013, Coherent lake growth on the central Tibetan Plateau since the 1970s—Characterization and attribution: *Journal of Hydrology*, v. 483, p. 61–67, at <https://doi.org/10.1016/j.jhydrol.2013.01.003>.
- Lei, Y., Yao, T., Sheng, Y., Zhang, E., Wang, W., and Li, J., 2012, Characteristics of $\delta^{13}\text{C}$ DIC in lakes on the Tibetan Plateau and its implications for the carbon cycle: *Hydrological Processes*, v. 26, no. 4, p. 535–543, at <https://doi.org/10.1002/hyp.8152>.
- Lei, Y., Yao, T., Tian, L., Sheng, Y., Lazhu, Liao, J., Zhao, H., Yang, W., Yang, K., et al., 2021, Response of downstream lakes to Aru glacier collapses on the western Tibetan Plateau: *Cryosphere*, v. 15, no. 1, p. 199–214, at <https://doi.org/10.5194/tc-15-199-2021>.
- Lei, Y., Yao, T., Yang, K., Sheng, Y., Kleinherenbrink, M., Yi, S., Bird, B.W., Zhang, X., Zhu, L., and Zhang, G., 2017, Lake seasonality across the Tibetan Plateau and their varying relationship with regional mass changes and local hydrology: *Geophysical Research Letters*, v. 44, no. 2, p. 892–900, at <https://doi.org/10.1002/2016GL072062>.
- Lei, Y., Yao, T., Yi, C., Wang, W., Sheng, Y., Li, J., and Joswiak, D., 2012, Glacier mass loss induced the rapid growth of Linggo Co on the central Tibetan Plateau: *Journal of Glaciology*, v. 58, no. 207, p. 177–184, at <https://doi.org/10.3189/2012JoG11J025>.

- Leigh, L., Helder, D.L., Behnert, I., Deadman, A., Fox, N., Leloğlu, U.M., Özen, H., and Griffith, D., 2011, Tuz Gölü site characteristics, in 2011 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Vancouver, Canada, 24–29 July 2011, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3871–3874, at <https://doi.org/10.1109/IGARSS.2011.6050076>.
- Leinonen, J., Lebsack, M.D., Oreopoulos, L., and Cho, N., 2016, Interregional differences in MODIS-derived cloud regimes: *Journal of Geophysical Research*, v. 121, no. 19, p. 11648–11665, at <https://doi.org/10.1002/2016JD025193>.
- Leisso, N.P., Thome, K.J., and Czaplá-Myers, J.S., 2007, Validation of the on-board radiometric calibration of the GOES I-M visible channel by reflectance-based vicarious methods, in *Atmospheric and Environmental Remote Sensing Data Processing and Utilization III—Readiness for GEOSS*, San Diego, Calif., 27–30 August 2007, Proceedings of SPIE Vol. 6684: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 668404, at <https://doi.org/10.1117/12.734410>.
- Leitão, P.J., Schwieder, M., Pedroni, F., Sanchez, M., Pinto, J.R.R., Maracahipes, L., Bustamante, M., and Hostert, P., 2019, Mapping woody plant community turnover with space-borne hyperspectral data—A case study in the Cerrado: *Remote Sensing in Ecology and Conservation*, v. 5, no. 1, p. 107–115, at <https://doi.org/10.1002/rse2.91>.
- Leitão, P.J., Schwieder, M., Pötzschner, F., Pinto, J.R.R., Teixeira, A.M.C., Pedroni, F., Sanchez, M., Rogass, C., van der Linden, S., et al., 2018, From sample to pixel—Multi-scale remote sensing data for upscaling aboveground carbon data in heterogeneous landscapes: *Ecosphere*, v. 9, no. 8, article e02298, at <https://doi.org/10.1002/ecs2.2298>.
- Leitão, P.J., Schwieder, M., Suess, S., Catry, I., Milton, E.J., Moreira, F., Osborne, P.E., Pinto, M.J., van der Linden, S., and Hostert, P., 2015, Mapping beta diversity from space—Sparse Generalised Dissimilarity Modelling (SGDM) for analysing high-dimensional data: *Methods in Ecology and Evolution*, v. 6, no. 7, p. 764–771, at <https://doi.org/10.1111/2041-210X.12378>.
- Leitão, P.J., Schwieder, M., Suess, S., Okujeni, A., Galvão, L.S., van der Linden, S., and Hostert, P., 2015, Monitoring natural ecosystem and ecological gradients—Perspectives with EnMAP: *Remote Sensing*, v. 7, no. 10, p. 13098–13119, at <https://doi.org/10.3390/rs71013098>.
- Lenes, J.M., Walsh, J.J., Otis, D.B., and Carder, K.L., 2005, Iron fertilization of *Trichodesmium* off the west coast of Barbados—A one-dimensional numerical model: *Deep-Sea Research Part I—Oceanographic Research Papers*, v. 52, no. 6, p. 1021–1041, at <https://doi.org/10.1016/j.dsr.2004.11.010>.
- Lenney, M.P., Woodcock, C.E., Collins, J.B., and Hamdi, H., 1996, The status of agricultural lands in Egypt—The use of multitemporal NDVI features derived from Landsat TM: *Remote Sensing of Environment*, v. 56, no. 1, p. 8–20, at [https://doi.org/10.1016/0034-4257\(95\)00152-2](https://doi.org/10.1016/0034-4257(95)00152-2).
- Lepczyk, C.A., Flather, C.H., Radeloff, V.C., Pidgeon, A.M., Hammer, R.B., and Liu, J., 2008, Human impacts on regional avian diversity and abundance: *Conservation Biology*, v. 22, no. 2, p. 405–416, at <https://doi.org/10.1111/j.1523-1739.2008.00881.x>.
- Lepczyk, C.A., Hammer, R.B., Stewart, S.I., and Radeloff, V.C., 2007, Spatiotemporal dynamics of housing growth hotspots in the North Central U.S. from 1940 to 2000: *Landscape Ecology*, v. 22, no. 6, p. 939–952, at <https://doi.org/10.1007/s10980-006-9066-2>.

- Lepczyk, C.A., Wunnicke, A., Radeloff, V.C., Flather, C.H., Pidgeon, A.M., and Hammer, R.B., 2013, Using housing growth to estimate habitat change—Detecting Ovenbird response in a rapidly growing New England State: Urban Ecosystems, v. 16, no. 3, p. 499–510, at <https://doi.org/10.1007/s11252-013-0290-7>.
- Lesak, A.A., Radeloff, V.C., Hawbaker, T.J., Pidgeon, A.M., Gobakken, T., and Contrucci, K., 2011, Modeling forest songbird species richness using LiDAR-derived measures of forest structure: Remote Sensing of Environment, v. 115, no. 11, p. 2823–2835, at <https://doi.org/10.1016/j.rse.2011.01.025>.
- Levermann, A., Winkelmann, R., Nowicki, S., Fastook, J.L., Frieler, K., Greve, R., Hellmer, H.H., Martin, M.A., Meinshausen, M., et al., 2014, Projecting Antarctic ice discharge using response functions from SeaRISE ice-sheet models: Earth System Dynamics, v. 5, no. 2, p. 271–293, at <https://doi.org/10.5194/esd-5-271-2014>.
- Levy, R., Miller, J., and Thome, K.J., 2022, Landsat 9 Operational Land Imager2 (OLI2) on-orbit results of new special characterizations, in Earth Observing Systems XXVII 2022, San Diego, Calif., 21–26 August 2022, Proceedings of SPIE Vol. 12232: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 122320x, at <https://doi.org/10.1117/12.2633665>.
- Levy, R., Miller, J.A., Barsi, J.A., Thome, K.J., Kaita, E., Montanaro, M., and Markham, B.L., 2023, Landsat 8 decade of on-orbit operation summary of events and current state, in Earth Observing Systems XXVIII, San Diego, Calif., 22–24 August 2023, Proceedings of SPIE Vol. 12685: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 126850q, at <https://doi.org/10.1117/12.2678051>.
- Levy, R.C., Mattoo, S., Sawyer, V., Shi, Y., Colarco, P.R., Lyapustin, A.I., Wang, Y., and Remer, L.A., 2018, Exploring systematic offsets between aerosol products from the two MODIS sensors: Atmospheric Measurement Techniques, v. 11, no. 7, p. 4073–4092, at <https://doi.org/10.5194/amt-11-4073-2018>.
- Levy, R.C., Remer, L.A., Mattoo, S., Vermote, E.F., and Kaufman, Y.J., 2007, Second-generation operational algorithm—Retrieval of aerosol properties over land from inversion of Moderate Resolution Imaging Spectroradiometer spectral reflectance: Journal of Geophysical Research Atmospheres, v. 112, no. 13, article D13211, at <https://doi.org/10.1029/2006JD007811>.
- Lewińska, K.E., Hostert, P., Buchner, J., Bleyhl, B., and Radeloff, V.C., 2020, Short-term vegetation loss versus decadal degradation of grasslands in the Caucasus based on Cumulative Endmember Fractions: Remote Sensing of Environment, v. 248, article 111969, at <https://doi.org/10.1016/j.rse.2020.111969>.
- Lewińska, K.E., Ives, A.R., Morrow, C.J., Rogova, N., Yin, H., Elsen, P.R., de Beurs, K., Hostert, P., and Radeloff, V.C., 2023, Beyond “greening” and “browning”—Trends in grassland ground cover fractions across Eurasia that account for spatial and temporal autocorrelation: Global Change Biology, at <https://doi.org/10.1111/gcb.16800>.
- Lewis, A., Lymburner, L., Purss, M.B.J., Brooke, B., Evans, B., Ip, A., Dekker, A.G., Irons, J.R., Minchin, S., et al., 2016, Rapid, high-resolution detection of environmental change over continental scales from satellite data – the Earth Observation Data Cube: International Journal of Digital Earth, v. 9, no. 1, p. 106–111, at <https://doi.org/10.1080/17538947.2015.1111952>.

- Lewis, A., Oliver, S., Lymburner, L., Evans, B., Wyborn, L., Mueller, N., Raevksi, G., Hooke, J., Woodcock, R., et al., 2017, The Australian Geoscience Data Cube—Foundations and lessons learned: Remote Sensing of Environment, v. 202, p. 276–292, at <https://doi.org/10.1016/j.rse.2017.03.015>.
- Lewis, P., Guanter, L., Lopez Saldana, G., Muller, J.P., Watson, G., Shane, N., Kennedy, T., Fisher, J., Domenech, C., et al., 2012, The ESA globAlbedo project—Algorithm, in 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Munich, Germany, 22–27 July 2012, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5745–5748, at <https://doi.org/10.1109/IGARSS.2012.6352306>.
- Lewis, P., Quaife, T., Gomez-Dans, J., Disney, M., Wooster, M., Roy, D.P., and Pinty, B., 2009, Modelling the impact of wildfire on spectral reflectance, in 2009 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Cape Town, South Africa, 12–17 July 2009, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. IV1019–IV1022, at <https://doi.org/10.1109/IGARSS.2009.5417553>.
- Ley, T.W., Allen, R.G., and Jensen, M.E., 2009, Adjusting wind speed measured over variable height alfalfa for use in the ASCE standardized penman-monteith equation, in Great rivers, World Environmental and Water Resources Congress, Kansas City, Mo., 17–21 May 2009, Proceedings: Reston, Va., American Society of Civil Engineers, p. 4141–4157, at [https://doi.org/10.1061/41036\(342\)418](https://doi.org/10.1061/41036(342)418).
- Ley, T.W., Allen, R.G., and Jensen, M.E., 2010, Translating wind speed measured over alfalfa for use in the ASCE standardized reference ET equation, in 5th National Decennial Irrigation Conference 2010, Held in Conjunction with Irrigation Show 2010, Phoenix, Ariz., 5–8 December 2010, Proceedings: St. Joseph, Mich., American Society of Agricultural and Biological Engineers, p. 164–186, at <https://doi.org/10.13031/2013.35826>.
- Ley, T.W., Allen, R.G., and Jensen, M.E., 2013, Translating wind-speed measurements over alfalfa having varying height for use in the asce standardized reference ET equation: Journal of Irrigation and Drainage Engineering, v. 139, no. 6, p. 463–475, at [https://doi.org/10.1061/\(ASCE\)IR.1943-4774.0000570](https://doi.org/10.1061/(ASCE)IR.1943-4774.0000570).
- Li, A., Huang, C., Sun, G., Shi, H., Toney, C., Zhu, Z., Rollins, M.G., Goward, S.N., and Masek, J.G., 2011, Modeling the height of young forests regenerating from recent disturbances in Mississippi using Landsat and ICESat data: Remote Sensing of Environment, v. 115, no. 8, p. 1837–1849, at <https://doi.org/10.1016/j.rse.2011.03.001>.
- Li, A., Zhao, W., Mitchell, J.J., Glenn, N.F., Germino, M.J., Sankey, J.B., and Allen, R.G., 2017, Aerodynamic roughness length estimation with lidar and imaging spectroscopy in a shrub-dominated dryland: Photogrammetric Engineering and Remote Sensing, v. 83, no. 6, p. 415–427, at <https://doi.org/10.14358/PERS.83.6.415>.
- Li, D., Tong, Z., Jiang, X., Blunt, L., and Gao, F., 2018, Calibration of an interferometric on-machine probing system on an ultra-precision turning machine: Measurement—Journal of the International Measurement Confederation, v. 118, p. 96–104, at <https://doi.org/10.1016/j.measurement.2017.12.038>.
- Li, F., Anderson, M.C., Kustas, W.P., Scott, R.L., and Prueger, J.H., 2006, Utility of satellite thermal remote sensing for mapping riparian and upland desert water use, in Conference on Hydrology, 20th and American Meteorological Society, 86th, Atlanta, Ga., 29 January–2 February 2006, Proceedings: Boston, Mass., American Meteorological Society, p. 1–4, at https://ams.confex.com/ams/Annual2006/techprogram/paper_103254.htm.

- Li, F., Jupp, D.L.B., Lymburner, L., Tan, P., McIntyre, A., Thankappan, M., Lewis, A., and Held, A., 2013, Characteristics of MODIS BRDF shape and its relationship with land cover classes in Australia, *in* International Congress on Modelling and Simulation, 20th, Adapting to change—The multiple roles of modelling, MODSIM 2013 - Held jointly with the 22nd National Conference of the Australian Society for Operations Research, ASOR 2013 and the DSTO led Defence Operations Research Symposium, DORS 2013, Adelaide, Australia, 1–6 December 2013, Proceedings: Melbourne, Australia, Australian Mathematical Sciences Institute, p. 1903–1909.
- Li, F., Jupp, D.L.B., Reddy, S., Lymburner, L., Mueller, N., Tan, P., and Islam, A., 2010, An evaluation of the use of atmospheric and BRDF correction to standardize Landsat data: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 3, no. 3, p. 257–270, at <https://doi.org/10.1109/JSTARS.2010.2042281>.
- Li, F., Jupp, D.L.B., Thankappan, M., Lymburner, L., Mueller, N., Lewis, A., and Held, A., 2012, A physics-based atmospheric and BRDF correction for Landsat data over mountainous terrain: *Remote Sensing of Environment*, v. 124, p. 756–770, at <https://doi.org/10.1016/j.rse.2012.06.018>.
- Li, F., Kustas, W.P., Anderson, M.C., Jackson, T.J., Bindlish, R., and Prueger, J.H., 2006, Comparing the utility of microwave and thermal remote-sensing constraints in two-source energy balance modeling over an agricultural landscape: *Remote Sensing of Environment*, v. 101, no. 3, p. 315–328, at <https://doi.org/10.1016/j.rse.2006.01.001>.
- Li, F., Kustas, W.P., Anderson, M.C., Prueger, J.H., and Scott, R.L., 2008, Effect of remote sensing spatial resolution on interpreting tower-based flux observations: *Remote Sensing of Environment*, v. 112, no. 2, p. 337–349, at <https://doi.org/10.1016/j.rse.2006.11.032>.
- Li, F., Zhang, X., Kondragunta, S., and Roy, D.P., 2018, Investigation of the fire radiative energy biomass combustion coefficient—A comparison of polar and geostationary satellite retrievals over the conterminous United States: *Journal of Geophysical Research Biogeosciences*, v. 123, no. 2, p. 722–739, at <https://doi.org/10.1002/2017JG004279>.
- Li, F., Zhang, X., Roy, D.P., and Kondragunta, S., 2019, Estimation of biomass-burning emissions by fusing the fire radiative power retrievals from polar-orbiting and geostationary satellites across the conterminous United States: *Atmospheric Environment*, v. 211, p. 274–287, at <https://doi.org/10.1016/j.atmosenv.2019.05.017>.
- Li, H., Shen, Y., Yang, P., Zhao, W., Allen, R.G., Shao, H., and Lei, Y., 2015, Calculation of albedo on complex terrain using MODIS data—a case study in Taihang Mountain of China: *Environmental Earth Sciences*, v. 74, no. 7, p. 6315–6324, at <https://doi.org/10.1007/s12665-015-4656-4>.
- Li, H., Song, X.P., Hansen, M.C., Becker-Reshef, I., Adusei, B., Pickering, J., Wang, L., Wang, L., Lin, Z., et al., 2023, Development of a 10-m resolution maize and soybean map over China—Matching satellite-based crop classification with sample-based area estimation: *Remote Sensing of Environment*, v. 294, at <https://doi.org/10.1016/j.rse.2023.113623>.
- Li, J., and Roy, D.P., 2017, A global analysis of Sentinel-2a, Sentinel-2b and Landsat-8 data revisit intervals and implications for terrestrial monitoring: *Remote Sensing*, v. 9, no. 9, article 902, at <https://doi.org/10.3390/rs9090902>.
- Li, J., and Sheng, Y., 2012, An automated scheme for glacial lake dynamics mapping using Landsat imagery and digital elevation models—A case study in the Himalayas: *International Journal of Remote Sensing*, v. 33, no. 16, p. 5194–5213, at <https://doi.org/10.1080/01431161.2012.657370>.

- Li, J., Zipper, C.E., Donovan, P.F., Wynne, R.H., and Oliphant, A.J., 2015, Reconstructing disturbance history for an intensively mined region by time-series analysis of Landsat imagery: *Environmental Monitoring and Assessment*, v. 187, no. 9, article 557, at <https://doi.org/10.1007/s10661-015-4766-1>.
- Li, J., Zipper, C.E., Li, S., Donovan, P.F., Wynne, R.H., Oliphant, A.J., and Xia, Q., 2015, Character analysis of mining disturbance and reclamation trajectory in surface coal-mine area by time-series NDVI: *Nongye Gongcheng Xuebao/Transactions of the Chinese Society of Agricultural Engineering*, v. 31, no. 16, p. 251–257, at <http://www.ingentaconnect.com/content/tcsae/tcsae/2015/00000031/00000016/art00033>.
- Li, K., Zhu, J., Ives, A.R., Radeloff, V.C., and Wang, F., 2023, Semiparametric regression for spatial data via deep learning: *Spatial Statistics*, v. 57, article 100777, at <https://doi.org/10.1016/j.spasta.2023.100777>.
- Li, M., Mao, L., Zhou, C., Vogelmann, J.E., and Zhu, Z., 2010, Comparing forest fragmentation and its drivers in China and the USA with Globcover v2.2: *Journal of Environmental Management*, v. 91, no. 12, p. 2572–2580, at <https://doi.org/10.1016/j.jenvman.2010.07.010>.
- Li, M., Zhu, Z., Vogelmann, J.E., Xu, D., Wen, W., and Liu, A., 2011, Characterizing fragmentation of the collective forests in southern China from multitemporal Landsat imagery—A case study from Kecheng district of Zhejiang province: *Applied Geography*, v. 31, no. 3, p. 1026–1035, at <https://doi.org/10.1016/j.apgeog.2011.02.004>.
- Li, R., Wang, D., Wang, W., and Nemani, R., 2023, A GeoNEX-based high-spatiotemporal-resolution product of land surface downward shortwave radiation and photosynthetically active radiation: *Earth System Science Data*, v. 15, no. 3, p. 1419–1436, at <https://doi.org/10.5194/essd-15-1419-2023>.
- Li, R.R., Remer, L., Kaufman, Y.J., Mattoo, S., Gao, B.C., and Vermote, E.F., 2005, Snow and ice mask for the MODIS aerosol products: *IEEE Geoscience and Remote Sensing Letters*, v. 2, no. 3, p. 306–310, at <https://doi.org/10.1109/LGRS.2005.847755>.
- Li, R.R., Remer, L., Kaufman, Y.J., Mattoo, S., Gao, B.C., and Vermote, E.F., 2006, Masking of residual snow and ice covered surfaces for improving aerosol retrievals from MODIS data, *in* 2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Denver, Colo., 31 July–4 August 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2236–2238, at <https://doi.org/10.1109/IGARSS.2006.578>.
- Li, S., Wang, W., Hashimoto, H., Xiong, J., Vandal, T., Yao, J., Qian, L., Ichii, K., Lyapustin, A., et al., 2019, First provisional land surface reflectance product from geostationary satellite Himawari-8 AHI: *Remote Sensing*, v. 11, no. 24, article 2990, at <https://doi.org/10.3390/rs11242990>.
- Li, T., Zhu, Z., Wang, Z., Román, M.O., Kalb, V.L., and Zhao, Y., 2022, Continuous monitoring of nighttime light changes based on daily NASA's Black Marble product suite: *Remote Sensing of Environment*, v. 282, article 113269, at <https://doi.org/10.1016/j.rse.2022.113269>.
- Li, X., Gao, F., Wang, J., Strahler, A., Lucht, W., and Schaaf, C.B., 2000, Parameter error propagation in BRDF derived by fitting multiple angular observations at single sun position, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3142–3144, at <https://doi.org/10.1109/IGARSS.2000.860363>.

- Li, X., Gao, F., Wang, J., Strahler, A.H., Lucht, W., and Schaaf, C.B., 2000, Estimation of the parameter error propagation in inversion based BRDF observations at single sun position: *Science in China, Series E—Technological Sciences*, v. 43, no. S 1, p. 9–16, at <https://doi.org/10.1007/BF02916573>.
- Li, X., Gao, F., Wang, J., Strahler, A.H., Lucht, W., and Schaaf, C.B., 2000, Frequency-domain method for separating signal and noise: *Science in China, Series E—Technological Sciences*, v. 43, no. 1, p. 9–16, at <https://doi.org/10.1007/BF02917132>.
- Li, X., Gao, F., Wang, J., Yang, H., Strahler, A., and Schaaf, C.B., 2002, Bi-directional normalized difference vegetation index—Concept and application: *Progress in Natural Science*, v. 12, no. 2, article 115, at <https://caod.oriprobe.com/articles/4396389/Bi-directional-normalized-difference-vegetation-in.htm>.
- Li, X., Gao, F., Yang, H., Wang, J., Strahler, A., and Schaaf, C.B., 2001, Bi-directional NDVI and atmosphere-coupled BRDF inversion, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2391–2393, at <https://doi.org/10.1109/IGARSS.2001.978012>.
- Li, X., Ni, W., Hu, B., Woodcock, C.E., and Strahler, A., 1996, Decoupling path-scattering of light in a homogeneous layer and multiple bouncing at its non-Lambertian bottom: *Science in China, Series E—Technological Sciences*, v. 39, no. 6, p. 656–669, at <https://doi.org/10.1360/ye1996-39-6-656>.
- Li, X., Ni, W., Woodcock, C.E., and Strahler, A., 1996, Simplified hybrid model for radiation under discontinuous canopies, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 293–295, at <https://doi.org/10.1109/IGARSS.1996.516320>.
- Li, Y., Kustas, W.P., Huang, C., Nieto, H., Haghighi, E., Anderson, M.C., Domingo, F., Garcia, M., and Scott, R.L., 2019, Evaluating soil resistance formulations in thermal-based Two-Source Energy Balance (TSEB) Model—Implications for heterogeneous semiarid and arid regions: *Water Resources Research*, v. 55, no. 2, p. 1059–1078, at <https://doi.org/10.1029/2018WR022981>.
- Li, Y., Tang, Z., Liu, C., and Kilic, A., 2017, Estimation and investigation of consumptive water use in residential area—Case cities in Nebraska, U.S.A: *Sustainable Cities and Society*, v. 35, p. 637–644, at <https://doi.org/10.1016/j.scs.2017.09.012>.
- Li, Z., Douglas, E., Strahler, A., Schaaf, C.B., Yang, X., Wang, Z., Yao, T., Zhao, F., Saenz, E.J., et al., 2013, Separating leaves from trunks and branches with dual-wavelength terrestrial lidar scanning, in 2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Melbourne, Australia, 21–26 July 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3383–3386, at <https://doi.org/10.1109/IGARSS.2013.6723554>.
- Li, Z., Erb, A., Sun, Q., Liu, Y., Shuai, Y., Wang, Z., Boucher, P., and Schaaf, C., 2018, Preliminary assessment of 20-m surface albedo retrievals from sentinel-2A surface reflectance and MODIS/VIIIRS surface anisotropy measures: *Remote Sensing of Environment*, v. 217, p. 352–365, at <https://doi.org/10.1016/j.rse.2018.08.025>.
- Li, Z., Fung, A.K., Tjuatja, S., Betty, C., and Irons, J.R., 1996, Energy conservation in soil surface scattering in the optical region, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2186–2188, at <https://doi.org/10.1109/IGARSS.1996.516930>.

- Li, Z., Huang, C., Zhu, Z., Gao, F., Tang, H., Xin, X., Ding, L., Shen, B., Liu, J., et al., 2018, Mapping daily leaf area index at 30 m resolution over a meadow steppe area by fusing Landsat, Sentinel-2A and MODIS data: *International Journal of Remote Sensing*, v. 39, no. 23, p. 9025–0953, at <https://doi.org/10.1080/01431161.2018.1504342>.
- Li, Z., Jupp, D.L.B., Strahler, A.H., Schaaf, C.B., Howe, G., Hewawasam, K., Douglas, E.S., Chakrabarti, S., Cook, T.A., et al., 2016, Radiometric calibration of a dual-wavelength, full-waveform terrestrial lidar: *Sensors*, v. 16, no. 3, article 313, at <https://doi.org/10.3390/s16030313>.
- Li, Z., Roy, D.P., and Zhang, H.K., 2021, The incidence and magnitude of the hot-spot bidirectional reflectance distribution function (BRDF) signature in GOES-16 Advanced Baseline Imager (ABI) 10 and 15 minute reflectance over north America: *Remote Sensing of Environment*, v. 265, article 112638, at <https://doi.org/10.1016/j.rse.2021.112638>.
- Li, Z., Roy, D.P., Zhang, H.K., Vermote, E.F., and Huang, H., 2019, Evaluation of Landsat-8 and Sentinel-2A aerosol optical depth retrievals across Chinese cities and implications for medium spatial resolution urban aerosol monitoring: *Remote Sensing*, v. 11, no. 2, article 122, at <https://doi.org/10.3390/rs11020122>.
- Li, Z., Schaefer, M., Strahler, A., Schaaf, C.B., and Jupp, D., 2018, On the utilization of novel spectral laser scanning for three-dimensional classification of vegetation elements: *Interface Focus*, v. 8, no. 2, article 20170039, at <https://doi.org/10.1098/rsfs.2017.0039>.
- Li, Z., Shi, H., Vogelmann, J.E., Hawbaker, T.J., and Peterson, B., 2020, Assessment of fire fuel load dynamics in shrubland ecosystems in the Western United States using MODIS products: *Remote Sensing*, v. 12, no. 12, article 1911, at <https://doi.org/10.3390/rs12121911>.
- Li, Z., Strahler, A., Schaaf, C.B., Jupp, D., Schaefer, M., and Olofsson, P., 2018, Seasonal change of leaf and woody area profiles in a midlatitude deciduous forest canopy from classified dual-wavelength terrestrial lidar point clouds: *Agricultural and Forest Meteorology*, v. 262, p. 279–297, at <https://doi.org/10.1016/j.agrformet.2018.07.014>.
- Li, Z., White, J.C., Wulder, M.A., Hermosilla, T., Davidson, A.M., and Comber, A.J., 2021, Land cover harmonization using Latent Dirichlet Allocation: *International Journal of Geographical Information Science*, v. 35, no. 2, p. 348–374, at <https://doi.org/10.1080/13658816.2020.1796131>.
- Li, Z., Zhang, H.K., and Roy, D.P., 2019, Investigation of Sentinel-2 bidirectional reflectance hot-spot sensing conditions: *IEEE Transactions on Geoscience and Remote Sensing*, v. 57, no. 6, p. 3591–3598, at <https://doi.org/10.1109/TGRS.2018.2885967>.
- Li, Z., Zhang, H.K., Roy, D.P., Yan, L., and Huang, H., 2020, Sharpening the Sentinel-2 10 and 20 m bands to PlanetScope-0 3 m resolution: *Remote Sensing*, v. 12, no. 15, article 2406, at <https://doi.org/10.3390/RS12152406>.
- Li, Z., Zhang, H.K., Roy, D.P., Yan, L., Huang, H., and Li, J., 2017, Landsat 15-m Panchromatic-Assisted Downscaling (LPAD) of the 30-m reflective wavelength bands to Sentinel-2 20-m resolution: *Remote Sensing*, v. 9, no. 7, article 755, at <https://doi.org/10.3390/rs9070755>.
- Li, Z.J., Fung, A.K., Tjuatja, S., Gibbs, D.P., Betty, C.L., and Irons, J.R., 1996, A modeling study of backscattering from soil surfaces: *IEEE Transactions on Geoscience and Remote Sensing*, v. 34, no. 1, p. 264–271, at <https://doi.org/10.1109/36.481911>.

- Liang, F., Xiao, Q., Wang, Y., Lyapustin, A.I., Li, G., Gu, D., Pan, X., and Liu, Y., 2018, MAIAC-based long-term spatiotemporal trends of PM_{2.5} in Beijing, China: *Science of the Total Environment*, v. 616–617, p. 1589–1598, at <https://doi.org/10.1016/j.scitotenv.2017.10.155>.
- Liang, L., Schwartz, M.D., Wang, Z., Gao, F., Schaaf, C.B., Tan, B., Morisette, J.T., and Zhang, X., 2014, A cross comparison of spatiotemporally enhanced springtime phenological measurements from satellites and ground in a northern U.S. mixed forest: *IEEE Transactions on Geoscience and Remote Sensing*, v. 52, no. 12, p. 7513 – 7526, at <https://doi.org/10.1109/TGRS.2014.2313558>.
- Liang, S., Fang, H., Chen, M., Shuey, C.J., Walthall, C., Daughtry, C., Morisette, J., Schaaf, C.B., and Strahler, A., 2002, Validating MODIS land surface reflectance and albedo products—Methods and preliminary results: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 149–162, at [https://doi.org/10.1016/S0034-4257\(02\)00092-5](https://doi.org/10.1016/S0034-4257(02)00092-5).
- Liang, S., Wang, K., Wang, W., Wang, D., Gui, S., Zhang, X., Mirmelstein, J., Zhu, X., Kim, H.Y., et al., 2009, Mapping high-resolution land surface radiative fluxes from MODIS—Algorithms and preliminary validation results, *in* Li, D., Shan, J., and Gong, J., eds., *Geospatial technology for Earth observation*: Boston, Mass., Springer, p. 141–176, at https://doi.org/10.1007/978-1-4419-0050-0_6.
- Liang, X.Z., Xu, M., Gao, W., Kunkel, K., Slusser, J., Dai, Y., Min, Q., Houser, P.R., Rodell, M., et al., 2005, Development of land surface albedo parameterization based on moderate resolution imaging spectroradiometer (MODIS) data: *Journal of Geophysical Research Atmospheres*, v. 110, no. 11, p. 1–22, at <https://doi.org/10.1029/2004JD005579>.
- Liebert, R., Huntington, J.L., Morton, C., Sueki, S., and Acharya, K., 2016, Reduced evapotranspiration from leaf beetle induced tamarisk defoliation in the Lower Virgin River using satellite-based energy balance: *Ecohydrology*, v. 9, no. 1, p. 179–193, at <https://doi.org/10.1002/eco.1623>.
- Lieng, E., Vikhamar Schuler, D., Kastdalen, L., Fjone, G., Hansen, M.C., and Bolstad, J.P., 2005, Classification of land cover using decision trees and multiple reference data sources, *in* *Global Monitoring for Sustainability and Security—31st International Symposium on Remote Sensing of Environment, ISRSE 2005*, St. Petersburg, Russian Federation, 20–24 June 2005, Proceedings: International Society for Photogrammetry and Remote Sensing, paper no. 629, at <http://www.isprs.org/proceedings/2005/isrse/html/papers/629.pdf>.
- Lieskovský, J., Kaim, D., Balázs, P., Boltžiar, M., Chmiel, M., Grabska, E., Király, G., Konkoly-Gyuró, É., Kozak, J., et al., 2018, Historical land use dataset of the Carpathian region (1819–1980): *Journal of Maps*, v. 14, no. 2, p. 644–651, at <https://doi.org/10.1080/17445647.2018.1502099>.
- Liew, S.W., and Helder, D.L., 2003, Landsat-5 Thematic Mapper cold focal plane characterization: *International Journal of Remote Sensing*, v. 24, no. 2, p. 249–263, at <https://doi.org/10.1080/01431160304976>.
- Ligtenberg, S.R.M., Lenaerts, J.T.M., Van Den Broeke, M.R., and Scambos, T.A., 2014, On the formation of blue ice on Byrd Glacier, Antarctica: *Journal of Glaciology*, v. 60, no. 219, p. 41–50, at <https://doi.org/10.3189/2014JoG13J116>.
- Lim, K., Treitz, P., Wulder, M.A., St-Onge, B., and Flood, M., 2003, LiDAR remote sensing of forest structure: *Progress in Physical Geography*, v. 27, no. 1, p. 88–106, at <https://doi.org/10.1191/0309133303pp360ra>.

- Lin, Y., Zhu, Z., Guo, W., Sun, Y., Yang, X., and Kovalsky, V., 2020, Continuous monitoring of cotton stem water potential using Sentinel-2 imagery: *Remote Sensing*, v. 12, no. 7, article 1176, at <https://doi.org/10.3390/rs12071176>.
- Lindquist, E.J., Hansen, M.C., Roy, D.P., and Justice, C.O., 2008, The suitability of decadal image data sets for mapping tropical forest cover change in the Democratic Republic of Congo—Implications for the global land survey: *International Journal of Remote Sensing*, v. 29, no. 24, p. 7269–7275, at <https://doi.org/10.1080/01431160802275890>.
- Lipscomb, W., Bindschadler, R.A., Bueler, E., Holland, D., Johnson, J., and Price, S., 2009, A community ice sheet model for sea level prediction: *Eos*, v. 90, no. 3, p. 23–23, at <https://doi.org/10.1029/2009EO030004>.
- Lister, A.J., Andersen, H., Frescino, T., Gatzliolis, D., Healey, S., Heath, L.S., Liknes, G.C., McRoberts, R., Moisen, G.G., et al., 2020, Use of remote sensing data to improve the efficiency of national forest inventories—A case study from the United States national forest inventory: *Forests*, v. 11, no. 12, article 1364, at <https://doi.org/10.3390/f11121364>.
- Liu, C., Huang, X., Zhu, Z., Chen, H., Tang, X., and Gong, J., 2019, Automatic extraction of built-up area from ZY3 multi-view satellite imagery—Analysis of 45 global cities: *Remote Sensing of Environment*, v. 226, p. 51–73, at <https://doi.org/10.1016/j.rse.2019.03.033>.
- Liu, C.C., Carder, K.L., Miller, R.L., and Ivey, J.E., 2002, Fast and accurate model of underwater scalar irradiance: *Applied Optics*, v. 41, no. 24, p. 4962–4974, at <https://doi.org/10.1364/AO.41.004962>.
- Liu, C.C., Miller, R.L., Carder, K.L., Lee, Z., D'Sa, E.J., and Ivey, J.E., 2006, Estimating the underwater light field from remote sensing of ocean color: *Journal of Oceanography*, v. 62, no. 3, p. 235–248, at <https://doi.org/10.1007/s10872-006-0048-4>.
- Liu, J., Liu, S., and Loveland, T.R., 2006, Temporal evolution of carbon budgets of the Appalachian forests in the U.S. from 1972 to 2000: *Forest Ecology and Management*, v. 222, no. 1-3, p. 191–201, at <https://doi.org/10.1016/j.foreco.2005.09.028>.
- Liu, J., Liu, S., Loveland, T.R., and Tieszen, L.L., 2008, Integrating remotely sensed land cover observations and a biogeochemical model for estimating forest ecosystem carbon dynamics: *Ecological Modelling*, v. 219, no. 3-4, p. 361–372, at <https://doi.org/10.1016/j.ecolmodel.2008.04.019>.
- Liu, J., Melloh, R.A., Woodcock, C.E., Davis, R.E., and Ochs, E.S., 2004, The effect of viewing geometry and topography on viewable gap fractions through forest canopies: *Hydrological Processes*, v. 18, no. 18, p. 3595–3607, at <https://doi.org/10.1002/hyp.5802>.
- Liu, J., Melloh, R.A., Woodcock, C.E., Davis, R.E., Painter, T.H., and McKenzie, C., 2008, Modeling the view angle dependence of gap fractions in forest canopies—Implications for mapping fractional snow cover using optical remote sensing: *Journal of Hydrometeorology*, v. 9, no. 5, p. 1005–1019, at <https://doi.org/10.1175/2008JHM866.1>.
- Liu, J., Schaaf, C.B., Strahler, A., Jiao, Z., Shuai, Y., Zhang, Q., Roman, M., Augustine, J.A., and Dutton, E.G., 2009, Validation of moderate resolution imaging spectroradiometer (MODIS) albedo retrieval algorithm—Dependence of albedo on solar zenith angle: *Journal of Geophysical Research Atmospheres*, v. 114, no. 1, article D01106, at <https://doi.org/10.1029/2008JD009969>.
- Liu, J., Sleeter, B.M., Zhu, Z., Loveland, T.R., Sohl, T., Howard, S.M., Key, C.H., Hawbaker, T., Liu, S., et al., 2020, Critical land change information enhances the understanding of carbon balance in the

- United States: *Global Change Biology*, v. 26, no. 7, p. 3920–3929, at <https://doi.org/10.1111/gcb.15079>.
- Liu, J., Vogelmann, J.E., Zhu, Z., Key, C.H., Sleeter, B.M., Price, D.T., Chen, J.M., Cochrane, M.A., Eidenshink, J.C., et al., 2011, Estimating California ecosystem carbon change using process model and land cover disturbance data—1951-2000: *Ecological Modelling*, v. 222, no. 14, p. 2333–2341, at <https://doi.org/10.1016/j.ecolmodel.2011.03.042>.
- Liu, K., Ke, L., Wang, J., Jiang, L., Richards, K.S., Sheng, Y., Zhu, Y., Fan, C., Zhan, P., et al., 2021, Ongoing drainage reorganization driven by rapid lake growths on the Tibetan Plateau: *Geophysical Research Letters*, v. 48, no. 24, article e2021GL095795, at <https://doi.org/10.1029/2021GL095795>.
- Liu, L., Liang, L., Schwartz, M.D., Donnelly, A., Wang, Z., Schaaf, C.B., and Liu, L., 2015, Evaluating the potential of MODIS satellite data to track temporal dynamics of autumn phenology in a temperate mixed forest: *Remote Sensing of Environment*, v. 160, p. 156–165, at <https://doi.org/10.1016/j.rse.2015.01.011>.
- Liu, L., Zhang, X., Yu, Y., Gao, F., and Yang, Z., 2018, Real-time monitoring of crop phenology in the Midwestern United States using VIIRS observations: *Remote Sensing*, v. 10, no. 10, article 1540, at <https://doi.org/10.3390/rs10101540>.
- Liu, M., Yang, W., Zhu, X., Chen, J., Chen, X., Yang, L., and Helmer, E.H., 2019, An Improved Flexible Spatiotemporal DATA Fusion (IFSDF) method for producing high spatiotemporal resolution Normalized Difference Vegetation Index time series: *Remote Sensing of Environment*, v. 227, p. 74–89, at <https://doi.org/10.1016/j.rse.2019.03.012>.
- Liu, Q., Basu, S., Ganguly, S., Mukhopadhyay, S., DiBiano, R., Karki, M., and Nemani, R., 2020, DeepSat V2—Feature augmented convolutional neural nets for satellite image classification: *Remote Sensing Letters*, v. 11, no. 2, p. 156–165, at <https://doi.org/10.1080/2150704X.2019.1693071>.
- Liu, Q., Yan, G., Jiao, Z., Xiao, Q., Wen, J., Liang, S., Wang, J., Schaaf, C., and Strahler, A., 2018, From geometric-optical remote sensing modeling to quantitative remote sensing science—In Memory of academician Xiaowen Li: *Remote Sensing*, v. 10, no. 11, article 1764, at <https://doi.org/10.3390/rs10111764>.
- Liu, S., Ding, W., Gao, F., and Stepinski, T.F., 2012, Adaptive Selective Learning for automatic identification of sub-kilometer craters: *Neurocomputing*, v. 92, p. 78–87, at <https://doi.org/10.1016/j.neucom.2011.11.023>.
- Liu, S., Li, Z., Liu, J., Loveland, T.R., Chen, M., and Tieszen, L., 2006, Upscaling terrestrial carbon dynamics from sites to regions with uncertainty measures—The GEMS experience, *in* Biennial Meeting, 3rd, Burlington, Vt., 9–13 August 2006, Proceedings: St. Louis, Mo., International Environmental Modelling & Software Society, p. 1–6, at http://www.iemss.org/iemss2006/papers/w15/371_Liu_0.pdf.
- Liu, S., Loveland, T.R., and Kurtz, R.M., 2004, Contemporary carbon dynamics in terrestrial ecosystems in the Southeastern Plains of the United States: *Environmental Management*, v. 33, no. S 1, p. S442–S456, at <https://doi.org/10.1007/s00267-003-9152-z>.
- Liu, W., Gopal, S., and Woodcock, C.E., 2004, Uncertainty and confidence in land cover classification using a hybrid classifier approach: *Photogrammetric Engineering and Remote Sensing*, v. 70, no. 8, p. 963–971, at <https://doi.org/10.14358/PERS.70.8.963>.

- Liu, W., Seto, K.C., Wu, E.Y., Gopal, S., and Woodcock, C.E., 2004, ART-MMAP—A neural network approach to subpixel classification: *IEEE Transactions on Geoscience and Remote Sensing*, v. 42, no. 9, p. 1976–1983, at <https://doi.org/10.1109/TGRS.2004.831893>.
- Liu, W., Song, C., Schroeder, T.A., and Cohen, W.B., 2008, Predicting forest successional stages using multitemporal Landsat imagery with forest inventory and analysis data: *International Journal of Remote Sensing*, v. 29, no. 13, p. 3855–3872, at <https://doi.org/10.1080/01431160701840166>.
- Liu, Y., Hill, M.J., Zhang, X., Wang, Z., Richardson, A.D., Hufkens, K., Filippa, G., Baldocchi, D.D., Ma, S., et al., 2017, Using data from Landsat, MODIS, VIIRS and PhenoCams to monitor the phenology of California oak/grass savanna and open grassland across spatial scales: *Agricultural and Forest Meteorology*, v. 237-238, p. 311–325, at <https://doi.org/10.1016/j.agrformet.2017.02.026>.
- Liu, Y., McDonough MacKenzie, C., Primack, R.B., Hill, M.J., Zhang, X., Wang, Z., and Schaaf, C.B., 2021, Using remote sensing to monitor the spring phenology of Acadia National Park across elevational gradients: *Ecosphere*, v. 12, no. 12, article e03888, at <https://doi.org/10.1002/ecs2.3888>.
- Liu, Y., Sun, Q., Wang, Z., Schaaf, C.B., and Erb, A., 2016, Evaluation of VIIRS daily BRDF, albedo, and NBAR product using the MODIS Collection V006 product and in situ measurements, *in* 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1962–1965, at <https://doi.org/10.1109/IGARSS.2016.7729505>.
- Liu, Y., Wang, Z., Sun, Q., Erb, A.M., Li, Z., Schaaf, C.B., Zhang, X., Román, M.O., Scott, R.L., et al., 2017, Evaluation of the VIIRS BRDF, Albedo and NBAR products suite and an assessment of continuity with the long term MODIS record: *Remote Sensing of Environment*, v. 201, p. 256–274, at <https://doi.org/10.1016/j.rse.2017.09.020>.
- Lobert, F., Löw, J., Schwieder, M., Gocht, A., Schlund, M., Hostert, P., and Erasmi, S., 2023, A deep learning approach for deriving winter wheat phenology from optical and SAR time series at field level: *Remote Sensing of Environment*, v. 298, article 113800, at <https://doi.org/10.1016/j.rse.2023.113800>.
- Loboda, T.V., Giglio, L., Boschetti, L., and Justice, C.O., 2012, Regional fire monitoring and characterization using global NASA MODIS fire products in dry lands of Central Asia: *Frontiers of Earth Science*, v. 6, no. 2, p. 196–205, at <https://doi.org/10.1007/s11707-012-0313-3>.
- Lobser, S.E., and Cohen, W.B., 2007, MODIS tasselled cap—Land cover characteristics expressed through transformed MODIS data: *International Journal of Remote Sensing*, v. 28, no. 22, p. 5079–5101, at <https://doi.org/10.1080/01431160701253303>.
- Lockwood, R., Bachmann, C.M., Chrisp, M., Smeaton, C., Pahlaven, N., Hochberg, E., Montes, M.J., Gao, B.C., Frouin, R., et al., 2023, Aquatic ecosystems science using an imaging spectrometer, *in* Imaging Spectrometry XXVI—Applications, Sensors, and Processing, San Diego, Calif., 20–25 August 2023, Proceedings of SPIE Vol. 12688: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 126880d, at <https://doi.org/10.1117/12.2676124>.
- Lockwood, R.B., Chrisp, M.P., Parameswaran, L., Thome, K.J., and Babu, S.R., 2018, Remote sensing using VNIR/SWIR dispersive imaging spectrometers—Historical development, current state-of-the-art, and future trends, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6332–6335, at <https://doi.org/10.1109/IGARSS.2018.8518887>.

- Long, J., Nelson, T., and Wulder, M.A., 2010, Regionalization of landscape pattern indices using multivariate cluster analysis: *Environmental Management*, v. 46, no. 1, p. 134–142, at <https://doi.org/10.1007/s00267-010-9510-6>.
- Long, J.A., Nelson, T.A., and Wulder, M.A., 2010, Characterizing forest fragmentation—Distinguishing change in composition from configuration: *Applied Geography*, v. 30, no. 3, p. 426–435, at <https://doi.org/10.1016/j.apgeog.2009.12.002>.
- Long, J.A., Nelson, T.A., and Wulder, M.A., 2010, Local indicators for categorical data—Impacts of scaling decisions: *Canadian Geographer*, v. 54, no. 1, p. 15–28, at <https://doi.org/10.1111/j.1541-0064.2009.00300.x>.
- Lorent, H., Sonnenschein, R., Tsiourlis, G.M., Hostert, P., and Lambin, E., 2009, Livestock subsidies and rangeland degradation in central Crete: *Ecology and Society*, v. 14, no. 2, article 41, at <http://www.ecologyandsociety.org/vol14/iss2/art41/>.
- Lorenz, D.J., Otkin, J.A., Svoboda, M., Hain, C.R., Anderson, M.C., and Zhong, Y., 2017, Predicting the U.S. drought monitor using precipitation, soil moisture, and evapotranspiration anomalies. Part II—Intraseasonal drought intensification forecasts: *Journal of Hydrometeorology*, v. 18, no. 7, p. 1963–1982, at <https://doi.org/10.1175/JHM-D-16-0067.1>.
- Lorenz, D.J., Otkin, J.A., Svoboda, M., Hain, C.R., Anderson, M.C., and Zhong, Y., 2017, Predicting U.S. drought monitor states using precipitation, soil moisture, and evapotranspiration anomalies. Part I—Development of a nondiscrete USDM index: *Journal of Hydrometeorology*, v. 18, no. 7, p. 1943–1962, at <https://doi.org/10.1175/JHM-D-16-0066.1>.
- Loría-Salazar, S.M., Sayer, A.M., Barnes, J., Huang, J., Flynn, C., Lareau, N., Lee, J., Lyapustin, A., Redemann, J., et al., 2021, Evaluation of novel NASA Moderate Resolution Imaging Spectroradiometer and Visible Infrared Imaging Radiometer suite aerosol products and assessment of smoke height boundary layer ratio during extreme smoke events in the Western USA: *Journal of Geophysical Research Atmospheres*, v. 126, no. 11, article e2020JD034180, at <https://doi.org/10.1029/2020JD034180>.
- Love, S.P., Davis, A.B., Winker, D.M., and Cahalan, R.F., 2001, First retrievals of the physical thickness and optical depth of dense clouds with off-beam/multiple-scattering lidar, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 67–71, at <https://doi.org/10.1109/IGARSS.2001.976059>.
- Loveland, T.R., 2001, Toward a national fuels mapping strategy—Lessons from selected mapping programs: *International Journal of Wildland Fire*, v. 10, no. 3–4, p. 289–299, at <https://doi.org/10.1071/WF01030>.
- Loveland, T.R., 2012, History of land-cover mapping, in Giri, C.P., ed., *Remote sensing of land use and land cover—Principles and applications*: Boca Raton, Fla., CRC Press, p. 13–22, at <https://doi.org/10.1201/b11964-4>.
- Loveland, T.R., Anderson, M.C., Huntington, J.L., Irons, J.R., Johnson, D.M., Rocchio, L.E.P., Woodcock, C.E., and Wulder, M.A., 2022, Seeing our planet anew—Fifty years of Landsat: *Photogrammetric Engineering & Remote Sensing*, v. 88, no. 7, p. 429–436, at <https://doi.org/10.14358/PERS.88.7.429>.

- Loveland, T.R., and Belward, A.S., 1997, IGBP-DIS global 1 km land cover data set, DISCover—First results: *International Journal of Remote Sensing*, v. 18, no. 15, p. 3289–3295, at <https://doi.org/10.1080/014311697217099>.
- Loveland, T.R., and Belward, A.S., 1997, The international geosphere biosphere programme data and information system global land cover data set (DIScover): *Acta Astronautica*, v. 41, no. 4–10, p. 681–689, at [https://doi.org/10.1016/S0094-5765\(98\)00050-2](https://doi.org/10.1016/S0094-5765(98)00050-2).
- Loveland, T.R., Cochrane, M.A., and Henebry, G.M., 2008, Landsat still contributing to environmental research: *Trends in Ecology and Evolution*, v. 23, no. 4, p. 182–183, at <https://doi.org/10.1016/j.tree.2008.01.002>.
- Loveland, T.R., and DeFries, R.S., 2004, Observing and monitoring land use and land cover change, in Defries, R.S., Asner, G.P., and Houghton, R.A., eds., *Ecosystems and land use change*, v. 153: Washington, D.C., American Geophysical Union, p. 231–246, at <https://doi.org/10.1029/153GM18>.
- Loveland, T.R., and Dwyer, J.L., 2012, Landsat—Building a strong future: *Remote Sensing of Environment*, v. 122, p. 22–29, at <https://doi.org/10.1016/j.rse.2011.09.022>.
- Loveland, T.R., Estes, J.E., and Scepán, J., 1999, Global land cover mapping and validation—Foreword: *Photogrammetric Engineering and Remote Sensing*, v. 65, no. 9, p. 1011–1012, at https://www.asprs.org/wp-content/uploads/pers/1999journal/sep/1999_sept_special.pdf.
- Loveland, T.R., Gallant, A.L., and Vogelmann, J.E., 2005, Perspectives on the use of land-cover data for ecological investigations, in Wiens, J.A., ed., *Issues and perspectives in landscape ecology*: New York, N.Y., Cambridge University Press, p. 120–128, at <https://doi.org/10.1017/CBO9780511614415.014>.
- Loveland, T.R., and Irons, J.R., 2016, Landsat 8—The plans, the reality, and the legacy: *Remote Sensing of Environment*, v. 185, p. 1–6, at <https://doi.org/10.1016/j.rse.2016.07.033>.
- Loveland, T.R., and Mahmood, R., 2014, A design for a sustained assessment of climate forcing and feedbacks related to land use and land cover change: *Bulletin of the American Meteorological Society*, v. 95, no. 10, p. 1563–1572, at <https://doi.org/10.1175/BAMS-D-12-00208.1>.
- Loveland, T.R., and Merchant, J.M., 2004, Ecoregions and ecoregionalization—Geographical and ecological perspectives: *Environmental Management*, v. 34, no. S 1, p. S1–13, at <https://doi.org/10.1007/s00267-003-5181-x>.
- Loveland, T.R., Reed, B.C., Ohlen, D.O., Brown, J.F., Zhu, Z., Yang, L., and Merchant, J.W., 2000, Development of a global land cover characteristics database and IGBP DISCover from 1 km AVHRR data: *International Journal of Remote Sensing*, v. 21, no. 6–7, p. 1303–1330, at <https://doi.org/10.1080/014311600210191>.
- Loveland, T.R., Sohl, T.L., Stehman, S.V., Gallant, A.L., Saylor, K.L., and Napton, D.E., 2002, A strategy for estimating the rates of recent United States land-cover changes: *Photogrammetric Engineering and Remote Sensing*, v. 68, no. 10, p. 1091–1099, at https://www.asprs.org/wp-content/uploads/pers/2002journal/october/2002_oct_1091-1099.pdf.
- Loveland, T.R., Zhu, Z., Ohlen, D.O., Brown, J.F., Reed, B.C., and Yang, L., 1999, An analysis of the IGBP global land-cover characterization process: *Photogrammetric Engineering and Remote Sensing*, v. 65, no. 9, p. 1021–1032, at https://www.asprs.org/wp-content/uploads/pers/1999journal/sep/1999_sept_1021-1032.pdf.

- Lucht, W., Schaaf, C.B., and Strahler, A.H., 2000, An algorithm for the retrieval of albedo from space using semiempirical BRDF models: *IEEE Transactions on Geoscience and Remote Sensing*, v. 38, no. 2, p. 977–998, at <https://doi.org/10.1109/36.841980>.
- Lucht, W., Schaaf, C.B., Strahler, A.H., Muller, J.-P., Hu, B., Lewis, P., Liu, Y., Hyman, A.H., Li, X., et al., 1998, At-launch status of the MODIS BRDF/albedo algorithm—Implementation, AVHRR-based prototyping, and future plans, *in* 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1289–1291, at <https://doi.org/10.1109/IGARSS.1998.691380>.
- Lugo, A.E., Helmer, E.H., and Valentín, E.S., 2012, Caribbean landscapes and their biodiversity: *Interciencia*, v. 37, no. 9, p. 705–710, at <http://www.redalyc.org/pdf/339/33925502008.pdf>.
- Lugo, A.E., and Helmer, E.L., 2004, Emerging forests on abandoned land—Puerto Rico’s new forests: *Forest Ecology and Management*, v. 190, no. 2–3, p. 145–161, at <https://doi.org/10.1016/j.foreco.2003.09.012>.
- Lukashin, C., Goldin, D., Hutchinson, C., Roithmayr, C.M., Sun, W., Thome, K.J., Wielicki, B.A., Wu, A., and Xiong, X., 2017, CLARREO Pathfinder—On-orbit data matching and sensor inter-calibration, *in* 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, Tex., 23–28 July 2017, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 297–300, at <https://doi.org/10.1109/IGARSS.2017.8126954>.
- Lukashin, C., Jin, Z., Kopp, G., MacDonnell, D.G., and Thome, K.J., 2015, CLARREO reflected solar spectrometer—Restrictions for instrument sensitivity to polarization: *IEEE Transactions on Geoscience and Remote Sensing*, v. 53, no. 12, p. 6703–6709, at <https://doi.org/10.1109/TGRS.2015.2446197>.
- Lukashin, C., Wielicki, B.A., Young, D.F., Thome, K.J., Jin, Z., and Sun, W., 2013, Uncertainty estimates for imager reference inter-calibration with CLARREO reflected solar spectrometer: *IEEE Transactions on Geoscience and Remote Sensing*, v. 51, no. 3, p. 1425–1436, at <https://doi.org/10.1109/TGRS.2012.2233480>.
- Lunetta, R.S., Ediriwickrema, J., Iames, J., Johnson, D.M., Lyon, J.G., McKerrow, A., and Pilant, A., 2003, A quantitative assessment of a combined spectral and GIS rule-based land-cover classification in the Neuse River Basin of North Carolina: *Photogrammetric Engineering and Remote Sensing*, v. 69, no. 3, p. 299–310, at https://www.asprs.org/wp-content/uploads/pers/2003journal/march/2003_mar_299-310.pdf.
- Lunetta, R.S., Ediriwickrema, J., Johnson, D.M., Lyon, J.G., and McKerrow, A., 2002, Impacts of vegetation dynamics on the identification of land-cover change in a biologically complex community in North Carolina, USA: *Remote Sensing of Environment*, v. 82, no. 2–3, p. 258–270, at [https://doi.org/10.1016/S0034-4257\(02\)00042-1](https://doi.org/10.1016/S0034-4257(02)00042-1).
- Lunetta, R.S., Johnson, D.M., Lyon, J.G., and Croswell, J., 2004, Impacts of imagery temporal frequency on land-cover change detection monitoring: *Remote Sensing of Environment*, v. 89, no. 4, p. 444–454, at <https://doi.org/10.1016/j.rse.2003.10.022>.
- Luo, J., Sheng, Y., Shen, Z., and Li, J., 2010, High-precise water extraction based on spectral-spatial coupled remote sensing information, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute

- of Electrical and Electronics Engineers (IEEE), p. 2840–2843, at <https://doi.org/10.1109/IGARSS.2010.5648978>.
- Luoma, V., Saarinen, N., Wulder, M.A., White, J.C., Vastaranta, M., Holopainen, M., and Hyyppä, J., 2017, Assessing precision in conventional field measurements of individual tree attributes: *Forests*, v. 8, no. 2, article 38, at <https://doi.org/10.3390/f8020038>.
- Lutz, B., Roy, D.P., Leff, C., Lewicki, S., Geier, E., Ziskin, D., Kilpatrick, K., and Chu, A., 2000, A review of EOS Terra quality assessment, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2092–2095, at <https://doi.org/10.1109/IGARSS.2000.858285>.
- Lyapustin, A., Wang, Y., Choi, M., Xiong, X., Angal, A., Wu, A., Doelling, D.R., Bhatt, R., Go, S., et al., 2023, Calibration of the SNPP and NOAA 20 VIIRS sensors for continuity of the MODIS climate data records: *Remote Sensing of Environment*, v. 295, article 113717, at <https://doi.org/10.1016/j.rse.2023.113717>.
- Lyapustin, A., Wang, Y., Korkin, S., and Huang, D., 2018, MODIS Collection 6 MAIAC algorithm: Atmospheric Measurement Techniques, v. 11, no. 10, p. 5741–5765, at <https://doi.org/10.5194/amt-11-5741-2018>.
- Lyapustin, A.I., 1999, Atmospheric and geometrical effects on land surface albedo: *Journal of Geophysical Research Atmospheres*, v. 104, no. D4, p. 4127–4143, at <https://doi.org/10.1029/1998JD200064>.
- Lyapustin, A.I., 1999, A method for determining atmospheric optical parameters and surface albedo from multiangle satellite measurements—Sea surface applications: *IEEE Transactions on Geoscience and Remote Sensing*, v. 37, no. 1 pt. 1, p. 277–286, at <https://doi.org/10.1109/36.739162>.
- Lyapustin, A.I., 2001, Three-dimensional effects in the remote sensing of surface albedo: *IEEE Transactions on Geoscience and Remote Sensing*, v. 39, no. 2, p. 254–263, at <https://doi.org/10.1109/36.905233>.
- Lyapustin, A.I., 2002, Radiative transfer code SHARM-3D for radiance simulations over a non-Lambertian nonhomogeneous surface—Intercomparison study: *Applied Optics*, v. 41, no. 27, p. 5607–5615, at <https://doi.org/10.1364/AO.41.005607>.
- Lyapustin, A.I., 2003, Interpolation and profile correction (IPC) method for shortwave radiative transfer in spectral intervals of gaseous absorption: *Journal of the Atmospheric Sciences*, v. 60, no. 6, p. 865–871, at [https://doi.org/10.1175/1520-0469\(2003\)060<0865:IAPCIM>2.0.CO;2](https://doi.org/10.1175/1520-0469(2003)060<0865:IAPCIM>2.0.CO;2).
- Lyapustin, A.I., 2005, Radiative transfer code SHARM for atmospheric and terrestrial applications: *Applied Optics*, v. 44, no. 36, p. 7764–7772, at <https://doi.org/10.1364/AO.44.007764>.
- Lyapustin, A.I., Alexander, M.J., Ott, L., Molod, A., Holben, B., Susskind, J., and Wang, Y., 2014, Observation of mountain lee waves with MODIS NIR column water vapor: *Geophysical Research Letters*, v. 41, no. 2, p. 710–716, at <https://doi.org/10.1002/2013GL058770>.
- Lyapustin, A.I., Gatebe, C.K., Kahn, R., Brandt, R., Redemann, J., Russell, P., King, M.D., Pedersen, C.A., Gerland, S., et al., 2010, Analysis of snow bidirectional reflectance from ARCTAS spring-2008 campaign: *Atmospheric Chemistry and Physics*, v. 10, no. 9, p. 4359–4375, at <https://doi.org/10.5194/acp-10-4359-2010>.
- Lyapustin, A.I., and Kaufman, Y.J., 2001, Role of adjacency effect in the remote sensing of aerosol: *Journal of Geophysical Research Atmospheres*, v. 106, no. D11, p. 11909–11916, at <https://doi.org/10.1029/2000JD900647>.

- Lyapustin, A.I., and Knyazikhin, Y., 2001, Green's function method for the radiative transfer problem. I. Homogeneous non-Lambertian surface: *Applied Optics*, v. 40, no. 21, p. 3495–3501, at <https://doi.org/10.1364/AO.40.003495>.
- Lyapustin, A.I., and Knyazikhin, Y., 2002, Green's function method in the radiative transfer problem. II. Spatially heterogeneous anisotropic surface: *Applied Optics*, v. 41, no. 27, p. 5600–5606, at <https://doi.org/10.1364/AO.41.005600>.
- Lyapustin, A.I., Kondakov, M.V., and Muldashev, T.Z., 1996, A preliminary analysis of the MKS-M2 experiments 'Summer Forest 94': *Earth Observation and Remote Sensing*, v. 14, no. 2, p. 321–329.
- Lyapustin, A.I., Korokin, S., Wang, Y., Quayle, B., and Laszlo, I., 2012, Discrimination of biomass burning smoke and clouds in MAIAC algorithm: *Atmospheric Chemistry and Physics*, v. 12, no. 20, p. 9679–9686, at <https://doi.org/10.5194/acp-12-9679-2012>.
- Lyapustin, A.I., Korokin, S., Wang, Y., Quayle, B., and Laszlo, I., 2012, Erratum—Discrimination of biomass burning smoke and clouds in MAIAC algorithm published (*Atmospheric Chemistry and Physics* (2012) 12 (9679-9686)): *Atmospheric Chemistry and Physics*, v. 12, no. 21, p. 10631–10631, at <https://doi.org/10.5194/acp-12-10631-2012>.
- Lyapustin, A.I., Martonchik, J., Wang, Y., Laszlo, I., and Korokin, S., 2011, Multiangle implementation of atmospheric correction (MAIAC)—1. Radiative transfer basis and look-up tables: *Journal of Geophysical Research Atmospheres*, v. 116, no. 3, article D03210, at <https://doi.org/10.1029/2010JD014985>.
- Lyapustin, A.I., and Muldashev, T.Z., 1999, Method of spherical harmonics in the radiative transfer problem with non-lambertian surface: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 61, no. 4, p. 545–555, at [https://doi.org/10.1016/S0022-4073\(98\)00041-7](https://doi.org/10.1016/S0022-4073(98)00041-7).
- Lyapustin, A.I., and Muldashev, T.Z., 1999, Multiangle monitoring of atmospheric aerosol and surface reflectance from MIR station: *IEEE Transactions on Geoscience and Remote Sensing*, v. 37, no. 1 pt. 2, p. 589–595, at <https://doi.org/10.1109/36.739122>.
- Lyapustin, A.I., and Muldashev, T.Z., 2000, Generalization of Marshak boundary condition for non-Lambert reflection: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 67, no. 6, p. 457–464, at [https://doi.org/10.1016/S0022-4073\(00\)00014-5](https://doi.org/10.1016/S0022-4073(00)00014-5).
- Lyapustin, A.I., and Muldashev, T.Z., 2000, Solution for atmospheric optical transfer function using spherical harmonics method: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 68, no. 1, p. 43–56, at [https://doi.org/10.1016/S0022-4073\(00\)00013-3](https://doi.org/10.1016/S0022-4073(00)00013-3).
- Lyapustin, A.I., and Privette, J.L., 1999, A new method of retrieving surface bidirectional reflectance from ground measurements—Atmospheric sensitivity study: *Journal of Geophysical Research Atmospheres*, v. 104, no. D6, p. 6257–6268, at <https://doi.org/10.1029/1998JD200123>.
- Lyapustin, A.I., Tedesco, M., Wang, Y., Aoki, T., Hori, M., and Kokhanovsky, A., 2009, Retrieval of snow grain size over Greenland from MODIS: *Remote Sensing of Environment*, v. 113, no. 9, p. 1976–1987, at <https://doi.org/10.1016/j.rse.2009.05.008>.
- Lyapustin, A.I., and Wang, Y., 2005, Parameterized code SHARM-3D for radiative transfer over inhomogeneous surfaces: *Applied Optics*, v. 44, no. 35, p. 7602–7610, at <https://doi.org/10.1364/AO.44.007602>.

- Lyapustin, A.I., Wang, Y., and Frey, R., 2008, An automatic cloud mask algorithm based on time series of MODIS measurements: *Journal of Geophysical Research Atmospheres*, v. 113, no. 16, article D16207, at <https://doi.org/10.1029/2007JD009641>.
- Lyapustin, A.I., Wang, Y., Hsu, C., Torres, O., Leptoukh, G., Kalashnikova, O., and Korin, S., 2011, Analysis of MAIAC dust aerosol retrievals from modis over North Africa, *in* *Electromagnetic and Light Scattering XIII (ELS XIII)*, Taormina, Italy, 26–30 September 2011, *Atti della Accademia Peloritana dei Pericolanti - Classe di Scienze Fisiche, Matematiche e Naturali*, v. 89, no. S1: Accademia Peloritana dei Pericolanti, p. 061–1–061–4, at <https://doi.org/10.1478/C1V89S1P061>.
- Lyapustin, A.I., Wang, Y., Kahn, R., Xiong, J., Ignatov, A., Wolfe, R., Wu, A., and Bruegge, C., 2006, Analysis of calibration differences between MODIS and MISR, *in* *Remote Sensing and Modeling of Ecosystems for Sustainability III*, San Diego, Calif., 14–16 August 2006, *Proceedings of SPIE Vol. 6298*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 62980x, at <https://doi.org/10.1117/12.680896>.
- Lyapustin, A.I., Wang, Y., Kahn, R., Xiong, J., Ignatov, A., Wolfe, R., Wu, A., Holben, B., and Bruegge, C., 2007, Analysis of MODIS-MISR calibration differences using surface albedo around AERONET sites and cloud reflectance: *Remote Sensing of Environment*, v. 107, no. 1–2, p. 12–21, at <https://doi.org/10.1016/j.rse.2006.09.028>.
- Lyapustin, A.I., Wang, Y., Laszlo, I., Hilker, T., G.Hall, F., Sellers, P.J., Tucker, C.J., and Korin, S.V., 2012, Multi-angle implementation of atmospheric correction for MODIS (MAIAC)—3. Atmospheric correction: *Remote Sensing of Environment*, v. 127, p. 385–393, at <https://doi.org/10.1016/j.rse.2012.09.002>.
- Lyapustin, A.I., Wang, Y., Laszlo, I., Kahn, R., Korin, S., Remer, L., Levy, R., and Reid, J.S., 2011, Multiangle implementation of atmospheric correction (MAIAC)—2. Aerosol algorithm: *Journal of Geophysical Research Atmospheres*, v. 116, no. 3, article D03211, at <https://doi.org/10.1029/2010JD014986>.
- Lyapustin, A.I., Wang, Y., Laszlo, I., and Korin, S., 2012, Improved cloud and snow screening in MAIAC aerosol retrievals using spectral and spatial analysis: *Atmospheric Measurement Techniques*, v. 5, no. 4, p. 843–850, at <https://doi.org/10.5194/amt-5-843-2012>.
- Lyapustin, A.I., Wang, Y., Martonchik, J., Privette, J., and Holben, B., 2005, Development of the AERONET-based surface reflectance validation network (ASRVN), *in* *Global Monitoring for Sustainability and Security—31st International Symposium on Remote Sensing of Environment, ISRSE 2005*, St. Petersburg, Russian Federation, 20–24 June 2005, *Proceedings: International Society for Photogrammetry and Remote Sensing*, paper no. 739.
- Lyapustin, A.I., Wang, Y., Xiong, X., Meister, G., Platnick, S., Levy, R., Franz, B., Korin, S., Hilker, T., et al., 2014, Scientific impact of MODIS C5 calibration degradation and C6+ improvements: *Atmospheric Measurement Techniques*, v. 7, no. 12, p. 4353–4365, at <https://doi.org/10.5194/amt-7-4353-2014>.
- Lyapustin, A.I., Williams, D.L., Markham, B., Irons, J.R., Holben, B., and Wang, Y., 2004, A method for unbiased high-resolution aerosol retrieval from Landsat: *Journal of the Atmospheric Sciences*, v. 61, no. 11, p. 1233–1244, at [https://doi.org/10.1175/1520-0469\(2004\)061<1233:AMFUHA>2.0.CO;2](https://doi.org/10.1175/1520-0469(2004)061<1233:AMFUHA>2.0.CO;2).
- Lymburner, L., Beggs, P.J., and Jacobson, C.R., 2000, Estimation of canopy-average surface-specific leaf area using Landsat TM data: *Photogrammetric Engineering and Remote Sensing*, v. 66, no. 2, p.

183–191, at https://www.asprs.org/wp-content/uploads/pers/2000journal/february/2000_feb_183-191.pdf.

- Lymburner, L., Botha, E., Hestir, E., Anstee, J., Sagar, S., Dekker, A., and Malthus, T., 2016, Landsat 8—Providing continuity and increased precision for measuring multi-decadal time series of total suspended matter: *Remote Sensing of Environment*, v. 185, p. 108–118, at <https://doi.org/10.1016/j.rse.2016.04.011>.
- Lymburner, L., Bunting, P., Lucas, R., Scarth, P., Alam, I., Phillips, C., Ticehurst, C., and Held, A., 2020, Mapping the multi-decadal mangrove dynamics of the Australian coastline: *Remote Sensing of Environment*, v. 238, article 111185, at <https://doi.org/10.1016/j.rse.2019.05.004>.
- Lymburner, L., McIntyre, A., Li, F., Ip, A., Thankappan, M., and Sixsmith, J., 2013, Creating multi-sensor time series using data from Landsat-5 TM and Landsat-7 ETM+ to characterise vegetation dynamics, in 2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Melbourne, Australia, 21–26 July 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 961–963, at <https://doi.org/10.1109/IGARSS.2013.6721321>.
- Lymburner, L., Sagar, S., Thankappan, M., Fyfe, S., Nicholas, T., Mueller, N., Lewis, A., and Brooke, B., 2016, Monitoring coastal change dynamics using multi-decadal moderate resolution Earth observation data, in Living Planet Symposium 2016, Prague, Czech Republic, 9–13 May 2016, ESA SP 740: Noordwijk, Netherlands, European Space Agency, p. 1–4, at <http://adsabs.harvard.edu/abs/2016ESASP.740E..88L>.
- Lymburner, L., Tan, P., McIntyre, A., Lewis, A., and Thankappan, M., 2013, Dynamic land cover dataset version 2—2001–now...a land cover odyssey, in 2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Melbourne, Australia, 21–26 July 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3297–3300, at <https://doi.org/10.1109/IGARSS.2013.6723532>.
- Lyons, E.A., and Sheng, Y., 2018, LakeTime—Automated seasonal scene selection for global lake mapping using Landsat ETM+ and OLI: *Remote Sensing*, v. 10, no. 1, article 54, at <https://doi.org/10.3390/rs10010054>.
- Lyons, E.A., Sheng, Y., Smith, L.C., Li, J., Hinkel, K.M., Lenters, J.D., and Wang, J., 2013, Quantifying sources of error in multitemporal multisensor lake mapping: *International Journal of Remote Sensing*, v. 34, no. 22, p. 7887–7905, at <https://doi.org/10.1080/01431161.2013.827343>.
- Ma, L., Hurtt, G., Tang, H., Lamb, R., Lister, A., Chini, L., Dubayah, R., Armston, J., Campbell, E., et al., 2023, Spatial heterogeneity of global forest aboveground carbon stocks and fluxes constrained by spaceborne lidar data and mechanistic modeling: *Global Change Biology*, v. 29, no. 12, p. 3378–3394, at <https://doi.org/10.1111/gcb.16682>.
- MacAyeal, D.R., Scambos, T.A., Hulbe, C.L., and Fahnestock, M.A., 2003, Catastrophic ice-shelf break-up by an ice-shelf-fragment-capsize mechanism: *Journal of Glaciology*, v. 49, no. 164, p. 22–36, at <https://doi.org/10.3189/172756503781830863>.
- MacDonald, G.M., Beilman, D.W., Kremenetski, K.V., Sheng, Y., Smith, L.C., and Velichko, A.A., 2006, Rapid early development of circumarctic peatlands and atmospheric CH₄ and CO₂ variations: *Science*, v. 314, no. 5797, p. 285–288, at <https://doi.org/10.1126/science.1131722>.
- Maciel, D.A., Pahlevan, N., Barbosa, C.C.F., de Novo, E.M.L.D.M., Paulino, R.S., Martins, V.S., Vermote, E., and Crawford, C.J., in press, Validity of the Landsat surface reflectance archive for aquatic

- science—Implications for cloud-based analysis: *Limnology And Oceanography Letters*, at <https://doi.org/10.1002/lo2.10344>.
- Maciel, D.A., Pahlevan, N., Barbosa, C.C.F., Martins, V.S., Smith, B., O’Shea, R.E., Balasubramanian, S.V., Saranathan, A.M., and Novo, E.M.L.M., 2023, Towards global long-term water transparency products from the Landsat archive: *Remote Sensing of Environment*, v. 299, article 113889, at <https://doi.org/10.1016/j.rse.2023.113889>.
- Mackay, D.S., Samanta, S., Nemani, R.R., and Band, L.E., 2003, Multi-objective parameter estimation for simulating canopy transpiration in forested watersheds: *Journal of Hydrology*, v. 277, no. 3–4, p. 230–247, at [https://doi.org/10.1016/S0022-1694\(03\)00130-6](https://doi.org/10.1016/S0022-1694(03)00130-6).
- MacKinnon, J., Harding, D., Moussa, M., Brandt, M., Montesano, P., Carroll, M., Wynne, R., Thomas, V., Huemmrich, F., and Ranson, J., 2023, Multi-path fusion—A hierarchical machine learning approach for combining diverse data sets for a forest monitoring new observing system, in 2023 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Pasadena, Calif., 16–21 July 2023, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1708–1711, at <https://doi.org/10.1109/IGARSS52108.2023.10282678>.
- MacLennan, M.L., Lenaerts, J.T.M., Shields, C.A., Hoffman, A.O., Wever, N., Thompson-Munson, M., Winters, A.C., Pettit, E.C., Scambos, T.A., and Wille, J.D., 2023, Climatology and surface impacts of atmospheric rivers on West Antarctica: *Cryosphere*, v. 17, no. 2, p. 865–881, at <https://doi.org/10.5194/tc-17-865-2023>.
- Madson, A., Fielding, E., Sheng, Y., and Cavanaugh, K., 2019, High-resolution spaceborne, airborne and in situ landslide kinematic measurements of the slumgullion landslide in Southwest Colorado: *Remote Sensing*, v. 11, no. 3, article 265, at <https://doi.org/10.3390/rs11030265>.
- Madson, A., and Sheng, Y., 2020, Reservoir induced deformation analysis for several filling and operational scenarios at the Grand Ethiopian Renaissance Dam impoundment: *Remote Sensing*, v. 12, no. 11, article 1886, at <https://doi.org/10.3390/rs12111886>.
- Madson, A., and Sheng, Y., 2021, Automated water level monitoring at the continental scale from ICESat-2 photons: *Remote Sensing*, v. 13, no. 18, article 3631, at <https://doi.org/10.3390/rs13183631>.
- Madson, A., and Sheng, Y., 2021, Coulomb stress analysis for several filling and operational scenarios at the Grand Ethiopian Renaissance Dam impoundment: *Environmental Earth Sciences*, v. 80, no. 7, article 286, at <https://doi.org/10.1007/s12665-021-09591-w>.
- Madson, A., Sheng, Y., and Song, C., 2017, ICESat-derived lithospheric flexure as caused by an endorheic lake’s expansion on the Tibetan Plateau and the comparison to modeled flexural responses: *Journal of Asian Earth Sciences*, v. 148, p. 142–152, at <https://doi.org/10.1016/j.jseaes.2017.08.028>.
- Maeda, E.E., Formaggio, A.R., Shimabukuro, Y.E., Arcoverde, G.F.B., and Hansen, M.C., 2009, Predicting forest fire in the Brazilian Amazon using MODIS imagery and artificial neural networks: *International Journal of Applied Earth Observation and Geoinformation*, v. 11, no. 4, p. 265–272, at <https://doi.org/10.1016/j.jag.2009.03.003>.
- Maeda, E.E., Moura, Y.M., Wagner, F., Hilker, T., Lyapustin, A.I., Wang, Y., Chave, J., Mörtus, M., Aragão, L.E.O.C., and Shimabukuro, Y., 2016, Consistency of vegetation index seasonality across the Amazon rainforest: *International Journal of Applied Earth Observation and Geoinformation*, v. 52, p. 42–53, at <https://doi.org/10.1016/j.jag.2016.05.005>.

- Magnuson, J.J., Robertson, D.M., Benson, B.J., Wynne, R.H., Livingstone, D.M., Arai, T., Assel, R.A., Barry, R.G., Card, V., et al., 2000, Historical trends in lake and river ice cover in the Northern Hemisphere: *Science*, v. 289, no. 5485, p. 1743–1746, at <https://doi.org/10.1126/science.289.5485.1743>.
- Magnussen, S., Allard, D., and Wulder, M.A., 2006, Poisson Voronoï tiling for finding clusters in spatial point patterns: *Scandinavian Journal of Forest Research*, v. 21, no. 3, p. 239–248, at <https://doi.org/10.1080/02827580600688178>.
- Magnussen, S., Boudewyn, P., and Wulder, M.A., 2004, Contextual classification of Landsat TM images to forest inventory cover types: *International Journal of Remote Sensing*, v. 25, no. 12, p. 2421–2440, at <https://doi.org/10.1080/01431160310001642296>.
- Magnussen, S., Boudewyn, P., Wulder, M.A., and Seemann, D., 2000, Predictions of forest inventory cover type proportions using Landsat TM: *Silva Fennica*, v. 34, no. 4, p. 351–370, at <https://doi.org/10.14214/sf.618>.
- Magnussen, S., Næsset, E., and Wulder, M.A., 2007, Efficient multiresolution spatial predictions for large data arrays: *Remote Sensing of Environment*, v. 109, no. 4, p. 451–463, at <https://doi.org/10.1016/j.rse.2007.01.018>.
- Magnussen, S., Stehman, S.V., Corona, P., and Wulder, M.A., 2004, A Pòlya-urn resampling scheme for estimating precision and confidence intervals under one-stage cluster sampling—Application to map classification accuracy and cover-type frequencies: *Forest Science*, v. 50, no. 6, p. 810–822, at <https://doi.org/10.1093/forestscience/50.6.810>.
- Magnussen, S., and Wulder, M.A., 2012, Post-fire canopy height recovery in Canada's boreal forests using airborne laser scanner (ALS): *Remote Sensing*, v. 4, no. 6, p. 1600–1616, at <https://doi.org/10.3390/rs4061600>.
- Mah, G.R., Vogelmann, J.E., and Choate, M., 2000, Landsat 5/Landsat 7 underfly cross-calibration experiment, *in* Algorithms for Multispectral, Hyperspectral, and Ultraspectral Imagery VI, Orlando, Fla., 24–26 April 2000, Proceedings of SPIE Vol. 4049: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 167–174, at <https://doi.org/10.1117/12.410337>.
- Mahler, A.B., Thome, K.J., Yin, D., and Sprigg, W.A., 2006, Dust transport model validation using satellite- And ground-based methods in the southwestern United States, *in* Remote Sensing of Aerosol and Chemical Gases, Model Simulation/Assimilation, and Applications to Air Quality, San Diego, Calif., 13–14 August 2006, Proceedings of SPIE Vol. 6299: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 62990I, at <https://doi.org/10.1117/12.679868>.
- Maiersperger, T.K., Cohen, W.B., and Ganio, L.M., 2001, A TM-based hardwood-conifer mixture index for closed canopy forests in the Oregon Coast Range: *International Journal of Remote Sensing*, v. 22, no. 6, p. 1053–1066, at <https://doi.org/10.1080/01431160117436>.
- Maiersperger, T.K., Scaramuzza, P.L., Leigh, L., Shrestha, S., Gallo, K.P., Jenkerson, C.B., and Dwyer, J.L., 2013, Characterizing LEDAPS surface reflectance products by comparisons with AERONET, field spectrometer, and MODIS data: *Remote Sensing of Environment*, v. 136, p. 1–13, at <https://doi.org/10.1016/j.rse.2013.04.007>.

- Maignan, F., Bréon, F.M., Vermote, E.F., Ciais, P., and Viovy, N., 2008, Mild winter and spring 2007 over western Europe led to a widespread early vegetation onset: *Geophysical Research Letters*, v. 35, no. 2, article L02404, at <https://doi.org/10.1029/2007GL032472>.
- Main-Knorn, M., Cohen, W.B., Kennedy, R.E., Grodzki, W., Pflugmacher, D., Griffiths, P., and Hostert, P., 2013, Monitoring coniferous forest biomass change using a Landsat trajectory-based approach: *Remote Sensing of Environment*, v. 139, p. 277–290, at <https://doi.org/10.1016/j.rse.2013.08.010>.
- Main-Knorn, M., Hostert, P., Kozak, J., and Kuemmerle, T., 2009, How pollution legacies and land use histories shape post-communist forest cover trends in the Western Carpathians: *Forest Ecology and Management*, v. 258, no. 2, p. 60–70, at <https://doi.org/10.1016/j.foreco.2009.03.034>.
- Main-Knorn, M., Moisen, G.G., Healey, S.P., Keeton, W.S., Freeman, E.A., and Hostert, P., 2011, Evaluating the remote sensing and inventory-based estimation of biomass in the western Carpathians: *Remote Sensing*, v. 3, no. 7, p. 1427–1446, at <https://doi.org/10.3390/rs3071427>.
- Makungwa, S.D., Chittock, A., Skole, D.L., Kanyama-Phiri, G.Y., and Woodhouse, I.H., 2013, Allometry for biomass estimation in *Jatropha* trees planted as boundary hedge in farmers' fields: *Forests*, v. 4, no. 2, p. 218–233, at <https://doi.org/10.3390/f4020218>.
- Malakar, N.K., Hulley, G.C., Hook, S.J., Laraby, K., Cook, M., and Schott, J.R., 2018, An operational land surface temperature product for Landsat thermal data—Methodology and validation: *IEEE Transactions on Geoscience and Remote Sensing*, v. 56, no. 10, p. 5717–5735, at <https://doi.org/10.1109/TGRS.2018.2824828>.
- Malavelle, F.F., Haywood, J.M., Jones, A., Gettelman, A., Clarisse, L., Bauduin, S., Allan, R.P., Karset, I.H.H., Kristjánsson, J.E., et al., 2017, Strong constraints on aerosol-cloud interactions from volcanic eruptions: *Nature*, v. 546, no. 7659, p. 485–491, at <https://doi.org/10.1038/nature22974>.
- Malla, R., and Helder, D.L., 2008, Radiometric calibration of reflective bands of Landsat 4 thematic mapper using pseudo-invariant site technique, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. IV1344–IV1347, at <https://doi.org/10.1109/IGARSS.2008.4779980>.
- Maltman, J.C., Hermosilla, T., Wulder, M.A., Coops, N.C., and White, J.C., 2023, Estimating and mapping forest age across Canada's forested ecosystems: *Remote Sensing of Environment*, v. 290, article 113529, at <https://doi.org/10.1016/j.rse.2023.113529>.
- Mandl, D., Sohlberg, R., Justice, C.O., Ungar, S., Ames, T., Frye, S., Chien, S., Cappelaere, P., and Tran, D., 2007, Experiments with user centric GEOSS architectures, *in* 2007 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Barcelona, Spain, 23–28 July 2007, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 297–300, at <https://doi.org/10.1109/IGARSS.2007.4422789>.
- Mandl, D., Sohlberg, R., Justice, C.O., Ungar, S., Ames, T., Frye, S., Chien, S., Tran, D., Cappelaere, P., et al., 2007, Sensor webs with a service-oriented architecture for on-demand science products, *in* Readiness for GEOSS, Atmospheric and Environmental Remote Sensing Data Processing and Utilization III, San Diego, Calif., 27–30 August 2007, Proceedings of SPIE Vol. 6684: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 668414, at <https://doi.org/10.1117/12.735944>.

- Mandl, D., Sohlberg, R., Justice, C.O., Ungar, S., Ames, T., Frye, S., Chien, S., Tran, D., Cappelaere, P., et al., 2008, A space-based sensor web for disaster management, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. V294–V297, at <https://doi.org/10.1109/IGARSS.2008.4780086>.
- Mangan, J.M., Overpeck, J.T., Webb, R.S., Wessman, C., and Goetz, A.F.H., 2004, Response of Nebraska Sand Hills natural vegetation to drought, fire, grazing, and plant functional type shifts as simulated by the Century model: *Climatic Change*, v. 63, no. 1–2, p. 49–90, at <https://doi.org/10.1023/B:CLIM.0000018516.53419.90>.
- Manninen, T., Riihela, A., Heidinger, A., Schaaf, C.B., Lattanzio, A., and Key, J., 2018, Intercalibration of polar-orbiting spectral radiometers without simultaneous observations: *IEEE Transactions on Geoscience and Remote Sensing*, v. 56, no. 3, p. 1507–1519, at <https://doi.org/10.1109/TGRS.2017.2764627>.
- Manninen, T., Riihelä, A., Schaaf, C.B., Key, J., and Lattanzio, A., 2016, Intercalibration of two polar satellite instruments without simultaneous Nadir observations, *in* Living Planet Symposium 2016, Prague, Czech Republic, 9–13 May 2016, ESA SP 740: Noordwijk, Netherlands, European Space Agency, p. 1–8, at http://www.scope-cm.org/wpcms/wp-content/uploads/2016/07/manninen_et_al_ESA_livingPlanet_2016.pdf.
- Manton, M.J., Belward, A.S., Harrison, D.E., Kuhn, A., Lefale, P., Rösner, S., Simmons, A., Westermeyer, W., and Zillman, J., 2010, Observation needs for climate services and research, *in* *Procedia Environmental Sciences*, Geneva, Switzerland, 31 August–4 September 2009, v. 1: Amsterdam, Netherlands, Elsevier, p. 184–101, at <https://doi.org/10.1016/j.proenv.2010.09.012>.
- Marconcini, M., Gorelick, N., Metz-Marconcini, A., and Esch, T., 2020, Accurately monitoring urbanization at global scale—The world settlement footprint, *in* 11th International Symposium on Digital Earth, ISDE 2019, Florence, Italy, 24–27 September 2019, IOP Conference Series—Earth and Environmental Science v. 509: Bristol, UK, IOPScience, paper no. 012036, at <https://doi.org/10.1088/1755-1315/509/1/012036>.
- Marconcini, M., Metz-Marconcini, A., Esch, T., and Gorelick, N., 2021, Understanding current trends in global urbanisation—The world settlement footprint suite: *GI_Forum*, v. 9, no. 1, p. 33–38, at https://doi.org/10.1553/GISCIENCE2021_01_S33.
- Margolis, H.A., Nelson, R.F., Montesano, P.M., Beaudoin, A., Sun, G., Andersen, H.E., and Wulder, M.A., 2015, Combining satellite lidar, airborne lidar, and ground plots to estimate the amount and distribution of aboveground biomass in the boreal forest of North America: *Canadian Journal of Forest Research*, v. 45, no. 7, p. 838–855, at <https://doi.org/10.1139/cjfr-2015-0006>.
- Margono, B.A., Bwangoy, J.R.B., Potapov, P.V., and Hansen, M.C., 2014, Mapping wetlands in Indonesia using Landsat and PALSAR data-sets and derived topographical indices: *Geo-Spatial Information Science*, v. 17, no. 1, p. 60–71, at <https://doi.org/10.1080/10095020.2014.898560>.
- Margono, B.A., Potapov, P.V., Turubanova, S., Stolle, F., and Hansen, M.C., 2014, Primary forest cover loss in indonesia over 2000–2012: *Nature Climate Change*, v. 4, no. 8, p. 730–735, at <https://doi.org/10.1038/nclimate2277>.
- Margono, B.A., Turubanova, S., Zhuravleva, I., Potapov, P., Tyukavina, A., Baccini, A., Goetz, S., and Hansen, M.C., 2012, Mapping and monitoring deforestation and forest degradation in Sumatra

- (Indonesia) using Landsat time series data sets from 1990 to 2010: *Environmental Research Letters*, v. 7, no. 3, article 034010, at <https://doi.org/10.1088/1748-9326/7/3/034010>.
- Mariano, D.A., Santos, C.A.C.D., Wardlow, B.D., Anderson, M.C., Schiltmeyer, A.V., Tadesse, T., and Svoboda, M.D., 2018, Use of remote sensing indicators to assess effects of drought and human-induced land degradation on ecosystem health in Northeastern Brazil: *Remote Sensing of Environment*, v. 213, p. 129–143, at <https://doi.org/10.1016/j.rse.2018.04.048>.
- Marin, J., Rapacciuolo, G., Costa, G.C., Graham, C.H., Brooks, T.M., Young, B.E., Radeloff, V.C., Behm, J.E., Helmus, M.R., and Hedges, S.B., 2018, Evolutionary time drives global tetrapod diversity: *Proceedings of the Royal Society B—Biological Sciences*, v. 285, no. 1872, article 20172378, at <https://doi.org/10.1098/rspb.2017.2378>.
- Marinho, E., Vancutsem, C., Fasbender, D., Kayitakire, F., Pini, G., and Pekel, J.F., 2012, Estimation of sowing dates at the village level—A probabilistic approach based on vegetation onset detections, *in* 1st International Conference on Agro-Geoinformatics, *Agro-Geoinformatics 2012*, Shanghai, China, 2–4 August 2012, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 496–501, at <https://doi.org/10.1109/Agro-Geoinformatics.2012.6311695>.
- Marinho, E., Vancutsem, C., Fasbender, D., Kayitakire, F., Pini, G., and Pekel, J.F., 2014, From remotely sensed vegetation onset to sowing dates—Aggregating pixel-level detections into village-level sowing probabilities: *Remote Sensing*, v. 6, no. 11, p. 10947–10965, at <https://doi.org/10.3390/rs61110947>.
- Mariotto, I., Thenkabail, P.S., Huete, A., Slonecker, E.T., and Platonov, A., 2013, Hyperspectral versus multispectral crop-productivity modeling and type discrimination for the HypSIRI mission: *Remote Sensing of Environment*, v. 139, p. 291–305, at <https://doi.org/10.1016/j.rse.2013.08.002>.
- Markham, B., Barsi, J., Kvaran, G., Ong, L., Kaita, E., Biggar, S., Czaplá-Myers, J., Mishra, N., and Helder, D.L., 2014, Landsat-8 operational land imager radiometric calibration and stability: *Remote Sensing*, v. 6, no. 12, p. 12275–12308, at <https://doi.org/10.3390/rs61212275>.
- Markham, B., Barsi, J., Montanaro, M., McCorkel, J., Gerace, A., Pedelty, J., Hook, S., Raqueno, N., Anderson, C., and Haque, M.O., 2018, Landsat-8 on-orbit and Landsat-9 pre-launch sensor radiometric characterization, *in* *Earth Observing Missions and Sensors—Development, Implementation, and Characterization V*, Honolulu, Hawaii, 24–26 September 2018, Proceedings of SPIE Vol. 10781: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1078104, at <https://doi.org/10.1117/12.2324715>.
- Markham, B., Goward, S.N., Arvidson, T., Barsi, J., and Scaramuzza, P., 2006, Landsat-7 long-term acquisition plan radiometry—Evolution over time: *Photogrammetric Engineering and Remote Sensing*, v. 72, no. 10, p. 1129–1135, at <https://doi.org/10.14358/PERS.72.10.1129>.
- Markham, B., Jenstrom, D., Sauer, B., Pszcolka, S., Dulski, V., Hair, J., McCorkel, J., Kvaran, G., Thome, K., et al., 2020, Landsat 9 mission update and status, *in* *Earth Observing Systems XXV 2020*, online virtual meeting, 24 August–4 September 2020, Proceedings of SPIE Vol. 11501: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 115010o, at <https://doi.org/10.1117/12.2569748>.
- Markham, B.L., Anderson, C.H., Choate, M.J., Crawford, C.J., Jenstrom, D.T., Masek, J.A., Pedelty, J.A., Sauer, B.K., and Thome, K.J., 2021, Landsat 9—Ready for launch, *in* *Earth Observing Systems XXVI 2021*, San Diego, Calif., 1–5 August 2021, Proceedings of SPIE Vol. 11829: Bellingham, Wash.,

- Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 118290j, at <https://doi.org/10.1117/12.2595885>.
- Markham, B.L., Barker, J.L., Barsi, J.A., Kaita, E., Thome, K.J., Helder, D.L., Palluconi, F.D., Schott, J.R., and Scaramuzza, P., 2002, Landsat-7 ETM+ radiometric stability and absolute calibration, *in* Sensors, Systems, and Next-Generation Satellites VI, Agia Pelagia, Crete, 23–26 September 2002, Proceedings of SPIE Vol. 4881: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 308–318, at <https://doi.org/10.1117/12.462998>.
- Markham, B.L., Barker, J.L., Boncyk, W.C., Kaita, E., and Helder, D.L., 1996, Landsat-7 Enhanced Thematic Mapper Plus in-flight radiometric calibration, *in* 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1273–1275, at <https://doi.org/10.1109/IGARSS.1996.516635>.
- Markham, B.L., Barker, J.L., Kaita, E., Barsi, J.A., Helder, D.L., Palluconi, F.D., Schott, J.R., Thome, K.J., Morfitt, R., and Scaramuzza, P., 2001, Landsat-7 ETM+ radiometric calibration—Two years on-orbit, *in* 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 518–520, at <https://doi.org/10.1109/IGARSS.2001.976208>.
- Markham, B.L., Barker, J.L., Pedelty, J.A., Irons, J.R., and Williams, D.L., 1999, Landsat-7 mission update and on-orbit ETM+ radiometric performance, *in* 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Hamburg, Germany, 28 June–2 July 1999, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1494–1496, at <https://doi.org/10.1109/IGARSS.1999.771998>.
- Markham, B.L., Barsi, J.A., Helder, D.L., Thome, K.J., and Barker, J.L., 2006, Evaluation of the Landsat-5 TM radiometric calibration history using desert test sites, *in* Sensors, Systems, and Next-Generation Satellites X, Stockholm, Sweden, 11–13 September 2006, Proceedings of SPIE Vol. 6361: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 63610V, at <https://doi.org/10.1117/12.690065>.
- Markham, B.L., Barsi, J.A., Kaita, E., Ong, L., Haque, M.O., Mishra, N., Czaplak-Myers, J., Pahlevan, N., and Helder, D.L., 2014, Landsat-8 Operational Land Imager on-orbit radiometric calibration and stability, *in* Earth Observing Systems XIX, San Diego, Calif., 18–20 August 2014, Proceedings of SPIE Vol. 9218: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 921815, at <https://doi.org/10.1117/12.2063159>.
- Markham, B.L., Barsi, J.A., Morfitt, R., Choate, M., Montanaro, M., Arvidson, T., and Irons, J.R., 2015, Landsat 8—Status and on-orbit performance, *in* Sensors, Systems, and Next-Generation Satellites XIX, Toulouse, France, 21–24 September 2015, Proceedings of SPIE Vol. 9639: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 963908, at <https://doi.org/10.1117/12.2194905>.
- Markham, B.L., Barsi, J.A., Thome, K.J., Barker, J.L., Scaramuzza, P.L., and Helder, D.L., 2005, SLC-off Landsat-7 ETM+ reflective band radiometric calibration, *in* Earth Observing Systems X, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5882: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 58820d, at <https://doi.org/10.1117/12.620021>.

- Markham, B.L., Boncyk, W.E., Helder, D.L., and Barker, J.L., 1997, Landsat-7 enhanced thematic mapper plus radiometric calibration: *Canadian Journal of Remote Sensing*, v. 23, no. 4, p. 318–332, at <https://doi.org/10.1080/07038992.1997.10855218>.
- Markham, B.L., Dabney, P.W., Reuter, D., Thome, K.J., Irons, J.R., Barsi, J.A., and Montanaro, M., 2011, Landsat Data Continuity Mission operational land imager and thermal infrared sensor performance, *in Earth Observing Systems XVI*, San Diego, Calif., 23–25 August 2011, Proceedings of SPIE Vol. 8153: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 81530D, at <https://doi.org/10.1117/12.895542>.
- Markham, B.L., Haque, M.O., Barsi, J.A., Micijevic, E., Helder, D.L., Thome, K.J., Aaron, D.B., and Czapla-Myers, J.S., 2012, Landsat-7 ETM+—12 years on-orbit reflective-band radiometric performance: *IEEE Transactions on Geoscience and Remote Sensing*, v. 50, no. 5 PART 2, p. 2056–2062, at <https://doi.org/10.1109/TGRS.2011.2169803>.
- Markham, B.L., and Helder, D.L., 2012, Forty-year calibrated record of Earth-reflected radiance from Landsat—A review: *Remote Sensing of Environment*, v. 122, p. 30–40, at <https://doi.org/10.1016/j.rse.2011.06.026>.
- Markham, B.L., Knight, E.J., Canova, B., Donley, E., Kvaran, G., Lee, K., Barsi, J.A., Pedelty, J.A., Dabney, P.W., and Irons, J.R., 2012, The Landsat Data Continuity Mission Operational Land Imager (OLI) sensor, *in 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Munich, Germany, 22–27 July 2012, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6995–6998, at <https://doi.org/10.1109/IGARSS.2012.6351961>.
- Markham, B.L., Ong, L., Barsi, J.A., Mendenhall, J.A., Lencioni, D.E., Helder, D.L., Hollaren, D.M., and Morfitt, R., 2006, Radiometric calibration stability of the EO-1 Advanced Land Imager—5 years on-orbit, *in Sensors, Systems, and Next-Generation Satellites X*, Stockholm, Sweden, 11–13 September 2006, Proceedings of SPIE Vol. 6361: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 63610U, at <https://doi.org/10.1117/12.690058>.
- Markham, B.L., Storey, J.C., and Irons, J.R., 2013, Landsat Data Continuity Mission - now Landsat-8—six months on orbit, *in Earth Observing Systems XVIII*, San Diego, Calif., 26–29 August 2013, Proceedings of SPIE Vol. 8866: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 88661B, at <https://doi.org/10.1117/12.2025290>.
- Markham, B.L., Storey, J.C., Williams, D.L., and Irons, J.R., 2004, Landsat sensor performance—History and current status: *IEEE Transactions on Geoscience and Remote Sensing*, v. 42, no. 12, p. 2691–2694, at <https://doi.org/10.1109/TGRS.2004.840720>.
- Markham, B.L., Thome, K.J., Barsi, J.A., Kaita, E., Helder, D.L., Barker, J.L., and Scaramuzza, P.L., 2004, Landsat-7 ETM+ on-orbit reflective-band radiometric stability and absolute calibration: *IEEE Transactions on Geoscience and Remote Sensing*, v. 42, no. 12, p. 2810–2820, at <https://doi.org/10.1109/TGRS.2004.836389>.
- Marshak, A., Ackerman, A., da Silva, A.M., Eck, T., Holben, B., Kahn, R., Kleidman, R., Knobelspiesse, K., Levy, R., et al., 2021, Aerosol properties in cloudy environments from remote sensing observations. A review of the current state of knowledge: *Bulletin of the American Meteorological Society*, v. 102, no. 11, p. E2177–E2197, at <https://doi.org/10.1175/BAMS-D-20-0225.1>.

- Marshak, A., Davis, A., Cahalan, R.F., and Wiscombe, W., 1998, Nonlocal independent pixel approximation—Direct and inverse problems: *IEEE Transactions on Geoscience and Remote Sensing*, v. 36, no. 1, p. 192–205, at <https://doi.org/10.1109/36.655329>.
- Marshak, A., Davis, A., Wiscombe, W., and Cahalan, R.F., 1997, Inhomogeneity effects on cloud shortwave absorption measurements—Two-aircraft simulations: *Journal of Geophysical Research Atmospheres*, v. 102, no. 14, p. 16619–16637, at <https://doi.org/10.1029/97JD01153>.
- Marshak, A., Davis, A., Wiscombe, W., and Cahalan, R.F., 1997, Scale invariance in liquid water distributions in marine stratocumulus. Part II—Multifractal properties and intermittency issues: *Journal of the Atmospheric Sciences*, v. 54, no. 11, p. 1423–1444, at [https://doi.org/10.1175/1520-0469\(1997\)054<1423:SIILWD>2.0.CO;2](https://doi.org/10.1175/1520-0469(1997)054<1423:SIILWD>2.0.CO;2).
- Marshak, A., Davis, A., Wiscombe, W., and Cahalan, R.F., 1998, Radiative effects of sub-mean free path liquid water variability observed in stratiform clouds: *Journal of Geophysical Research Atmospheres*, v. 103, no. D16, p. 19557–19567, at <https://doi.org/10.1029/98JD01728>.
- Marshak, A., Davis, A., Wiscombe, W., Ridgway, W., and Cahalan, R.F., 1998, Biases in shortwave column absorption in the presence of fractal clouds: *Journal of Climate*, v. 11, no. 3, p. 431–446, at [https://doi.org/10.1175/1520-0442\(1998\)011<0431:BISCAI>2.0.CO;2](https://doi.org/10.1175/1520-0442(1998)011<0431:BISCAI>2.0.CO;2).
- Marshak, A., Herman, J., Szabo, A., Blank, K., Carn, S., Cede, A., Geogdzhayev, I., Huang, D., Huang, L.K., et al., 2018, Earth observations from DSCOVR epic instrument: *Bulletin of the American Meteorological Society*, v. 99, no. 9, p. 1829–1850, at <https://doi.org/10.1175/BAMS-D-17-0223.1>.
- Marshak, A., Oreopoulos, L., Davis, A.B., Wiscombe, W.J., and Cahalan, R.F., 1999, Horizontal radiative fluxes in clouds and accuracy of the Independent Pixel Approximation at absorbing wavelengths: *Geophysical Research Letters*, v. 26, no. 11, p. 1585–1588, at <https://doi.org/10.1029/1999GL90030>.
- Marshak, A., Platnick, S., Várnai, T., Wen, G., and Cahalan, R.F., 2006, Impact of three-dimensional radiative effects on satellite retrievals of cloud droplet sizes: *Journal of Geophysical Research Atmospheres*, v. 111, no. 9, article D09207, at <https://doi.org/10.1029/2005JD006686>.
- Marshak, A., Wiscombe, W., Davis, A., Oreopoulos, L., and Cahalan, R.F., 1999, On the removal of the effect of horizontal fluxes in two-aircraft measurements of cloud absorption: *Quarterly Journal of the Royal Meteorological Society*, v. 125, no. 558, p. 2153–2170, at <https://doi.org/10.1256/smsqj.55810>.
- Marshall, M., and Thenkabail, P.S., 2014, Biomass modeling of four leading world crops using hyperspectral narrowbands in support of HypIRI mission: *Photogrammetric Engineering and Remote Sensing*, v. 80, no. 8, p. 757–772, at <https://doi.org/10.14358/PERS.80.8.757>.
- Marshall, M., and Thenkabail, P.S., 2015, Advantage of hyperspectral EO-1 Hyperion over multispectral IKONOS, GeoEye-1, WorldView-2, Landsat ETM+, and MODIS vegetation indices in crop biomass estimation: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 108, p. 205–218, at <https://doi.org/10.1016/j.isprsjprs.2015.08.001>.
- Marshall, M., and Thenkabail, P.S., 2015, Developing in situ non-destructive estimates of crop biomass to address issues of scale in remote sensing: *Remote Sensing*, v. 7, no. 1, p. 808–835, at <https://doi.org/10.3390/rs70100808>.

- Marshall, M., Thenkabail, P.S., Biggs, T., and Post, K., 2016, Hyperspectral narrowband and multispectral broadband indices for remote sensing of crop evapotranspiration and its components (transpiration and soil evaporation): *Agricultural and Forest Meteorology*, v. 218–219, p. 122–134, at <https://doi.org/10.1016/j.agrformet.2015.12.025>.
- Martin, H.M., Allen, R.G., Angel, J.R.P., Burge, J.H., Davison, W.B., DeRigne, S.T., Dettmann, L.R., Ketelsen, D.A., Kittrell, W.C., et al., 1998, Fabrication and measured quality of the MMT primary mirror, *in* *Advanced Technology Optical/IR Telescopes VI*, Kona, Hawaii, 23–25 March 1998, *Proceedings of SPIE Vol. 3352*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 194–204, at <https://doi.org/10.1117/12.319255>.
- Martin, H.M., Allen, R.G., Burge, J.H., Cuerden, B., Gressler, W., Hubler, W., Ketelsen, D., Kim, D.W., Kingsley, J.S., et al., 2014, Manufacture of the combined primary and tertiary mirrors of the Large Synoptic Survey Telescope, *in* *Advances in Optical and Mechanical Technologies for Telescopes and Instrumentation*, Montréal, Canada, 23–27 June 2014, *Proceedings of SPIE Vol. 9151*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 915125, at <https://doi.org/10.1117/12.2057317>.
- Martin, H.M., Allen, R.G., Burge, J.H., Davis, J.M., Davison, W.B., Johns, M., Kim, D.W., Kingsley, J.S., Law, K., et al., 2014, Production of primary mirror segments for the Giant Magellan Telescope, *in* *Advances in Optical and Mechanical Technologies for Telescopes and Instrumentation*, Montréal, Canada, 23–27 June 2014, *Proceedings of SPIE Vol. 9151*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 91510j, at <https://doi.org/10.1117/12.2057012>.
- Martin, H.M., Allen, R.G., Burge, J.H., Dettmann, L.R., Ketelsen, D.A., Kittrell, W.C., and Miller, S.M., 1999, Polishing of a 6.5 mf/1.25 mirror for the first Magellan telescope, *in* *Optical Fabrication and Testing*, Berlin, Germany, 26–28 May 1999, *Proceedings of SPIE Vol. 3739*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 47–55, at <https://doi.org/10.1117/12.360161>.
- Martin, H.M., Allen, R.G., Burge, J.H., Dettmann, L.R., Ketelsen, D.A., Miller, S.M., and Sasian, J.M., 2002, Fabrication of mirrors for the Magellan telescopes and the large binocular telescope, *in* *Large Ground-based Telescopes*, Waikoloa, Hawaii, 22–26 August 2002, *Proceedings of SPIE Vol. 4837*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 609–618, at <https://doi.org/10.1117/12.458606>.
- Martin, H.M., Allen, R.G., Burge, J.H., Kim, D.W., Kingsley, J.S., Law, K., Lutz, R.D., Strittmatter, P.A., Su, P., et al., 2012, Production of 8.4 m segments for the Giant Magellan Telescope, *in* *Modern Technologies in Space- and Ground-Based Telescopes and Instrumentation II*, Amsterdam, Netherlands, 1–6 July 2012, *Proceedings of SPIE Vol. 8450*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 84502d, at <https://doi.org/10.1117/12.926347>.
- Martin, H.M., Allen, R.G., Burge, J.H., Kim, D.W., Kingsley, J.S., Tuell, M.T., West, S.C., Zhao, C., and Zobrist, T., 2010, Fabrication and testing of the first 8.4 m off-axis segment for the Giant Magellan Telescope, *in* *Modern Technologies in Space- and Ground-Based Telescopes and Instrumentation*, San Diego, Calif., 27 June–2 July 2010, *Proceedings of SPIE Vol. 7739*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 77390a, at <https://doi.org/10.1117/12.857494>.

- Martin, H.M., Allen, R.G., Cuerden, B., DeRigne, S.T., Dettmann, L.R., Ketelsen, D.A., Miller, S.M., Parodi, G., and Warner, S., 2000, Primary mirror system for the first Magellan telescope, *in* *Optical Design, Materials, Fabrication, and Maintenance*, Munich, Germany, 27–29 March 2000, Proceedings of SPIE Vol. 4003: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 2–13, at <https://doi.org/10.1117/12.391497>.
- Martin, H.M., Allen, R.G., Cuerden, B., Hill, J.M., Ketelsen, D.A., Miller, S.M., Sasian, J.M., Tuell, M.T., and Warner, S., 2006, Manufacture of the second 8.4 m primary mirror for the Large Binocular Telescope, *in* *Optomechanical Technologies for Astronomy*, Orlando, Fla., 24–31 May 2006, Proceedings of SPIE Vol. 6273 I: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 62730c, at <https://doi.org/10.1117/12.672454>.
- Martin, H.M., Allen, R.G., Gasho, V., Jannuzi, B.T., Kim, D.W., Kingsley, J.S., Law, K., Loeff, A., Lutz, R.D., et al., 2018, Manufacture of primary mirror segments for the giant Magellan telescope, *in* *Advances in Optical and Mechanical Technologies for Telescopes and Instrumentation III*, Austin, Tex., 10–15 June 2018, Proceedings of SPIE Vol. 10706: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 107060V, at <https://doi.org/10.1117/12.2312935>.
- Martin, S., Drucker, R., Aster, R., Davey, F., Okal, E., Scambos, T.A., and MacAyeal, D., 2010, Kinematic and seismic analysis of giant tabular Iceberg breakup at Cape Adare, Antarctica: *Journal of Geophysical Research Solid Earth*, v. 115, no. 6, article B06311, at <https://doi.org/10.1029/2009JB006700>.
- Martin, T.C., Allen, R.G., Brazil, L.E., Burkhalter, J.P., and Polly, J.S., 2013, Evapotranspiration estimates from remote sensing for irrigation water management, *in* Qu, J., Powell, A., and Sivakumar, M.V.K., eds., *Satellite-based applications on climate change*: Dordrecht, Netherlands, Springer, p. 195–216, at https://doi.org/10.1007/978-94-007-5872-8_13.
- Martínez Pastur, G., Aravena Acuña, M.C., Silveira, E.M.O., Von Müller, A., La Manna, L., González-Polo, M., Chaves, J.E., Cellini, J.M., Lencinas, M.V., et al., 2022, Mapping soil organic carbon content in patagonian forests based on climate, topography and vegetation metrics from satellite imagery: *Remote Sensing*, v. 14, no. 22, article 5702, at <https://doi.org/10.3390/rs14225702>.
- Martínez-Alonso, S., Rustad, J.R., and Goetz, A.F.H., 2002, Ab initio quantum mechanical modeling of infrared vibrational frequencies of the OH group in dioctahedral phyllosilicates. Part II—Main physical factors governing the OH vibrations: *American Mineralogist*, v. 87, no. 8–9, p. 1224–1234, at <https://doi.org/10.2138/am-2002-8-922>.
- Martínez-Alonso, S., Rustad, J.R., and Goetz, A.F.H., 2002, Ab initio quantum mechanical modeling of infrared vibrational frequencies of the OH group in dioctahedral phyllosilicates. Part I—Methods, results and comparison to experimental data: *American Mineralogist*, v. 87, no. 8–9, p. 1215–1223, at <https://doi.org/10.2138/am-2002-8-921>.
- Martins, V.S., Lyapustin, A., Wang, Y., Giles, D.M., Smirnov, A., Slutsker, I., and Korokin, S., 2019, Global validation of columnar water vapor derived from EOS MODIS-MAIAC algorithm against the ground-based AERONET observations: *Atmospheric Research*, v. 225, p. 181–192, at <https://doi.org/10.1016/j.atmosres.2019.04.005>.
- Martins, V.S., Lyapustin, A.I., De Carvalho, L.A.S., Barbosa, C.C.F., and Novo, E.M.L.M., 2017, Validation of high-resolution MAIAC aerosol product over South America: *Journal of Geophysical Research*, v. 122, no. 14, p. 7537–7559, at <https://doi.org/10.1002/2016JD026301>.

- Martins, V.S., Novo, E.M.L.M., Lyapustin, A.I., Aragão, L.E.O.C., Freitas, S.R., and Barbosa, C.C.F., 2018, Seasonal and interannual assessment of cloud cover and atmospheric constituents across the Amazon (2000–2015)—Insights for remote sensing and climate analysis: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 145, p. 309–327, at <https://doi.org/10.1016/j.isprsjprs.2018.05.013>.
- Martins, V.S., Roy, D.P., Huang, H., Boschetti, L., Zhang, H.K., and Yan, L., 2022, Deep learning high resolution burned area mapping by transfer learning from Landsat-8 to PlanetScope: *Remote Sensing of Environment*, v. 280, article 113203, at <https://doi.org/10.1016/j.rse.2022.113203>.
- Martinuzzi, S., Allstadt, A.J., Bateman, B.L., Heglund, P.J., Pidgeon, A.M., Thogmartin, W.E., Vavrus, S.J., and Radeloff, V.C., 2016, Future frequencies of extreme weather events in the National Wildlife Refuges of the conterminous U.S: *Biological Conservation*, v. 201, p. 327–335, at <https://doi.org/10.1016/j.biocon.2016.07.007>.
- Martinuzzi, S., Allstadt, A.J., Pidgeon, A.M., Flather, C.H., Jolly, W.M., and Radeloff, V.C., 2019, Future changes in fire weather, spring droughts, and false springs across U.S. National forests and grasslands: *Ecological Applications*, v. 29, no. 5, article e01904, at <https://doi.org/10.1002/eap.1904>.
- Martinuzzi, S., Cook, B.D., Helmer, E.H., Keller, M., Locke, D.H., Marcano-Vega, H., Uriarte, M., and Morton, D.C., 2022, Patterns and controls on island-wide aboveground biomass accumulation in second-growth forests of Puerto Rico: *Biotropica*, v. 54, no. 5, p. 1146–1159, at <https://doi.org/10.1111/btp.13122>.
- Martinuzzi, S., Gavier-Pizarro, G.I., Lugo, A.E., and Radeloff, V.C., 2015, Future land-use changes and the potential for novelty in ecosystems of the United States: *Ecosystems*, v. 18, no. 8, p. 1332–1342, at <https://doi.org/10.1007/s10021-015-9901-x>.
- Martinuzzi, S., Januchowski-Hartley, S.R., Pracheil, B.M., McIntyre, P.B., Plantinga, A.J., Lewis, D.J., and Radeloff, V.C., 2014, Threats and opportunities for freshwater conservation under future land use change scenarios in the United States: *Global Change Biology*, v. 20, no. 1, p. 113–124, at <https://doi.org/10.1111/gcb.12383>.
- Martinuzzi, S., Lugo, A.E., Brandeis, T.J., and Helmer, E.H., 2013, Case study—Geographic distribution and level of novelty of Puerto Rican forests, *in* Hobbs, R.J., Higgs, E.S., and Hall, C.M., eds., *Novel ecosystems—Intervening in the new ecological world order*: Chichester, UK, John Wiley & Sons, p. 81–87, at <https://doi.org/10.1002/9781118354186.ch9>.
- Martinuzzi, S., Olah, A.M., Rivera, L., Politi, N., Silveira, E.M.O., Pastur, G.M., Rosas, Y.M., Lizarraga, L., Názaro, P., et al., 2023, Closing the research-implementation gap—Integrating species and human footprint data into Argentina’s forest planning: *Biological Conservation*, v. 286, article 110257, at <https://doi.org/10.1016/j.biocon.2023.110257>.
- Martinuzzi, S., Radeloff, V.C., Higgins, J.V., Helmers, D.P., Plantinga, A.J., and Lewis, D.J., 2013, Key areas for conserving United States’ biodiversity likely threatened by future land use change: *Ecosphere*, v. 4, no. 5, article A58, at <https://doi.org/10.1890/ES12-00376.1>.
- Martinuzzi, S., Radeloff, V.C., Joppa, L.N., Hamilton, C.M., Helmers, D.P., Plantinga, A.J., and Lewis, D.J., 2015, Scenarios of future land use change around United States’ protected areas: *Biological Conservation*, v. 184, p. 446–455, at <https://doi.org/10.1016/j.biocon.2015.02.015>.
- Martinuzzi, S., Radeloff, V.C., Pastur, G.M., Rosas, Y.M., Lizarraga, L., Politi, N., Rivera, L., Herrera, A.H., Silveira, E.M.O., et al., 2021, Informing forest conservation planning with detailed human

- footprint data for Argentina: *Global Ecology and Conservation*, v. 31, article e01787, at <https://doi.org/10.1016/j.gecco.2021.e01787>.
- Martinuzzi, S., Ramos-González, O.M., Muñoz-Erickson, T.A., Locke, D.H., Lugo, A.E., and Radeloff, V.C., 2018, Vegetation cover in relation to socioeconomic factors in a tropical city assessed from sub-meter resolution imagery: *Ecological Applications*, v. 28, no. 3, p. 681–693, at <https://doi.org/10.1002/eap.1673>.
- Martinuzzi, S., Rivera, L., Politi, N., Bateman, B.L., Ruiz De Los Llanos, E., Lizarraga, L., De Bustos, M.S., Chalukian, S., Pidgeon, A.M., and Radeloff, V.C., 2018, Enhancing biodiversity conservation in existing land-use plans with widely available datasets and spatial analysis techniques: *Environmental Conservation*, v. 45, no. 3, p. 252–260, at <https://doi.org/10.1017/S0376892917000455>.
- Martinuzzi, S., Withey, J.C., Pidgeon, A.M., Plantinga, A.J., McKerrow, A.J., Williams, S.G., Helmers, D.P., and Radeloff, V.C., 2015, Future land-use scenarios and the loss of wildlife habitats in the southeastern United States: *Ecological Applications*, v. 25, no. 1, p. 160–171, at <https://doi.org/10.1890/13-2078.1>.
- Marx, A., and Goward, S.N., 2013, Remote sensing in human rights and international humanitarian law monitoring—Concepts and methods: *Geographical Review*, v. 103, no. 1, p. 100–111, at <https://doi.org/10.1111/j.1931-0846.2013.00188.x>.
- Masek, J., Ju, J., Roger, J.C., Skakun, S., Claverie, M., and Dungan, J., 2018, Harmonized Landsat/Sentinel-2 products for land monitoring, in 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8163–8165, at <https://doi.org/10.1109/IGARSS.2018.8517760>.
- Masek, J.G., 2001, Stability of boreal forest stands during recent climate change—Evidence from Landsat satellite imagery: *Journal of Biogeography*, v. 28, no. 8, p. 967–976, at <https://doi.org/10.1046/j.1365-2699.2001.00612.x>.
- Masek, J.G., Cohen, W.B., Leckie, D., Wulder, M.A., Vargas, R., De Jong, B., Healey, S.P., Law, B., Birdsey, R., et al., 2011, Recent rates of forest harvest and conversion in North America: *Journal of Geophysical Research Biogeosciences*, v. 116, no. 2, article G00K03, at <https://doi.org/10.1029/2010JG001471>.
- Masek, J.G., and Collatz, G.J., 2006, Estimating forest carbon fluxes in a disturbed southeastern landscape—Integration of remote sensing, forest inventory, and biogeochemical modeling: *Journal of Geophysical Research Biogeosciences*, v. 111, no. 1, article G01006, at <https://doi.org/10.1029/2005JG000062>.
- Masek, J.G., and Duncan, C.C., 1998, Minimum-work mountain building: *Journal of Geophysical Research Solid Earth*, v. 103, no. 1, p. 907–917, at <https://doi.org/10.1029/97JB03213>.
- Masek, J.G., Goward, S.N., Kennedy, R.E., Cohen, W.B., Moisen, G.G., Schleeweis, K., and Huang, C., 2013, United States forest disturbance trends observed using Landsat time series: *Ecosystems*, v. 16, no. 6, p. 1087–1104, at <https://doi.org/10.1007/s10021-013-9669-9>.
- Masek, J.G., Goward, S.N., and Shock, C.T., 2000, REALM—An image database for Landsat-7 data, in Algorithms for Multispectral, Hyperspectral, and Ultraspectral Imagery VI, Orlando, Fla., 24–26 April 2000, Proceedings of SPIE Vol. 4049: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 328–335, at <https://doi.org/10.1117/12.410356>.

- Masek, J.G., Hayes, D.J., Joseph Hughes, M., Healey, S.P., and Turner, D.P., 2015, The role of remote sensing in process-scaling studies of managed forest ecosystems: *Forest Ecology and Management*, v. 355, p. 109–123, at <https://doi.org/10.1016/j.foreco.2015.05.032>.
- Masek, J.G., Honzak, M., Goward, S.N., Liu, P., and Pak, E., 2001, Landsat-7 ETM+ as an observatory for land cover initial radiometric and geometric comparisons with Landsat-5 Thematic Mapper: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 118–130, at [https://doi.org/10.1016/S0034-4257\(01\)00254-1](https://doi.org/10.1016/S0034-4257(01)00254-1).
- Masek, J.G., Huang, C., Wolfe, R., Cohen, W.B., Hall, F., Kutler, J., and Nelson, P., 2008, North American forest disturbance mapped from a decadal Landsat record: *Remote Sensing of Environment*, v. 112, no. 6, p. 2914–2926, at <https://doi.org/10.1016/j.rse.2008.02.010>.
- Masek, J.G., Lindsay, F.E., and Goward, S.N., 2000, Dynamics of urban growth in the Washington DC metropolitan area, 1973-1996, from Landsat observations: *International Journal of Remote Sensing*, v. 21, no. 18, p. 3473–3486, at <https://doi.org/10.1080/014311600750037507>.
- Masek, J.G., Shock, C.T., and Goward, S.N., 2001, Research Environment for Advanced Landsat Monitoring (REALM)—A computational approach for Landsat-7 global science: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 204–216, at [https://doi.org/10.1016/S0034-4257\(01\)00260-7](https://doi.org/10.1016/S0034-4257(01)00260-7).
- Masek, J.G., and Sun, G., 2004, A spectral-angle methodology for mapping net forest cover change in northeastern China: *International Journal of Remote Sensing*, v. 25, no. 24, p. 5629–5636, at <https://doi.org/10.1080/01431160410001709066>.
- Masek, J.G., Vermote, E.F., Saleous, N.E., Wolfe, R., Hall, F.G., Huemmrich, K.F., Gao, F., Kutler, J., and Lim, T.K., 2006, A Landsat surface reflectance dataset for North America, 1990-2000: *IEEE Geoscience and Remote Sensing Letters*, v. 3, no. 1, p. 68–72, at <https://doi.org/10.1109/LGRS.2005.857030>.
- Masek, J.G., Wolfe, R., Hall, F., Cohen, W.B., Kennedy, R.E., Powell, S., Goward, S.N., Huang, C., Healey, S.P., and Moisen, G., 2007, Assessing North American forest disturbance from the Landsat archive, in *2007 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Barcelona, Spain, 23–28 July 2007, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5294–5297, at <https://doi.org/10.1109/IGARSS.2007.4424057>.
- Masek, J.G., Wulder, M.A., Markham, B., McCorkel, J., Crawford, C.J., Storey, J., and Jenstrom, D.T., 2020, Landsat 9—Empowering open science and applications through continuity: *Remote Sensing of Environment*, v. 248, article 111968, at <https://doi.org/10.1016/j.rse.2020.111968>.
- Maslanik, J., Fowler, C., Key, J., Scambos, T.A., Hutchinson, T., and Emery, W., 1997, AVHRR-based Polar Pathfinder products for modeling applications: *Annals of Glaciology*, v. 25, p. 388–392, at <https://doi.org/10.3189/S0260305500014336>.
- Massada, A.B., and Radeloff, V.C., 2010, Two multi-scale contextual approaches for mapping spatial pattern: *Landscape Ecology*, v. 25, no. 5, p. 711–725, at <https://doi.org/10.1007/s10980-010-9452-7>.
- Massey, R., Sankey, T.T., Congalton, R.G., Yadav, K., Thenkabail, P.S., Ozdogan, M., and Sánchez Meador, A.J., 2017, MODIS phenology-derived, multi-year distribution of conterminous U.S. crop types: *Remote Sensing of Environment*, v. 198, p. 490–503, at <https://doi.org/10.1016/j.rse.2017.06.033>.

- Massom, R.A., Scambos, T.A., Bennetts, L.G., Reid, P., Squire, V.A., and Stammerjohn, S.E., 2018, Antarctic ice shelf disintegration triggered by sea ice loss and ocean swell: *Nature*, v. 558, no. 7710, p. 383–389, at <https://doi.org/10.1038/s41586-018-0212-1>.
- Massom, R.A., Stammerjohn, S.E., Lefebvre, W., Harangozo, S.A., Adams, N., Scambos, T.A., Pook, M.J., and Fowler, C., 2008, West Antarctic Peninsula sea ice in 2005—Extreme ice compaction and ice edge retreat due to strong anomaly with respect to climate: *Journal of Geophysical Research Oceans*, v. 113, no. 2, article C02S20, at <https://doi.org/10.1029/2007JC004239>.
- Massom, R.A., Worby, A., Lytle, V., Markus, T., Allison, I., Scambos, T.A., Enomoto, H., Tateyama, K., Haran, T., et al., 2006, ARISE (Antarctic Remote Ice Sensing Experiment) in the East 2003—Validation of satellite-derived sea-ice data products: *Annals of Glaciology*, v. 44, no. 1, p. 288–296, at <https://doi.org/10.3189/172756406781811268>.
- Masuoka, E., Roy, D.P., Wolfe, R., Morissette, J., Sinno, S., Teague, M., Saleous, N., Devadiga, S., Justice, C.O., and Nickeson, J., 2011, MODIS land data products—Generation, quality assurance and validation, in Ramachandran, B., Justice, C.O., and Abrams, M.J., eds., *Land remote sensing and global environmental change*: New York, N.Y., Springer, p. 509–531, at https://doi.org/10.1007/978-1-4419-6749-7_22.
- Matasci, G., Hermosilla, T., Wulder, M.A., White, J.C., Coops, N.C., Hobart, G.W., Bolton, D.K., Tompalski, P., and Bater, C.W., 2018, Three decades of forest structural dynamics over Canada’s forested ecosystems using Landsat time-series and lidar plots: *Remote Sensing of Environment*, v. 216, p. 697–714, at <https://doi.org/10.1016/j.rse.2018.07.024>.
- Matasci, G., Hermosilla, T., Wulder, M.A., White, J.C., Coops, N.C., Hobart, G.W., and Zald, H.S.J., 2018, Large-area mapping of Canadian boreal forest cover, height, biomass and other structural attributes using Landsat composites and lidar plots: *Remote Sensing of Environment*, v. 209, p. 90–106, at <https://doi.org/10.1016/j.rse.2017.12.020>.
- Matasci, G., Hermosilla, T., Wulder, M.A., White, J.C., Hobart, G.W., Zald, H.S.J., and Coops, N.C., 2017, A space-time data cube—Multi-temporal forest structure maps from Landsat and lidar, in 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, Tex., 23–28 July 2017, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2581–2584, at <https://doi.org/10.1109/IGARSS.2017.8127523>.
- Mathieu, R., Main, R., Roy, D., Naidoo, L., and Yang, H., 2018, Detection of burned areas in southern African savannahs using time series of C-band Sentinel-1 data, in 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5337–5339, at <https://doi.org/10.1109/IGARSS.2018.8517838>.
- Mathieu, R., Main, R., Roy, D.P., Naidoo, L., and Yang, H., 2019, The effect of surface fire in savannah systems in the Kruger National Park (KNP), South Africa, on the backscatter of C-band Sentinel-1 images: *Fire*, v. 2, no. 3, article 37, at <https://doi.org/10.3390/fire2030037>.
- Matisziw, T.C., and Hipple, J.D., 2001, Spatial clustering and state/county legislation—The case of hog production in Missouri: *Regional Studies*, v. 35, no. 8, p. 719–730, at <https://doi.org/10.1080/00343400120084704>.
- Matricardi, E.A.T., Skole, D.L., Cochrane, M.A., Pedlowski, M., and Chomentowski, W., 2007, Multi-temporal assessment of selective logging in the Brazilian Amazon using Landsat data:

- International Journal of Remote Sensing, v. 28, no. 1, p. 63–82, at <https://doi.org/10.1080/01431160600763014>.
- Matricardi, E.A.T., Skole, D.L., Cochrane, M.A., Qi, J., and Chomentowski, W., 2005, Monitoring selective logging in tropical evergreen forests using Landsat—Multitemporal regional analyses in Mato Grosso, Brazil: *Earth Interactions*, v. 9, no. 24, article 24, at <https://doi.org/10.1175/EI142.1>.
- Matricardi, E.A.T., Skole, D.L., Costa, O.B., Pedlowski, M.A., Samek, J.H., and Miguel, E.P., 2020, Long-term forest degradation surpasses deforestation in the Brazilian Amazon: *Science*, v. 369, no. 6509, p. 1378–1382, at <https://doi.org/10.1126/science.abb3021>.
- Matricardi, E.A.T., Skole, D.L., Pedlowski, M.A., and Chomentowski, W., 2013, Assessment of forest disturbances by selective logging and forest fires in the Brazilian Amazon using Landsat data: *International Journal of Remote Sensing*, v. 34, no. 4, p. 1057–1086, at <https://doi.org/10.1080/01431161.2012.717182>.
- Matricardi, E.A.T., Skole, D.L., Pedlowski, M.A., Chomentowski, W., and Fernandes, L.C., 2010, Assessment of tropical forest degradation by selective logging and fire using Landsat imagery: *Remote Sensing of Environment*, v. 114, no. 5, p. 1117–1129, at <https://doi.org/10.1016/j.rse.2010.01.001>.
- Matsuoka, K., Hindmarsh, R.C.A., Moholdt, G., Bentley, M.J., Pritchard, H.D., Brown, J., Conway, H., Drews, R., Durand, G., et al., 2015, Antarctic ice rises and rumples—Their properties and significance for ice-sheet dynamics and evolution: *Earth-Science Reviews*, v. 150, p. 724–745, at <https://doi.org/10.1016/j.earscirev.2015.09.004>.
- Mavko, M.E., Thome, K.J., and Reagan, J.A., 2003, Compiled aerosol optical depth and extinction-to-backscatter climatology for Tucson, AZ, in *Optical Spectroscopic Techniques and Instrumentation for Atmospheric and Space Research V*, San Diego, Calif., 7–8 August 2003, *Proceedings of SPIE Vol. 5157*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 13–22, at <https://doi.org/10.1117/12.506578>.
- Maxwell, S.K., 2004, Filling Landsat ETM+ SLC-off gaps using a segmentation model approach: *Photogrammetric Engineering and Remote Sensing*, v. 70, no. 10, p. 1109–1111, at <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=8e60413d7a5bcdad61784af34faebfb910e0805>.
- Maxwell, S.K., 2010, Generating land cover boundaries from remotely sensed data using object-based image analysis—Overview and epidemiological application: *Spatial and Spatio-temporal Epidemiology*, v. 1, no. 4, p. 231–237, at <https://doi.org/10.1016/j.sste.2010.09.005>.
- Maxwell, S.K., 2011, Downscaling pesticide use data to the crop field level in California using Landsat satellite imagery—Paraquat case study: *Remote Sensing*, v. 3, no. 9, p. 1805–1816, at <https://doi.org/10.3390/rs3091805>.
- Maxwell, S.K., Airola, M., and Nuckols, J.R., 2010, Using Landsat satellite data to support pesticide exposure assessment in California: *International Journal of Health Geographics*, v. 9, no. 46, p. 1–14, at <https://doi.org/10.1186/1476-072X-9-46>.
- Maxwell, S.K., and Craig, M.E., 2008, Use of Landsat ETM+ SLC-off segment-based gap-filled imagery for crop type mapping: *Geocarto International*, v. 23, no. 3, p. 169–179, at <https://doi.org/10.1080/10106040701207399>.

- Maxwell, S.K., Hoffer, R.M., and Chapman, P.L., 2002, AVHRR channel selection for land cover classification: *International Journal of Remote Sensing*, v. 23, no. 23, p. 5061–5073, at <https://doi.org/10.1080/01431160210145588>.
- Maxwell, S.K., Hoffer, R.M., and Chapman, P.L., 2002, AVHRR composite period selection for land cover classification: *International Journal of Remote Sensing*, v. 23, no. 23, p. 5043–5059, at <https://doi.org/10.1080/01431160210145579>.
- Maxwell, S.K., Meliker, J.R., and Goovaerts, P., 2010, Use of land surface remotely sensed satellite and airborne data for environmental exposure assessment in cancer research: *Journal of Exposure Science and Environmental Epidemiology*, v. 20, no. 2, p. 176–185, at <https://doi.org/10.1038/jes.2009.7>.
- Maxwell, S.K., Nuckols, J.R., and Ward, M.H., 2006, A method for mapping corn using the US Geological Survey 1992 National Land Cover Dataset: *Computers and Electronics in Agriculture*, v. 51, no. 1-2, p. 54–65, at <https://doi.org/10.1016/j.compag.2005.11.003>.
- Maxwell, S.K., Nuckols, J.R., Ward, M.H., and Hoffer, R.M., 2004, An automated approach to mapping corn from Landsat imagery: *Computers and Electronics in Agriculture*, v. 43, no. 1, p. 43–54, at <https://doi.org/10.1016/j.compag.2003.09.001>.
- Maxwell, S.K., Schmidt, G.L., and Storey, J.C., 2007, A multi-scale segmentation approach to filling gaps in Landsat ETM+ SLC-off images: *International Journal of Remote Sensing*, v. 28, no. 23, p. 5339–5356, at <https://doi.org/10.1080/01431160601034902>.
- Maxwell, S.K., and Sylvester, K.M., 2012, Identification of “ever-cropped” land (1984-2010) using Landsat annual maximum NDVI image composites—Southwestern Kansas case study: *Remote Sensing of Environment*, v. 121, p. 186–195, at <https://doi.org/10.1016/j.rse.2012.01.022>.
- Maxwell, S.K., Wood, E.C., and Janus, A., 2008, Comparison of the USGS 2001 NLCD to the 2002 USDA Census of Agriculture for the upper midwest United States: *Agriculture, Ecosystems and Environment*, v. 127, no. 1-2, p. 141–145, at <https://doi.org/10.1016/j.agee.2008.03.012>.
- Mayaux, P., Bartholomé, E., Fritz, S., and Belward, A.S., 2004, A new land-cover map of Africa for the year 2000: *Journal of Biogeography*, v. 31, no. 6, p. 861–877, at <https://doi.org/10.1111/j.1365-2699.2004.01073.x>.
- Mayaux, P., Eva, H., Brink, A., Achard, F., and Belward, A.S., 2008, Remote sensing of land-cover and land-use dynamics, *in* Chuvieco, E., ed., *Earth observation of global change—The role of satellite remote sensing in monitoring the global environment*: Dordrecht, Netherlands, Springer, p. 85–108, at https://doi.org/10.1007/978-1-4020-6358-9_5.
- Mayaux, P., Pekel, J.F., Desclée, B., Donnay, F., Lupi, A., Achard, F., Clerici, M., Bodart, C., Brink, A., et al., 2013, State and evolution of the African rainforests between 1990 and 2010: *Philosophical Transactions of the Royal Society B—Biological Sciences*, v. 368, no. 1625, article 20120300, at <https://doi.org/10.1098/rstb.2012.0300>.
- Mayaux, P., Tadoum, M., De Wasseige, C., Eba’a Atyi, R., Billand, A., Nasi, R., Defourny, P., Bayol, N., Cassagne, B., et al., 2009, The observatory for forests of central Africa, *in* *Sustaining the millennium development goals*, International Symposium on Remote Sensing of Environment, 33rd, Stresa, Italy, 4–8 May 2009, Proceedings: Tucson, Ariz., International Center for Remote Sensing of Environment, p. 681–684, at http://www.observatoire-comifac.net/docs/docsOFAC/OFAC_Stresa.pdf.

- Mayaux, P., Vancutsem, C., Pekel, J.F., de Wasseige, C., Defourny, P., Hansen, M.C., and Mane, L., 2016, Continental and regional approaches for improving land-cover maps of Africa, *in* Giri, C.P., ed., *Remote sensing of land use and land cover—Principles and applications*: Boca Raton, Fla., CRC Press, p. 265–273, at <https://doi.org/10.1201/b11964-23>.
- Mbow, C., Chhin, S., Sambou, B., and Skole, D.L., 2013, Potential of dendrochronology to assess annual rates of biomass productivity in savanna trees of West Africa: *Dendrochronologia*, v. 31, no. 1, p. 41–51, at <https://doi.org/10.1016/j.dendro.2012.06.001>.
- Mbow, C., Smith, P., Skole, D.L., Duguma, L., and Bustamante, M., 2014, Achieving mitigation and adaptation to climate change through sustainable agroforestry practices in africa: *Current Opinion in Environmental Sustainability*, v. 6, no. 1, p. 8–14, at <https://doi.org/10.1016/j.cosust.2013.09.002>.
- McAndrew, B., and McCorkel, J., 2019, Time resolved irradiance of an integrating sphere illuminated by a mode-locked optical parametric oscillator, *in* *Earth Observing Systems XXIV 2019*, San Diego, Calif., 11–15 August 2019, *Proceedings of SPIE Vol. 11127*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 111270k, at <https://doi.org/10.1117/12.2530295>.
- McAndrew, B., McCorkel, J.T., Shuman, T., Zukowski, B., Traore, A., Rodriguez, M., Brown, S., and Woodward, J., 2018, Goddard Laser for absolute measurement of radiance for instrument calibration in the ultraviolet to short wave infrared, *in* *CLEO—Applications and Technology, CLEO_AT 2018*, San Jose, Calif., 13–18 May 2018, Part F92-CLEO_AT 2018: Washington, D.C., Optical Society of America, paper no. AF3M.6, at https://doi.org/10.1364/CLEO_AT.2018.AF3M.6.
- McCabe, J.D., Yin, H., Cruz, J., Radeloff, V., Pidgeon, A., Bonter, D.N., and Zuckerberg, B., 2018, Prey abundance and urbanization influence the establishment of avian predators in a metropolitan landscape: *Proceedings of the Royal Society B—Biological Sciences*, v. 285, no. 1890, article rspb.2018.2120, at <https://doi.org/10.1098/rspb.2018.2120>.
- McCabe, M.F., Houborg, R., Rosas, J., Ershadi, A., Anderson, M.C., and Hain, C., 2015, Towards a satellite based system for monitoring agricultural water use—A case study for Saudi Arabia, *in* *2015 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Milan, Italy, 26–31 July 2015, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 862–865, at <https://doi.org/10.1109/IGARSS.2015.7325901>.
- McCarty, J.L., Justice, C.O., and Korontzi, S., 2007, Agricultural burning in the southeastern United States detected by MODIS: *Remote Sensing of Environment*, v. 108, no. 2, p. 151–162, at <https://doi.org/10.1016/j.rse.2006.03.020>.
- McCarty, J.L., Korontzi, S., Justice, C.O., and Loboda, T., 2009, The spatial and temporal distribution of crop residue burning in the contiguous United States: *Science of the Total Environment*, v. 407, no. 21, p. 5701–5712, at <https://doi.org/10.1016/j.scitotenv.2009.07.009>.
- McCorkel, J., Efremova, B., Hair, J., Andrade, M., and Holben, B., 2020, GOES-16 ABI solar reflective channel validation for Earth science application: *Remote Sensing of Environment*, v. 237, article 111438, at <https://doi.org/10.1016/j.rse.2019.111438>.
- McCorkel, J., Montanaro, M., Efremova, B., Pearlman, A., Wenny, B., Lunsford, A., Simon, A., Hair, J., and Reuter, D., 2018, Landsat 9 thermal infrared sensor 2 characterization plan overview, *in* *2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Valencia, Spain, 22–27

- July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8845–8848, at <https://doi.org/10.1109/IGARSS.2018.8518798>.
- McCorkel, J., Van Naarden, J., Lindsey, D., Efremova, B., Coakley, M., Black, M., and Krimchansky, A., 2019, GOES-17 advanced baseline imager performance recovery summary, *in* 2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), paper no. 9044466, at <https://doi.org/10.1109/IGARSS40859.2019.9044466>.
- McCorkel, J.T., 2014, Cross-calibration of Earth observing system terra satellite sensors MODIS and ASTER, *in* Earth Observing Systems XIX, San Diego, Calif., 18–20 August 2014, Proceedings of SPIE Vol. 9218: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 92180x, at <https://doi.org/10.1117/12.2062498>.
- McCorkel, J.T., Bachmann, C.M., Coburn, C., Gerace, A., Leigh, L., Czapla-Myers, J., Helder, D.L., and Cook, B., 2018, Overview of the 2015 Algodones Sand Dunes field campaign to support sensor intercalibration: *Journal of Applied Remote Sensing*, v. 12, no. 1, article 012003, at <https://doi.org/10.1117/1.JRS.12.012003>.
- McCorkel, J.T., Cairns, B., and Wasilewski, A., 2016, Imager-to-radiometer in-flight cross calibration—RSP radiometric comparison with airborne and satellite sensors: *Atmospheric Measurement Techniques*, v. 9, no. 3, p. 955–962, at <https://doi.org/10.5194/amt-9-955-2016>.
- McCorkel, J.T., Czapla-Myers, J., Thome, K.J., and Wenny, B., 2015, Online resource for Earth-observing satellite sensor calibration, *in* Earth Observing Systems XX, San Diego, Calif., 9–13 August 2015, Proceedings of SPIE Vol. 9607: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 96070b, at <https://doi.org/10.1117/12.2188741>.
- McCorkel, J.T., Kuester, M., Johnson, B.R., and Kampe, T.U., 2011, NEON ground validation capabilities for airborne and space-based imagers, *in* Earth Observing Systems XVI, San Diego, Calif., 23–25 August 2011, Proceedings of SPIE Vol. 8153: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 81530z, at <https://doi.org/10.1117/12.894370>.
- McCorkel, J.T., McAndrew, B., and Thome, K.J., 2013, Laser-based spectral and radiometric calibration of the clarreo imaging spectrometer, *in* 5th Workshop on Hyperspectral Image and Signal Processing, WHISPERS 2013, Gainesville, Fla., 26–28 June 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), paper no. 8080646, at <https://doi.org/10.1109/WHISPERS.2013.8080646>.
- McCorkel, J.T., Thome, K.J., Biggar, S., and Kuester, M., 2006, Radiometric calibration of advanced land imager using reflectance-based results between 2001 and 2005, *in* Earth Observing Systems XI, San Diego, Calif., 14–16 August 2006, Proceedings of SPIE Vol. 6296: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 62960G, at <https://doi.org/10.1117/12.679892>.
- McCorkel, J.T., Thome, K.J., Hair, J., McAndrew, B., Jennings, D., Rabin, D., Daw, A., and Lunsford, A., 2012, Instrumentation and first results of the reflected solar demonstration system for the Climate Absolute Radiance and Refractivity Observatory, *in* Earth Observing Systems XVII, San Diego, Calif., 13–16 August 2012, Proceedings of SPIE Vol. 8510: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 85100b, at <https://doi.org/10.1117/12.930950>.

- McCorkel, J.T., Thome, K.J., Leisso, N., Anderson, N., and Czapla-Myers, J., 2009, Radiometric characterization of hyperspectral imagers using multispectral sensors, *in* Earth Observing Systems XIV, San Diego, Calif., 3–5 August 2009, Proceedings of SPIE Vol. 7452: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 745210, at <https://doi.org/10.1117/12.828608>.
- McCorkel, J.T., Thome, K.J., and Lockwood, R.B., 2013, Absolute radiometric calibration of narrow-swath imaging sensors with reference to non-coincident wide-swath sensors: *IEEE Transactions on Geoscience and Remote Sensing*, v. 51, no. 3, p. 1309–1318, at <https://doi.org/10.1109/TGRS.2012.2219874>.
- McCorkel, J.T., Thome, K.J., and Ong, L., 2013, Vicarious calibration of EO-1 Hyperion: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 6, no. 2, p. 400–407, at <https://doi.org/10.1109/JSTARS.2012.2225417>.
- McCullum, A.J.K., McClellan, C., Daudert, B., Huntington, J., Green, R., Ly, V., Marley, A.R.G., Tulley, N.R., Morton, C., et al., 2021, Satellite-based drought reporting on the Navajo Nation: *Journal of the American Water Resources Association*, v. 57, no. 5, p. 675–691, at <https://doi.org/10.1111/1752-1688.12909>.
- McDermid, G.J., Coops, N.C., Wulder, M.A., Franklin, S.E., and Seitz, N.E., 2010, Critical remote sensing contributions to spatial wildlife ecological knowledge and management, *in* Cushman, S.A., and Huettmann, F., eds., *Spatial complexity, informatics, and wildlife conservation*: Tokyo, Japan, Springer, p. 193–221, at https://doi.org/10.1007/978-4-431-87771-4_11.
- McDowell, N.G., Coops, N.C., Beck, P.S.A., Chambers, J.Q., Gangodagamage, C., Hicke, J.A., Huang, C.Y., Kennedy, R.E., Krofcheck, D.J., et al., 2015, Global satellite monitoring of climate-induced vegetation disturbances: *Trends in Plant Science*, v. 20, no. 2, p. 114–123, at <https://doi.org/10.1016/j.tplants.2014.10.008>.
- McEvoy, D.J., Hobbins, M., Brown, T.J., VanderMolen, K., Wall, T., Huntington, J.L., and Svoboda, M., 2019, Establishing relationships between drought indices and wildfire danger outputs—A test case for the California-Nevada drought early warning system: *Climate*, v. 7, no. 4, article 52, at <https://doi.org/10.3390/cli7040052>.
- McEvoy, D.J., Huntington, J.L., Abatzoglou, J.T., and Edwards, L.M., 2012, An evaluation of multiscalar drought indices in Nevada and Eastern California: *Earth Interactions*, v. 16, no. 18, p. 1–18, at <https://doi.org/10.1175/2012EI000447.1>.
- McEvoy, D.J., Huntington, J.L., Hobbins, M.T., Wood, A., Morton, C., Anderson, M.C., and Hain, C., 2016, The evaporative demand drought index. Part II—CONUS-wide assessment against common drought indicators: *Journal of Hydrometeorology*, v. 17, no. 6, p. 1763–1779, at <https://doi.org/10.1175/JHM-D-15-0122.1>.
- McEvoy, D.J., Huntington, J.L., Mejia, J.F., and Hobbins, M.T., 2016, Improved seasonal drought forecasts using reference evapotranspiration anomalies: *Geophysical Research Letters*, v. 43, no. 1, p. 377–385, at <https://doi.org/10.1002/2015GL067009>.
- McEvoy, D.J., Mejia, J.F., and Huntington, J.L., 2014, Use of an observation network in the Great Basin to evaluate gridded climate data: *Journal of Hydrometeorology*, v. 15, no. 5, p. 1913–1931, at <https://doi.org/10.1175/JHM-D-14-0015.1>.
- McEvoy, D.J., Roj, S., Dunkerly, C., McGraw, D., Huntington, J.L., Hobbins, M.T., and Ott, T., 2022, Validation and bias correction of forecast reference evapotranspiration for agricultural

- applications in Nevada: *Journal of Water Resources Planning and Management*, v. 148, no. 11, article 04022057, at [https://doi.org/10.1061/\(ASCE\)WR.1943-5452.0001595](https://doi.org/10.1061/(ASCE)WR.1943-5452.0001595).
- McGee Iii, J.A., Day, S.D., Wynne, R.H., and White, M.B., 2012, Using geospatial tools to assess the urban tree canopy—Decision support for local governments: *Journal of Forestry*, v. 110, no. 5, p. 275–286, at <https://doi.org/10.5849/jof.11-052>.
- McGrath, D., Steffen, K., Holland, P.R., Scambos, T.A., Rajaram, H., Abdalati, W., and Rignot, E., 2014, The structure and effect of suture zones in the Larsen C Ice Shelf, Antarctica: *Journal of Geophysical Research Earth Surface*, v. 119, no. 3, p. 588–602, at <https://doi.org/10.1002/2013JF002935>.
- McGrath, D., Steffen, K., Rajaram, H., Scambos, T.A., Abdalati, W., and Rignot, E., 2012, Basal crevasses on the Larsen C Ice Shelf, Antarctica—Implications for meltwater ponding and hydrofracture: *Geophysical Research Letters*, v. 39, no. 16, article L16504, at <https://doi.org/10.1029/2012GL052413>.
- McGrath, D., Steffen, K., Scambos, T.A., Rajaram, H., Casassa, G., and Rodriguez Lagos, J.L., 2012, Basal crevasses and associated surface crevassing on the Larsen C ice shelf, Antarctica, and their role in ice-shelf instability: *Annals of Glaciology*, v. 53, no. 60, p. 10–18, at <https://doi.org/10.3189/2012AoG60A005>.
- McGrath-Spangler, E.L., McCarty, W., Privé, N.C., Moradi, I., Karpowicz, B.M., and McCorkel, J., 2022, Using OSSEs to evaluate the impacts of geostationary infrared sounders: *Journal of Atmospheric and Oceanic Technology*, v. 39, no. 12, p. 1903–1918, at <https://doi.org/10.1175/JTECH-D-22-0033.1>.
- McGwire, K.C., Weltz, M.A., Snyder, K.A., Huntington, J.L., Morton, C.G., and McEvoy, D.J., 2017, Satellite Assessment of Early-Season Forecasts for Vegetation Conditions of Grazing Allotments in Nevada, United States: *Rangeland Ecology and Management*, v. 70, no. 6, p. 730–739, at <https://doi.org/10.1016/j.rama.2017.06.005>.
- McLane, A.J., McDermid, G.J., and Wulder, M.A., 2009, Processing discrete-return profiling lidar data to estimate canopy closure for large-area forest mapping and management: *Canadian Journal of Remote Sensing*, v. 35, no. 3, p. 217–229, at <https://doi.org/10.5589/m09-009>.
- McMahon, G., Benjamin, S.P., Clarke, K., Findley, J.E., Fisher, R.N., Graf, W.L., Gundersen, L.C., Jones, J.W., Loveland, T.R., et al., 2005, Geography for a changing world—A science strategy for the geographic research of the U.S. Geological Survey, 2005-2015, U.S. Geological Survey Circular 1281, 74 p., at <https://doi.org/10.3133/cir1281>.
- McManus, K.M., Morton, D.C., Masek, J.G., Wang, D., Sexton, J.O., Nagol, J.R., Ropars, P., and Boudreau, S., 2012, Satellite-based evidence for shrub and graminoid tundra expansion in northern Quebec from 1986 to 2010: *Global Change Biology*, v. 18, no. 7, p. 2313–2323, at <https://doi.org/10.1111/j.1365-2486.2012.02708.x>.
- McRoberts, R.E., Cohen, W.B., Erik, N., Stehman, S.V., and Tomppo, E.O., 2010, Using remotely sensed data to construct and assess forest attribute maps and related spatial products: *Scandinavian Journal of Forest Research*, v. 25, no. 4, p. 340–367, at <https://doi.org/10.1080/02827581.2010.497496>.
- McRoberts, R.E., Cohen, W.B., and Pflugmacher, D., 2014, Preface, 2012 ForestSAT Special Issue: Remote Sensing of Environment, v. 151, p. 1–2, at <https://doi.org/10.1016/j.rse.2014.02.010>.

- McRoberts, R.E., Vibrans, A.C., Sannier, C., Næsset, E., Hansen, M.C., Walters, B.F., and Lingner, D.V., 2016, Methods for evaluating the utilities of local and global maps for increasing the precision of estimates of subtropical forest area: *Canadian Journal of Forest Research*, v. 46, no. 7, p. 924–932, at <https://doi.org/10.1139/cjfr-2016-0064>.
- Means, J.E., Acker, S.A., Harding, D.J., Blair, J.B., Lefsky, M.A., Cohen, W.B., Harmon, M.E., and McKee, W.A., 1999, Use of large-footprint scanning airborne Lidar to estimate forest stand characteristics in the western cascades of Oregon: *Remote Sensing of Environment*, v. 67, no. 3, p. 298–308, at [https://doi.org/10.1016/S0034-4257\(98\)00091-1](https://doi.org/10.1016/S0034-4257(98)00091-1).
- Mecikalski, J.R., Anderson, M.C., Otkin, J.A., and Norman, J.M., 2004, Regional scale energy and water flux climatologies as derived from remote sensing inputs and a land-exchange model, *in* Annual Meeting, 84th, Seattle, Wash., 11–15 January 2004, Joint Poster Session 4: Boston, Mass., American Meteorological Society, p. 4691–4694, at https://ams.confex.com/ams/84Annual/techprogram/paper_71924.htm.
- Mecikalski, J.R., Diak, G.R., Anderson, M.C., and Norman, J.M., 1999, Estimating fluxes on continental scales using remotely sensed data in an atmospheric-land exchange model: *Journal of Applied Meteorology*, v. 38, no. 9, p. 1352–1369, at [https://doi.org/10.1175/1520-0450\(1999\)038<1352:EFOCSU>2.0.CO;2](https://doi.org/10.1175/1520-0450(1999)038<1352:EFOCSU>2.0.CO;2).
- Mecikalski, J.R., Diak, G.R., Norman, J.M., and Anderson, M.C., 1997, A method for estimating regional surface sensible heating using shelter-level air temperature and upper-air data: *Agricultural and Forest Meteorology*, v. 88, no. 1–4, p. 101–110, at [https://doi.org/10.1016/S0168-1923\(97\)00050-6](https://doi.org/10.1016/S0168-1923(97)00050-6).
- Mecikalski, J.R., Mackaro, S.M., Anderson, M.C., Norman, J.M., and Basara, J.B., 2005, Evaluating the use of the Atmospheric Land Exchange Inverse (ALEXI) model in short-term prediction and mesoscale diagnosis, *in* Annual Meeting, 85th, San Diego, Calif., 9–13 January 2005, Proceedings: Boston, Mass., American Meteorological Society, p. 1817–1821, at <http://citeseerx.ist.psu.edu/viewdoc/citations;jsessionid=8C06E615A2E24AA948973BB928DAA7D9?doi=10.1.1.553.1402>.
- Meddens, A.J.H., Vierling, L.A., Eitel, J.U.H., Jennewein, J.S., White, J.C., and Wulder, M.A., 2018, Developing 5 m resolution canopy height and digital terrain models from WorldView and ArcticDEM data: *Remote Sensing of Environment*, v. 218, p. 174–188, at <https://doi.org/10.1016/j.rse.2018.09.010>.
- Meier, G.A., Brown, J.F., Evsizer, R.J., and Vogelmann, J.E., 2015, Phenology and climate relationships in aspen (*Populus tremuloides* Michx.) forest and woodland communities of southwestern Colorado: *Ecological Indicators*, v. 48, p. 189–197, at <https://doi.org/10.1016/j.ecolind.2014.05.033>.
- Meigs, G.W., Kennedy, R.E., and Cohen, W.B., 2011, A Landsat time series approach to characterize bark beetle and defoliator impacts on tree mortality and surface fuels in conifer forests: *Remote Sensing of Environment*, v. 115, no. 12, p. 3707–3718, at <https://doi.org/10.1016/j.rse.2011.09.009>.
- Meigs, G.W., Kennedy, R.E., Gray, A.N., and Gregory, M.J., 2015, Spatiotemporal dynamics of recent mountain pine beetle and western spruce budworm outbreaks across the Pacific Northwest Region, USA: *Forest Ecology and Management*, v. 339, no. 1, p. 71–86, at <https://doi.org/10.1016/j.foreco.2014.11.030>.

- Meigs, G.W., Zald, H.S.J., Campbell, J.L., Keeton, W.S., and Kennedy, R.E., 2016, Do insect outbreaks reduce the severity of subsequent forest fires?: *Environmental Research Letters*, v. 11, no. 4, article 045008, at <https://doi.org/10.1088/1748-9326/11/4/045008>.
- Meister, G., Abel, P., Carder, K., Chapin, A., Clark, D., Cooper, J., Davis, C., English, D., Fargion, G., et al., 2003, The second SIMBIOS Radiometric Intercomparison (SIMRIC-2), March–November 2002, NASA Technical Memorandum, v. 2, 210006, 65 p., at <https://ntrs.nasa.gov/search.jsp?R=20110023623>.
- Meitner, J., Balek, J., Bláhová, M., Semerádová, D., Hlavinka, P., Lukas, V., Jurečka, F., Žalud, Z., Klem, K., et al., 2023, Estimating drought-induced crop yield losses at the cadastral area level in the Czech Republic: *Agronomy*, v. 13, no. 7, article 1669, at <https://doi.org/10.3390/agronomy13071669>.
- Mejia, J.F., Niswonger, R.G., and Huntington, J.L., 2014, Uncertainty transfer in modeling layers—From GCM to downscaling to hydrologic surface-groundwater modeling, *in* Bold visions for environmental modeling, International Congress on Environmental Modelling and Software, 7th, San Diego, Calif., 15–19 June 2014, Proceedings: Switzerland, International Environmental Modelling & Software Society, p. 447–454, at <https://scholarsarchive.byu.edu/cgi/viewcontent.cgi?article=1072&context=iemssconference>.
- Melaas, E.K., Friedl, M.A., and Zhu, Z., 2013, Detecting interannual variation in deciduous broadleaf forest phenology using Landsat TM/ETM+ data: *Remote Sensing of Environment*, v. 132, p. 176–185, at <https://doi.org/10.1016/j.rse.2013.01.011>.
- Melchiorre, A., Boschetti, L., and Roy, D.P., 2020, Global evaluation of the suitability of MODIS-Terra detected cloud cover as a proxy for Landsat 7 cloud conditions: *Remote Sensing*, v. 12, no. 2, article 202, at <https://doi.org/10.3390/rs12020202>.
- Melesse, A.M., Weng, Q., Thenkabail, P.S., and Senay, G.B., 2007, Remote sensing sensors and applications in environmental resources mapping and modelling: *Sensors*, v. 7, no. 12, p. 3209–3241, at <https://doi.org/10.3390/s7123209>.
- Melser, R., Coops, N.C., Wulder, M.A., and Derksen, C., 2023, Multi-source remote sensing based modeling of vegetation productivity in the boreal—Issues & opportunities: *Canadian Journal of Remote Sensing*, v. 49, no. 1, article 2256895, at <https://doi.org/10.1080/07038992.2023.2256895>.
- Melton, F., Xiong, J., Wang, W., Milesi, C., Li, S., Quackenbush, A., Theobald, D.M., Goetz, S.J., Jantz, P., and Nemani, R.R., 2016, Potential impacts of climate and land use change on ecosystem processes in the Great Northern and Appalachian Landscape Conservation Cooperatives, *in* Hansen, A.J., Monahan, W.B., Olliff, S.T., and Theobald, D.M., eds., *Climate change in wildlands—Pioneering approaches to science and management*: Washington, D.C., Island Press, p. 119–150, at https://doi.org/10.5822/978-1-61091-713-1_7.
- Melton, F.S., Johnson, L.F., Lund, C.P., Pierce, L.L., Michaelis, A.R., Hiatt, S.H., Guzman, A., Adhikari, D.D., Purdy, A.J., et al., 2012, Satellite irrigation management support with the terrestrial observation and prediction system—A framework for integration of satellite and surface observations to support improvements in agricultural water resource management: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 5, no. 6, p. 1709–1721, at <https://doi.org/10.1109/JSTARS.2012.2214474>.

- Menlove, J., and Healey, S.P., 2020, A comprehensive forest biomass dataset for the USA allows customized validation of remotely sensed biomass estimates: *Remote Sensing*, v. 12, no. 24, article 4141, at <https://doi.org/10.3390/rs12244141>.
- Mentaschi, L., Voudoukas, M.I., Pekel, J.F., Voukouvalas, E., and Feyen, L., 2018, Global long-term observations of coastal erosion and accretion: *Scientific Reports*, v. 8, no. 1, article 12876, at <https://doi.org/10.1038/s41598-018-30904-w>.
- Mertz, O., Müller, D., Sikor, T., Hett, C., Heinimann, A., Castella, J.C., Lestrelin, G., Ryan, C.M., Reay, D.S., et al., 2012, The forgotten D—Challenges of addressing forest degradation in complex mosaic landscapes under REDD+: *Geografisk Tidsskrift*, v. 112, no. 1, p. 63–76, at <https://doi.org/10.1080/00167223.2012.709678>.
- Messinger, D.W., West, J.E., and Schott, J.R., 2006, Improving background multivariate normality and target detection performance using spatial and spectral segmentation, in 2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Denver, Colo., 31 July–4 August 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 371–374, at <https://doi.org/10.1109/IGARSS.2006.100>.
- Metternicht, G., Lucas, R., Bunting, P., Held, A., Lymburner, L., and Ticehurst, C., 2018, Addressing mangrove protection in Australia—The contribution of Earth observation technologies, in 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6548–6551, at <https://doi.org/10.1109/IGARSS.2018.8517518>.
- Mettler, C., and Helder, D.L., 2005, Cross-calibration of the Landsat-4 and Landsat-5 thematic mappers, in Earth Observing Systems X, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5882: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 588207, at <https://doi.org/10.1117/12.619539>.
- Meyer, K., Platnick, S., Oreopoulos, L., and Lee, D., 2013, Estimating the direct radiative effect of absorbing aerosols overlying marine boundary layer clouds in the southeast Atlantic using MODIS and CALIOP: *Journal of Geophysical Research Atmospheres*, v. 118, no. 10, p. 4801–4815, at <https://doi.org/10.1002/jgrd.50449>.
- Meyer, M.F., Danielson, J.J., Estes, M., Fickas, K.C., Gesch, D., Kavanaugh, M.T., King, T.V., Pahlevan, N., and Palaseanu-Lovejoy, M., 2023, Pecora 22—Remote sensing for freshwater and marine environments: *Limnology and Oceanography Bulletin*, v. 32, no. 2, p. 82–83, at <https://doi.org/10.1002/lob.10549>.
- Meyers, J.P., Schott, J.R., and Brown, S.D., 2002, Incorporation of polarization into the DIRSIG synthetic image generation model, in *Imaging Spectrometry VII*, Seattle, Wash., 8–10 July 2002, Proceedings of SPIE Vol. 4816: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 132–143, at <https://doi.org/10.1117/12.451545>.
- Meyfroidt, P., de Bremond, A., Ryan, C.M., Archer, E., Aspinall, R., Chhabra, A., Camara, G., Corbera, E., DeFries, R., et al., 2022, Ten facts about land systems for sustainability: *Proceedings of the National Academy of Sciences of the United States of America*, v. 119, no. 7, article e2109217118, at <https://doi.org/10.1073/pnas.2109217118>.
- Mhawish, A., Banerjee, T., Sorek-Hamer, M., Bilal, M., Lyapustin, A.I., Chatfield, R., and Broday, D.M., 2020, Estimation of high-resolution PM_{2.5} over the Indo-Gangetic Plain by fusion of satellite

- data, meteorology, and land use variables: *Environmental Science and Technology*, v. 54, no. 13, p. 7891–7900, at <https://doi.org/10.1021/acs.est.0c01769>.
- Mhawish, A., Banerjee, T., Sorek-Hamer, M., Lyapustin, A., Broday, D.M., and Chatfield, R., 2019, Comparison and evaluation of MODIS Multi-angle Implementation of Atmospheric Correction (MAIAC) aerosol product over South Asia: *Remote Sensing of Environment*, v. 224, p. 12–28, at <https://doi.org/10.1016/j.rse.2019.01.033>.
- Michael, K., Murphy, K., Lowe, D., Masuoka, E., Vollmer, B., Tilmes, C., Teague, M., Ye, G., Maiden, M., et al., 2010, Implementation of the land, atmosphere near real-time capability for EOS (LANCE), *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1442–1445, at <https://doi.org/10.1109/IGARSS.2010.5650534>.
- Michaud, J.S., Coops, N.C., Andrew, M.E., and Wulder, M.A., 2012, Characterising spatiotemporal environmental and natural variation using a dynamic habitat index throughout the province of Ontario: *Ecological Indicators*, v. 18, p. 303–311, at <https://doi.org/10.1016/j.ecolind.2011.11.027>.
- Michaud, J.S., Coops, N.C., Andrew, M.E., Wulder, M.A., Brown, G.S., and Rickbeil, G.J.M., 2014, Estimating moose (*Alces alces*) occurrence and abundance from remotely derived environmental indicators: *Remote Sensing of Environment*, v. 152, p. 190–201, at <https://doi.org/10.1016/j.rse.2014.06.005>.
- Micijevic, E., Barsi, J., Haque, M.O., Levy, R., Anderson, C., Thome, K., Czaplá-Myers, J., and Helder, D., 2022, Radiometric performance of the Landsat 9 Operational Land Imager over the first 8 months on orbit, *in* Earth Observing Systems XXVII 2022, San Diego, Calif., 21–26 August 2022, Proceedings of SPIE Vol. 12232: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 122320w, at <https://doi.org/10.1117/12.2634301>.
- Micijevic, E., and Helder, D.L., 2005, Outgassing models for Landsat-4 thematic mapper short wave infrared bands, *in* Earth Observing Systems X, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5882: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 588208, at <https://doi.org/10.1117/12.620160>.
- Micijevic, E., Rengarajan, R., Haque, M.O., Lubke, M., Tuli, F.T.Z., Shaw, J.L., Hasan, N., Denevan, A., Franks, S., et al., 2022, ECCOE Landsat Quarterly Calibration and Validation Report—Quarter 3, 2021, U.S. Geological Survey Open-File Report 1025, 38 p., at <https://doi.org/10.3133/ofr20221025>.
- Middleton, E.M., Drolet, G., Huemmrich, K.F., Hall, F.G., Knox, R.G., Black, A., Barr, A., Lyapustin, A.I., Gervin, J.C., and Margolis, H., 2004, Direct satellite inference of ecosystem light use efficiency for carbon exchange using MODIS on Terra and Aqua, *in* 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2038–2041, at <https://doi.org/10.1109/IGARSS.2004.1370750>.
- Mildrexler, D.J., Yang, Z., Cohen, W.B., and Bell, D.M., 2016, A forest vulnerability index based on drought and high temperatures: *Remote Sensing of Environment*, v. 173, p. 314–325, at <https://doi.org/10.1016/j.rse.2015.11.024>.

- Mildrexler, D.J., Zhao, M., Cohen, W.B., Running, S.W., Song, X.P., and Jones, M.O., 2018, Thermal anomalies detect critical global land surface changes: *Journal of Applied Meteorology and Climatology*, v. 57, no. 2, p. 391–411, at <https://doi.org/10.1175/JAMC-D-17-0093.1>.
- Milesi, C., Elvidge, C.D., Nemani, R.R., and Running, S.W., 2002, Impact of urban sprawl on net primary productivity in the Southeastern United States, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2971–2973, at <https://doi.org/10.1109/IGARSS.2002.1026839>.
- Milesi, C., Elvidge, C.D., Nemani, R.R., and Running, S.W., 2003, Assessing the impact of urban land development on net primary productivity in the southeastern United States: *Remote Sensing of Environment*, v. 86, no. 3, p. 401–410, at [https://doi.org/10.1016/S0034-4257\(03\)00081-6](https://doi.org/10.1016/S0034-4257(03)00081-6).
- Milesi, C., Hashimoto, H., Running, S.W., and Nemani, R.R., 2005, Climate variability, vegetation productivity and people at risk: *Global and Planetary Change*, v. 47, no. 2–4, p. 221–231, at <https://doi.org/10.1016/j.gloplacha.2004.10.020>.
- Milesi, C., Nemani, R.R., Running, S.W., and Elvidge, C.D., 2003, Assessing the environmental impacts of human settlements using satellite data: *Management of Environmental Quality—An International Journal*, v. 14, no. 1, p. 99–107, at <https://doi.org/10.1108/14777830310460414>.
- Milesi, C., Running, S.W., Elvidge, C.D., Dietz, J.B., Tuttle, B.T., and Nemani, R.R., 2005, Mapping and modeling the biogeochemical cycling of turf grasses in the United States: *Environmental Management*, v. 36, no. 3, p. 426–438, at <https://doi.org/10.1007/s00267-004-0316-2>.
- Milesi, C., Samanta, A., Hashimoto, H., Kumar, K.K., Ganguly, S., Thenkabail, P.S., Srivastava, A.N., Nemani, R.R., and Myneni, R.B., 2010, Decadal variations in NDVI and food production in India: *Remote Sensing*, v. 2, no. 3, p. 758–776, at <https://doi.org/10.3390/rs2030758>.
- Miller, C.R., Barton, B.T., Zhu, L., Radeloff, V.C., Oliver, K.M., Harmon, J.P., and Ives, A.R., 2017, Combined effects of night warming and light pollution on predator - Prey interactions: *Proceedings of the Royal Society B—Biological Sciences*, v. 284, no. 1864, article 20171195, at <https://doi.org/10.1098/rspb.2017.1195>.
- Miller, J.Z., Long, D.G., Jezek, K.C., Johnson, J.T., Brodzik, M.J., Shuman, C.A., Koenig, L.S., and Scambos, T.A., 2020, Brief communication—Mapping Greenland’s perennial firn aquifers using enhanced-resolution L-band brightness temperature image time series: *Cryosphere*, v. 14, no. 9, p. 2809–2817, at <https://doi.org/10.5194/tc-14-2809-2020>.
- Miller, J.Z., Long, D.G., Shuman, C.A., and Scambos, T.A., 2023, Satellite mapping of the extent and physical characteristics of an expansive perennial firn aquifer in the Wilkins Ice Shelf, Antarctic Peninsula, *in* 2023 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Pasadena, Calif., 16–21 July 2023, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 219–222, at <https://doi.org/10.1109/IGARSS52108.2023.10281647>.
- Milne, B.T., and Cohen, W.B., 1999, Multiscale assessment of binary and continuous landcover variables for MODIS validation, mapping, and modeling applications: *Remote Sensing of Environment*, v. 70, no. 1, p. 82–98, at [https://doi.org/10.1016/S0034-4257\(99\)00059-0](https://doi.org/10.1016/S0034-4257(99)00059-0).
- Miraglio, T., Huesca, M., Gastellu-Etchegorry, J.P., Schaaf, C., Adeline, K.R.M., Ustin, S.L., and Briottet, X., 2021, Impact of modeling abstractions when estimating leaf mass per area and equivalent water

- thickness over sparse forests using a hybrid method: *Remote Sensing*, v. 13, no. 16, article 3235, at <https://doi.org/10.3390/rs13163235>.
- Mishra, N., Haque, M.O., Leigh, L., Aaron, D.B., Helder, D.L., and Markham, B., 2014, Radiometric cross calibration of Landsat 8 Operational Land Imager (OLI) and Landsat 7 Enhanced Thematic Mapper Plus (ETM+): *Remote Sensing*, v. 6, no. 12, p. 12619–12638, at <https://doi.org/10.3390/rs61212619>.
- Mishra, N., Helder, D.L., Angal, A., Choi, J., and Xiong, X., 2014, Absolute calibration of optical satellite sensors using Libya 4 pseudo invariant calibration site: *Remote Sensing*, v. 6, no. 2, p. 1327–1346, at <https://doi.org/10.3390/rs6021327>.
- Mishra, N., Helder, D.L., Barsi, J., and Markham, B., 2016, Continuous calibration improvement in solar reflective bands—Landsat 5 through Landsat 8: *Remote Sensing of Environment*, v. 185, p. 7–15, at <https://doi.org/10.1016/j.rse.2016.07.032>.
- Mishra, V., Cruise, J.F., Hain, C.R., Mecikalski, J.R., and Anderson, M.C., 2018, Development of soil moisture profiles through coupled microwave-thermal infrared observations in the southeastern United States: *Hydrology and Earth System Sciences*, v. 22, no. 9, p. 4935–4957, at <https://doi.org/10.5194/hess-22-4935-2018>.
- Mishra, V., Cruise, J.F., Mecikalski, J.R., Hain, C.R., and Anderson, M.C., 2013, A remote-sensing driven tool for estimating crop stress and yields: *Remote Sensing*, v. 5, no. 7, p. 3331–3356, at <https://doi.org/10.3390/rs5073331>.
- Mishra, V., Ellenburg, W.L., Griffin, R.E., Mecikalski, J.R., Cruise, J.F., Hain, C.R., and Anderson, M.C., 2018, An initial assessment of a SMAP soil moisture disaggregation scheme using TIR surface evaporation data over the continental United States: *International Journal of Applied Earth Observation and Geoinformation*, v. 68, p. 92–104, at <https://doi.org/10.1016/j.jag.2018.02.005>.
- Mitchell, B.G., Bricaud, A., Carder, K.L., Cleveland, J., Ferrari, G., Gould, R., Kahru, M., Kishino, M., Maske, H., et al., 2000, Determination of spectral absorption coefficients of particles, dissolved material and phytoplankton for discrete water samples, *in* Fargion, G.S., and Mueller, J.L., eds., *Ocean optics protocols for satellite ocean color sensor validation*, rev. 2, NASA Technical Memorandum, NASA/TM—2000-209966, p. 125–153, at <https://ntrs.nasa.gov/api/citations/20000097063/downloads/20000097063.pdf>.
- Mitchell, S.W., Rimmel, T.K., Csillag, F., and Wulder, M.A., 2008, Distance to second cluster as a measure of classification confidence: *Remote Sensing of Environment*, v. 112, no. 5, p. 2615–2626, at <https://doi.org/10.1016/j.rse.2007.12.006>.
- Mithal, V., Nayak, G., Khandelwal, A., Kumar, V., Nemani, R.R., and Oza, N.C., 2018, Mapping burned areas in tropical forests using a novel machine learning framework: *Remote Sensing*, v. 10, no. 1, article 69, at <https://doi.org/10.3390/rs10010069>.
- Mithal, V., Nayak, G., Khandelwal, A., Kumar, V., Oza, N.C., and Nemani, R.R., 2017, RAPT—Rare Class Prediction in Absence of True Labels: *IEEE Transactions on Knowledge and Data Engineering*, v. 29, no. 11, p. 2484–2497, at <https://doi.org/10.1109/TKDE.2017.2739739>.
- Miyahara, H., Wen, G., Cahalan, R.F., and Ohmura, A., 2008, Deriving historical total solar irradiance from lunar borehole temperatures: *Geophysical Research Letters*, v. 35, no. 2, article L02716, at <https://doi.org/10.1029/2007GL032171>.

- Mladenova, I.E., Bolten, J.D., Crow, W.T., Anderson, M.C., Hain, C.R., Johnson, D.M., and Mueller, R., 2017, Intercomparison of soil moisture, evaporative stress, and vegetation indices for estimating corn and soybean yields over the U.S.: IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, v. 10, no. 4, p. 1328–1343, at <https://doi.org/10.1109/JSTARS.2016.2639338>.
- Mockrin, M.H., Fishler, H.K., Kramer, H.A., Radeloff, V.C., and Stewart, S.I., 2022, A tale of two fires—Retreat and rebound a decade after wildfires in California and South Carolina: Society and Natural Resources, v. 35, no. 8, p. 875–895, article 875, at <https://doi.org/10.1080/08941920.2022.2081895>.
- Mockrin, M.H., Helmers, D., Martinuzzi, S., Hawbaker, T.J., and Radeloff, V.C., 2022, Growth of the wildland-urban interface within and around U.S. national forests and grasslands, 1990–2010: Landscape and Urban Planning, v. 218, article 104283, at <https://doi.org/10.1016/j.landurbplan.2021.104283>.
- Mockrin, M.H., Locke, D.H., Stewart, S.I., Hammer, R.B., and Radeloff, V.C., 2019, Forests, houses, or both? Relationships between land cover, housing characteristics, and resident socioeconomic status across ecoregions: Journal of Environmental Management, v. 234, p. 464–475, at <https://doi.org/10.1016/j.jenvman.2018.12.001>.
- Mockrin, M.H., Stewart, S.I., Matonis, M.S., Johnson, K.M., Hammer, R.B., and Radeloff, V.C., 2018, Sprawling and diverse—The changing U.S. population and implications for public lands in the 21st Century: Journal of Environmental Management, v. 215, p. 153–165, at <https://doi.org/10.1016/j.jenvman.2018.03.053>.
- Mockrin, M.H., Stewart, S.I., Radeloff, V.C., and Hammer, R.B., 2016, Recovery and adaptation after wildfire on the Colorado Front Range (2010-12): International Journal of Wildland Fire, v. 25, no. 11, p. 1144–1155, at <https://doi.org/10.1071/WF16020>.
- Mockrin, M.H., Stewart, S.I., Radeloff, V.C., Hammer, R.B., and Alexandre, P.M., 2015, Adapting to wildfire—Rebuilding after home loss: Society and Natural Resources, v. 28, no. 8, p. 839–856, at <https://doi.org/10.1080/08941920.2015.1014596>.
- Mockrin, M.H., Stewart, S.I., Radeloff, V.C., Hammer, R.B., and Johnson, K.M., 2013, Spatial and temporal residential density patterns from 1940 to 2000 in and around the Northern Forest of the Northeastern United States: Population and Environment, v. 34, no. 3, p. 400–419, at <https://doi.org/10.1007/s11111-012-0165-5>.
- Modaresi Rad, A., Abatzoglou, J.T., Fleishman, E., Mockrin, M.H., Radeloff, V.C., Pourmohamad, Y., Cattau, M., Johnson, J.M., Higuera, P., et al., 2023, Social vulnerability of the people exposed to wildfires in U.S. west coast states: Science Advances, v. 9, no. 38, article eadh4615, at <https://doi.org/10.1126/sciadv.adh4615>.
- Moeller, C., Schwarting, T., McCorkel, J., Moyer, D., and McIntire, J., 2019, JPSS-2 VIIRS version 2 at-launch relative spectral response characterization, in Earth Observing Systems XXIV 2019, San Diego, Calif., 11–15 August 2019, Proceedings of SPIE Vol. 11127: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 111270d, at <https://doi.org/10.1117/12.2530022>.
- Moer, M., Martin, J.R., Demeo, T., Alegria, J., Spies, T., Cohen, W.B., Healey, S.P., Hemstrom, M., Cissel, J., et al., 2005, Northwest Forest Plan—The first 10 years (1994–2003)—Status and trend of late-

- successional and old-growth forest, General Technical Report, USDA Forest Service, Pacific Northwest Research Station, PNW-GTR-646, 142 p., at <https://doi.org/10.2737/PNW-GTR-646>.
- Moer, M., Ohmann, J.L., Kennedy, R.E., Cohen, W.B., Gregory, M.J., Yang, Z., Roberts, H.M., Spies, T.A., and Fiorella, M., 2011, Northwest Forest Plan—The first 15 years (1994–2008)—Status and trends of late-successional and old-growth forests, General Technical Report, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, PNW-GTR-853, 48 p., at <https://doi.org/10.2737/PNW-GTR-853>.
- Mohrmann, J., Wood, R., Yuan, T., Song, H., Eastman, R., and Oreopoulos, L., 2021, Identifying meteorological influences on marine low-cloud mesoscale morphology using satellite classifications: *Atmospheric Chemistry and Physics*, v. 21, no. 12, p. 9629–9642, at <https://doi.org/10.5194/acp-21-9629-2021>.
- Moisen, G.G., McConville, K.S., Schroeder, T.A., Healey, S.P., Finco, M.V., and Frescino, T.S., 2020, Estimating land use and land cover change in north central Georgia—Can remote sensing observations augment traditional forest inventory data?: *Forests*, v. 11, no. 8, article 856, at <https://doi.org/10.3390/F11080856>.
- Molinario, G., Davies, D.K., Schroeder, W., and Justice, C.O., 2014, Characterizing the spatio-temporal fire regime in Ethiopia using the MODIS-active fire product—A replicable methodology for country-level fire reporting: *African Geographical Review*, v. 33, no. 2, p. 99–123, at <https://doi.org/10.1080/19376812.2013.854708>.
- Molinario, G., Hansen, M., Potapov, P., Tyukavina, A., and Stehman, S., 2020, Contextualizing landscape-scale forest cover loss in the democratic Republic of Congo (DRC) between 2000 and 2015: *Land*, v. 9, no. 1, article 23, at <https://doi.org/10.3390/land9010023>.
- Molinario, G., Hansen, M.C., and Potapov, P.V., 2015, Forest cover dynamics of shifting cultivation in the Democratic Republic of Congo—A remote sensing-based assessment for 2000–2010: *Environmental Research Letters*, v. 10, no. 9, article 094009, at <https://doi.org/10.1088/1748-9326/10/9/094009>.
- Molinario, G., Hansen, M.C., Potapov, P.V., Tyukavina, A., Stehman, S., Barker, B., and Humber, M., 2017, Quantification of land cover and land use within the rural complex of the Democratic Republic of Congo: *Environmental Research Letters*, v. 12, no. 10, article 104001, at <https://doi.org/10.1088/1748-9326/aa8680>.
- Molinier, M., Astola, H., Rätty, T., and Woodcock, C., 2018, Timely and semi-automatic detection of forest logging events in boreal forest using all available Landsat data, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1730–1733, at <https://doi.org/10.1109/IGARSS.2018.8518112>.
- Möller, M., Gerstmann, H., Gao, F., Dahms, T.C., and Förster, M., 2017, Coupling of phenological information and simulated vegetation index time series—Limitations and potentials for the assessment and monitoring of soil erosion risk: *Catena*, v. 150, p. 192–205, at <https://doi.org/10.1016/j.catena.2016.11.016>.
- Möller, M., Gerstmann, H., Thirkow, D., Gao, F., and Förster, M., 2015, Coupling of phenological information and synthetically generated time-series for crop types as indicator for vegetation coverage information, *in* Analysis of Multitemporal Remote Sensing Images (Multi-Temp), International Workshop, 8th, Annecy, France, 22–24 July 2015, Proceedings: Piscataway, N.J.,

- Institute of Electrical and Electronics Engineers (IEEE), paper no. 7245802, at <https://doi.org/10.1109/Multi-Temp.2015.7245802>.
- Möller, M., Lymburner, L., and Volk, M., 2007, The comparison index—A tool for assessing the accuracy of image segmentation: *International Journal of Applied Earth Observation and Geoinformation*, v. 9, no. 3, p. 311–321, at <https://doi.org/10.1016/j.jag.2006.10.002>.
- Möller, M., Volk, M., Friedrich, K., and Lymburner, L., 2008, Placing soil-genesis and transport processes into a landscape context—A multiscale terrain-analysis approach: *Journal of Plant Nutrition and Soil Science*, v. 171, no. 3, p. 419–430, at <https://doi.org/10.1002/jpln.200625039>.
- Mollicone, D., Achard, F., Federici, S., Eva, H.D., Grassi, G., Belward, A.S., Raes, F., Seufert, G., Stibig, H.J., et al., 2007, An incentive mechanism for reducing emissions from conversion of intact and non-intact forests: *Climatic Change*, v. 83, no. 4, p. 477–493, at <https://doi.org/10.1007/s10584-006-9231-2>.
- Monson, R.K., Neice, A.A., Trahan, N.A., Shiach, I., McCorkel, J.T., and Moore, D.J., 2016, Interactions between temperature and intercellular CO₂ concentration in controlling leaf isoprene emission rates: *Plant, Cell and Environment*, v. 39, no. 11, p. 2404–2413, at <https://doi.org/10.1111/pce.12787>.
- Monson, R.K., Winkler, B., Rosenstiel, T.N., Block, K., Merl-Pham, J., Strauss, S.H., Ault, K., Maxfield, J., Moore, D.J.P., et al., 2020, High productivity in hybrid-poplar plantations without isoprene emission to the atmosphere: *Proceedings of the National Academy of Sciences of the United States of America*, v. 117, no. 3, p. 1596–1605, at <https://doi.org/10.1073/pnas.1912327117>.
- Montanaro, M., McCorkel, J., Tveekrem, J., Stauder, J., Lunsford, A., Mentzell, E., Hair, J., and Reuter, D., 2018, Landsat 9 Thermal Infrared Sensor 2 preliminary stray light assessment, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8853–8856, at <https://doi.org/10.1109/IGARSS.2018.8519394>.
- Montanaro, M., Reuter, D.C., Markham, B.L., Thome, K.J., Lunsford, A.W., Jhabvala, M.D., Rohrbach, S.O., and Gerace, A.D., 2011, Spectral analysis of the primary flight focal plane arrays for the thermal infrared sensor, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVII, Orlando, Fla., 25–28 April 2011, Proceedings of SPIE Vol. 8048: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 804816, at <https://doi.org/10.1117/12.889265>.
- Montanaro, M., Tesfaye, Z., Lunsford, A., Wenny, B., Reuter, D., Markham, B., Smith, R., and Thome, K.J., 2013, Preliminary on-orbit performance of the thermal infrared sensor (TIRS) on board Landsat 8, *in* Earth Observing Systems XVIII, San Diego, Calif., 26–29 August 2013, Proceedings of SPIE Vol. 8866: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 88661d, at <https://doi.org/10.1117/12.2025650>.
- Montes-Hugo, M.A., and Carder, K.L., 2005, Monte Carlo simulations as a tool to optimize target detection by AUV/ROV laser line scanners, *in* Modeling, Simulation, and Verification of Space-based Systems II, Orlando, Fla., 28 March–1 April 2005, Proceedings of SPIE Vol. 5799: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 1–12, at <https://doi.org/10.1117/12.621279>.

- Montes-Hugo, M.A., Carder, K.L., Foy, R.J., Cannizzaro, J., Brown, E., and Pegau, S., 2005, Estimating phytoplankton biomass in coastal waters of Alaska using airborne remote sensing: Remote Sensing of Environment, v. 98, no. 4, p. 481–493, at <https://doi.org/10.1016/j.rse.2005.08.013>.
- Montes-Hugo, M.A., Gould, R., Arnone, R., Ducklow, H., Carder, K.L., English, D., Schofield, O., and Kerfoot, J., 2009, Beyond the first optical depth—Fusing optical data from ocean color imagery and gliders, in *Ocean Remote Sensing—Methods and Applications*, San Diego, Calif., 2–6 August 2009, Proceedings of SPIE Vol. 7459: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 74590n, at <https://doi.org/10.1117/12.831429>.
- Montes-Hugo, M.A., Vernet, M., Smith, R., and Carder, K.L., 2008, Phytoplankton size-structure on the western shelf of the Antarctic Peninsula—A remote-sensing approach: *International Journal of Remote Sensing*, v. 29, no. 3, p. 801–829, at <https://doi.org/10.1080/01431160701297615>.
- Montgomery, L., Miège, C., Miller, J., Scambos, T.A., Wallin, B., Miller, O., Solomon, D.K., Forster, R., and Koenig, L., 2020, Hydrologic properties of a highly permeable firn aquifer in the Wilkins Ice Shelf, Antarctica: *Geophysical Research Letters*, v. 47, no. 22, article e2020GL089552, at <https://doi.org/10.1029/2020GL089552>.
- Moody, A., and Johnson, D.M., 2001, Land-surface phenologies from AVHRR using the discrete fourier transform: *Remote Sensing of Environment*, v. 75, no. 3, p. 305–323, at [https://doi.org/10.1016/S0034-4257\(00\)00175-9](https://doi.org/10.1016/S0034-4257(00)00175-9).
- Moody, A., and Woodcock, C.E., 1996, Calibration-based models for correction of area estimates derived from coarse resolution land-cover data: *Remote Sensing of Environment*, v. 58, no. 3, p. 225–241, at [https://doi.org/10.1016/S0034-4257\(96\)00036-3](https://doi.org/10.1016/S0034-4257(96)00036-3).
- Moody, E.G., King, M.D., Platnick, S., Schaaf, C.B., and Gao, F., 2005, Spatially complete global spectral surface albedos—Value-added datasets derived from terra MODIS land products: *IEEE Transactions on Geoscience and Remote Sensing*, v. 43, no. 1, p. 144–157, at <https://doi.org/10.1109/TGRS.2004.838359>.
- Moody, E.G., King, M.D., Schaaf, C.B., Hall, D.K., and Platnick, S., 2007, Northern Hemisphere five-year average (2000–2004) spectral albedos of surfaces in the presence of snow—Statistics computed from Terra MODIS land products: *Remote Sensing of Environment*, v. 111, no. 2, p. 337–345, at <https://doi.org/10.1016/j.rse.2007.03.026>.
- Moon, T., Scambos, T., Abdalati, W., Ahlstrøm, A.P., Bindschadler, R., Gambill, J., Heimbach, P., Hock, R., Langley, K., et al., 2020, Ending a sea of confusion—Insights and opportunities in sea-level change communication: *Environment*, v. 62, no. 5, p. 4–15, at <https://doi.org/10.1080/00139157.2020.1791627>.
- Moon, T.A., Overeem, I., Druckenmiller, M., Holland, M., Huntington, H., Kling, G., Lovcraft, A.L., Miller, G., Scambos, T., et al., 2019, The expanding footprint of rapid Arctic change: *Earth's Future*, v. 7, no. 3, p. 212–218, at <https://doi.org/10.1029/2018EF001088>.
- Mora, B., Wulder, M.A., Hobart, G.W., White, J.C., Bater, C.W., Gougeon, F.A., Varhola, A., and Coops, N.C., 2013, Forest inventory stand height estimates from very high spatial resolution satellite imagery calibrated with lidar plots: *International Journal of Remote Sensing*, v. 34, no. 12, p. 4406–4424, at <https://doi.org/10.1080/01431161.2013.779041>.
- Mora, B., Wulder, M.A., and White, J.C., 2010, Identifying leading species using tree crown metrics derived from very high spatial resolution imagery in a boreal forest environment: *Canadian Journal of Remote Sensing*, v. 36, no. 4, p. 332–344, at <https://doi.org/10.5589/m10-052>.

- Mora, B., Wulder, M.A., and White, J.C., 2010, Segment-constrained regression tree estimation of forest stand height from very high spatial resolution panchromatic imagery over a boreal environment: *Remote Sensing of Environment*, v. 114, no. 11, p. 2474–2484, at <https://doi.org/10.1016/j.rse.2010.05.022>.
- Mora, B., Wulder, M.A., and White, J.C., 2013, An approach using Dempster-Shafer theory to fuse spatial data and satellite image derived crown metrics for estimation of forest stand leading species: *Information Fusion*, v. 14, no. 4, p. 384–395, at <https://doi.org/10.1016/j.inffus.2012.05.004>.
- Mora, B., Wulder, M.A., White, J.C., and Hobart, G., 2013, Modeling stand height, volume, and biomass from very high spatial resolution satellite imagery and samples of airborne LIDAR: *Remote Sensing*, v. 5, no. 5, p. 2308–2326, at <https://doi.org/10.3390/rs5052308>.
- Morales Betancourt, R., Lee, D., Oreopoulos, L., Sud, Y.C., Barahona, D., and Nenes, A., 2012, Sensitivity of cirrus and mixed-phase clouds to the ice nuclei spectra in McRAS-AC—Single column model simulations: *Atmospheric Chemistry and Physics*, v. 12, no. 22, p. 10679–10692, at <https://doi.org/10.5194/acp-12-10679-2012>.
- Moran, M.S., 2000, Image-based remote sensing for precision crop management—A status report, *in* Space 2002—The Seventh International Conference and Exposition on Engineering, Construction, Operations and Business in Space, Albuquerque, N. Mex., 27 February–2 March 2000, Proceedings: Reston, Va., American Society of Civil Engineers, p. 185–193, at [https://doi.org/10.1061/40479\(204\)18](https://doi.org/10.1061/40479(204)18).
- Moran, M.S., 2004, Use of remote sensing for monitoring evaporation over managed watersheds, *in* Watershed Management and Operations Management 2000, Fort Collins, Colo., 20–24 June 2000, Proceedings: Fort Collins, Colo., American Society of Civil Engineers, p. 1–12, at [https://doi.org/10.1061/40499\(2000\)127](https://doi.org/10.1061/40499(2000)127).
- Moran, M.S., 2012, Security for mobile ATE applications, *in* IEEE AUTOTESTCON 2012, Anaheim, Calif., 10–13 September 2012, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 204–208, at <https://doi.org/10.1109/AUTEST.2012.6334538>.
- Moran, M.S., Bryant, R., Holifield, C.D., and McElroy, S., 2003, Refined empirical line approach for retrieving surface reflectance from EO-1 ALI images: *IEEE Transactions on Geoscience and Remote Sensing*, v. 41, p. 1411–1414, at <https://doi.org/10.1109/TGRS.2003.813207>.
- Moran, M.S., Bryant, R., Thome, K.J., Ni, W., Nouvellon, Y., Gonzalez-Dugo, M.P., Qi, J., and Clarke, T.R., 2001, A refined empirical line approach for reflectance factor retrieval from Landsat-5 TM and Landsat-7 ETM+: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 71–82, at [https://doi.org/10.1016/S0034-4257\(01\)00250-4](https://doi.org/10.1016/S0034-4257(01)00250-4).
- Moran, M.S., Bryant, R.B., Clarke, T.R., and Qi, J., 2001, Deployment and calibration of reference reflectance tarps for use with airborne imaging sensors: *Photogrammetric Engineering and Remote Sensing*, v. 67, no. 3, p. 273–286, at <https://naldc.nal.usda.gov/download/54854/PDF>.
- Moran, M.S., Doorn, B., Escobar, V., and Brown, M.E., 2015, Connecting NASA science and engineering with Earth science applications: *Journal of Hydrometeorology*, v. 16, no. 1, p. 473–483, at <https://doi.org/10.1175/JHM-D-14-0093.1>.
- Moran, M.S., Emmerich, W.E., Goodrich, D.C., Heilman, P., Holifield Collins, C.D., Keefer, T.O., Nearing, M.A., Nichols, M.H., Renard, K.G., et al., 2008, Preface to special section on fifty years of research and data collection—U.S. Department of Agriculture Walnut Gulch Experimental

- Watershed: *Water Resources Research*, v. 44, no. 5, article W05s01, at <https://doi.org/10.1029/2007WR006083>.
- Moran, M.S., Fitzgerald, G., Rango, A., Walthall, C., Barnes, E., Bausch, W., Clarke, T., Daughtry, C., Everitt, J., et al., 2003, Sensor development and radiometric correction for agricultural applications: *Photogrammetric Engineering and Remote Sensing*, v. 69, no. 6, p. 705–718, at <https://doi.org/10.14358/PERS.69.6.705>.
- Moran, M.S., Hamerlynck, E.P., Scott, R.L., Stone, J.J., Holifield Collins, C.D., Keefer, T.O., Bryant, R., DeYoung, L., Nearing, G.S., et al., 2010, Hydrologic response to precipitation pulses under and between shrubs in the Chihuahuan Desert, Arizona: *Water Resources Research*, v. 46, no. 10, article W10509, at <https://doi.org/10.1029/2009WR008842>.
- Moran, M.S., Humes, K.S., and Pinter Jr, P.J., 1997, The scaling characteristics of remotely-sensed variables for sparsely-vegetated heterogeneous landscapes: *Journal of Hydrology*, v. 190, no. 3–4, p. 337–362, at [https://doi.org/10.1016/S0022-1694\(96\)03133-2](https://doi.org/10.1016/S0022-1694(96)03133-2).
- Moran, M.S., Hutchinson, B.S., Marsh, S.E., McClaran, M.P., and Olsson, A.D., 2009, Archiving and distributing three long-term interconnected geospatial data sets: *IEEE Transactions on Geoscience and Remote Sensing*, v. 47, no. 1, p. 59–71, at <https://doi.org/10.1109/TGRS.2008.2002815>.
- Moran, M.S., Hymer, D.C., Qi, J., and Kerr, Y., 2002, Comparison of ERS-2 SAR and Landsat TM imagery for monitoring agricultural crop and soil conditions: *Remote Sensing of Environment*, v. 79, no. 2–3, p. 243–252, at [https://doi.org/10.1016/S0034-4257\(01\)00276-0](https://doi.org/10.1016/S0034-4257(01)00276-0).
- Moran, M.S., Inoue, Y., and Barnes, E.M., 1997, Opportunities and limitations for image-based remote sensing in precision crop management: *Remote Sensing of Environment*, v. 61, no. 3, p. 319–346, at [https://doi.org/10.1016/S0034-4257\(97\)00045-X](https://doi.org/10.1016/S0034-4257(97)00045-X).
- Moran, M.S., O'Neill, P.E., Entekhabi, D., Njoku, E.G., and Kellogg, K.H., 2010, Fostering applications opportunities for the NASA Soil Moisture Active Passive (SMAP) mission, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2571–2574, at <https://doi.org/10.1109/IGARSS.2010.5652647>.
- Moran, M.S., Peters-Lidard, C.D., Watts, J.M., and Mc Elroy, S., 2004, Estimating soil moisture at the watershed scale with satellite-based radar and land surface models: *Canadian Journal of Remote Sensing*, v. 30, no. 5, p. 805–826, at <https://doi.org/10.5589/m04-043>.
- Moran, M.S., Rahman, A.F., Washburne, J.C., Goodrich, D.C., Weltz, M.A., and Kustas, W.P., 1996, Combining the Penman-Monteith equation with measurements of surface temperature and reflectance to estimate evaporation rates of semiarid grassland: *Agricultural and Forest Meteorology*, v. 80, no. 2–4, p. 87–109, at [https://doi.org/10.1016/0168-1923\(95\)02292-9](https://doi.org/10.1016/0168-1923(95)02292-9).
- Moran, M.S., Scott, R.L., Hamerlynck, E.P., Green, K.N., Emmerich, W.E., and Holifield Collins, C.D., 2009, Soil evaporation response to Lehmann lovegrass (*Eragrostis lehmanniana*) invasion in a semiarid watershed: *Agricultural and Forest Meteorology*, v. 149, no. 12, p. 2133–2142, at <https://doi.org/10.1016/j.agrformet.2009.03.018>.
- Moran, M.S., Scott, R.L., Keefer, T.O., Emmerich, W.E., Hernandez, M., Nearing, G.S., Paige, G.B., Cosh, M.H., and O'Neill, P.E., 2009, Partitioning evapotranspiration in semiarid grassland and shrubland ecosystems using time series of soil surface temperature: *Agricultural and Forest Meteorology*, v. 149, no. 1, p. 59–72, at <https://doi.org/10.1016/j.agrformet.2008.07.004>.

- Moran, M.S., Vidal, A., Troufleau, D., Qi, J., Clarke, T.R., Pinter Jr, P.J., Mitchell, T.A., Inoue, Y., and Neale, C.M.U., 1997, Combining multifrequency microwave and optical data for crop management: Remote Sensing of Environment, v. 61, no. 1, p. 96–109, at [https://doi.org/10.1016/S0034-4257\(96\)00243-X](https://doi.org/10.1016/S0034-4257(96)00243-X).
- Morin, R.S., Healey, S.P., Prisley, S., Randolph, K.C., Westfall, J.A., and Gray, A.N., 2023, Editorial—Monitoring and responding to global change to promote resilient and productive forests through innovative forest inventory: Frontiers in Forests and Global Change, v. 6, at <https://doi.org/10.3389/ffgc.2023.1168453>.
- Morisette, J., Privette, J., Justice, C.O., and Starr, D., 2000, MODIS land validation activities—Status and review, in 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1699–1701, at <https://doi.org/10.1109/IGARSS.2000.857317>.
- Morisette, J.T., Baret, F., Privette, J.L., Myneni, R.B., Nickeson, J.E., Garrigues, S., Shabanov, N.V., Weiss, M., Fernandes, R.A., et al., 2006, Validation of global moderate-resolution LAI products—A framework proposed within the CEOS land product validation subgroup: IEEE Transactions on Geoscience and Remote Sensing, v. 44, no. 7, p. 1804–1814, at <https://doi.org/10.1109/TGRS.2006.872529>.
- Morisette, J.T., Giglio, L., Csiszar, I., and Justice, C.O., 2005, Validation of the MODIS active fire product over Southern Africa with ASTER data: International Journal of Remote Sensing, v. 26, no. 19, p. 4239–4264, at <https://doi.org/10.1080/01431160500113526>.
- Morisette, J.T., Giglio, L., Csiszar, I., Setzer, A., Schroeder, W., Morton, D., and Justice, C.O., 2005, Validation of MODIS active fire detection products derived from two algorithms: Earth Interactions, v. 9, article 9, at <https://doi.org/10.1175/EI141.1>.
- Morisette, J.T., Nickeson, J.E., Davis, P., Wang, Y., Tian, Y., Woodcock, C.E., Shabanov, N., Hansen, M.C., Cohen, W.B., et al., 2003, High spatial resolution satellite observations for validation of MODIS land products—IKONOS observations acquired under the NASA Scientific Data Purchase: Remote Sensing of Environment, v. 88, no. 1–2, p. 100–110, at <https://doi.org/10.1016/j.rse.2003.04.003>.
- Morisette, J.T., Privette, J.L., and Justice, C.O., 2002, A framework for the validation of MODIS Land products: Remote Sensing of Environment, v. 83, no. 1–2, p. 77–96, at [https://doi.org/10.1016/S0034-4257\(02\)00088-3](https://doi.org/10.1016/S0034-4257(02)00088-3).
- Morse, A., Kramber, W.J., Allen, R.G., and Tasumi, M., 2004, Use of the METRIC evapotranspiration model to compute water use by irrigated agriculture in Idaho, in 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2134–2137, at <https://doi.org/10.1109/IGARSS.2004.1370780>.
- Morse, A., Kramber, W.J., Wilkins, M., Allen, R.G., and Tasumi, M., 2003, Preliminary computation of evapotranspiration by land cover type using Landsat TM data and SEBAL, in 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2956–2958, at <https://doi.org/10.1109/IGARSS.2003.1294644>.
- Morse, B.S., Pohll, G., Huntington, J.L., and Rodriguez Castillo, R., 2003, Stochastic capture zone analysis of an arsenic-contaminated well using the generalized likelihood uncertainty estimator (GLUE)

- methodology: *Water Resources Research*, v. 39, no. 6, p. HWC21–HWC29, at <https://doi.org/10.1029/2002WR001470>.
- Morstad, D.L., and Helder, D.L., 2008, Use of pseudo-invariant sites for long-term sensor calibration, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. I253–I256, at <https://doi.org/10.1109/IGARSS.2008.4778841>.
- Morton, C.G., Huntington, J.L., Pohl, G.M., Allen, R.G., McGwire, K.C., and Bassett, S.D., 2013, Assessing calibration uncertainty and automation for estimating evapotranspiration from agricultural areas using METRIC: *Journal of the American Water Resources Association*, v. 49, no. 3, p. 549–562, at <https://doi.org/10.1111/jawr.12054>.
- Morton, D.C., DeFries, R.S., Shimabukuro, Y.E., Anderson, L.O., Del Bon Espírito-Santo, F., Hansen, M.C., and Carroll, M., 2005, Rapid assessment of annual deforestation in the Brazilian Amazon using MODIS data: *Earth Interactions*, v. 9, no. 8, article 8, at <https://doi.org/10.1175/EI139.1>.
- Morton, D.C., Nagol, J., Carabajal, C.C., Rosette, J., Palace, M., Cook, B.D., Vermote, E.F., Harding, D.J., and North, P.R., 2016, Morton et al. reply: *Nature*, v. 531, no. 7594, p. E6–E6, at <https://doi.org/10.1038/nature16458>.
- Morton, D.C., Nagol, J., Carabajal, C.C., Rosette, J., Palace, M., Cook, B.D., Vermote, E.F., Harding, D.J., and North, P.R.J., 2014, Amazon forests maintain consistent canopy structure and greenness during the dry season: *Nature*, v. 506, no. 7487, p. 221–224, at <https://doi.org/10.1038/nature13006>.
- Morway, E.D., Buto, S.G., Niswonger, R.G., and Huntington, J.L., 2023, Assessing potential effects of changes in water use in the middle Carson River Basin with a numerical groundwater-flow model, Eagle, Dayton, and Churchill Valleys, West-Central Nevada, U.S. Geological Survey Scientific Investigations Report 2023–5008, 112 p., at <https://doi.org/10.3133/sir20235008>.
- Motesharrei, S., Rivas, J., Kalnay, E., Asrar, G.R., Busalacchi, A.J., Cahalan, R.F., Cane, M.A., Colwell, R.R., Feng, K., et al., 2017, Modeling sustainability—Population, inequality, consumption, and bidirectional coupling of the Earth and human Systems: *National Science Review*, v. 3, no. 4, p. 470–494, at <https://doi.org/10.1093/nsr/nww081>.
- Moura, Y.M.D., Hilker, T., Gonçalves, F.G., Galvão, L.S., dos Santos, J.R., Lyapustin, A.I., Maeda, E.E., and de Jesus Silva, C.V., 2016, Scaling estimates of vegetation structure in Amazonian tropical forests using multi-angle MODIS observations: *International Journal of Applied Earth Observation and Geoinformation*, v. 52, p. 580–590, at <https://doi.org/10.1016/j.jag.2016.07.017>.
- Mourad, R., Jaafar, H., Anderson, M., and Gao, F., 2020, Assessment of leaf area index models using harmonized Landsat and Sentinel-2 surface reflectance data over a semi-arid irrigated landscape: *Remote Sensing*, v. 12, no. 19, article 3121, at <https://doi.org/10.3390/RS12193121>.
- Moussavi, M.S., Abdalati, W., Pope, A., Scambos, T.A., Tedesco, M., MacFerrin, M., and Grigsby, S., 2016, Derivation and validation of supraglacial lake volumes on the Greenland Ice Sheet from high-resolution satellite imagery: *Remote Sensing of Environment*, v. 183, p. 294–303, at <https://doi.org/10.1016/j.rse.2016.05.024>.
- Moussavi, M.S., Abdalati, W., Scambos, T.A., and Neuenschwander, A., 2014, Applicability of an automatic surface detection approach to micro-pulse photon-counting lidar altimetry data—Implications for canopy height retrieval from future ICESat-2 data: *International Journal of*

Remote Sensing, v. 35, no. 13, p. 5263–5279, at <https://doi.org/10.1080/01431161.2014.939780>.

- Moustafa, S.E., Rennermalm, A.K., Román, M.O., Wang, Z., Schaaf, C.B., Smith, L.C., Koenig, L.S., and Erb, A., 2017, Evaluation of satellite remote sensing albedo retrievals over the ablation area of the southwestern Greenland ice sheet: *Remote Sensing of Environment*, v. 198, p. 115–125, at <https://doi.org/10.1016/j.rse.2017.05.030>.
- Moyer, D., McIntire, J., Xiong, X., and Thome, K., 2020, Preliminary JPSS-3 VIIRS polarization sensitivity and comparison with S-NPP, JPSS-1 and -2, in 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), online virtual meeting, 26 September–2 October 2020, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6246–6249, at <https://doi.org/10.1109/IGARSS39084.2020.9323257>.
- Mueller, A., Hausold, A., and Strobl, P., 2002, HySens - DAIS/ROSIS imaging spectrometers at DLR, in *Remote Sensing for Environmental Monitoring, GIS Applications, and Geology*, Toulouse, France, 17–21 September 2001, Proceedings of SPIE Vol. 4545: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 225–235, at <https://doi.org/10.1117/12.453677>.
- Mueller, A., Richter, R., Habermeyer, M., Mehl, H., Dech, S., Kaufmann, H., Segl, K., Strobl, P., Haschberger, P., and Bamler, R., 2002, ARES - A new reflective/emissive imaging spectrometer for terrestrial applications, in *Sensors, Systems, and Next-Generation Satellites VI*, Agia Pelagia, Crete, 23–26 September 2002, Proceedings of SPIE Vol. 4881: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 159–166, at <https://doi.org/10.1117/12.463015>.
- Mueller, J.L., Davis, C., Arnone, R., Frouin, R., Carder, K.L., Lee, Z.P., Steward, R.G., Hooker, S., Mobley, C.D., and McLean, S., 2000, Above-water radiance and remote sensing reflectance measurement and analysis protocols, in Fargion, G.S., and Mueller, J.L., eds., *Ocean optics protocols for satellite ocean color sensor validation*, rev. 2, NASA Technical Memorandum, NASA/TM—2000-209966, p. 98–107, at <https://ntrs.nasa.gov/api/citations/20000097063/downloads/20000097063.pdf>.
- Mueller, N., Lewis, A., Roberts, D., Ring, S., Melrose, R., Sixsmith, J., Lymburner, L., McIntyre, A., Tan, P., et al., 2016, Water observations from space—Mapping surface water from 25years of Landsat imagery across Australia: *Remote Sensing of Environment*, v. 174, p. 341–352, at <https://doi.org/10.1016/j.rse.2015.11.003>.
- Mugabowindekwe, M., Brandt, M., Chave, J., Reiner, F., Skole, D.L., Kariryaa, A., Igel, C., Hiernaux, P., Ciais, P., et al., 2023, Nation-wide mapping of tree-level aboveground carbon stocks in Rwanda: *Nature Climate Change*, v. 13, p. 91–97, at <https://doi.org/10.1038/s41558-022-01544-w>.
- Muldashev, T.Z., Lyapustin, A.I., and Sultangazin, U.M., 1999, Spherical harmonics method in the problem of radiative transfer in the atmosphere-surface system: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 61, no. 3, p. 393–404, at [https://doi.org/10.1016/S0022-4073\(98\)00025-9](https://doi.org/10.1016/S0022-4073(98)00025-9).
- Müller, H., Rufin, P., Griffiths, P., Barros Siqueira, A.J., and Hostert, P., 2015, Mining dense Landsat time series for separating cropland and pasture in a heterogeneous Brazilian savanna landscape: *Remote Sensing of Environment*, v. 156, p. 490–499, at <https://doi.org/10.1016/j.rse.2014.10.014>.
- Müller, H., Rufin, P., Griffiths, P., de Barros Viana Hissa, L., and Hostert, P., 2016, Beyond deforestation—Differences in long-term regrowth dynamics across land use regimes in southern Amazonia:

- Remote Sensing of Environment, v. 186, p. 652–662, at <https://doi.org/10.1016/j.rse.2016.09.012>.
- Muller-Karger, F.E., Hestir, E., Ade, C., Turpie, K., Roberts, D.A., Siegel, D., Miller, R.J., Humm, D., Izenberg, N., et al., 2018, Satellite sensor requirements for monitoring essential biodiversity variables of coastal ecosystems: Ecological Applications, v. 28, no. 3, p. 749–760, at <https://doi.org/10.1002/eap.1682>.
- Mullissa, A., Vollrath, A., Odongo-Braun, C., Slagter, B., Balling, J., Gou, Y., Gorelick, N., and Reiche, J., 2021, Sentinel-1 SAR backscatter analysis ready data preparation in Google Earth Engine: Remote Sensing, v. 13, no. 10, article 1954, at <https://doi.org/10.3390/rs13101954>.
- Mulverhill, C., Coops, N.C., Hermosilla, T., White, J.C., and Wulder, M.A., 2022, Evaluating ICESat-2 for monitoring, modeling, and update of large area forest canopy height products: Remote Sensing of Environment, v. 271, article 112919, at <https://doi.org/10.1016/j.rse.2022.112919>.
- Muñoz-Perea, C.G., Allen, R.G., Westermann, D.T., Wright, J.L., and Singh, S.P., 2007, Water use efficiency among dry bean landraces and cultivars in drought-stressed and non-stressed environments: Euphytica, v. 155, no. 3, p. 393–402, at <https://doi.org/10.1007/s10681-006-9340-z>.
- Muñoz-Perea, C.G., Terán, H., Allen, R.G., Wright, J.L., Westermann, D.T., and Singh, S.P., 2006, Selection for drought resistance in dry bean landraces and cultivars: Crop Science, v. 46, no. 5, p. 2111–2120, at <https://doi.org/10.2135/cropsci2006.01.0029>.
- Munteanu, C., Kuemmerle, T., Boltiziar, M., Butsic, V., Gimmi, U., Lúboš, H., Kaim, D., Király, G., Konkoly-Gyuró, É., et al., 2014, Forest and agricultural land change in the Carpathian region-A meta-analysis of long-term patterns and drivers of change: Land Use Policy, v. 38, p. 685–697, at <https://doi.org/10.1016/j.landusepol.2014.01.012>.
- Munteanu, C., Kuemmerle, T., Boltiziar, M., Lieskovský, J., Mojses, M., Kaim, D., Konkoly-Gyuró, É., Mackovčín, P., Müller, D., et al., 2017, Nineteenth-century land-use legacies affect contemporary land abandonment in the Carpathians: Regional Environmental Change, v. 17, no. 8, p. 2209–2222, at <https://doi.org/10.1007/s10113-016-1097-x>.
- Munteanu, C., Kuemmerle, T., Keuler, N.S., Müller, D., Balázs, P., Dobosz, M., Griffiths, P., Halada, L., Kaim, D., et al., 2015, Legacies of 19th century land use shape contemporary forest cover: Global Environmental Change, v. 34, p. 83–94, at <https://doi.org/10.1016/j.gloenvcha.2015.06.015>.
- Munteanu, C., Nita, M.D., Abrudan, I.V., and Radeloff, V.C., 2016, Historical forest management in Romania is imposing strong legacies on contemporary forests and their management: Forest Ecology and Management, v. 361, p. 179–193, at <https://doi.org/10.1016/j.foreco.2015.11.023>.
- Munteanu, C., Pidgeon, A.M., and Radeloff, V.C., 2018, Bird conservation in the Carpathian Ecoregion in light of long-term land use trends and conservation responsibility: Biodiversity and Conservation, v. 27, no. 8, p. 2051–2068, at <https://doi.org/10.1007/s10531-018-1524-z>.
- Munteanu, C., Radeloff, V.C., Griffiths, P., Halada, L., Kaim, D., Knorn, J., Kozak, J., Kuemmerle, T., Lieskovský, J., et al., 2016, Land change in the Carpathian region before and after major institutional changes, in Gutman, G., and Radeloff, V.C., eds., Land-cover and land-use changes in Eastern Europe after the collapse of the Soviet Union in 1991: Cham, Switzerland, Springer, p. 57–90, at https://doi.org/10.1007/978-3-319-42638-9_4.
- Munzimi, Y.A., Hansen, M.C., Adusei, B., and Senay, G.B., 2015, Characterizing Congo basin rainfall and climate using Tropical Rainfall Measuring Mission (TRMM) satellite data and limited rain gauge

- ground observations: *Journal of Applied Meteorology and Climatology*, v. 54, no. 3, p. 541–555, at <https://doi.org/10.1175/JAMC-D-14-0052.1>.
- Munzimi, Y.A., Hansen, M.C., and Asante, K.O., 2019, Estimating daily streamflow in the Congo Basin using satellite-derived data and a semi-distributed hydrological model: *Hydrological Sciences Journal*, v. 64, no. 12, p. 1472–1487, at <https://doi.org/10.1080/02626667.2019.1647342>.
- Murali Krishna, G., Thenkabail, P., Pardhasaradhi, T., and Oliphant, A., 2020, Agricultural cropland extent and areas of South Asia derived using Landsat satellite 30-m time-series big-data using random forest machine learning algorithms on the Google Earth Engine cloud: *GIScience and Remote Sensing*, v. 57, no. 3, p. 302–322, at <https://doi.org/10.1080/15481603.2019.1690780>.
- Murillo-Sandoval, P.J., Gjerdsseth, E., Correa-Ayram, C., Wrathall, D., Van Den Hoek, J., Dávalos, L.M., and Kennedy, R., 2021, No peace for the forest—Rapid, widespread land changes in the Andes-Amazon region following the Colombian civil war: *Global Environmental Change*, v. 69, article 102283, at <https://doi.org/10.1016/j.gloenvcha.2021.102283>.
- Murphy, K.J., Davies, D.K., Michael, K., Justice, C.O., Schmaltz, J.E., Boller, R., McLemore, B.D., Vollmer, B., and Wong, M.M., 2015, LANCE, NASA's land, atmosphere near real-time capability for EOS, in Lippitt, C., Stow, D., and Coulter, L., eds., *Time-sensitive remote sensing*: New York, N.Y., Springer, p. 113–127, at https://doi.org/10.1007/978-1-4939-2602-2_8.
- Murphy, R.E., Barnes, W.L., Lyapustin, A.I., Privette, J., Welsch, C., DeLuccia, F., Swenson, H., Schueler, C.F., Ardanuy, P.E., and Kealy, P.S.M., 2001, Using VIIRS to provide data continuity with MODIS, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1212–1214, at <https://doi.org/10.1109/IGARSS.2001.976795>.
- Murphy-Morris, J.E., Irons, J.R., Markham, B.L., Barnes, R.A., and Schweiss, R.J., 2003, Performance requirements and trade-offs for the Landsat Data Continuity Mission, in *Earth Observing Systems VIII*, San Diego, Calif., 3–6 August 2003, Proceedings of SPIE Vol. 5151: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 9–19, at <https://doi.org/10.1117/12.507484>.
- Musy, R.F., Wynne, R.H., Binn, C.E., Scrivani, J.A., and McRoberts, R.E., 2006, Automated forest area estimation using iterative guided spectral class rejection: *Photogrammetric Engineering and Remote Sensing*, v. 72, no. 8, p. 949–960, at <https://doi.org/10.14358/PERS.72.8.949>.
- Mutiibwa, D., Kilic, A., and Irmak, S., 2014, The effect of land cover/land use changes on the regional climate of the USA High Plains: *Climate*, v. 2, no. 3, p. 153–167, at <https://doi.org/10.3390/cli2030153>.
- Muto, A., Scambos, T.A., Steffen, K., Slater, A.G., and Clow, G.D., 2011, Recent surface temperature trends in the interior of East Antarctica from borehole firn temperature measurements and geophysical inverse methods: *Geophysical Research Letters*, v. 38, no. 15, article L15502, at <https://doi.org/10.1029/2011GL048086>.
- Mutziger, A.J., Burt, C.M., Howes, D.J., and Allen, R.G., 2005, Comparison of measured and FAO-56 modeled evaporation from bare soil: *Journal of Irrigation and Drainage Engineering*, v. 131, no. 1, p. 59–72, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2005\)131:1\(59\)](https://doi.org/10.1061/(ASCE)0733-9437(2005)131:1(59)).
- Myhre, G., Kvalevåg, M.M., and Schaaf, C.B., 2005, Radiative forcing due to anthropogenic vegetation change based on MODIS surface albedo data: *Geophysical Research Letters*, v. 32, no. 21, p. 1–4, at <https://doi.org/10.1029/2005GL024004>.

- Myneni, R.B., Hoffman, S., Knyazikhin, Y., Privette, J.L., Glassy, J., Tian, Y., Wang, Y., Song, X., Zhang, Y., et al., 2002, Global products of vegetation leaf area and fraction absorbed PAR from year one of MODIS data: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 214–231, at [https://doi.org/10.1016/S0034-4257\(02\)00074-3](https://doi.org/10.1016/S0034-4257(02)00074-3).
- Myneni, R.B., Keeling, C.D., Tucker, C.J., Asrar, G., and Nemani, R.R., 1997, Increased plant growth in the northern high latitudes from 1981 to 1991: *Nature*, v. 386, no. 6626, p. 698–702, at <https://doi.org/10.1038/386698a0>.
- Myneni, R.B., Yang, W., Nemani, R.R., Huete, A.R., Dickinson, R.E., Knyazikhin, Y., Didan, K., Fu, R., Negrón Juárez, R.I., et al., 2007, Large seasonal swings in leaf area of Amazon rainforests: *Proceedings of the National Academy of Sciences of the United States of America*, v. 104, no. 12, p. 4820–4823, at <https://doi.org/10.1073/pnas.0611338104>.
- Nackoney, J., Demol, M., Akpona, H.A., Bauters, M., Boeckx, P., Dupain, J., Facheux, C., Hansen, M.C., Kalemba, J.C., et al., 2022, Coupled forest zoning and agricultural intervention yields conflicting outcomes for tropical forest conservation in the Democratic Republic of the Congo (DRC): *Environmental Research Letters*, v. 17, no. 6, article 064002, at <https://doi.org/10.1088/1748-9326/ac6ad8>.
- Nackoney, J., Molinario, G., Potapov, P., Turubanova, S., Hansen, M.C., and Furuichi, T., 2014, Impacts of civil conflict on primary forest habitat in northern Democratic Republic of the Congo, 1990–2010: *Biological Conservation*, v. 170, p. 321–328, at <https://doi.org/10.1016/j.biocon.2013.12.033>.
- Nadal, J.L.V., Franch, B., Roger, J.C., Skakun, S., Vermote, E., and Justice, C., 2018, Spectrally adjusted surface reflectance and its dependence with NDVI for passive optical sensors, in 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 6452–6455, at <https://doi.org/10.1109/IGARSS.2018.8517306>.
- Nadler, C., Allander, K., Pohll, G., Morway, E., Naranjo, R., and Huntington, J.L., 2018, Evaluation of bias associated with capture maps derived from nonlinear groundwater flow models: *Groundwater*, v. 56, no. 3, p. 458–469, at <https://doi.org/10.1111/gwat.12597>.
- Nagler, P.L., Daughtry, C.S.T., and Goward, S.N., 1996, Shortwave infrared spectral reflectance of plant litter and soils, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 1803–1805, at <https://doi.org/10.1109/IGARSS.1996.516806>.
- Nagler, P.L., Daughtry, C.S.T., and Goward, S.N., 2000, Plant litter and soil reflectance: *Remote Sensing of Environment*, v. 71, no. 2, p. 207–215, at [https://doi.org/10.1016/S0034-4257\(99\)00082-6](https://doi.org/10.1016/S0034-4257(99)00082-6).
- Nagol, J.R., Sexton, J.O., Kim, D.H., Anand, A., Morton, D., Vermote, E.F., and Townshend, J.R., 2015, Bidirectional effects in Landsat reflectance estimates—Is there a problem to solve?: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 103, p. 129–135, at <https://doi.org/10.1016/j.isprsjprs.2014.09.006>.
- Nagol, J.R., Vermote, E.F., and Prince, S.D., 2009, Effects of atmospheric variation on AVHRR NDVI data: *Remote Sensing of Environment*, v. 113, no. 2, p. 392–397, at <https://doi.org/10.1016/j.rse.2008.10.007>.
- Nagol, J.R., Vermote, E.F., and Prince, S.D., 2014, Quantification of impact of orbital drift on inter-annual trends in AVHRR NDVI data: *Remote Sensing*, v. 6, no. 7, p. 6680–6687, at <https://doi.org/10.3390/rs6076680>.

- Nair, S., Srinivasan, G., and Nemani, R.R., 2009, Evaluation of multi-satellite TRMM derived rainfall estimates over a western state of India: *Journal of the Meteorological Society of Japan*, v. 87, no. 6, p. 927–939, at <https://doi.org/10.2151/jmsj.87.927>.
- Nakalembe, C., Dempewolf, J., and Justice, C.O., 2017, Agricultural land use change in Karamoja Region, Uganda: *Land Use Policy*, v. 62, p. 2–12, at <https://doi.org/10.1016/j.landusepol.2016.11.029>.
- Nandy, P., Thome, K.J., and Biggar, S., 1998, Instrument for retrieval of BRDF data for vicarious calibration, in 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 562–564, at <https://doi.org/10.1109/IGARSS.1998.699511>.
- Nandy, P., Thome, K.J., and Biggar, S., 1999, Laboratory characterization of a CCD camera system for retrieval of bi-directional reflectance distribution function, in *Sensors, Systems, and Next-Generation Satellites III*, Florence, Italy, 20–23 September 1999, Proceedings of SPIE Vol. 3870: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 243–253, at <https://doi.org/10.1117/12.373192>.
- Nandy, P., Thome, K.J., and Biggar, S., 2000, Sensitivity analysis of a CCD-based camera system for the retrieval of bidirectional reflectance distribution function for vicarious calibration, in *Imaging Spectrometry VI*, San Diego, Calif., 31 July–2 August 2000, Proceedings of SPIE Vol. 4132: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 279–289, at <https://doi.org/10.1117/12.406597>.
- Nandy, P., Thome, K.J., and Biggar, S., 2001, Characterization and field use of a CCD camera system for retrieval of bidirectional reflectance distribution function: *Journal of Geophysical Research Atmospheres*, v. 106, no. D11, p. 11957–11966, at <https://doi.org/10.1029/2000JD900390>.
- Nanson, R., Bishop-Taylor, R., Sagar, S., and Lymburner, L., 2022, Geomorphic insights into Australia's coastal change using a national dataset derived from the multi-decadal Landsat archive: *Estuarine, Coastal and Shelf Science*, v. 265, article 107712, at <https://doi.org/10.1016/j.ecss.2021.107712>.
- Napton, D.E., Sohl, T.L., Auch, R.F., and Loveland, T.R., 2003, Land use and land cover change in the North Central Appalachians ecoregion: *Pennsylvania Geographer*, v. 41, no. 2, p. 46–66.
- Nardin, W., Locatelli, S., Pasquarella, V., Rulli, M.C., Woodcock, C.E., and Fagherazzi, S., 2016, Dynamics of a fringe mangrove forest detected by Landsat images in the Mekong River Delta, Vietnam: *Earth Surface Processes and Landforms*, v. 41, no. 14, p. 2024–2037, at <https://doi.org/10.1002/esp.3968>.
- Nardin, W., Woodcock, C.E., and Fagherazzi, S., 2016, Bottom sediments affect *Sonneratia* mangrove forests in the prograding Mekong delta, Vietnam: *Estuarine, Coastal and Shelf Science*, v. 177, p. 60–70, at <https://doi.org/10.1016/j.ecss.2016.04.019>.
- Nascimento Bendini, H.D., Maria Garcia Fonseca, L., Schwieder, M., Korting, T.S., Rufin, P., Arco Sanches, I.D., Leitão, P.J., and Hostert, P., 2019, Comparing phenometrics extracted from dense Landsat-like image time series for crop classification, in 2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 469–472, at <https://doi.org/10.1109/IGARSS.2019.8898139>.
- Naughton-Treves, L., Mena, J.L., Treves, A., Alvarez, N., and Radeloff, V.C., 2003, Wildlife survival beyond park boundaries—The impact of slash-and-burn agriculture and hunting on mammals in

- Tambopata, Peru: Conservation Biology, v. 17, no. 4, p. 1106–1117, at <https://doi.org/10.1046/j.1523-1739.2003.02045.x>.
- Nearing, G.S., Crow, W.T., Thorp, K.R., Moran, M.S., Reichle, R.H., and Gupta, H.V., 2012, Assimilating remote sensing observations of leaf area index and soil moisture for wheat yield estimates—An observing system simulation experiment: Water Resources Research, v. 48, no. 5, article W05525, at <https://doi.org/10.1029/2011WR011420>.
- Nearing, G.S., Moran, M.S., Scott, R.L., and Ponce-Campos, G., 2012, Coupling diffusion and maximum entropy models to estimate thermal inertia: Remote Sensing of Environment, v. 119, p. 222–231, at <https://doi.org/10.1016/j.rse.2011.12.012>.
- Nearing, G.S., Moran, M.S., Thorp, K.R., Collins, C.D.H., and Slack, D.C., 2010, Likelihood parameter estimation for calibrating a soil moisture model using radar backscatter: Remote Sensing of Environment, v. 114, no. 11, p. 2564–2574, at <https://doi.org/10.1016/j.rse.2010.05.031>.
- Neeti, N., and Kennedy, R.E., 2016, Comparison of national level biomass maps for conterminous US—Understanding pattern and causes of differences: Carbon Balance and Management, v. 11, no. 1, article 19, at <https://doi.org/10.1186/s13021-016-0060-y>.
- Neigh, C.S.R., Masek, J.G., Bourget, P., Cook, B., Huang, C., Rishmawi, K., and Zhao, F., 2014, Deciphering the precision of stereo IKONOS canopy height models for US forests with G-LiHT airborne LiDAR: Remote Sensing, v. 6, no. 3, p. 1762–1782, at <https://doi.org/10.3390/rs6031762>.
- Neigh, C.S.R., Masek, J.G., Bourget, P., Rishmawi, K., Zhao, F., Huang, C., Cook, B.D., and Nelson, R.F., 2016, Regional rates of young US forest growth estimated from annual Landsat disturbance history and IKONOS stereo imagery: Remote Sensing of Environment, v. 173, p. 282–293, at <https://doi.org/10.1016/j.rse.2015.09.007>.
- Neigh, C.S.R., Masek, J.G., and Nickeson, J.E., 2013, High-resolution satellite data open for government research: Eos, v. 94, no. 13, p. 121–123, at <https://doi.org/10.1002/2013EO130002>.
- Neigh, C.S.R., McCorkel, J.T., Campbell, P.K.E., Ong, L., Ly, V., Landis, D., and Middleton, E.M., 2016, Monitoring orbital precession of EO-1 Hyperion with three atmospheric correction models in the Libya-4 PICS: IEEE Geoscience and Remote Sensing Letters, v. 13, no. 12, p. 1797–1801, at <https://doi.org/10.1109/LGRS.2016.2612539>.
- Neigh, C.S.R., McCorkel, J.T., and Middleton, E.M., 2015, Quantifying Libya-4 surface reflectance heterogeneity with WorldView-1, 2 and EO-1 Hyperion: IEEE Geoscience and Remote Sensing Letters, v. 12, no. 11, p. 2277–2281, at <https://doi.org/10.1109/LGRS.2015.2468174>.
- Neigh, C.S.R., Nelson, R.F., Ranson, K.J., Margolis, H.A., Montesano, P.M., Sun, G., Kharuk, V., Næsset, E., Wulder, M.A., and Andersen, H.E., 2013, Taking stock of circumboreal forest carbon with ground measurements, airborne and spaceborne LiDAR: Remote Sensing of Environment, v. 137, p. 274–287, at <https://doi.org/10.1016/j.rse.2013.06.019>.
- Neigh, C.S.R., Tucker, C.J., Carroll, M.L., Montesano, P.M., Slayback, D.A., Wooten, M.R., Lyapustin, A.I., Shean, D.E., Alexandrov, O., and MacAnder, M.J., 2019, An API for spaceborne sub-meter resolution products for Earth science, in 2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5397–5400, at <https://doi.org/10.1109/IGARSS.2019.8898358>.

- Nelson, M.D., Healey, S.P., Moser, W.K., and Hansen, M.C.H., 2009, Combining satellite imagery with forest inventory data to assess damage severity following a major blowdown event in northern Minnesota, USA: *International Journal of Remote Sensing*, v. 30, no. 19, p. 5089–5108, at <https://doi.org/10.1080/01431160903022951>.
- Nelson, M.D., Healey, S.P., Moser, W.K., Masek, J.G., and Cohen, W.B., 2011, Consistency of forest presence and biomass predictions modeled across overlapping spatial and temporal extents: *Mathematical and Computational Forestry and Natural-Resource Sciences*, v. 3, no. 2, p. 102–113, at <https://www.fs.usda.gov/research/treesearch/38889>.
- Nelson, S.A.C., Soranno, P.A., Cheruvellil, K.S., Batzli, S.A., and Skole, D.L., 2003, Regional Assessment of lake water clarity using satellite remote sensing: *Journal of Limnology*, v. 62, no. 1s, p. 27–32, at <https://doi.org/10.4081/jlimnol.2003.s1.27>.
- Nelson, T., Boots, B., and Wulder, M.A., 2005, Techniques for accuracy assessment of tree locations extracted from remotely sensed imagery: *Journal of Environmental Management*, v. 74, no. 3, p. 265–271, at <https://doi.org/10.1016/j.jenvman.2004.10.002>.
- Nelson, T., Boots, B., and Wulder, M.A., 2006, Large-area mountain pine beetle infestations—Spatial data representation and accuracy: *Forestry Chronicle*, v. 82, no. 2, p. 243–252, at <https://doi.org/10.5558/tfc82243-2>.
- Nelson, T., Boots, B., Wulder, M.A., and Feick, R., 2004, Predicting forest age classes from high spatial resolution remotely sensed imagery using Voronoi polygon aggregation: *Geoinformatica*, v. 8, no. 2, p. 143–155, at <https://doi.org/10.1023/B:GEIN.0000017745.92969.31>.
- Nelson, T., Boots, B., Wulder, M.A., Shore, T., Safranyik, L., and Ebata, T., 2006, Rating the susceptibility of forests to mountain pine beetle infestations—The impact of data: *Canadian Journal of Forest Research*, v. 36, no. 11, p. 2815–2825, at <https://doi.org/10.1139/X06-163>.
- Nelson, T., Niemann, K.O., and Wulder, M.A., 2001, Spatial statistical techniques for aggregating point objects extracted from high spatial resolution imagery, in *2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1663–1665, at <https://doi.org/10.1109/IGARSS.2001.977027>.
- Nelson, T., Niemann, K.O., and Wulder, M.A., 2002, Spatial statistical techniques for aggregating point objects extracted from high spatial resolution remotely sensed imagery: *Journal of Geographical Systems*, v. 4, no. 4, p. 423–433, at <https://doi.org/10.1007/s101090300092>.
- Nelson, T., Wilson, H.G., Boots, B., and Wulder, M.A., 2005, Use of ordinal conversion for radiometric normalization and change detection: *International Journal of Remote Sensing*, v. 26, no. 3, p. 535–541, at <https://doi.org/10.1080/01431160512331314065>.
- Nelson, T., Wulder, M.A., and Niemann, K.O., 2001, Spatial resolution implications of digitizing aerial photography for environmental applications: *Imaging Science Journal*, v. 49, no. 4, p. 223–232, at <https://doi.org/10.1080/13682199.2001.11784386>.
- Nelson, T.A., Coops, N.C., Wulder, M.A., Perez, L., Fitterer, J., Powers, R., and Fontana, F., 2014, Predicting climate change impacts to the Canadian boreal forest: *Diversity*, v. 6, no. 1, p. 133–157, at <https://doi.org/10.3390/d6010133>.

- Nelson, T.A., Nijland, W., Bourbonnais, M.L., and Wulder, M.A., 2017, Regression tree modeling of spatial pattern and process interactions, *in* Rempel, T.K., and Perera, A., eds., *Mapping forest landscape patterns*: New York, N.Y., Springer, p. 187–212, at https://doi.org/10.1007/978-1-4939-7331-6_5.
- Nemani, R., Wang, W., Hashimoto, H., Michaelis, A., Vandal, T., Lyapustin, A., Zhang, J., Lee, T., Kalluri, S., et al., 2020, GeoNEX—A geostationary Earth observatory at NASA Earth exchange—Earth monitoring from operational geostationary satellite systems, *in* 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), online virtual meeting, 26 September–2 October 2020, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 128–131, at <https://doi.org/10.1109/IGARSS39084.2020.9323435>.
- Nemani, R.R., Hashimoto, H., Votava, P., Melton, F., Wang, W., Michaelis, A., Mutch, L., Milesi, C., Hiatt, S., and White, M., 2009, Monitoring and forecasting ecosystem dynamics using the Terrestrial Observation and Prediction System (TOPS): Remote Sensing of Environment, v. 113, no. 7, p. 1497–1509, at <https://doi.org/10.1016/j.rse.2008.06.017>.
- Nemani, R.R., Keeling, C.D., Hashimoto, H., Jolly, W.M., Piper, S.C., Tucker, C.J., Myneni, R.B., and Running, S.W., 2003, Climate-driven increases in global terrestrial net primary production from 1982 to 1999: *Science*, v. 300, no. 5625, p. 1560–1563, at <https://doi.org/10.1126/science.1082750>.
- Nemani, R.R., and Running, S., 1997, Land cover characterization using multitemporal red, near-ir, and thermal-ir data from NOAA/AVHRR: *Ecological Applications*, v. 7, no. 1, p. 79–90, at [https://doi.org/10.1890/1051-0761\(1997\)007\[0079:LCCUMR\]2.0.CO;2](https://doi.org/10.1890/1051-0761(1997)007[0079:LCCUMR]2.0.CO;2).
- Nemani, R.R., and Running, S.W., 1996, Implementation of a hierarchical global vegetation classification in ecosystem function models: *Journal of Vegetation Science*, v. 7, no. 3, p. 337–346, at <https://doi.org/10.2307/3236277>.
- Nemani, R.R., Running, S.W., Pielke, R.A., and Chase, T.N., 1996, Global vegetation cover changes from coarse resolution satellite data: *Journal of Geophysical Research Atmospheres*, v. 101, no. D3, p. 7157–7162, at <https://doi.org/10.1029/95JD02138>.
- Nemani, R.R., Votava, P., Michaelis, A., Melton, F., and Milesi, C., 2011, Collaborative supercomputing for global change science: *Eos*, v. 92, no. 13, p. 109–110, at <https://doi.org/10.1029/2011EO130001>.
- Nemani, R.R., Votava, P., Roads, J., White, M., Running, S., and Coughlan, J., 2002, Terrestrial observation and prediction system—Integration of satellite and surface weather observations with ecosystem models, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2394–2396, at <https://doi.org/10.1109/IGARSS.2002.1026555>.
- Nemani, R.R., White, M., Thornton, P., Nishida, K., Reddy, S., Jenkins, J., and Running, S., 2002, Recent trends in hydrologic balance have enhanced the terrestrial carbon sink in the United States: *Geophysical Research Letters*, v. 29, no. 10, p. 106–1 – 106–4, at <https://doi.org/10.1029/2002GL014867>.
- Nemani, R.R., White, M.A., Cayan, D.R., Jones, G.V., Running, S.W., Coughlan, J.C., and Peterson, D.L., 2001, Asymmetric warming over coastal California and its impact on the premium wine industry: *Climate Research*, v. 19, no. 1, p. 25–34, at <https://doi.org/10.3354/cr019025>.
- Nepstad, D., McGrath, D., Stickler, C., Alencar, A., Azevedo, A., Swette, B., Bezerra, T., DiGiano, M., Shimada, J., et al., 2014, Slowing Amazon deforestation through public policy and interventions

- in beef and soy supply chains: *Science*, v. 344, no. 6188, p. 1118–1123, at <https://doi.org/10.1126/science.1248525>.
- Netanyahu, N.S., Le Moigne, J., and Masek, J.G., 2004, Georegistration of Landsat data via robust matching of multiresolution features: *IEEE Transactions on Geoscience and Remote Sensing*, v. 42, no. 7, p. 1586–1600, at <https://doi.org/10.1109/TGRS.2004.826822>.
- Neumann, W., Ericsson, G., Dettki, H., Bunnefeld, N., Keuler, N.S., Helmers, D.P., and Radeloff, V.C., 2012, Difference in spatiotemporal patterns of wildlife road-crossings and wildlife-vehicle collisions: *Biological Conservation*, v. 145, no. 1, p. 70–78, at <https://doi.org/10.1016/j.biocon.2011.10.011>.
- Neumann, W., Ericsson, G., Dettki, H., and Radeloff, V.C., 2013, Behavioural response to infrastructure of wildlife adapted to natural disturbances: *Landscape and Urban Planning*, v. 114, p. 9–27, at <https://doi.org/10.1016/j.landurbplan.2013.02.002>.
- Neumann, W., Martinuzzi, S., Estes, A.B., Pidgeon, A.M., Dettki, H., Ericsson, G., and Radeloff, V.C., 2015, Opportunities for the application of advanced remotely-sensed data in ecological studies of terrestrial animal movement: *Movement Ecology*, v. 3, no. 1, article 8, at <https://doi.org/10.1186/s40462-015-0036-7>.
- Newnham, G.J., Armston, J.D., Calders, K., Disney, M.I., Lovell, J.L., Schaaf, C.B., Strahler, A.H., and Danson, F.M., 2015, Terrestrial laser scanning for plot-scale forest measurement: *Current Forestry Reports*, v. 1, no. 4, p. 239–251, at <https://doi.org/10.1007/s40725-015-0025-5>.
- Newnham, G.J., Armston, J.D., Calders, K., Disney, M.I., Lovell, J.L., Schaaf, C.B., Strahler, A.H., and Danson, F.M., 2016, Erratum—Terrestrial laser scanning for plot-scale forest measurement (*Current Forestry Reports*, (2015), 1, 4, (239-251), 10.1007/s40725-015-0025-5): *Current Forestry Reports*, v. 2, no. 3, p. 214–214, at <https://doi.org/10.1007/s40725-016-0039-7>.
- Newswander, T., Bergen, Z., Hancock, J., Hansen, S., Shumway, A., Stauder, J., and Williams, D.L., 2015, Thermal Earth Resource Monitoring Instrument (THERMI) size, weight and power reduction, in *Infrared Remote Sensing and Instrumentation XXIII*, San Diego, Calif., 9–13 August 2015, *Proceedings of SPIE Vol. 9608*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 96080s, at <https://doi.org/10.1117/12.2193212>.
- Nguyen, H.T.T., Doan, T.M., and Radeloff, V.C., 2018, Applying Random Forest classification to map land use/land cover using Landsat 8 OLI, in *Geoinformation for Disaster Management Conference, Gi4DM 2018*, Istanbul, Turkey, 18–21 March 2018, *ISPRS Archives Vol. XLII-3/W4: International Society for Photogrammetry and Remote Sensing*, p. 363–367, at <https://www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XLII-3-W4/363/2018/>.
- Ni, W., Li, X., and Woodcock, C.E., 1998, Simple hybrid BRDF model for discontinuous plant canopies, in *1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Seattle, Wash., 6–10 July 1998, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 1237–1239, at <https://doi.org/10.1109/IGARSS.1998.691362>.
- Ni, W., Li, X., Woodcock, C.E., Caetano, M.R., and Strahler, A.H., 1999, An analytical hybrid GORT model for bidirectional reflectance over discontinuous plant canopies: *IEEE Transactions on Geoscience and Remote Sensing*, v. 37, no. 2, p. 987–999, at <https://doi.org/10.1109/36.752217>.
- Ni, W., Li, X., Woodcock, C.E., Roujean, J.L., Davis, R., and Strahler, A., 1996, Modeling solar radiation transmission in boreal conifer forests, in *1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Lincoln, Nebr., 28–31 May 1996, *Proceedings: Piscataway, N.J., Institute of*

- Electrical and Electronics Engineers (IEEE), p. 591–593, at <https://doi.org/10.1109/IGARSS.1996.516412>.
- Ni, W., Li, X., Woodcock, C.E., Roujean, J.L., and Davis, R.E., 1997, Transmission of solar radiation in boreal conifer forests—Measurements and models: *Journal of Geophysical Research Atmospheres*, v. 102, no. 24, p. 29555–29566, at <https://doi.org/10.1029/97JD00198>.
- Ni, W., and Woodcock, C.E., 1999, Surface albedo of boreal conifer forests—Modeling and measurements, *in* 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Hamburg, Germany, 28 June–2 July 1999, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1068–1070, at <https://doi.org/10.1109/IGARSS.1999.774535>.
- Ni, W., and Woodcock, C.E., 2000, Effect of canopy structure and the presence of snow on the albedo of boreal conifer forests: *Journal of Geophysical Research Atmospheres*, v. 105, no. D9, p. 11879–11888, at <https://doi.org/10.1029/1999JD901158>.
- Ni, W., Woodcock, C.E., and Jupp, D.L.B., 1999, Variance in bidirectional reflectance over discontinuous plant canopies: *Remote Sensing of Environment*, v. 69, no. 1, p. 1–15, at [https://doi.org/10.1016/S0034-4257\(98\)00125-4](https://doi.org/10.1016/S0034-4257(98)00125-4).
- Nickeson, J.E., Morissette, J.T., Privette, J.L., Justice, C.O., and Wickland, D.E., 2007, Coordinating Earth observing system land validation: *Eos*, v. 88, no. 7, p. 81–82, at <https://doi.org/10.1029/2007EO070002>.
- Nie, W., Zaitchik, B.F., Rodell, M., Kumar, S.V., Anderson, M.C., and Hain, C., 2018, Groundwater withdrawals under drought—Reconciling GRACE and land surface models in the United States High Plains Aquifer: *Water Resources Research*, v. 54, no. 8, p. 5282–5299, at <https://doi.org/10.1029/2017WR022178>.
- Nie, Y., Liu, Q., Wang, J., Zhang, Y., Sheng, Y., and Liu, S., 2018, An inventory of historical glacial lake outburst floods in the Himalayas based on remote sensing observations and geomorphological analysis: *Geomorphology*, v. 308, p. 91–106, at <https://doi.org/10.1016/j.geomorph.2018.02.002>.
- Nie, Y., Sheng, Y., Liu, Q., Liu, L., Liu, S., Zhang, Y., and Song, C., 2017, A regional-scale assessment of Himalayan glacial lake changes using satellite observations from 1990 to 2015: *Remote Sensing of Environment*, v. 189, p. 1–13, at <https://doi.org/10.1016/j.rse.2016.11.008>.
- Nieke, J., Kaiser, J.W., Schläpfer, D., Brazile, J., Itten, K.I., Strobl, P., Schaepman, M.E., and Ulbrich, G., 2004, Calibration methodology for the airborne dispersive pushbroom imaging spectrometer (APEX), *in* Sensors, Systems, and Next-Generation Satellites VIII, Maspalomas, Spain, 13–15 September 2004, Proceedings of SPIE Vol. 5570: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 445–452, at <https://doi.org/10.1117/12.566364>.
- Nield, G.A., Barletta, V.R., Bordonni, A., King, M.A., Whitehouse, P.L., Clarke, P.J., Domack, E., Scambos, T.A., and Berthier, E., 2014, Rapid bedrock uplift in the Antarctic Peninsula explained by viscoelastic response to recent ice unloading: *Earth and Planetary Science Letters*, v. 397, p. 32–41, at <https://doi.org/10.1016/j.epsl.2014.04.019>.
- Nieto, H., Alsina, M.M., Kustas, W.P., García-Tejera, O., Chen, F., Bambach, N., Gao, F., Alfieri, J.G., Hipps, L.E., et al., 2022, Evaluating different metrics from the thermal-based two-source energy balance model for monitoring grapevine water stress: *Irrigation Science*, v. 40, no. 4-5, p. 697–713, at <https://doi.org/10.1007/s00271-022-00790-2>.

- Nieto, H., Bellvert, J., Kustas, W.P., Alfieri, J.G., Gao, F., Prueger, J., Torres-Rua, A.F., Hipps, L.E., Elarab, M., and Song, L., 2017, Unmanned airborne thermal and multispectral imagery for estimating evapotranspiration in irrigated vineyards, *in* 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, Tex., 23–28 July 2017, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5510–5513, at <https://doi.org/10.1109/IGARSS.2017.8128252>.
- Nieto, H., Kustas, W.P., Alfieri, J.G., Gao, F., Hipps, L.E., Los, S., Prueger, J.H., McKee, L.G., and Anderson, M.C., 2019, Impact of different within-canopy wind attenuation formulations on modelling sensible heat flux using TSEB: *Irrigation Science*, v. 37, no. 3, p. 315–331, at <https://doi.org/10.1007/s00271-018-0611-y>.
- Nieto, H., Kustas, W.P., Torres-Rúa, A., Alfieri, J.G., Gao, F., Anderson, M.C., White, W.A., Song, L., Alsina, M.M., et al., 2019, Evaluation of TSEB turbulent fluxes using different methods for the retrieval of soil and canopy component temperatures from UAV thermal and multispectral imagery: *Irrigation Science*, v. 37, no. 3, p. 389–406, at <https://doi.org/10.1007/s00271-018-0585-9>.
- Nietupski, T.C., Kennedy, R.E., Temesgen, H., and Kerns, B.K., 2021, Spatiotemporal image fusion in Google Earth Engine for annual estimates of land surface phenology in a heterogeneous landscape: *International Journal of Applied Earth Observation and Geoinformation*, v. 99, article 102323, at <https://doi.org/10.1016/j.jag.2021.102323>.
- Nightingale, J., Nickeson, J., Justice, C.O., Baret, F., Garrigues, S., Wolfe, R., and Masuoka, E., 2009, Global validation of EOS land products, lessons learned and future challenges—A MODIS case study, *in* Sustaining the millennium development goals, International Symposium on Remote Sensing of Environment, 33rd, Stresa, Italy, 4–8 May 2009, Proceedings: Tucson, Ariz., International Center for Remote Sensing of Environment, p. 1195–1198, at <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=04586c104db139f037a91da72c7333c3abbe56cb>.
- Nijland, W., Coops, N.C., Coogan, S.C.P., Bater, C.W., Wulder, M.A., Nielsen, S.E., McDermid, G., and Stenhouse, G.B., 2013, Vegetation phenology can be captured with digital repeat photography and linked to variability of root nutrition in *Hedysarum alpinum*: *Applied Vegetation Science*, v. 16, no. 2, p. 317–324, at <https://doi.org/10.1111/avsc.12000>.
- Nijland, W., de Jong, R., de Jong, S.M., Wulder, M.A., Bater, C.W., and Coops, N.C., 2014, Monitoring plant condition and phenology using infrared sensitive consumer grade digital cameras: *Agricultural and Forest Meteorology*, v. 184, p. 98–106, at <https://doi.org/10.1016/j.agrformet.2013.09.007>.
- Nijland, W., Nielsen, S.E., Coops, N.C., Wulder, M.A., and Stenhouse, G.B., 2014, Fine-spatial scale predictions of understory species using climate- and LiDAR-derived terrain and canopy metrics: *Journal of Applied Remote Sensing*, v. 8, no. 1, article 083572, at <https://doi.org/10.1117/1.JRS.8.083572>.
- Nill, L., Grünberg, I., Ullmann, T., Gessner, M., Boike, J., and Hostert, P., 2022, Arctic shrub expansion revealed by Landsat-derived multitemporal vegetation cover fractions in the Western Canadian Arctic: *Remote Sensing of Environment*, v. 281, article 113228, at <https://doi.org/10.1016/j.rse.2022.113228>.
- Ni-Meister, W., Strahler, A.H., Woodcock, C.E., Schaaf, C.B., Jupp, D.L.B., Yao, T., Zhao, F., and Yang, X., 2008, Modeling the hemispherical scanning, below-canopy lidar and vegetation structure characteristics with a geometric-optical and radiative-transfer model: *Canadian Journal of Remote Sensing*, v. 34, no. Suppl. 2, p. S385–S397, at <https://doi.org/10.5589/m08-047>.

- Niroumand-Jadidi, M., Pahlevan, N., and Vitti, A., 2019, Mapping substrate types and compositions in shallow streams: *Remote Sensing*, v. 11, no. 3, article 262, at <https://doi.org/10.3390/rs11030262>.
- Nishida, K., Nemani, R.R., Glassy, J.M., and Running, S.W., 2003, Development of an evapotranspiration index from Aqua/MODIS for monitoring surface moisture status: *IEEE Transactions on Geoscience and Remote Sensing*, v. 41, no. 2 pt. 1, p. 493–500, at <https://doi.org/10.1109/TGRS.2003.811744>.
- Nishida, K., Nemani, R.R., Running, S.W., and Glassy, J.M., 2003, An operational remote sensing algorithm of land surface evaporation: *Journal of Geophysical Research Atmospheres*, v. 108, no. 9, p. ACL 5–14, at <https://doi.org/10.1029/2002JD002062>.
- Niswonger, R.G., Morway, E.D., Triana, E., and Huntington, J.L., 2017, Managed aquifer recharge through off-season irrigation in agricultural regions: *Water Resources Research*, v. 53, no. 8, p. 6970–6992, at <https://doi.org/10.1002/2017WR020458>.
- Nita, M.D., Munteanu, C., Gutman, G., Abrudan, I.V., and Radeloff, V.C., 2018, Widespread forest cutting in the aftermath of World War II captured by broad-scale historical Corona spy satellite photography: *Remote Sensing of Environment*, v. 204, p. 322–332, at <https://doi.org/10.1016/j.rse.2017.10.021>.
- Niu, Z., Gao, N., Zhang, Z., Gao, F., and New Jiang, X., 2018, 3D shape measurement of discontinuous specular objects based on advanced PMD with bi-telecentric lens: *Optics Express*, v. 26, no. 2, p. 1615–1632, at <https://doi.org/10.1364/OE.26.001615>.
- Niu, Z., Zhang, H., Wang, X., Yao, W., Zhou, D., Zhao, K., Zhao, H., Li, N., Huang, H., et al., 2012, Mapping wetland changes in China between 1978 and 2008: *Chinese Science Bulletin*, v. 57, no. 22, p. 2813–2823, at <https://doi.org/10.1007/s11434-012-5093-3>.
- Nolin, A.W., Fetterer, F.M., and Scambos, T.A., 2002, Surface roughness characterizations of sea ice and ice sheets—Case studies with MISR data: *IEEE Transactions on Geoscience and Remote Sensing*, v. 40, no. 7, p. 1605–1615, at <https://doi.org/10.1109/TGRS.2002.801581>.
- Nolin, A.W., Stroeve, J.C., Scambos, T.A., and Fetterer, F., 2001, Cryospheric applications of MISR data, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1219–1221, at <https://doi.org/10.1109/IGARSS.2001.976798>.
- Norman, J.M., and Anderson, M.C., 2004, Soil-plant-atmosphere continuum, in Hillel, D., and Hatfield, J.L., eds., *Encyclopedia of soils in the environment*: Amsterdam, Netherlands, Elsevier, p. 513–521, at <https://doi.org/10.1016/B0-12-348530-4/00416-1>.
- Norman, J.M., Anderson, M.C., and Diak, G.R., 1996, Approach for mapping light-use efficiency on regional scales using satellite observations, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2358–2360, at <https://doi.org/10.1109/IGARSS.1996.516986>.
- Norman, J.M., Anderson, M.C., and Kustas, W.P., 2006, Are single-source, remote-sensing surface-flux models too simple?, in *Earth observation for vegetation monitoring and water management*, Naples, Italy, 10–11 November 2005, Proceedings: Melville, N.Y., American Institute of Physics, p. 170–177, at <https://doi.org/10.1063/1.2349341>.

- Norman, J.M., Anderson, M.C., Kustas, W.P., French, A.N., Mecikalski, J., Torn, R., Diak, G.R., Schmugge, T.J., and Tanner, B.C.W., 2003, Remote sensing of surface energy fluxes at 101-m pixel resolutions: *Water Resources Research*, v. 39, no. 8, p. SWC91–SWC917, at <https://doi.org/10.1029/2002WR001775>.
- Norris, P.M., Oreopoulos, L., Hou, A.Y., Tao, W.K., and Zeng, X., 2008, Representation of 3D heterogeneous cloud fields using copulas—Theory for water clouds: *Quarterly Journal of the Royal Meteorological Society*, v. 134, no. 636, p. 1843–1864, at <https://doi.org/10.1002/qj.321>.
- Nouvellon, Y., Lo Seen, D., Begue, A., Rambal, S., Moran, M.S., Qi, J., Chehbouni, A., and Kerr, Y., 1998, Combining remote sensing and plant growth modeling to describe the carbon and water budget of semi-arid grasslands, in 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2393–2395, at <https://doi.org/10.1109/IGARSS.1998.702224>.
- Nouvellon, Y., Moran, M.S., Chehbouni, A., Lo Seen, D., Bryant, R., Nichols, M., Prevot, L., Rambal, S., Ni, W., et al., 2000, Assimilating Landsat data in an ecosystem model for multi-year simulation of grassland carbon, water and energy budget, in 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1966–1968, at <https://doi.org/10.1109/IGARSS.2000.858203>.
- Nouvellon, Y., Moran, M.S., Seen, D.L., Bryant, R., Rambal, S., Ni, W., Bégué, A., Chehbouni, A., Emmerich, W.E., et al., 2001, Coupling a grassland ecosystem model with Landsat imagery for a 10-year simulation of carbon and water budgets: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 131–149, at [https://doi.org/10.1016/S0034-4257\(01\)00255-3](https://doi.org/10.1016/S0034-4257(01)00255-3).
- Nouvellon, Y., Rambal, S., Lo Seen, D., Moran, M.S., Lhomme, J.P., Bégué, A., Chehbouni, A.G., and Kerr, Y., 2000, Modelling of daily fluxes of water and carbon from shortgrass steppes: *Agricultural and Forest Meteorology*, v. 100, no. 2–3, p. 137–153, at [https://doi.org/10.1016/S0168-1923\(99\)00140-9](https://doi.org/10.1016/S0168-1923(99)00140-9).
- Nouvellon, Y., Seen, D.L., Rambal, S., Begue, A., Moran, M.S., Kerr, Y., and Qi, J., 1998, Time variation of radiation use efficiency of a semi-arid grassland—Consequences for remotely-sensed estimation of primary production, in *Remote Sensing for Agriculture, Ecosystems, and Hydrology*, Barcelona, Spain, 22–24 September 1998, Proceedings of SPIE Vol. 3499: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 191–203, at <https://doi.org/10.1117/12.332751>.
- Nouvellon, Y., Seen, D.L., Rambal, S., Bégué, A., Moran, M.S., Kerr, Y., and Qi, J., 2000, Time course of radiation use efficiency in a shortgrass ecosystem—Consequences for remotely sensed estimation of primary production: *Remote Sensing of Environment*, v. 71, no. 1, p. 43–55, at [https://doi.org/10.1016/S0034-4257\(99\)00063-2](https://doi.org/10.1016/S0034-4257(99)00063-2).
- Nowicki, S., Bindschadler, R.A., Abe-Ouchi, A., Aschwanden, A., Bueller, E., Choi, H., Fastook, J., Granzow, G., Greve, R., et al., 2013, Insights into spatial sensitivities of ice mass response to environmental change from the SeaRISE ice sheet modeling project I—Antarctica: *Journal of Geophysical Research Earth Surface*, v. 118, no. 2, p. 1002–1024, at <https://doi.org/10.1002/jgrf.20081>.
- Nowicki, S., Bindschadler, R.A., Abe-Ouchi, A., Aschwanden, A., Bueller, E., Choi, H., Fastook, J., Granzow, G., Greve, R., et al., 2013, Insights into spatial sensitivities of ice mass response to environmental change from the SeaRISE ice sheet modeling project II—Greenland: *Journal of Geophysical Research Earth Surface*, v. 118, no. 2, p. 1025–1044, at <https://doi.org/10.1002/jgrf.20076>.

- Nyamuryekung'e, S., Cibils, A.F., Estell, R.E., McIntosh, M., VanLeeuwen, D., Steele, C., González, A.L., Spiegel, S., Reyes, L.A., et al., 2021, Foraging behavior and body temperature of heritage vs. commercial beef cows in relation to desert ambient heat: *Journal of Arid Environments*, v. 193, article 104565, at <https://doi.org/10.1016/j.jaridenv.2021.104565>.
- Obata, K., Tsuchida, S., Yamamoto, H., and Thome, K., 2020, Erratum—Correction—Obata, K., et al. Cross-calibration between ASTER and MODIS visible to near-infrared bands for improvement of ASTER radiometric calibration. *Sensors* 2017, 17, 1793 (*Sensors* (Basel, Switzerland) (2017) 17 8 PII—E4057): *Sensors*, v. 20, no. 14, article 1793, at <https://doi.org/10.3390/s20144057>.
- Obata, K., Tsuchida, S., Yamamoto, H., and Thome, K.J., 2017, Cross-calibration between ASTER and MODIS visible to near-infrared bands for improvement of aster radiometric calibration: *Sensors*, v. 17, no. 8, article 1793, at <https://doi.org/10.3390/s17081793>.
- Obenschain, A., Williams, D.L., and Andary, J., 1998, Landsat 7—Extending the Landsat tradition into the next century: *Space Technology*, v. 18, no. 1–2, p. 3–10, at [https://doi.org/10.1016/S0892-9270\(97\)00045-6](https://doi.org/10.1016/S0892-9270(97)00045-6).
- O'Brien, P., Douglas, E.M., and Schaaf, C.B., 2016, Examining water use regimes of suburban watersheds at annual and subannual timescales: *Journal of Hydrologic Engineering*, v. 21, no. 1, article 05015012, at [https://doi.org/10.1061/\(ASCE\)HE.1943-5584.0001265](https://doi.org/10.1061/(ASCE)HE.1943-5584.0001265).
- Ochs, W.R., Johns, A., Seaton, B., Adams, C., Wasiak, F., Fatig, C., Jackson, W., and Jones, R., 2012, Maintaining James Webb Space Telescope integration and test systems for long development cycles, *in* *Space operations—Experience, mission systems, and advanced concepts*, International Conference on Space Operations, 12th, Stockholm, Sweden, 11–15 June 2012, Proceedings: Reston, Va., American Institute of Aeronautics and Astronautics, p. 1–8, at <https://doi.org/10.2514/6.2012-1238302>.
- Ochwat, N., Scambos, T., Fahnestock, M., and Stammerjohn, S., 2023, Characteristics, recent evolution, and ongoing retreat of Hunt Fjord Ice Shelf, northern Greenland: *Journal of Glaciology*, v. 69, no. 273, p. 57–70, at <https://doi.org/10.1017/jog.2022.44>.
- O'Connell, J., Connolly, J., Vermote, E.F., and Holden, N.M., 2013, Radiometric normalization for change detection in peatlands—A modified temporal invariant cluster approach: *International Journal of Remote Sensing*, v. 34, no. 8, p. 2905–2924, at <https://doi.org/10.1080/01431161.2012.752886>.
- O'Connor, R.J., Jones, M.T., White, D., Hunsaker, C., Loveland, T.R., Jones, B., and Preston, E., 1996, Spatial partitioning of environmental correlates of avian biodiversity in the conterminous United States: *Biodiversity Letters*, v. 3, no. 3, p. 97–110, at <https://doi.org/10.2307/2999723>.
- Oderwald, R.G., and Wynne, R.H., 2000, Field applications for statistical data and techniques: *Journal of Forestry*, v. 98, no. 6, p. 58–60, at <https://doi.org/10.1093/jof/98.6.58>.
- O'Donnell, E.M., Messinger, D.W., Salvaggio, C., and Schott, J.R., 2004, Identification and detection of gaseous effluents from hyperspectral imagery using invariant algorithms, *in* *Algorithms and Technologies for MultiSpectral, Hyperspectral, and Ultraspectral Imagery X*, Orlando, Fla., 12–15 April 2004, Proceedings of SPIE Vol. 5425: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 573–582, at <https://doi.org/10.1117/12.542426>.
- O'Donnell, E.M., Messinger, D.W., Salvaggio, C., and Schott, J.R., 2005, The invariant algorithm for identification and detection of multiple gas plumes and weak releases, *in* *Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI*, Orlando, Fla., 28

- March–1 April 2005, Proceedings of SPIE Vol. 5806: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 206–217, at <https://doi.org/10.1117/12.610638>.
- O'Donnell, E.M., Schott, J.R., and Raqueno, N.G., 2002, Calibration history of Landsat thermal data, in 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 27–29, at <https://doi.org/10.1109/IGARSS.2002.1024930>.
- Oeser, J., Pflugmacher, D., Senf, C., Heurich, M., and Hostert, P., 2017, Using intra-annual Landsat time series for attributing forest disturbance agents in Central Europe: Forests, v. 8, no. 7, article 251, at <https://doi.org/10.3390/f8070251>.
- Oetter, D.R., Cohen, W.B., Berterretche, M., Maieresperger, T.K., and Kennedy, R.E., 2001, Land cover mapping in an agricultural setting using multiseasonal Thematic Mapper data: Remote Sensing of Environment, v. 76, no. 2, p. 139–155, at [https://doi.org/10.1016/S0034-4257\(00\)00202-9](https://doi.org/10.1016/S0034-4257(00)00202-9).
- O'Halloran, T.L., Law, B.E., Goulden, M.L., Wang, Z., Barr, J.G., Schaaf, C.B., Brown, M., Fuentes, J.D., Göckede, M., et al., 2012, Radiative forcing of natural forest disturbances: Global Change Biology, v. 18, no. 2, p. 555–565, at <https://doi.org/10.1111/j.1365-2486.2011.02577.x>.
- Ohana-Levi, N., Gao, F., Knipper, K., Kustas, W.P., Anderson, M.C., del Mar Alsina, M., Sanchez, L.A., and Karnieli, A., 2022, Time-series clustering of remote sensing retrievals for defining management zones in a vineyard: Irrigation Science, v. 40, p. 801–815, at <https://doi.org/10.1007/s00271-021-00752-0>.
- Ohana-Levi, N., Knipper, K., Kustas, W.P., Anderson, M.C., Netzer, Y., Gao, F., Alsina, M.M., Sanchez, L.A., and Karnieli, A., 2020, Using satellite thermal-based evapotranspiration time series for defining management zones and spatial association to local attributes in a vineyard: Remote Sensing, v. 12, no. 15, article 2436, at <https://doi.org/10.3390/RS12152436>.
- Ohmann, J.L., Gregory, M.J., Roberts, H.M., Cohen, W.B., Kennedy, R.E., and Yang, Z., 2012, Mapping change of older forest with nearest-neighbor imputation and Landsat time-series: Forest Ecology and Management, v. 272, p. 13–25, at <https://doi.org/10.1016/j.foreco.2011.09.021>.
- Ohnesorge, B., Plieninger, T., and Hostert, P., 2013, Management effectiveness and land cover change in dynamic cultural landscapes-assessing a central european biosphere reserve: Ecology and Society, v. 18, no. 4, article 23, at <https://doi.org/10.5751/ES-05888-180423>.
- Ojima, D.S., DeFries, R.S., Goward, S.N., Hansen, A., Hansen, M.C., Loveland, T., Skole, D., and Vogeler, J., 2022, Landsat@50: Frontiers in Ecology and the Environment, v. 20, no. 6, p. 340–342, at <https://doi.org/10.1002/fee.2541>.
- Okalebo, J.A., Oglesby, R.J., Feng, S., Hubbard, K., Kilic, A., Hayes, M., and Hays, C., 2016, An evaluation of the Community Land Model (Version 3.5) and Noah Land Surface Models for temperature and precipitation over Nebraska (Central Great Plains)—Implications for agriculture in simulations of future climate change and adaptation, in Filho, W.L., Musa, H., Cavan, G., O'Hare, P., and Seixas, J., eds., Climate change adaptation, resilience and hazards: Cham, Switzerland, Springer, p. 21–34, at https://doi.org/10.1007/978-3-319-39880-8_2.
- Okujeni, A., Canters, F., Cooper, S.D., Degerickx, J., Heiden, U., Hostert, P., Priem, F., Roberts, D.A., Somers, B., and van der Linden, S., 2018, Generalizing machine learning regression models using multi-site spectral libraries for mapping vegetation-impervious-soil fractions across multiple cities: Remote Sensing of Environment, v. 216, p. 482–496, at <https://doi.org/10.1016/j.rse.2018.07.011>.

- Okujeni, A., Jänicke, C., Cooper, S., Frantz, D., Hostert, P., Clark, M., Segl, K., and van der Linden, S., 2021, Multi-season unmixing of vegetation class fractions across diverse Californian ecoregions using simulated spaceborne imaging spectroscopy data: *Remote Sensing of Environment*, v. 264, article 112558, at <https://doi.org/10.1016/j.rse.2021.112558>.
- Okujeni, A., van der Linden, S., and Hostert, P., 2015, Extending the vegetation-impervious-soil model using simulated EnMAP data and machine learning: *Remote Sensing of Environment*, v. 158, p. 69–80, at <https://doi.org/10.1016/j.rse.2014.11.009>.
- Okujeni, A., van der Linden, S., Jakimow, B., Rabe, A., Verrelst, J., and Hostert, P., 2014, A comparison of advanced regression algorithms for quantifying urban land cover: *Remote Sensing*, v. 6, no. 7, p. 6324–6346, at <https://doi.org/10.3390/rs6076324>.
- Okujeni, A., van der Linden, S., Suess, S., and Hostert, P., 2017, Ensemble learning from synthetically mixed training data for quantifying urban land cover with support vector regression: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 10, no. 4, p. 1640–1650, at <https://doi.org/10.1109/JSTARS.2016.2634859>.
- Okujeni, A., van der Linden, S., Tits, L., Somers, B., and Hostert, P., 2013, Support vector regression and synthetically mixed training data for quantifying urban land cover: *Remote Sensing of Environment*, v. 137, p. 184–197, at <https://doi.org/10.1016/j.rse.2013.06.007>.
- Oleson, K.W., Bonan, G.B., Schaaf, C.B., Gao, F., Jin, Y., and Strahler, A., 2003, Assessment of global climate model land surface albedo using MODIS data: *Geophysical Research Letters*, v. 30, no. 8, p. 26–1 – 26–4, at <https://doi.org/10.1029/2002GL016749>.
- Oliphant, A., Thenkabail, P., and Teluguntla, P., 2022, Global Food-Security-Support-Analysis Data at 30-m Resolution (GFSAD30) Cropland-Extent Products—Download analysis, U.S. Geological Survey Open-File Report 1001, 30 p., at <https://doi.org/10.3133/ofr20221001>.
- Oliphant, A.J., Li, J., Wynne, R.H., Donovan, P.F., and Zipper, C.E., 2014, Identifying woody vegetation on coal surface mines using phenological indicators with multitemporal Landsat imagery, in *ISPRS Technical Commission I Symposium*, Denver, Colo., 17–20 November 2014, International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XL-1: Bethesda, Md., International Society for Photogrammetry and Remote Sensing, p. 339–345, at <https://doi.org/10.5194/isprsarchives-XL-1-339-2014>.
- Oliphant, A.J., Wynne, R.H., Zipper, C.E., Ford, W.M., Donovan, P.F., and Li, J., 2016, Autumn olive (*Elaeagnus umbellata*) presence and proliferation on former surface coal mines in Eastern USA: *Biological Invasions*, v. 19, no. 1, p. 179–195, at <https://doi.org/10.1007/s10530-016-1271-6>.
- Oliveira, P.T.S., Nearing, M.A., Moran, M.S., Goodrich, D.C., Wendland, E., and Gupta, H.V., 2014, Trends in water balance components across the Brazilian Cerrado: *Water Resources Research*, v. 50, no. 9, p. 7100–7114, at <https://doi.org/10.1002/2013WR015202>.
- Olofsson, P., Foody, G.M., Herold, M., Stehman, S.V., Woodcock, C.E., and Wulder, M.A., 2014, Good practices for estimating area and assessing accuracy of land change: *Remote Sensing of Environment*, v. 148, p. 42–57, at <https://doi.org/10.1016/j.rse.2014.02.015>.
- Olofsson, P., Foody, G.M., Stehman, S.V., and Woodcock, C.E., 2013, Making better use of accuracy data in land change studies—Estimating accuracy and area and quantifying uncertainty using stratified estimation: *Remote Sensing of Environment*, v. 129, p. 122–131, at <https://doi.org/10.1016/j.rse.2012.10.031>.

- Olofsson, P., Holden, C.E., Bullock, E.L., and Woodcock, C.E., 2016, Time series analysis of satellite data reveals continuous deforestation of New England since the 1980s: *Environmental Research Letters*, v. 11, no. 6, article 064002, at <https://doi.org/10.1088/1748-9326/11/6/064002>.
- Olofsson, P., Kuemmerle, T., Griffiths, P., Knorn, J., Baccini, A., Gancz, V., Blujdea, V., Houghton, R.A., Abrudan, I.V., and Woodcock, C.E., 2011, Carbon implications of forest restitution in post-socialist Romania: *Environmental Research Letters*, v. 6, no. 4, article 045202, at <https://doi.org/10.1088/1748-9326/6/4/045202>.
- Olofsson, P., Stehman, S.V., Woodcock, C.E., Sulla-Menashe, D., Sibley, A.M., Newell, J.D., Friedl, M.A., and Herold, M., 2012, A global land-cover validation data set, part I—Fundamental design principles: *International Journal of Remote Sensing*, v. 33, no. 18, p. 5768–5788, at <https://doi.org/10.1080/01431161.2012.674230>.
- Olofsson, P., Torchinava, P., Woodcock, C.E., Baccini, A., Houghton, R.A., Ozdogan, M., Zhao, F., and Yang, X., 2010, Implications of land use change on the national terrestrial carbon budget of Georgia: *Carbon Balance and Management*, v. 5, no. 4, p. 1–13, at <https://doi.org/10.1186/1750-0680-5-4>.
- Olsen, H.W., Krosley, L., Nelson, K., Chabrilat, S., Goetz, A.F.H., and Noe, D.C., 2000, Mineralogy-swelling potential relationships for expansive shales, in *The GeoDenver 2000—Unsaturated Soils Sessions 'Advances in Ultrasound Geotechnical'*, Denver, Colo., 5 August 2000, Proceedings: Reston, Va., American Society of Civil Engineers, p. 361–378, at [https://doi.org/10.1061/40510\(287\)25](https://doi.org/10.1061/40510(287)25).
- Ong, C., Mueller, A., Thome, K.J., Bachmann, M., Czaplá-Myers, J., Holzwarth, S., Khalsa, S.J., Maclellan, C., Malthus, T., et al., 2016, Report on International Spaceborne Imaging Spectroscopy Technical Committee calibration and validation workshop, national environment research council field spectroscopy facility, University of Edinburgh, in *2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1909–1911, at <https://doi.org/10.1109/IGARSS.2016.7729491>.
- Ong, C., Mueller, A., Thome, K.J., Pierce, L.E., and Malthus, T., 2016, The geoscience spaceborne imaging spectroscopy technical committee's calibration and validation workshop: *IEEE Geoscience and Remote Sensing Magazine*, v. 4, no. 2, p. 94–97, at <https://doi.org/10.1109/MGRS.2016.2540661>.
- Ong, C., Thome, K., Heiden, U., Czaplá-Myers, J., and Mueller, A., 2018, Reflectance-based imaging spectrometer error budget field practicum at the Railroad Valley Test Site, Nevada [Technical Committees]: *IEEE Geoscience and Remote Sensing Magazine*, v. 6, no. 3, p. 111–115, at <https://doi.org/10.1109/MGRS.2018.2841934>.
- Ong, C., Thome, K., and Kuze, A., 2019, Role of CEOS working group on calibration and validation in analysis ready data products, in *2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5538–5540, at <https://doi.org/10.1109/IGARSS.2019.8899301>.
- Ono, A., Sakuma, F., Arai, K., Yamaguchi, Y., Fujisada, H., Slater, P.N., Thome, K.J., Palluconi, F.D., and Kieffer, H.H., 1996, Preflight and in-flight calibration plan for ASTER: *Journal of Atmospheric and Oceanic Technology*, v. 13, no. 2, p. 321–335, at [https://doi.org/10.1175/1520-0426\(1996\)013<0321:PAIFCP>2.0.CO;2](https://doi.org/10.1175/1520-0426(1996)013<0321:PAIFCP>2.0.CO;2).

- Ordóñez, A., Martinuzzi, S., Radeloff, V.C., and Williams, J.W., 2014, Combined speeds of climate and land-use change of the conterminous US until 2050: *Nature Climate Change*, v. 4, no. 9, p. 811–816, at <https://doi.org/10.1038/nclimate2337>.
- O'Reilly, J.E., Maritorena, S., Mitchell, B.G., Siegel, D.A., Carder, K.L., Garver, S.A., Kahru, M., and McClain, C., 1998, Ocean color chlorophyll algorithms for SeaWiFS: *Journal of Geophysical Research Oceans*, v. 103, no. C11, p. 24937–24953, at <https://doi.org/10.1029/98JC02160>.
- O'Reilly, J.E., Maritorena, S., O'Brien, M.C., Siegel, D.A., Toole, D., Menzies, D., Smith, R.C., Mueller, J.L., Mitchell, B.G., et al., 2000, *in* Hooker, S.B., and Firestone, E.R., eds., SeaWiFS postlaunch calibration and validation analyses, pt. 3, SeaWiFS Postlaunch Technical Report Series, NASA Technical Memorandum 2000-206892, v. 11, 49 p., at <https://ntrs.nasa.gov/api/citations/20010067783/downloads/20010067783.pdf>.
- Oreopoulos, L., 2005, The impact of subsampling on MODIS level-3 statistics of cloud optical thickness and effective radius: *IEEE Transactions on Geoscience and Remote Sensing*, v. 43, no. 2, p. 366–373, at <https://doi.org/10.1109/TGRS.2004.841247>.
- Oreopoulos, L., and Barker, H.W., 1999, Accounting for subgrid-scale cloud variability in a multi-layer 1D solar radiative transfer algorithm: *Quarterly Journal of the Royal Meteorological Society*, v. 125, no. 553, p. 301–330, at <https://doi.org/10.1002/qj.49712555316>.
- Oreopoulos, L., and Cahalan, R.F., 2005, Cloud inhomogeneity from MODIS: *Journal of Climate*, v. 18, no. 23, p. 5110–5124, at <https://doi.org/10.1175/JCLI3591.1>.
- Oreopoulos, L., Cahalan, R.F., and Platnick, S., 2007, The plane-parallel albedo bias of liquid clouds from MODIS observations: *Journal of Climate*, v. 20, no. 20, p. 5114–5125, at <https://doi.org/10.1175/JCLI4305.1>.
- Oreopoulos, L., Cho, N., and Lee, D., 2017, New insights about cloud vertical structure from CloudSat and CALIPSO observations: *Journal of Geophysical Research Atmospheres*, v. 122, no. 17, p. 9280–9300, at <https://doi.org/10.1002/2017JD026629>.
- Oreopoulos, L., Cho, N., and Lee, D., 2017, Using MODIS cloud regimes to sort diagnostic signals of aerosol-cloud-precipitation interactions: *Journal of Geophysical Research*, v. 122, no. 10, p. 5416–5440, at <https://doi.org/10.1002/2016JD026120>.
- Oreopoulos, L., Cho, N., and Lee, D., 2020, A global survey of apparent aerosol-cloud interaction signals: *Journal of Geophysical Research Atmospheres*, v. 125, no. 1, article e2019JD031287, at <https://doi.org/10.1029/2019JD031287>.
- Oreopoulos, L., Cho, N., Lee, D., and Kato, S., 2016, Radiative effects of global MODIS cloud regimes: *Journal of Geophysical Research*, v. 121, no. 5, p. 2299–2317, at <https://doi.org/10.1002/2015JD024502>.
- Oreopoulos, L., Cho, N., Lee, D., Kato, S., and Huffman, G.J., 2014, An examination of the nature of global modis cloud regimes: *Journal of Geophysical Research*, v. 119, no. 13, p. 8362–8383, at <https://doi.org/10.1002/2013JD021409>.
- Oreopoulos, L., Chou, M.D., Khairoutdinov, M., Barker, H.W., and Cahalan, R.F., 2004, Performance of Goddard Earth observing system GCM column radiation models under heterogeneous cloud conditions: *Atmospheric Research*, v. 72, no. 1–4, p. 365–382, at <https://doi.org/10.1016/j.atmosres.2004.03.025>.

- Oreopoulos, L., and Davies, R., 1998, Plane parallel albedo biases from satellite observations. Part I—dependence on resolution and other factors: *Journal of Climate*, v. 11, no. 5, p. 919–932, at [https://doi.org/10.1175/1520-0442\(1998\)011<0919:PPABFS>2.0.CO;2](https://doi.org/10.1175/1520-0442(1998)011<0919:PPABFS>2.0.CO;2).
- Oreopoulos, L., and Davies, R., 1998, Plane parallel albedo biases from satellite observations. Part II—parameterizations for bias removal: *Journal of Climate*, v. 11, no. 5, p. 933–944, at [https://doi.org/10.1175/1520-0442\(1998\)011<0933:PPABFS>2.0.CO;2](https://doi.org/10.1175/1520-0442(1998)011<0933:PPABFS>2.0.CO;2).
- Oreopoulos, L., and Khairoutdinov, M., 2003, Overlap properties of clouds generated by a cloud-resolving model: *Journal of Geophysical Research Atmospheres*, v. 108, no. 15, p. AAC 15–1 – AAC 15–9, at <https://doi.org/10.1029/2002JD003329>.
- Oreopoulos, L., Lee, D., Sud, Y.C., and Suarez, M.J., 2012, Radiative impacts of cloud heterogeneity and overlap in an atmospheric General Circulation Model: *Atmospheric Chemistry and Physics*, v. 12, no. 19, p. 9097–9111, at <https://doi.org/10.5194/acp-12-9097-2012>.
- Oreopoulos, L., Marshak, A., and Cahalan, R.F., 2003, Consistency of ARESE II cloud absorption estimates and sampling issues: *Journal of Geophysical Research Atmospheres*, v. 108, no. 1, p. AAC 13–1 AAC 13–16, at <https://doi.org/10.1029/2002JD002243>.
- Oreopoulos, L., Marshak, A., Cahalan, R.F., Várnai, T., Davis, A.B., and Macke, A., 2006, New directions in the radiative transfer of cloudy atmospheres: *Eos*, v. 87, no. 5, p. 57–58, at <https://doi.org/10.1029/2006EO050006>.
- Oreopoulos, L., Marshak, A., Cahalan, R.F., and Wen, G., 2000, Cloud three-dimensional effects evidenced in Landsat spatial power spectra and autocorrelation functions: *Journal of Geophysical Research Atmospheres*, v. 105, no. D11, p. 14777–14788, at <https://doi.org/10.1029/2000JD900153>.
- Oreopoulos, L., and Mlawer, E., 2010, The continual intercomparison of radiation codes (CIRC): *Bulletin of the American Meteorological Society*, v. 91, no. 3, p. 305–310, at <https://doi.org/10.1175/2009BAMS2732.1>.
- Oreopoulos, L., Mlawer, E., Delamere, J., and Shippert, T., 2009, The Continual Intercomparison of Radiation Codes (CIRC)—A new standard for evaluating GCM radiation codes, *in* Current problems in atmospheric radiation, International Radiation Symposium, Foz do Iguacu, Brazil, 3–8 August 2008, Proceedings: Melville, N.Y., American Institute of Physics, p. 73–76, at <https://doi.org/10.1063/1.3117076>.
- Oreopoulos, L., Mlawer, E., Delamere, J., Shippert, T., Cole, J., Fomin, B., Iacono, M., Jin, Z., Li, J., et al., 2012, The continual intercomparison of radiation codes—Results from Phase I: *Journal of Geophysical Research Atmospheres*, v. 117, no. 6, article D06118, at <https://doi.org/10.1029/2011JD016821>.
- Oreopoulos, L., and Norris, P.M., 2011, An analysis of cloud overlap at a midlatitude atmospheric observation facility: *Atmospheric Chemistry and Physics*, v. 11, no. 12, p. 5557–5567, at <https://doi.org/10.5194/acp-11-5557-2011>.
- Oreopoulos, L., and Platnick, S., 2008, Radiative susceptibility of cloudy atmospheres to droplet number perturbations—2. Global analysis from MODIS: *Journal of Geophysical Research Atmospheres*, v. 113, no. 14, article D14S21, at <https://doi.org/10.1029/2007JD009655>.

- Oreopoulos, L., Platnick, S., Hong, G., Yang, P., and Cahalan, R.F., 2009, The shortwave radiative forcing bias of liquid and ice clouds from MODIS observations: *Atmospheric Chemistry and Physics*, v. 9, no. 16, p. 5865–5875, at <https://doi.org/10.5194/acp-9-5865-2009>.
- Oreopoulos, L., Platnick, S.E., Hong, G., Yang, P., and Cahalan, R.F., 2009, The shortwave radiative forcing bias of homogeneous liquid and ice clouds observed by MODIS, *in* Current problems in atmospheric radiation, International Radiation Symposium, Foz do Iguacu, Brazil, 3–8 August 2008, Proceedings: Melville, N.Y., American Institute of Physics, p. 569–572, at <https://doi.org/10.1063/1.3117049>.
- Oreopoulos, L., and Rossow, W.B., 2011, The cloud radiative effects of International Satellite Cloud Climatology Project weather states: *Journal of Geophysical Research Atmospheres*, v. 116, no. 12, article D12202, at <https://doi.org/10.1029/2010JD015472>.
- Oreopoulos, L., Wilson, M.J., and Várnai, T., 2011, Implementation on Landsat data of a simple cloud-mask algorithm developed for MODIS land bands: *IEEE Geoscience and Remote Sensing Letters*, v. 8, no. 4, p. 597–601, at <https://doi.org/10.1109/LGRS.2010.2095409>.
- Oreopoulos, L., Cahalan, R.F., Marshak, A., and Wen, G., 2000, A new normalized difference cloud retrieval technique applied to Landsat radiances over the Oklahoma ARM site: *Journal of Applied Meteorology*, v. 39, no. 12 pt. 2, p. 2305–2321, at [https://doi.org/10.1175/1520-0450\(2000\)039<2305:ANNDCR>2.0.CO;2](https://doi.org/10.1175/1520-0450(2000)039<2305:ANNDCR>2.0.CO;2).
- Ørka, H.O., Wulder, M.A., Gobakken, T., and Næsset, E., 2012, Subalpine zone delineation using LiDAR and Landsat imagery: *Remote Sensing of Environment*, v. 119, p. 11–20, at <https://doi.org/10.1016/j.rse.2011.11.023>.
- Ortega-Fariás, S., Fonseca, D., De La Fuente, D., Kilic, A., Ortega-Salazar, S., Allen, R.G., and Carrasco-Benavides, M., 2017, Remote sensing model to evaluate the spatial variability of vineyard water requirements: *Acta Horticulturae*, v. 1188, p. 235–242, at <https://doi.org/10.17660/ActaHortic.2017.1188.30>.
- Ortega-Fariás, S., Ortega-Salazar, S., Poblete, T., Kilic, A., Allen, R.G., Poblete-Echeverría, C., Ahumada-Orellana, L., Zuñiga, M., and Sepúlveda, D., 2016, Estimation of energy balance components over a drip-irrigated olive orchard using thermal and multispectral cameras placed on a helicopter-based unmanned aerial vehicle (UAV): *Remote Sensing*, v. 8, no. 8, article 638, at <https://doi.org/10.3390/rs8080638>.
- Ortega-Fariás, S., Ortega-Salazar, S., Poblete, T., Poblete-Echeverría, C., Zuñiga, M., Sepúlveda-Reyes, D., Kilic, A., and Allen, R.G., 2017, Estimation of olive evapotranspiration using multispectral and thermal sensors placed aboard an unmanned aerial vehicle: *Acta Horticulturae*, v. 1150, p. 1–8, at <https://doi.org/10.17660/ActaHortic.2017.1150.1>.
- Ortega-Salazar, S., Ortega-Fariás, S., Kilic, A., and Allen, R., 2021, Performance of the METRIC model for mapping energy balance components and actual evapotranspiration over a superintensive drip-irrigated olive orchard: *Agricultural Water Management*, v. 251, article 106861, at <https://doi.org/10.1016/j.agwat.2021.106861>.
- Orwig, D.A., Boucher, P., Paynter, I., Saenz, E., Li, Z., and Schaaf, C.B., 2018, The potential to characterize ecological data with terrestrial laser scanning in Harvard Forest, MA: *Interface Focus*, v. 8, no. 2, article 20170044, at <https://doi.org/10.1098/rsfs.2017.0044>.
- O’Shea, R.E., Pahlevan, N., Smith, B., Boss, E., Gurlin, D., Alikas, K., Kangro, K., Kudela, R.M., and Vaičiūtė, D., 2023, A hyperspectral inversion framework for estimating absorbing inherent optical

- properties and biogeochemical parameters in inland and coastal waters: Remote Sensing of Environment, v. 295, article 113706, at <https://doi.org/10.1016/j.rse.2023.113706>.
- O'Shea, R.E., Pahlevan, N., Smith, B., Bresciani, M., Egerton, T., Giardino, C., Li, L., Moore, T., Ruiz-Verdu, A., et al., 2021, Advancing cyanobacteria biomass estimation from hyperspectral observations— Demonstrations with HICO and PRISMA imagery: Remote Sensing of Environment, v. 266, article 112693, at <https://doi.org/10.1016/j.rse.2021.112693>.
- Ota, T., Ahmed, O.S., Franklin, S.E., Wulder, M.A., Kajisa, T., Mizoue, N., Yoshida, S., Takao, G., Hirata, Y., et al., 2014, Estimation of airborne lidar-derived tropical forest canopy height using Landsat time series in Cambodia: Remote Sensing, v. 6, no. 11, p. 10750–10772, at <https://doi.org/10.3390/rs61110750>.
- Otis, D.B., Carder, K.L., English, D.C., and Ivey, J.E., 2004, CDOM transport from the Bahamas Banks: Coral Reefs, v. 23, no. 1, p. 152–160, at <https://doi.org/10.1007/s00338-003-0356-8>.
- Otkin, J.A., Anderson, M.C., Hain, C., Mladenova, I.E., Basara, J.B., and Svoboda, M., 2013, Examining rapid onset drought development using the thermal infrared-based evaporative stress index: Journal of Hydrometeorology, v. 14, no. 4, p. 1057–1074, at <https://doi.org/10.1175/JHM-D-12-0144.1>.
- Otkin, J.A., Anderson, M.C., Hain, C., and Svoboda, M., 2014, Examining the relationship between drought development and rapid changes in the evaporative stress index: Journal of Hydrometeorology, v. 15, no. 3, p. 938–956, at <https://doi.org/10.1175/JHM-D-13-0110.1>.
- Otkin, J.A., Anderson, M.C., Hain, C., and Svoboda, M., 2015, Using temporal changes in drought indices to generate probabilistic drought intensification forecasts: Journal of Hydrometeorology, v. 16, no. 1, p. 88–105, at <https://doi.org/10.1175/JHM-D-14-0064.1>.
- Otkin, J.A., Anderson, M.C., Hain, C., Svoboda, M., Johnson, D.M., Mueller, R., Tadesse, T., Wardlow, B., and Brown, J., 2016, Assessing the evolution of soil moisture and vegetation conditions during the 2012 United States flash drought: Agricultural and Forest Meteorology, v. 218–219, p. 230–242, at <https://doi.org/10.1016/j.agrformet.2015.12.065>.
- Otkin, J.A., Anderson, M.C., and Mecikalski, J.R., 2004, Validation of goes-based insolation estimates using pyranometer insolation data from the United States climate reference network, in 26th Conference on Agricultural and Forest Meteorology/13th Air Pollution/5th Urban Environment/16th Biometeorology and Aerobiology, Vancouver, Canada, 23–26 August 2004, Poster Session 1: Boston, Mass., American Meteorological Society, p. 433–437, at https://ams.confex.com/ams/AFAPURBBIO/techprogram/paper_80007.htm.
- Otkin, J.A., Anderson, M.C., and Mecikalski, J.R., 2005, A 2-year climatology of land-surface energy fluxes using the ALEXI model, in 85th AMS Annual Meeting, American Meteorological Society - Combined Preprints, San Diego, Calif., 9–13 January 2005, Poster Session 3: Boston, Mass., American Meteorological Society, p. 1845–1851, at https://ams.confex.com/ams/Annual2005/techprogram/paper_83734.htm.
- Otkin, J.A., Anderson, M.C., and Mecikalski, J.R., 2005, Multiseasonal validation of goes-based insolation estimates, in Annual Meeting, 85th, San Diego, Calif., 9–13 January 2005, Poster Session 1: Boston, Mass., American Meteorological Society, p. 1777–1782, at https://ams.confex.com/ams/Annual2005/techprogram/paper_83735.htm.

- Otkin, J.A., Anderson, M.C., Mecikalski, J.R., and Diak, G.R., 2005, Validation of GOES-based insolation estimates using data from the U.S. Climate Reference Network: *Journal of Hydrometeorology*, v. 6, no. 4, p. 460–475, at <https://doi.org/10.1175/JHM440.1>.
- Otkin, J.A., Shafer, M., Svoboda, M., Wardlow, B., Anderson, M.C., Hain, C., and Basara, J., 2015, Facilitating the use of drought early warning information through interactions with agricultural stakeholders: *Bulletin of the American Meteorological Society*, v. 96, no. 7, p. 1073–1078, at <https://doi.org/10.1175/BAMS-D-14-00219.1>.
- Otkin, J.A., Svoboda, M., Hunt, E.D., Ford, T.W., Anderson, M.C., Hain, C., and Basara, J.B., 2018, Flash droughts—A review and assessment of the challenges imposed by rapid-onset droughts in the United States: *Bulletin of the American Meteorological Society*, v. 99, no. 5, p. 911–919, at <https://doi.org/10.1175/BAMS-D-17-0149.1>.
- Otkin, J.A., Zhong, Y., Hunt, E.D., Basara, J., Svoboda, M., Anderson, M.C., and Hain, C., 2019, Assessing the evolution of soil moisture and vegetation conditions during a flash drought-flash recovery sequence over the South-Central United States: *Journal of Hydrometeorology*, v. 20, no. 3, p. 549–562, at <https://doi.org/10.1175/JHM-D-18-0171.1>.
- Otkin, J.A., Zhong, Y., Hunt, E.D., Christian, J.I., Basara, J.B., Nguyen, H., Wheeler, M.C., Ford, T.W., Hoell, A., et al., 2021, Development of a flash drought intensity index: *Atmosphere*, v. 12, no. 6, article 741, at <https://doi.org/10.3390/atmos12060741>.
- Otkin, J.A., Zhong, Y., Lorenz, D., Anderson, M.C., and Hain, C., 2018, Exploring seasonal and regional relationships between the Evaporative Stress Index and surface weather and soil moisture anomalies across the United States: *Hydrology and Earth System Sciences*, v. 22, no. 10, p. 5373–5386, at <https://doi.org/10.5194/hess-22-5373-2018>.
- Otosaka, I.N., Shepherd, A., Ivins, E.R., Schlegel, N.J., Amory, C., Van Den Broeke, M.R., Horwath, M., Joughin, I., King, M.D., et al., 2023, Mass balance of the Greenland and Antarctic ice sheets from 1992 to 2020: *Earth System Science Data*, v. 15, no. 4, p. 1597–1616, at <https://doi.org/10.5194/essd-15-1597-2023>.
- Ou, G., Chen, X., Kilic, A., Bartelt-Hunt, S., Li, Y., and Samal, A., 2013, Development of a cross-section based streamflow routing package for MODFLOW: *Environmental Modelling and Software*, v. 50, p. 132–143, at <https://doi.org/10.1016/j.envsoft.2013.09.012>.
- Ouaidrari, H., Czajkowski, K.P., Goward, S.N., and Sobrino, J.A., 1998, Global surface temperature for climate studies using NOAA-AVHRR data, in 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 598–600, at <https://doi.org/10.1109/IGARSS.1998.699523>.
- Ouaidrari, H., El Saleous, N., Vermote, E.F., Townshend, J.R., and Goward, S.N., 2003, AVHRR Land Pathfinder II (ALP II) data set—Evaluation and inter-comparison with other data sets: *International Journal of Remote Sensing*, v. 24, no. 1, p. 135–142, at <https://doi.org/10.1080/01431160305006>.
- Ouaidrari, H., Goward, S.N., Czajkowski, K.P., Sobrino, J.A., and Vermote, E.F., 2002, Land surface temperature estimation from AVHRR thermal infrared measurements—An assessment for the AVHRR Land Pathfinder II data set: *Remote Sensing of Environment*, v. 81, no. 1, p. 114–128, at [https://doi.org/10.1016/S0034-4257\(01\)00338-8](https://doi.org/10.1016/S0034-4257(01)00338-8).

- Ouaidrari, H., and Vermote, E.F., 1999, Operational atmospheric correction of Landsat TM data: Remote Sensing of Environment, v. 70, no. 1, p. 4–15, at [https://doi.org/10.1016/S0034-4257\(99\)00054-1](https://doi.org/10.1016/S0034-4257(99)00054-1).
- Ozdogan, M., Olofsson, P., Woodcock, C.E., and Baccini, A., 2016, Forest changes and carbon budgets in the Black Sea region, *in* Gutman, G., and Radeloff, V.C., eds., *Land-cover and land-use changes in Eastern Europe after the collapse of the Soviet Union in 1991*: Cham, Switzerland, Springer, p. 149–171, at https://doi.org/10.1007/978-3-319-42638-9_7.
- Ozdogan, M., and Woodcock, C.E., 2006, Resolution dependent errors in remote sensing of cultivated areas: *Remote Sensing of Environment*, v. 103, no. 2, p. 203–217, at <https://doi.org/10.1016/j.rse.2006.04.004>.
- Ozdogan, M., Woodcock, C.E., and Salvucci, G.D., 2003, Monitoring changes in irrigated lands in southeastern Turkey with remote sensing, *in* 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, *Proceedings*: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1570–1572, at <https://doi.org/10.1109/IGARSS.2003.1294178>.
- Ozdogan, M., Woodcock, C.E., Salvucci, G.D., and Demir, H., 2006, Changes in summer irrigated crop area and water use in Southeastern Turkey from 1993 to 2002—Implications for current and future water resources: *Water Resources Management*, v. 20, no. 3, p. 467–488, at <https://doi.org/10.1007/s11269-006-3087-0>.
- Özen, H., Fox, N., Deadman, A., Behnert, I., Harris, P., Gürbüz, S., Yuan, L., Griffith, D., Kaewmanee, M., et al., 2012, Comparison of radiometric gain of optical satellite sensors using Tuz Golu radiometrically calibrated test site, *in* 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Munich, Germany, 22–27 July 2012, *Proceedings*: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1120–1123, at <https://doi.org/10.1109/IGARSS.2012.6351352>.
- Özen, H., Fox, N., Gürbüz, S.Z., Deadman, A., Behnert, I., Harris, P., Yua, L., Griffith, D., Kaewmanee, M., et al., 2012, Preliminary results of the comparison of satellite imagers using Tuz Gölü as a reference standard, *in* XXII ISPRS Congress, Technical Commission I, Melbourne, Australia, 25 August–1 September 2012, *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XXXIX-B1: Bethesda, Md., International Society for Photogrammetry and Remote Sensing, p. 145–148, at <https://doi.org/10.5194/isprsarchives-XXXIX-B1-145-2012>.
- Padman, L., Costa, D.P., Dinniman, M.S., Fricker, H.A., Goebel, M.E., Huckstadt, L.A., Humbert, A., Joughin, I., Lenaerts, J.T.M., et al., 2012, Oceanic controls on the mass balance of Wilkins Ice Shelf, Antarctica: *Journal of Geophysical Research Oceans*, v. 117, no. 1, article C01010, at <https://doi.org/10.1029/2011JC007301>.
- Padula, F.P., and Schott, J.R., 2010, Historic calibration of the thermal infrared band of Landsat-5 TM: *Photogrammetric Engineering and Remote Sensing*, v. 76, no. 11, p. 1225–1238, at <https://doi.org/10.14358/PERS.76.11.1225>.
- Padula, F.P., Schott, J.R., Barsi, J.A., Raqueno, N.G., and Hook, S.J., 2010, Calibration of Landsat 5 thermal infrared channel—Updated calibration history and assessment of the errors associated with the methodology: *Canadian Journal of Remote Sensing*, v. 36, no. 5, p. 617–630, at <https://doi.org/10.5589/m10-084>.

- Padula, F.P., Schott, J.R., and Raqueño, N.G., 2008, New methodology for an improved thermal calibration of Landsat 5 through fusion of environmental data sources, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. IV1340–IV1343, at <https://doi.org/10.1109/IGARSS.2008.4779979>.
- Pagnutti, M., Blonski, S., Cramer, M., Helder, D.L., Holekamp, K., Honkavaara, E., and Ryan, R., 2010, Targets, methods, and sites for assessing the in-flight spatial resolution of electro-optical data products: *Canadian Journal of Remote Sensing*, v. 36, no. 5, p. 583–601, at <https://doi.org/10.5589/m10-078>.
- Pagnutti, M., Ryan, R.E., Kelly, M., Holekamp, K., Zanoni, V., Thome, K.J., and Schiller, S., 2003, Radiometric characterization of IKONOS multispectral imagery: *Remote Sensing of Environment*, v. 88, no. 1–2, p. 53–68, at <https://doi.org/10.1016/j.rse.2003.07.008>.
- Pahlevan, N., Balasubramanian, S.V., Sarkar, S., and Franz, B.A., 2018, Toward long-term aquatic science products from heritage Landsat missions: *Remote Sensing*, v. 10, no. 9, article 1337, at <https://doi.org/10.3390/rs10091337>.
- Pahlevan, N., Chittimalli, S.K., Balasubramanian, S.V., and Vellucci, V., 2019, Sentinel-2/Landsat-8 product consistency and implications for monitoring aquatic systems: *Remote Sensing of Environment*, v. 220, p. 19–29, at <https://doi.org/10.1016/j.rse.2018.10.027>.
- Pahlevan, N., Garrett, A.J., Gerace, A.D., and Schott, J.R., 2012, Integrating Landsat-7 imagery with physics-based models for quantitative mapping of coastal waters near river discharges: *Photogrammetric Engineering and Remote Sensing*, v. 78, no. 11, p. 1163–1174, at <https://doi.org/10.14358/PERS.78.11.1163>.
- Pahlevan, N., Gerace, A.D., and Schott, J.R., 2011, Using thermal remote sensing as a tool for calibrating a hydrodynamic model in inland waters, *in* Ocean Sensing and Monitoring III, Orlando, Fla., 26–27 April 2011, Proceedings of SPIE Vol. 8030: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 80300i, at <https://doi.org/10.1117/12.887212>.
- Pahlevan, N., Greb, S., and Dekker, A.G., 2022, Earth observation in support of SDG 6.3.2/6.6.1—Reporting surface water quality, *in* Kavvada, A., Cripe, D., and Friedl, L., eds., *Earth observation applications and global policy frameworks*: Hoboken, N.J., American Geophysical Union and Wiley, p. 67-83, at <https://doi.org/10.1002/9781119536789.ch4>.
- Pahlevan, N., Lee, Z., Hu, C., and Schott, J.R., 2013, Analyzing radiometric requirements for diurnal observations of coastal/oceanic waters from geo-stationary orbits, *in* Ocean Sensing and Monitoring V, Baltimore, Md., 30 April–1 May 2013, Proceedings of SPIE Vol. 8724: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 87240k, at <https://doi.org/10.1117/12.2016279>.
- Pahlevan, N., Lee, Z., Hu, C., and Schott, J.R., 2014, Diurnal remote sensing of coastal/oceanic waters—A radiometric analysis for geostationary coastal and air pollution events: *Applied Optics*, v. 53, no. 4, p. 648–665, at <https://doi.org/10.1364/AO.53.000648>.
- Pahlevan, N., Lee, Z., Lawson, A., and Arnone, R., 2013, Scene-based cross-comparison of SNPP-VIIRS and Aqua-MODIS over oceanic waters, *in* Earth Observing Systems XVIII, San Diego, Calif., 26–29 August 2013, Proceedings of SPIE Vol. 8866: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 88660j, at <https://doi.org/10.1117/12.2023423>.

- Pahlevan, N., Lee, Z., Wei, J., Schaaf, C.B., Schott, J.R., and Berk, A., 2014, On-orbit radiometric characterization of OLI (Landsat-8) for applications in aquatic remote sensing: *Remote Sensing of Environment*, v. 154, p. 272–284, at <https://doi.org/10.1016/j.rse.2014.08.001>.
- Pahlevan, N., Mangin, A., Balasubramanian, S.V., Smith, B., Alikas, K., Arai, K., Barbosa, C., Bélanger, S., Binding, C., et al., 2021, ACIX-Aqua—A global assessment of atmospheric correction methods for Landsat-8 and Sentinel-2 over lakes, rivers, and coastal waters: *Remote Sensing of Environment*, v. 258, article 112366, at <https://doi.org/10.1016/j.rse.2021.112366>.
- Pahlevan, N., Raqueno, N.G., and Schott, J.R., 2012, Cross-calibration of Landsat-7's visible-near-infrared bands with Terra-MODIS over dark waters, *in* *Ocean Sensing and Monitoring IV*, Baltimore, Md., 24–26 April 2012, Proceedings of SPIE Vol. 8372: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 837210, at <https://doi.org/10.1117/12.919161>.
- Pahlevan, N., Roger, J.C., and Ahmad, Z., 2017, Revisiting short-wave-infrared (SWIR) bands for atmospheric correction in coastal waters: *Optics Express*, v. 25, no. 6, p. 6015–6035, at <https://doi.org/10.1364/OE.25.006015>.
- Pahlevan, N., Sarkar, S., Devadiga, S., Wolfe, R.E., Roman, M., Vermote, E.F., Lin, G., and Xiong, X., 2017, Impact of spatial sampling on continuity of MODIS–VIIRS land surface reflectance products—A simulation approach: *IEEE Transactions on Geoscience and Remote Sensing*, v. 55, no. 1, p. 183–196, at <https://doi.org/10.1109/TGRS.2016.2604214>.
- Pahlevan, N., Sarkar, S., and Franz, B.A., 2016, Uncertainties in coastal ocean color products—Impacts of spatial sampling: *Remote Sensing of Environment*, v. 181, p. 14–26, at <https://doi.org/10.1016/j.rse.2016.03.022>.
- Pahlevan, N., Sarkar, S., Franz, B.A., Balasubramanian, S.V., and He, J., 2017, Sentinel-2 MultiSpectral Instrument (MSI) data processing for aquatic science applications—Demonstrations and validations: *Remote Sensing of Environment*, v. 201, p. 47–56, at <https://doi.org/10.1016/j.rse.2017.08.033>.
- Pahlevan, N., and Schott, J.R., 2012, Characterizing the relative calibration of Landsat-7 (ETM+) visible bands with Terra (MODIS) over clear waters—The implications for monitoring water resources: *Remote Sensing of Environment*, v. 125, p. 167–180, at <https://doi.org/10.1016/j.rse.2012.07.013>.
- Pahlevan, N., and Schott, J.R., 2013, Leveraging EO-1 to evaluate capability of new generation of Landsat sensors for coastal/inland water studies: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 6, no. 2, p. 360–374, at <https://doi.org/10.1109/JSTARS.2012.2235174>.
- Pahlevan, N., Schott, J.R., Franz, B.A., Zibordi, G., Markham, B., Bailey, S., Schaaf, C.B., Ondrusek, M., Greb, S., and Strait, C.M., 2017, Landsat 8 remote sensing reflectance (Rrs) products—Evaluations, intercomparisons, and enhancements: *Remote Sensing of Environment*, v. 190, p. 289–301, at <https://doi.org/10.1016/j.rse.2016.12.030>.
- Pahlevan, N., Sheldon, P., Peri, F., Wei, J., Shang, Z., Sun, Q., Chen, R.F., Lee, Z., Schaaf, C.B., et al., 2016, Calibration/validation of Landsat-derived ocean colour products in Boston harbour, *in* XXIII ISPRS Congress, Commission VIII, Prague, Czech Republic, 12–19 July 2016, *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XLI-B8: Lemmer, Netherlands, International Society for Photogrammetry and Remote Sensing, p. 1165–1168, at <https://doi.org/10.5194/isprsarchives-XLI-B8-1165-2016>.

- Pahlevan, N., Smith, B., Alikas, K., Anstee, J., Barbosa, C., Binding, C., Bresciani, M., Cremella, B., Giardino, C., et al., 2022, Simultaneous retrieval of selected optical water quality indicators from Landsat-8, Sentinel-2, and Sentinel-3: *Remote Sensing of Environment*, v. 270, article 112860, at <https://doi.org/10.1016/j.rse.2021.112860>.
- Pahlevan, N., Smith, B., Binding, C., Gurlin, D., Li, L., Bresciani, M., and Giardino, C., 2020, Hyperspectral retrievals of phytoplankton absorption and chlorophyll-a in inland and nearshore coastal waters: *Remote Sensing of Environment*, v. 253, article 112200, at <https://doi.org/10.1016/j.rse.2020.112200>.
- Pahlevan, N., Smith, B., Binding, C., and O'Donnell, D.M., 2017, Spectral band adjustments for remote sensing reflectance spectra in coastal/inland waters: *Optics Express*, v. 25, no. 23, p. 28650–28667, at <https://doi.org/10.1364/OE.25.028650>.
- Pahlevan, N., Smith, B., Schalles, J., Binding, C., Cao, Z., Ma, R., Alikas, K., Kangro, K., Gurlin, D., et al., 2020, Seamless retrievals of chlorophyll-a from Sentinel-2 (MSI) and Sentinel-3 (OLCI) in inland and coastal waters—A machine-learning approach: *Remote Sensing of Environment*, v. 240, article 111604, at <https://doi.org/10.1016/j.rse.2019.111604>.
- Pahlevan, N., Wei, J., Schaaf, C.B., and Schott, J.R., 2014, Evaluating radiometric sensitivity of Landsat 8 over coastal/inland waters, in *Joint 2014 IEEE International Geoscience and Remote Sensing Symposium (IGARSS) and the 35th Canadian Symposium on Remote Sensing (CSRS 2014)*, Quebec City, Canada, 13–18 July 2014, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1393–1396, at <https://doi.org/10.1109/IGARSS.2014.6946695>.
- Pakat, A., Hui, D., Kaewmanee, M., Helder, D.L., and Puangjaktha, P., 2017, Cross calibration Thaichote & Landsat 8 over Libya4 using pseudo invariant calibration sites (PICS), in *International Conference on Applied System Innovation—Applied System Innovation for Modern Technology, ICASI 2017*, Sapporo, Japan, 13–17 May 2017, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 834–837, at <https://doi.org/10.1109/ICASI.2017.7988563>.
- Palluconi, F.D., and Albee, A.L., 1997, Mars Global Surveyor—Ready for launch in November 1996: *Acta Astronautica*, v. 40, no. 2–8, p. 511–516, at [https://doi.org/10.1016/S0094-5765\(97\)00115-X](https://doi.org/10.1016/S0094-5765(97)00115-X).
- Palluconi, F.D., Hook, S., Abtahi, A., and Alley, R., 2005, Validation of Landsat 7 ETM+ band 6 radiometric performance, in *Earth Observing Systems X*, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5882: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 58820c, at <https://doi.org/10.1117/12.620013>.
- Palluconi, F.D., Tonooka, H., Hook, S., Abtahi, A., Alley, R., Thompson, T., Hoover, G., and Zadourian, S., 2001, EOS ASTER thermal infrared band vicarious calibration, in *Sensors, Systems, and Next-Generation Satellites V*, Toulouse, France, 17–20 September 2001, Proceedings of SPIE Vol. 4540: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 255–259, at <https://doi.org/10.1117/12.450667>.
- Pan, Y., Melillo, J.M., McGuire, A.D., Kicklighter, D.W., Pitelka, L.F., Hibbard, K., Pierce, L.L., Running, S.W., Ojima, D.S., et al., 1998, Modeled responses of terrestrial ecosystems to elevated atmospheric CO₂—A comparison of simulations by the biogeochemistry models of the Vegetation/Ecosystem Modeling and Analysis Project (VEMAP): *Oecologia*, v. 114, no. 3, p. 389–404, at <https://doi.org/10.1007/s004420050462>.
- Panda, S.S., Rao, M.N., Thenkabail, P.S., and Fitzgerald, J.E., 2015, Remote sensing systems—platforms and sensors—Aerial, satellite, UAV, optical, radar, and LIDAR, in Thenkabail, P.S., ed., *Remotely*

- sensed data characterization, classification, and accuracies: Boca Raton, Fla., CRC Press, p. 3–57, at <https://doi.org/10.1201/b19294-8>.
- Pantaleoni, E., Wynne, R.H., Galbraith, J.M., and Campbell, J.B., 2009, A logit model for predicting wetland location using ASTER and GIS: *International Journal of Remote Sensing*, v. 30, no. 9, p. 2215–2236, at <https://doi.org/10.1080/01431160802549310>.
- Pantaleoni, E., Wynne, R.H., Galbraith, J.M., and Campbell, J.B., 2009, Mapping wetlands using ASTER data—A comparison between classification trees and logistic regression: *International Journal of Remote Sensing*, v. 30, no. 13, p. 3423–3440, at <https://doi.org/10.1080/01431160802562214>.
- Parada Jr, R.J., Thome, K.J., Biggar, S.F., Santer, R.P., and LaMarr, J.H., 1997, Radiometer calibrations using solar radiation, *in* *Earth Observing Systems II*, San Diego, Calif., 27 July–1 August 1997, *Proceedings of SPIE Vol. 3117*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 253–261, at <https://doi.org/10.1117/12.278924>.
- Parada Jr, R.J., Thome, K.J., and Santer, R.P., 1997, Results of dark target vicarious calibration using Lake Tahoe, *in* *Advanced and Next-Generation Satellites II*, Taormina, Italy, 23–27 September 1996, *Proceedings of SPIE Vol. 2957*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 332–343, at <https://doi.org/10.1117/12.265452>.
- Parece, T.E., McGee, J., Campbell, J.B., and Wynne, R.H., 2015, Virginia’s efforts to expand learning geospatial technologies across the educational spectrum: *Photogrammetric Engineering and Remote Sensing*, v. 81, no. 3, p. 177–185, at [https://doi.org/10.1016/S0099-1112\(15\)30335-9](https://doi.org/10.1016/S0099-1112(15)30335-9).
- Parinussa, R.M., Yilmaz, M.T., Anderson, M.C., Hain, C.R., and De Jeu, R.A.M., 2013, An intercomparison of remotely sensed soil moisture products at various spatial scales over the Iberian Peninsula: *Hydrological Processes*, v. 28, no. 18, p. 4865–4876, at <https://doi.org/10.1002/hyp.9975>.
- Parizek, B.R., Christianson, K., Anandakrishnan, S., Alley, R.B., Walker, R.T., Edwards, R.A., Wolfe, D.S., Bertini, G.T., Rinehart, S.K., et al., 2013, Dynamic (in)stability of Thwaites Glacier, West Antarctica: *Journal of Geophysical Research Earth Surface*, v. 118, no. 2, p. 638–655, at <https://doi.org/10.1002/jgrf.20044>.
- Park, T., Chen, C., Macias-Fauria, M., Tømmervik, H., Choi, S., Winkler, A., Bhatt, U.S., Walker, D.A., Piao, S., et al., 2019, Changes in timing of seasonal peak photosynthetic activity in northern ecosystems: *Global Change Biology*, v. 25, no. 7, p. 2382–2395, at <https://doi.org/10.1111/gcb.14638>.
- Park, T., Ganguly, S., Tømmervik, H., Euskirchen, E.S., Högda, K.A., Karlsen, S.R., Brovkin, V., Nemani, R.R., and Myneni, R.B., 2016, Changes in growing season duration and productivity of northern vegetation inferred from long-term remote sensing data: *Environmental Research Letters*, v. 11, no. 8, article 084001, at <https://doi.org/10.1088/1748-9326/11/8/084001>.
- Park, T., Gumma, M.K., Wang, W., Panjala, P., Dubey, S.K., and Nemani, R.R., 2023, Greening of human-dominated ecosystems in India: *Communications Earth and Environment*, v. 4, no. 1, article 419, at <https://doi.org/10.1038/s43247-023-01078-9>.
- Park, T., Hashimoto, H., Wang, W., Thrasher, B., Michaelis, A.R., Lee, T., Brosnan, I.G., and Nemani, R.R., 2023, What does global land climate look like at 2°C warming?: *Earth’s Future*, v. 11, no. 5, at <https://doi.org/10.1029/2022EF003330>.
- Park, T., Kennedy, R.E., Choi, S., Wu, J., Lefsky, M.A., Bi, J., Mantooth, J.A., Myneni, R.B., and Knyazikhin, Y., 2014, Application of physically-based slope correction for maximum forest canopy height

- estimation using waveform lidar across different footprint sizes and locations—Tests on LVIS and GLAS: *Remote Sensing*, v. 6, no. 7, p. 6566–6586, at <https://doi.org/10.3390/rs6076566>.
- Parmenter, A.W., Hansen, A., Kennedy, R.E., Cohen, W.B., Langner, U., Lawrence, R., Maxwell, B., Gallant, A., and Aspinall, R., 2003, Land use and land cover change in the Greater Yellowstone Ecosystem—1975-1995: *Ecological Applications*, v. 13, no. 3, p. 687–703, at [https://doi.org/10.1890/1051-0761\(2003\)013\[0687:LUALCC\]2.0.CO;2](https://doi.org/10.1890/1051-0761(2003)013[0687:LUALCC]2.0.CO;2).
- Parry, C.K., Kustas, W.P., Knipper, K.R., Anderson, M.C., Alfieri, J.G., Prueger, J.H., and McElrone, A.J., 2019, Comparison of vineyard evapotranspiration estimates from surface renewal using measured and modelled energy balance components in the GRAPEX project: *Irrigation Science*, v. 37, no. 3, p. 333–343, at <https://doi.org/10.1007/s00271-018-00618-y>.
- Pascual, C., García-Abril, A., Cohen, W.B., and Martín-Fernández, S., 2010, Relationship between LiDAR-derived forest canopy height and Landsat images: *International Journal of Remote Sensing*, v. 31, no. 5, p. 1261–1280, at <https://doi.org/10.1080/01431160903380656>.
- Pascual, C., García-Abril, A., García-Montero, L.G., Martín-Fernández, S., and Cohen, W.B., 2008, Object-based semi-automatic approach for forest structure characterization using lidar data in heterogeneous *Pinus sylvestris* stands: *Forest Ecology and Management*, v. 255, no. 11, p. 3677–3685, at <https://doi.org/10.1016/j.foreco.2008.02.055>.
- Pasquarella, V.J., Bradley, B.A., and Woodcock, C.E., 2017, Near-real-time monitoring of insect defoliation using Landsat time series: *Forests*, v. 8, no. 8, article 275, at <https://doi.org/10.3390/f8080275>.
- Pasquarella, V.J., Holden, C.E., Kaufman, L., and Woodcock, C.E., 2016, From imagery to ecology—Leveraging time series of all available Landsat observations to map and monitor ecosystem state and dynamics: *Remote Sensing in Ecology and Conservation*, v. 2, no. 3, p. 152–170, at <https://doi.org/10.1002/rse2.24>.
- Pasquarella, V.J., Holden, C.E., and Woodcock, C.E., 2018, Improved mapping of forest type using spectral-temporal Landsat features: *Remote Sensing of Environment*, v. 210, p. 193–207, at <https://doi.org/10.1016/j.rse.2018.02.064>.
- Patterson, P.L., Healey, S.P., Ståhl, G., Saarela, S., Holm, S., Andersen, H.E., Dubayah, R.O., Duncanson, L., Hancock, S., et al., 2019, Statistical properties of hybrid estimators proposed for GEDI - NASA's global ecosystem dynamics investigation: *Environmental Research Letters*, v. 14, no. 6, article 065007, at <https://doi.org/10.1088/1748-9326/ab18df>.
- Pax-Lenney, M., and Woodcock, C.E., 1997, The effect of spatial resolution on the ability to monitor the status of agricultural lands: *Remote Sensing of Environment*, v. 61, no. 2, p. 210–220, at [https://doi.org/10.1016/S0034-4257\(97\)00003-5](https://doi.org/10.1016/S0034-4257(97)00003-5).
- Pax-Lenney, M., and Woodcock, C.E., 1997, Monitoring agricultural lands in Egypt with multitemporal Landsat TM imagery—How many images are needed?: *Remote Sensing of Environment*, v. 59, no. 3, p. 522–529, at [https://doi.org/10.1016/S0034-4257\(96\)00124-1](https://doi.org/10.1016/S0034-4257(96)00124-1).
- Pax-Lenney, M., Woodcock, C.E., Macomber, S.A., Gopal, S., and Song, C., 2001, Forest mapping with a generalized classifier and Landsat TM data: *Remote Sensing of Environment*, v. 77, no. 3, p. 241–250, at [https://doi.org/10.1016/S0034-4257\(01\)00208-5](https://doi.org/10.1016/S0034-4257(01)00208-5).
- Payero, J.O., Neale, C.M.U., Wright, J.L., and Allen, R.G., 2003, Guidelines for validating bowen ratio data: *Transactions of the American Society of Agricultural Engineers*, v. 46, no. 4, p. 1051–1060, at <https://doi.org/10.13031/2013.13967>.

- Paynter, I., Cook, B., Corp, L., Nagol, J., and McCorkel, J., 2020, Characterization of firefly, an imaging spectrometer designed for remote sensing of solar induced fluorescence: *Sensors*, v. 20, no. 17, article 4682, at <https://doi.org/10.3390/s20174682>.
- Paynter, I., Genest, D., Peri, F., and Schaaf, C.B., 2018, Bounding uncertainty in volumetric geometric models for terrestrial lidar observations of ecosystems: *Interface Focus*, v. 8, no. 2, article 20170043, at <https://doi.org/10.1098/rsfs.2017.0043>.
- Paynter, I., Genest, D., Saenz, E., Peri, F., Boucher, P., Li, Z., Strahler, A., and Schaaf, C.B., 2018, Classifying ecosystems with metaproperties from terrestrial laser scanner data: *Methods in Ecology and Evolution*, v. 9, no. 2, p. 210–222, at <https://doi.org/10.1111/2041-210X.12854>.
- Paynter, I., Genest, D., Saenz, E., Peri, F., Li, Z., Strahler, A., and Schaaf, C.B., 2018, Quality assessment of terrestrial laser scanner ecosystem observations using pulse trajectories: *IEEE Transactions on Geoscience and Remote Sensing*, v. 56, no. 11, p. 6324–6333, at <https://doi.org/10.1109/TGRS.2018.2836947>.
- Paynter, I., Saenz, E., Genest, D., Peri, F., Erb, A., Li, Z., Wiggin, K., Muir, J., Raunonen, P., et al., 2016, Observing ecosystems with lightweight, rapid-scanning terrestrial lidar scanners: *Remote Sensing in Ecology and Conservation*, v. 2, no. 4, p. 174–189, at <https://doi.org/10.1002/rse2.26>.
- Paynter, I., Schaaf, C., Bowen, J.L., Deegan, L., Peri, F., and Cook, B., 2019, Characterizing a New England saltmarsh with NASA G-LiHT airborne lidar: *Remote Sensing*, v. 11, no. 5, article 509, at <https://doi.org/10.3390/rs11050509>.
- Pearlman, A., Efremova, B., Montanaro, M., Lunsford, A., Reuter, D., and McCorkel, J., 2022, Landsat 9 Thermal Infrared Sensor 2 on-orbit calibration and initial performance: *IEEE Transactions on Geoscience and Remote Sensing*, v. 60, article 1002608, at <https://doi.org/10.1109/TGRS.2022.3183551>.
- Pearlman, A., McCorkel, J., Montanaro, M., Efremova, B., Wenny, B., Lunsford, A., Simon, A., Hair, J., and Reuter, D., 2018, Landsat 9 Thermal Infrared Sensor 2 pre-launch characterization—Initial imaging and spectral performance results, *in* Earth Observing Systems XXIII, San Diego, Calif., 19–23 August 2018, Proceedings of SPIE Vol. 10764: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1076406, at <https://doi.org/10.1117/12.2321084>.
- Pearlman, A., Montanaro, M., Efremova, B., McCorkel, J., Wenny, B., Lunsford, A., and Reuter, D., 2021, Prelaunch radiometric calibration and uncertainty analysis of Landsat Thermal Infrared Sensor 2: *IEEE Transactions on Geoscience and Remote Sensing*, v. 59, no. 4, p. 2715–2726, at <https://doi.org/10.1109/TGRS.2020.3008655>.
- Pearlman, A.J., Efremova, B., Lunsford, A., McCorkel, J., Simon, A., and Reuter, D., 2019, Landsat 9 thermal infrared sensor 2 spectral response test—Updates and perspective, *in* 2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8534–8537, at <https://doi.org/10.1109/IGARSS.2019.8899118>.
- Peddle, D.R., Franklin, S.E., Johnson, R.L., Lavigne, M.B., and Wulder, M.A., 2003, Structural change detection in a disturbed conifer forest using a geometric optical reflectance model in multiple-forward mode: *IEEE Transactions on Geoscience and Remote Sensing*, v. 41, no. 1, p. 163–166, at <https://doi.org/10.1109/TGRS.2002.807756>.
- Peddle, D.R., Huemmrich, K.F., Hall, F.G., Masek, J.G., Soenen, S.A., and Jackson, C.D., 2011, Applications of the BIOPHYS algorithm for physically-based retrieval of biophysical, structural and forest

- disturbance information: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 4, no. 4, p. 971–982, at <https://doi.org/10.1109/JSTARS.2011.2164899>.
- Pedelty, J., Devadiga, S., Masuoka, E., Brown, M., Pinzon, J., Tucker, C., Vermote, E.F., Prince, S., Nagol, J., et al., 2007, Generating a long-term land data record from the AVHRR and MODIS instruments, *in* 2007 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Barcelona, Spain, 23–28 July 2007, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1021–1024, at <https://doi.org/10.1109/IGARSS.2007.4422974>.
- Pedlowski, M.A., Matricardi, E.A.T., Skole, D.L., Cameron, S.R., Chomentowski, W., Fernandes, C., and Lisboa, A., 2005, Conservation units—A new deforestation frontier in the Amazonian state of Rondônia, Brazil: *Environmental Conservation*, v. 32, no. 2, p. 149–155, at <https://doi.org/10.1017/S0376892905002134>.
- Peduzzi, A., Allen, H.L., and Wynne, R.H., 2010, Leaf area of overstory and understory in pine plantations in the flatwoods: *Southern Journal of Applied Forestry*, v. 34, no. 4, p. 154–160, at <https://doi.org/10.1093/sjaf/34.4.154>.
- Peduzzi, A., Wynne, R.H., Fox, T.R., Nelson, R.F., and Thomas, V.A., 2012, Estimating leaf area index in intensively managed pine plantations using airborne laser scanner data: *Forest Ecology and Management*, v. 270, p. 54–65, at <https://doi.org/10.1016/j.foreco.2011.12.048>.
- Peduzzi, A., Wynne, R.H., Thomas, V.A., Nelson, R.F., Reis, J.J., and Sanford, M., 2012, Combined use of airborne lidar and DBInSAR data to estimate LAI in temperate mixed forests: *Remote Sensing*, v. 4, no. 6, p. 1758–1780, at <https://doi.org/10.3390/rs4061758>.
- Peery, M.Z., Jones, G.M., Gutiérrez, R.J., Redpath, S.M., Franklin, A.B., Simberloff, D., Turner, M.G., Radeloff, V.C., and White, G.C., 2019, The conundrum of agenda-driven science in conservation: *Frontiers in Ecology and the Environment*, v. 17, no. 2, p. 80–82, at <https://doi.org/10.1002/fee.2006>.
- Pekel, J.F., Ceccato, P., Vancutsem, C., Cressman, K., Vanbogaert, E., and Defourny, P., 2011, Development and application of multi-temporal colorimetric transformation to monitor vegetation in the desert locust habitat: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 4, no. 2, p. 318–326, at <https://doi.org/10.1109/JSTARS.2010.2052591>.
- Pekel, J.F., Cottam, A., Gorelick, N.S., and Belward, A.S., 2016, High-resolution mapping of global surface water and its long-term changes: *Nature*, v. 540, no. 7633, p. 418–422, at <https://doi.org/10.1038/nature20584>.
- Pekel, J.F., Cressman, K., Ceccato, P., Vancutsem, C., Vanbogaert, E., and Defourny, P., 2009, Development and application of multi-temporal colorimetric transformation to monitor vegetation in the desert locust habitat, *in* 5th International Workshop on the Analysis of Multi-Temporal Remote Sensing Images 2009, MultiTemp 2009, Groton, Conn., 28–30 July 2009, Proceedings, p. 234–241.
- Pekel, J.F., Vancutsem, C., Bastin, L., Clerici, M., Vanbogaert, E., Bartholomé, E., and Defourny, P., 2014, A near real-time water surface detection method based on HSV transformation of MODIS multi-Spectral time series data: *Remote Sensing of Environment*, v. 140, p. 704–716, at <https://doi.org/10.1016/j.rse.2013.10.008>.
- Pekkarinen, A., Reithmaier, L., and Strobl, P., 2009, Pan-European forest/non-forest mapping with Landsat ETM+ and CORINE Land Cover 2000 data: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 64, no. 2, p. 171–183, at <https://doi.org/10.1016/j.isprsjprs.2008.09.004>.

- Pellegrino, A., Fabbretto, A., Bresciani, M., de Lima, T.M.A., Braga, F., Pahlevan, N., Brando, V.E., Kratzer, S., Gianinetto, M., and Giardino, C., 2023, Assessing the Accuracy of PRISMA Standard Reflectance Products in Globally Distributed Aquatic Sites: *Remote Sensing*, v. 15, no. 8, at <https://doi.org/10.3390/rs15082163>.
- Pelletier, D., Clark, M., Anderson, M.C.G., Rayfield, B., Wulder, M.A., and Cardille, J.A., 2014, Applying circuit theory for corridor expansion and management at regional scales—tiling, pinch points, and omnidirectional connectivity: *PLoS ONE*, v. 9, no. 1, article e84135, at <https://doi.org/10.1371/journal.pone.0084135>.
- Pelletier, D., Lapointe, M.É., Wulder, M.A., White, J.C., and Cardille, J.A., 2017, Forest connectivity regions of Canada using circuit theory and image analysis: *PLoS ONE*, v. 12, no. 2, article e0169428, at <https://doi.org/10.1371/journal.pone.0169428>.
- Pelletier, F., Cardille, J.A., Wulder, M.A., White, J.C., and Hermosilla, T., 2024, Inter- and intra-year forest change detection and monitoring of aboveground biomass dynamics using Sentinel-2 and Landsat: *Remote Sensing of Environment*, v. 301, article 113931, at <https://doi.org/10.1016/j.rse.2023.113931>.
- Pendrill, F., Gardner, T.A., Meyfroidt, P., Persson, U.M., Adams, J., Azevedo, T., Lima, M.G.B., Baumann, M., Curtis, P.G., et al., 2022, Disentangling the numbers behind agriculture-driven tropical deforestation: *Science*, v. 377, no. 6611, article eabm9267, at <https://doi.org/10.1126/science.abm9267>.
- Pengra, B., Gallant, A.L., Zhu, Z., and Dahal, D., 2016, Evaluation of the initial thematic output from a continuous change-detection algorithm for use in automated operational land-change mapping by the U.S. geological survey: *Remote Sensing*, v. 8, no. 10, article 811, at <https://doi.org/10.3390/rs8100811>.
- Pengra, B., Long, J., Dahal, D., Stehman, S.V., and Loveland, T.R., 2015, A global reference database from very high resolution commercial satellite data and methodology for application to Landsat derived 30m continuous field tree cover data: *Remote Sensing of Environment*, v. 165, p. 234–248, at <https://doi.org/10.1016/j.rse.2015.01.018>.
- Pengra, B.W., Johnston, C.A., and Loveland, T.R., 2007, Mapping an invasive plant, *Phragmites australis*, in coastal wetlands using the EO-1 Hyperion hyperspectral sensor: *Remote Sensing of Environment*, v. 108, no. 1, p. 74–81, at <https://doi.org/10.1016/j.rse.2006.11.002>.
- Pengra, B.W., Stehman, S.V., Horton, J.A., Dockter, D.J., Schroeder, T.A., Yang, Z., Cohen, W.B., Healey, S.P., and Loveland, T.R., 2020, Quality control and assessment of interpreter consistency of annual land cover reference data in an operational national monitoring program: *Remote Sensing of Environment*, v. 238, article 111261, at <https://doi.org/10.1016/j.rse.2019.111261>.
- Pereira, L.S., Allen, R.G., Smith, M., and Raes, D., 2015, Crop evapotranspiration estimation with FAO56—Past and future: *Agricultural Water Management*, v. 147, p. 4–20, at <https://doi.org/10.1016/j.agwat.2014.07.031>.
- Pereira, L.S., Perrier, A., Allen, R.G., and Alves, I., 1999, Evapotranspiration—Concepts and future trends: *Journal of Irrigation and Drainage Engineering*, v. 125, no. 2, p. 45–51, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(1999\)125:2\(45\)](https://doi.org/10.1061/(ASCE)0733-9437(1999)125:2(45)).
- Perry, C., Steduto, P., Allen, R.G., and Burt, C.M., 2009, Increasing productivity in irrigated agriculture—Agronomic constraints and hydrological realities: *Agricultural Water Management*, v. 96, no. 11, p. 1517–1524, at <https://doi.org/10.1016/j.agwat.2009.05.005>.

- Perz, S.G., and Skole, D.L., 2003, Secondary forest expansion in the Brazilian Amazon and the refinement of forest transition theory: *Society and Natural Resources*, v. 16, no. 4, p. 277–294, at <https://doi.org/10.1080/08941920390178856>.
- Perz, S.G., and Skole, D.L., 2003, Social determinants of secondary forests in the Brazilian Amazon: *Social Science Research*, v. 32, no. 1, p. 25–60, at [https://doi.org/10.1016/S0049-089X\(02\)00012-1](https://doi.org/10.1016/S0049-089X(02)00012-1).
- Pesta, F., Bhatta, S., Helder, D.L., and Mishra, N., 2015, Radiometric non-uniformity characterization and correction of Landsat 8 OLI using Earth imagery-based techniques: *Remote Sensing*, v. 7, no. 1, p. 430–446, at <https://doi.org/10.3390/rs70100430>.
- Peters-Lidard, C.D., Mocko, D.M., Garcia, M., Santanello Jr, J.A., Tischler, M.A., Moran, M.S., and Wu, Y., 2008, Role of precipitation uncertainty in the estimation of hydrologic soil properties using remotely sensed soil moisture in a semiarid environment: *Water Resources Research*, v. 44, no. 5, article W05s18, at <https://doi.org/10.1029/2007WR005884>.
- Peterson, E.D., Brown, S.D., Hattenberger, T.J., and Schott, J.R., 2004, Surface and buried landmine scene generation and validation using the Digital Imaging and Remote Sensing Image Generation model, *in* *Imaging Spectrometry X*, Denver, Colo., 2–4 August 2004, *Proceedings of SPIE Vol. 5546*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 312–323, at <https://doi.org/10.1117/12.561264>.
- Petitcolin, F., and Vermote, E.F., 2002, Land surface reflectance, emissivity and temperature from MODIS middle and thermal infrared data: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 112–134, at [https://doi.org/10.1016/S0034-4257\(02\)00094-9](https://doi.org/10.1016/S0034-4257(02)00094-9).
- Petitcolin, F.R., and Vermote, E.F., 2001, Applications of middle infrared surface reflectance from MODIS data, *in* 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 381–383, at <https://doi.org/10.1109/IGARSS.2001.976165>.
- Petri, C.A., Galvão, L.S., and Lyapustin, A.I., 2019, MODIS BRDF effects over Brazilian tropical forests and savannahs—A comparative analysis: *Remote Sensing Letters*, v. 10, no. 2, p. 95–102, at <https://doi.org/10.1080/2150704X.2018.1526425>.
- Pettorelli, N., Wegmann, M., Skidmore, A., Mùcher, S., Dawson, T.P., Fernandez, M., Lucas, R., Schaepman, M.E., Wang, T., et al., 2016, Framing the concept of satellite remote sensing essential biodiversity variables—Challenges and future directions: *Remote Sensing in Ecology and Conservation*, v. 2, no. 3, p. 122–131, at <https://doi.org/10.1002/rse2.15>.
- Pfarr, B., Ochs, W.R., Leibe, J., and Fatig, C., 1997, Operations lessons learned from the Hubble Space Telescope first and second servicing missions, *in* *Defense and Space Programs Conference and Exhibit—Critical Defense and Space Programs for the Future*, 1997, Huntsville, Ala., 23–25 September 1997, *Proceedings: Reston, Va., American Institute of Aeronautics and Astronautics*, p. 141–147, at <https://doi.org/10.2514/6.1997-3933>.
- Pflugmacher, D., Cohen, W.B., and Kennedy, R.E., 2012, Using Landsat-derived disturbance history (1972–2010) to predict current forest structure: *Remote Sensing of Environment*, v. 122, p. 146–165, at <https://doi.org/10.1016/j.rse.2011.09.025>.
- Pflugmacher, D., Cohen, W.B., Kennedy, R.E., and Lefsky, M., 2008, Regional applicability of forest height and aboveground biomass models for the Geoscience Laser Altimeter System: *Forest Science*, v. 54, no. 6, p. 647–657, at <https://doi.org/10.1093/forestscience/54.6.647>.

- Pflugmacher, D., Cohen, W.B., Kennedy, R.E., and Yang, Z., 2014, Using Landsat-derived disturbance and recovery history and lidar to map forest biomass dynamics: *Remote Sensing of Environment*, v. 151, p. 124–137, at <https://doi.org/10.1016/j.rse.2013.05.033>.
- Pflugmacher, D., Krankina, O.N., and Cohen, W.B., 2007, Satellite-based peatland mapping—Potential of the MODIS sensor: *Global and Planetary Change*, v. 56, no. 3-4, p. 248–257, at <https://doi.org/10.1016/j.gloplacha.2006.07.019>.
- Pflugmacher, D., Krankina, O.N., Cohen, W.B., Friedl, M.A., Sulla-Menashe, D., Kennedy, R.E., Nelson, P., Loboda, T.V., Kuemmerle, T., et al., 2011, Comparison and assessment of coarse resolution land cover maps for Northern Eurasia: *Remote Sensing of Environment*, v. 115, no. 12, p. 3539–3553, at <https://doi.org/10.1016/j.rse.2011.08.016>.
- Pflugmacher, D., Rabe, A., Peters, M., and Hostert, P., 2019, Mapping pan-European land cover using Landsat spectral-temporal metrics and the European LUCAS survey: *Remote Sensing of Environment*, v. 221, p. 583–595, at <https://doi.org/10.1016/j.rse.2018.12.001>.
- Pfösch, K.A., Pflugmacher, D., Okujeni, A., and Hostert, P., 2023, Mapping forest fire severity using bi-temporal unmixing of Sentinel-2 data - Towards a quantitative understanding of fire impacts: *Science of Remote Sensing*, v. 8, article 100097, at <https://doi.org/10.1016/j.srs.2023.100097>.
- Phalke, A.R., Özdoğan, M., Thenkabail, P.S., Erickson, T., Gorelick, N., Yadav, K., and Congalton, R.G., 2020, Mapping croplands of Europe, Middle East, Russia, and Central Asia using Landsat, Random Forest, and Google Earth Engine: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 167, p. 104–122, at <https://doi.org/10.1016/j.isprsjprs.2020.06.022>.
- Pham, Q.V., Ha, N.T.T., Pahlevan, N., Oanh, L.T., Nguyen, T.B., and Nguyen, N.T., 2018, Using Landsat-8 images for quantifying suspended sediment concentration in red river (Northern Vietnam): *Remote Sensing*, v. 10, no. 11, article 1841, at <https://doi.org/10.3390/rs10111841>.
- Phillips, R.D., Blinn, C.E., Watson, L.T., and Wynne, R.H., 2009, An adaptive noise-filtering algorithm for AVIRIS data with implications for classification accuracy: *IEEE Transactions on Geoscience and Remote Sensing*, v. 47, no. 9, p. 3168–3179, at <https://doi.org/10.1109/TGRS.2009.2020156>.
- Phillips, R.D., Hossain, M.S., Watson, L.T., Wynne, R.H., and Ramakrishnan, N., 2014, Enrichment procedures for soft clusters—A statistical test and its applications: *CMES - Computer Modeling in Engineering and Sciences*, v. 97, no. 2, p. 175–197, at <https://www.techscience.com/CMES/v97n2/27132/pdf>.
- Phillips, R.D., Watson, L.T., Easterling, D.R., and Wynne, R.H., 2014, An SMP soft classification algorithm for remote sensing: *Computers and Geosciences*, v. 68, p. 73–80, at <https://doi.org/10.1016/j.cageo.2014.03.010>.
- Phillips, R.D., Watson, L.T., Ramakrishnan, N., and Wynne, R.H., 2009, A hypothesis test for the evaluation of soft clusters for classification, *in* International Conference on Image Processing, Computer Vision, & Pattern Recognition, Las Vegas, Nev., 13–16 July 2009, Proceedings, p. 672–678, at <http://people.cs.vt.edu/~naren/papers/ipcv09-hyptest>.
- Phillips, R.D., Watson, L.T., Ramakrishnan, N., and Wynne, R.H., 2009, An iterative framework for the improvement of soft clusters for classification, *in* International Conference on Image Processing, Computer Vision, & Pattern Recognition, Las Vegas, Nev., 13–16 July 2009, Proceedings, p. 766–772, at <http://people.cs.vt.edu/~ramakris/papers/ipcv09-iterative.pdf>.

- Phillips, R.D., Watson, L.T., and Wynne, R.H., 2007, Hybrid image classification and parameter selection using a shared memory parallel algorithm: *Computers and Geosciences*, v. 33, no. 7, p. 875–897, at <https://doi.org/10.1016/j.cageo.2006.10.014>.
- Phillips, R.D., Watson, L.T., and Wynne, R.H., 2008, A fuzzy homogeneity test for the iterative guided spectral class rejection algorithm, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. II883–II886, at <https://doi.org/10.1109/IGARSS.2008.4779136>.
- Phillips, R.D., Watson, L.T., and Wynne, R.H., 2008, A shared memory parallel algorithm for data reduction using the singular value decomposition, *in* Spring Simulation Multiconference, Ottawa, Canada, 14–17 April 2008, Proceedings: San Diego, Calif., Society of Computer Simulation International, p. 459–466, at <http://dl.acm.org/citation.cfm?id=1400619>.
- Phillips, R.D., Watson, L.T., and Wynne, R.H., 2008, A study of fuzzy clustering within the IGSCR framework, *in* Annual Southeast Regional Conference, 46th, Auburn, Ala., 28–29 March 2008, Proceedings: New York, N.Y., Association for Computing Machinery, p. 140–145, at <https://doi.org/10.1145/1593105.1593142>.
- Phillips, R.D., Watson, L.T., and Wynne, R.H., 2009, Examining the potential parallel scalability of a fuzzy semisupervised classification algorithm, *in* Spring Simulation Multiconference, SpringSim 2009, San Diego, Calif., 22–27 March 2009, Proceedings: New York, N.Y., Association for Computing Machinery, paper no. 106, at <https://dl.acm.org/citation.cfm?id=1639921>.
- Phillips, R.D., Watson, L.T., Wynne, R.H., and Blinn, C.E., 2009, Feature reduction using a singular value decomposition for the iterative guided spectral class rejection hybrid classifier: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 64, no. 1, p. 107–116, at <https://doi.org/10.1016/j.isprsjprs.2008.03.004>.
- Phillips, R.D., Watson, L.T., Wynne, R.H., and Ramakrishnan, N., 2012, Continuous iterative guided spectral class rejection classification algorithm: *IEEE Transactions on Geoscience and Remote Sensing*, v. 50, no. 6, p. 2303–2317, at <https://doi.org/10.1109/TGRS.2011.2173802>.
- Phillips, R.D., Zhang, J., Watson, L.T., Blinn, C.E., and Wynne, R.H., 2008, An adaptive noise filtering algorithm based on the maximum noise fraction, *in* International Conference on Image Processing, Computer Vision, & Pattern Recognition, Las Vegas, Nev., 14–17 July 2008, Proceedings: Bethesda, Md., American Society for Photogrammetry and Remote Sensing, p. 717–723, at <http://www.asprs.org/a/publications/proceedings/pecora17/0028.pdf>.
- Piao, S., Wang, X., Park, T., Chen, C., Lian, X., He, Y., Bjerke, J.W., Chen, A., Ciais, P., et al., 2020, Characteristics, drivers and feedbacks of global greening: *Nature Reviews Earth and Environment*, v. 1, no. 1, p. 14–27, at <https://doi.org/10.1038/s43017-019-0001-x>.
- Pichard, S.L., Campbell, L., Carder, K.L., Kang, J.B., Patch, J., Tabita, F.R., and Paul, J.H., 1997, Analysis of ribulose biphosphate carboxylase gene expression in natural phytoplankton communities by group-specific gene probing: *Marine Ecology Progress Series*, v. 149, no. 1–3, p. 239–253, at <https://doi.org/10.3354/meps149239>.
- Pickell, P.D., Hermosilla, T., Coops, N.C., Masek, J.G., Franks, S., and Huang, C., 2014, Monitoring anthropogenic disturbance trends in an industrialized boreal forest with Landsat time series: *Remote Sensing Letters*, v. 5, no. 9, p. 783–792, at <https://doi.org/10.1080/2150704X.2014.967881>.

- Pickell, P.D., Hermosilla, T., Frazier, R.J., Coops, N.C., and Wulder, M.A., 2016, Forest recovery trends derived from Landsat time series for North American boreal forests: *International Journal of Remote Sensing*, v. 37, no. 1, p. 138–149, at <https://doi.org/10.1080/2150704X.2015.1126375>.
- Pickens, A.H., Hansen, M.C., Hancher, M., Stehman, S.V., Tyukavina, A., Potapov, P., Marroquin, B., and Sherani, Z., 2020, Mapping and sampling to characterize global inland water dynamics from 1999 to 2018 with full Landsat time-series: *Remote Sensing of Environment*, v. 243, article 111792, at <https://doi.org/10.1016/j.rse.2020.111792>.
- Pickens, A.H., Hansen, M.C., Stehman, S.V., Tyukavina, A., Potapov, P., Zalles, V., and Higgins, J., 2022, Global seasonal dynamics of inland open water and ice: *Remote Sensing of Environment*, v. 272, article 112963, at <https://doi.org/10.1016/j.rse.2022.112963>.
- Pickering, J., Stehman, S.V., Tyukavina, A., Potapov, P., Watt, P., Jantz, S.M., Bholanath, P., and Hansen, M.C., 2019, Quantifying the trade-off between cost and precision in estimating area of forest loss and degradation using probability sampling in Guyana: *Remote Sensing of Environment*, v. 221, p. 122–135, at <https://doi.org/10.1016/j.rse.2018.11.018>.
- Pickering, J., Tyukavina, A., Lima, A., Khan, A., Potapov, P., Adusei, B., and Hansen, M.C., 2021, Using multi-resolution satellite data to quantify land dynamics—Applications of planetscope imagery for cropland and tree-cover loss area estimation: *Remote Sensing*, v. 13, no. 11, article 2191, at <https://doi.org/10.3390/rs13112191>.
- Picoli, M.C.A., Rorato, A., Leitão, P., Camara, G., Maciel, A., Hostert, P., and Sanches, I.D., 2020, Impacts of public and private sector policies on soybean and pasture expansion in mato Grosso-Brazil from 2001 to 2017: *Land*, v. 9, no. 1, article 20, at <https://doi.org/10.3390/land9010020>.
- Pidgeon, A.M., Flather, C.H., Radeloff, V.C., Lepczyk, C.A., Keuler, N.S., Wood, E.M., Stewart, S.I., and Hammer, R.B., 2014, Systematic temporal patterns in the relationship between housing development and forest bird biodiversity: *Conservation Biology*, v. 28, no. 5, p. 1291–1301, at <https://doi.org/10.1111/cobi.12291>.
- Pidgeon, A.M., Radeloff, V.C., Flather, C.H., Lepczyk, C.A., Clayton, M.K., Hawbaker, T.J., and Hammer, R.B., 2007, Associations of forest bird species richness with housing and landscape patterns across the USA: *Ecological Applications*, v. 17, no. 7, p. 1989–2010, at <https://doi.org/10.1890/06-1489.1>.
- Pidgeon, A.M., Radeloff, V.C., and Mathews, N.E., 2003, Landscape-scale patterns of black-throated sparrow (*Amphispiza bilineata*) abundance and nest success: *Ecological Applications*, v. 13, no. 2, p. 530–542, at [https://doi.org/10.1890/1051-0761\(2003\)013\[0530:LSPOBT\]2.0.CO;2](https://doi.org/10.1890/1051-0761(2003)013[0530:LSPOBT]2.0.CO;2).
- Pidgeon, A.M., Radeloff, V.C., and Mathews, N.E., 2006, Contrasting measures of fitness to classify habitat quality for the black-throated sparrow (*Amphispiza bilineata*): *Biological Conservation*, v. 132, no. 2, p. 199–210, at <https://doi.org/10.1016/j.biocon.2006.03.024>.
- Pike, A., Danner, E., Boughton, D., Melton, F., Nemani, R.R., Rajagopalan, B., and Lindley, S., 2013, Forecasting river temperatures in real time using a stochastic dynamics approach: *Water Resources Research*, v. 49, no. 9, p. 5168–5182, at <https://doi.org/10.1002/wrcr.20389>.
- Pilewskie, P., Goetz, A.F.H., Beal, D.A., Bergstrom, R.W., and Mariani, P., 1998, Observations of the spectral distribution of solar irradiance at the ground during SUCCESS: *Geophysical Research Letters*, v. 25, no. 8, p. 1141–1144, at <https://doi.org/10.1029/98GL00238>.

- Pilliod, D.S., Rohde, A.T., Charnley, S., Davee, R.R., Dunham, J.B., Gosnell, H., Grant, G.E., Hausner, M.B., Huntington, J.L., and Nash, C., 2018, Survey of beaver-related restoration practices in rangeland streams of the western USA: *Environmental Management*, v. 61, no. 1, p. 58–68, at <https://doi.org/10.1007/s00267-017-0957-6>.
- Pincus, R., Mlawer, E.J., Oreopoulos, L., Ackerman, A.S., Baek, S., Brath, M., Buehler, S.A., Cady-Pereira, K.E., Cole, J.N.S., et al., 2015, Radiative flux and forcing parameterization error in aerosol-free clear skies: *Geophysical Research Letters*, v. 42, no. 13, p. 5485–5492, at <https://doi.org/10.1002/2015GL064291>.
- Pinheiro, T.F., Escada, M.I.S., Valeriano, D.M., Hostert, P., Gollnow, F., and Müller, H., 2016, Forest degradation associated with logging frontier expansion in the Amazon—The BR-163 region in southwestern Pará, Brazil: *Earth Interactions*, v. 20, no. 17, article 17, at <https://doi.org/10.1175/EI-D-15-0016.1>.
- Pinter Jr, P.J., Hatfield, J.L., Schepers, J.S., Barnes, E.M., Moran, M.S., Daughtry, C.S.T., and Upchurch, D.R., 2003, Remote sensing for crop management: *Photogrammetric Engineering and Remote Sensing*, v. 69, no. 6, p. 647–664, at <https://doi.org/10.14358/PERS.69.6.647>.
- Pinto, C., Ponzoni, F., Castro, R., Leigh, L., Mishra, N., Aaron, D.B., and Helder, D.L., 2016, First in-flight radiometric calibration of MUX and WFI on-board CBERS-4: *Remote Sensing*, v. 8, no. 5, article 405, at <https://doi.org/10.3390/rs8050405>.
- Pinto, C.T., de Carvalho e Oliveira, P.V., Aaron, D., Holt, J., Russell, B., Durell, C., and Leigh, L., 2022, Preliminary evaluation of the mirror-based empirical line method using FLARE system, *in Earth Observing Systems XXVII 2022*, San Diego, Calif., 21–26 August 2022, *Proceedings of SPIE Vol. 12232*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1223214, at <https://doi.org/10.1117/12.2633107>.
- Pinto, C.T., Haque, O.M., Micijevic, E., and Helder, D.L., 2019, Landsats 1-5 Multispectral Scanner system sensors radiometric calibration update: *IEEE Transactions on Geoscience and Remote Sensing*, v. 57, no. 10, p. 7378–7394, at <https://doi.org/10.1109/TGRS.2019.2913106>.
- Pinto, C.T., Leigh, L., and Helder, D., 2019, SDSU vegetative site analysis from 2013 to 2017 for radiometric calibration of Earth observation sensors, *in Anais do XIX Simposio Brasileiro de Sensoriamento Remoto*, Santos-SP, Brazil, 14–17 April 2019, *Proceedings: San Jose dos Campos, Brazil, Instituto Nacional de Pesquisas Espaciais*, p. 979–982, at <https://proceedings.science/sbsr-2019/papers/sdsu-vegetative-site-analysis-from-2013-to-2017-for-radiometric-calibration-of-earth-observation-sensors-?lang=en>.
- Pinto, C.T., Ponzoni, F.J., Castro, R.M., Leigh, L., Kaewmanee, M., Aaron, D.B., and Helder, D.L., 2016, Evaluation of the uncertainty in the spectral band adjustment factor (SBAF) for cross-calibration using Monte Carlo simulation: *Remote Sensing Letters*, v. 7, no. 9, p. 837–846, at <https://doi.org/10.1080/2150704X.2016.1190474>.
- Pinty, B., Taberner, M., Haemmerle, V.R., Paradise, S.R., Vermote, E.F., Verstraete, M.M., Gobron, N., and Widlowski, J.L., 2011, Corrigendum: *Journal of Climate*, v. 24, no. 17, p. 4769–4769, at <https://doi.org/10.1175/JCLI-D-11-00126.1>.
- Pinty, B., Taberner, M., Haemmerle, V.R., Paradise, S.R., Vermote, E.F., Verstraete, M.M., Gobron, N., and Widlowski, J.L., 2011, Global-scale comparison of MISR and MODIS land surface albedos: *Journal of Climate*, v. 24, no. 3, p. 732–749, at <https://doi.org/10.1175/2010JCLI3709.1>.

- Pisek, J., Erb, A., Korhonen, L., Biermann, T., Carrara, A., Cremonese, E., Cuntz, M., Fares, S., Gerosa, G., et al., 2021, Retrieval and validation of forest background reflectivity from daily Moderate Resolution Imaging Spectroradiometer (MODIS) bidirectional reflectance distribution function (BRDF) data across European forests: *Biogeosciences*, v. 18, no. 2, p. 621–635, at <https://doi.org/10.5194/bg-18-621-2021>.
- Pittman, K., Hansen, M.C., Becker-Reshef, I., Potapov, P.V., and Justice, C.O., 2010, Estimating global cropland extent with multi-year MODIS data: *Remote Sensing*, v. 2, no. 7, p. 1844–1863, at <https://doi.org/10.3390/rs2071844>.
- Platonov, A., Thenkabail, P.S., Biradar, C.M., Cai, X., Gumma, M., Dheeravath, V., Cohen, Y., Alchanatis, V., Goldshlager, N., et al., 2008, Water productivity mapping (WPM) using Landsat ETM+ data for the irrigated croplands of the Syrdarya river basin in Central Asia: *Sensors*, v. 8, no. 12, p. 8156–8180, at <https://doi.org/10.3390/s8128156>.
- Platt, R.V., and Goetz, A.F.H., 2004, A comparison of AVIRIS and Landsat for land use classification at the urban fringe: *Photogrammetric Engineering and Remote Sensing*, v. 70, no. 7, p. 813–819, at <https://doi.org/10.14358/PERS.70.7.813>.
- Plekhanova, E., Kim, J.S., Oehri, J., Erb, A., Schaaf, C., and Schaepman-Strub, G., 2022, Mid-summer snow-free albedo across the Arctic tundra was mostly stable or increased over the past two decades: *Environmental Research Letters*, v. 17, no. 12, article 124026, at <https://doi.org/10.1088/1748-9326/aca5a1>.
- Plieninger, T., Schleyer, C., Mantel, M., and Hostert, P., 2012, Is there a forest transition outside forests? Trajectories of farm trees and effects on ecosystem services in an agricultural landscape in Eastern Germany: *Land Use Policy*, v. 29, no. 1, p. 233–243, at <https://doi.org/10.1016/j.landusepol.2011.06.011>.
- Ploton, P., Mortier, F., Réjou-Méchain, M., Barbier, N., Picard, N., Rossi, V., Dormann, C., Cornu, G., Viennois, G., et al., 2020, Spatial validation reveals poor predictive performance of large-scale ecological mapping models: *Nature Communications*, v. 11, no. 1, article 4540, at <https://doi.org/10.1038/s41467-020-18321-y>.
- Plutzer, C., Kroisleitner, C., Haberl, H., Fetzl, T., Bulgheroni, C., Beringer, T., Hostert, P., Kastner, T., Kuemmerle, T., et al., 2016, Changes in the spatial patterns of human appropriation of net primary production (HANPP) in Europe 1990–2006: *Regional Environmental Change*, v. 16, no. 5, p. 1225–1238, at <https://doi.org/10.1007/s10113-015-0820-3>.
- Pôças, I., Paço, T.A., Cunha, M., Andrade, J.A., Silvestre, J., Sousa, A., Santos, F.L., Pereira, L.S., and Allen, R.G., 2014, Satellite-based evapotranspiration of a super-intensive olive orchard—Application of METRIC algorithms: *Biosystems Engineering*, v. 128, p. 69–81, at <https://doi.org/10.1016/j.biosystemseng.2014.06.019>.
- Pöçasa, I., Cunha, M., Pereira, L.S., and Allen, R.G., 2012, Using remote sensing energy balance and evapotranspiration to characterize montane landscape vegetation with focus on grass and pasture lands: *International Journal of Applied Earth Observation and Geoinformation*, v. 21, no. 1, p. 159–172, at <https://doi.org/10.1016/j.jag.2012.08.017>.
- Pogorzala, D., Fulbright, J.P., Kline, E., Efremova, B., McCorkel, J., and Van Naarden, J., 2020, Mitigating the GOES-17 ABI thermal anomaly using predictive calibration, *in* *Sensors, Systems, and Next-Generation Satellites XXIV 2020*, online virtual meeting, 21–25 September 2020, Proceedings of

- SPIE Vol. 11530: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 115300o, at <https://doi.org/10.1117/12.2574160>.
- Pogorzala, D., Messinger, D., Salvaggio, C., and Schott, J.R., 2004, Gas plume species identification by regression analyses, *in* Algorithms and Technologies for MultiSpectral, Hyperspectral, and Ultraspectral Imagery X, Orlando, Fla., 12–15 April 2004, Proceedings of SPIE Vol. 5425: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 583–591, at <https://doi.org/10.1117/12.541641>.
- Pogorzala, D., Messinger, D., Salvaggio, C., and Schott, J.R., 2005, Gas plume species identification in airborne LWIR imagery using constrained stepwise regression analyses, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI, Orlando, Fla., 28 March–1 April 2005, Proceedings of SPIE Vol. 5806: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 194–205, at <https://doi.org/10.1117/12.603661>.
- Polgar, C.A., Primack, R.B., Dukes, J.S., Schaaf, C.B., Wang, Z., and Hoeppe, S.S., 2014, Tree leaf out response to temperature—Comparing field observations, remote sensing, and a warming experiment: *International Journal of Biometeorology*, v. 58, no. 6, p. 1251–1257, at <https://doi.org/10.1007/s00484-013-0718-z>.
- Politi, N., Rivera, L., Martinuzzi, S., Radeloff, V.C., and Pidgeon, A.M., 2021, Conservation prioritization when species distribution data are scarce: *Landscape and Urban Planning*, v. 210, article 104067, at <https://doi.org/10.1016/j.landurbplan.2021.104067>.
- Polonsky, I.N., Davis, A.B., Love, S.P., Cahalan, R.F., Várnai, T., and McGill, M.J., 2005, Off-beam cloud lidar systems, comparison with ARM instruments at the Oklahoma CART site, *in* Hyperspectral Imaging and Sounding of the Environment, HISE 2005, Alexandria, Va., 31 January–3 February 2005, OSA Technical Digest: Washington, D.C., Optical Society of America, paper no. HTuD6, at <https://doi.org/10.1364/HISE.2005.HTuD6>.
- Ponce Campos, G.E., Moran, M.S., Huete, A., Zhang, Y., Bresloff, C., Huxman, T.E., Eamus, D., Bosch, D.D., Buda, A.R., et al., 2013, Ecosystem resilience despite large-scale altered hydroclimatic conditions: *Nature*, v. 494, no. 7437, p. 349–352, at <https://doi.org/10.1038/nature11836>.
- Pope, A., Scambos, T.A., Moussavi, M., Tedesco, M., Willis, M., Shean, D., and Grigsby, S., 2016, Estimating supraglacial lake depth in West Greenland using Landsat 8 and comparison with other multispectral methods: *Cryosphere*, v. 10, no. 1, p. 15–27, at <https://doi.org/10.5194/tc-10-15-2016>.
- Popescu, S.C., Radtke, P.J., and Wynne, R.H., 2003, Forest measurements with airborne and ground-based laser scanning: *GeoSpatial Solutions*, v. 13, no. 8, p. 18–18.
- Popescu, S.C., and Wynne, R.H., 2004, Seeing the trees in the forest—Using lidar and multispectral data fusion with local filtering and variable window size for estimating tree height: *Photogrammetric Engineering and Remote Sensing*, v. 70, no. 5, p. 589–604, at <https://doi.org/10.14358/PERS.70.5.589>.
- Popescu, S.C., Wynne, R.H., and Nelson, R.F., 2002, Estimating plot-level tree heights with lidar—Local filtering with a canopy-height based variable window size: *Computers and Electronics in Agriculture*, v. 37, no. 1–3, p. 71–95, at [https://doi.org/10.1016/S0168-1699\(02\)00121-7](https://doi.org/10.1016/S0168-1699(02)00121-7).
- Popescu, S.C., Wynne, R.H., and Nelson, R.F., 2003, Measuring individual tree crown diameter with lidar and assessing its influence on estimating forest volume and biomass: *Canadian Journal of Remote Sensing*, v. 29, no. 5, p. 564–577, at <https://doi.org/10.5589/m03-027>.

- Popescu, S.C., Wynne, R.H., and Scrivani, J.A., 2004, Fusion of small-footprint lidar and multispectral data to estimate plot-level volume and biomass in deciduous and pine forests in Virginia, USA: *Forest Science*, v. 50, no. 4, p. 551–565, at <https://doi.org/10.1093/forestscience/50.4.551>.
- Potapov, P., Hansen, M.C., Gerrand, A.M., Lindquist, E.J., Pittman, K., Turubanova, S., and Wilkie, M.L., 2011, The global Landsat imagery database for the FAO FRA remote sensing survey: *International Journal of Digital Earth*, v. 4, no. 1, p. 2–21, at <https://doi.org/10.1080/17538947.2010.492244>.
- Potapov, P., Hansen, M.C., Kommareddy, I., Kommareddy, A., Turubanova, S., Pickens, A., Adusei, B., Tyukavina, A., and Ying, Q., 2020, Landsat analysis ready data for global land cover and land cover change mapping: *Remote Sensing*, v. 12, no. 3, article 426, at <https://doi.org/10.3390/rs12030426>.
- Potapov, P., Hansen, M.C., Laestadius, L., Turubanova, S., Yaroshenko, A., Thies, C., Smith, W., Zhuravleva, I., Komarova, A., et al., 2017, The last frontiers of wilderness—Tracking loss of intact forest landscapes from 2000 to 2013: *Science Advances*, v. 3, no. 1, article e1600821, at <https://doi.org/10.1126/sciadv.1600821>.
- Potapov, P., Hansen, M.C., Stehman, S.V., Loveland, T.R., and Pittman, K., 2008, Combining MODIS and Landsat imagery to estimate and map boreal forest cover loss: *Remote Sensing of Environment*, v. 112, no. 9, p. 3708–3719, at <https://doi.org/10.1016/j.rse.2008.05.006>.
- Potapov, P., Hansen, M.C., Stehman, S.V., Pittman, K., and Turubanova, S., 2009, Gross forest cover loss in temperate forests—Biome-wide monitoring results using MODIS and Landsat data: *Journal of Applied Remote Sensing*, v. 3, no. 1, article 033569, at <https://doi.org/10.1117/1.3283904>.
- Potapov, P., Li, X., Hernandez-Serna, A., Turubanova, S., Tyukavina, A., Hansen, M.C., Tang, H., and Nguyen, Q.H., 2021, Tropical forest canopy structure and change assessment using Landsat, GEDI, and airborne lidar data, in 2021 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Brussels, Belgium, 12–16 July 2021, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 666–669, at <https://doi.org/10.1109/IGARSS47720.2021.9554814>.
- Potapov, P., Siddiqui, B.N., Iqbal, Z., Aziz, T., Zzaman, B., Islam, A., Pickens, A., Talero, Y., Tyukavina, A., et al., 2017, Comprehensive monitoring of Bangladesh tree cover inside and outside of forests, 2000–2014: *Environmental Research Letters*, v. 12, no. 10, article 104015, at <https://doi.org/10.1088/1748-9326/aa84bb>.
- Potapov, P., Turubanova, S., and Hansen, M.C., 2011, Regional-scale boreal forest cover and change mapping using Landsat data composites for European Russia: *Remote Sensing of Environment*, v. 115, no. 2, p. 548–561, at <https://doi.org/10.1016/j.rse.2010.10.001>.
- Potapov, P., Turubanova, S., Hansen, M.C., Tyukavina, A., Zalles, V., Khan, A., Song, X.P., Pickens, A., Shen, Q., and Cortez, J., 2022, Global maps of cropland extent and change show accelerated cropland expansion in the twenty-first century: *Nature Food*, v. 3, no. 1, p. 19–28, at <https://doi.org/10.1038/s43016-021-00429-z>.
- Potapov, P., Tyukavina, A., Turubanova, S., Talero, Y., Hernandez-Serna, A., Hansen, M.C., Saah, D., Tenneson, K., Poortinga, A., et al., 2019, Annual continuous fields of woody vegetation structure in the Lower Mekong region from 2000–2017 Landsat time-series: *Remote Sensing of Environment*, v. 232, article 111278, at <https://doi.org/10.1016/j.rse.2019.111278>.
- Potapov, P.V., Dempewolf, J., Talero, Y., Hansen, M.C., Stehman, S.V., Vargas, C., Rojas, E.J., Castillo, D., Mendoza, E., et al., 2014, National satellite-based humid tropical forest change assessment in

- Peru in support of REDD+ implementation: *Environmental Research Letters*, v. 9, no. 12, article 124012, at <https://doi.org/10.1088/1748-9326/9/12/124012>.
- Potapov, P.V., Hansen, M.C., and Stehman, S.V., 2011, High-latitude forest cover loss in Northern Eurasia, 2000-2005, *in* Gutman, G., and Reissell, A., eds., *Eurasian arctic land cover and land use in a changing climate*: Dordrecht, Netherlands, Springer, p. 37–51, at https://doi.org/10.1007/978-90-481-9118-5_3.
- Potapov, P.V., Turubanova, S.A., Hansen, M.C., Adusei, B., Broich, M., Altstatt, A., Mane, L., and Justice, C.O., 2012, Quantifying forest cover loss in Democratic Republic of the Congo, 2000-2010, with Landsat ETM+ data: *Remote Sensing of Environment*, v. 122, p. 106–116, at <https://doi.org/10.1016/j.rse.2011.08.027>.
- Potapov, P.V., Turubanova, S.A., Tyukavina, A., Krylov, A.M., McCarty, J.L., Radeloff, V.C., and Hansen, M.C., 2015, Eastern Europe's forest cover dynamics from 1985 to 2012 quantified from the full Landsat archive: *Remote Sensing of Environment*, v. 159, p. 28–43, at <https://doi.org/10.1016/j.rse.2014.11.027>.
- Potere, D., Woodcock, C.E., Schneider, A., Ozdogan, M., and Baccini, A., 2007, Patterns in forest clearing along the Appalachian Trail Corridor: *Photogrammetric Engineering and Remote Sensing*, v. 73, no. 7, p. 783–791, at <https://doi.org/10.14358/PERS.73.7.783>.
- Potter, C., Klooster, S., Nemani, R.R., Genovese, V., Hiatt, S., Fladeland, M., and Gross, P., 2006, Estimating carbon budgets for U.S. ecosystems: *Eos*, v. 87, no. 8, p. 85–87, at <https://doi.org/10.1029/2006EO080001>.
- Potter, C., Klooster, S., Steinbach, M., Tan, P., Kumar, V., Shekhar, S., Nemani, R.R., and Myneni, R., 2003, Global teleconnections of climate to terrestrial carbon flux: *Journal of Geophysical Research Atmospheres*, v. 108, no. 17, p. ACL 12–1 – ACL 12–12, at <https://doi.org/10.1029/2002JD002979>.
- Potter, C., Kumar, V., Klooster, S., and Nemani, R.R., 2007, Recent history of trends in vegetation greenness and large-scale ecosystem disturbances in Eurasia: *Tellus, Series B—Chemical and Physical Meteorology*, v. 59, no. 2, p. 260–272, at <https://doi.org/10.1111/j.1600-0889.2006.00245.x>.
- Potter, C., Tan, P.N., Kumar, V., Kucharik, C., Klooster, S., Genovese, V., Cohen, W.B., and Healey, S.P., 2005, Recent history of large-scale ecosystem disturbances in North America derived from the AVHRR satellite record: *Ecosystems*, v. 8, no. 7, p. 808–824, at <https://doi.org/10.1007/s10021-005-0041-6>.
- Pounder, N.L., Hogan, R.J., Várnai, T.V., Battaglia, A., and Cahalan, R.F., 2012, A variational method to retrieve the extinction profile in liquid clouds using multiple-field-of-view lidar: *Journal of Applied Meteorology and Climatology*, v. 51, no. 2, p. 350–365, at <https://doi.org/10.1175/JAMC-D-10-05007.1>.
- Powell, S.L., Cohen, W.B., Healey, S.P., Kennedy, R.E., Moisen, G.G., Pierce, K.B., and Ohmann, J.L., 2010, Quantification of live aboveground forest biomass dynamics with Landsat time-series and field inventory data—A comparison of empirical modeling approaches: *Remote Sensing of Environment*, v. 114, no. 5, p. 1053–1068, at <https://doi.org/10.1016/j.rse.2009.12.018>.
- Powell, S.L., Cohen, W.B., and Kennedy, R.E., 2009, Assessing multi-decadal changes in aboveground biomass with satellite time-series and field inventory data, *in* 5th International Workshop on the

- Analysis of Multi-Temporal Remote Sensing Images 2009, MultiTemp 2009, Groton, Conn., 28–30 July 2009, Proceedings, p. 101–103.
- Powell, S.L., Cohen, W.B., Kennedy, R.E., Healey, S.P., and Huang, C., 2014, Observation of trends in biomass loss as a result of disturbance in the conterminous U.S.—1986-2004: *Ecosystems*, v. 17, no. 1, p. 142–157, at <https://doi.org/10.1007/s10021-013-9713-9>.
- Powell, S.L., Cohen, W.B., Yang, Z., Pierce, J.D., and Alberti, M., 2008, Quantification of impervious surface in the Snohomish Water Resources Inventory Area of Western Washington from 1972-2006: *Remote Sensing of Environment*, v. 112, no. 4, p. 1895–1908, at <https://doi.org/10.1016/j.rse.2007.09.010>.
- Powell, S.L., Pflugmacher, D., Kirschbaum, A.A., Kim, Y., and Cohen, W.B., 2007, Moderate resolution remote sensing alternatives—A review of Landsat-like sensors and their applications: *Journal of Applied Remote Sensing*, v. 1, no. 1, article 012506, at <https://doi.org/10.1117/1.2819342>.
- Powers, R.P., Coops, N.C., Morgan, J.L., Wulder, M.A., Nelson, T.A., Drever, C.R., and Cumming, S.G., 2013, A remote sensing approach to biodiversity assessment and regionalization of the Canadian boreal forest: *Progress in Physical Geography*, v. 37, no. 1, p. 36–62, at <https://doi.org/10.1177/0309133312457405>.
- Powers, R.P., Coops, N.C., Nelson, T., and Wulder, M.A., 2016, Evaluating nature reserve design efficacy in the Canadian boreal forest using time series AVHRR data: *Canadian Journal of Remote Sensing*, v. 42, no. 3, p. 171–189, at <https://doi.org/10.1080/07038992.2016.1171065>.
- Powers, R.P., Coops, N.C., Nelson, T., Wulder, M.A., and Ronnie Drever, C., 2013, Integrating accessibility and intactness into large-area conservation planning in the Canadian boreal forest: *Biological Conservation*, v. 167, p. 371–379, at <https://doi.org/10.1016/j.biocon.2013.08.032>.
- Powers, R.P., Coops, N.C., Tulloch, V.J., Gergel, S.E., Nelson, T.A., and Wulder, M.A., 2017, A conservation assessment of Canada's boreal forest incorporating alternate climate change scenarios: *Remote Sensing in Ecology and Conservation*, v. 3, no. 4, p. 202–216, at <https://doi.org/10.1002/rse2.34>.
- Prajamwong, S., Merkley, G.P., and Allen, R.G., 1997, Decision support model for irrigation water management: *Journal of Irrigation and Drainage Engineering*, v. 123, no. 2, p. 106–113, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(1997\)123:2\(106\)](https://doi.org/10.1061/(ASCE)0733-9437(1997)123:2(106)).
- Pratt, P.D., Carder, K.L., Costello, D.K., and Lee, Z., 1997, Algorithms for path radiance and attenuation to provide color corrections for underwater imagery, characterize optical properties, and determine bottom albedo, in *Ocean Optics XIII*, Halifax, NS, Canada, 22–25 October 1996, Proceedings of SPIE Vol. 2963: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 753–759, at <https://doi.org/10.1117/12.266396>.
- Price, J.C., 1997, Spectral band selection for visible-near infrared remote sensing—Spectral-spatial resolution tradeoffs: *IEEE Transactions on Geoscience and Remote Sensing*, v. 35, no. 5, p. 1277–1285, at <https://doi.org/10.1109/36.628794>.
- Price, J.C., 1998, An approach for analysis of reflectance spectra: *Remote Sensing of Environment*, v. 64, no. 3, p. 316–330, at [https://doi.org/10.1016/S0034-4257\(98\)00008-X](https://doi.org/10.1016/S0034-4257(98)00008-X).
- Price, J.C., 1998, What this prairie will awaken: *Organization & Environment*, v. 11, no. 3, p. 356–362, at <https://doi.org/10.1177/0921810698113007>.

- Price, J.C., 1999, Combining multispectral data of differing spatial resolution: IEEE Transactions on Geoscience and Remote Sensing, v. 37, no. 3, p. 1199–1203, at <https://doi.org/10.1109/36.763272>.
- Price, J.C., 2003, Comparing MODIS and ETM+ data for regional and global land classification: Remote Sensing of Environment, v. 86, no. 4, p. 491–499, at [https://doi.org/10.1016/S0034-4257\(03\)00127-5](https://doi.org/10.1016/S0034-4257(03)00127-5).
- Price, J.C., Steven, M., Andrteu, B., and Jaggard, K., 1996, Visible near-infrared radiation parameters for sugar-beets: International Journal of Remote Sensing, v. 17, no. 17, p. 3411–3418, at <https://doi.org/10.1080/01431169608949159>.
- Price, S.F., Bindschadler, R.A., Hulbe, C.L., and Blankenship, D.D., 2002, Force balance along an inland tributary and onset to Ice Stream D, West Antarctica: Journal of Glaciology, v. 48, no. 160, p. 20–30, at <https://doi.org/10.3189/172756502781831539>.
- Price, S.F., Bindschadler, R.A., Hulbe, C.L., and Joughin, I.R., 2001, Post-stagnation behavior in the upstream regions of Ice Stream C, West Antarctica: Journal of Glaciology, v. 47, no. 157, p. 283–294, at <https://doi.org/10.3189/172756501781832232>.
- Prihodko, L., and Goward, S.N., 1997, Estimation of air temperature from remotely sensed surface observations: Remote Sensing of Environment, v. 60, no. 3, p. 335–346, at [https://doi.org/10.1016/S0034-4257\(96\)00216-7](https://doi.org/10.1016/S0034-4257(96)00216-7).
- Prince, S.D., and Goward, S.N., 1996, Evaluation of the NOAA/NASA pathfinder AVHRR land data set for global primary production modelling: International Journal of Remote Sensing, v. 17, no. 1, p. 217–221, at <https://doi.org/10.1080/01431169608948999>.
- Prince, S.D., Goward, S.N., Goetz, S., and Czajkowski, K., 2000, Interannual Atmosphere-Biosphere Variation—Implications for observation and modeling: Journal of Geophysical Research Atmospheres, v. 105, no. D15, p. 20055–20063, at <https://doi.org/10.1029/2000JD900177>.
- Prishchepov, A.V., Müller, D., Baumann, M., Kuemmerle, T., Alcantara, C., and Radeloff, V.C., 2016, Underlying drivers and spatial determinants of post-Soviet agricultural land abandonment in temperate Eastern Europe, in Gutman, G., and Radeloff, V.C., eds., Land-cover and land-use changes in Eastern Europe after the collapse of the Soviet Union in 1991: Cham, Switzerland, Springer, p. 91–117, at https://doi.org/10.1007/978-3-319-42638-9_5.
- Prishchepov, A.V., Müller, D., Butsic, V., and Radeloff, V.C., 2012, Sensitivity of spatially explicit land-use logistic regression models to the errors land-use change maps, in Managing Resources of a Limited Planet, iEMSs 2012—6th Biennial Meeting of the International Environmental Modelling and Software Society, Leipzig, Germany, 1–5 July 2012, Proceedings: Manno, Switzerland, International Environmental Modelling and Software Society, p. 2008–2015, at <https://scholarsarchive.byu.edu/iemssconference/2012/Stream-B/24/>.
- Prishchepov, A.V., Radeloff, V.C., Baumann, M., Kuemmerle, T., and Müller, D., 2012, Effects of institutional changes on land use—Agricultural land abandonment during the transition from state-command to market-driven economies in post-Soviet Eastern Europe: Environmental Research Letters, v. 7, no. 2, article 024021, at <https://doi.org/10.1088/1748-9326/7/2/024021>.
- Prishchepov, A.V., Radeloff, V.C., Dubinin, M., and Alcantara, C., 2012, The effect of Landsat ETM/ETM+ image acquisition dates on the detection of agricultural land abandonment in Eastern Europe: Remote Sensing of Environment, v. 126, p. 195–209, at <https://doi.org/10.1016/j.rse.2012.08.017>.

- Prishchepov, V.A., Müller, D., Dubinin, M., Baumann, M., and Radeloff, V.C., 2013, Determinants of agricultural land abandonment in post-Soviet European Russia: *Land Use Policy*, v. 30, no. 1, p. 873–884, at <https://doi.org/10.1016/j.landusepol.2012.06.011>.
- Privette, J.L., Asner, G.P., Conel, J., Huemmrich, K.F., Olson, R., Rango, A., Rahman, A.F., Thome, K.J., and Walter-Shea, E.A., 2000, The EOS Prototype Validation Exercise (PROVE) at Jornada—Overview and lessons learned: *Remote Sensing of Environment*, v. 74, no. 1, p. 1–12, at [https://doi.org/10.1016/S0034-4257\(00\)00117-6](https://doi.org/10.1016/S0034-4257(00)00117-6).
- Privette, J.L., Morisette, J.T., Justice, C.O., and Starr, D., 1999, EOS global land validation network, *in* 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Hamburg, Germany, 28 June–2 July 1999, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2587–2589, at <https://doi.org/10.1109/IGARSS.1999.771585>.
- Privette, J.L., Mukelabai, M., Zhang, H., and Schaaf, C.B., 2004, Characterization of MODIS land albedo (MOD43) accuracy with atmospheric conditions in Africa, *in* 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4594–4597, at <https://doi.org/10.1109/IGARSS.2004.1370178>.
- Privette, J.L., and Roy, D.P., 2005, Southern Africa as a remote sensing test bed—The SAFARI 2000 special issue overview: *International Journal of Remote Sensing*, v. 26, no. 19, p. 4141–4158, at <https://doi.org/10.1080/01431160500113401>.
- Proud, S.R., Zhang, Q., Schaaf, C.B.B., Fensholt, R., Rasmussen, M.O., Shisanya, C., Mutero, W., Mbow, C., Anyamba, A., et al., 2014, The normalization of surface anisotropy effects present in SEVIRI reflectances by using the MODIS BRDF method: *IEEE Transactions on Geoscience and Remote Sensing*, v. 52, no. 10, p. 6026–6039, at <https://doi.org/10.1109/TGRS.2013.2294602>.
- Prueger, J.H., Alfieri, J.G., Hipps, L.E., Kustas, W.P., Chavez, J.L., Evett, S.R., Anderson, M.C., French, A.N., Neale, C.M.U., et al., 2012, Patch scale turbulence over dryland and irrigated surfaces in a semi-arid landscape under advective conditions during BEAREX08: *Advances in Water Resources*, v. 50, p. 106–119, at <https://doi.org/10.1016/j.advwatres.2012.07.014>.
- Prueger, J.H., Hatfield, J.L., Kustas, W.P., Hipps, L.E., Li, F., Macpherson, I., Anderson, M.C., Parkin, T.B., Eichinger, W.E., and Cooper, D.I., 2004, Spatial and temporal variation of water, energy and carbon fluxes from tower and aircraft measurements, *in* 26th Conference on Agricultural and Forest Meteorology/13th Air Pollution/5th Urban Environment/16th Biometeorology and Aerobiology, Vancouver, Canada, 23–26 August 2004, Session 9: Boston, Mass., American Meteorological Society, p. 263–267, at https://ams.confex.com/ams/AFAPURBBIO/techprogram/paper_80159.htm.
- Prueger, J.H., Parry, C.K., Kustas, W.P., Alfieri, J.G., Alsina, M.M., Nieto, H., Wilson, T.G., Hipps, L.E., Anderson, M.C., et al., 2019, Crop Water Stress Index of an irrigated vineyard in the Central Valley of California: *Irrigation Science*, v. 37, no. 3, p. 297–313, at <https://doi.org/10.1007/s00271-018-0598-4>.
- Purss, M.B.J., Peterson, P.R., Strobl, P., Dow, C., Sabeur, Z.A., Gibb, R.G., and Ben, J., 2019, DataCubes—A discrete global grid systems perspective: *Cartographica*, v. 53, no. 4, p. 63–71, at <https://doi.org/10.3138/cart.54.1.2018-0017>.

- Qi, J., Kerr, Y.H., Moran, M.S., Wertz, M., Huete, A.R., Sorooshian, S., and Bryant, R., 2000, Leaf area index estimates using remotely sensed data and BRDF models in a semiarid region: *Remote Sensing of Environment*, v. 73, no. 1, p. 18–30, at [https://doi.org/10.1016/S0034-4257\(99\)00113-3](https://doi.org/10.1016/S0034-4257(99)00113-3).
- Qi, J., Marsett, R., Heilman, P., Biedenbender, S., Moran, M.S., Goodrich, D., and Wertz, M., 2002, RANGES improves satellite-based information and land cover assessments in Southwest United States: *Eos*, v. 83, no. 51, p. 601–606, at <https://doi.org/10.1029/2002EO000411>.
- Qi, J., Marsett, R.C., Moran, M.S., Goodrich, D.C., Heilman, P., Kerr, Y.H., Dedieu, G., Chehbouni, A., and Zhang, X.X., 2000, Spatial and temporal dynamics of vegetation in the San Pedro River basin area: *Agricultural and Forest Meteorology*, v. 105, no. 1–3, p. 55–68, at [https://doi.org/10.1016/S0168-1923\(00\)00195-7](https://doi.org/10.1016/S0168-1923(00)00195-7).
- Qi, J., and Moran, M.S., 1996, Integrated approach to estimating LAI using multitemporal and multidirectional remote sensing measurements, *in* 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1420–1422, at <https://doi.org/10.1109/IGARSS.1996.516684>.
- Qi, J., Wang, C., Matricardi, E., and Skole, D.L., 2002, Improved selective logging detection with Landsat images in tropical regions, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2078–2080, at <https://doi.org/10.1109/IGARSS.2002.1026450>.
- Qian, Y., Yang, Z., Di, L., Rahman, M.S., Tan, Z., Xue, L., Gao, F., Yu, E.G., and Zhang, X., 2019, Crop growth condition assessment at county scale based on heat-aligned growth stages: *Remote Sensing*, v. 11, no. 20, article 2439, at <https://doi.org/10.3390/rs11202439>.
- Qiao, C., Luo, J., Sheng, Y., Shen, Z., and Li, J., 2010, Lake shrinkage analysis using spectral-spatial coupled remote sensing on Tibetan Plateau, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 926–929, at <https://doi.org/10.1109/IGARSS.2010.5653706>.
- Qiao, C., Luo, J., Sheng, Y., Shen, Z., Zhu, Z., and Ming, D., 2012, An adaptive water extraction method from remote sensing image based on NDWI: *Journal of the Indian Society of Remote Sensing*, v. 40, no. 3, p. 421–433, at <https://doi.org/10.1007/s12524-011-0162-7>.
- Qin, Y., Xiao, X., Dong, J., Zhou, Y., Zhu, Z., Zhang, G., Du, G., Jin, C., Kou, W., et al., 2015, Mapping paddy rice planting area in cold temperate climate region through analysis of time series Landsat 8 (OLI), Landsat 7 (ETM+) and MODIS imagery: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 105, p. 220–233, at <https://doi.org/10.1016/j.isprsjprs.2015.04.008>.
- Qin, Y., Xiao, X., Wang, J., Dong, J., Ewing, K., Hoagland, B., Hough, D.J., Fagin, T.D., Zou, Z., et al., 2016, Mapping annual forest cover in sub-humid and semi-arid regions through analysis of Landsat and PALSAR imagery: *Remote Sensing*, v. 8, no. 11, article 933, at <https://doi.org/10.3390/rs8110933>.
- Qiu, S., He, B., Zhu, Z., Liao, Z., and Quan, X., 2017, Improving Fmask cloud and cloud shadow detection in mountainous area for Landsats 4–8 images: *Remote Sensing of Environment*, v. 199, p. 107–119, at <https://doi.org/10.1016/j.rse.2017.07.002>.

- Qiu, S., Lin, Y., Shang, R., Zhang, J., Ma, L., and Zhu, Z., 2019, Making Landsat time series consistent—Evaluating and improving Landsat analysis ready data: *Remote Sensing*, v. 11, no. 1, article 51, at <https://doi.org/10.3390/rs11010051>.
- Qiu, S., Zhu, Z., and He, B., 2019, Fmask 4.0—Improved cloud and cloud shadow detection in Landsats 4–8 and Sentinel-2 imagery: *Remote Sensing of Environment*, v. 231, article 111205, at <https://doi.org/10.1016/j.rse.2019.05.024>.
- Qiu, S., Zhu, Z., Olofsson, P., Woodcock, C.E., and Jin, S., 2023, Evaluation of Landsat image compositing algorithms: *Remote Sensing of Environment*, v. 285, article 113375, at <https://doi.org/10.1016/j.rse.2022.113375>.
- Qiu, S., Zhu, Z., and Woodcock, C.E., 2020, Cirrus clouds that adversely affect Landsat 8 images—What are they and how to detect them?: *Remote Sensing of Environment*, v. 246, article 111884, at <https://doi.org/10.1016/j.rse.2020.111884>.
- Qiu, Z., Yang, L., and Loveland, T.R., 1996, Recent experiences in mapping land cover from AVHRR data—People’s Republic of China test sites, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2318–2320, at <https://doi.org/10.1109/IGARSS.1996.516973>.
- Qu, J.J., and Justice, C.O., 2007, The EastFIRE special edition—Selected papers from the EastFIRE Conference on the Application of Remote Sensing to Fire Research in the Eastern United States: *Remote Sensing of Environment*, v. 108, no. 2, p. 121–122, at <https://doi.org/10.1016/j.rse.2006.09.027>.
- Qu, Z., Kindel, B.C., and Goetz, A.F.H., 2002, Atmospheric correction for two classes of hyperspectral imaging sensors, in Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery VIII, Orlando, Fla., 1–4 April 2002, Proceedings of SPIE Vol. 4725: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 83–94, at <https://doi.org/10.1117/12.478739>.
- Qu, Z., Kindel, B.C., and Goetz, A.F.H., 2003, The high accuracy atmospheric correction for hyperspectral data (HATCH) model: *IEEE Transactions on Geoscience and Remote Sensing*, v. 41, no. 6 pt. 1, p. 1223–1231, at <https://doi.org/10.1109/TGRS.2003.813125>.
- Quinn Thomas, R., Brooks, E.B., Jersild, A.L., Ward, E.J., Wynne, R.H., Albaugh, T.J., Dinon-Aldridge, H., Burkhart, H.E., Domec, J.C., et al., 2017, Leveraging 35 years of *Pinus taeda* research in the southeastern US to constrain forest carbon cycle predictions—Regional data assimilation using ecosystem experiments: *Biogeosciences*, v. 14, no. 14, p. 3525–3547, at <https://doi.org/10.5194/bg-14-3525-2017>.
- Rabe, A., Jakimow, B., Thiel, F., Hostert, P., and Van Der Linden, S., 2018, EnMAP-Box 3 a free and open source Python plug-in for QGIS, in 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 7764–7766, at <https://doi.org/10.1109/IGARSS.2018.8518854>.
- Rabe, A., Van Der Linden, S., and Hostert, P., 2009, Simplifying support vector machines for regression analysis of hyperspectral imagery, in Evolution in remote sensing, First Workshop on Hyperspectral Image and Signal Processing, Grenoble, France, 26–28 August 2009, Proceedings:

- Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), paper no. 5289090, at <https://doi.org/10.1109/WHISPERS.2009.5289090>.
- Rabe, A., Van Der Linden, S., and Hostert, P., 2010, Simplifying support vector machines for classification of hyperspectral imagery and selection of relevant features, *in* 2nd Workshop on Hyperspectral Image and Signal Processing—Evolution in Remote Sensing, WHISPERS 2010, Reykjavik, Iceland, 14–16 June 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), paper no. 5594937, at <https://doi.org/10.1109/WHISPERS.2010.5594937>.
- Radeloff, V.C., 1996, Dynamic modelling of a roe deer population in a GIS: *European Journal of Wildlife Research*, v. 42, no. 3, p. 203–213, at <https://doi.org/10.1007/Bf02242544>.
- Radeloff, V.C., Beaudry, F., Brooks, T.M., Butsic, V., Dubinin, M., Kuemmerle, T., and Pidgeon, A.M., 2013, Hot moments for biodiversity conservation: *Conservation Letters*, v. 6, no. 1, p. 58–65, at <https://doi.org/10.1111/j.1755-263X.2012.00290.x>.
- Radeloff, V.C., Dubinin, M., Coops, N.C., Allen, A.M., Brooks, T.M., Clayton, M.K., Costa, G.C., Graham, C.H., Helmers, D.P., et al., 2019, The Dynamic Habitat Indices (DHIs) from MODIS and global biodiversity: *Remote Sensing of Environment*, v. 222, p. 204–214, at <https://doi.org/10.1016/j.rse.2018.12.009>.
- Radeloff, V.C., Hagen, A.E., Voss, P.R., Field, D.R., and Mladenoff, D.J., 2000, Exploring the spatial relationship between census and land-cover data: *Society and Natural Resources*, v. 13, no. 6, p. 599–609, at <https://doi.org/10.1080/08941920050114646>.
- Radeloff, V.C., Hammer, R.B., and Stewart, S.I., 2005, Rural and suburban sprawl in the U.S. Midwest from 1940 to 2000 and its relation to forest fragmentation: *Conservation Biology*, v. 19, no. 3, p. 793–805, at <https://doi.org/10.1111/j.1523-1739.2005.00387.x>.
- Radeloff, V.C., Hammer, R.B., Stewart, S.I., Fried, J.S., Holcomb, S.S., and McKeefry, J.F., 2005, The wildland-urban interface in the United States: *Ecological Applications*, v. 15, no. 3, p. 799–805, at <https://doi.org/10.1890/04-1413>.
- Radeloff, V.C., Hammer, R.B., Voss, P.R., Hagen, A.E., Field, D.R., and Mladenoff, D.J., 2001, Human demographic trends and landscape level forest management in the northwest Wisconsin Pine Barrens: *Forest Science*, v. 47, no. 2, p. 229–241, at <https://doi.org/10.1093/forestscience/47.2.229>.
- Radeloff, V.C., Helmers, D.P., Anu Kramer, H., Mockrin, M.H., Alexandre, P.M., Bar-Massada, A., Butsic, V., Hawbaker, T.J., Martinuzzi, S., et al., 2018, Rapid growth of the US wildland-urban interface raises wildfire risk: *Proceedings of the National Academy of Sciences of the United States of America*, v. 115, no. 13, p. 3314–3319, at <https://doi.org/10.1073/pnas.1718850115>.
- Radeloff, V.C., Miller, T.F., He, H.S., and Mladenoff, D.J., 2000, Periodicity in spatial data and geostatistical models—Autocorrelation between patches: *Ecography*, v. 23, no. 1, p. 81–91, at <https://doi.org/10.1111/j.1600-0587.2000.tb00263.x>.
- Radeloff, V.C., Mladenoff, D.J., and Boyce, M.S., 1999, Detecting jack pine budworm defoliation using spectral mixture analysis—Separating effects from determinants: *Remote Sensing of Environment*, v. 69, no. 2, p. 156–169, at [https://doi.org/10.1016/S0034-4257\(99\)00008-5](https://doi.org/10.1016/S0034-4257(99)00008-5).
- Radeloff, V.C., Mladenoff, D.J., and Boyce, M.S., 2000, The changing relation of landscape patterns and jack pine budworm populations during an outbreak: *Oikos*, v. 90, no. 3, p. 417–430, at <https://doi.org/10.1034/j.1600-0706.2000.900301.x>.

- Radeloff, V.C., Mladenoff, D.J., and Boyce, M.S., 2000, Effects of interacting disturbances on landscape patterns—Budworm defoliation and salvage logging: *Ecological Applications*, v. 10, no. 1, p. 233–247, at [https://doi.org/10.1890/1051-0761\(2000\)010\[0233:EOIDOL\]2.0.CO;2](https://doi.org/10.1890/1051-0761(2000)010[0233:EOIDOL]2.0.CO;2).
- Radeloff, V.C., Mladenoff, D.J., and Boyce, M.S., 2000, A historical perspective and future outlook on landscape scale restoration in the northwest Wisconsin Pine Barrens: *Restoration Ecology*, v. 8, no. 2, p. 119–126, at <https://doi.org/10.1046/j.1526-100X.2000.80018.x>.
- Radeloff, V.C., Mladenoff, D.J., Guries, R.P., and Boyce, M.S., 2004, Spatial patterns of cone serotiny in *Pinus banksiana* in relation to fire disturbance: *Forest Ecology and Management*, v. 189, no. 1–3, p. 133–141, at <https://doi.org/10.1016/j.foreco.2003.07.040>.
- Radeloff, V.C., Mladenoff, D.J., Gustafson, E.J., Scheller, R.M., Zollner, P.A., He, H.S., and Akçakaya, H.R., 2006, Modeling forest harvesting effects on landscape pattern in the Northwest Wisconsin Pine Barrens: *Forest Ecology and Management*, v. 236, no. 1, p. 113–126, at <https://doi.org/10.1016/j.foreco.2006.09.007>.
- Radeloff, V.C., Mladenoff, D.J., He, H.S., and Boyce, M.S., 1999, Forest landscape change in the northwestern Wisconsin Pine Barrens from pre-European settlement to the present: *Canadian Journal of Forest Research*, v. 29, no. 11, p. 1649–1659, at <https://doi.org/10.1139/x99-089>.
- Radeloff, V.C., Mockrin, M.H., Helmers, D., Carlson, A., Hawbaker, T.J., Martinuzzi, S., Schug, F., Alexandre, P.M., Kramer, H.A., and Pidgeon, A.M., 2023, Rising wildfire risk to houses in the United States, especially in grasslands and shrublands: *Science*, v. 382, no. 6671, p. 702–707, at <https://doi.org/10.1126/science.ade9223>.
- Radeloff, V.C., Nelson, E., Plantinga, A.J., Lewis, D.J., Helmers, D., Lawler, J.J., Withey, J.C., Beaudry, F., Martinuzzi, S., et al., 2012, Economic-based projections of future land use in the conterminous United States under alternative policy scenarios: *Ecological Applications*, v. 22, no. 3, p. 1036–1049, at <https://doi.org/10.1890/11-0306.1>.
- Radeloff, V.C., Pidgeon, A.M., and Hostert, P., 1999, Habitat and population modelling of roe deer using an interactive geographic information system: *Ecological Modelling*, v. 114, no. 2–3, p. 287–304, at [https://doi.org/10.1016/S0304-3800\(98\)00164-1](https://doi.org/10.1016/S0304-3800(98)00164-1).
- Radeloff, V.C., Roy, D.P., Wulder, M.A., Anderson, M., Cook, B., Crawford, C.J., Friedl, M., Gao, F., Gorelick, N., et al., 2024, Need and vision for global medium-resolution Landsat and Sentinel-2 data products: *Remote Sensing of Environment*, v. 300, article 113918, at <https://doi.org/10.1016/j.rse.2023.113918>.
- Radeloff, V.C., Stewart, S.I., Hawbaker, T.J., Gimmi, U., Pidgeon, A.M., Flather, C.H., Hammer, R.B., and Helmers, D.P., 2010, Housing growth in and near United States protected areas limits their conservation value: *Proceedings of the National Academy of Sciences of the United States of America*, v. 107, no. 2, p. 940–945, at <https://doi.org/10.1073/pnas.0911131107>.
- Radeloff, V.C., Williams, J.W., Bateman, B.L., Burke, K.D., Carter, S.K., Childress, E.S., Cromwell, K.J., Gratton, C., Hasley, A.O., et al., 2015, The rise of novelty in ecosystems: *Ecological Applications*, v. 25, no. 8, p. 2051–2068, at <https://doi.org/10.1890/14-1781.1>.
- Rahman, M.M., Moran, M.S., Thoma, D.P., Bryant, R., Holifield Collins, C.D., Jackson, T., Orr, B.J., and Tischler, M., 2008, Mapping surface roughness and soil moisture using multi-angle radar imagery without ancillary data: *Remote Sensing of Environment*, v. 112, no. 2, p. 391–402, at <https://doi.org/10.1016/j.rse.2006.10.026>.

- Rahman, M.M., Moran, M.S., Thoma, D.P., Bryant, R., Sano, E.E., Collins, C.D.H., Skirvin, S., Kershner, C., and Orr, B.J., 2007, A derivation of roughness correlation length for parameterizing radar backscatter models: *International Journal of Remote Sensing*, v. 28, no. 18, p. 3995–4012, at <https://doi.org/10.1080/01431160601075533>.
- Ramírez-Cuesta, J.M., Allen, R.G., Intrigliolo, D.S., Kilic, A., Robison, C.W., Trezza, R., Santos, C., and Lorite, I.J., 2020, METRIC-GIS—An advanced energy balance model for computing crop evapotranspiration in a GIS environment: *Environmental Modelling and Software*, v. 131, article 104770, at <https://doi.org/10.1016/j.envsoft.2020.104770>.
- Ramírez-Cuesta, J.M., Allen, R.G., Zarco-Tejada, P.J., Kilic, A., Santos, C., and Lorite, I.J., 2019, Impact of the spatial resolution on the energy balance components on an open-canopy olive orchard: *International Journal of Applied Earth Observation and Geoinformation*, v. 74, p. 88–102, at <https://doi.org/10.1016/j.jag.2018.09.001>.
- Ramírez-Cuesta, J.M., Kilic, A., Allen, R.G., Santos, C., and Lorite, I.J., 2017, Evaluating the impact of adjusting surface temperature derived from Landsat 7 ETM+ in crop evapotranspiration assessment using high-resolution Airborne data: *International Journal of Remote Sensing*, v. 38, no. 14, p. 4177–4205, at <https://doi.org/10.1080/01431161.2017.1317939>.
- Ramírez-Reyes, C., Bateman, B.L., and Radeloff, V.C., 2016, Effects of habitat suitability and minimum patch size thresholds on the assessment of landscape connectivity for jaguars in the Sierra Gorda, Mexico: *Biological Conservation*, v. 204, p. 296–305, at <https://doi.org/10.1016/j.biocon.2016.10.020>.
- Ramírez-Reyes, C., Sims, K.R.E., Potapov, P., and Radeloff, V.C., 2018, Payments for ecosystem services in Mexico reduce forest fragmentation: *Ecological Applications*, v. 28, no. 8, p. 1982–1997, at <https://doi.org/10.1002/eap.1753>.
- Ramsey, M.S., and Flynn, L.P., 2004, Strategies, insights, and the recent advances in volcanic monitoring and mapping with data from NASA's Earth Observing System: *Journal of Volcanology and Geothermal Research*, v. 135, no. 1–2, p. 1–11, at <https://doi.org/10.1016/j.jvolgeores.2003.12.015>.
- Randall, D.A., Dazlich, D.A., Zhang, C., Denning, A.S., Sellers, P.J., Tucker, C.J., Bounoua, L., Berry, J.A., Collatz, G.J., et al., 1996, A revised land surface parameterization (SiB2) for GCMs. Part III—The greening of the Colorado State University general circulation model: *Journal of Climate*, v. 9, no. 4, p. 738–763, at [https://doi.org/10.1175/1520-0442\(1996\)009<0738:ARLSPF>2.0.CO;2](https://doi.org/10.1175/1520-0442(1996)009<0738:ARLSPF>2.0.CO;2).
- Randles, C.A., Kinne, S., Myhre, G., Schulz, M., Stier, P., Fischer, J., Doppler, L., Highwood, E., Ryder, C., et al., 2013, Intercomparison of shortwave radiative transfer schemes in global aerosol modeling—Results from the AeroCom Radiative Transfer Experiment: *Atmospheric Chemistry and Physics*, v. 13, no. 5, p. 2347–2379, at <https://doi.org/10.5194/acp-13-2347-2013>.
- Rao, A.S., Bala, G., Ravindranath, N.H., and Nemani, R., 2019, Multi-model assessment of trends, variability and drivers of terrestrial carbon uptake in India: *Journal of Earth System Science*, v. 128, no. 4, article 99, at <https://doi.org/10.1007/s12040-019-1120-y>.
- Rapacciuolo, G., Graham, C.H., Marin, J., Behm, J.E., Costa, G.C., Hedges, S.B., Helmus, M.R., Radeloff, V.C., Young, B.E., and Brooks, T.M., 2019, Species diversity as a surrogate for conservation of phylogenetic and functional diversity in terrestrial vertebrates across the Americas: *Nature Ecology and Evolution*, v. 3, no. 1, p. 53–61, at <https://doi.org/10.1038/s41559-018-0744-7>.

- Rapacciuolo, G., Marin, J., Costa, G.C., Helmus, M.R., Behm, J.E., Brooks, T.M., Hedges, S.B., Radeloff, V.C., Young, B.E., and Graham, C.H., 2017, The signature of human pressure history on the biogeography of body mass in tetrapods: *Global Ecology and Biogeography*, v. 26, no. 9, p. 1022–1034, at <https://doi.org/10.1111/geb.12612>.
- Raqueño, N.G., Smith, L.E., Messinger, D.W., Salvaggio, C., Raqueño, R.V., and Schott, J.R., 2005, Megacollect 2004—Hyperspectral collection experiment of terrestrial targets and backgrounds of the RIT megascene and surrounding area (Rochester, New York), *in Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI*, Orlando, Fla., 28 March–1 April 2005, *Proceedings of SPIE Vol. 5806*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 554–565, at <https://doi.org/10.1117/12.605838>.
- Raqueno, R., Raqueno, N., Fairbanks, R., Schott, J.R., Vodacek, A., and Hamel, J., 2000, Hyperspectral analysis tools for the multiparameter inversion of water quality factors in coastal regions, *in Imaging Spectrometry VI*, San Diego, Calif., 31 July–2 August 2000, *Proceedings of SPIE Vol. 4132*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 323–333, at <https://doi.org/10.1117/12.406601>.
- Raqueño, R.V., Raqueño, N.G., Weidemann, A.D., Effler, S.W., Perkins, M., Vodacek, A., Schott, J.R., Philpot, W.D., and Kim, M., 2005, Megacollect 2004—Hyperspectral collection experiment over the waters of the Rochester Embayment, *in Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI*, Orlando, Fla., 28 March–1 April 2005, *Proceedings of SPIE Vol. 5806*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 566–577, at <https://doi.org/10.1117/12.605856>.
- Rascher, U., Agati, G., Alonso, L., Cecchi, G., Champagne, S., Colombo, R., Damm, A., Daumard, F., De Miguel, E., et al., 2009, CEFLES2—The remote sensing component to quantify photosynthetic efficiency from the leaf to the region by measuring sun-induced fluorescence in the oxygen absorption bands: *Biogeosciences*, v. 6, no. 7, p. 1181–1198, at <https://doi.org/10.5194/bg-6-1181-2009>.
- Rascher, U., Damm, A., Van Der Linden, S., Okujeni, A., Pieruschka, R., Schickling, A., and Hostert, P., 2010, Sensing of photosynthetic activity of crops, *in Oerke, E.-C., Gerhards, R., Menz, G., and Sikora, R.A., eds., Precision crop protection—The challenge and use of heterogeneity*: Dordrecht, Netherlands, Springer, p. 87–99, at https://doi.org/10.1007/978-90-481-9277-9_6.
- Rasmussen, P., Abrahamson, J., Tang, X., Smith, O., Gray, J., Woodcock, C., and Bosch, M., 2023, Assessment of performance of tree-based algorithms to reduce errors of omission and commission in change detection, *in 2023 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Pasadena, Calif., 16–21 July 2023, *Proceedings*: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6676–6679, at <https://doi.org/10.1109/IGARSS52108.2023.10283320>.
- Raup, B.H., Scambos, T.A., and Haran, T., 2005, Topography of streaklines on an antarctic ice shelf from photogrammetry applied to a single Advanced Land Imager (ALI) image: *IEEE Transactions on Geoscience and Remote Sensing*, v. 43, no. 4, p. 736–742, at <https://doi.org/10.1109/TGRS.2005.843953>.
- Raut, B., Kaewmanee, M., Angal, A., Xiong, X., and Helder, D., 2019, Empirical absolute calibration model for multiple pseudo-invariant calibration sites: *Remote Sensing*, v. 11, no. 9, article 1105, at <https://doi.org/10.3390/rs11091105>.

- Ray, S.S., Navalgund, R., and Justice, C.O., 2019, Earth observations for agricultural monitoring—Editorial, *in* 2019 ISPRS-GEOGLAM-ISRS Joint International Workshop on Earth Observations for Agricultural Monitoring, New Delhi, India, 18–20 February 2019, International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, XLII-3/W6: Lemmer, Netherlands, International Society for Photogrammetry and Remote Sensing, p. 1–1, at <https://doi.org/10.5194/isprs-archives-XLII-3-W6-1-2019>.
- Raymond, C.L., Healey, S.P., Peduzzi, A., and Patterson, P., 2015, Representative regional models of post-disturbance forest carbon accumulation—Integrating inventory data and a growth and yield model: *Forest Ecology and Management*, v. 336, p. 21–34, at <https://doi.org/10.1016/j.foreco.2014.09.038>.
- Raymond, S.N., Armitage, P.J., and Gorelick, N.S., 2009, Planet-planet scattering in planetesimal disks: *Astrophysical Journal*, v. 699, no. 2 pt. 2, p. L88–L92, at <https://doi.org/10.1088/0004-637X/699/2/L88>.
- Raymond, S.N., Armitage, P.J., and Gorelick, N.S., 2010, Planet-planet scattering in planetesimal disks. II. Predictions for outer extrasolar planetary systems: *Astrophysical Journal*, v. 711, no. 2, p. 772–795, at <https://doi.org/10.1088/0004-637X/711/2/772>.
- Raymond, S.N., Barnes, R., Armitage, P.J., and Gorelick, N.S., 2008, Mean motion resonances from planet-planet scattering: *Astrophysical Journal*, v. 687, no. 2, p. L107–L110, at <https://doi.org/10.1086/593301>.
- Raymond, S.N., Barnes, R., Veras, D., Armitage, P.J., Gorelick, N.S., and Greenberg, R., 2009, Planet-planet scattering leads to tightly packed planetary systems: *Astrophysical Journal*, v. 696, no. 1 pt. 2, p. L98–L101, at <https://doi.org/10.1088/0004-637X/696/1/L98>.
- Raymond, S.N., Rory, B., and Gorelick, N.S., 2008, A dynamical perspective on additional planets in 55 Cancri: *Astrophysical Journal*, v. 689, no. 1, p. 478–491, at <https://doi.org/10.1086/592772>.
- Razenkova, E., Dubinin, M., Pidgeon, A.M., Hobi, M.L., Zhu, L., Bragina, E.V., Allen, A.M., Clayton, M.K., Baskin, L.M., et al., 2023, Abundance patterns of mammals across Russia explained by remotely sensed vegetation productivity and snow indices: *Journal of Biogeography*, v. 50, no. 5, p. 932–946, at <https://doi.org/10.1111/jbi.14588>.
- Razenkova, E., Radeloff, V.C., Dubinin, M., Bragina, E.V., Allen, A.M., Clayton, M.K., Pidgeon, A.M., Baskin, L.M., Coops, N.C., and Hobi, M.L., 2020, Vegetation productivity summarized by the Dynamic Habitat Indices explains broad-scale patterns of moose abundance across Russia: *Scientific Reports*, v. 10, no. 1, article 836, at <https://doi.org/10.1038/s41598-019-57308-8>.
- Reagan, J., Wang, X., Cattrall, C., and Thome, K.J., 2004, Spaceborne lidar aerosol retrieval approaches based on aerosol model constraints, *in* 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1940–1943, at <https://doi.org/10.1109/IGARSS.2004.1370723>.
- Reagan, J.A., Thome, K.J., and Powell, D.M., 2001, Lidar aerosol ratio—Measurements and models, *in* 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 84–87, at <https://doi.org/10.1109/IGARSS.2001.976064>.
- Rebelo, L., Lewis, P., and Roy, D.P., 2003, Burn scar detection in southern Africa using a bidirectional reflectance model based approach, *in* 2003 IEEE International Geoscience and Remote Sensing

- Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 997–999, at <https://doi.org/10.1109/IGARSS.2003.1293990>.
- Rebelo, L., Lewis, P., and Roy, D.P., 2004, A temporal-BRDF model-based approach to change detection, *in* 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2103–2106, at <https://doi.org/10.1109/IGARSS.2004.1370772>.
- Rebesco, M., Domack, E., Zgur, F., Lavoie, C., Leventer, A., Brachfeld, S., Willmott, V., Halverson, G., Truffer, M., et al., 2014, Boundary condition of grounding lines prior to collapse, *Larsen-B Ice Shelf, Antarctica: Science*, v. 345, no. 6202, p. 1354–1358, at <https://doi.org/10.1126/science.1256697>.
- Reed, B.C., Loveland, T.R., and Tieszen, L.L., 1996, An approach for using avhrr data to monitor u.s. great plains grasslands: *Geocarto International*, v. 11, no. 3, p. 13–22, at <https://doi.org/10.1080/10106049609354544>.
- Rees, G., Headland, R., Scambos, T.A., and Haran, T., 2014, Finding the Arctic pole of inaccessibility: *Polar Record*, v. 50, no. 1, p. 86–91, at <https://doi.org/10.1017/S003224741300051X>.
- Reeves, M.C., Washington-Allen, R.A., Angerer, J., Hunt Jr., E.R., Kulawardhana, R.W., Kumar, L., Loboda, T., Loveland, T.R., Metternicht, G., and Ramsey, R.D., 2015, Global view of remote sensing of rangelands—Evolution, applications, future pathways, *in* Thenkabail, P.S., ed., *Land resources monitoring, modeling, and mapping with remote sensing*: Boca Raton, Fla., CRC Press, p. 237–275, at <https://doi.org/10.1201/b19322-19>.
- Reiche, J., Lucas, R., Mitchell, A.L., Verbesselt, J., Hoekman, D.H., Haarpaintner, J., Kellendorfer, J.M., Rosenqvist, A., Lehmann, E.A., et al., 2016, Combining satellite data for better tropical forest monitoring: *Nature Climate Change*, v. 6, no. 2, p. 120–122, at <https://doi.org/10.1038/nclimate2919>.
- Reid, P., Stammerjohn, S., Massom, R., Scambos, T.A., and Lieser, J., 2015, The record 2013 Southern Hemisphere sea-ice extent maximum: *Annals of Glaciology*, v. 56, no. 69, p. 99–106, at <https://doi.org/10.3189/2015AoG69A892>.
- Reilly, M.J., Dunn, C.J., Meigs, G.W., Spies, T.A., Kennedy, R.E., Bailey, J.D., and Briggs, K., 2017, Contemporary patterns of fire extent and severity in forests of the Pacific Northwest, USA (1985–2010): *Ecosphere*, v. 8, no. 3, article e01695, at <https://doi.org/10.1002/ecs2.1695>.
- Reiner, F., Brandt, M., Tong, X., Skole, D., Kariryaa, A., Ciais, P., Davies, A., Hiernaux, P., Chave, J., et al., 2023, More than one quarter of Africa’s tree cover is found outside areas previously classified as forest: *Nature Communications*, v. 14, no. 1, at <https://doi.org/10.1038/s41467-023-37880-4>.
- Reinersman, P.N., and Carder, K.L., 2004, Hybrid numerical method for solution of the radiative transfer equation in one, two, or three dimensions: *Applied Optics*, v. 43, no. 13, p. 2734–2743, at <https://doi.org/10.1364/AO.43.002734>.
- Reinersman, P.N., Carder, K.L., and Chen, F.I.R., 1998, Satellite-sensor calibration verification with the cloud-shadow method: *Applied Optics*, v. 37, no. 24, p. 5541–5549, at <https://doi.org/10.1364/AO.37.005541>.
- Reinhäkel, G., Zhukov, B., Oertel, D., Müller, A., and Strobl, P., 1998, Unmixing of simulated ASTER data with applications for the assessment of mining impacts in Central Germany, *in* *Imaging*

- Spectrometry IV, San Diego, Calif., 20–21 July 1998, Proceedings of SPIE Vol. 3438: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 345–354, at <https://doi.org/10.1117/12.328115>.
- Remer, L.A., Kaufman, Y.J., Tanré, D., Mattoo, S., Chu, D.A., Martins, J.V., Li, R.R., Ichoku, C., Levy, R.C., et al., 2005, The MODIS aerosol algorithm, products, and validation: *Journal of the Atmospheric Sciences*, v. 62, no. 4, p. 947–973, at <https://doi.org/10.1175/JAS3385.1>.
- Rommel, T.K., Csillag, F., Mitchell, S., and Wulder, M.A., 2005, Integration of forest inventory and satellite imagery—A Canadian status assessment and research issues: *Forest Ecology and Management*, v. 207, no. 3, p. 405–428, at <https://doi.org/10.1016/j.foreco.2004.11.023>.
- Ren, H., Jiang, X., Gao, F., and Zhang, Z., 2014, Absolute height measurement of specular surfaces with modified active fringe reflection photogrammetry, *in* Interferometry XVII—Advanced Applications, San Diego, Calif., 18–20 August 2014, Proceedings of SPIE Vol. 9204: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 920408, at <https://doi.org/10.1117/12.2060203>.
- Rendenieks, Z., Nita, M.D., Nikodemus, O., and Radeloff, V.C., 2020, Half a century of forest cover change along the Latvian-Russian border captured by object-based image analysis of Corona and Landsat TM/OLI data: *Remote Sensing of Environment*, v. 249, article 112010, at <https://doi.org/10.1016/j.rse.2020.112010>.
- Rengarajan, R., Goodenough, A.A., and Schott, J.R., 2016, Simulating the directional, spectral and textural properties of a large-scale scene at high resolution using a MODIS BRDF product, *in* Sensors, Systems, and Next-Generation Satellites XX, Edinburgh, Scotland, UK, 26–29 September 2016, Proceedings of SPIE Vol. 10000: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 10000y, at <https://doi.org/10.1117/12.2240527>.
- Rengarajan, R., and Schott, J.R., 2016, Modeling forest defoliation using simulated BRDF and assessing its effect on reflectance and sensor reaching radiance, *in* Remote Sensing and Modeling of Ecosystems for Sustainability XIII, San Diego, Calif., 28 August–1 September 2016, Proceedings of SPIE Vol. 9975: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 997503, at <https://doi.org/10.1117/12.2235391>.
- Rengarajan, R., and Schott, J.R., 2016, Modeling of forest canopy BRDF using DIRSIG, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXII, Baltimore, Md., 18–21 April 2016, Proceedings of SPIE Vol. 9840: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 98401f, at <https://doi.org/10.1117/12.2223354>.
- Rengarajan, R., and Schott, J.R., 2017, Modeling and simulation of deciduous forest canopy and its anisotropic reflectance properties using the Digital Image and Remote Sensing Image Generation (DIRSIG) Tool: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 10, no. 11, p. 4805–4817, at <https://doi.org/10.1109/JSTARS.2017.2751539>.
- Rengarajan, R., and Schott, J.R., 2018, Evaluation of sensor and environmental factors impacting the use of Multiple Sensor data for time-series applications: *Remote Sensing*, v. 10, no. 11, article 1678, at <https://doi.org/10.3390/rs10111678>.
- Resmini, R.G., Kappus, M.E., Aldrich, W.S., Harsanyi, J.C., and Anderson, M.C., 1997, Mineral mapping with HYperspectral digital imagery collection experiment (HYDICE) sensor data at Cuprite, Nevada, U.S.A: *International Journal of Remote Sensing*, v. 18, no. 7, p. 1553–1570, at <https://doi.org/10.1080/014311697218278>.

- Reuter, D., Irons, J.R., Lunsford, A., Montanaro, M., Pellerano, F., Richardson, C., Smith, R., Tesfaye, Z., and Thome, K.J., 2011, The Operational Land Imager (OLI) and the Thermal Infrared Sensor (TIRS) on the Landsat Data Continuity Mission (LDCM), *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVII, Orlando, Fla., 25–28 April 2011, Proceedings of SPIE Vol. 8048: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 804812, at <https://doi.org/10.1117/12.885963>.
- Reuter, D., Richardson, C., Irons, J.R., Allen, R.G., Anderson, M.C., Budinoff, J., Casto, G., Coltharp, C., Finneran, P., et al., 2010, The thermal infrared sensor on the Landsat Data Continuity Mission, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 754–757, at <https://doi.org/10.1109/IGARSS.2010.5653746>.
- Reuter, D.C., Richardson, C.M., Pellerano, F.A., Irons, J.R., Allen, R.G., Anderson, M.C., Jhabvala, M.D., Lunsford, A.W., Montanaro, M., et al., 2015, The thermal infrared sensor (TIRS) on Landsat 8—Design overview and pre-launch characterization: Remote Sensing, v. 7, no. 1, p. 1135–1153, at <https://doi.org/10.3390/rs70101135>.
- Reuter, H.I., Nelson, A., Strobl, P., Mehl, W., and Jarvis, A., 2009, A first assessment of aster GDEM tiles for absolute accuracy, relative accuracy and terrain parameters, *in* 2009 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Cape Town, South Africa, 12–17 July 2009, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. V240–V243, at <https://doi.org/10.1109/IGARSS.2009.5417688>.
- Riaza, A., Strobl, P., Beisl, U., Hausold, A., and Müller, A., 2002, Spectral mapping of rock weathering degrees on granite using hyperspectral DAIS 7915 spectrometer data: International Journal of Applied Earth Observation and Geoinformation, v. 3, no. 4, p. 345–354, at [https://doi.org/10.1016/S0303-2434\(01\)85042-X](https://doi.org/10.1016/S0303-2434(01)85042-X).
- Richter, N., Jarmer, T., Chabrilat, S., Oyonarte, C., Hostert, P., and Kaufmann, H., 2009, Free iron oxide determination in mediterranean soils using diffuse reflectance spectroscopy: Soil Science Society of America Journal, v. 73, no. 1, p. 72–81, at <https://doi.org/10.2136/sssaj2008.0025>.
- Rickbeil, G.J.M., Hermosilla, T., Coops, N.C., White, J.C., and Wulder, M.A., 2016, Barren-ground caribou (*Rangifer tarandus groenlandicus*) behaviour after recent fire events—Integrating caribou telemetry data with Landsat fire detection techniques: Global Change Biology, v. 23, no. 3, p. 1036–1047, at <https://doi.org/10.1111/gcb.13456>.
- Rickbeil, G.J.M., Hermosilla, T., Coops, N.C., White, J.C., and Wulder, M.A., 2017, Estimating changes in lichen mat volume through time and related effects on barren ground caribou (*Rangifer tarandus groenlandicus*) movement: PLoS ONE, v. 12, no. 3, article e0172669, at <https://doi.org/10.1371/journal.pone.0172669>.
- Rickbeil, G.J.M., Hermosilla, T., Coops, N.C., White, J.C., Wulder, M.A., and Lantz, T.C., 2018, Changing northern vegetation conditions are influencing barren ground caribou (*Rangifer tarandus groenlandicus*) post-calving movement rates: Journal of Biogeography, v. 45, no. 3, p. 702–712, at <https://doi.org/10.1111/jbi.13161>.
- Rignot, E., Salas, W.A., and Skole, D.L., 1997, Erratum—Mapping deforestation and secondary growth in Rondonia, Brazil, using imaging radar and thematic mapper data (Remote Sensing of Environment 59:2 (167-179)): Remote Sensing of Environment, v. 61, no. 1, p. 179–180, at [https://doi.org/10.1016/S0034-4257\(97\)00072-2](https://doi.org/10.1016/S0034-4257(97)00072-2).

- Rignot, E., Salas, W.A., and Skole, D.L., 1997, Mapping deforestation and secondary growth in Rondonia, Brazil, using imaging radar and thematic mapper data: *Remote Sensing of Environment*, v. 59, no. 2, p. 167–179, at [https://doi.org/10.1016/S0034-4257\(96\)00150-2](https://doi.org/10.1016/S0034-4257(96)00150-2).
- Riihelä, A., Manninen, T., Key, J., Sun, Q., Sütterlin, M., Lattanzio, A., and Schaaf, C.B., 2018, A multisensor approach to global retrievals of land surface albedo: *Remote Sensing*, v. 10, no. 6, article 848, at <https://doi.org/10.3390/rs10060848>.
- Riihimäki, L.D., Flynn, C., McComiskey, A., Lubin, D., Blanchard, Y., Chiu, J.C., Feingold, G., Feldman, D.R., Gristey, J.J., et al., 2021, The shortwave spectral radiometer for atmospheric science capabilities and applications from the arm user facility: *Bulletin of the American Meteorological Society*, v. 102, no. 3, p. E539–E554, at <https://doi.org/10.1175/BAMS-D-19-0227.1>.
- Rio, M.H., Lorenzoni, L., Murakami, H., Falcini, F., Colella, S., Volpe, G., Brando, V., Braga, F., Concha, J., et al., 2021, Trilateral water quality monitoring from space during Covid-19, in 2021 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Brussels, Belgium, 12–16 July 2021, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1563–1566, at <https://doi.org/10.1109/IGARSS47720.2021.9554949>.
- Riofrío, J., White, J.C., Tompalski, P., Coops, N.C., and Wulder, M.A., 2022, Harmonizing multi-temporal airborne laser scanning point clouds to derive periodic annual height increments in temperate mixedwood forests: *Canadian Journal of Forest Research*, v. 52, no. 10, p. 1334–1352, at <https://doi.org/10.1139/cjfr-2022-0055>.
- Riofrío, J., White, J.C., Tompalski, P., Coops, N.C., and Wulder, M.A., 2023, Modelling height growth of temperate mixedwood forests using an age-independent approach and multi-temporal airborne laser scanning data: *Forest Ecology and Management*, v. 543, at <https://doi.org/10.1016/j.foreco.2023.121137>.
- Rissman, A.R., Burke, K.D., Kramer, H.A.C., Radeloff, V.C., Schilke, P.R., Selles, O.A., Toczydlowski, R.H., Wardropper, C.B., Barrow, L.A., et al., 2018, Forest management for novelty, persistence, and restoration influenced by policy and society: *Frontiers in Ecology and the Environment*, v. 16, no. 8, p. 454–462, at <https://doi.org/10.1002/fee.1818>.
- Rittenhouse, C.D., Berlin, E.H., Mikle, N., Qiu, S., Riordan, D., and Zhu, Z., 2022, An object-based approach to map young forest and shrubland vegetation based on multi-source remote sensing data: *Remote Sensing*, v. 14, no. 5, article 1091, at <https://doi.org/10.3390/rs14051091>.
- Rittenhouse, C.D., Pidgeon, A.M., Albright, T.P., Culbert, P.D., Clayton, M.K., Flather, C.H., Huang, C., Masek, J.G., and Radeloff, V.C., 2010, Avifauna response to hurricanes—Regional changes in community similarity: *Global Change Biology*, v. 16, no. 3, p. 905–917, at <https://doi.org/10.1111/j.1365-2486.2009.02101.x>.
- Rittenhouse, C.D., Pidgeon, A.M., Albright, T.P., Culbert, P.D., Clayton, M.K., Flather, C.H., Huang, C., Masek, J.G., Stewart, S.I., and Radeloff, V.C., 2010, Conservation of forest birds—Evidence of a shifting baseline in community structure: *PLoS ONE*, v. 5, no. 8, article e11938, at <https://doi.org/10.1371/journal.pone.0011938>.
- Rittenhouse, C.D., Pidgeon, A.M., Albright, T.P., Culbert, P.D., Clayton, M.K., Flather, C.H., Masek, J.G., and Radeloff, V.C., 2012, Land-cover change and avian diversity in the conterminous United States: *Conservation Biology*, v. 26, no. 5, p. 821–829, at <https://doi.org/10.1111/j.1523-1739.2012.01867.x>.

- Ritz, A.L., Thomas, V.A., Wynne, R.H., Corey Green, P., Schroeder, T.A., Albaugh, T.J., Burkhart, H.E., Carter, D.R., Cook, R.L., et al., 2022, Assessing the utility of NAIP digital aerial photogrammetric point clouds for estimating canopy height of managed loblolly pine plantations in the southeastern United States: *International Journal of Applied Earth Observation and Geoinformation*, v. 113, article 103012, at <https://doi.org/10.1016/j.jag.2022.103012>.
- Rivera, L.O., Martinuzzi, S., Politi, N., Bardavid, S., De Bustos, S., Chalukian, S., Lizárraga, L., Radeloff, V., and Pidgeon, A., 2021, National parks influence habitat use of lowland tapirs in adjacent private lands in the Southern Yungas of Argentina: *ORYX*, v. 55, no. 4, p. 625–634, at <https://doi.org/10.1017/S0030605319000796>.
- Rizayeva, A., Nita, M.D., and Radeloff, V.C., 2023, Large-area, 1964 land cover classifications of Corona spy satellite imagery for the Caucasus Mountains: *Remote Sensing of Environment*, v. 284, article 113343, at <https://doi.org/10.1016/j.rse.2022.113343>.
- Robert Chen, F., Lee, Z., and Carder, K.L., 1997, An bathymetric algorithm of water-leaving radiances in AVIRIS Imagery—Use of a reflectance model, *in* COSPAR Colloquia Series, Taiwan, 12–17 September 1995, Proceedings: Oxford, England, UK, Committee on Space Research, p. 221–228, at [https://doi.org/10.1016/S0964-2749\(97\)80026-1](https://doi.org/10.1016/S0964-2749(97)80026-1).
- Robertson, C., Farmer, C.J.Q., Nelson, T.A., MacKenzie, I.K., Wulder, M.A., and White, J.C., 2009, Determination of the compositional change (1999–2006) in the pine forests of British Columbia due to mountain pine beetle infestation: *Environmental Monitoring and Assessment*, v. 158, no. 1–4, p. 593–608, at <https://doi.org/10.1007/s10661-008-0607-9>.
- Robertson, C., Nelson, T.A., Boots, B., and Wulder, M.A., 2007, STAMP—Spatial-temporal analysis of moving polygons: *Journal of Geographical Systems*, v. 9, no. 3, p. 207–227, at <https://doi.org/10.1007/s10109-007-0044-2>.
- Robertson, C., Nelson, T.A., Jelinski, D.E., Wulder, M.A., and Boots, B., 2009, Spatial-temporal analysis of species range expansion—The case of the mountain pine beetle, *Dendroctonus ponderosae*: *Journal of Biogeography*, v. 36, no. 8, p. 1446–1458, at <https://doi.org/10.1111/j.1365-2699.2009.02100.x>.
- Robertson, C., Wulder, M.A., Nelson, T.A., and White, J.C., 2008, Risk rating for mountain pine beetle infestation of lodgepole pine forests over large areas with ordinal regression modelling: *Forest Ecology and Management*, v. 256, no. 5, p. 900–912, at <https://doi.org/10.1016/j.foreco.2008.05.054>.
- Roberts-Pierel, B.M., Kirchner, P.B., Kilbride, J.B., and Kennedy, R.E., 2022, Changes over the last 35 years in Alaska’s glaciated landscape—A novel deep learning approach to mapping glaciers at fine temporal granularity: *Remote Sensing*, v. 14, no. 18, article 4582, at <https://doi.org/10.3390/rs14184582>.
- Robinson, G.D., Gross, H.N., and Schott, J.R., 2000, Evaluation of two applications of spectral mixing models to image fusion: *Remote Sensing of Environment*, v. 71, no. 3, p. 272–281, at [https://doi.org/10.1016/S0034-4257\(99\)00074-7](https://doi.org/10.1016/S0034-4257(99)00074-7).
- Rocchio, L., Masek, J.G., Sun, G., and Williams, D.L., 2003, Validation of satellite-derived forest metrics in northeastern China, *in* 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2574–2576, at <https://doi.org/10.1109/IGARSS.2003.1294513>.

- Rodrigues-Eklund, G., Hansen, M.C., Tyukavina, A., Stehman, S.V., Hubacek, K., and Baiocchi, G., 2021, Sample-based estimation of tree cover change in Haiti using aerial photography—Substantial increase in tree cover between 2002 and 2010: *Forests*, v. 12, no. 9, article 1243, at <https://doi.org/10.3390/f12091243>.
- Roesch, A., Schaaf, C.B., and Gao, F., 2004, Use of Moderate-Resolution Imaging Spectroradiometer bidirectional reflectance distribution function products to enhance simulated surface albedos: *Journal of Geophysical Research Atmospheres*, v. 109, no. 12, p. D12105 1–10, at <https://doi.org/10.1029/2004JD004552>.
- Rogan, J., Franklin, J., Stow, D., Miller, J., Woodcock, C.E., and Roberts, D., 2008, Mapping land-cover modifications over large areas—A comparison of machine learning algorithms: *Remote Sensing of Environment*, v. 112, no. 5, p. 2272–2283, at <https://doi.org/10.1016/j.rse.2007.10.004>.
- Roger, J.C., Mallet, M., Dubuisson, P., Cachier, H., Vermote, E.F., Dubovik, O., and Despiau, S., 2006, A synergetic approach for estimating the local direct aerosol forcing—Application to an urban zone during the Expérience sur Site pour Contraindre les Modèles de Pollution et de Transport d’Emission (ESCOMPTE) experiment: *Journal of Geophysical Research Atmospheres*, v. 111, no. 13, article D13208, at <https://doi.org/10.1029/2005JD006361>.
- Roger, J.C., Vermote, E., Skakun, S., Murphy, E., Dubovik, O., Kalczynski, N., Korgo, B., and Holben, B., 2022, Aerosol models from the AERONET database—Application to surface reflectance validation: *Atmospheric Measurement Techniques*, v. 15, no. 5, p. 1123–1144, at <https://doi.org/10.5194/amt-15-1123-2022>.
- Roger, J.C., and Vermote, E.F., 1997, Computation and Use of the Reflectivity at 3.75 μM from AVHRR Thermal Channels: *Remote Sensing Reviews*, v. 15, no. 1–4, p. 75–98, at <https://doi.org/10.1080/02757259709532332>.
- Roger, J.C., and Vermote, E.F., 1998, A method to retrieve the reflectivity signature at 3.75 μm from AVHRR data: *Remote Sensing of Environment*, v. 64, no. 1, p. 103–114, at [https://doi.org/10.1016/S0034-4257\(97\)00173-9](https://doi.org/10.1016/S0034-4257(97)00173-9).
- Roger, J.C., Vermote, E.F., Murphy, E., Pinchaud, M., and Brent, H., 2016, Methodology and error budget for evaluating the MODIS-VIIRS land surface reflectance fundamental climate data record, *in* 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2941–2943, at <https://doi.org/10.1109/IGARSS.2016.7729759>.
- Rogers, B.M., Solvik, K., Hogg, E.H., Ju, J., Masek, J.G., Michaelian, M., Berner, L.T., and Goetz, S.J., 2018, Detecting early warning signals of tree mortality in boreal North America using multiscale satellite data: *Global Change Biology*, v. 24, no. 6, p. 2284–2304, at <https://doi.org/10.1111/gcb.14107>.
- Rogers, D.A., Rooney, T.P., Hawbaker, T.J., Radeloff, V.C., and Waller, D.M., 2009, Paying the extinction debt in southern Wisconsin forest understories: *Conservation Biology*, v. 23, no. 6, p. 1497–1506, at <https://doi.org/10.1111/j.1523-1739.2009.01256.x>.
- Rogers, K., Lymburner, L., Salum, R., Brooke, B.P., and Woodroffe, C.D., 2017, Mapping of mangrove extent and zonation using high and low tide composites of Landsat data: *Hydrobiologia*, v. 803, p. 49–68, at <https://doi.org/10.1007/s10750-017-3257-5>.
- Roggeri, P., Belward, A.S., Mayaux, P., Eva, H., Brink, A., Dubois, G., Peedell, S., and Leo, O., 2010, Sustainable development in developing countries—The African, Caribbean and Pacific

- observatory: Technological and Economic Development of Economy, v. 16, no. 4, p. 736–752, at <http://www.tandfonline.com/doi/abs/10.3846/tede.2010.45>.
- Rogozovsky, I., Ansmann, A., Althausen, D., Heese, B., Engelmann, R., Hofer, J., Baars, H., Schechner, Y., Lyapustin, A., and Chudnovsky, A., 2021, Impact of aerosol layering, complex aerosol mixing, and cloud coverage on high-resolution MAIAC aerosol optical depth measurements—Fusion of lidar, AERONET, satellite, and ground-based measurements: Atmospheric Environment, v. 247, article 118163, at <https://doi.org/10.1016/j.atmosenv.2020.118163>.
- Rogozovsky, I., Ohneiser, K., Lyapustin, A., Ansmann, A., and Chudnovsky, A., 2023, The impact of different aerosol layering conditions on the high-resolution MODIS/MAIAC AOD retrieval bias—The uncertainty analysis: Atmospheric Environment, v. 309, article 119930, at <https://doi.org/10.1016/j.atmosenv.2023.119930>.
- Roithmayr, C.M., Lukashin, C., Speth, P.W., Kopp, G., Thome, K.J., Wielicki, B.A., and Young, D.F., 2014, CLARREO approach for reference intercalibration of reflected solar sensors—On-orbit data matching and sampling: IEEE Transactions on Geoscience and Remote Sensing, v. 52, no. 10, p. 6762–6774, at <https://doi.org/10.1109/TGRS.2014.2302397>.
- Roithmayr, C.M., Lukashin, C., Speth, P.W., Young, D.F., Wielicki, B.A., Thome, K.J., and Kopp, G., 2014, Opportunities to intercalibrate radiometric sensors from international space station: Journal of Atmospheric and Oceanic Technology, v. 31, no. 4, p. 890–902, at <https://doi.org/10.1175/JTECH-D-13-00163.1>.
- Rojas, I.M., Pidgeon, A.M., and Radeloff, V.C., 2020, Restoring riparian forests according to existing regulations could greatly improve connectivity for forest fauna in Chile: Landscape and Urban Planning, v. 203, article 103895, at <https://doi.org/10.1016/j.landurbplan.2020.103895>.
- Rollins, M.G., Keane, R.E., Zhu, Z., Menakis, J.P., Caratti, J.F., Holsinger, L., Parsons, R., Karau, E., Long, J.L., et al., 2006, The LANDFIRE prototype project—Nationally consistent and locally relevant geospatial data for wildland fire management, General Technical Report, USDA Forest Service, Rocky Mountain Research Station, RMRS-GTR-175, 418 p., at <https://doi.org/10.2737/RMRS-GTR-175>.
- Roman, M.O., Csiszar, I., Justice, C.O., Key, J., Privette, J., Devadiga, S., Davidson, C., Wolfe, R.E., and Masuoka, E.J., 2012, Status of the Suomi NPP visible/infrared imager radiometer suite's (VIIRS) land environmental data records (EDRs) after early evaluation of on-orbit performance, in 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Munich, Germany, 22–27 July 2012, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1084–1087, at <https://doi.org/10.1109/IGARSS.2012.6351360>.
- Román, M.O., Gatebe, C.K., Schaaf, C.B., Poudyal, R., Wang, Z., and King, M.D., 2011, Variability in surface BRDF at different spatial scales (30m-500m) over a mixed agricultural landscape as retrieved from airborne and satellite spectral measurements: Remote Sensing of Environment, v. 115, no. 9, p. 2184–2203, at <https://doi.org/10.1016/j.rse.2011.04.012>.
- Roman, M.O., Gatebe, C.K., Shuai, Y., Wang, Z., Gao, F., Masek, J.G., He, T., Liang, S., and Schaaf, C.B., 2013, Use of in situ and airborne multiangle data to assess MODIS- and Landsat-based estimates of directional reflectance and albedo: IEEE Transactions on Geoscience and Remote Sensing, v. 51, no. 3, p. 1393–1404, at <https://doi.org/10.1109/TGRS.2013.2243457>.
- Roman, M.O., Justice, C.O., and Csiszar, I., 2014, Land, cryosphere, and nighttime environmental products from Suomi NPP VIIRS—Overview and status, in Joint 2014 IEEE International Geoscience and

- Remote Sensing Symposium (IGARSS) and the 35th Canadian Symposium on Remote Sensing (CSRS 2014), Quebec City, Canada, 13–18 July 2014, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3530–3533, at <https://doi.org/10.1109/IGARSS.2014.6947244>.
- Román, M.O., Justice, C.O., Csiszar, I., Key, J.R., Devadiga, S., Davidson, C., Wolfe, R., and Privette, J., 2011, Pre-launch evaluation of the NPP VIIRS Land and Cryosphere EDRs to meet NASA's science requirements, *in* 2011 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Vancouver, Canada, 24–29 July 2011, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 154–157, at <https://doi.org/10.1109/IGARSS.2011.6048921>.
- Román, M.O., Schaaf, C.B., Lewis, P., Gao, F., Anderson, G.P., Privette, J.L., Strahler, A.H., Woodcock, C.E., and Barnsley, M., 2010, Assessing the coupling between surface albedo derived from MODIS and the fraction of diffuse skylight over spatially-characterized landscapes: *Remote Sensing of Environment*, v. 114, no. 4, p. 738–760, at <https://doi.org/10.1016/j.rse.2009.11.014>.
- Román, M.O., Schaaf, C.B., Woodcock, C.E., Strahler, A.H., Yang, X., Braswell, R.H., Curtis, P.S., Davis, K.J., Dragoni, D., et al., 2009, The MODIS (Collection V005) BRDF/albedo product—Assessment of spatial representativeness over forested landscapes: *Remote Sensing of Environment*, v. 113, no. 11, p. 2476–2498, at <https://doi.org/10.1016/j.rse.2009.07.009>.
- Rosa, R.D., Paredes, P., Rodrigues, G.C., Alves, I., Fernando, R.M., Pereira, L.S., and Allen, R.G., 2012, Implementing the dual crop coefficient approach in interactive software—1. Background and computational strategy: *Agricultural Water Management*, v. 103, p. 8–24, at <https://doi.org/10.1016/j.agwat.2011.10.013>.
- Rosa, R.D., Paredes, P., Rodrigues, G.C., Fernando, R.M., Alves, I., Pereira, L.S., and Allen, R.G., 2012, Implementing the dual crop coefficient approach in interactive software—2. Model testing: *Agricultural Water Management*, v. 103, p. 62–77, at <https://doi.org/10.1016/j.agwat.2011.10.018>.
- Rose, R.A., Byler, D., Eastman, J.R., Fleishman, E., Geller, G., Goetz, S., Guild, L., Hamilton, H., Hansen, M.C., et al., 2015, Ten ways remote sensing can contribute to conservation: *Conservation Biology*, v. 29, no. 2, p. 350–359, at <https://doi.org/10.1111/cobi.12397>.
- Rosette, J., Cook, B., Nelson, R., Huang, C., Masek, J.G., Tucker, C., Sun, G., Huang, W., Montesano, P., et al., 2015, Sensor compatibility for biomass change estimation using remote sensing data sets—Part of NASA's carbon monitoring system initiative: *IEEE Geoscience and Remote Sensing Letters*, v. 12, no. 7, p. 1511–1515, at <https://doi.org/10.1109/LGRS.2015.2411262>.
- Rothery, D.A., Thorne, M.T., and Flynn, L.P., 2003, MODIS thermal alerts in Britain and the North Sea during the first half of 2001: *International Journal of Remote Sensing*, v. 24, no. 4, p. 817–826, at <https://doi.org/10.1080/01431160210124491>.
- Rotz, J.D., Abaye, A.O., Wynne, R.H., Rayburn, E.B., Scaglia, G., and Phillips, R.D., 2008, Classification of digital photography for measuring productive ground cover: *Rangeland Ecology and Management*, v. 61, no. 2, p. 245–248, at <https://doi.org/10.2111/07-011.1>.
- Rowhani, P., Lepczyk, C.A., Linderman, M.A., Pidgeon, A.M., Radeloff, V.C., Culbert, P.D., and Lambin, E.F., 2008, Variability in energy influences avian distribution patterns across the USA: *Ecosystems*, v. 11, no. 6, p. 854–867, at <https://doi.org/10.1007/s10021-008-9165-9>.
- Roy, D.P., 1997, Investigation of the maximum Normalized Difference Vegetation Index (NDVI) and the maximum surface temperature (Ts) AVHRR compositing procedures for the extraction of NDVI

- and Ts over forest: *International Journal of Remote Sensing*, v. 18, no. 11, p. 2383–2401, at <https://doi.org/10.1080/014311697217675>.
- Roy, D.P., 2000, The impact of misregistration upon composited wide field of view satellite data and implications for change detection: *IEEE Transactions on Geoscience and Remote Sensing*, v. 38, no. 4, p. 2017–2032, at <https://doi.org/10.1109/36.851783>.
- Roy, D.P., Borak, J.S., Devadiga, S., Wolfe, R.E., Zheng, M., and Descloitres, J., 2002, The MODIS Land product quality assessment approach: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 62–76, at [https://doi.org/10.1016/S0034-4257\(02\)00087-1](https://doi.org/10.1016/S0034-4257(02)00087-1).
- Roy, D.P., and Boschetti, L., 2009, Southern Africa validation of the MODIS, L3JRC, and GlobCarbon burned-area products: *IEEE Transactions on Geoscience and Remote Sensing*, v. 47, no. 4, p. 1032–1044, at <https://doi.org/10.1109/TGRS.2008.2009000>.
- Roy, D.P., Boschetti, L., and Giglio, L., 2010, Remote sensing of global Savanna fire occurrence, extent, and properties, in Hill, M.J., and Hanan, N.P., eds., *Ecosystem function in savannas—Measurement and modeling at landscape to global scales*: Boca Raton, Fla., CRC Press, p. 239–254, at <https://doi.org/10.1201/b10275-22>.
- Roy, D.P., Boschetti, L., and Justice, C.O., 2006, Global mapping of fire-affected areas using multitemporal MODIS data—The MCD45 product, in 2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Denver, Colo., 31 July–4 August 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4165–4168, at <https://doi.org/10.1109/IGARSS.2006.1068>.
- Roy, D.P., Boschetti, L., Justice, C.O., and Ju, J., 2008, The collection 5 MODIS burned area product—Global evaluation by comparison with the MODIS active fire product: *Remote Sensing of Environment*, v. 112, no. 9, p. 3690–3707, at <https://doi.org/10.1016/j.rse.2008.05.013>.
- Roy, D.P., Boschetti, L., Maier, S.W., and Smith, A.M.S., 2010, Field estimation of ash and char colour-lightness using a standard grey scale: *International Journal of Wildland Fire*, v. 19, no. 6, p. 698–704, at <https://doi.org/10.1071/WF09133>.
- Roy, D.P., Boschetti, L., and Smith, A.M.S., 2013, Satellite remote sensing of fires, in Belcher, C.M., ed., *Fire phenomena and the Earth system—An interdisciplinary guide to fire science*: Chichester, UK, John Wiley & Sons, p. 77–93, at <https://doi.org/10.1002/9781118529539.ch5>.
- Roy, D.P., Boschetti, L., and Trigg, S.N., 2006, Remote sensing of fire severity—Assessing the performance of the normalized burn ratio: *IEEE Geoscience and Remote Sensing Letters*, v. 3, no. 1, p. 112–116, at <https://doi.org/10.1109/LGRS.2005.858485>.
- Roy, D.P., Descloitres, J., Devadiga, S., Crandall, C., Wolfe, R.E., Justice, C.O., and Wanchoo, L., 2000, The MODIS land quality assessment approach, in 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2056–2058, at <https://doi.org/10.1109/IGARSS.2000.858270>.
- Roy, D.P., Devereux, B., Grainger, B., and White, S.J., 1997, Parametric geometric correction of airborne thematic mapper imagery: *International Journal of Remote Sensing*, v. 18, no. 9, p. 1865–1887, at <https://doi.org/10.1080/014311697217927>.
- Roy, D.P., Frost, P.G.H., Justice, C.O., Landmann, T., Le Roux, J.L., Gumbo, K., Makungwa, S., Dunham, K., Du Toit, R., et al., 2005, The Southern Africa Fire Network (SAFNet) regional burned-area

- product-validation protocol: *International Journal of Remote Sensing*, v. 26, no. 19, p. 4265–4292, at <https://doi.org/10.1080/01431160500113096>.
- Roy, D.P., Giglio, L., Kendall, J.D., and Justice, C.O., 1999, Multi-temporal active-fire based burn scar detection algorithm: *International Journal of Remote Sensing*, v. 20, no. 5, p. 1031–1038, at <https://doi.org/10.1080/014311699213073>.
- Roy, D.P., Huang, H., Boschetti, L., Giglio, L., Yan, L., Zhang, H.H., and Li, Z., 2019, Landsat-8 and Sentinel-2 burned area mapping—A combined sensor multi-temporal change detection approach: *Remote Sensing of Environment*, v. 231, article 111254, at <https://doi.org/10.1016/j.rse.2019.111254>.
- Roy, D.P., Huang, H., Houborg, R., and Martins, V.S., 2021, A global analysis of the temporal availability of PlanetScope high spatial resolution multi-spectral imagery: *Remote Sensing of Environment*, v. 264, article 112586, at <https://doi.org/10.1016/j.rse.2021.112586>.
- Roy, D.P., Jin, Y., Lewis, P.E., and Justice, C.O., 2005, Prototyping a global algorithm for systematic fire-affected area mapping using MODIS time series data: *Remote Sensing of Environment*, v. 97, no. 2, p. 137–162, at <https://doi.org/10.1016/j.rse.2005.04.007>.
- Roy, D.P., Ju, J., Kline, K., Scaramuzza, P.L., Kovalsky, V., Hansen, M.C., Loveland, T.R., Vermote, E.F., and Zhang, C., 2010, Web-enabled Landsat Data (WELD)—Landsat ETM+ composited mosaics of the conterminous United States: *Remote Sensing of Environment*, v. 114, no. 1, p. 35–49, at <https://doi.org/10.1016/j.rse.2009.08.011>.
- Roy, D.P., Ju, J., and Kommadreddy, I., 2011, Web-enabled Landsat data (WELD)—A consistent, long-term, large-area, 30m data record for the terrestrial user community, *in* The GEOSS Era, Towards Operational Environmental Monitoring—34th International Symposium on Remote Sensing of Environment, Sydney, Australia, 10–15 April 2011, Proceedings: Bethesda, Md., International Society for Photogrammetry and Remote Sensing, paper no. 00470, at <http://www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00470.pdf>.
- Roy, D.P., Ju, J., Lewis, P., Schaaf, C.B., Gao, F., Hansen, M.C., and Lindquist, E., 2008, Multi-temporal MODIS-Landsat data fusion for relative radiometric normalization, gap filling, and prediction of Landsat data: *Remote Sensing of Environment*, v. 112, no. 6, p. 3112–3130, at <https://doi.org/10.1016/j.rse.2008.03.009>.
- Roy, D.P., Ju, J., Mbow, C., Frost, P., and Loveland, T.R., 2010, Accessing free Landsat data via the Internet—Africa’s challenge: *Remote Sensing Letters*, v. 1, no. 2, p. 111–117, at <https://doi.org/10.1080/01431160903486693>.
- Roy, D.P., Kennedy, P., and Folving, S., 1997, Combination of the normalized difference vegetation index and surface temperature for regional scale european forest cover mapping using AVHRR data: *International Journal of Remote Sensing*, v. 18, no. 5, p. 1189–1195, at <https://doi.org/10.1080/014311697218665>.
- Roy, D.P., Kovalsky, V., Zhang, H., Yan, L., and Kommareddy, I., 2015, The utility of Landsat data for global long term terrestrial monitoring, *in* Ramachandran, B., Justice, C.O., and Abrams, M.J., eds., *Land remote sensing and global environmental change*: New York, N.Y., Springer, p. 289–305, at https://doi.org/10.1007/978-3-319-15967-6_14.
- Roy, D.P., Kovalsky, V., Zhang, H.K., Vermote, E.F., Yan, L., Kumar, S.S., and Egorov, A., 2016, Characterization of Landsat-7 to Landsat-8 reflective wavelength and normalized difference vegetation index continuity: *Remote Sensing of Environment*, v. 185, p. 57–70, at <https://doi.org/10.1016/j.rse.2015.12.024>.

- Roy, D.P., and Kumar, S.S., 2016, Multi-year MODIS active fire type classification over the Brazilian Tropical Moist Forest Biome: *International Journal of Digital Earth*, v. 10, no. 1, p. 54–84, at <https://doi.org/10.1080/17538947.2016.1208686>.
- Roy, D.P., and Landmann, T., 2005, Characterizing the surface heterogeneity of fire effects using multi-temporal reflective wavelength data: *International Journal of Remote Sensing*, v. 26, no. 19, p. 4197–4218, at <https://doi.org/10.1080/01431160500112783>.
- Roy, D.P., Lewis, P., Schaaf, C.B., Devadiga, S., and Boschetti, L., 2006, The global impact of clouds on the production of MODIS bidirectional reflectance model-based composites for terrestrial monitoring: *IEEE Geoscience and Remote Sensing Letters*, v. 3, no. 4, p. 452–456, at <https://doi.org/10.1109/LGRS.2006.875433>.
- Roy, D.P., Lewis, P.E., and Justice, C.O., 2002, Burned area mapping using multi-temporal moderate spatial resolution data—a bi-directional reflectance model-based expectation approach: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 263–286, at [https://doi.org/10.1016/S0034-4257\(02\)00077-9](https://doi.org/10.1016/S0034-4257(02)00077-9).
- Roy, D.P., Li, J., Zhang, H.K., and Yan, L., 2016, Best practices for the reprojection and resampling of Sentinel-2 Multi Spectral Instrument Level 1C data: *Remote Sensing Letters*, v. 7, no. 11, p. 1023–1032, at <https://doi.org/10.1080/2150704X.2016.1212419>.
- Roy, D.P., Li, J., Zhang, H.K., Yan, L., Huang, H., and Li, Z., 2017, Examination of Sentinel-2A multi-spectral instrument (MSI) reflectance anisotropy and the suitability of a general method to normalize MSI reflectance to nadir BRDF adjusted reflectance: *Remote Sensing of Environment*, v. 199, p. 25–38, at <https://doi.org/10.1016/j.rse.2017.06.019>.
- Roy, D.P., Li, Z., and Zhang, H.K., 2017, Adjustment of sentinel-2 multi-spectral instrument (MSI) red-edge band reflectance to nadir BRDF adjusted reflectance (NBAR) and quantification of red-edge band BRDF effects: *Remote Sensing*, v. 9, no. 12, article 1325, at <https://doi.org/10.3390/rs9121325>.
- Roy, D.P., Li, Z., Zhang, H.K., and Huang, H., 2020, A conterminous United States analysis of the impact of Landsat 5 orbit drift on the temporal consistency of Landsat 5 Thematic Mapper data: *Remote Sensing of Environment*, v. 240, article 111701, at <https://doi.org/10.1016/j.rse.2020.111701>.
- Roy, D.P., Qin, Y., Kovalskyy, V., Vermote, E.F., Ju, J., Egorov, A., Hansen, M.C., Kommareddy, I., and Yan, L., 2014, Conterminous United States demonstration and characterization of MODIS-based Landsat ETM+ atmospheric correction: *Remote Sensing of Environment*, v. 140, p. 433–449, at <https://doi.org/10.1016/j.rse.2013.09.012>.
- Roy, D.P., Trigg, S.N., Bhima, R., Brockett, B.H., Dube, O.P., Frost, P., Govender, N., Landmann, T., Le Roux, J., et al., 2006, The utility of satellite fire product accuracy information—perspectives and recommendations from the Southern Africa Fire Network: *IEEE Transactions on Geoscience and Remote Sensing*, v. 44, no. 7, p. 1928–1930, at <https://doi.org/10.1109/TGRS.2006.871200>.
- Roy, D.P., Wulder, M.A., Loveland, T.R., C.E. W., Allen, R.G., Anderson, M.C., Helder, D.L., Irons, J.R., Johnson, D.M., et al., 2014, Landsat-8—Science and product vision for terrestrial global change research: *Remote Sensing of Environment*, v. 145, p. 154–172, at <https://doi.org/10.1016/j.rse.2014.02.001>.
- Roy, D.P., and Yan, L., 2020, Robust Landsat-based crop time series modelling: *Remote Sensing of Environment*, v. 238, article 110810, at <https://doi.org/10.1016/j.rse.2018.06.038>.

- Roy, D.P., Zhang, H.K., Ju, J., Gomez-Dans, J.L., Lewis, P.E., Schaaf, C.B., Sun, Q., Li, J., Huang, H., and Kovalskyy, V., 2016, A general method to normalize Landsat reflectance data to nadir BRDF adjusted reflectance: *Remote Sensing of Environment*, v. 176, p. 255–271, at <https://doi.org/10.1016/j.rse.2016.01.023>.
- Rozanov, V.V., and Lyapustin, A.I., 2010, Similarity of radiative transfer equation—Error analysis of phase function truncation techniques: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 111, no. 12–13, p. 1964–1979, at <https://doi.org/10.1016/j.jqsrt.2010.03.018>.
- Rozwadowska, A., and Cahalan, R.F., 2002, Plane-parallel biases computed from inhomogeneous Arctic clouds and sea ice: *Journal of Geophysical Research Atmospheres*, v. 107, no. 19, p. AAC 8–1–AAC 8–17, at <https://doi.org/10.1029/2002JD002092>.
- Rubio, E., Colin, J., D’Urso, G., Trezza, R., Allen, R.G., Calera, A., González, J., Jochum, A., Menenti, M., et al., 2006, Golden day comparison of methods to retrieve K_c -NDVI, K_c -analytical, MSSEBS, METRIC), in AIP Conference, Naples, Italy, 10–11 November 2005, Proceedings: Melville, N.Y., American Institute of Physics, p. 193–200, at <https://doi.org/10.1063/1.2349344>.
- Ruefenacht, B., Finco, M.V., Nelson, M.D., Czaplewski, R., Helmer, E.H., Blackard, J.A., Holden, G.R., Lister, A.J., Salajanu, D., et al., 2008, Conterminous U.S. and Alaska forest type mapping using forest inventory and analysis data: *Photogrammetric Engineering and Remote Sensing*, v. 74, no. 11, p. 1379–1388, at <https://doi.org/10.14358/PERS.74.11.1379>.
- Rufin, P., Frantz, D., Ernst, S., Rabe, A., Griffiths, P., Özdoğan, M., and Hostert, P., 2019, Mapping cropping practices on a national scale using intra-annual Landsat time series binning: *Remote Sensing*, v. 11, no. 3, article 232, at <https://doi.org/10.3390/rs11030232>.
- Rufin, P., Frantz, D., Yan, L., and Hostert, P., 2021, Operational coregistration of the Sentinel-2A/B image archive using multitemporal Landsat spectral averages: *IEEE Geoscience and Remote Sensing Letters*, v. 18, no. 4, p. 712–716, at <https://doi.org/10.1109/LGRS.2020.2982245>.
- Rufin, P., Gollnow, F., Müller, D., and Hostert, P., 2019, Synthesizing dam-induced land system change: *Ambio*, v. 48, no. 10, p. 1183–1194, at <https://doi.org/10.1007/s13280-018-01144-z>.
- Rufin, P., Levers, C., Baumann, M., Jägermeyr, J., Krueger, T., Kuemmerle, T., and Hostert, P., 2018, Global-scale patterns and determinants of cropping frequency in irrigation dam command areas: *Global Environmental Change*, v. 50, p. 110–122, at <https://doi.org/10.1016/j.gloenvcha.2018.02.011>.
- Rufin, P., Müller, D., Schwieder, M., Pflugmacher, D., and Hostert, P., 2021, Landsat time series reveal simultaneous expansion and intensification of irrigated dry season cropping in Southeastern Turkey: *Journal of Land Use Science*, v. 16, no. 1, p. 94–110, at <https://doi.org/10.1080/1747423X.2020.1858198>.
- Rufin, P., Müller, H., Pflugmacher, D., and Hostert, P., 2015, Land use intensity trajectories on Amazonian pastures derived from Landsat time series: *International Journal of Applied Earth Observation and Geoinformation*, v. 41, p. 1–10, at <https://doi.org/10.1016/j.jag.2015.04.010>.
- Rufin, P., Rabe, A., Nill, L., and Hostert, P., 2021, GEE timeseries explorer for QGIS - Instant access to petabytes of Earth observation data, in FOSS4G 2021 - Academic Track, Buenos Aires, Argentina, 27 September–2 October 2021, International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XLVI-4/W2-2021: Lemmer, Netherlands, International Society for Photogrammetry and Remote Sensing, p. 155–158, at <https://doi.org/10.5194/isprs-archives-XLVI-4-W2-2021-155-2021>.

- Running, S.W., Nemani, R.R., Heinsch, F.A., Zhao, M., Reeves, M., and Hashimoto, H., 2004, A continuous satellite-derived measure of global terrestrial primary production: *BioScience*, v. 54, no. 6, p. 547–560, at [https://doi.org/10.1641/0006-3568\(2004\)054\[0547:ACSMOG\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2004)054[0547:ACSMOG]2.0.CO;2).
- Running, S.W., Nemani, R.R., Townshend, J.R.G., and Baldocchi, D.D., 2009, Next-generation terrestrial carbon monitoring, *in* McPherson, B.J., and Sundquist, E.T., eds., *Carbon sequestration and its role in the global carbon cycle*, v. 183: Washington, D.C., American Geophysical Union, p. 49–69, at <https://doi.org/10.1029/2006GM000526>.
- Russell, B., Scharpf, D., Holt, J., Arnold, W., Durell, C., Jablonski, J., Conran, D., Schiller, S., Leigh, L., et al., 2020, Initial results of the flare vicarious calibration network, *in* *Earth Observing Systems XXV 2020*, online virtual meeting, 24 August–4 September 2020, *Proceedings of SPIE Vol. 11501*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 115010f, at <https://doi.org/10.1117/12.2566759>.
- Russell, C.A., Irons, J.R., and Dabney, P.W., 1996, Estimating hemispherical reflectance and selected biophysical parameters for boreal forest canopies using spectral bidirectional reflectance data acquired by ASAS, *in* 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, *Proceedings*: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1417–1419, at <https://doi.org/10.1109/IGARSS.1996.516683>.
- Russell, C.A., Irons, J.R., and Dabney, P.W., 1997, Bidirectional reflectance of selected BOREAS sites from multiangle airborne data: *Journal of Geophysical Research Atmospheres*, v. 102, no. 24, p. 29505–29516, at <https://doi.org/10.1029/96JD03880>.
- Rutan, D., Rose, F., Roman, M., Manalo-Smith, N., Schaaf, C.B., and Charlock, T., 2009, Development and assessment of broadband surface albedo from Clouds and the Earth’s Radiant Energy System Clouds and Radiation Swath data product: *Journal of Geophysical Research Atmospheres*, v. 114, no. 8, article D08125, at <https://doi.org/10.1029/2008JD010669>.
- Ryan, R., Baldridge, B., Schowengerdt, R.A., Choi, T., Helder, D.L., and Blonski, S., 2003, IKONOS spatial resolution and image interpretability characterization: *Remote Sensing of Environment*, v. 88, no. 1–2, p. 37–52, at <https://doi.org/10.1016/j.rse.2003.07.006>.
- Ryan, R., Pagnutti, M., Burch, K., Leigh, L., Ruggles, T., Cao, C., Aaron, D., Blonski, S., and Helder, D., 2019, The Terra Vega Active Light Source—A first step in a new approach to perform nighttime absolute radiometric calibrations and early results calibrating the VIIRS DNB: *Remote Sensing*, v. 11, no. 6, article 710, at <https://doi.org/10.3390/rs11060710>.
- Ryan, R.E., Pagnutti, M., Ruggles, T., Burch, K., Leigh, L., Aaron, D.B., Helder, D., Cao, C., and Blonski, S., 2019, Laying the foundation for improved night lights time series from the VIIRS DNB, *in* ASPRS 2019 Annual Conference and 19th International Lidar Mapping Forum 2019, ILMF 2019, Denver, Colo., 28–30 January 2019, *Proceedings*: Bethesda, Md., American Society for Photogrammetry and Remote Sensing, paper no. 15D, at <http://conferences.asprs.org/class/389/>.
- Ryherd, S., and Woodcock, C.E., 1996, Combining spectral and texture data in the segmentation of remotely sensed images: *Photogrammetric Engineering and Remote Sensing*, v. 62, no. 2, p. 181–194, at https://www.asprs.org/wp-content/uploads/pers/1996journal/feb/1996_feb_181-194.pdf.
- Ryu, J.H., Contor, B., Johnson, G., Allen, R.G., and Tracy, J., 2012, System dynamics to sustainable water resources management in the eastern Snake Plain Aquifer under water supply uncertainty:

- Journal of the American Water Resources Association, v. 48, no. 6, p. 1204–1220, at <https://doi.org/10.1111/j.1752-1688.2012.00681.x>.
- Saarela, S., Holm, S., Healey, S.P., Andersen, H.E., Petersson, H., Prentius, W., Patterson, P.L., Næsset, E., Gregoire, T.G., and Ståhl, G., 2018, Generalized hierarchical model-based estimation for aboveground biomass assessment using GEDI and Landsat data: *Remote Sensing*, v. 10, no. 11, article 1832, at <https://doi.org/10.3390/rs10111832>.
- Saarela, S., Varvia, P., Korhonen, L., Yang, Z., Patterson, P.L., Gobakken, T., Næsset, E., Healey, S.P., and Ståhl, G., 2023, Three-phase hierarchical model-based and hybrid inference: *MethodsX*, v. 11, article 102321, at <https://doi.org/10.1016/j.mex.2023.102321>.
- Saarinen, N., Kankare, V., Pyörälä, J., Yrttimaa, T., Liang, X., Wulder, M.A., Holopainen, M., Hyyppä, J., and Vastaranta, M., 2019, Assessing the effects of sample size on parametrizing a taper curve equation and the resultant stem-volume estimates: *Forests*, v. 10, no. 10, article 848, at <https://doi.org/10.3390/f10100848>.
- Saarinen, N., Vastaranta, M., Honkavaara, E., Wulder, M.A., White, J.C., Litkey, P., Holopainen, M., and Hyyppä, J., 2015, Mapping the risk of forest wind damage using airborne scanning LiDAR, *in* ISPRS Technical Commission I Symposium, Denver, Colo., 25–27 March 2015, *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XL-3/W2: Bethesda, Md., International Society for Photogrammetry and Remote Sensing, p. 189–196, at <https://doi.org/10.5194/isprsarchives-XL-3-W2-189-2015>.
- Saarinen, N., Vastaranta, M., Honkavaara, E., Wulder, M.A., White, J.C., Litkey, P., Holopainen, M., and Hyyppä, J., 2016, Using multi-source data to map and model the predisposition of forests to wind disturbance: *Scandinavian Journal of Forest Research*, v. 31, no. 1, p. 66–79, at <https://doi.org/10.1080/02827581.2015.1056751>.
- Saarinen, N., Vastaranta, M., Näsi, R., Rosnell, T., Hakala, T., Honkavaara, E., Wulder, M.A., Luoma, V., Tommaselli, A.M.G., et al., 2017, UAV-based photogrammetric point clouds and hyperspectral imaging for mapping biodiversity indicators in boreal forests, *in* 2017 *Frontiers in Spectral imaging and 3D Technologies for Geospatial Solutions*, Jyväskylä, Finland, 25–27 October 2017, *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XLII-3/W3: Lemmer, Netherlands, International Society for Photogrammetry and Remote Sensing, p. 171–175, at <https://doi.org/10.5194/isprs-archives-XLII-3-W3-171-2017>.
- Saarinen, N., Vastaranta, M., Näsi, R., Rosnell, T., Hakala, T., Honkavaara, E., Wulder, M.A., Luoma, V., Tommaselli, A.M.G., et al., 2018, Assessing biodiversity in boreal forests with UAV-based photogrammetric point clouds and hyperspectral imaging: *Remote Sensing*, v. 10, no. 2, article 338, at <https://doi.org/10.3390/rs10020338>.
- Saarinen, N., White, J.C., Wulder, M.A., Kangas, A., Tuominen, S., Kankare, V., Holopainen, M., Hyyppä, J., and Vastaranta, M., 2018, Landsat archive holdings for Finland—Opportunities for forest monitoring: *Silva Fennica*, v. 52, no. 3, article 9986, at <https://doi.org/10.14214/sf.9986>.
- Saatchi, S., Asefi-Najafabady, S., Malhi, Y., Aragão, L.E.O.C., Anderson, L.O., Myneni, R.B., and Nemani, R.R., 2013, Persistent effects of a severe drought on Amazonian forest canopy: *Proceedings of the National Academy of Sciences of the United States of America*, v. 110, no. 2, p. 565–570, at <https://doi.org/10.1073/pnas.1204651110>.

- Saatchi, S., Longo, M., Xu, L., Yang, Y., Abe, H., André, M., Aukema, J.E., Carvalhais, N., Cadillo-Quiroz, H., et al., 2021, Detecting vulnerability of humid tropical forests to multiple stressors: *One Earth*, v. 4, no. 7, p. 988–1003, at <https://doi.org/10.1016/j.oneear.2021.06.002>.
- Sabor, A.A., Radeloff, V.C., McRoberts, R.E., Clayton, M., and Stewart, S.I., 2007, Adding uncertainty to forest inventory plot locations—Effects on analyses using geospatial data: *Canadian Journal of Forest Research*, v. 37, no. 11, p. 2313–2325, at <https://doi.org/10.1139/X07-067>.
- Sachs, D.L., Sollins, P., and Cohen, W.B., 1998, Detecting landscape changes in the interior of British Columbia from 1975 to 1992 using satellite imagery: *Canadian Journal of Forest Research*, v. 28, no. 1, p. 23–36, at <https://doi.org/10.1139/x97-186>.
- Safre, A.L.S., Nassar, A., Torres-Rua, A., Aboutaleb, M., Saad, J.C.C., Manzione, R.L., de Castro Teixeira, A.H., Prueger, J.H., McKee, L.G., et al., 2022, Performance of Sentinel-2 SAFER ET model for daily and seasonal estimation of grapevine water consumption: *Irrigation Science*, v. 40, no. 4-5, p. 635–654, at <https://doi.org/10.1007/s00271-022-00810-1>.
- Sagar, S., Phillips, C., Bala, B., Roberts, D., and Lymburner, L., 2018, Generating continental scale pixel-based surface reflectance composites in coastal regions with the use of a multi-resolution tidal model: *Remote Sensing*, v. 10, no. 3, article 480, at <https://doi.org/10.3390/rs10030480>.
- Sagar, S., Roberts, D., Bala, B., and Lymburner, L., 2017, Extracting the intertidal extent and topography of the Australian coastline from a 28 year time series of Landsat observations: *Remote Sensing of Environment*, v. 195, p. 153–169, at <https://doi.org/10.1016/j.rse.2017.04.009>.
- Sahetapy-Engel, S.T.M., Flynn, L.P., Harris, A.J.L., Bluth, G.J., Rose, W.I., and Matias, O., 2004, Surface temperature and spectral measurements at Santiaguito lava dome, Guatemala: *Geophysical Research Letters*, v. 31, no. 19, p. L19610 1–5, at <https://doi.org/10.1029/2004GL020683>.
- Saintilan, N., Asbridge, E., Lucas, R., Rogers, K., Wen, L., Powell, M., Colloff, M.J., Rodriguez, J.F., Saco, P.M., et al., 2021, Australian forested wetlands under climate change—Collapse or proliferation?: *Marine and Freshwater Research*, v. 73, no. 10, p. 1255–1262, at <https://doi.org/10.1071/MF21233>.
- Saintilan, N., Lymburner, L., Wen, L., Haigh, I.D., Ai, E., Kelleway, J.J., Rogers, K., Pham, T.D., and Lucas, R., 2022, The lunar nodal cycle controls mangrove canopy cover on the Australian continent: *Science Advances*, v. 8, no. 37, article eabo6602, at <https://doi.org/10.1126/sciadv.abo6602>.
- Salas, W.A., Ducey, M.J., Rignot, E., and Skole, D.L., 2002, Assessment of JERS-1 SAR for monitoring secondary vegetation in Amazonia—I. Spatial and temporal variability in backscatter across a chrono-sequence of secondary vegetation stands in Rondonia: *International Journal of Remote Sensing*, v. 23, no. 7, p. 1357–1379, at <https://doi.org/10.1080/01431160110092939>.
- Salas, W.A., Ducey, M.J., Rignot, E., and Skole, D.L., 2002, Assessment of JERS-1 SAR for monitoring secondary vegetation in Amazonia—II. Spatial, temporal, and radiometric considerations for operational monitoring: *International Journal of Remote Sensing*, v. 23, no. 7, p. 1381–1399, at <https://doi.org/10.1080/01431160110092948>.
- Salas, W.A., and Skole, D.L., 1998, Remote sensing of land cover change—Secondary growth dynamics in Rondonia, Brazil, in *1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2515–2517, at <https://doi.org/10.1109/IGARSS.1998.702263>.

- Salgues, G., Cadau, E.G., Pessiot, L., Gaudissart, V., Enache, S., Gascon, F., Boccia, V., and Strobl, P., 2023, A candidate DGGs (Discrete Global Grid System) for Sentinel-2—First outcomes, *in* 2023 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Pasadena, Calif., 16–21 July 2023, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4978–4981, at <https://doi.org/10.1109/IGARSS52108.2023.10281749>.
- Salisbury, J., Davis, C., Erb, A., Hu, C., Gatebe, C., Jordan, C., Lee, Z., Mannino, A., Mouw, C.B., et al., 2017, Coastal observations from a new vantage point: *Eos*, v. 98, no. 1, p. 20–25, at <https://doi.org/10.1029/2016EO062707>.
- Salmon, B.P., Wessels, K.J., Van Den Bergh, F., Steenkamp, K., Kleynhans, W., Swanepoel, D., Roy, D.P., and Kovalskyy, V., 2013, Evaluation of rule-based classifier for Landsat-based automated land cover mapping in South Africa, *in* 2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Melbourne, Australia, 21–26 July 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4301–4304, at <https://doi.org/10.1109/IGARSS.2013.6723785>.
- Salmona, Y.B., Matricardi, E.A.T., Skole, D.L., Silva, J.F.A., Coelho Filho, O.D.A., Pedlowski, M.A., Sampaio, J.M., Castrillón, L.C.R., Brandão, R.A., et al., 2023, A worrying future for river flows in the Brazilian Cerrado provoked by land use and climate c: *Sustainability*, v. 15, no. 5, article 4251, at <https://doi.org/10.3390/su15054251>.
- Salomon, J., Hodges, J.C.F., Friedl, M., Schaaf, C.B., Strahler, A., Gao, F., Schneider, A., Zhang, X., El Saleous, N., and Wolfe, R.E., 2004, Global land-water mask derived from MODIS Nadir BRDF-Adjusted Reflectances (NBAR) and the MODIS land cover algorithm, *in* 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 239–241, at <https://doi.org/10.1109/IGARSS.2004.1369005>.
- Salomon, J.G., Schaaf, C.B., Strahler, A.H., Gao, F., and Jin, Y., 2006, Validation of the MODIS Bidirectional Reflectance Distribution Function and albedo retrievals using combined observations from the Aqua and Terra platforms: *IEEE Transactions on Geoscience and Remote Sensing*, v. 44, no. 6, p. 1555–1564, at <https://doi.org/10.1109/TGRS.2006.871564>.
- Salvaggio, P.S., Schott, J.R., and McKeown, D.M., 2015, Laboratory validation of a sparse aperture image quality model, *in* Unconventional Imaging and Wavefront Sensing 2015, San Diego, Calif., 12–13 August 2015, Proceedings of SPIE Vol. 9617: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 961708, at <https://doi.org/10.1117/12.2188325>.
- Salvaggio, P.S., Schott, J.R., and McKeown, D.M., 2016, Genetic apertures—An improved sparse aperture design framework: *Applied Optics*, v. 55, no. 12, p. 3182–3191, at <https://doi.org/10.1364/AO.55.003182>.
- Salvaggio, P.S., Schott, J.R., and McKeown, D.M., 2017, Validation of modeled sparse aperture post-processing artifacts: *Applied Optics*, v. 56, no. 4, p. 761–770, at <https://doi.org/10.1364/AO.56.000761>.
- Samanta, A., Anderson, B.T., Ganguly, S., Knyazikhin, Y., Nemani, R.R., and Myneni, R.B., 2010, Physical climate response to a reduction of anthropogenic climate forcing: *Earth Interactions*, v. 14, no. 7, p. 1–11, at <https://doi.org/10.1175/2010EI325.1>.

- Samanta, A., Ganguly, S., Hashimoto, H., Devadiga, S., Vermote, E.F., Knyazikhin, Y., Nemani, R.R., and Myneni, R.B., 2010, Amazon forests did not green-up during the 2005 drought: Geophysical Research Letters, v. 37, no. 5, article L05401, at <https://doi.org/10.1029/2009GL042154>.
- Samanta, A., Ganguly, S., Vermote, E.F., Nemani, R.R., and Myneni, R.B., 2012, Interpretation of variations in MODIS-measured greenness levels of Amazon forests during 2000 to 2009: Environmental Research Letters, v. 7, no. 2, article 02401, at <https://doi.org/10.1088/1748-9326/7/2/024018>.
- Samanta, A., Knyazikhin, Y., Xu, L., Dickinson, R.E., Fu, R., Costa, M.H., Saatchi, S.S., Nemani, R.R., and Myneni, R.B., 2012, Erratum—Seasonal changes in leaf area of Amazon forests from leaf flushing and abscission (Journal of Geophysical Research (2012) 117 (G03004)): Journal of Geophysical Research Biogeosciences, v. 117, no. 3, article G03004, at <https://doi.org/10.1029/2012JG002083>.
- Samanta, A., Knyazikhin, Y., Xu, L., Dickinson, R.E., Fu, R., Costa, M.H., Saatchi, S.S., Nemani, R.R., and Myneni, R.B., 2012, Seasonal changes in leaf area of Amazon forests from leaf flushing and abscission: Journal of Geophysical Research Biogeosciences, v. 117, no. 1, article G01015, at <https://doi.org/10.1029/2011JG001818>.
- Samek, J.H., Anhar, A., Maimunah, S., and Skole, D., 2022, Measuring forest ecosystem services in Aceh Province for inclusion to local forest resource management plans: APN Science Bulletin, v. 12, no. 1, p. 90–101, at <https://doi.org/10.30852/sb.2022.1910>.
- Sampson, D.A., Wynne, R.H., and Seiler, J.R., 2008, Edaphic and climate effects on forest stand development, net primary production, and net ecosystem productivity simulated for Coastal Plain loblolly pine in Virginia: Journal of Geophysical Research Biogeosciences, v. 113, no. 1, article G01003, at <https://doi.org/10.1029/2006JG000270>.
- Sánchez, J.M., Kustas, W.P., Caselles, V., and Anderson, M.C., 2008, Modelling surface energy fluxes over maize using a two-source patch model and radiometric soil and canopy temperature observations: Remote Sensing of Environment, v. 112, no. 3, p. 1130–1143, at <https://doi.org/10.1016/j.rse.2007.07.018>.
- Sánchez-Azofeifa, G.A., Harriss, R.C., and Skole, D.L., 2001, Deforestation in Costa Rica—A quantitative analysis using remote sensing imagery: Biotropica, v. 33, no. 3, p. 378–384, at <https://doi.org/10.1111/j.1744-7429.2001.tb00192.x>.
- Sanders, L.C., Raqueno, R.V., and Schott, J.R., 1999, Atmospheric correction algorithm for hyperspectral imagery, in Image and Signal Processing for Remote Sensing V, Florence, Italy, 22–24 September 1999, Proceedings of SPIE Vol. 3871: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 2–9, at <https://doi.org/10.1117/12.373238>.
- Sanders, L.C., Schott, J.R., and Raqueno, R., 2000, Atmospheric correction algorithm featuring adjacency effect for hyperspectral imagery, in Imaging Spectrometry VI, San Diego, Calif., 30 July–4 August 1999, Proceedings of SPIE Vol. 4132: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 218–229, at <https://doi.org/10.1117/12.406590>.
- Sanders, L.C., Schott, J.R., and Raqueño, R., 2001, A VNIR/SWIR atmospheric correction algorithm for hyperspectral imagery with adjacency effect: Remote Sensing of Environment, v. 78, no. 3, p. 252–263, at [https://doi.org/10.1016/S0034-4257\(01\)00219-X](https://doi.org/10.1016/S0034-4257(01)00219-X).
- Sandford, S.P., Young, D.F., Corliss, J.M., Wielicki, B.A., Gazarik, M.J., Mlynczak, M.G., Little, A.D., Jones, C.D., Speth, P.W., et al., 2010, CLARREO—Cornerstone of the climate observing system measuring

- decadal change through accurate emitted infrared and reflected solar spectra and radio occultation, *in* Sensors, Systems, and Next-Generation Satellites XIV, Toulouse, France, 20–23 September 2010, Proceedings of SPIE Vol. 7826: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 782611, at <https://doi.org/10.1117/12.866353>.
- San-Miguel-Ayanz, J., Pereira, J.M.C., Boca, R., Strobl, P., Kucera, J., and Pekkarinen, A., 2009, Forest fires in the european mediterranean region—Mapping and analysis of burned areas, *in* Chuvieco, E., ed., Earth observation of wildland fires in Mediterranean ecosystems: Berlin, Germany, Springer, p. 189–203, at https://doi.org/10.1007/978-3-642-01754-4_13.
- Sano, E.E., Huete, A.R., Troufleau, D., Moran, M.S., and Vidai, A., 1998, Relation between ERS-1 synthetic aperture radar data and measurements of surface roughness and moisture content of rocky soils in a semiarid rangeland: *Water Resources Research*, v. 34, no. 6, p. 1491–1498, at <https://doi.org/10.1029/98WR00032>.
- Sano, E.E., Huete, A.R., Troufleau, D., Moran, M.S., and Vidal, A., 1996, Analysis of ERS-1 SAR data to study soil moisture content in rocky soils, *in* 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 157–159, at <https://doi.org/10.1109/IGARSS.1996.516276>.
- Sano, E.E., Jianguo, Q., Huete, A.R., and Moran, M.S., 1998, The use of SAR/TM synergy for estimating soil moisture content over a semi-arid rangeland, *in* Second Latino-American Seminar on Radar Remote Sensing Image Processing Techniques, Santos, Sao Paulo, Brazil, 11–12 September 1998, Proceedings: INPE/ESA, p. 175–183, at <http://www.tucson.ars.ag.gov/unit/publications/pdffiles/1413.pdf>.
- Sano, E.E., Moran, M.S., Huete, A.R., and Miura, T., 1997, Ku-band SAR data for bare soil moisture retrieval over agricultural fields, *in* 1997 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Singapore, 3–8 August 1997, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 98–100, at <https://doi.org/10.1109/IGARSS.1997.615809>.
- Sano, E.E., Moran, M.S., Huete, A.R., and Miura, T., 1998, C- and multiangle Ku-band synthetic aperture radar data for bare soil moisture estimation in agricultural areas: *Remote Sensing of Environment*, v. 64, no. 1, p. 77–90, at [https://doi.org/10.1016/S0034-4257\(97\)00170-3](https://doi.org/10.1016/S0034-4257(97)00170-3).
- Santamaria-Artigas, A., Franch, B., Guillevic, P., Roger, J.C., and Vermote, E., 2018, Comparison of surface air temperature products from reanalysis over United States and Ukraine—Application to wheat yield forecasting, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5359–5362, at <https://doi.org/10.1109/IGARSS.2018.8518644>.
- Santamaria-Artigas, A., Franch, B., Roger, J.C., Vermote, E., and Justice, C., 2019, Evaluation of the surface reflectance long-term data record from AVHRR over multiple land surface types, *in* 2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8830–8833, at <https://doi.org/10.1109/IGARSS.2019.8898536>.
- Santamaria-Artigas, A.E., Franch, B., Guillevic, P., Roger, J.C., Vermote, E.F., and Skakun, S., 2019, Evaluation of near-surface air temperature from reanalysis over the United States and Ukraine—Application to winter wheat yield forecasting: *IEEE Journal of Selected Topics in Applied Earth*

- Observations and Remote Sensing, v. 12, no. 7, p. 2260–2269, at <https://doi.org/10.1109/JSTARS.2019.2902479>.
- Santanello Jr, J.A., Peters-Lidard, C.D., Garcia, M.E., Mocko, D.M., Tischler, M.A., Moran, M.S., and Thoma, D.P., 2007, Using remotely-sensed estimates of soil moisture to infer soil texture and hydraulic properties across a semi-arid watershed: *Remote Sensing of Environment*, v. 110, no. 1, p. 79–97, at <https://doi.org/10.1016/j.rse.2007.02.007>.
- Santer, R.P., Schmectig, C., and Thome, K.J., 1997, BRDF and surface-surround effects on SPOT-HRV vicarious calibration, in *Advanced and Next-Generation Satellites II*, Taormina, Italy, 23–27 September 1996, *Proceedings of SPIE Vol. 2957*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 344–354, at <https://doi.org/10.1117/12.265448>.
- Santos, C., Lorite, I.J., Allen, R.G., and Tasumi, M., 2012, Aerodynamic parameterization of the satellite-based energy balance (METRIC) model for ET estimation in rainfed olive orchards of Andalusia, Spain: *Water Resources Management*, v. 26, no. 11, p. 3267–3283, at <https://doi.org/10.1007/s11269-012-0071-8>.
- Santos, C., Lorite, I.J., Tasumi, M., and Allen, R.G., 2012, ET estimation for olive orchards using satellite-based energy balance and ET simulation, in *Remote Sensing and Hydrology 2010*, Jackson Hole, Wyo., 27–30 September 2010, *IAHS Publication 352*: Wallingford, UK, International Association of Hydrological Sciences, p. 80–83.
- Santos, C., Lorite, I.J., Tasumi, M., Allen, R.G., and Fereres, E., 2008, Integrating satellite-based evapotranspiration with simulation models for irrigation management at the scheme level: *Irrigation Science*, v. 26, no. 3, p. 277–288, at <https://doi.org/10.1007/s00271-007-0093-9>.
- Santos, C., Lorite, I.J., Tasumi, M., Allen, R.G., and Fereres, E., 2010, Performance assessment of an irrigation scheme using indicators determined with remote sensing techniques: *Irrigation Science*, v. 28, no. 6, p. 461–477, at <https://doi.org/10.1007/s00271-010-0207-7>.
- Santos, C., Lorite, I.J., Tasumi, M., Allen, R.G., Gavilán, P., and Fereres, E., 2007, Integration of satellite-based energy balance with simulation models applied to irrigation management at an irrigation scheme of southern Spain, in *Remote Sensing for Agriculture, Ecosystems, and Hydrology IX*, Florence, Italy, 18–20 September 2007, *Proceedings of SPIE Vol. 6742*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 67420P, at <https://doi.org/10.1117/12.737740>.
- Santos, F., Meneses, P., and Hostert, P., 2019, Monitoring long-term forest dynamics with scarce data—A multi-date classification implementation in the Ecuadorian Amazon: *European Journal of Remote Sensing*, v. 52, p. 62–78, at <https://doi.org/10.1080/22797254.2018.1533793>.
- Saranathan, A.M., and Pahlevan, N., 2023, Multi-parameter retrieval of water quality indicators from bayesian and mixture density networks, in *2023 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Pasadena, Calif., 16–21 July 2023, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 3946–3949, at <https://doi.org/10.1109/IGARSS52108.2023.10281433>.
- Saranathan, A.M., Smith, B., and Pahlevan, N., 2023, Per-pixel uncertainty quantification and reporting for satellite-derived chlorophyll-a estimates via mixture density networks: *IEEE Transactions on Geoscience and Remote Sensing*, v. 61, article 4200718, at <https://doi.org/10.1109/TGRS.2023.3234465>.

- Sasai, T., Nakai, S., Setoyama, Y., Ono, K., Kato, S., Mano, M., Murakami, K., Miyata, A., Saigusa, N., et al., 2012, Analysis of the spatial variation in the net ecosystem production of rice paddy fields using the diagnostic biosphere model, BEAMS: Ecological Modelling, v. 247, p. 175–189, at <https://doi.org/10.1016/j.ecolmodel.2012.08.016>.
- Sasai, T., Obikawa, H., Murakami, K., Kato, S., Matsunaga, T., and Nemani, R.R., 2016, Estimation of net ecosystem production in Asia using the diagnostic-type ecosystem model with a 10 km grid-scale resolution: Journal of Geophysical Research Biogeosciences, v. 121, no. 6, p. 1484–1502, at <https://doi.org/10.1002/2015JG003157>.
- Sasai, T., Saigusa, N., Nasahara, K.N., Ito, A., Hashimoto, H., Nemani, R.R., Hirata, R., Ichii, K., Takagi, K., et al., 2011, Satellite-driven estimation of terrestrial carbon flux over Far East Asia with 1-km grid resolution: Remote Sensing of Environment, v. 115, no. 7, p. 1758–1771, at <https://doi.org/10.1016/j.rse.2011.03.007>.
- Savage, S.L., Lawrence, R.L., Squires, J.R., Holbrook, J.D., Olson, L.E., Braaten, J.D., and Cohen, W.B., 2018, Shifts in forest structure in northwest Montana from 1972 to 2015 using the Landsat archive from multispectral scanner to operational land imager: Forests, v. 9, no. 4, article 157, at <https://doi.org/10.3390/f9040157>.
- Saxena, R., Watson, L.T., Thomas, V.A., and Wynne, R.H., 2017, Scaling constituent algorithms of a trend and change detection polyalgorithm, in 25th High Performance Computing Symposium, HPC 2017, Part of the 2017 Spring Simulation Multi-Conference, SpringSim 2017, Virginia Beach, Va., 23–26 April 2017, Simulation Series, v. 49, no. 3: Society for Modeling and Simulation International, p. 59–70, at <http://dl.acm.org/citation.cfm?id=3108102>.
- Saxena, R., Watson, L.T., Wynne, R.H., Brooks, E.B., Thomas, V.A., Zhiqiang, Y., and Kennedy, R.E., 2018, Towards a polyalgorithm for land use change detection: ISPRS Journal of Photogrammetry and Remote Sensing, v. 144, p. 217–234, at <https://doi.org/10.1016/j.isprsjprs.2018.07.002>.
- Sayer, A., Hsu, N., Lee, J., Kim, W.V., Dubovik, O., Dutcher, S., Huang, D., Litvinov, P., Lyapustin, A., et al., 2018, Validation of SOAR VIIRS over-water aerosol retrievals and context within the global satellite aerosol data record: Journal of Geophysical Research Atmospheres, v. 123, no. 23, p. 13,496–13,526, at <https://doi.org/10.1029/2018JD029465>.
- Scambos, T., and Abdalati, W., 2022, How fast is sea level rising?: Arctic, Antarctic, and Alpine Research, v. 54, no. 1, p. 111–112, at <https://doi.org/10.1080/15230430.2022.2047247>.
- Scambos, T., Stammerjohn, S., Abrahamsen, E.P., Barreira, S., Bitz, C.M., Butler, A., Clem, K.R., Colwell, S., Coy, L., et al., 2020, Antarctica and the Southern Ocean, State of the climate in 2019, Bulletin of the American Meteorological Society, v. 101, no. 8, p. S287–S320, at <https://doi.org/10.1175/BAMS-D-20-0090.1>.
- Scambos, T., Straneo, F., and Tedesco, M., 2021, How fast is the Greenland ice sheet melting?: Arctic, Antarctic, and Alpine Research, v. 53, no. 1, p. 221–222, at <https://doi.org/10.1080/15230430.2021.1946241>.
- Scambos, T.A., 2011, Earth's ice—Sea level, climate, and our future commitment: Bulletin of the Atomic Scientists, v. 67, no. 1, p. 28–40, at <https://doi.org/10.1177/0096340210392965>.
- Scambos, T.A., and Abraham, J., 2015, Briefing—Antarctic ice sheet mass loss and future sea-level rise: Proceedings of the Institution of Civil Engineers—Forensic Engineering, v. 168, no. 2, p. 81–84, at <https://doi.org/10.1680/feng.14.00014>.

- Scambos, T.A., Bell, R.E., Alley, R.B., Anandakrishnan, S., Bromwich, D.H., Brunt, K., Christianson, K., Creyts, T., Das, S.B., et al., 2017, How much, how fast?—A science review and outlook for research on the instability of Antarctica's Thwaites Glacier in the 21st century: *Global and Planetary Change*, v. 153, p. 16–34, at <https://doi.org/10.1016/j.gloplacha.2017.04.008>.
- Scambos, T.A., Berthier, E., Haran, T., Shuman, C.A., Cook, A.J., Ligtenberg, S.R.M., and Bohlander, J., 2014, Detailed ice loss pattern in the northern Antarctic Peninsula—Widespread decline driven by ice front retreats: *Cryosphere*, v. 8, no. 6, p. 2135–2145, at <https://doi.org/10.5194/tc-8-2135-2014>.
- Scambos, T.A., Berthier, E., and Shuman, C.A., 2011, The triggering of subglacial lake drainage during rapid glacier drawdown—Crane Glacier, Antarctic Peninsula: *Annals of Glaciology*, v. 52, no. 59, p. 74–82, at https://hal.archives-ouvertes.fr/file/index/docid/626055/filename/Scambos_et_al_Annals_2011.pdf.
- Scambos, T.A., Bohlander, J., Raup, B., and Haran, T., 2004, Glaciological characteristics of Insite Ice Stream using remote sensing: *Antarctic Science*, v. 16, no. 2, p. 205–213, at <https://doi.org/10.1017/S0954102004001919>.
- Scambos, T.A., Bohlander, J.A., Shuman, C.A., and Skvarca, P., 2004, Glacier acceleration and thinning after ice shelf collapse in the Larsen B embayment, Antarctica: *Geophysical Research Letters*, v. 31, no. 18, p. L18402 1–4, at <https://doi.org/10.1029/2004GL020670>.
- Scambos, T.A., Campbell, G.G., Pope, A., Haran, T., Muto, A., Lazzara, M., Reijmer, C.H., and van den Broeke, M.R., 2018, Ultralow surface temperatures in East Antarctica from satellite thermal infrared mapping—The coldest places on Earth: *Geophysical Research Letters*, v. 45, no. 12, p. 6124–6133, at <https://doi.org/10.1029/2018GL078133>.
- Scambos, T.A., and Fahnestock, M.A., 1998, Improving digital elevation models over ice sheets using AVHRR-based photogrammetry: *Journal of Glaciology*, v. 44, no. 146, p. 97–103, at <https://doi.org/10.1017/S002214300002392>.
- Scambos, T.A., Frezzotti, M., Haran, T., Bohlander, J., Lenaerts, J.T.M., Van Den Broeke, M.R., Jezek, K., Long, D., Urbini, S., et al., 2012, Extent of low-accumulation 'wind glaze' areas on the East Antarctic plateau—Implications for continental ice mass balance: *Journal of Glaciology*, v. 58, no. 210, p. 633–647, at <https://doi.org/10.3189/2012JoG11J232>.
- Scambos, T.A., Fricker, H.A., Liu, C.C., Bohlander, J., Fastook, J., Sargent, A., Massom, R., and Wu, A.M., 2009, Ice shelf disintegration by plate bending and hydro-fracture—Satellite observations and model results of the 2008 Wilkins ice shelf break-ups: *Earth and Planetary Science Letters*, v. 280, no. 1–4, p. 51–60, at <https://doi.org/10.1016/j.epsl.2008.12.027>.
- Scambos, T.A., and Haran, T., 2002, An image-enhanced DEM of the Greenland ice sheet: *Annals of Glaciology*, v. 34, p. 291–298, at <https://doi.org/10.3189/172756402781817969>.
- Scambos, T.A., Haran, T.M., Fahnestock, M.A., Painter, T.H., and Bohlander, J., 2007, MODIS-based Mosaic of Antarctica (MOA) data sets—Continent-wide surface morphology and snow grain size: *Remote Sensing of Environment*, v. 111, no. 2, p. 242–257, at <https://doi.org/10.1016/j.rse.2006.12.020>.
- Scambos, T.A., Haran, T.M., and Massom, R., 2006, Validation of AVHRR and MODIS ice surface temperature products using in situ radiometers: *Annals of Glaciology*, v. 44, no. 1, p. 345–351, at <https://doi.org/10.3189/172756406781811457>.

- Scambos, T.A., Hulbe, C., Fahnestock, M., and Bohlander, J., 2000, The link between climate warming and break-up of ice shelves in the Antarctic Peninsula: *Journal of Glaciology*, v. 46, no. 154, p. 516–530, at <https://doi.org/10.3189/172756500781833043>.
- Scambos, T.A., Jezek, K., Sohn, H.-Y., and Fahnestock, M., 2000, New surface features of the Antarctic ice sheet from radar and visible-NIR mapping, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2576–2579, at <https://doi.org/10.1109/IGARSS.2000.859645>.
- Scambos, T.A., Kvaran, G., and Fahnestock, M.A., 1999, Improving AVHRR resolution through data cumulation for mapping polar ice sheets: *Remote Sensing of Environment*, v. 69, no. 1, p. 56–66, at [https://doi.org/10.1016/S0034-4257\(99\)00009-7](https://doi.org/10.1016/S0034-4257(99)00009-7).
- Scambos, T.A., Nereson, N.A., and Fahnestock, M.A., 1998, Detailed topography of Roosevelt Island and Siple Dome, West Antarctica: *Annals of Glaciology*, v. 27, p. 61–67, at <https://doi.org/10.3189/1998AoG27-1-61-67>.
- Scambos, T.A., and Novak, C., 2005, On the current location of the byrd “snow cruiser” and other artifacts from little America I, II, III and Framheim: *Polar Geography*, v. 29, no. 4, p. 237–252, at <https://doi.org/10.1080/789610142>.
- Scambos, T.A., Ross, R., Bauer, R., Yermolin, Y., Skvarca, P., Long, D., Bohlander, J., and Haran, T., 2008, Calving and ice-shelf break-up processes investigated by proxy—Antarctic tabular iceberg evolution during northward drift: *Journal of Glaciology*, v. 54, no. 187, p. 579–591, at <https://doi.org/10.3189/002214308786570836>.
- Scambos, T.A., Ross, R., Haran, T., Bauer, R., Ainley, D.G., Seo, K.W., De Keyser, M., Behar, A., and MacAyeal, D.R., 2013, A camera and multisensor automated station design for polar physical and biological systems monitoring—AMIGOS: *Journal of Glaciology*, v. 59, no. 214, p. 303–314, at <https://doi.org/10.3189/2013JoG12J170>.
- Scambos, T.A., Sergienko, O., Sargent, A., MacAyeal, D., and Fastook, J., 2005, ICESat profiles of tabular iceberg margins and iceberg breakup at low latitudes: *Geophysical Research Letters*, v. 32, no. 23, p. 1–4, at <https://doi.org/10.1029/2005GL023802>.
- Scambos, T.A., and Shuman, C., 2016, Comment on ‘mass gains of the Antarctic ice sheet exceed losses’ by H. J. Zwally and others: *Journal of Glaciology*, v. 62, no. 233, p. 599–603, at <https://doi.org/10.1017/jog.2016.59>.
- Scanlan, N.W., Schott, J.R., and Brown, S.D., 2004, Performance analysis of improved methodology for incorporation of spatial/spectral variability in synthetic hyperspectral imagery, *in* Imaging Spectrometry IX, San Diego, Calif., 6–7 August 2003, Proceedings of SPIE Vol. 5159: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 319–330, at <https://doi.org/10.1117/12.509858>.
- Scanlon, T., Greenwell, C., Czapla-Myers, J., Anderson, N., Goodman, T., Thome, K.J., Wolliams, E., Porrovecchio, G., Linduška, P., et al., 2017, Ground comparisons at RadCalNet sites to determine the equivalence of sites within the network, *in* Sensors, Systems, and Next-Generation Satellites XXI, Warsaw, Poland, 11–14 September 2017, Proceedings of SPIE Vol. 10423: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 104231b, at <https://doi.org/10.1117/12.2278649>.

- Scaramuzza, P.L., Bouchard, M.A., and Dwyer, J.L., 2012, Development of the Landsat data continuity mission cloud-cover assessment algorithms: *IEEE Transactions on Geoscience and Remote Sensing*, v. 50, no. 4, p. 1140–1154, at <https://doi.org/10.1109/TGRS.2011.2164087>.
- Scepan, J., Menz, G., and Hansen, M.C., 1999, The DISCover validation image interpretation process: *Photogrammetric Engineering and Remote Sensing*, v. 65, no. 9, p. 1075–1081, at https://www.asprs.org/wp-content/uploads/pers/1999journal/sep/1999_sept_1075-1081.pdf.
- Schaaf, C.B., Gao, F., Strahler, A.H., Lucht, W., Li, X., Tsang, T., Strugnell, N.C., Zhang, X., Jin, Y., et al., 2002, First operational BRDF, albedo nadir reflectance products from MODIS: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 135–148, at [https://doi.org/10.1016/S0034-4257\(02\)00091-3](https://doi.org/10.1016/S0034-4257(02)00091-3).
- Schaaf, C.B., Gao, F., Strahler, A.H., Tsang, T., Lucht, W., Strugnell, N., Li, X., Muller, J.-P., Lewis, P., et al., 2000, MODerate resolution Imaging Spectroradiometer (MODIS) BRDF and Albedo product—Preliminary results, in *2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3048–3050, at <https://doi.org/10.1109/IGARSS.2000.860331>.
- Schaaf, C.B., Liu, J., Gao, F., and Strahler, A.H., 2011, Aqua and terra MODIS albedo and reflectance anisotropy products, in Ramachandran, B., Justice, C.O., and Abrams, M.J., eds., *Land remote sensing and global environmental change*: New York, N.Y., Springer, p. 549–561, at https://doi.org/10.1007/978-1-4419-6749-7_24.
- Schaaf, C.B., Lucht, W., Strahler, A.H., Hodges, J.C.F., and d'Entremont, R.P., 1998, Relationship between land surface properties and BRDF/albedo parameters using satellite data, in *1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1277–1279, at <https://doi.org/10.1109/IGARSS.1998.691375>.
- Schaaf, C.B., Lucht, W., Tsang, T., Gao, F., Strugnell, N., Chen, L., Liu, Y., and Strahler, A.H., 1999, Prototyping the moderate resolution imaging spectroradiometer (MODIS) BRDF and Albedo product, in *1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Hamburg, Germany, 28 June–2 July 1999, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1506–1508, at <https://doi.org/10.1109/IGARSS.1999.772002>.
- Schaaf, C.B., Strahler, A., Gao, F., Lucht, W., Jin, Y., Li, X., Zhang, X., Tsvetsinskaya, E., Muller, J.P., et al., 2002, Global albedo, BRDF and nadir BRDF-adjusted reflectance products from MODIS, in *2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1188–1190, at <https://doi.org/10.1109/IGARSS.2002.1025877>.
- Schaaf, C.B., Strahler, A.H., Gao, F., Lucht, W., Li, X., Zhang, X., Jin, Y., Tsvetsinskaya, E., Muller, J.P., et al., 2001, MODIS operational bidirectional reflectance and albedo products, in *2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2227–2229, at <https://doi.org/10.1109/IGARSS.2001.977957>.
- Schaaf, C.B., Wang, Z., and Strahler, A.H., 2011, Commentary on Wang and Zender-MODIS snow albedo bias at high solar zenith angles relative to theory and to in situ observations in Greenland: *Remote Sensing of Environment*, v. 115, no. 5, p. 1296–1300, at <https://doi.org/10.1016/j.rse.2011.01.002>.

- Schaaf, C.B.B., Martonchik, J., Pinty, B., Govaerts, Y., Gao, F., Lattanzio, A., Liu, J., Strahler, A., and Taberner, M., 2008, Retrieval of surface albedo from satellite sensors, *in* Liang, S., ed., *Advances in land remote sensing—System, modeling, inversion and application*: Dordrecht, Netherlands, Springer, p. 219–243, at https://doi.org/10.1007/978-1-4020-6450-0_9.
- Schaeffer, B.A., Iliades, J., Dwyer, J.L., Urquhart, E., Salls, W., Rover, J., and Seegers, B., 2018, An initial validation of Landsat 5 and 7 derived surface water temperature for U.S. lakes, reservoirs, and estuaries: *International Journal of Remote Sensing*, v. 39, p. 7789–7805, at <https://doi.org/10.1080/01431161.2018.1471545>.
- Schaepman, M.E., Green, R.O., Ungar, S.G., Curtiss, B., Boardman, J., Plaza, A.J., Gao, B.C., Ustin, S., Kokaly, R., et al., 2006, The future of imaging spectroscopy - Prospective technologies and applications, *in* 2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Denver, Colo., 31 July–4 August 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2005–2009, at <https://doi.org/10.1109/IGARSS.2006.519>.
- Schaepman, M.E., Itten, K.I., Schläpfer, D., Kaiser, J.W., Brazile, J., Debruyn, W., Neukom, A., Feusi, H., Adolph, P., et al., 2003, Status of the airborne dispersive pushbroom imaging spectrometer APEX (Airborne Prism Experiment), *in* 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4304–4306, at <https://doi.org/10.1109/IGARSS.2003.1295497>.
- Schaepman, M.E., Itten, K.I., Schläpfer, D., Kaiser, J.W., Brazile, J., Debruyn, W., Neukom, A., Feusi, H., Adolph, P., et al., 2004, APEX—Current status of the airborne dispersive pushbroom imaging spectrometer, *in* *Sensors, Systems and Next-Generation Satellites VII*, Barcelona, Spain, 8–10 September 2003, Proceedings of SPIE Vol. 5234: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 202–210, at <https://doi.org/10.1117/12.513745>.
- Schaepman, M.E., Kneubuehler, M., Meier, E., Mueller, A., Strobl, P., Reulke, R., and Horn, R., 1998, Fusion of hyperspectral (DAIS 7915), wide-angle (WAAC), and SAR (E-SAR) data acquisition methods—The MultiSwiss'97 campaign, *in* *Imaging Spectrometry IV*, San Diego, Calif., 20–21 July 1998, Proceedings of SPIE Vol. 3438: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 84–95, at <https://doi.org/10.1117/12.328125>.
- Schaepman-Strub, G., Schaepman, M.E., Martonchik, J., and Schaaf, C.B., 2006, What's in a satellite albedo product?, *in* 2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Denver, Colo., 31 July–4 August 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2848–2851, at <https://doi.org/10.1109/IGARSS.2006.732>.
- Schäfer, P., Pflugmacher, D., Hostert, P., and Leser, U., 2018, Classifying land cover from satellite images using time series analytics, *in* *Workshops of the International Conference on Extending Database Technology and the International Conference on Database Theory, EDBT/ICDT-WS 2018*, Vienna, Austria, 26 March 2018, Proceedings: Aachen, Germany, CEUR, p. 10–15, at <http://ceur-ws.org/Vol-2083/paper-02.pdf>.
- Scharlemann, J.P.W., Kapos, V., Campbell, A., Lysenko, I., Burgess, N.D., Hansen, M.C., Gibbs, H.K., Dickson, B., and Miles, L., 2010, Securing tropical forest carbon—The contribution of protected areas to REDD: *ORYX*, v. 44, no. 3, p. 352–357, at <https://doi.org/10.1017/S0030605310000542>.

- Scheffler, D., Hollstein, A., Diedrich, H., Segl, K., and Hostert, P., 2017, AROSICS—An automated and robust open-source image co-registration software for multi-sensor satellite data: *Remote Sensing*, v. 9, no. 7, article 676, at <https://doi.org/10.3390/rs9070676>.
- Scherler, D., Wulf, H., and Gorelick, N., 2018, Global assessment of supraglacial debris-cover extents: *Geophysical Research Letters*, v. 45, no. 21, p. 11,798–11,805, at <https://doi.org/10.1029/2018GL080158>.
- Schiefer, S., Hostert, P., and Damm, A., 2006, Correcting brightness gradients in hyperspectral data from urban areas: *Remote Sensing of Environment*, v. 101, no. 1, p. 25–37, at <https://doi.org/10.1016/j.rse.2005.12.003>.
- Schimel, D.S., Braswell, B.H., Emanuel, W., Rizzo, B., Smith, T., Woodward, F.I., Fisher, H., Kittel, T.G.F., McKeown, R., et al., 1997, Continental scale variability in ecosystem processes—Models, data, and the role of disturbance: *Ecological Monographs*, v. 67, no. 2, p. 251–271, at [https://doi.org/10.1890/0012-9615\(1997\)067\[0251:CSVIEP\]2.0.CO;2](https://doi.org/10.1890/0012-9615(1997)067[0251:CSVIEP]2.0.CO;2).
- Schleeweis, K., Goward, S.N., Huang, C., Dwyer, J.L., Dungan, J.L., Lindsey, M.A., Michaelis, A., Rishmawi, K., and Masek, J.G., 2016, Selection and quality assessment of Landsat data for the North American forest dynamics forest history maps of the US: *International Journal of Digital Earth*, v. 9, no. 10, p. 963–980, at <https://doi.org/10.1080/17538947.2016.1158876>.
- Schleeweis, K., Goward, S.N., Huang, C., Masek, J.G., Moisen, G., Kennedy, R.E., and Thomas, N.E., 2013, Regional dynamics of forest canopy change and underlying causal processes in the contiguous U.S: *Journal of Geophysical Research Biogeosciences*, v. 118, no. 3, p. 1035–1053, at <https://doi.org/10.1002/jgrg.20076>.
- Schleeweis, K.G., Moisen, G.G., Schroeder, T.A., Toney, C., Freeman, E.A., Goward, S.N., Huang, C., and Dungan, J.L., 2020, US national maps attributing forest change—1986–2010: *Forests*, v. 11, no. 6, article 653, at <https://doi.org/10.3390/F11060653>.
- Schlingmeier, D., and Schott, J.R., 1998, Resolution enhancement of thermal infrared images via high resolution class-map and statistical methods, *in* Algorithms for Multispectral and Hyperspectral Imagery IV, Orlando, Fla., 13–14 April 1998, Proceedings of SPIE Vol. 3372: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 100–111, at <https://doi.org/10.1117/12.312612>.
- Schmidt, G.D., Allen, R.G., Smith, P.S., and Liebert, J., 1996, Combined ultraviolet-optical spectropolarimetry of the magnetic white dwarf GD 229: *Astrophysical Journal*, v. 463, no. 1 pt. 1, p. 320–325, at <https://doi.org/10.1086/177244>.
- Schmiedgen, A., Komainda, M., Kowalski, K., Hostert, P., Tonn, B., Kayser, M., and Isselstein, J., 2021, Impacts of cutting frequency and position to tree line on herbage accumulation in silvopastoral grassland reveal potential for grassland conservation based on land use and cover information: *Annals of Applied Biology*, v. 179, no. 1, p. 75–84, at <https://doi.org/10.1111/aab.12681>.
- Schmit, T.J., Li, Z., Gunshor, M.M., Iturbide-Iturbide, F., Yoe, J.G., McCorkel, J., and Heidinger, A., 2022, U.S. plans for geostationary hyperspectral infrared sounders, *in* 2022 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Kuala Lumpur, Malaysia, 17–22 July 2022, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5411–5414, at <https://doi.org/10.1109/IGARSS46834.2022.9884082>.

- Schneider, A., Friedl, M.A., McIver, D.K., and Woodcock, C.E., 2003, Mapping Urban Areas by Fusing Multiple Sources of Coarse Resolution Remotely Sensed Data: Photogrammetric Engineering and Remote Sensing, v. 69, no. 12, p. 1377–1386, at <https://doi.org/10.14358/PERS.69.12.1377>.
- Schneider, A., McIver, D.K., Friedl, M.A., and Woodcock, C.E., 2001, Mapping urban areas using coarse resolution remotely sensed data, *in* IEEE/ISPRS Joint Workshop on Remote Sensing and Data Fusion over Urban Areas, DFUA 2001, Rome, Italy, 8–9 November 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 136–140, at <https://doi.org/10.1109/DFUA.2001.985750>.
- Schneider, A., Seto, K.C., and Woodcock, C.E., 2003, Spatial and temporal patterns of land cover change in Chengdu, China, 1978-2002, *in* 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3365–3367, at <https://doi.org/10.1109/IGARSS.2003.1294784>.
- Schneider, A., and Woodcock, C.E., 2008, Compact, dispersed, fragmented, extensive? A comparison of urban growth in twenty-five global cities using remotely sensed data, pattern metrics and census information: *Urban Studies*, v. 45, no. 3, p. 659–692, at <https://doi.org/10.1177/0042098007087340>.
- Scholes, R.J., Kendall, J., and Justice, C.O., 1996, The quantity of biomass burned in southern Africa: *Journal of Geophysical Research Atmospheres*, v. 101, no. 19, p. 23667–23676, at <https://doi.org/10.1029/96JD01623>.
- Scholes, R.J., Ward, D.E., and Justice, C.O., 1996, Emissions of trace gases and aerosol particles due to vegetation burning in southern hemisphere Africa: *Journal of Geophysical Research Atmospheres*, v. 101, no. 19, p. 23677–23682, at <https://doi.org/10.1029/95JD02049>.
- Scholl, J.F., Thome, K.J., and Dereniak, E.L., 2004, Normalized difference vegetation index calculations from JPEG2000 compressed Landsat 7 images, *in* Mathematics of Data/Image Coding, Compression, and Encryption VII, with Applications, Denver, Colo., 4–5 August 2004, Proceedings of SPIE Vol. 5561: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 84–95, at <https://doi.org/10.1117/12.557954>.
- Schons, S.Z., Gudimenda, H., Amacher, G.S., Cobourn, K.M., Wynne, R.H., and Thomas, V.A., 2020, Can efficiency gains in the wood processing industry conserve forests in developing countries? The case of Andhra Pradesh: *Forest Products Journal*, v. 70, no. 4, p. 409–415, at <https://doi.org/10.13073/FPJ-D-20-00021>.
- Schott, J.R., 2000, Combining image derived spectra and physics based models for hyperspectral image exploitation, *in* 29th Applied Imagery Pattern Recognition Workshop, AIPR 2000, Washington, D.C., 16–18 October 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 15–24, at <https://doi.org/10.1109/AIPRW.2000.953598>.
- Schott, J.R., 2003, Combining physics-based models and imaging spectroscopy to study the Earth, *in* The Next 100 Years, AIAA\ICAS International Air and Space Symposium and Exposition, Reston, Va., 14–17 July 2003, Proceedings: Reston, Va., American Institute of Aeronautics and Astronautics, p. 1293–1302, at <https://doi.org/10.2514/6.2003-2690>.
- Schott, J.R., 2003, The evolution of spectral remote sensing from color images to imaging spectroscopy, *in* PICS Conference—The Digital Photography Conference, Rochester, N.Y., 13–16 May 2003,

- Proceedings: Society for Imaging Science and Technology, p. 250–257, at <https://www.imaging.org/common/uploaded%20files/pdfs/Papers/2003/PICS-0-287/8526.pdf>.
- Schott, J.R., 2004, Spectral data adds a new dimension to remote imaging of Earth: *Laser Focus World*, v. 40, no. 8, p. 76–84, at <https://scholarworks.rit.edu/article/308>.
- Schott, J.R., 2009, *Fundamentals of polarimetric remote sensing*: Bellingham, Wash., SPIE Press, 244 p., at <https://doi.org/10.1117/3.817304>.
- Schott, J.R., Anderson, C.R., and Barsi, J.A., 2008, Refinement of the method for using pseudo-invariant sites for long term calibration trending of Landsat reflective bands, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. I245–I248, at <https://doi.org/10.1109/IGARSS.2008.4778839>.
- Schott, J.R., Barsi, J.A., Nordgren, B.L., Raqueño, N.G., and De Alwis, D., 2001, Calibration of Landsat thermal data and application to water resource studies: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 108–117, at [https://doi.org/10.1016/S0034-4257\(01\)00253-X](https://doi.org/10.1016/S0034-4257(01)00253-X).
- Schott, J.R., and Brown, S.D., 1998, Incorporation of enhanced texture/transition modeling tools into a synthetic image generation model, *in* 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1508–1511, at <https://doi.org/10.1109/IGARSS.1998.691547>.
- Schott, J.R., Brown, S.D., and Raqueno, R.V., 1999, Advanced synthetic image generation models and their application to multi/hyper-spectral algorithm development, *in* 27th AIPR Workshop Advances in Computer-Assisted Recognition, Washington, D.C., 14–16 October 1998, Proceedings of SPIE Vol. 3584: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 211–220, at <https://doi.org/10.1117/12.339823>.
- Schott, J.R., Brown, S.D., Raqueño, R.V., Gross, H.N., and Robinson, G., 1999, An advanced synthetic image generation model and its application to multi/hyperspectral algorithm development: *Canadian Journal of Remote Sensing*, v. 25, no. 2, p. 99–111, at <https://doi.org/10.1080/07038992.1999.10874709>.
- Schott, J.R., and Chang, C.Y., 2000, Synthetic image generation of chemical plumes for hyperspectral applications: *Optical Engineering*, v. 39, no. 4, p. 1047–1056, at <https://doi.org/10.1117/1.602459>.
- Schott, J.R., Gallagher, T.W., and Barsi, J., 1997, Calibration procedures for evaluation of in-flight radiometry performance of thermal infrared satellite sensors, *in* Sensors, Systems, and Next-Generation Satellites, London, UK, 21–25 September 1997, Proceedings of SPIE Vol. 3221: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 286–299, at <https://doi.org/10.1117/12.298095>.
- Schott, J.R., Gerace, A., Brown, S., Gartley, M., Montanaro, M., and Reuter, D.C., 2012, Simulation of image performance characteristics of the Landsat data continuity mission (LDCM) thermal infrared sensor (TIRS): *Remote Sensing*, v. 4, no. 8, p. 2477–2491, at <https://doi.org/10.3390/rs4082477>.
- Schott, J.R., Gerace, A., and Montanaro, M., 2012, Simulation of the performance and image quality characteristics of the Landsat OLI and TIRS sensors using DIRSIG, *in* Sensors, Systems, and Next-Generation Satellites XVI, Edinburgh, Scotland, UK, 24–27 September 2012, Proceedings of SPIE

- Vol. 8553: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 85330L at <https://doi.org/10.1117/12.971226>.
- Schott, J.R., Gerace, A., Raqueno, N., Ientilucci, E., Raqueno, R., and Lunsford, A.W., 2014, Chasing the TIRS ghosts—Calibrating the Landsat 8 Thermal bands, *in* Earth Observing Systems XIX, San Diego, Calif., 18–20 August 2014, Proceedings of SPIE Vol. 9218: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 92181a, at <https://doi.org/10.1117/12.2063236>.
- Schott, J.R., Gerace, A., Woodcock, C.E., Wang, S., Zhu, Z., Wynne, R.H., and Blinn, C.E., 2016, The impact of improved signal-to-noise ratios on algorithm performance—Case studies for Landsat class instruments: *Remote Sensing of Environment*, v. 185, p. 37–45, at <https://doi.org/10.1016/j.rse.2016.04.015>.
- Schott, J.R., Gerace, A.D., Brown, S.D., and Gartley, M.G., 2011, Modeling the image performance of the Landsat Data Continuity Mission sensors, *in* Earth Observing Systems XVI, San Diego, Calif., 23–25 August 2011, Proceedings of SPIE Vol. 8153: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 81530f, at <https://doi.org/10.1117/12.893675>.
- Schott, J.R., Hook, S.J., Barsi, J.A., Markham, B.L., Miller, J., Padula, F.P., and Raqueno, N.G., 2012, Thermal infrared radiometric calibration of the entire Landsat 4, 5, and 7 archive (1982-2010): *Remote Sensing of Environment*, v. 122, p. 41–49, at <https://doi.org/10.1016/j.rse.2011.07.022>.
- Schott, J.R., Kuo, S.D., Brown, S.D., and Raqueno, R.V., 1997, Prediction of observed image spectra using synthetic image generation models, *in* Imaging Spectrometry III, San Diego, Calif., 27 July–1 August 1997, Proceedings of SPIE Vol. 3118: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 81–93, at <https://doi.org/10.1117/12.283821>.
- Schott, J.R., Lee, K., Raqueno, R., and Hoffmann, G., 2002, Use of physics based models in hyperspectral image exploitation, *in* Applied Imagery Pattern Recognition Workshop, AIPR 2002, Washington, D.C., 16–18 October 2002, Proceedings: Los Alamitos, Calif., IEEE Computer Society, p. 36–42, at <https://doi.org/10.1109/AIPR.2002.1182252>.
- Schott, J.R., Raqueno, R.V., Raqueno, N.G., and Brown, S.D., 2010, A synthetic sensor/image simulation tool to support the Landsat Data Continuity Mission (LDCM), *in* Opportunities for Emerging Geospatial Technologies—American Society for Photogrammetry and Remote Sensing Annual Conference 2010, San Diego, Calif., 26–30 April 2010, Proceedings: Bethesda, Md., American Society for Photogrammetry and Remote Sensing, p. 843–854, at <http://www.asprs.org/wp-content/uploads/2013/08/Schott.pdf>.
- Schroeder, T.A., Cohen, W.B., Song, C., Canty, M.J., and Yang, Z., 2006, Radiometric correction of multi-temporal Landsat data for characterization of early successional forest patterns in western Oregon: *Remote Sensing of Environment*, v. 103, no. 1, p. 16–26, at <https://doi.org/10.1016/j.rse.2006.03.008>.
- Schroeder, T.A., Cohen, W.B., and Yang, Z., 2007, Patterns of forest regrowth following clearcutting in western Oregon as determined from a Landsat time-series: *Forest Ecology and Management*, v. 243, no. 2-3, p. 259–273, at <https://doi.org/10.1016/j.foreco.2007.03.019>.
- Schroeder, T.A., Gray, A., Harmon, M.E., Wallin, D.O., and Cohen, W.B., 2008, Estimating live forest carbon dynamics with a Landsat-based curve-fitting approach: *Journal of Applied Remote Sensing*, v. 2, no. 1, article 023519, at <https://doi.org/10.1117/1.2937821>.

- Schroeder, T.A., Healey, S.P., Moisen, G.G., Frescino, T.S., Cohen, W.B., Huang, C., Kennedy, R.E., and Yang, Z., 2014, Improving estimates of forest disturbance by combining observations from Landsat time series with U.S. Forest Service Forest Inventory and Analysis data: Remote Sensing of Environment, v. 154, no. 1, p. 61–73, at <https://doi.org/10.1016/j.rse.2014.08.005>.
- Schroeder, T.A., Schleeweis, K.G., Moisen, G.G., Toney, C., Cohen, W.B., Freeman, E.A., Yang, Z., and Huang, C., 2017, Testing a Landsat-based approach for mapping disturbance causality in U.S. forests: Remote Sensing of Environment, v. 195, p. 230–243, at <https://doi.org/10.1016/j.rse.2017.03.033>.
- Schroeder, T.A., Wulder, M.A., Healey, S.P., and Moisen, G.G., 2011, Mapping wildfire and clearcut harvest disturbances in boreal forests with Landsat time series data: Remote Sensing of Environment, v. 115, no. 6, p. 1421–1433, at <https://doi.org/10.1016/j.rse.2011.01.022>.
- Schroeder, T.A., Wulder, M.A., Healey, S.P., and Moisen, G.G., 2012, Detecting post-fire salvage logging from Landsat change maps and national fire survey data: Remote Sensing of Environment, v. 122, p. 166–174, at <https://doi.org/10.1016/j.rse.2011.10.031>.
- Schroeder, W., Csiszar, I., Giglio, L., Ellicott, E., and Justice, C.O., 2011, Satellite active fire product validation using high spatial resolution reference data, in Towards operational environmental monitoring, International Symposium on Remote Sensing of Environment—The GEOSS Era, 34th, Sydney, Australia, 10–15 April 2011, Proceedings: Tuscon, Ariz., International Center for Remote Sensing of Environment, p. 1–4, at <https://www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00178.pdf>.
- Schroeder, W., Morisette, J.T., Csiszar, I., Giglio, L., Morton, D., and Justice, C.O., 2005, Characterizing vegetation fire dynamics in Brazil through multisatellite data—Common trends and practical issues: Earth Interactions, v. 9, article 13, at <https://doi.org/10.1175/EI120.1>.
- Schug, F., Bar-Massada, A., Carlson, A.R., Cox, H., Hawbaker, T.J., Helmers, D., Hostert, P., Kaim, D., Kasraee, N.K., et al., 2023, The global wildland–urban interface: Nature, v. 621, no. 7977, p. 94–99, at <https://doi.org/10.1038/s41586-023-06320-0>.
- Schug, F., Frantz, D., Okujeni, A., and Hostert, P., 2022, Sub-pixel building area mapping based on synthetic training data and regression-based unmixing using Sentinel-1 and -2 data: Remote Sensing Letters, v. 13, no. 8, p. 822–832, at <https://doi.org/10.1080/2150704X.2022.2088253>.
- Schug, F., Frantz, D., van der Linden, S., and Hostert, P., 2021, Gridded population mapping for Germany based on building density, height and type from Earth Observation data using census disaggregation and bottom-up estimates: PLoS ONE, v. 16, article e0249044, at <https://doi.org/10.1371/journal.pone.0249044>.
- Schug, F., Frantz, D., Wiedenhofer, D., Haberl, H., Virág, D., van der Linden, S., and Hostert, P., 2023, High-resolution mapping of 33 years of material stock and population growth in Germany using Earth observation data: Journal of Industrial Ecology, v. 27, no. 1, p. 110–124, at <https://doi.org/10.1111/jiec.13343>.
- Schug, F., Okujeni, A., Hauer, J., Hostert, P., Nielsen, J.Ø., and van der Linden, S., 2018, Mapping patterns of urban development in Ouagadougou, Burkina Faso, using machine learning regression modeling with bi-seasonal Landsat time series: Remote Sensing of Environment, v. 210, p. 217–228, at <https://doi.org/10.1016/j.rse.2018.03.022>.

- Schug, F., Wiedenhofer, D., Haberl, H., Frantz, D., Virág, D., van der Linden, S., and Hostert, P., 2023, High-resolution data and maps of material stock, population, and employment in Austria from 1985 to 2018: Data in Brief, v. 47, article 108997, at <https://doi.org/10.1016/j.dib.2023.108997>.
- Schull, M., Anderson, M.C., Houborg, R., and Kustas, W., 2012, On the relationship between nominal light use efficiency and leaf chlorophyll, in 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Munich, Germany, 22–27 July 2012, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 7306–7308, at <https://doi.org/10.1109/IGARSS.2012.6351974>.
- Schull, M.A., Anderson, M.C., Houborg, R., Gitelson, A., and Kustas, W.P., 2015, Thermal-based modeling of coupled carbon, water, and energy fluxes using nominal light use efficiencies constrained by leaf chlorophyll observations: Biogeosciences, v. 12, no. 5, p. 1511–1523, at <https://doi.org/10.5194/bg-12-1511-2015>.
- Schutgens, N., Sayer, A.M., Heckel, A., Hsu, C., Jethva, H., De Leeuw, G., Leonard, P.J.T., Levy, R.C., Lipponen, A., et al., 2020, An AeroCom-AeroSat study—Intercomparison of satellite AOD datasets for aerosol model evaluation: Atmospheric Chemistry and Physics, v. 20, no. 21, p. 12431–12457, at <https://doi.org/10.5194/acp-20-12431-2020>.
- Schwert, B., Rogan, J., Giner, N.M., Ogneva-Himmelberger, Y., Blanchard, S.D., and Woodcock, C.E., 2013, A comparison of support vector machines and manual change detection for land-cover map updating in Massachusetts, USA: Remote Sensing Letters, v. 4, no. 9, p. 882–890, at <https://doi.org/10.1080/2150704X.2013.809497>.
- Schwieder, M., Buddeberg, M., Kowalski, K., Pfoch, K., Bartsch, J., Bach, H., Pickert, J., and Hostert, P., 2020, Estimating grassland parameters from Sentinel-2—A model comparison study: PFG - Journal of Photogrammetry, Remote Sensing and Geoinformation Science, v. 88, p. 379–390, at <https://doi.org/10.1007/s41064-020-00120-1>.
- Schwieder, M., Leitão, P.J., da Cunha Bustamante, M.M., Ferreira, L.G., Rabe, A., and Hostert, P., 2016, Mapping Brazilian savanna vegetation gradients with Landsat time series: International Journal of Applied Earth Observation and Geoinformation, v. 52, p. 361–370, at <https://doi.org/10.1016/j.jag.2016.06.019>.
- Schwieder, M., Leitão, P.J., Pinto, J.R.R., Teixeira, A.M.C., Pedroni, F., Sanchez, M., Bustamante, M.M., and Hostert, P., 2018, Landsat phenological metrics and their relation to aboveground carbon in the Brazilian Savanna: Carbon Balance and Management, v. 13, no. 1, article 7, at <https://doi.org/10.1186/s13021-018-0097-1>.
- Schwieder, M., Leitão, P.J., Suess, S., Senf, C., and Hostert, P., 2014, Estimating fractional shrub cover using simulated enmap data—A comparison of three machine learning regression techniques: Remote Sensing, v. 6, no. 4, p. 3427–3445, at <https://doi.org/10.3390/rs6043427>.
- Schwieder, M., Wesemeyer, M., Frantz, D., Pfoch, K., Erasmi, S., Pickert, J., Nendel, C., and Hostert, P., 2021, Mapping grassland mowing events across Germany based on combined Sentinel-2 and Landsat 8 time series: Remote Sensing of Environment, v. 269, article 112795, at <https://doi.org/10.1016/j.rse.2021.112795>.
- Scott, J.M., Loveland, T.R., Gergely, K., Strittholt, J., and Staus, N., 2004, National Wildlife Refuge System—Ecological context and integrity: Natural Resources Journal, v. 44, no. 4, p. 1041–1066, at <https://www.jstor.org/stable/24889060>.

- Scott, R.L., Hamerlynck, E.P., Jenerette, G.D., Moran, M.S., and Barron-Gafford, G.A., 2010, Carbon dioxide exchange in a semidesert grassland through drought-induced vegetation change: *Journal of Geophysical Research Biogeosciences*, v. 115, no. 3, article G03026, at <https://doi.org/10.1029/2010JG001348>.
- Sebastian, D.E., Ganguly, S., Krishnaswamy, J., Duffy, K., Nemani, R., and Ghosh, S., 2019, Multi-scale association between vegetation growth and climate in India—A wavelet analysis approach: *Remote Sensing*, v. 11, no. 22, article 2703, at <https://doi.org/10.3390/rs11222703>.
- Sedano, F., Kempeneers, P., Miguel, J.S., Strobl, P., and Vogt, P., 2012, Towards a pan-European burnt scar mapping methodology based on single date—Medium resolution optical remote sensing data: *International Journal of Applied Earth Observation and Geoinformation*, v. 20, no. 1, p. 52–59, at <https://doi.org/10.1016/j.jag.2011.08.003>.
- Sedano, F., Kempeneers, P., Strobl, P., Kucera, J., Vogt, P., Seebach, L., and San-Miguel-Ayanz, J., 2011, A cloud mask methodology for high resolution remote sensing data combining information from high and medium resolution optical sensors: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 66, no. 5, p. 588–596, at <https://doi.org/10.1016/j.isprsjprs.2011.03.005>.
- See, L., Fritz, S., You, L., Ramankutty, N., Herrero, M., Justice, C.O., Becker-Reshef, I., Thornton, P., Erb, K., et al., 2015, Improved global cropland data as an essential ingredient for food security: *Global Food Security*, v. 4, p. 37–45, at <https://doi.org/10.1016/j.gfs.2014.10.004>.
- Seebach, L., Strobl, P., Vogt, P., Mehl, W., and San-Miguel-Ayanz, J., 2013, Enhancing post-classification change detection through morphological post-processing - a sensitivity analysis: *International Journal of Remote Sensing*, v. 34, no. 20, p. 7145–7162, at <https://doi.org/10.1080/01431161.2013.815382>.
- Seebach, L.M., Strobl, P., San Miguel-Ayanz, J., and Bastrup-Birk, A., 2011, Identifying strengths and limitations of pan-European forest cover maps through spatial comparison: *International Journal of Geographical Information Science*, v. 25, no. 11, p. 1865–1884, at <https://doi.org/10.1080/13658816.2011.562211>.
- Seebach, L.M., Strobl, P., San Miguel-Ayanz, J., Gallego, J., and Bastrup-Birk, A., 2011, Comparative analysis of harmonized forest area estimates for European countries: *Forestry*, v. 84, no. 3, p. 285–299, at <https://doi.org/10.1093/forestry/cpr013>.
- Seider, J.H., Lantz, T.C., Hermosilla, T., Wulder, M.A., and Wang, J.A., 2022, Biophysical determinants of shifting tundra vegetation productivity in the Beaufort Delta Region of Canada: *Ecosystems*, v. 25, p. 1435–1454, at <https://doi.org/10.1007/s10021-021-00725-6>.
- Sellers, P.J., Hall, F.G., Kelly, R.D., Black, A., Baldocchi, D., Berry, J., Ryan, M., Ranson, K.J., Crill, P.M., et al., 1997, BOREAS in 1997—Experiment overview, scientific results, and future directions: *Journal of Geophysical Research Atmospheres*, v. 102, no. 24, p. 28731–28769, at <https://doi.org/10.1029/97JD03300>.
- Sellers, P.J., Los, S.O., Tucker, C.J., Justice, C.O., Dazlich, D.A., Collatz, G.J., and Randall, D.A., 1996, A revised land surface parameterization (SiB2) for atmospheric GCMs. Part II—The generation of global fields of terrestrial biophysical parameters from satellite data: *Journal of Climate*, v. 9, no. 4, p. 706–737, at [https://doi.org/10.1175/1520-0442\(1996\)009<0706:ARLSPF>2.0.CO;2](https://doi.org/10.1175/1520-0442(1996)009<0706:ARLSPF>2.0.CO;2).
- Semmens, K.A., Anderson, M.C., Kustas, W.P., Gao, F., Alfieri, J.G., McKee, L., Prueger, J.H., Hain, C.R., Cammalleri, C., et al., 2016, Monitoring daily evapotranspiration over two California vineyards

- using Landsat 8 in a multi-sensor data fusion approach: *Remote Sensing of Environment*, v. 185, p. 155–170, at <https://doi.org/10.1016/j.rse.2015.10.025>.
- Sen, S., Zipper, C.E., Wynne, R.H., and Donovan, P.F., 2012, Identifying revegetated mines as disturbance/recovery trajectories using an interannual Landsat chronosequence: *Photogrammetric Engineering and Remote Sensing*, v. 78, no. 3, p. 223–235, at <https://doi.org/10.14358/PERS.78.3.223>.
- Sen, S., Zipper, C.E., Wynne, R.H., Donovan, P.F., and Coulston, J.W., 2011, Using satellite imagery to characterize locations, ages and woody canopy cover of reclaimed surface mines in Appalachia, USA, in 28th Annual Meeting, ASMR 2011, Bismarck, N. Dak., 11–16 June 2011, Proceedings: Lexington, Ky., American Society of Mining and Reclamation, p. 567–590, at <https://www.asmr.us/Portals/0/Documents/Conference-Proceedings/2011/0567-Sen.pdf>.
- Senay, G.B., Friedrichs, M., Morton, C., Parrish, G.E.L., Schauer, M., Khand, K., Kagone, S., Boiko, O., and Huntington, J., 2022, Mapping actual evapotranspiration using Landsat for the conterminous United States—Google Earth Engine implementation and assessment of the SSEBop model: *Remote Sensing of Environment*, v. 275, article 113011, at <https://doi.org/10.1016/j.rse.2022.113011>.
- Senf, C., Campbell, E.M., Pflugmacher, D., Wulder, M.A., and Hostert, P., 2017, A multi-scale analysis of western spruce budworm outbreak dynamics: *Landscape Ecology*, v. 32, no. 3, p. 501–514, at <https://doi.org/10.1007/s10980-016-0460-0>.
- Senf, C., Hostert, P., and Van Der Linden, S., 2012, Using MODIS time series and random forests classification for mapping land use in South-East Asia, in 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Munich, Germany, 22–27 July 2012, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6733–6736, at <https://doi.org/10.1109/IGARSS.2012.6352560>.
- Senf, C., Leitão, P.J., Pflugmacher, D., van der Linden, S., and Hostert, P., 2015, Mapping land cover in complex Mediterranean landscapes using Landsat—Improved classification accuracies from integrating multi-seasonal and synthetic imagery: *Remote Sensing of Environment*, v. 156, p. 527–536, at <https://doi.org/10.1016/j.rse.2014.10.018>.
- Senf, C., Pflugmacher, D., Hostert, P., and Seidl, R., 2017, Using Landsat time series for characterizing forest disturbance dynamics in the coupled human and natural systems of Central Europe: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 130, p. 453–463, at <https://doi.org/10.1016/j.isprsjprs.2017.07.004>.
- Senf, C., Pflugmacher, D., van der Linden, S., and Hostert, P., 2013, Mapping rubber plantations and natural forests in Xishuangbanna (Southwest China) using multi-spectral phenological metrics from MODIS time series: *Remote Sensing*, v. 5, no. 6, p. 2795–2812, at <https://doi.org/10.3390/rs5062795>.
- Senf, C., Pflugmacher, D., Wulder, M.A., and Hostert, P., 2015, Characterizing spectral-temporal patterns of defoliator and bark beetle disturbances using Landsat time series: *Remote Sensing of Environment*, v. 170, p. 166–177, at <https://doi.org/10.1016/j.rse.2015.09.019>.
- Senf, C., Pflugmacher, D., Zhiqiang, Y., Sebold, J., Knorn, J., Neumann, M., Hostert, P., and Seidl, R., 2018, Canopy mortality has doubled in Europe's temperate forests over the last three decades: *Nature Communications*, v. 9, no. 1, article 4978, at <https://doi.org/10.1038/s41467-018-07539-6>.

- Senf, C., Seidl, R., and Hostert, P., 2017, Remote sensing of forest insect disturbances—Current state and future directions: *International Journal of Applied Earth Observation and Geoinformation*, v. 60, p. 49–60, at <https://doi.org/10.1016/j.jag.2017.04.004>.
- Senf, C., Wulder, M.A., Campbell, E.M., and Hostert, P., 2016, Using Landsat to assess the relationship between spatiotemporal patterns of western spruce budworm outbreaks and regional-scale weather variability: *Canadian Journal of Remote Sensing*, v. 42, no. 6, p. 706–718, at <https://doi.org/10.1080/07038992.2016.1220828>.
- Seo, K.W., Waliser, D.E., Lee, C.K., Tian, B., Scambos, T.A., Kim, B.M., van Angelen, J.H., and van den Broeke, M.R., 2015, Accelerated mass loss from Greenland ice sheet—Links to atmospheric circulation in the North Atlantic: *Global and Planetary Change*, v. 128, p. 61–71, at <https://doi.org/10.1016/j.gloplacha.2015.02.006>.
- Seo, K.W., Wilson, C.R., Scambos, T.A., Kim, B.M., Waliser, D.E., Tian, B., Kim, B.H., and Eom, J., 2015, Surface mass balance contributions to acceleration of Antarctic ice mass loss during 2003–2013: *Journal of Geophysical Research Solid Earth*, v. 120, no. 5, p. 3617–3627, at <https://doi.org/10.1002/2014jb011755>.
- Sergienko, O.V., Bindschadler, R.A., Vornberger, P.L., and MacAyeal, D.R., 2008, Ice stream basal conditions from block-wise surface data inversion and simple regression models of ice stream flow—Application to Bindschadler Ice Stream: *Journal of Geophysical Research Earth Surface*, v. 113, no. 4, article F04010, at <https://doi.org/10.1029/2008JF001004>.
- Sergienko, O.V., MacAyeal, D.R., and Bindschadler, R.A., 2007, Causes of sudden, short-term changes in ice-stream surface elevation: *Geophysical Research Letters*, v. 34, no. 22, article L22503, at <https://doi.org/10.1029/2007GL031775>.
- Sergienko, O.V., MacAyeal, D.R., and Bindschadler, R.A., 2009, Stick-slip behavior of ice streams—Modeling investigations: *Annals of Glaciology*, v. 50, no. 52, p. 87–94, at <https://doi.org/10.3189/172756409789624274>.
- Serreze, M.C., Maslanik, J.A., Scambos, T.A., Fetterer, F., Stroeve, J., Knowles, K., Fowler, C., Drobot, S., Barry, R.G., and Haran, T.M., 2003, A record minimum arctic sea ice extent and area in 2002: *Geophysical Research Letters*, v. 30, no. 3, p. 10–1 – 10–4, at <https://doi.org/10.1029/2002GL016406>.
- Seto, K.C., Kaufmann, R.K., and Woodcock, C.E., 2000, Landsat reveals China’s farmland reserves, but they’re vanishing fast: *Nature*, v. 406, no. 6792, p. 121–121, at <https://doi.org/10.1038/35018267>.
- Seto, K.C., Woodcock, C.E., Song, C., Huang, X., Lu, J., and Kaufmann, R.K., 2002, Monitoring land-use change in the Pearl River Delta using Landsat TM: *International Journal of Remote Sensing*, v. 23, no. 10, p. 1985–2004, at <https://doi.org/10.1080/01431160110075532>.
- Sever, L., Alpert, P., Lyapustin, A.I., Wang, Y., and Chudnovsky, A., 2017, An example of aerosol pattern variability over bright surface using high resolution MODIS MAIAC—The eastern and western areas of the Dead Sea and environs: *Atmospheric Environment*, v. 165, p. 359–369, at <https://doi.org/10.1016/j.atmosenv.2017.06.047>.
- Severinghaus, J.P., Albert, M.R., Courville, Z.R., Fahnestock, M.A., Kawamura, K., Montzka, S.A., Mühle, J., Scambos, T.A., Shields, E., et al., 2010, Deep air convection in the firn at a zero-accumulation site, central Antarctica: *Earth and Planetary Science Letters*, v. 293, no. 3–4, p. 359–367, at <https://doi.org/10.1016/j.epsl.2010.03.003>.

- Shah, C.A., Sheng, Y., and Smith, L.C., 2008, Automated image registration based on pseudoinvariant metrics of dynamic land-surface features: *IEEE Transactions on Geoscience and Remote Sensing*, v. 46, no. 11, p. 3908–3916, at <https://doi.org/10.1109/TGRS.2008.2000636>.
- Shang, C., Wulder, M.A., Coops, N.C., White, J.C., and Hermosilla, T., 2020, Spatially-explicit prediction of wildfire burn probability using remotely-sensed and ancillary data: *Canadian Journal of Remote Sensing*, v. 46, no. 3, p. 313–329, at <https://doi.org/10.1080/07038992.2020.1788385>.
- Shang, R., and Zhu, Z., 2019, Harmonizing Landsat 8 and Sentinel-2—A time-series-based reflectance adjustment approach: *Remote Sensing of Environment*, v. 235, article 111439, at <https://doi.org/10.1016/j.rse.2019.111439>.
- Shang, R., Zhu, Z., Zhang, J., Qiu, S., Yang, Z., Li, T., and Yang, X., 2022, Near-real-time monitoring of land disturbance with harmonized Landsats 7–8 and Sentinel-2 data: *Remote Sensing of Environment*, v. 278, article 113073, at <https://doi.org/10.1016/j.rse.2022.113073>.
- Shapiro, A.C., Aguilar-Amuchastegui, N., Hostert, P., and Bastin, J.F., 2016, Using fragmentation to assess degradation of forest edges in Democratic Republic of Congo: *Carbon Balance and Management*, v. 11, no. 1, article 11, at <https://doi.org/10.1186/s13021-016-0054-9>.
- Sharma, C., Thenkabail, P.S., and Sharma, J.R., 2011, Earth observing data and methods for advancing water harvesting technologies in the semi-arid rain-fed environments of India, *in* Global Humanitarian Technology Conference, Seattle, Wash., 30 October–1 November 2011, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 189–193, at <https://doi.org/10.1109/GHTC.2011.68>.
- Sharma, V., Irmak, S., Kilic, A., Sharma, V., Gilley, J.E., Meyer, G.E., Knezevic, S.Z., and Marx, D., 2016, Quantification and mapping of surface residue cover for maize and soybean fields in south central Nebraska: *Transactions of the ASABE*, v. 59, no. 3, p. 925–939, at <https://doi.org/10.13031/trans.59.11489>.
- Sharma, V., Kilic, A., and Irmak, S., 2016, Impact of scale/resolution on evapotranspiration from Landsat and MODIS images: *Water Resources Research*, v. 52, no. 3, p. 1800–1819, at <https://doi.org/10.1002/2015WR017772>.
- Shchur, A., Bragina, E., Sieber, A., Pidgeon, A.M., and Radeloff, V.C., 2017, Monitoring selective logging with Landsat satellite imagery reveals that protected forests in Western Siberia experience greater harvest than non-protected forests: *Environmental Conservation*, v. 44, no. 2, p. 191–199, at <https://doi.org/10.1017/S0376892916000576>.
- Shea, Y., Fleming, G., Kopp, G., Lukashin, C., Pilewskie, P., Smith, P., Thome, K., Wielicki, B., Liu, X., and Wu, W., 2020, Clarreo Pathfinder—Mission overview and current status, *in* 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), online virtual meeting, 26 September–2 October 2020, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3286–3289, at <https://doi.org/10.1109/IGARSS39084.2020.9323176>.
- Shell, J.R., Brown, S.D., Devaraj, C., Messinger, D.W., Pogorzala, D., Goodenough, A., and Schott, J.R., 2009, Polarized form of the governing equation including atmospheric scattering terms, *in* Schott, J.R., ed., *Fundamentals of Polarimetric Remote Sensing*: Bellingham, Wash., SPIE Press, p. 107–133, at <https://doi.org/10.1117/3.817304.ch7>.
- Shell, J.R., Brown, S.D., Gartley, M.G., and Schott, J.R.R., 2009, Measurements and modeling of the pBRDF of materials, *in* Schott, J.R., ed., *Fundamentals of Polarimetric Remote Sensing*: Bellingham, Wash., SPIE Press, p. 165–189, at <https://doi.org/10.1117/3.817304.ch10>.

- Shell, J.R., Salvaggio, C., and Schott, J.R., 2004, A novel BRDF measurement technique with spatial resolution-dependent spectral variance, *in* 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4754–4757, at <https://doi.org/10.1109/IGARSS.2004.1370221>.
- Shell, J.R., and Schott, J.R., 2005, A polarized clutter measurement technique based on the governing equation for polarimetric remote sensing in the visible to near infrared, *in* Targets and Backgrounds—Characterization and Representation XI, Orlando, Fla., 28–29 March 2005, Proceedings of SPIE Vol. 5811: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 34–45, at <https://doi.org/10.1117/12.600751>.
- Shen, D., and Sheng, Y., 2012, Area partitioning for channel network extraction using digital elevation models and remote sensing: IEEE Geoscience and Remote Sensing Letters, v. 9, no. 2, p. 194–198, at <https://doi.org/10.1109/LGRS.2011.2163812>.
- Shen, Y., Zhang, X., Wang, W., Nemani, R., Ye, Y., and Wang, J., 2021, Fusing geostationary satellite observations with harmonized Landsat-8 and Sentinel-2 time series for monitoring field-scale land surface phenology: Remote Sensing, v. 13, no. 21, article 4465, at <https://doi.org/10.3390/rs13214465>.
- Shen, Z., Li, J., Sheng, Y., Warner, T.A., and Zhao, L., 2019, A multitemporal remote sensing image registration method based on water bodies for the lake-rich region: IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, v. 12, no. 11, p. 4327–4341, at <https://doi.org/10.1109/JSTARS.2019.2950686>.
- Shen, Z., Sheng, Y., Luo, J., and Xia, L., 2013, Registration of remote sensing images of large regions using lake center points as ground control points: Journal of Remote Sensing, v. 17, no. 5, p. 1118–1130, at <https://doi.org/10.11834/jrs.20132245>.
- Shen, Z., Yu, X., Sheng, Y., Li, J., and Luo, J., 2015, A fast algorithm to estimate the deepest points of lakes for regional lake registration: PLoS ONE, v. 10, no. 12, article 0144700, at <https://doi.org/10.1371/journal.pone.0144700>.
- Shen, Z.F., Sheng, Y., and Luo, J.C., 2013, A fast algorithm to find the largest inner circle of a complex polygon: Guang Pu Xue Yu Guang Pu Fen Xi/Spectroscopy and Spectral Analysis, v. 33, no. 6, p. 1581–1586, at [https://doi.org/10.3964/j.issn.1000-0593\(2013\)06-1581-06](https://doi.org/10.3964/j.issn.1000-0593(2013)06-1581-06).
- Sheng, Y., 2004, Comparative evaluation of iterative and non-iterative methods to ground coordinate determination from single aerial images: Computers and Geosciences, v. 30, no. 3, p. 267–279, at <https://doi.org/10.1016/j.cageo.2003.11.003>.
- Sheng, Y., 2005, Theoretical analysis of the iterative photogrammetric method to determining ground coordinates from photo coordinates and a DEM: Photogrammetric Engineering and Remote Sensing, v. 71, no. 7, p. 863–871, at <https://doi.org/10.14358/PERS.71.7.863>.
- Sheng, Y., 2007, Minimising algorithm-induced artefacts in true ortho-image generation—A direct method implemented in the vector domain: Photogrammetric Record, v. 22, no. 118, p. 151–163, at <https://doi.org/10.1111/j.1477-9730.2007.00425.x>.
- Sheng, Y., 2008, Modeling algorithm-induced errors in iterative mono-plotting process: Photogrammetric Engineering and Remote Sensing, v. 74, no. 12, p. 1529–1537, at <https://doi.org/10.14358/PERS.74.12.1529>.

- Sheng, Y., 2008, Quantifying the size of a lidar footprint—A set of generalized equations: *IEEE Geoscience and Remote Sensing Letters*, v. 5, no. 3, p. 419–422, at <https://doi.org/10.1109/LGRS.2008.916978>.
- Sheng, Y., 2009, PaleoLakeR—A semiautomated tool for regional-scale paleolake recovery using geospatial information technologies: *IEEE Geoscience and Remote Sensing Letters*, v. 6, no. 4, p. 797–801, at <https://doi.org/10.1109/LGRS.2009.2025778>.
- Sheng, Y., 2011, Remote sensing, in Agnew, J., and Livingstone, D.M., eds., *The SAGE Handbook of Geographical Knowledge*: London, UK, SAGE, p. 171–184, at <https://doi.org/10.4135/9781446201091.n14>.
- Sheng, Y., and Alsdorf, D.E., 2005, Automated georeferencing and orthorectification of amazon basin-wide SAR mosaics using SRTM DEM data: *IEEE Transactions on Geoscience and Remote Sensing*, v. 43, no. 8, p. 1929–1940, at <https://doi.org/10.1109/TGRS.2005.852160>.
- Sheng, Y., Gong, P., and Biging, G.S., 2001, Model-based conifer-crown surface reconstruction from high-resolution aerial images: *Photogrammetric Engineering and Remote Sensing*, v. 67, no. 8, p. 957–965, at https://www.asprs.org/wp-content/uploads/pers/2001journal/august/2001_aug_957-965.pdf.
- Sheng, Y., Gong, P., and Biging, G.S., 2003, Model-based conifer canopy surface reconstruction from photographic imagery—Overcoming the occlusion, foreshortening, and edge effects: *Photogrammetric Engineering and Remote Sensing*, v. 69, no. 3, p. 249–258, at <https://doi.org/10.14358/PERS.69.3.249>.
- Sheng, Y., Gong, P., and Biging, G.S., 2003, True orthoimage production for forested areas from large-scale aerial photographs: *Photogrammetric Engineering and Remote Sensing*, v. 69, no. 3, p. 259–266, at <https://doi.org/10.14358/PERS.69.3.259>.
- Sheng, Y., Gong, P., and Xiao, Q., 2001, Quantitative dynamic flood monitoring with NOAA AVHRR: *International Journal of Remote Sensing*, v. 22, no. 9, p. 1709–1724, at <https://doi.org/10.1080/01431160118481>.
- Sheng, Y., Shah, C.A., and Smith, L.C., 2008, Automated image registration for hydrologic change detection in the lake-rich arctic: *IEEE Geoscience and Remote Sensing Letters*, v. 5, no. 3, p. 414–418, at <https://doi.org/10.1109/LGRS.2008.916646>.
- Sheng, Y., Smith, L.C., Frey, K.E., and Alsdorf, D.E., 2002, A high temporal resolution data set of ERS scatterometer radar backscatter for research in Arctic and sub-Arctic regions: *Polar Record*, v. 38, no. 205, p. 115–120, at <https://doi.org/10.1017/S0032247400017502>.
- Sheng, Y., Smith, L.C., MacDonald, G.M., Kremenetski, K.V., Frey, K.E., Velichko, A.A., Lee, M., Beilman, D.W., and Dubinin, P., 2004, A high-resolution GIS-based inventory of the west Siberian peat carbon pool: *Global Biogeochemical Cycles*, v. 18, no. 3, p. GB3004 1–14, at <https://doi.org/10.1029/2003GB002190>.
- Sheng, Y., Song, C., Wang, J., Lyons, E.A., Knox, B.R., Cox, J.S., and Gao, F., 2016, Representative lake water extent mapping at continental scales using multi-temporal Landsat-8 imagery: *Remote Sensing of Environment*, v. 185, p. 129–141, at <https://doi.org/10.1016/j.rse.2015.12.041>.
- Sheng, Y., Su, Y., and Xiao, Q., 1998, Challenging the cloud-contamination problem in flood monitoring with NOAA/AVHRR imagery: *Photogrammetric Engineering and Remote Sensing*, v. 64, no. 3, p.

- 191–198, at https://www.asprs.org/wp-content/uploads/pers/1998journal/mar/1998_mar_191-198.pdf.
- Sheng, Y., and Yao, T., 2009, Editorial—Integrated assessments of environmental change on the Tibetan Plateau: *Environmental Research Letters*, v. 4, no. 4, article 045201, at <https://doi.org/10.1088/1748-9326/4/4/045201>.
- Shepherd, A., Ivins, E., Rignot, E., Smith, B., Van Den Broeke, M., Velicogna, I., Whitehouse, P., Briggs, K., Joughin, I., et al., 2018, Mass balance of the Antarctic Ice Sheet from 1992 to 2017: *Nature*, v. 558, no. 7709, p. 219–222, at <https://doi.org/10.1038/s41586-018-0179-y>.
- Shepherd, A., Ivins, E.R., Geruo, A., Barletta, V.R., Bentley, M.J., Bettadpur, S., Briggs, K.H., Bromwich, D.H., Forsberg, R., et al., 2012, A reconciled estimate of ice-sheet mass balance: *Science*, v. 338, no. 6111, p. 1183–1189, at <https://doi.org/10.1126/science.1228102>.
- Shetler, B., Mergens, D., Chang, C., Mertz, F., Schott, J.R., Brown, S., Strunce, R., Maher, F., Kubica, S., et al., 2000, Comprehensive hyperspectral system simulation I—Integrated sensor scene modeling and the simulation architecture, *in* Algorithms for Multispectral, Hyperspectral, and Ultraspectral Imagery VI, Orlando, Fla., 24–26 April 2000, Proceedings of SPIE Vol. 4049: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 94–104, at <https://doi.org/10.1117/12.410379>.
- Shi, H., Auch, R.F., Vogelmann, J.E., Feng, M., Rigge, M., Senay, G., and Verdin, J.P., 2018, Case study comparing multiple irrigated land datasets in Arizona and Colorado, USA: *Journal of the American Water Resources Association*, v. 54, no. 2, p. 505–526, at <https://doi.org/10.1111/1752-1688.12620>.
- Shi, Y., Choi, S., Ni, X., Ganguly, S., Zhang, G., Duong, H.V., Lefsky, M.A., Simard, M., Saatchi, S.S., et al., 2013, Allometric scaling and resource limitations model of tree heights—Part 1. Model optimization and testing over continental USA: *Remote Sensing*, v. 5, no. 1, p. 284–306, at <https://doi.org/10.3390/rs5010284>.
- Shi, Y., Liu, S., Yan, W., Zhao, S., Ning, Y., Peng, X., Chen, W., Chen, L., Hu, X., et al., 2021, Influence of landscape features on urban land surface temperature—Scale and neighborhood effects: *Science of the Total Environment*, v. 771, article 145381, at <https://doi.org/10.1016/j.scitotenv.2021.145381>.
- Shiffman, S., and Nemani, R.R., 2005, Evaluation of decision trees for cloud detection from AVHRR data, *in* 2005 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seoul, South Korea, 25–29 July 2005, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5610–5613, at <https://doi.org/10.1109/IGARSS.2005.1526048>.
- Shirk, A.J., Jones, G.M., Yang, Z., Davis, R.J., Ganey, J.L., Gutiérrez, R.J., Healey, S.P., Hedwall, S.J., Hoagland, S.J., et al., 2023, Automated habitat monitoring systems linked to adaptive management—A new paradigm for species conservation in an era of rapid environmental change: *Landscape Ecology*, v. 38, article 7–22, at <https://doi.org/10.1007/s10980-022-01457-1>.
- Shock, C., Chang, C., Davis, L.S., Goward, S.N., Saltz, J.H., and Sussman, A.D., 1996, High-performance image database system for remote sensing, *in* 24th AIPR Workshop on Tools and Techniques for Modeling and Simulation, Washington, D.C., 11–13 October 1995, Proceedings of SPIE Vol. 2645: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 20–29, at <https://doi.org/10.1117/12.233068>.

- Shock, C.T., Chang, C., Davis, L., Goward, S.N., Saltz, J., and Sussman, A., 1996, A high performance image database system for remotely sensed imagery, *in* 2nd International Euro-Par Conference on Parallel Processing, Euro-Par 1996, Lyon, France, 26–29 August 1996, Proceedings: Berlin, Germany, Springer, p. 109–122, at <https://doi.org/10.1007/BFb0024692>.
- Shrestha, M., Hasan, M.N., Leigh, L., and Helder, D., 2019, Extended pseudo invariant calibration sites (EPICS) for the cross-calibration of optical satellite sensors: *Remote Sensing*, v. 11, no. 14, article 1676, at <https://doi.org/10.3390/rs11141676>.
- Shrestha, M., Hasan, N., Leigh, L., and Helder, D., 2019, Derivation of hyperspectral profile of extended pseudo invariant calibration sites (EPICS) for use in sensor calibration: *Remote Sensing*, v. 11, no. 19, article 2279, at <https://doi.org/10.3390/rs11192279>.
- Shrestha, M., Helder, D., and Christopherson, J., 2021, Dlr Earth sensing imaging spectrometer (Desis) level 1 product evaluation using radcalnet measurements: *Remote Sensing*, v. 13, no. 12, article 2420, at <https://doi.org/10.3390/rs13122420>.
- Shrestha, M., Leigh, L., and Helder, D., 2019, Classification of North Africa for use as an extended pseudo invariant calibration sites (EPICS) for radiometric calibration and stability monitoring of optical satellite sensors: *Remote Sensing*, v. 11, no. 7, article 875, at <https://doi.org/10.3390/rs11070875>.
- Shrestha, M., Mann, J., Maddox, E., Robbins, T., Irwin, J., Kropuenske, T., and Helder, D., 2023, Implementing a dual-spectrometer approach for improved surface reflectance estimation: *Remote Sensing*, v. 15, no. 23, article 5451, at <https://doi.org/10.3390/rs15235451>.
- Shrestha, R., and Wynne, R.H., 2012, Estimating biophysical parameters of individual trees in an urban environment using small footprint discrete-return imaging Lidar: *Remote Sensing*, v. 4, no. 2, p. 484–508, at <https://doi.org/10.3390/rs4020484>.
- Shtein, A., Karnieli, A., Katra, I., Raz, R., Levy, I., Lyapustin, A.I., Dorman, M., Broday, D.M., and Kloog, I., 2018, Estimating daily and intra-daily PM10 and PM2.5 in Israel using a spatio-temporal hybrid modeling approach: *Atmospheric Environment*, v. 191, p. 142–152, at <https://doi.org/10.1016/j.atmosenv.2018.08.002>.
- Shuai, Y., Masek, J.G., Gao, F., and Schaaf, C.B., 2011, An algorithm for the retrieval of 30-m snow-free albedo from Landsat surface reflectance and MODIS BRDF: *Remote Sensing of Environment*, v. 115, no. 9, p. 2204–2216, at <https://doi.org/10.1016/j.rse.2011.04.019>.
- Shuai, Y., Masek, J.G., Gao, F., Schaaf, C.B., and He, T., 2014, An approach for the long-term 30-m land surface snow-free albedo retrieval from historic Landsat surface reflectance and MODIS-based a priori anisotropy knowledge: *Remote Sensing of Environment*, v. 152, p. 467–479, at <https://doi.org/10.1016/j.rse.2014.07.009>.
- Shuai, Y., Schaaf, C.B., Strahler, A.H., Li, X., Gao, F., Liu, J., Wolfe, R.E., Wang, J., Zhang, X., and Zhu, Q., 2008, Monitoring vegetation phenology using improved MODIS products, *in* *Electronic Imaging and Multimedia Technology V*, Beijing, China, 12–15 November 2007, Proceedings of SPIE Vol. 6833: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 68332X, at <https://doi.org/10.1117/12.757743>.
- Shuai, Y., Schaaf, C.B., Strahler, A.H., Liu, J., and Jiao, Z., 2008, Quality assessment of BRDF/albedo retrievals in MODIS operational system: *Geophysical Research Letters*, v. 35, no. 5, article L05407, at <https://doi.org/10.1029/2007GL032568>.

- Shuai, Y., Schaaf, C.B., Zhang, X., Strahler, A., Roy, D.P., Morisette, J., Wang, Z., Nightingale, J., Nickeson, J., et al., 2013, Daily MODIS 500 m reflectance anisotropy direct broadcast (DB) products for monitoring vegetation phenology dynamics: *International Journal of Remote Sensing*, v. 34, no. 16, p. 5997–6016, at <https://doi.org/10.1080/01431161.2013.803169>.
- Shuai, Y., Tuerhanjiang, L., Shao, C., Gao, F., Zhou, Y., Xie, D., Liu, T., Liang, J., and Chu, N., 2020, Re-understanding of land surface albedo and related terms in satellite-based retrievals: *Big Earth Data*, v. 4, no. 1, p. 45–67, at <https://doi.org/10.1080/20964471.2020.1716561>.
- Shukla, S., McEvoy, D., Hobbins, M., Husak, G., Huntington, J.L., Funk, C., Macharia, D., and Verdin, J., 2017, Examining the value of global seasonal reference evapotranspiration forecasts to support FEWS NET's food insecurity outlooks: *Journal of Applied Meteorology and Climatology*, v. 56, no. 11, p. 2941–2949, at <https://doi.org/10.1175/JAMC-D-17-0104.1>.
- Shuman, C., Scambos, T.A., and Berthier, E., 2016, Ice loss processes in the Seal Nunataks ice shelf region from satellite altimetry and imagery: *Annals of Glaciology*, v. 57, no. 73, p. 94–104, at <https://doi.org/10.1017/aog.2016.29>.
- Shuman, C.A., Alley, R.B., Fahnestock, M.A., Bindschadler, R.A., White, J.W.C., Winterle, J., and McConnell, J.R., 1998, Temperature history and accumulation timing for the snowpack at GISP2, central Greenland: *Journal of Glaciology*, v. 44, no. 146, p. 21–30, at <https://doi.org/10.1017/S0022143000002318>.
- Shuman, C.A., Alley, R.B., Fahnestock, M.A., Fawcett, P.J., Bindschadler, R.A., White, J.W.C., Grootes, P.M., Anandakrishnan, S., and Stearns, C.R., 1997, Detection and monitoring of stratigraphic markers and temperature trends at the Greenland Ice Sheet Project 2 using passive-microwave remote-sensing data: *Journal of Geophysical Research Oceans*, v. 102, no. C12, p. 26877–26886, at <https://doi.org/10.1029/96JC02323>.
- Shuman, C.A., Berthier, E., and Scambos, T.A., 2011, 2001-2009 elevation and mass losses in the Larsen A and B embayments, Antarctic Peninsula: *Journal of Glaciology*, v. 57, no. 204, p. 737–754, at <https://doi.org/10.3189/002214311797409811>.
- Shuman, C.A., Fahnestock, M.A., Bindschadler, R.A., Alley, R.B., and Stearns, C.R., 1996, Composite temperature record from the Greenland summit, 1987-1994—Synthesis of multiple automatic weather station records and SSM/I brightness temperatures: *Journal of Climate*, v. 9, no. 6, p. 1421–1428, at [https://doi.org/10.1175/1520-0442\(1996\)009<1421:CTRFTG>2.0.CO;2](https://doi.org/10.1175/1520-0442(1996)009<1421:CTRFTG>2.0.CO;2).
- Sica, Y.V., Gavier-Pizarro, G.I., Pidgeon, A.M., Travaini, A., Bustamante, J., Radeloff, V.C., and Quintana, R.D., 2018, Changes in bird assemblages in a wetland ecosystem after 14 years of intensified cattle farming: *Austral Ecology*, v. 43, no. 7, p. 786–797, at <https://doi.org/10.1111/aec.12621>.
- Sica, Y.V., Quintana, R.D., Radeloff, V.C., and Gavier-Pizarro, G.I., 2016, Wetland loss due to land use change in the Lower Paraná River Delta, Argentina: *Science of the Total Environment*, v. 568, p. 967–978, at <https://doi.org/10.1016/j.scitotenv.2016.04.200>.
- Sicard, M., Thome, K.J., Crowther, B.G., and Smith, M.W., 1998, Shortwave infrared spectroradiometer for atmospheric transmittance measurements: *Journal of Atmospheric and Oceanic Technology*, v. 15, no. 1, p. 174–183, at [https://doi.org/10.1175/1520-0426\(1998\)015<0174:SISFAT>2.0.CO;2](https://doi.org/10.1175/1520-0426(1998)015<0174:SISFAT>2.0.CO;2).
- Sieber, A., Kuemmerle, T., Prishchepov, A.V., Wendland, K.J., Baumann, M., Radeloff, V.C., Baskin, L.M., and Hostert, P., 2013, Landsat-based mapping of post-Soviet land-use change to assess the effectiveness of the Oksky and Mordovsky protected areas in European Russia: *Remote Sensing of Environment*, v. 133, p. 38–51, at <https://doi.org/10.1016/j.rse.2013.01.021>.

- Sieber, A., Uvarov, N.V., Baskin, L.M., Radeloff, V.C., Bateman, B.L., Pankov, A.B., and Kuemmerle, T., 2015, Post-Soviet land-use change effects on large mammals' habitat in European Russia: *Biological Conservation*, v. 191, p. 567–576, at <https://doi.org/10.1016/j.biocon.2015.07.041>.
- Siebert, M.J., Kennicutt II, M.C., and Bindschadler, R.A., eds., 2013, Antarctic subglacial aquatic environments, v. 192: Washington, D.C., American Geophysical Union, 245 p., at <https://doi.org/10.1029/GM192>.
- Siegfried, M.R., Fricker, H.A., Roberts, M., Scambos, T.A., and Tulaczyk, S., 2014, A decade of West Antarctic subglacial lake interactions from combined ICESat and CryoSat-2 altimetry: *Geophysical Research Letters*, v. 41, no. 3, p. 891–898, at <https://doi.org/10.1002/2013GL058616>.
- Sikder, M.S., Wang, J., Allen, G.H., Sheng, Y., Yamazaki, D., Song, C., Ding, M., Crétaux, J.F., and Pavelsky, T.M., 2023, Lake-TopoCat—A global lake drainage topology and catchment database: *Earth System Science Data*, v. 15, no. 8, p. 3483–3511, at <https://doi.org/10.5194/essd-15-3483-2023>.
- Silveira, E.M.O., Bueno, I.T., Acerbi-Junior, F.W., Mello, J.M., Scolforo, J.R.S., and Wulder, M.A., 2018, Using spatial features to reduce the impact of seasonality for detecting tropical forest changes from Landsat time series: *Remote Sensing*, v. 10, no. 6, article 808, at <https://doi.org/10.3390/rs10060808>.
- Silveira, E.M.O., Espírito Santo, F.D., Wulder, M.A., Acerbi Júnior, F.W., Carvalho, M.C., Mello, C.R., Mello, J.M., Shimabukuro, Y.E., Terra, M.C.N.S., et al., 2019, Pre-stratified modelling plus residuals kriging reduces the uncertainty of aboveground biomass estimation and spatial distribution in heterogeneous savannas and forest environments: *Forest Ecology and Management*, v. 445, p. 96–109, at <https://doi.org/10.1016/j.foreco.2019.05.016>.
- Silveira, E.M.O., Pidgeon, A.M., Farwell, L.S., Hobi, M.L., Razenkova, E., Zuckerberg, B., Coops, N.C., and Radeloff, V.C., 2023, Multi-grain habitat models that combine satellite sensors with different resolutions explain bird species richness patterns best: *Remote Sensing of Environment*, v. 295, at <https://doi.org/10.1016/j.rse.2023.113661>.
- Silveira, E.M.O., Radeloff, V.C., Martínez Pastur, G.J., Martinuzzi, S., Politi, N., Lizarraga, L., Rivera, L.O., Gavier-Pizarro, G.I., Yin, H., et al., 2022, Forest phenoclusters for Argentina based on vegetation phenology and climate: *Ecological Applications*, v. 32, no. 3, article e2526, at <https://doi.org/10.1002/eap.2526>.
- Silveira, E.M.O., Radeloff, V.C., Martinuzzi, S., Martinez Pastur, G.J., Bono, J., Politi, N., Lizarraga, L., Rivera, L.O., Ciuffoli, L., et al., 2023, Nationwide native forest structure maps for Argentina based on forest inventory data, SAR Sentinel-1 and vegetation metrics from Sentinel-2 imagery: *Remote Sensing of Environment*, v. 285, article 113391, at <https://doi.org/10.1016/j.rse.2022.113391>.
- Silveira, E.M.O., Radeloff, V.C., Martinuzzi, S., Martínez Pastur, G.J., Rivera, L.O., Politi, N., Lizarraga, L., Farwell, L.S., Elsen, P.R., and Pidgeon, A.M., 2021, Spatio-temporal remotely sensed indices identify hotspots of biodiversity conservation concern: *Remote Sensing of Environment*, v. 258, article 112368, at <https://doi.org/10.1016/j.rse.2021.112368>.
- Silveira, E.M.O., Silva, S.H.G., Acerbi-Junior, F.W., Carvalho, M.C., Carvalho, L.M.T., Scolforo, J.R.S., and Wulder, M.A., 2019, Object-based random forest modelling of aboveground forest biomass outperforms a pixel-based approach in a heterogeneous and mountain tropical environment: *International Journal of Applied Earth Observation and Geoinformation*, v. 78, p. 175–188, at <https://doi.org/10.1016/j.jag.2019.02.004>.

- Simmons, R.E., Brower, B.V., and Schott, J.R., 1997, Data characterization for hyperspectral image compression, *in* Multispectral Imaging for Terrestrial Applications II, San Diego, Calif., 27 July–1 August 1997, Proceedings of SPIE Vol. 3119: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 172–183, at <https://doi.org/10.1117/12.278946>.
- Simons, G., Bastiaanssen, W., Ngô, L.A., Hain, C.R., Anderson, M.C., and Senay, G., 2016, Integrating global satellite-derived data products as a pre-analysis for hydrological modelling studies—A case study for the Red River Basin: *Remote Sensing*, v. 8, no. 4, article 279, at <https://doi.org/10.3390/rs8040279>.
- Simpson, C.E., Arp, C.D., Sheng, Y., Carroll, M.L., Jones, B.M., and Smith, L.C., 2021, Landsat-derived bathymetry of lakes on the Arctic Coastal Plain of northern Alaska: *Earth System Science Data*, v. 13, no. 3, p. 1135–1150, at <https://doi.org/10.5194/essd-13-1135-2021>.
- Sims, D.A., Rahman, A.F., Vermote, E.F., and Jiang, Z., 2011, Seasonal and inter-annual variation in view angle effects on MODIS vegetation indices at three forest sites: *Remote Sensing of Environment*, v. 115, no. 12, p. 3112–3120, at <https://doi.org/10.1016/j.rse.2011.06.018>.
- Sims, K.R.E., Alix-Garcia, J.M., Shapiro-Garza, E., Fine, L.R., Radeloff, V.C., Aronson, G., Castillo, S., Ramirez-Reyes, C., and Yañez-Pagans, P., 2014, Improving environmental and social targeting through adaptive management in Mexico's payments for hydrological services program: *Conservation Biology*, v. 28, no. 5, p. 1151–1159, at <https://doi.org/10.1111/cobi.12318>.
- Sinyuk, A., Dubovik, O., Holben, B., Eck, T.F., Breon, F.M., Martonchik, J., Kahn, R., Diner, D.J., Vermote, E.F., et al., 2007, Aerosol and surface properties characterization from joint inversion of ground-based and satellite observations, *in* Hyperspectral Imaging and Sounding of the Environment, HISE 2007, Santa Fe, N. Mex., 11–15 February 2007, OSA Technical Digest: Washington, D.C., Optical Society of America, paper no. JWA12, at <https://doi.org/10.1364/FTS.2007.JWA12>.
- Sinyuk, A., Dubovik, O., Holben, B., Eck, T.F., Breon, F.M., Martonchik, J., Kahn, R., Diner, D.J., Vermote, E.F., et al., 2007, Simultaneous retrieval of aerosol and surface properties from a combination of AERONET and satellite data: *Remote Sensing of Environment*, v. 107, no. 1-2, p. 90–108, at <https://doi.org/10.1016/j.rse.2006.07.022>.
- Sixsmith, J., Oliver, S., and Lymburner, L., 2013, A hybrid approach to automated Landsat pixel quality, *in* 2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Melbourne, Australia, 21–26 July 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4146–4149, at <https://doi.org/10.1109/IGARSS.2013.6723746>.
- Skakun, R., Franklin, S.E., Wulder, M.A., and Carroll, A., 2002, Aerial, GIS, and field data calibration of a Landsat ETM+ mountain pine beetle detection procedure in British Columbia, Canada, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2887–2889, at <https://doi.org/10.1109/IGARSS.2002.1026811>.
- Skakun, R.S., Wulder, M.A., and Franklin, S.E., 2003, Sensitivity of the thematic mapper enhanced wetness difference index to detect mountain pine beetle red-attack damage: *Remote Sensing of Environment*, v. 86, no. 4, p. 433–443, at [https://doi.org/10.1016/S0034-4257\(03\)00112-3](https://doi.org/10.1016/S0034-4257(03)00112-3).
- Skakun, S., Brown, M.G.L., Roger, J.C., and Vermote, E., 2020, Capturing corn and soybean yield variability at field scale using very high spatial resolution satellite data, *in* 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), online virtual meeting, 26 September–2

- October 2020, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3723–3726, at <https://doi.org/10.1109/IGARSS39084.2020.9324033>.
- Skakun, S., Franch, B., Roger, J.C., Vermote, E.F., Becker-Reshef, I., Justice, C.O., and Santamaria-Artigas, A., 2016, Incorporating yearly derived winter wheat maps into winter wheat yield forecasting model, *in* 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 7164–7167, at <https://doi.org/10.1109/IGARSS.2016.7730869>.
- Skakun, S., Franch, B., Vermote, E., Roger, J.C., Justice, C.O., Masek, J., and Murphy, E., 2018, Winter wheat yield assessment using Landsat 8 and Sentinel-2 data, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5964–5967, at <https://doi.org/10.1109/IGARSS.2018.8519134>.
- Skakun, S., Franch, B., Vermote, E., Roger, J.C., Kussul, N., and Masek, J., 2019, The use of Landsat 8 and Sentinel-2 data and meteorological observations for winter wheat yield assessment, *in* 2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6291–6294, at <https://doi.org/10.1109/IGARSS.2019.8898245>.
- Skakun, S., Franch, B., Vermote, E.F., Roger, J.C., Becker-Reshef, I., Justice, C.O., and Kussul, N., 2017, Early season large-area winter crop mapping using MODIS NDVI data, growing degree days information and a Gaussian mixture model: *Remote Sensing of Environment*, v. 195, p. 244–258, at <https://doi.org/10.1016/j.rse.2017.04.026>.
- Skakun, S., Justice, C.O., Kussul, N., Shelestov, A., and Lavreniuk, M., 2019, Satellite data reveal cropland losses in south-eastern Ukraine under military conflict: *Frontiers in Earth Science*, v. 7, article 305, at <https://doi.org/10.3389/feart.2019.00305>.
- Skakun, S., Justice, C.O., Vermote, E.F., and Roger, J.C., 2018, Transitioning from MODIS to VIIRS—An analysis of inter-consistency of NDVI data sets for agricultural monitoring: *International Journal of Remote Sensing*, v. 39, no. 4, p. 971–992, at <https://doi.org/10.1080/01431161.2017.1395970>.
- Skakun, S., Kalecinski, N.I., Brown, M.G.L., Johnson, D.M., Vermote, E.F., Roger, J.C., and Franch, B., 2021, Assessing within-field corn and soybean yield variability from WorldView-3, Planet, Sentinel-2, and Landsat 8 satellite imagery: *Remote Sensing*, v. 13, no. 5, article 872, at <https://doi.org/10.3390/rs13050872>.
- Skakun, S., Roger, J.C., Vermote, E.F., Justice, C.O., and Masek, J.G., 2017, Automatic co-registration of multi-temporal Landsat-8/OLI and sentinel-2A/MSI images, *in* 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, Tex., 23–28 July 2017, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5272–5274, at <https://doi.org/10.1109/IGARSS.2017.8128191>.
- Skakun, S., Roger, J.C., Vermote, E.F., Masek, J.G., and Justice, C.O., 2017, Automatic sub-pixel co-registration of Landsat-8 Operational Land Imager and Sentinel-2A Multi-Spectral Instrument images using phase correlation and machine learning based mapping: *International Journal of Digital Earth*, v. 10, p. 1253–1269, at <https://doi.org/10.1080/17538947.2017.1304586>.
- Skakun, S., Vermote, E., Franch, B., Roger, J.C., Kussul, N., Ju, J., and Masek, J., 2019, Winter wheat yield assessment from Landsat 8 and Sentinel-2 data—Incorporating surface reflectance, through

- phenological fitting, into regression yield models: *Remote Sensing*, v. 11, no. 15, article 1768, at <https://doi.org/10.3390/rs11151768>.
- Skakun, S., Vermote, E.F., Artigas, A.E.S., Rountree, W.H., and Roger, J.C., 2021, An experimental sky-image-derived cloud validation dataset for Sentinel-2 and Landsat 8 satellites over NASA GSFC: *International Journal of Applied Earth Observation and Geoinformation*, v. 95, article 102253, at <https://doi.org/10.1016/j.jag.2020.102253>.
- Skakun, S., Vermote, E.F., Roger, J., and Justice, C.O., 2017, Multispectral misregistration of Sentinel-2A images—Analysis and implications for potential applications: *IEEE Geoscience and Remote Sensing Letters*, v. 14, no. 12, p. 2408–2412, at <https://doi.org/10.1109/LGRS.2017.2766448>.
- Skakun, S., Vermote, E.F., Roger, J.C., Justice, C.O., and Masek, J.G., 2019, Validation of the LaSRC cloud detection algorithm for Landsat 8 images: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 12, no. 7, p. 2439–2446, at <https://doi.org/10.1109/JSTARS.2019.2894553>.
- Skakun, S., Wevers, J., Brockmann, C., Doxani, G., Aleksandrov, M., Batič, M., Frantz, D., Gascon, F., Gómez-Chova, L., et al., 2022, Cloud Mask Intercomparison eXercise (CMIX)—An evaluation of cloud masking algorithms for Landsat 8 and Sentinel-2: *Remote Sensing of Environment*, v. 274, article 112990, at <https://doi.org/10.1016/j.rse.2022.112990>.
- Skidmore, A.K., Coops, N.C., Neinavaz, E., Ali, A., Schaepman, M.E., Paganini, M., Kissling, W.D., Vihervaara, P., Darvishzadeh, R., et al., 2021, Author Correction—Priority list of biodiversity metrics to observe from space (*Nature Ecology & Evolution*, (2021), 10.1038/s41559-021-01451-x): *Nature Ecology and Evolution*, v. 5, p. 1046–1046, at <https://doi.org/10.1038/s41559-021-01492-2>.
- Skidmore, A.K., Coops, N.C., Neinavaz, E., Ali, A., Schaepman, M.E., Paganini, M., Kissling, W.D., Vihervaara, P., Darvishzadeh, R., et al., 2021, Priority list of biodiversity metrics to observe from space: *Nature Ecology and Evolution*, v. 5, p. 896–906, at <https://doi.org/10.1038/s41559-021-01451-x>.
- Skidmore, A.K., Pettorelli, N., Coops, N.C., Geller, G.N., Hansen, M.C., Lucas, R., Múcher, C.A., O'Connor, B., Paganini, M., et al., 2015, Environmental science—Agree on biodiversity metrics to track from space: *Nature*, v. 523, no. 7561, p. 403–405, at <https://doi.org/10.1038/523403a>.
- Skole, D.L., 1997, A land cover change monitoring program—Strategy for an international effort: *Mitigation and Adaptation Strategies for Global Change*, v. 2, no. 2–3, p. 157–175, at <https://doi.org/10.1007/BF02437201>.
- Skole, D.L., 2004, Geography as a great intellectual melting pot and the preeminent interdisciplinary environmental discipline: *Annals of the American Association of Geographers*, v. 94, no. 4, p. 739–743, at <https://doi.org/10.1111/j.1467-8306.2004.00429.x>.
- Skole, D.L., Mbow, C., Mugabowindekwe, M., Brandt, M.S., and Samek, J.H., 2021, Trees outside of forests as natural climate solutions: *Nature Climate Change*, v. 11, p. 1013–1016, at <https://doi.org/10.1038/s41558-021-01230-3>.
- Skole, D.L., Samek, J.H., Chomentowski, W., and Smalligan, M., 2009, Forests, carbon, and the global environment—New directions in research, in Brown, D.G., Robinson, D.T., French, N.H.F., and Reed, B.C., eds., *Land use and the carbon cycle—Advances in integrated science, management, and policy*: New York, N.Y., Cambridge University Press, p. 505–522, at <https://doi.org/10.1017/CBO9780511894824.026>.

- Skole, D.L., Samek, J.H., Dieng, M., and Mbow, C., 2021, The contribution of trees outside of forests to landscape carbon and climate change mitigation in West Africa: *Forests*, v. 12, no. 12, article 1652, at <https://doi.org/10.3390/f12121652>.
- Skole, D.L., Samek, J.H., Mbow, C., Chirwa, M., Ndalowa, D., Tumeo, T., Kachamba, D., Kamoto, J., Chioza, A., and Kamangadazi, F., 2021, Direct measurement of forest degradation rates in Malawi— Toward a national forest monitoring system to support reddy+: *Forests*, v. 12, no. 4, article 426, at <https://doi.org/10.3390/f12040426>.
- Skole, D.L., Samek, J.H., and Smalligan, M.J., 2011, Implications of allometry: *Proceedings of the National Academy of Sciences of the United States of America*, v. 108, no. 4, article E12, at <https://doi.org/10.1073/pnas.1015854108>.
- Slater, P.N., Biggar, S.F., Palmer, J.M., and Thome, K.J., 2001, Unified approach to absolute radiometric calibration in the solar-reflective range: *Remote Sensing of Environment*, v. 77, no. 3, p. 293–303, at [https://doi.org/10.1016/S0034-4257\(01\)00210-3](https://doi.org/10.1016/S0034-4257(01)00210-3).
- Slater, P.N., Biggar, S.F., Thome, K.J., Gellman, D.I., and Spyak, P.R., 1996, Vicarious radiometric calibrations of EOS sensors: *Journal of Atmospheric and Oceanic Technology*, v. 13, no. 2, p. 349–359, at [https://doi.org/10.1175/1520-0426\(1996\)013<0349:VRCOES>2.0.CO;2](https://doi.org/10.1175/1520-0426(1996)013<0349:VRCOES>2.0.CO;2).
- Sleeter, B.M., Liu, J., Daniel, C., Rayfield, B., Sherba, J., Hawbaker, T.J., Zhu, Z., Selmants, P.C., and Loveland, T.R., 2018, Effects of contemporary land-use and land-cover change on the carbon balance of terrestrial ecosystems in the United States: *Environmental Research Letters*, v. 13, no. 4, article 045006, at <https://doi.org/10.1088/1748-9326/aab540>.
- Sleeter, B.M., Sohl, T.L., Loveland, T.R., Auch, R.F., Acevedo, W., Drummond, M.A., Sayler, K.L., and Stehman, S.V., 2013, Land-cover change in the conterminous United States from 1973 to 2000: *Global Environmental Change*, v. 23, no. 4, p. 733–748, at <https://doi.org/10.1016/j.gloenvcha.2013.03.006>.
- Smith, A.M.S., Tinkham, W.T., Roy, D.P., Boschetti, L., Kremens, R.L., Kumar, S.S., Sparks, A.M., and Falkowski, M.J., 2013, Quantification of fuel moisture effects on biomass consumed derived from fire radiative energy retrievals: *Geophysical Research Letters*, v. 40, no. 23, p. 6298–6302, at <https://doi.org/10.1002/2013GL058232>.
- Smith, A.M.S., Wynne, R.H., and Coops, N., 2008, Introduction to Special Issue - Remote characterization of vegetation structure and productivity—Plant to landscape scales: *Canadian Journal of Remote Sensing*, v. 34, no. Suppl. 2, p. iii–vi, at <https://doi.org/10.5589/m08-907>.
- Smith, B.E., Raymond, C.F., and Scambos, T.A., 2006, Anisotropic texture of ice sheet surfaces: *Journal of Geophysical Research Earth Surface*, v. 111, no. 1, article L06405, at <https://doi.org/10.1029/2005JF000393>.
- Smith, J., Thome, K.J., Crowther, B., and Biggar, S., 1998, Field evaluation of a diffuse to global irradiance meter for vicarious calibration, in 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 663–665, at <https://doi.org/10.1109/IGARSS.1998.699544>.
- Smith, J.A., Andersen, T.J., Shortt, M., Gaffney, A.M., Truffer, M., Stanton, T.P., Bindschadler, R.A., Dutrieux, P., Jenkins, A., et al., 2017, Sub-ice-shelf sediments record history of twentieth-century retreat of Pine Island Glacier: *Nature*, v. 541, no. 7635, p. 77–80, at <https://doi.org/10.1038/nature20136>.

- Smith, L.C., Beilman, D.W., Kremenetski, K.V., Sheng, Y., MacDonald, G.M., Lammers, R.B., Shiklomanov, A.I., and Lapshina, E.D., 2012, Influence of permafrost on water storage in West Siberian peatlands revealed from a new database of soil properties: *Permafrost and Periglacial Processes*, v. 23, no. 1, p. 69–79, at <https://doi.org/10.1002/ppp.735>.
- Smith, L.C., Chu, V.W., Yang, K., Gleason, C.J., Pitcher, L.H., Rennermalm, A.K., Legleiter, C.J., Behar, A.E., Overstreet, B.T., et al., 2015, Efficient meltwater drainage through supraglacial streams and rivers on the southwest Greenland ice sheet: *Proceedings of the National Academy of Sciences of the United States of America*, v. 112, no. 4, p. 1001–1006, at <https://doi.org/10.1073/pnas.1413024112>.
- Smith, L.C., MacDonald, G.M., Velichko, A.A., Beilman, D.W., Borisova, O.K., Frey, K.E., Kremenetski, K.V., and Sheng, Y., 2004, Siberian peatlands a net carbon sink and global methane source since the early Holocene: *Science*, v. 303, no. 5656, p. 353–356, at <https://doi.org/10.1126/science.1090553>.
- Smith, L.C., Sheng, Y., Forster, R.R., Steffen, K., Frey, K.E., and Alsdorf, D.E., 2003, Melting of small Arctic ice caps observed from ERS scatterometer time series: *Geophysical Research Letters*, v. 30, no. 20, p. CRY 2–1 – CRY 2–4, at <https://doi.org/10.1029/2003GL017641>.
- Smith, L.C., Sheng, Y., and MacDonald, G.M., 2007, A first pan-arctic assessment of the influence of glaciation, permafrost, topography and peatlands on northern hemisphere lake distribution: *Permafrost and Periglacial Processes*, v. 18, no. 2, p. 201–208, at <https://doi.org/10.1002/ppp.581>.
- Smith, L.C., Sheng, Y., MacDonald, G.M., and Hinzman, L.D., 2005, Atmospheric science—Disappearing arctic lakes: *Science*, v. 308, no. 5727, p. 1429–1429, at <https://doi.org/10.1126/science.1108142>.
- Smith, L.C., Sheng, Y., Magilligan, F.J., Smith, N.D., Gomez, B., Mertes, L.A.K., Krabill, W.B., and Garvin, J.B., 2006, Geomorphic impact and rapid subsequent recovery from the 1996 Skeiðarársandur jökulhlaup, Iceland, measured with multi-year airborne lidar: *Geomorphology*, v. 75, no. 1-2 SPEC. ISS., p. 65–75, at <https://doi.org/10.1016/j.geomorph.2004.01.012>.
- Smith, P.S., Schmidt, G.D., Allen, R.G., and Hines, D.C., 1997, Hubble Space Telescope and ground-based observations of I ZW 1 and MRK 486 and the variability of polarization in radio-quiet active galactic nuclei: *Astrophysical Journal*, v. 488, no. 1 pt. 1, p. 202–215, at <https://doi.org/10.1086/304669>.
- Snow, T., Straneo, F., Holte, J., Grigsby, S., Abdalati, W., and Scambos, T., 2021, More than skin deep—Sea surface temperature as a means of inferring Atlantic water variability on the southeast Greenland continental shelf near Helheim Glacier: *Journal of Geophysical Research Oceans*, v. 126, no. 4, article e2020JC016509, at <https://doi.org/10.1029/2020JC016509>.
- Snow, T., Zhang, W., Schreiber, E., Siegfried, M., Abdalati, W., and Scambos, T., 2023, Alongshore winds force warm Atlantic water toward Helheim Glacier in southeast Greenland: *Journal of Geophysical Research Oceans*, v. 128, no. 9, article e2023JC019953, at <https://doi.org/10.1029/2023JC019953>.
- Snyder, K.A., Huntington, J.L., Wehan, B.L., Morton, C.G., and Stringham, T.K., 2019, Comparison of Landsat and land-based phenology camera Normalized Difference Vegetation Index (NDVI) for dominant plant communities in the Great Basin: *Sensors*, v. 19, no. 5, article 1139, at <https://doi.org/10.3390/s19051139>.

- Snyder, K.A., Wehan, B.L., Filippa, G., Huntington, J.L., Stringham, T.K., and Snyder, D.K., 2016, Extracting plant phenology metrics in a great basin watershed—Methods and considerations for quantifying phenophases in a cold desert: *Sensors*, v. 16, no. 11, article 1948, at <https://doi.org/10.3390/s16111948>.
- Sobrino, J.A., Dempere-Marco, L., Vermote, E.F., and Cuenca, J., 1998, Correction for aerosol effects on satellite sea surface temperature measurements, *in* *Satellite Remote Sensing of Clouds and the Atmosphere III*, Barcelona, Spain, 21–25 September 1998, *Proceedings of SPIE Vol. 3495*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 379–387, at <https://doi.org/10.1117/12.332693>.
- Sobrino, J.A., Franch, B., Oltra-Carrió, R., Vermote, E.F., and Fedele, E., 2013, Evaluation of the MODIS Albedo product over a heterogeneous agricultural area: *International Journal of Remote Sensing*, v. 34, no. 15, p. 5530–5540, at <https://doi.org/10.1080/01431161.2013.792968>.
- Sogacheva, L., Popp, T., Sayer, A.M., Dubovik, O., Garay, M.J., Heckel, A., Christina Hsu, N., Jethva, H., Kahn, R.A., et al., 2020, Merging regional and global aerosol optical depth records from major available satellite products: *Atmospheric Chemistry and Physics*, v. 20, no. 4, p. 2031–2056, at <https://doi.org/10.5194/acp-20-2031-2020>.
- Sohl, T.L., and Dwyer, J.L., 1998, North american landscape characterization project—The production of a continental scale three-decade Landsat data set: *Geocarto International*, v. 13, no. 3, p. 43–51, at <https://doi.org/10.1080/10106049809354651>.
- Sohl, T.L., Gallant, A.L., and Loveland, T.R., 2004, The characteristics and interpretability of land surface change and implications for project design: *Photogrammetric Engineering and Remote Sensing*, v. 70, no. 4, p. 439–448, at <https://doi.org/10.14358/PERS.70.4.439>.
- Sohl, T.L., Loveland, T.R., Saylor, K.L., Gallant, A.L., Auch, R., and Napton, D., 2000, The Land Cover Trends Project—A strategy for monitoring land cover change at a national scale, *in* *2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Honolulu, Hawaii, 24–28 July 2000, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 2002–2004, at <https://doi.org/10.1109/IGARSS.2000.858245>.
- Sohl, T.L., Loveland, T.R., Sleeter, B.M., Saylor, K.L., and Barnes, C.A., 2010, Addressing foundational elements of regional land-use change forecasting: *Landscape Ecology*, v. 25, no. 2, p. 233–247, at <https://doi.org/10.1007/s10980-009-9391-3>.
- Sohl, T.L., Saylor, K.L., Drummond, M.A., and Loveland, T.R., 2007, The fore-sce model—A practical approach for projecting land cover change using scenario-based modeling: *Journal of Land Use Science*, v. 2, no. 2, p. 103–126, at <https://doi.org/10.1080/17474230701218202>.
- Sohl, T.L., Wimberly, M.C., Radeloff, V.C., Theobald, D.M., and Sleeter, B.M., 2016, Divergent projections of future land use in the United States arising from different models and scenarios: *Ecological Modelling*, v. 337, p. 281–297, at <https://doi.org/10.1016/j.ecolmodel.2016.07.016>.
- Song, C., Fan, C., Zhu, J., Wang, J., Sheng, Y., Liu, K., Chen, T., Zhan, P., Luo, S., et al., 2022, A comprehensive geospatial database of nearly 100 000 reservoirs in China: *Earth System Science Data*, v. 14, no. 9, p. 4017–4034, at <https://doi.org/10.5194/essd-14-4017-2022>.
- Song, C., Schroeder, T.A., and Cohen, W.B., 2007, Predicting temperate conifer forest successional stage distributions with multitemporal Landsat Thematic Mapper imagery: *Remote Sensing of Environment*, v. 106, no. 2, p. 228–237, at <https://doi.org/10.1016/j.rse.2006.08.008>.

- Song, C., and Sheng, Y., 2016, Contrasting evolution patterns between glacier-fed and non-glacier-fed lakes in the Tanggula Mountains and climate cause analysis: *Climatic Change*, v. 135, no. 3, p. 493–507, at <https://doi.org/10.1007/s10584-015-1578-9>.
- Song, C., Sheng, Y., Ke, L., Nie, Y., and Wang, J., 2016, Glacial lake evolution in the southeastern Tibetan Plateau and the cause of rapid expansion of proglacial lakes linked to glacial-hydrogeomorphic processes: *Journal of Hydrology*, v. 540, p. 504–514, at <https://doi.org/10.1016/j.jhydrol.2016.06.054>.
- Song, C., Sheng, Y., Wang, J., Ke, L., Madson, A., and Nie, Y., 2017, Heterogeneous glacial lake changes and links of lake expansions to the rapid thinning of adjacent glacier termini in the Himalayas: *Geomorphology*, v. 280, p. 30–38, at <https://doi.org/10.1016/j.geomorph.2016.12.002>.
- Song, C., Sheng, Y., Zhan, S., Wang, J., Ke, L., and Liu, K., 2020, Impact of amplified evaporation due to lake expansion on the water budget across the inner Tibetan Plateau: *International Journal of Climatology*, v. 40, no. 4, p. 2091–2105, at <https://doi.org/10.1002/joc.6320>.
- Song, C., and Woodcock, C.E., 2002, The spatial manifestation of forest succession in optical imagery—The potential of multiresolution imagery: *Remote Sensing of Environment*, v. 82, no. 2–3, p. 271–284, at [https://doi.org/10.1016/S0034-4257\(02\)00045-7](https://doi.org/10.1016/S0034-4257(02)00045-7).
- Song, C., and Woodcock, C.E., 2003, Estimating Tree Crown Size from Multiresolution Remotely Sensed Imagery: *Photogrammetric Engineering and Remote Sensing*, v. 69, no. 11, p. 1263–1270, at <https://doi.org/10.14358/PERS.69.11.1263>.
- Song, C., and Woodcock, C.E., 2003, Monitoring forest succession with multitemporal Landsat images—Factors of uncertainty: *IEEE Transactions on Geoscience and Remote Sensing*, v. 41, no. 11 pt. 1, p. 2557–2567, at <https://doi.org/10.1109/TGRS.2003.818367>.
- Song, C., and Woodcock, C.E., 2003, A regional forest ecosystem carbon budget model—Impacts of forest age structure and landuse history: *Ecological Modelling*, v. 164, no. 1, p. 33–47, at [https://doi.org/10.1016/S0304-3800\(03\)00013-9](https://doi.org/10.1016/S0304-3800(03)00013-9).
- Song, C., Woodcock, C.E., and Li, X., 2001, Manifestation of forest succession in optical imagery, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2230–2232, at <https://doi.org/10.1109/IGARSS.2001.977958>.
- Song, C., Woodcock, C.E., and Li, X., 2002, The spectral/temporal manifestation of forest succession in optical imagery—The potential of multitemporal imagery: *Remote Sensing of Environment*, v. 82, no. 2–3, p. 285–302, at [https://doi.org/10.1016/S0034-4257\(02\)00046-9](https://doi.org/10.1016/S0034-4257(02)00046-9).
- Song, C., Woodcock, C.E., Seto, K.C., Lenney, M.P., and Macomber, S.A., 2001, Classification and change detection using Landsat TM data—When and how to correct atmospheric effects?: *Remote Sensing of Environment*, v. 75, no. 2, p. 230–244, at [https://doi.org/10.1016/S0034-4257\(00\)00169-3](https://doi.org/10.1016/S0034-4257(00)00169-3).
- Song, C., Ye, Q., Sheng, Y., and Gong, T., 2015, Combined ICESat and CryoSat-2 altimetry for accessing water level dynamics of Tibetan lakes over 2003–2014: *Water*, v. 7, no. 9, p. 4685–4700, at <https://doi.org/10.3390/w7094685>.
- Song, X.P., Hansen, M.C., Potapov, P., Adusei, B., Pickering, J., Adami, M., Lima, A., Zalles, V., Stehman, S.V., et al., 2021, Massive soybean expansion in South America since 2000 and implications for

- conservation: *Nature Sustainability*, v. 4, p. 784–792, at <https://doi.org/10.1038/s41893-021-00729-z>.
- Song, X.P., Hansen, M.C., Stehman, S.V., Potapov, P.V., Tyukavina, A., Vermote, E.F., and Townshend, J.R., 2018, Correction—Global land change from 1982 to 2016 (*Nature*, (2018), 560, 7720, (639–643), 10.1038/s41586-018-0411-9): *Nature*, v. 563, no. 7732, p. E26–E26, at <https://doi.org/10.1038/s41586-018-0573-5>.
- Song, X.P., Hansen, M.C., Stehman, S.V., Potapov, P.V., Tyukavina, A., Vermote, E.F., and Townshend, J.R., 2018, Global land change from 1982 to 2016: *Nature*, v. 560, no. 7720, p. 639–643, at <https://doi.org/10.1038/s41586-018-0411-9>.
- Song, X.P., Huang, C., Saatchi, S.S., Hansen, M.C., and Townshend, J.R., 2015, Annual carbon emissions from deforestation in the Amazon basin between 2000 and 2010: *PLoS ONE*, v. 10, no. 5, article e0126754, at <https://doi.org/10.1371/journal.pone.0126754>.
- Song, X.P., Li, H., Potapov, P., and Hansen, M.C., 2022, Annual 30 m soybean yield mapping in Brazil using long-term satellite observations, climate data and machine learning: *Agricultural and Forest Meteorology*, v. 326, article 109186, at <https://doi.org/10.1016/j.agrformet.2022.109186>.
- Song, X.P., Potapov, P.V., Krylov, A., King, L., Di Bella, C.M., Hudson, A., Khan, A., Adusei, B., Stehman, S.V., and Hansen, M.C., 2017, National-scale soybean mapping and area estimation in the United States using medium resolution satellite imagery and field survey: *Remote Sensing of Environment*, v. 190, p. 383–395, at <https://doi.org/10.1016/j.rse.2017.01.008>.
- Sonnenschein, R., Kuemmerle, T., Udelhoven, T., Stellmes, M., and Hostert, P., 2011, Differences in Landsat-based trend analyses in drylands due to the choice of vegetation estimate: *Remote Sensing of Environment*, v. 115, no. 6, p. 1408–1420, at <https://doi.org/10.1016/j.rse.2011.01.021>.
- Sorek-Hamer, M., Broday, D.M., Chatfield, R., Esswein, R., Stafoggia, M., Lepeule, J., Lyapustin, A.I., and Kloog, I., 2017, Monthly analysis of PM ratio characteristics and its relation to AOD: *Journal of the Air and Waste Management Association*, v. 67, no. 1, p. 27–38, at <https://doi.org/10.1080/10962247.2016.1208121>.
- Soulard, C.E., Acevedo, W., Cohen, W.B., Yang, Z., Stehman, S.V., and Taylor, J.L., 2017, Harmonization of forest disturbance datasets of the conterminous USA from 1986 to 2011: *Environmental Monitoring and Assessment*, v. 189, no. 4, article 170, at <https://doi.org/10.1007/s10661-017-5879-5>.
- Souza, E.G., Scharf, P., Sudduth, K.A., and Hipple, J.D., 2006, Using a field radiometer to estimate instantaneous sky clearness: *Revista Brasileira de Engenharia Agrícola e Ambiental*, v. 10, no. 2, p. 369–373, at <https://doi.org/10.1590/S1415-43662006000200018>.
- Soverel, N.O., Coops, N.C., White, J.C., and Wulder, M.A., 2010, Characterizing the forest fragmentation of Canada's national parks: *Environmental Monitoring and Assessment*, v. 164, no. 1-4, p. 481–499, at <https://doi.org/10.1007/s10661-009-0908-7>.
- Sparn, T.P., Rottman, G., Woods, T.N., Boyle, B.D., Kohnert, R., Ryan, S., Davis, R., Fulton, R., and Ochs, W.R., 2005, The SORCE spacecraft and operations: *Solar Physics*, v. 230, no. 1-2 SPEC. ISS., p. 71–89, at <https://doi.org/10.1007/s11207-005-1584-6>.
- Speir, J., Schott, J.R., Goodenough, A., and Brown, S., 2010, Validation of in-water 3D radiative transfer using DIRSIG, in 2nd Workshop on Hyperspectral Image and Signal Processing—Evolution in

- Remote Sensing, WHISPERS 2010, Reykjavik, Iceland, 14–16 June 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), paper no. 5594868, at <https://doi.org/10.1109/WHISPERS.2010.5594868>.
- Spies, T.A., Miller, J.D., Buchanan, J.B., Lehmkuhl, J.F., Franklin, J.F., Healey, S.P., Hessburg, P.F., Safford, H.D., Cohen, W.B., et al., 2010, Underestimating risks to the northern spotted owl in fire-prone forests—Response to hanson et al: *Conservation Biology*, v. 24, no. 1, p. 330–333, at <https://doi.org/10.1111/j.1523-1739.2009.01414.x>.
- Spyak, P.R., LaMarr, J.H., and Thome, K.J., 1997, Errors in laboratory measurements resulting from atmospheric absorption near 1380 nm, *in* *Earth Observing Systems II*, San Diego, Calif., 27 July–1 August 1997, Proceedings of SPIE Vol. 3117: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 208–216, at <https://doi.org/10.1117/12.278922>.
- Spyak, P.R., Lamarr, J.H., and Thome, K.J., 1998, Atmospheric absorption in laboratory measurements—A comparison between MODTRAN3 and measurement: *Applied Optics*, v. 37, no. 25, p. 5797–5805, at <https://doi.org/10.1364/AO.37.005797>.
- Srivastava, A.N., Nemani, R., and Steinhäuser, K., 2017, Introduction, *Large-scale machine learning in the earth sciences*: New York, N.Y., Chapman and Hall/CRC, p. xv–xviii, at <https://doi.org/10.4324/9781315371740>.
- Srivastava, A.N., Nemani, R.R., and Steinhäuser, K., 2017, *Large-scale machine learning in the Earth sciences*: New York, N.Y., Chapman and Hall/CRC, 226 p., at <https://doi.org/10.4324/9781315371740>.
- Stafoggia, M., Bellander, T., Bucci, S., Davoli, M., de Hoogh, K., de' Donato, F., Gariazzo, C., Lyapustin, A., Michelozzi, P., et al., 2019, Estimation of daily PM10 and PM2.5 concentrations in Italy, 2013–2015, using a spatiotemporal land-use random-forest model: *Environment International*, v. 124, p. 170–179, at <https://doi.org/10.1016/j.envint.2019.01.016>.
- Stafoggia, M., Schwartz, J., Badaloni, C., Bellander, T., Alessandrini, E., Cattani, G., de' Donato, F., Gaeta, A., Leone, G., et al., 2017, Estimation of daily PM10 concentrations in Italy (2006–2012) using finely resolved satellite data, land use variables and meteorology: *Environment International*, v. 99, p. 234–244, at <https://doi.org/10.1016/j.envint.2016.11.024>.
- Ståhl, G., Saarela, S., Schnell, S., Holm, S., Breidenbach, J., Healey, S.P., Patterson, P.L., Magnussen, S., Næsset, E., et al., 2016, Use of models in large-area forest surveys—Comparing model-assisted, model-based and hybrid estimation: *Forest Ecosystems*, v. 3, no. 1, article 5, at <https://doi.org/10.1186/s40663-016-0064-9>.
- Stammerjohn, S., Scambos, T.A., Adusumilli, S., Barreira, S., Bernhard, G.H., Bozkurt, D., Bushinsky, S.M., Clem, K.R., Colwell, S., et al., 2021, Antarctica and the Southern Ocean, State of the climate in 2020, *Bulletin of the American Meteorological Society*, v. 102, no. 8, p. S317–S355, at <https://doi.org/10.1175/BAMS-D-21-0081.1>.
- Stammerjohn, S.E., and Scambos, T.A., 2020, Warming reaches the South Pole: *Nature Climate Change*, v. 10, p. 710–711, at <https://doi.org/10.1038/s41558-020-0827-8>.
- Stanimirova, R., Tarrio, K., Turlej, K., McAvoy, K., Stonebrook, S., Hu, K.T., Arévalo, P., Bullock, E.L., Zhang, Y., et al., 2023, A global land cover training dataset from 1984 to 2020: *Scientific Data*, v. 10, no. 1, article 879, at <https://doi.org/10.1038/s41597-023-02798-5>.

- Stanton, T.P., Shaw, W.J., Truffer, M., Corr, H.F.J., Peters, L.E., Riverman, K.L., Bindschadler, R.A., Holland, D.M., and Anandakrishnan, S., 2013, Channelized ice melting in the ocean boundary layer beneath Pine Island Glacier, Antarctica: *Science*, v. 341, no. 6151, p. 1236–1239, at <https://doi.org/10.1126/science.1239373>.
- Staver, A.C., and Hansen, M.C., 2015, Analysis of stable states in global savannas—Is the CART pulling the horse? A comment: *Global Ecology and Biogeography*, v. 24, no. 8, p. 985–987, at <https://doi.org/10.1111/geb.12285>.
- Steele, B.M., Reddy, S.K., and Nemani, R.R., 2005, A regression strategy for analyzing environmental data generated by spatio-temporal processes: *Ecological Modelling*, v. 181, no. 2–3, p. 93–108, at <https://doi.org/10.1016/j.ecolmodel.2004.06.038>.
- Stehman, S., Olofsson, P., Woodcock, C.E., Friedl, M., Sibley, A., Newell, J., Sulla-Menashe, D., and Herold, M., 2010, Designing a reference validation database for accuracy assessment of land cover, in 9th International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences, Accuracy 2010, Leicester, UK, 20–23 July 2010, Proceedings: Leicester, UK, International Spatial Accuracy Research Association, p. 185–187, at <http://spatialaccuracy.org/wp-content/uploads/2021/08/Stehman2010accuracy.pdf>.
- Stehman, S.V., Hansen, M.C., Broich, M., and Potapov, P.V., 2011, Adapting a global stratified random sample for regional estimation of forest cover change derived from satellite imagery: *Remote Sensing of Environment*, v. 115, no. 2, p. 650–658, at <https://doi.org/10.1016/j.rse.2010.10.009>.
- Stehman, S.V., Olofsson, P., Woodcock, C.E., Herold, M., and Friedl, M.A., 2012, A global land-cover validation data set, II—Augmenting a stratified sampling design to estimate accuracy by region and land-cover class: *International Journal of Remote Sensing*, v. 33, no. 22, p. 6975–6993, at <https://doi.org/10.1080/01431161.2012.695092>.
- Stehman, S.V., Sohl, T.L., and Loveland, T.R., 2003, Statistical sampling to characterize recent United States land-cover change: *Remote Sensing of Environment*, v. 86, no. 4, p. 517–529, at [https://doi.org/10.1016/S0034-4257\(03\)00129-9](https://doi.org/10.1016/S0034-4257(03)00129-9).
- Stehman, S.V., Sohl, T.L., and Loveland, T.R., 2005, An evaluation of sampling strategies to improve precision of estimates of gross change in land use and land cover: *International Journal of Remote Sensing*, v. 26, no. 22, p. 4941–4957, at <https://doi.org/10.1080/01431160500222632>.
- Steininger, M.K., Hansen, M.C., Townshend, J.R.G., Tucker, C.J., Skole, D.L., and DeFries, R., 2008, Convincing evidence of tropical forest decline: *Proceedings of the National Academy of Sciences of the United States of America*, v. 105, no. 24, article E34, at <https://doi.org/10.1073/pnas.0803707105>.
- Stern, A.J., Daughtry, C.S.T., Hunt, E.R., Jr., and Gao, F., 2023, Comparison of five spectral indices and six imagery classification techniques for assessment of crop residue cover using four years of Landsat imagery: *Remote Sensing*, v. 15, no. 18, article 4596, at <https://doi.org/10.3390/rs15184596>.
- Stevick, E., Pohll, G., and Huntington, J.L., 2005, Locating new production wells using a probabilistic-based groundwater model: *Journal of Hydrology*, v. 303, no. 1–4, p. 231–246, at <https://doi.org/10.1016/j.jhydrol.2004.07.016>.
- Stewart, B.P., Nelson, T.A., Laberee, K., Nielsen, S.E., Wulder, M.A., and Stenhouse, G., 2013, Quantifying grizzly bear selection of natural and anthropogenic edges: *Journal of Wildlife Management*, v. 77, no. 5, p. 957–964, at <https://doi.org/10.1002/jwmg.535>.

- Stewart, B.P., Nelson, T.A., Wulder, M.A., Nielsen, S.E., and Stenhouse, G., 2012, Impact of disturbance characteristics and age on grizzly bear habitat selection: *Applied Geography*, v. 34, p. 614–625, at <https://doi.org/10.1016/j.apgeog.2012.03.001>.
- Stewart, B.P., Wulder, M.A., McDermid, G.J., and Nelson, T., 2009, Disturbance capture and attribution through the integration of Landsat and IRS-1C imagery: *Canadian Journal of Remote Sensing*, v. 35, no. 6, p. 523–533, at <https://doi.org/10.5589/m10-006>.
- Stewart, S.I., Radeloff, V.C., Hammer, R.B., and Hawbaker, T.J., 2007, Defining the wildland-urban interface: *Journal of Forestry*, v. 105, no. 4, p. 201–207, at <https://doi.org/10.1093/jof/105.4.201>.
- Stewart, S.I., Wilmer, B., Hammer, R.B., Aplet, G.H., Hawbaker, T.J., Miller, C., and Radeloff, V.C., 2009, Wildland-urban interface maps vary with purpose and context: *Journal of Forestry*, v. 107, no. 2, p. 78–83, at <https://doi.org/10.1093/jof/107.2.78>.
- Steyaert, L.T., Hall, F.G., and Loveland, T.R., 1997, Land cover mapping, fire regeneration, and scaling studies in the Canadian boreal forest with 1 km AVHRR and Landsat TM data: *Journal of Geophysical Research Atmospheres*, v. 102, no. 24, p. 29581–29598, at <https://doi.org/10.1029/97JD01220>.
- Steyaert, L.T., Loveland, T.R., and Parton, W.J., 1997, Land cover characterization and land surface parameterization research: *Ecological Applications*, v. 7, no. 1, p. 1–2, at [https://doi.org/10.1890/1051-0761\(1997\)007\[0001:LCCALS\]2.0.CO;2](https://doi.org/10.1890/1051-0761(1997)007[0001:LCCALS]2.0.CO;2).
- Stibig, H.J., Belward, A.S., Roy, P.S., Rosalina-Wasrin, U., Agrawal, S., Joshi, P.K., Hildanus, Beuchle, R., Fritz, S., et al., 2007, A land-cover map for South and Southeast Asia derived from SPOT-VEGETATION data: *Journal of Biogeography*, v. 34, no. 4, p. 625–637, at <https://doi.org/10.1111/j.1365-2699.2006.01637.x>.
- St-Louis, V., Clayton, M.K., Pidgeon, A.M., and Radeloff, V.C., 2012, An evaluation of prior influence on the predictive ability of Bayesian model averaging: *Oecologia*, v. 168, no. 3, p. 719–726, at <https://doi.org/10.1007/s00442-011-2118-6>.
- St-Louis, V., Forester, J.D., Pelletier, D., Bélisle, M., Desrochers, A., Rayfield, B., Wulder, M.A., and Cardille, J.A., 2014, Circuit theory emphasizes the importance of edge-crossing decisions in dispersal-scale movements of a forest passerine: *Landscape Ecology*, v. 29, no. 5, p. 831–841, at <https://doi.org/10.1007/s10980-014-0019-x>.
- St-Louis, V., Pidgeon, A.M., Clayton, M.K., Locke, B.A., Bash, D., and Radeloff, V.C., 2009, Satellite image texture and a vegetation index predict avian biodiversity in the Chihuahuan Desert of New Mexico: *Ecography*, v. 32, no. 3, p. 468–480, at <https://doi.org/10.1111/j.1600-0587.2008.05512.x>.
- St-Louis, V., Pidgeon, A.M., Clayton, M.K., Locke, B.A., Bash, D., and Radeloff, V.C., 2010, Habitat variables explain loggerhead shrike occurrence in the northern Chihuahuan Desert, but are poor correlates of fitness measures: *Landscape Ecology*, v. 25, no. 4, p. 643–654, at <https://doi.org/10.1007/s10980-010-9451-8>.
- St-Louis, V., Pidgeon, A.M., Kuemmerle, T., Sonnenschein, R., Radeloff, V.C., Clayton, M.K., Locke, B.A., Bash, D., and Hostert, P., 2014, Modelling avian biodiversity using raw, unclassified satellite imagery: *Philosophical Transactions of the Royal Society B—Biological Sciences*, v. 369, no. 1643, p. 1471–2970, at <https://doi.org/10.1098/rstb.2013.0197>.

- St-Louis, V., Pidgeon, A.M., Radeloff, V.C., Hawbaker, T.J., and Clayton, M.K., 2006, High-resolution image texture as a predictor of bird species richness: *Remote Sensing of Environment*, v. 105, no. 4, p. 299–312, at <https://doi.org/10.1016/j.rse.2006.07.003>.
- Stöckli, R., Vermote, E.F., Saleous, N., Simmon, R., and Herring, D., 2006, True color Earth data set includes seasonal dynamics: *Eos*, v. 87, no. 5, p. 51–53, at <https://doi.org/10.1029/2006EO050002>.
- Stockmann, K.D., Anderson, N.M., Skog, K.E., Healey, S.P., Loeffler, D.R., Jones, G., and Morrison, J.F., 2012, Estimates of carbon stored in harvested wood products from the United States forest service northern region, 1906-2010: *Carbon Balance and Management*, v. 7, article 1, at <https://doi.org/10.1186/1750-0680-7-1>.
- Stoker, J.M., Cochrane, M.A., and Roy, D.P., 2014, Integrating disparate lidar data at the national scale to assess the relationships between height above ground, land cover and ecoregions: *Photogrammetric Engineering and Remote Sensing*, v. 80, no. 1, p. 59–70, at <https://doi.org/10.14358/PERS.80.1.59>.
- Stoltman, A.M., Radeloff, V.C., and Mladenoff, D.J., 2004, Forest visualization for management and planning in Wisconsin: *Journal of Forestry*, v. 102, no. 4, p. 7–13, at <https://doi.org/10.1093/jof/102.4.7>.
- Stoltman, A.M., Radeloff, V.C., and Mladenoff, D.J., 2007, Computer visualization of pre-settlement and current forests in Wisconsin: *Forest Ecology and Management*, v. 246, no. 2–3, p. 135–143, at <https://doi.org/10.1016/j.foreco.2007.02.029>.
- Stone, R.S., Anderson, G.P., Shettle, E.P., Andrews, E., Loukachine, K., Dutton, E.G., Schaaf, C.B., and Roman Iii, M.O., 2008, Radiative impact of boreal smoke in the Arctic—Observed and modeled: *Journal of Geophysical Research Atmospheres*, v. 113, no. 14, article D14S16, at <https://doi.org/10.1029/2007JD009657>.
- Storey, J., Roy, D.P., Masek, J.G., Gascon, F., Dwyer, J.L., and Choate, M., 2016, A note on the temporary misregistration of Landsat-8 Operational Land Imager (OLI) and Sentinel-2 Multi Spectral Instrument (MSI) imagery: *Remote Sensing of Environment*, v. 186, p. 121–122, at <https://doi.org/10.1016/j.rse.2016.08.025>.
- Strahler, A., d'Entremont, R., Lucht, W.W., Hu, B., Li, X., and Schaaf, C.B.B., 1997, MODIS BRDF/Albedo product—Prototyping albedo retrieval using AVHRR and GOES, in 1997 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Singapore, 3–8 August 1997, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1220–1223, at <https://doi.org/10.1109/IGARSS.1997.606403>.
- Strahler, A., Yao, T., Zhao, F., Yang, X., Wang, Z., Schaaf, C.B., Woodcock, C.E., Jupp, D., Culvenor, D., et al., 2011, Using a full-waveform, ground-based, scanning lidar (Echidna®) to retrieve forest vegetation structural parameters in american hardwood and conifer stands, in *The GEOSS Era, Towards Operational Environmental Monitoring—34th International Symposium on Remote Sensing of Environment*, Sydney, Australia, 10–15 April 2011, Proceedings: Bethesda, Md., International Society for Photogrammetry and Remote Sensing, paper no. 00821, at <http://www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00821.pdf>.
- Strahler, A.H., Jupp, D.L.B., Woodcock, C.E., Schaaf, C.B., Yao, T., Zhao, F., Yang, X., Lovell, J., Culvenor, D., et al., 2008, Retrieval of forest structural parameters using a ground-based lidar instrument

- (Echidna®): Canadian Journal of Remote Sensing, v. 34, no. Suppl. 2, p. S426–S440, at <https://doi.org/10.5589/m08-046>.
- Straneo, F., Heimbach, P., Sergienko, O., Hamilton, G., Catania, G., Griffies, S., Hallberg, R., Jenkins, A., Joughin, I., et al., 2013, Challenges to understanding the dynamic response of Greenland's marine terminating glaciers to oceanic and atmospheric forcing: Bulletin of the American Meteorological Society, v. 94, no. 8, p. 1131–1144, at <https://doi.org/10.1175/BAMS-D-12-00100.1>.
- Stratoulas, D., Tolpekin, V., de By, R.A., Zurita-Milla, R., Retsios, V., Bijker, W., Hasan, M.A., and Vermote, E., 2017, A workflow for automated satellite image processing—From raw VHSR data to object-based spectral information for smallholder agriculture: Remote Sensing, v. 9, no. 10, article 1048, at <https://doi.org/10.3390/rs9101048>.
- Strickland, G.E.I., Luther, J.E., White, J.C., and Wulder, M.A., 2020, Extending estimates of tree and tree species presence-absence through space and time using Landsat composites: Canadian Journal of Remote Sensing, v. 46, no. 5, p. 567–584, at <https://doi.org/10.1080/07038992.2020.1811083>.
- Strobl, P., Mueller, A., Oertel, D., Boehl, R., Fries, J., Richter, R., Obermeier, P., Hausold, A., Reinhaeckel, G., et al., 1998, Das abbildende spektrometer DAIS 7915, in 15. Nutzerseminar des Deutschen Fernerkundungsdatenzentrum (DFD) des DLR, Munchen, Germany, 14–16 October 1998, Proceedings: Deutsches Zentrum fuer Luft-und Raumfahrt e.V., p. 207–214.
- Strobl, P., Mueller, A., Schlaepfer, D., and Schaepman, M.E., 1997, Laboratory calibration and inflight validation of the Digital Airborne Imaging Spectrometer DAIS 7915, in Algorithms for Multispectral and Hyperspectral Imagery III, Orlando, Fla., 22–23 April 1997, Proceedings of SPIE Vol. 3071: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 225–236, at <https://doi.org/10.1117/12.280599>.
- Strobl, P.A., Bielski, C., Guth, P.L., Grohmann, C.H., Muller, J.P., López-Vázquez, C., Gesch, D.B., Amatulli, G., Riazanoff, S., and Carabajal, C., 2021, The Digital Elevation Model Intercomparison Experiment DEMIX, a community-based approach at global DEM benchmarking, in 24th ISPRS Congress on Imaging Today, Foreseeing Tomorrow, Commission IV, online and Nice, France, 5–9 July 2021, International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XLIII-B4-2021: Lemmer, Netherlands, International Society for Photogrammetry and Remote Sensing, p. 395–400, at <https://doi.org/10.5194/isprs-archives-XLIII-B4-2021-395-2021>.
- Stroeve, J., Box, J.E., Gao, F., Liang, S., Nolin, A., and Schaaf, C.B., 2005, Accuracy assessment of the MODIS 16-day albedo product for snow—Comparisons with Greenland in situ measurements: Remote Sensing of Environment, v. 94, no. 1, p. 46–60, at <https://doi.org/10.1016/j.rse.2004.09.001>.
- Stroeve, J., Box, J.E., Wang, Z., Schaaf, C.B., and Barrett, A., 2013, Re-evaluation of MODIS MCD43 greenland albedo accuracy and trends: Remote Sensing of Environment, v. 138, p. 199–214, at <https://doi.org/10.1016/j.rse.2013.07.023>.
- Stroeve, J., Holland, M.M., Meier, W., Scambos, T.A., and Serreze, M., 2007, Arctic sea ice decline—Faster than forecast: Geophysical Research Letters, v. 34, no. 9, article L09501, at <https://doi.org/10.1029/2007GL029703>.

- Stroeve, J., Serreze, M., Drobot, S., Gearheard, S., Holland, M., Maslanik, J., Meier, W., and Scambos, T.A., 2008, Arctic sea ice extent plummets in 2007: *Eos*, v. 89, no. 2, p. 13–14, at <https://doi.org/10.1029/2008EO020001>.
- Strugnell, N.C., Lucht, W., and Schaaf, C.B., 2001, A global albedo data set derived from AVHRR data for use in climate simulations: *Geophysical Research Letters*, v. 28, no. 1, p. 191–194, at <https://doi.org/10.1029/2000GL011580>.
- Stueve, K.M., Hobie Perry, C.H., Nelson, M.D., Healey, S.P., Hill, A.D., Moisen, G.G., Cohen, W.B., Gormanson, D.D., and Huang, C., 2011, Ecological importance of intermediate windstorms rivals large, infrequent disturbances in the northern Great Lakes: *Ecosphere*, v. 2, no. 1, article 2, at <https://doi.org/10.1890/ES10-00062.1>.
- Stueve, K.M., Housman, I.W., Zimmerman, P.L., Nelson, M.D., Webb, J.B., Perry, C.H., Chastain, R.A., Gormanson, D.D., Huang, C., et al., 2011, Snow-covered Landsat time series stacks improve automated disturbance mapping accuracy in forested landscapes: *Remote Sensing of Environment*, v. 115, no. 12, p. 3203–3219, at <https://doi.org/10.1016/j.rse.2011.07.005>.
- Sturtevant, J., Weilemann, M., Green, K., Dwyer, J.L., Robertson, E., and Hershey, R., 1998, Implementation of a closed-loop CD and overlay controller for sub-0.25 μm patterning, *in* Metrology, Inspection, and Process Control for Microlithography XII, Santa Clara, Calif., 23–25 February 1998, Proceedings of SPIE Vol. 3332: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 461–470, at <https://doi.org/10.1117/12.308788>.
- Su, P., Burge, J.H., Cuerden, B., Allen, R.G., and Martin, H.M., 2009, Scanning pentaprism measurements of off-axis aspherics II, *in* Optical Manufacturing and Testing VIII, San Diego, Calif., 4–5 August 2009, Proceedings of SPIE Vol. 7426: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 74260y, at <https://doi.org/10.1117/12.828497>.
- Su, Y., and Sheng, Y., 1999, Visualizing upwelling at monterey bay in an integrated environment of gis and scientific visualization: *Marine Geodesy*, v. 22, no. 2, p. 93–103, at <https://doi.org/10.1080/014904199273515>.
- Subedi, S., Fox, T.R., and Wynne, R.H., 2015, Determination of fertility rating (FR) in the 3-PG model for loblolly pine plantations in the southeastern United States based on site index: *Forests*, v. 6, no. 9, p. 3002–3027, at <https://doi.org/10.3390/f6093002>.
- Sud, Y.C., Lee, D., Oreopoulos, L., Barahona, D., Nenes, A., and Suarez, M.J., 2013, Performance of McRAS-AC in the GEOS-5 AGCM—Aerosol-cloud-microphysics, precipitation, cloud radiative effects, and circulation: *Geoscientific Model Development*, v. 6, no. 1, p. 57–79, at <https://doi.org/10.5194/gmd-6-57-2013>.
- Sud, Y.C., Walker, G.K., Zhou, Y.P., Schmidt, G.A., Lau, K.M., and Cahalan, R.F., 2008, Effects of doubled CO₂ on tropical sea surface temperatures (SSTs) for onset of deep convection and maximum SST—Simulations based inferences: *Geophysical Research Letters*, v. 35, no. 12, article L12707, at <https://doi.org/10.1029/2008GL033872>.
- Sud, Y.C., Walker, G.K., Zhou, Y.P., Schmidt, G.A., Lau, K.M., and Cahalan, R.F., 2008, Erratum—“Effects of doubled CO₂ on tropical sea surface temperatures (SSTs) for onset of deep convection and maximum SST—Simulations based inferences” (*Geophysical Research Letters* (2008) vol. 35 10.1029/2008GL033872): *Geophysical Research Letters*, v. 35, no. 18, article L18708, at <https://doi.org/10.1029/2008GL035702>.

- Sueki, S., Acharya, K., Huntington, J.L., Liebert, R., Healey, J., Jasoni, R., and Young, M., 2015, Defoliation effects of *Diorhabda carinulata* on tamarisk evapotranspiration and groundwater levels: *Ecohydrology*, v. 8, no. 8, p. 1560–1571, at <https://doi.org/10.1002/eco.1604>.
- Suess, S., van der Linden, S., Leitão, P.J., Okujeni, A., Waske, B., and Hostert, P., 2013, Import vector machines for quantitative analysis of hyperspectral data: *IEEE Geoscience and Remote Sensing Letters*, v. 11, no. 2, p. 449–453, at <https://doi.org/10.1109/LGRS.2013.2265102>.
- Suess, S., van der Linden, S., Okujeni, A., Griffiths, P., Leitão, P.J., Schwieder, M., and Hostert, P., 2018, Characterizing 32 years of shrub cover dynamics in southern Portugal using annual Landsat composites and machine learning regression modeling: *Remote Sensing of Environment*, v. 219, p. 353–364, at <https://doi.org/10.1016/j.rse.2018.10.004>.
- Suess, S., Van Der Linden, S., Okujeni, A., Leitão, P.J., Schwieder, M., and Hostert, P., 2015, Using class probabilities to map gradual transitions in shrub vegetation from simulated EnMAP data: *Remote Sensing*, v. 7, no. 8, p. 10668–10688, at <https://doi.org/10.3390/rs70810668>.
- Sulla-Menashe, D., Friedl, M.A., Krankina, O.N., Baccini, A., Woodcock, C.E., Sibley, A., Sun, G., Kharuk, V., and Elsakov, V., 2011, Hierarchical mapping of Northern Eurasian land cover using MODIS data: *Remote Sensing of Environment*, v. 115, no. 2, p. 392–403, at <https://doi.org/10.1016/j.rse.2010.09.010>.
- Sulla-Menashe, D., Friedl, M.A., and Woodcock, C.E., 2016, Sources of bias and variability in long-term Landsat time series over Canadian boreal forests: *Remote Sensing of Environment*, v. 177, p. 206–219, at <https://doi.org/10.1016/j.rse.2016.02.041>.
- Sulla-Menashe, D., Kennedy, R.E., Yang, Z., Braaten, J., Krankina, O.N., and Friedl, M.A., 2014, Detecting forest disturbance in the Pacific Northwest from MODIS time series using temporal segmentation: *Remote Sensing of Environment*, v. 151, p. 114–123, at <https://doi.org/10.1016/j.rse.2013.07.042>.
- Sulla-Menashe, D., Woodcock, C.E., and Friedl, M.A., 2018, Canadian boreal forest greening and browning trends—An analysis of biogeographic patterns and the relative roles of disturbance versus climate drivers: *Environmental Research Letters*, v. 13, no. 1, article 014007, at <https://doi.org/10.1088/1748-9326/aa9b88>.
- Sullivan, S.C., Lee, D., Oreopoulos, L., and Nenes, A., 2016, Role of updraft velocity in temporal variability of global cloud hydrometeor number: *Proceedings of the National Academy of Sciences of the United States of America*, v. 113, no. 21, p. 5791–5796, at <https://doi.org/10.1073/pnas.1514039113>.
- Sumnall, M., Fox, T.R., Wynne, R.H., and Thomas, V.A., 2017, Mapping the height and spatial cover of features beneath the forest canopy at small-scales using airborne scanning discrete return Lidar: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 133, p. 186–200, at <https://doi.org/10.1016/j.isprsjprs.2017.10.002>.
- Sumnall, M., Peduzzi, A., Fox, T.R., Wynne, R.H., and Thomas, V.A., 2016, Analysis of a lidar voxel-derived vertical profile at the plot and individual tree scales for the estimation of forest canopy layer characteristics: *International Journal of Remote Sensing*, v. 37, no. 11, p. 2653–2681, at <https://doi.org/10.1080/01431161.2016.1183833>.
- Sumnall, M., Peduzzi, A., Fox, T.R., Wynne, R.H., Thomas, V.A., and Cook, B., 2016, Assessing the transferability of statistical predictive models for leaf area index between two airborne discrete return LiDAR sensor designs within multiple intensely managed Loblolly pine forest locations in

- the south-eastern USA: *Remote Sensing of Environment*, v. 176, p. 308–319, at <https://doi.org/10.1016/j.rse.2016.02.012>.
- Sumnall, M.J., Albaugh, T.J., Carter, D.R., Cook, R.L., Hession, W.C., Campoe, O.C., Rubilar, R.A., Wynne, R.H., and Thomas, V.A., 2022, Effect of varied unmanned aerial vehicle laser scanning pulse density on accurately quantifying forest structure: *International Journal of Remote Sensing*, v. 43, no. 2, p. 721–750, at <https://doi.org/10.1080/01431161.2021.2023229>.
- Sumnall, M.J., Albaugh, T.J., Carter, D.R., Cook, R.L., Hession, W.C., Campoe, O.C., Rubilar, R.A., Wynne, R.H., and Thomas, V.A., 2023, Estimation of individual stem volume and diameter from segmented UAV laser scanning datasets in *Pinus taeda* L. plantations: *International Journal of Remote Sensing*, v. 44, no. 1, p. 217–247, at <https://doi.org/10.1080/01431161.2022.2161853>.
- Sumnall, M.J., Fox, T.R., Wynne, R.H., Blinn, C., and Thomas, V.A., 2016, Estimating leaf area index at multiple heights within the understorey component of Loblolly pine forests from airborne discrete-return lidar: *International Journal of Remote Sensing*, v. 37, no. 1, p. 78–99, at <https://doi.org/10.1080/01431161.2015.1117683>.
- Sumnall, M.J., Trlica, A., Carter, D.R., Cook, R.L., Schulte, M.L., Campoe, O.C., Rubilar, R.A., Wynne, R.H., and Thomas, V.A., 2021, Estimating the overstorey and understorey vertical extents and their leaf area index in intensively managed loblolly pine (*Pinus taeda* L.) plantations using airborne laser scanning: *Remote Sensing of Environment*, v. 254, article 112250, at <https://doi.org/10.1016/j.rse.2020.112250>.
- Sun, G., Hall, F., Ni, W., Fang, K., Masek, J.G., Fatoyinbo, T., Peddle, D., and Hilker, T., 2014, Forest parameters estimation from SAR and Landsat data using look-up table inversion, in *Joint 2014 IEEE International Geoscience and Remote Sensing Symposium (IGARSS) and the 35th Canadian Symposium on Remote Sensing (CSRS 2014)*, Quebec City, Canada, 13–18 July 2014, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 65–68, at <https://doi.org/10.1109/IGARSS.2014.6946356>.
- Sun, G., Ni, W., Hall, F., Masek, J.G., Fatoyinbo, T., and Peddle, D., 2013, Retrieval of forest biophysical parameters using physically-based algorithms, in *2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Melbourne, Australia, 21–26 July 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2621–2624, at <https://doi.org/10.1109/IGARSS.2013.6723360>.
- Sun, G., Ranson, K.J., Masek, J., Fu, A., and Wang, D., 2007, Predicting tree height and biomass from GLAS data, in *10th International Symposium on Physical Measurements and Signatures in Remote Sensing, ISPMRS 2007*, Davos, Switzerland, 12–14 March 2007, *International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences*, XXXVI, pt. 7/C50: Lemmer, Netherlands, International Society for Photogrammetry and Remote Sensing, p. 1–4, at <https://www.isprs.org/proceedings/XXXVI/7-C50/papers/T30.pdf>.
- Sun, G., Rocchio, L., Masek, J.G., Williams, D.L., and Ranson, K.J., 2002, Characterization of forest recovery from fire using Landsat and SAR data, in *2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1076–1078, at <https://doi.org/10.1109/IGARSS.2002.1025780>.
- Sun, G., Williams, D.L., Zhan, X., Li, Z., Masek, J.G., Ranson, K.J., and Rocchio, L., 2001, Monitoring forest dynamics using multi-sensor data in Northeastern China, in *2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Sydney, Australia, 9–13 July 2001, Proceedings:

- Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 768–770, at <https://doi.org/10.1109/IGARSS.2001.976630>.
- Sun, L., Anderson, M.C., Gao, F., Hain, C., Alfieri, J.G., Sharifi, A., McCarty, G.W., Yang, Y., Yang, Y., et al., 2017, Investigating water use over the Choptank River Watershed using a multisatellite data fusion approach: *Water Resources Research*, v. 53, no. 7, p. 5298–5319, at <https://doi.org/10.1002/2017WR020700>.
- Sun, L., Chen, Z., Gao, F., Anderson, M.C., Song, L., Wang, L., Hu, B., and Yang, Y., 2017, Reconstructing daily clear-sky land surface temperature for cloudy regions from MODIS data: *Computers and Geosciences*, v. 105, p. 10–20, at <https://doi.org/10.1016/j.cageo.2017.04.007>.
- Sun, L., Gao, F., Anderson, M.C., Dulaney, W., McKee, L., White, A., Kustas, B., Alfieri, J., and Prueger, J., 2016, Daily mapping of Landsat-like LAI and correlation to grape yield, in 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 7157–7160, at <https://doi.org/10.1109/IGARSS.2016.7730867>.
- Sun, L., Gao, F., Anderson, M.C., Kustas, W.P., Alsina, M.M., Sanchez, L., Sams, B., McKee, L., Dulaney, W., et al., 2017, Daily mapping of 30 m LAI and NDVI for grape yield prediction in California vineyards: *Remote Sensing*, v. 9, no. 4, article 317, at <https://doi.org/10.3390/rs9040317>.
- Sun, L., Gao, F., Xie, D., Anderson, M., Chen, R., Yang, Y., Yang, Y., and Chen, Z., 2021, Reconstructing daily 30 m NDVI over complex agricultural landscapes using a crop reference curve approach: *Remote Sensing of Environment*, v. 253, article 112156, at <https://doi.org/10.1016/j.rse.2020.112156>.
- Sun, Q., Wang, Z., Li, Z., Erb, A., and Schaaf, C.B., 2017, Evaluation of the global MODIS 30 arc-second spatially and temporally complete snow-free land surface albedo and reflectance anisotropy dataset: *International Journal of Applied Earth Observation and Geoinformation*, v. 58, p. 36–49, at <https://doi.org/10.1016/j.jag.2017.01.011>.
- Sundareshwar, P.V., Murtugudde, R., Srinivasan, G., Singh, S., Ramesh, K.J., Ramesh, R., Verma, S.B., Agarwal, D., Baldocchi, D., et al., 2007, Environment—Environmental monitoring network for India: *Science*, v. 316, no. 5822, p. 204–205, at <https://doi.org/10.1126/science.1137417>.
- Superczynski, S.D., Kondragunta, S., and Lyapustin, A.I., 2017, Evaluation of the multi-angle implementation of atmospheric correction (MAIAC) aerosol algorithm through intercomparison with VIIRS aerosol products and AERONET: *Journal of Geophysical Research*, v. 122, no. 5, p. 3005–3022, at <https://doi.org/10.1002/2016JD025720>.
- Sutheimer, C.M., Meunier, J., Drobyshv, I., Stambaugh, M.C., Hotchkiss, S.C., Rebitzke, E., and Radeloff, V.C., 2023, Climate forcing of regional fire years in the upper Great Lakes Region, USA: *International Journal of Wildland Fire*, v. 32, no. 5, p. 796–813, at <https://doi.org/10.1071/WF22205>.
- Sutheimer, C.M., Meunier, J., Hotchkiss, S.C., Rebitzke, E., and Radeloff, V.C., 2021, Historical fire regimes of North American hemiboreal peatlands: *Forest Ecology and Management*, v. 498, article 119561, at <https://doi.org/10.1016/j.foreco.2021.119561>.
- Sütterlin, M., Schaaf, C.B., Stöckli, R., Sun, Q., Hüsler, F., Neuhaus, C., and Wunderle, S., 2015, Albedo and reflectance anisotropy retrieval from AVHRR operated onboard NOAA and MetOp satellites—Algorithm performance and accuracy assessment for Europe: *Remote Sensing of Environment*, v. 168, p. 163–176, at <https://doi.org/10.1016/j.rse.2015.06.023>.

- Sütterlin, M., Stöckli, R., Schaaf, C.B., and Wunderle, S., 2016, Albedo climatology for European land surfaces retrieved from AVHRR data (1990-2014) and its spatial and temporal analysis from green-up to vegetation senescence: *Journal of Geophysical Research Atmospheres*, v. 121, no. 14, p. 8156–8171, at <https://doi.org/10.1002/2016JD024933>.
- Suttidate, N., Hobi, M.L., Pidgeon, A.M., Round, P.D., Coops, N.C., Helmers, D.P., Keuler, N.S., Dubinin, M., Bateman, B.L., and Radeloff, V.C., 2019, Tropical bird species richness is strongly associated with patterns of primary productivity captured by the Dynamic Habitat Indices: *Remote Sensing of Environment*, v. 232, article 111306, at <https://doi.org/10.1016/j.rse.2019.111306>.
- Suttidate, N., Pidgeon, A.M., Hobi, M.L., Round, P.D., Dubinin, M., and Radeloff, V.C., 2023, The effects of habitat heterogeneity, as measured by satellite image texture, on tropical forest bird distributions: *Biological Conservation*, v. 281, article 110002, at <https://doi.org/10.1016/j.biocon.2023.110002>.
- Suttidate, N., Steinmetz, R., Lynam, A.J., Sukmasuang, R., Ngoprasert, D., Chutipong, W., Bateman, B.L., Jenks, K.E., Baker-Whatton, M., et al., 2021, Habitat connectivity for endangered Indochinese tigers in Thailand: *Global Ecology and Conservation*, v. 29, article e01718, at <https://doi.org/10.1016/j.gecco.2021.e01718>.
- Svancara, L.K., Scott, J.M., Loveland, T.R., and Pidgorna, A.B., 2009, Assessing the landscape context and conversion risk of protected areas using satellite data products: *Remote Sensing of Environment*, v. 113, no. 7, p. 1357–1369, at <https://doi.org/10.1016/j.rse.2008.11.015>.
- Swap, R.J., Annegarn, H.J., Suttles, J.T., Haywood, J., Helmlinger, M.C., Hely, C., Hobbs, P.V., Holben, B.N., Ji, J., et al., 2002, The Southern African Regional Science Initiative (SAFARI 2000)—Overview of the dry season field campaign: *South African Journal of Science*, v. 98, no. 3–4, p. 125–130, at <https://hdl.handle.net/10520/EJC97439>.
- Swayze, G.A., Clark, R.N., Goetz, A.F.H., Chrien, T.H., and Gorelick, N.S., 2003, Effects of spectrometer band pass, sampling, and signal-to-noise ratio on spectral identification using the Tetracorder algorithm: *Journal of Geophysical Research Planets*, v. 108, no. 9, p. 9–1, at <https://doi.org/10.1029/2002je001975>.
- Swayze, G.A., Clark, R.N., Goetz, A.F.H., Livo, K.E., Breit, G.N., Kruse, F.A., Sutley, S.J., Snee, L.W., Lowers, H.A., et al., 2014, Mapping advanced argillic alteration at Cuprite, Nevada, using imaging spectroscopy: *Economic Geology*, v. 109, no. 5, p. 1179–1221, at <https://doi.org/10.2113/econgeo.109.5.1179>.
- Syphard, A.D., Keeley, J.E., Massada, A.B., Brennan, T.J., and Radeloff, V.C., 2012, Housing arrangement and location determine the likelihood of housing loss due to wildfire: *PLoS ONE*, v. 7, no. 3, article e33954, at <https://doi.org/10.1371/journal.pone.0033954>.
- Syphard, A.D., Radeloff, V.C., Hawbaker, T.J., and Stewart, S.I., 2009, Conservation threats due to human-caused increases in fire frequency in mediterranean-climate ecosystems: *Conservation Biology*, v. 23, no. 3, p. 758–769, at <https://doi.org/10.1111/j.1523-1739.2009.01223.x>.
- Syphard, A.D., Radeloff, V.C., Keeley, J.E., Hawbaker, T.J., Clayton, M.K., Stewart, S.I., and Hammer, R.B., 2007, Human influence on California fire regimes: *Ecological Applications*, v. 17, no. 5, p. 1388–1402, at <https://doi.org/10.1890/06-1128.1>.
- Syphard, A.D., Radeloff, V.C., Keuler, N.S., Taylor, R.S., Hawbaker, T.J., Stewart, S.I., and Clayton, M.K., 2008, Predicting spatial patterns of fire on a southern California landscape: *International Journal of Wildland Fire*, v. 17, no. 5, p. 602–613, at <https://doi.org/10.1071/WF07087>.

- Syphard, A.D., Stewart, S.I., McKeefry, J., Hammer, R.B., Fried, J.S., Holcomb, S., and Radeloff, V.C., 2009, Assessing housing growth when census boundaries change: *International Journal of Geographical Information Science*, v. 23, no. 7, p. 859–876, at <https://doi.org/10.1080/13658810802359877>.
- Szantoi, Z., and Strobl, P., 2019, Copernicus Sentinel-2 calibration and validation: *European Journal of Remote Sensing*, v. 52, no. 1, p. 253–255, at <https://doi.org/10.1080/22797254.2019.1582840>.
- Tahersima, M.H., Thome, K., Wenny, B.N., Anderson, N., and Czapla-Myers, J., 2023, Radiance-based and reflectance-based retrievals of surface reflectance for vicarious calibration, *in* *Earth Observing Systems XXVIII*, San Diego, Calif., 22–24 August 2023, *Proceedings of SPIE Vol. 12685*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1268514, at <https://doi.org/10.1117/12.2676913>.
- Tahersima, M.H., Thome, K., Wenny, B.N., Voskanian, N., and Yarahmadi, M., 2023, Intercomparison of Landsat OLI and JPSS VIIRS using a combination of RadCalNet sites as a common reference: *Remote Sensing*, v. 15, no. 23, article 5562, at <https://doi.org/10.3390/rs15235562>.
- Tahersima, M.H., Wenny, B.N., Voskanian, N., and Thome, K., 2022, Intercomparison of Landsat and Joint Polar Satellite System using radiometric calibration network, *in* *Earth Observing Systems XXVII 2022*, San Diego, Calif., 21–26 August 2022, *Proceedings of SPIE Vol. 12232*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1223218, at <https://doi.org/10.1117/12.2632818>.
- Tan, B., Hu, J., Huang, D., Yang, W., Zhang, P., Shabanov, N.V., Knyazikhin, Y., Nemani, R.R., and Myneni, R.B., 2005, Assessment of the broadleaf crops leaf area index product from the Terra MODIS instrument: *Agricultural and Forest Meteorology*, v. 135, no. 1–4, p. 124–134, at <https://doi.org/10.1016/j.agrformet.2005.10.008>.
- Tan, B., Masek, J.G., Wolfe, R., Gao, F., Huang, C., Vermote, E.F., Sexton, J.O., and Ederer, G., 2013, Improved forest change detection with terrain illumination corrected Landsat images: *Remote Sensing of Environment*, v. 136, p. 469–483, at <https://doi.org/10.1016/j.rse.2013.05.013>.
- Tan, B., Morisette, J.T., Wolfe, R.E., Gao, F., Ederer, G.A., Nightingale, J., and Pedelty, J.A., 2011, An enhanced TIMESAT algorithm for estimating vegetation phenology metrics from MODIS data: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 4, no. 2, p. 361–371, at <https://doi.org/10.1109/JSTARS.2010.2075916>.
- Tan, B., Wolfe, R., Masek, J.G., Gao, F., and Vermote, E.F., 2010, An illumination correction algorithm on Landsat-TM data, *in* *2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Honolulu, Hawaii, 25–30 July 2010, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 1964–1967, at <https://doi.org/10.1109/IGARSS.2010.5653492>.
- Tan, B., Woodcock, C.E., Hu, J., Zhang, P., Ozdogan, M., Huang, D., Yang, W., Knyazikhin, Y., and Myneni, R.B., 2006, The impact of gridding artifacts on the local spatial properties of MODIS data—Implications for validation, compositing, and band-to-band registration across resolutions: *Remote Sensing of Environment*, v. 105, no. 2, p. 98–114, at <https://doi.org/10.1016/j.rse.2006.06.008>.
- Tan, I., Oreopoulos, L., and Cho, N., 2019, The role of thermodynamic phase shifts in cloud optical depth variations with temperature: *Geophysical Research Letters*, v. 46, no. 8, p. 4502–4511, at <https://doi.org/10.1029/2018GL081590>.

- Tan, J., Cho, N., Oreopoulos, L., and Kirstetter, P., 2022, Evaluation of GPROF V05 precipitation retrievals under different cloud regimes: *Journal of Hydrometeorology*, v. 23, no. 3, p. 389–402, at <https://doi.org/10.1175/JHM-D-21-0154.1>.
- Tan, J., and Oreopoulos, L., 2019, Subgrid precipitation properties of mesoscale atmospheric systems represented by modis cloud regimes: *Journal of Climate*, v. 32, no. 6, p. 1797–1812, at <https://doi.org/10.1175/JCLI-D-18-0570.1>.
- Tan, J., Oreopoulos, L., Jakob, C., and Jin, D., 2018, Evaluating rainfall errors in global climate models through cloud regimes: *Climate Dynamics*, v. 50, no. 9–10, p. 3301–3314, at <https://doi.org/10.1007/s00382-017-3806-7>.
- Tan, P., Lymburner, L., and Mueller, N., 2013, A novel image based end-member extraction technique to map green, non-photosynthetic and bare soil fractions using Landsat data, *in* International Congress on Modelling and Simulation, 20th, Adapting to change—The multiple roles of modelling, MODSIM 2013 - Held jointly with the 22nd National Conference of the Australian Society for Operations Research, ASOR 2013 and the DSTO led Defence Operations Research Symposium, DORS 2013, Adelaide, Australia, 1–6 December 2013, Proceedings: Melbourne, Australia, Australian Mathematical Sciences Institute, p. 401–407, at <https://doi.org/10.36334/modsim.2013.A9.tan>.
- Tan, P., Lymburner, L., Mueller, N., Li, F., Thankappan, M., and Lewis, A., 2013, Applying machine learning methods and time series analysis to create a National Dynamic Land Cover Dataset for Australia, *in* 2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Melbourne, Australia, 21–26 July 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4289–4292, at <https://doi.org/10.1109/IGARSS.2013.6723782>.
- Tan, P., Lymburner, L., Thankappan, M., and Lewis, A., 2011, Mapping cropping practices using MODIS time series—Harnessing the data explosion: *Journal of the Indian Society of Remote Sensing*, v. 39, no. 3, p. 365–372, at <https://doi.org/10.1007/s12524-011-0124-0>.
- Tan, P., Sagar, S., Mueller, N., Lymburner, L., Thankappan, M., and Lewis, A., 2015, A surface cover change detection method based on the Australian Geoscience Data Cube, *in* International Congress on Modelling and Simulation, 21st—Partnering with industry and the community for innovation and impact through modelling, MODSIM 2015 - Held jointly with the 23rd National Conference of the Australian Society for Operations Research and the DSTO led Defence Operations Research Symposium, DORS 2015, Broadbeach, Australia, 29 November–4 December 2015, Proceedings: Melbourne, Australia, Australian Mathematical Sciences Institute, p. 173–179, at <https://doi.org/10.36334/MODSIM.2015.A3.Tan>.
- Tan, S., Narayanan, R.M., and Helder, D.L., 2005, Polarimetric reflectance and depolarization ratio from several tree species using a multiwavelength polarimetric lidar, *in* Polarization Science and Remote Sensing II, San Diego, Calif., 2–4 August 2005, Proceedings of SPIE Vol. 5888: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 58880m, at <https://doi.org/10.1117/12.613337>.
- Tan, Z., Liu, S., Johnston, C.A., Loveland, T.R., Tieszen, L.L., Liu, J., and Kurtz, R., 2005, Soil organic carbon dynamics as related to land use history in the northwestern Great Plains: *Global Biogeochemical Cycles*, v. 19, no. 3, p. 1–10, at <https://doi.org/10.1029/2005GB002536>.
- Tan, Z., Liu, S., Li, Z., and Loveland, T.R., 2007, Simulated responses of soil organic carbon stock to tillage management scenarios in the Northwest Great Plains: *Carbon Balance and Management*, v. 2, no. 7, p. 1–10, at <https://doi.org/10.1186/1750-0680-2-7>.

- Tan, Z., Liu, S., Li, Z., and Loveland, T.R., 2013, Soil and tillage management in the northwest Great Plains, *in* Rooney, D., ed., *Sustainable soil management*: New York, N.Y., Apple Academic Press, p. 15–30, at <https://doi.org/10.1201/b14080>.
- Tanase, M.A., Kennedy, R.E., and Aponte, C., 2015, Fire severity estimation from space—A comparison of active and passive sensors and their synergy for different forest types: *International Journal of Wildland Fire*, v. 24, no. 8, p. 1062–1075, at <https://doi.org/10.1071/WF15059>.
- Tanase, M.A., Kennedy, R.E., and Aponte, C., 2015, Radar Burn Ratio for fire severity estimation at canopy level—An example for temperate forests: *Remote Sensing of Environment*, v. 170, p. 14–31, at <https://doi.org/10.1016/j.rse.2015.08.025>.
- Tang, C.H., Coull, B.A., Schwartz, J., Lyapustin, A.I., Di, Q., and Koutrakis, P., 2017, Developing particle emission inventories using remote sensing (PEIRS): *Journal of the Air and Waste Management Association*, v. 67, no. 1, p. 53–63, at <https://doi.org/10.1080/10962247.2016.1214630>.
- Tang, H., Brolly, M., Zhao, F., Strahler, A.H., Schaaf, C.B.L., Ganguly, S., Zhang, G., and Dubayah, R., 2014, Deriving and validating Leaf Area Index (LAI) at multiple spatial scales through lidar remote sensing—a case study in Sierra National Forest, CA: *Remote Sensing of Environment*, v. 143, p. 131–141, at <https://doi.org/10.1016/j.rse.2013.12.007>.
- Tang, H., Song, X.P., Zhao, F.A., Strahler, A.H., Schaaf, C.L., Goetz, S., Huang, C., Hansen, M.C., and Dubayah, R., 2019, Definition and measurement of tree cover—A comparative analysis of field-, lidar- and Landsat-based tree cover estimations in the Sierra national forests, USA: *Agricultural and Forest Meteorology*, v. 268, p. 258–268, at <https://doi.org/10.1016/j.agrformet.2019.01.024>.
- Tang, R., Li, Z.L., Jia, Y., Li, C., Sun, X., Kustas, W.P., and Anderson, M.C., 2011, An intercomparison of three remote sensing-based energy balance models using Large Aperture Scintillometer measurements over a wheat-corn production region: *Remote Sensing of Environment*, v. 115, no. 12, p. 3187–3202, at <https://doi.org/10.1016/j.rse.2011.07.004>.
- Tang, X., Bratley, K.H., Cho, K., Bullock, E.L., Olofsson, P., and Woodcock, C.E., 2023, Near real-time monitoring of tropical forest disturbance by fusion of Landsat, Sentinel-2, and Sentinel-1 data: *Remote Sensing of Environment*, v. 294, at <https://doi.org/10.1016/j.rse.2023.113626>.
- Tang, X., Bullock, E.L., Olofsson, P., Estel, S., and Woodcock, C.E., 2019, Near real-time monitoring of tropical forest disturbance—New algorithms and assessment framework: *Remote Sensing of Environment*, v. 224, p. 202–218, at <https://doi.org/10.1016/j.rse.2019.02.003>.
- Tang, X., Bullock, E.L., Olofsson, P., and Woodcock, C.E., 2020, Can VIIRS continue the legacy of MODIS for near real-time monitoring of tropical forest disturbance?: *Remote Sensing of Environment*, v. 249, article 112024, at <https://doi.org/10.1016/j.rse.2020.112024>.
- Tang, X., Hutyrá, L.R., Arévalo, P., Baccini, A., Woodcock, C.E., and Olofsson, P., 2020, Spatiotemporal tracking of carbon emissions and uptake using time series analysis of Landsat data—A spatially explicit carbon bookkeeping model: *Science of the Total Environment*, v. 720, article 137409, at <https://doi.org/10.1016/j.scitotenv.2020.137409>.
- Tang, X., Woodcock, C.E., Olofsson, P., and Hutyrá, L.R., 2021, Spatiotemporal assessment of land use/land cover change and associated carbon emissions and uptake in the Mekong River Basin: *Remote Sensing of Environment*, v. 256, article 112336, at <https://doi.org/10.1016/j.rse.2021.112336>.

- Tank, V., Pfanz, H., Gemperlein, H., and Strobl, P., 2005, Infrared remote sensing of Earth degassing - Ground study: *Annals of Geophysics*, v. 48, no. 1, p. 181–194, at <https://www.annalsofgeophysics.eu/index.php/annals/article/viewFile/3193/3238>.
- Tansey, K., Grégoire, J.M., Defourny, P., Leigh, R., Pekel, J.F., van Bogaert, E., and Bartholomé, E., 2008, A new, global, multi-annual (2000-2007) burnt area product at 1 km resolution: *Geophysical Research Letters*, v. 35, no. 1, article L01401, at <https://doi.org/10.1029/2007GL031567>.
- Tao, X., Huang, C., Zhao, F., Schleeweis, K., Masek, J., and Liang, S., 2019, Mapping forest disturbance intensity in North and South Carolina using annual Landsat observations and field inventory data: *Remote Sensing of Environment*, v. 221, p. 351–362, at <https://doi.org/10.1016/j.rse.2018.11.029>.
- Tasumi, M., and Allen, R.G., 2007, Satellite-based ET mapping to assess variation in ET with timing of crop development: *Agricultural Water Management*, v. 88, no. 1-3, p. 54–62, at <https://doi.org/10.1016/j.agwat.2006.08.010>.
- Tasumi, M., Allen, R.G., and Trezza, R., 2008, At-surface reflectance and albedo from satellite for operational calculation of land surface energy balance: *Journal of Hydrologic Engineering*, v. 13, no. 2, p. 51–63, at [https://doi.org/10.1061/\(ASCE\)1084-0699\(2008\)13:2\(51\)](https://doi.org/10.1061/(ASCE)1084-0699(2008)13:2(51)).
- Tasumi, M., Allen, R.G., Trezza, R., and Wright, J.L., 2005, Satellite-based energy balance to assess within-population variance of crop coefficient curves: *Journal of Irrigation and Drainage Engineering*, v. 131, no. 1, p. 94–109, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(2005\)131:1\(94\)](https://doi.org/10.1061/(ASCE)0733-9437(2005)131:1(94)).
- Tasumi, M., Kimura, R., Allen, R.G., Moriyama, M., and Trezza, R., 2016, Development of the GCOM-C global ETindex estimation algorithm: *Journal of Agricultural Meteorology*, v. 72, no. 2, p. 85–94, at <https://doi.org/10.2480/agrmet.D-15-00022>.
- Tasumi, M., Kimura, R., Moriyama, M., Allen, R.G., and Fujii, A., 2012, Estimation of global ET-Index from satellite imagery for water resources management, *in* Land Surface Remote Sensing, Kyoto, Japan, 29 October–2 November 2012, Proceedings of SPIE Vol. 8524: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 85240K, at <https://doi.org/10.1117/12.976283>.
- Tasumi, M., Trezza, R., Allen, R.G., and Wright, J.L., 2005, Operational aspects of satellite-based energy balance models for irrigated crops in the semi-arid U.S: *Irrigation and Drainage Systems*, v. 19, no. 3–4, p. 355–376, at <https://doi.org/10.1007/s10795-005-8138-9>.
- Tavchandjian, O., Proulx, A., and Anderson, M.C., 2018, Application of conditional simulations to capital decisions for Ni-Sulfide and Ni-Laterite deposits, *in* Dimitrakopoulos, R., ed., *Advances in applied strategic mine planning*: Cham, Switzerland, Springer, p. 319–333, at https://doi.org/10.1007/978-3-319-69320-0_21.
- Taylor, N.J., Annandale, J.G., Vahrmeijer, J.T., Ibraimo, N.A., Mahohoma, W., Gush, M.B., and Allen, R.G., 2017, Modelling water use of subtropical fruit crops—The challenges: *Acta Horticulturae*, v. 1160, p. 277–284, at <https://doi.org/10.17660/ActaHortic.2017.1160.40>.
- Taylor, N.J., Mahohoma, W., Vahrmeijer, J.T., Gush, M.B., Allen, R.G., and Annandale, J.G., 2014, Crop coefficient approaches based on fixed estimates of leaf resistance are not appropriate for estimating water use of citrus: *Irrigation Science*, v. 33, no. 2, p. 153–166, at <https://doi.org/10.1007/s00271-014-0455-z>.

- Teillet, P.M., Barsi, J.A., Chander, G., and Thome, K.J., 2007, Prime candidate Earth targets for the post-launch radiometric calibration of space-based optical imaging instruments, *in* Earth Observing Systems XII, San Diego, Calif., 26–28 August 2007, Proceedings of SPIE Vol. 6677: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 66770s, at <https://doi.org/10.1117/12.733156>.
- Teillet, P.M., El Saleous, N., Hansen, M.C., Eidsenshink, J.C., Justice, C.O., and Townshend, J.R.G., 2000, An evaluation of the global 1-km AVHRR land dataset: *International Journal of Remote Sensing*, v. 21, no. 10, p. 1987–2021, at <https://doi.org/10.1080/01431160050021259>.
- Teillet, P.M., Fedosejevs, G., Gauthier, R.P., O’Neill, N.T., Thome, K.J., Biggar, S.F., Ripley, H., and Meygret, A., 2001, A generalized approach to the vicarious calibration of multiple Earth observation sensors using hyperspectral data: *Remote Sensing of Environment*, v. 77, no. 3, p. 304–327, at [https://doi.org/10.1016/S0034-4257\(01\)00211-5](https://doi.org/10.1016/S0034-4257(01)00211-5).
- Teillet, P.M., Fedosejevs, G., Gauthier, R.P., Shin, R.T., O’Neill, N.T., Thome, K.J., Biggar, S.F., Ripley, H., and Meygret, A., 1999, Radiometric calibration of multiple Earth observation sensors using airborne hyperspectral data at the Newell County rangeland test site, *in* Earth Observing Systems IV, Denver, Colo., 18–20 July 1999, Proceedings of SPIE Vol. 3750: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 470–481, at <https://doi.org/10.1117/12.363544>.
- Teillet, P.M., Fedosejevs, G., Thome, K.J., and Barker, J.L., 2007, Impacts of spectral band difference effects on radiometric cross-calibration between satellite sensors in the solar-reflective spectral domain: *Remote Sensing of Environment*, v. 110, no. 3, p. 393–409, at <https://doi.org/10.1016/j.rse.2007.03.003>.
- Teillet, P.M., Helder, D.L., Ruggles, T.A., Landry, R., Ahern, F.J., Higgs, N.J., Barsi, J., Chander, G., Markham, B.L., et al., 2004, A definitive calibration record for the Landsat-5 thematic mapper anchored to the Landsat-7 radiometric scale: *Canadian Journal of Remote Sensing*, v. 30, no. 4, p. 631–643, at <https://doi.org/10.5589/m04-022>.
- Teillet, P.M., Thome, K.J., Fox, N., and Morissette, J.T., 2001, Earth observation sensor calibration using a global instrumented and automated network of test sites (GIANTS), *in* Sensors, Systems, and Next-Generation Satellites V, Toulouse, France, 17–20 September 2001, Proceedings of SPIE Vol. 4540: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 246–254, at <https://doi.org/10.1117/12.450666>.
- Teillet, P.M., Fedosejevs, G., and Thome, K.J., 2004, Spectral band difference effects on radiometric cross-calibration between multiple satellite sensors in the Landsat solar-reflective spectral domain, *in* Sensors, Systems, and Next-Generation Satellites VIII, Maspalomas, Spain, 13–15 September 2004, Proceedings of SPIE Vol. 5570: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 307–316, at <https://doi.org/10.1117/12.562709>.
- Teixeira, A.C., Hernandez, F.B.T.H., Scherer-Warren, M., Andrade, R.G., Leivas, J.F., Victoria, D.C., Bolfe, E.L., Thenkabail, P.S., and Franco, R.A.M.F., 2015, Water productivity studies from Earth observation data—Characterization, modeling, and mapping water use and water productivity, *in* Thenkabail, P.S., ed., *Remote sensing of water resources, disasters, and urban studies*: Boca Raton, Fla., CRC Press, p. 101–125, at <https://doi.org/10.1201/b19321>.
- Teixeira Pinto, C., Chittimalli, S., Leigh, L., Ruggles, T., and Helder, D.L., 2017, A reflectance-based cross calibration of the Landsat sensors, *in* Earth Observing Systems XXII, San Diego, Calif., 6–10 August

- 2017, Proceedings of SPIE Vol. 10402: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 104021c, at <https://doi.org/10.1117/12.2275993>.
- Teixeira Pinto, C., Shrestha, M., Hasan, N., Leigh, L., and Helder, D.L., 2018, SBAF for cross-calibration of Landsat-8 OLI and Sentinel-2 MSI over North African PICS, *in* Earth Observing Systems XXIII, San Diego, Calif., 19–23 August 2018, Proceedings of SPIE Vol. 10764: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 107640y, at <https://doi.org/10.1117/12.2321203>.
- Teluguntla, P., Thenkabail, P., Oliphant, A., Xiong, J., Gumma, M.K., Congalton, R.G., Yadav, K., and Huete, A., 2018, A 30-m Landsat-derived cropland extent product of Australia and China using random forest machine learning algorithm on Google Earth Engine cloud computing platform: ISPRS Journal of Photogrammetry and Remote Sensing, v. 144, p. 325–340, at <https://doi.org/10.1016/j.isprsjprs.2018.07.017>.
- Teluguntla, P., Thenkabail, P.S., Xiong, J., Gumma, M.K., Congalton, R.G., Oliphant, A., Poehnelt, J., Yadav, K., Rao, M., and Massey, R., 2017, Spectral matching techniques (SMTs) and automated cropland classification algorithms (ACCAs) for mapping croplands of Australia using MODIS 250-m time-series (2000–2015) data: International Journal of Digital Earth, v. 10, no. 9, p. 944–977, at <https://doi.org/10.1080/17538947.2016.1267269>.
- Teluguntla, P., Thenkabail, P.S., Xiong, J., Gumma, M.K., Giri, C., Milesi, C., Ozdogan, M., Congalton, R.G., and Tilton, J., 2015, Global food security support analysis data at nominal 1 km (GFSAD1km) derived from remote sensing in support of food security in the twenty-first century—Current achievements and future possibilities, *in* Thenkabail, P.S., ed., Land resources monitoring, modeling, and mapping with remote sensing: Boca Raton, Fla., CRC Press, p. 131–159, at <https://doi.org/10.1201/b19322-14>.
- Temesgen, B., Allen, R.G., and Jensen, D.T., 1999, Adjusting temperature parameters to reflect well-watered conditions: Journal of Irrigation and Drainage Engineering, v. 125, no. 1, p. 26–33, at [https://doi.org/10.1061/\(ASCE\)0733-9437\(1999\)125:1\(26\)](https://doi.org/10.1061/(ASCE)0733-9437(1999)125:1(26)).
- Thackway, R., Lymburner, L., and Guerschman, J.P., 2013, Dynamic land cover information—Bridging the gap between remote sensing and natural resource management: Ecology and Society, v. 18, no. 1, article 2, at <https://doi.org/10.5751/ES-05229-180102>.
- Thanapura, P., Helder, D.L., Burckhard, S., Warmath, E., O’Neill, M., and Galster, D., 2006, Mapping urban land cover using QuickBird NDVI image and GIS spatial modeling for runoff coefficient determination, *in* Prospecting for geospatial information integration, Annual Conference, Reno, Nev., 1–5 May 2006, Proceedings: Bethesda, Md., American Society for Photogrammetry and Remote Sensing p. 1421–1432, at <http://www.asprs.org/a/publications/proceedings/reno2006/0153.pdf>.
- Thanapura, P., Helder, D.L., Burckhard, S., Warmath, E., O’Neill, M., and Galster, D., 2007, Mapping urban land cover using quickbird NDVI and GIS spatial modeling for runoff coefficient determination: Photogrammetric Engineering and Remote Sensing, v. 73, no. 1, p. 57–65, at <https://doi.org/10.14358/PERS.73.1.57>.
- Thankappan, M., Lymburner, L., Tan, P., McIntyre, A., Curnow, S., and Lewis, A., 2012, Building a continental scale land cover monitoring framework for Australia, *in* 1st Sentinel-2 Preparatory Symposium, Frascati, Italy, 23–27 April 2012, ESA-SP 707: Frascati, Italy, European Space Agency, p. 1–5, at <http://adsabs.harvard.edu/abs/2012ESASP.707E..16T>.

- Tharammal, T., Bala, G., Narayanappa, D., and Nemani, R., 2019, Potential roles of CO₂ fertilization, nitrogen deposition, climate change, and land use and land cover change on the global terrestrial carbon uptake in the twenty-first century: *Climate Dynamics*, v. 52, no. 7–8, p. 4393–4406, at <https://doi.org/10.1007/s00382-018-4388-8>.
- The, I.C., Abdalati, W., Allison, I., Carsey, F., Casassa, G., Fily, M., Frezzotti, M., Flicker, H.A., Genthon, C., et al., 2004, Recommendations for the collection and synthesis of Antarctic Ice Sheet mass balance data: *Global and Planetary Change*, v. 42, no. 1–4, p. 1–15, at <https://doi.org/10.1016/j.gloplacha.2003.11.008>.
- Thenkabail, P.S., 1999, Characterization of the alternative to slash-and-burn benchmark research area representing the Congolese rainforests of Africa using near-real-time SPOT HRV data: *International Journal of Remote Sensing*, v. 20, no. 5, p. 839–877, at <https://doi.org/10.1080/014311699212966>.
- Thenkabail, P.S., 2001, Optimal hyperspectral narrowbands for discriminating agricultural crops: *Remote Sensing Reviews*, v. 20, no. 4, p. 257–291, at <https://doi.org/10.1080/02757250109532439>.
- Thenkabail, P.S., 2003, Biophysical and yield information for precision farming from near-real-time and historical Landsat TM images: *International Journal of Remote Sensing*, v. 24, no. 14, p. 2879–2904, at <https://doi.org/10.1080/01431160710155974>.
- Thenkabail, P.S., 2004, Inter-sensor relationships between IKONOS and Landsat-7 ETM + NDVI data in three ecoregions of Africa: *International Journal of Remote Sensing*, v. 25, no. 2, p. 389–408, at <https://doi.org/10.1080/0143116031000114842>.
- Thenkabail, P.S., 2010, Global croplands and their importance for water and food security in the twenty-first century—Towards an ever green revolution that combines a second green revolution with a blue revolution: *Remote Sensing*, v. 2, no. 9, p. 2305–2312, at <https://doi.org/10.3390/rs2092305>.
- Thenkabail, P.S., 2011, Remote sensing open access journal—Leading a new paradigm in publishing: *Remote Sensing*, v. 3, no. 12, p. 2704–2706, at <https://doi.org/10.3390/rs3122704>.
- Thenkabail, P.S., 2012, Foreword—Global Cropland Special Issue—Global croplands and their water use for food security in the twenty-first century: *Photogrammetric Engineering and Remote Sensing*, v. 78, no. 8, p. 797–798, at <http://onlinedigitalpublishing.com/publication/?m=7922&i=120190&p=30&ver=html5>.
- Thenkabail, P.S., 2013, Foreword—Hyperspectral remote sensing of vegetation and agricultural crops: *Photogrammetric Engineering and Remote Sensing*, v. 79, no. 9, p. 784–784, at <http://onlinedigitalpublishing.com/publication/?m=7922&i=173077&p=22&ver=html5>.
- Thenkabail, P.S., 2013, Remote Sensing best paper award 2013: *Remote Sensing*, v. 5, no. 2, p. 862–863, at <https://doi.org/10.3390/rs5020862>.
- Thenkabail, P.S., 2013, Remote sensing Best Paper award for the year 2014: *Remote Sensing*, v. 6, no. 1, p. 905–906, at <https://doi.org/10.3390/rs6010905>.
- Thenkabail, P.S., 2014, Remote sensing open access journal—Increasing impact through quality publications: *Remote Sensing*, v. 6, no. 8, p. 7463–7468, at <https://doi.org/10.3390/rs6087463>.
- Thenkabail, P.S., ed., 2015, *Land resources monitoring, modeling, and mapping with remote sensing*: Boca Raton, Fla., CRC Press, 832 p., at <https://doi.org/10.1201/b19322>.

- Thenkabail, P.S., ed., 2015, Remote sensing handbook—Remote sensing of water resources, disasters, and urban studies: Boca Raton, Fla., CRC Press, 659 p., at <https://doi.org/10.1201/b19321>.
- Thenkabail, P.S., ed., 2015, Remotely sensed data characterization, classification, and accuracies: Boca Raton, Fla., CRC Press, 663 p., at <https://doi.org/10.1201/b19294>.
- Thenkabail, P.S., 2015, Monitoring, modeling, and mapping advances over the last 50 years and a vision for the future, *in* Thenkabail, P.S., ed., Remote sensing of water resources, disasters, and urban studies: Boca Raton, Fla., CRC Press, p. 615–658, at <https://doi.org/10.1201/b19321>.
- Thenkabail, P.S., 2015, Preface—Remote sensing advances of the last 50 years and a vision for the future, *in* Thenkabail, P.S., ed., Land resources monitoring, modeling, and mapping with remote sensing: Boca Raton, Fla., CRC Press, p. xvii–xxi, at <https://doi.org/10.1201/b19322>.
- Thenkabail, P.S., 2015, Remote sensing best paper award for the year 2015: Remote Sensing, v. 7, no. 5, p. 5370–5372, at <https://doi.org/10.3390/rs70505370>.
- Thenkabail, P.S., 2015, Remote sensing data characterization, classification, and accuracies—Advances of the last 50 years and a vision for the future, *in* Thenkabail, P.S., ed., Remotely sensed data characterization, classification, and accuracies: Boca Raton, Fla., CRC Press, p. 625–662, at <https://doi.org/10.1201/b19294-51>.
- Thenkabail, P.S., 2015, Remote sensing of land resources—Monitoring, modeling, and mapping advances over the last 50 years and a vision for the future, *in* Thenkabail, P.S., ed., Land resources monitoring, modeling, and mapping with remote sensing: Boca Raton, Fla., CRC Press, p. 791–831, at <https://doi.org/10.1201/b19322-43>.
- Thenkabail, P.S., 2019, Remote sensing 10th anniversary best paper award: Remote Sensing, v. 11, no. 15, article 1790, at <https://doi.org/10.3390/rs11151790>.
- Thenkabail, P.S., 2020, Remote sensing open access journal of MDPI—Current progress and future vision: Remote Sensing, v. 12, no. 15, article 2442, at <https://doi.org/10.3390/RS12152442>.
- Thenkabail, P.S., Aneece, I., Teluguntla, P., and Oliphant, A., 2021, Hyperspectral narrowband data propel gigantic leap in the Earth remote sensing: Photogrammetric Engineering and Remote Sensing, v. 87, no. 7, p. 461–467, at <https://doi.org/10.14358/PERS.87.7.461>.
- Thenkabail, P.S., Aneece, I., Teluguntla, P., Oliphant, A., and Foley, D., 2022, New generation and old generation hyperspectral remote sensing data and their comparisons with multispectral data in the study of global agriculture and vegetation, *in* 2022 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Kuala Lumpur, Malaysia, 17–22 July 2022, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5744–5745, at <https://doi.org/10.1109/IGARSS46834.2022.9883556>.
- Thenkabail, P.S., Biradar, C., Noojipady, P., Islam, A., Vithanage, J., Velpuri, M., Dheeravath, V., Kulawardhana, W., Li, Y.J., et al., 2006, International Water Management Institute’s Data Storehouse Pathway (IWMIDSP) a unique data and knowledge gateway of spatial data with emphasis on river basins, *in* Geoinformatics 2006—GNSS and Integrated Geospatial Applications, Wuhan, China, 28–29 October 2006, Proceedings of SPIE Vol. 6418: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 64181R, at <https://doi.org/10.1117/12.713214>.

- Thenkabail, P.S., Biradar, C.M., Noojipady, P., Cai, X., Dheeravath, V., Li, Y., Velpuri, M., Gumma, M., and Pandey, S., 2007, Sub-pixel area calculation methods for estimating irrigated areas: *Sensors*, v. 7, no. 11, p. 2519–2538, at <https://doi.org/10.3390/s7112519>.
- Thenkabail, P.S., Biradar, C.M., Noojipady, P., Dheeravath, V., Li, Y., Velpuri, M., Gumma, M., Gangalakunta, O.R.P., Turrall, H., et al., 2009, Global irrigated area map (GIAM), derived from remote sensing, for the end of the last millennium: *International Journal of Remote Sensing*, v. 30, no. 14, p. 3679–3733, at <https://doi.org/10.1080/01431160802698919>.
- Thenkabail, P.S., Biradar, C.M., Noojipady, P., Islam, A., Velpuri, M., Vithanage, J., Kulawardhana, W., Li, Y.J., Dheeravath, V.I., et al., 2006, The spatial data and knowledge gateways at the international Water Management Institute (IWMI), in *Geoinformatics 2006—GNSS and Integrated Geospatial Applications*, Wuhan, China, 28–29 October 2006, Proceedings of SPIE Vol. 6421: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 64211Z, at <https://doi.org/10.1117/12.713224>.
- Thenkabail, P.S., Biradar, C.M., Turrall, H., and Schull, M., 2005, A satellite sensor based global map of irrigated areas and products, in *26th Asian Conference on Remote Sensing and 2nd Asian Space Conference*, ACRS 2005, Hanoi, Vietnam, 7–11 November 2005, Proceedings: Tokyo, Japan, Asian Conference on Remote Sensing, p. 340–344, at <https://a-a-r-s.org/proceeding/ACRS2005/Papers/WAR2-1.pdf>.
- Thenkabail, P.S., Dheeravath, V., Biradar, C.M., Gangalakunta, O.R.P., Noojipady, P., Gurappa, C., Velpuri, M., Gumma, M., and Li, Y., 2009, Irrigated area maps and statistics of India using remote sensing and national statistics: *Remote Sensing*, v. 1, no. 2, p. 50–67, at <https://doi.org/10.3390/rs1020050>.
- Thenkabail, P.S., Enclona, E.A., Ashton, M.S., Legg, C., and De Dieu, M.J., 2004, Hyperion, IKONOS, ALI, and ETM+ sensors in the study of African rainforests: *Remote Sensing of Environment*, v. 90, no. 1, p. 23–43, at <https://doi.org/10.1016/j.rse.2003.11.018>.
- Thenkabail, P.S., Enclona, E.A., Ashton, M.S., and Van Der Meer, B., 2004, Accuracy assessments of hyperspectral waveband performance for vegetation analysis applications: *Remote Sensing of Environment*, v. 91, no. 3–4, p. 354–376, at <https://doi.org/10.1016/j.rse.2004.03.013>.
- Thenkabail, P.S., GangadharaRao, P., Biggs, T.W., Krishna, M., and Turrall, H., 2007, Spectral matching techniques to determine historical Land-use/Land-cover (LULC) and irrigated areas using time-series 0.1-degree AVHRR pathfinder datasets: *Photogrammetric Engineering and Remote Sensing*, v. 73, no. 9, p. 1029–1040, at <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=5bde46d005104b372165fa3c9433901848748e30>.
- Thenkabail, P.S., Hall, J., Lin, T., Ashton, M.S., Harris, D., and Enclona, E.A., 2003, Detecting floristic structure and pattern across topographic and moisture gradients in a mixed species Central African forest using IKONOS and Landsat-7 ETM+ images: *International Journal of Applied Earth Observation and Geoinformation*, v. 4, no. 3, p. 255–270, at [https://doi.org/10.1016/S0303-2434\(03\)00006-0](https://doi.org/10.1016/S0303-2434(03)00006-0).
- Thenkabail, P.S., Hanjra, M.A., Dheeravath, V., and Gumma, M., 2010, A holistic view of global croplands and their water use for ensuring global food security in the 21st century through advanced remote sensing and non-remote sensing approaches: *Remote Sensing*, v. 2, no. 1, p. 211–261, at <https://doi.org/10.3390/rs2010211>.

- Thenkabail, P.S., Hanjra, M.A., Dheeravath, V., and Gumma, M., 2011, Global croplands and their water use from remote sensing and nonremote sensing perspectives, *in* Weng, Q., ed., *Advances in environmental remote sensing—Sensors, algorithms, and applications*: Boca Raton, Fla., CRC Press, p. 383–420, at <https://doi.org/10.1201/b10599>.
- Thenkabail, P.S., Knox, J.W., Ozdogan, M., Gumma, M.K., Congalton, R.G., Wu, Z., Milesi, C., Finkral, A., Marshall, M., et al., 2012, Assessing future risks to agricultural productivity, water resources and food security—How can remote sensing help?: *Photogrammetric Engineering and Remote Sensing*, v. 78, no. 8, p. 773–782, at <http://onlinedigitalpublishing.com/publication/?m=7922&i=120190&p=6&ver=html5>.
- Thenkabail, P.S., Mariotto, I., Gumma, M.K., Middleton, E.M., Landis, D.R., and Huemmrich, K.F., 2013, Selection of hyperspectral narrowbands (hnbs) and composition of hyperspectral twoband vegetation indices (HVIS) for biophysical characterization and discrimination of crop types using field reflectance and Hyperion/EO-1 data: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 6, no. 2, p. 427–439, at <https://doi.org/10.1109/JSTARS.2013.2252601>.
- Thenkabail, P.S., and Nolte, C., 1996, Capabilities of Landsat-5 Thematic Mapper™ data in regional mapping and characterization of inland valley agroecosystems in West Africa: *International Journal of Remote Sensing*, v. 17, no. 8, p. 1505–1538, at <https://doi.org/10.1080/01431169608948721>.
- Thenkabail, P.S., Nolte, C., and Lyon, J.G., 2000, Remote sensing and GIS modeling for selection of a benchmark research area in the inland valley agroecosystems of West and Central Africa: *Photogrammetric Engineering and Remote Sensing*, v. 66, no. 6, p. 755–768, at https://www.asprs.org/wp-content/uploads/pers/2000journal/june/2000_jun_755-768.pdf.
- Thenkabail, P.S., and Rhee, J., 2017, GIScience and remote sensing (TGRS) special issue on advances in remote sensing and GIS-based drought monitoring: *GIScience and Remote Sensing*, v. 54, no. 2, p. 141–143, at <https://doi.org/10.1080/15481603.2017.1296219>.
- Thenkabail, P.S., Schull, M., and Turrall, H., 2005, Ganges and Indus river basin land use/land cover (LULC) and irrigated area mapping using continuous streams of MODIS data: *Remote Sensing of Environment*, v. 95, no. 3, p. 317–341, at <https://doi.org/10.1016/j.rse.2004.12.018>.
- Thenkabail, P.S., Smith, R.B., and De Pauw, E., 2000, Hyperspectral vegetation indices and their relationships with agricultural crop characteristics: *Remote Sensing of Environment*, v. 71, no. 2, p. 158–182, at [https://doi.org/10.1016/S0034-4257\(99\)00067-X](https://doi.org/10.1016/S0034-4257(99)00067-X).
- Thenkabail, P.S., Smith, R.B., and De Pauw, E., 2002, Evaluation of narrowband and broadband vegetation indices for determining optimal hyperspectral wavebands for agricultural crop characterization: *Photogrammetric Engineering and Remote Sensing*, v. 68, no. 6, p. 607–621, at https://www.asprs.org/wp-content/uploads/pers/2002journal/june/2002_jun_607-621.pdf.
- Thenkabail, P.S., Stucky, N., Griscom, B.W., Ashton, M.S., Diels, J., Van der Meer, B., and Enclona, E., 2004, Biomass estimations and carbon stock calculations in the oil palm plantations of African derived savannas using IKONOS data: *International Journal of Remote Sensing*, v. 25, no. 23, p. 5447–5472, at <https://doi.org/10.1080/01431160412331291279>.
- Thenkabail, P.S., Teluguntla, P., Gumma, M.K., and Dheeravath, V., 2015, Hyperspectral remote sensing for terrestrial applications, *in* Thenkabail, P.S., ed., *Land resources monitoring, modeling, and*

- mapping with remote sensing: Boca Raton, Fla., CRC Press, p. 201–233, at <https://doi.org/10.1201/b19322-17>.
- Thenkabail, P.S., and Wu, Z., 2012, An automated cropland classification algorithm (ACCA) for Tajikistan by combining Landsat, MODIS, and secondary data: *Remote Sensing*, v. 4, no. 10, p. 2890–2918, at <https://doi.org/10.3390/rs4102890>.
- Thoma, D., Moran, M.S., Bryant, R., Collins, C.H., Rahman, M., and Skirvin, S., 2004, Comparison of two methods for extracting surface soil moisture from C-band radar imagery, *in* 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 827–830, at <https://doi.org/10.1109/IGARSS.2004.1368532>.
- Thoma, D.P., Moran, M.S., Bryant, R., Rahman, M., Holifield-Collins, C.D., Skirvin, S., Sano, E.E., and Slocum, K., 2006, Comparison of four models to determine surface soil moisture from C-band radar imagery in a sparsely vegetated semiarid landscape: *Water Resources Research*, v. 42, no. 1, article W01418, at <https://doi.org/10.1029/2004WR003905>.
- Thoma, D.P., Moran, M.S., Bryant, R., Rahman, M.M., Collins, C.D.H., Keefer, T.O., Noriega, R., Osman, I., Skrivin, S.M., et al., 2008, Appropriate scale of soil moisture retrieval from high resolution radar imagery for bare and minimally vegetated soils: *Remote Sensing of Environment*, v. 112, no. 2, p. 403–414, at <https://doi.org/10.1016/j.rse.2007.06.021>.
- Thomas, N.E., Huang, C., Goward, S.N., Powell, S., Rishmawi, K., Schleeweis, K., and Hinds, A., 2011, Validation of North American Forest Disturbance dynamics derived from Landsat time series stacks: *Remote Sensing of Environment*, v. 115, no. 1, p. 19–32, at <https://doi.org/10.1016/j.rse.2010.07.009>.
- Thomas, R.Q., Jersild, A.L., Brooks, E.B., Thomas, V.A., and Wynne, R.H., 2018, A mid-century ecological forecast with partitioned uncertainty predicts increases in loblolly pine forest productivity: *Ecological Applications*, v. 28, no. 6, p. 1503–1519, at <https://doi.org/10.1002/eap.1761>.
- Thomas, V.A., Wynne, R.H., Kauffman, J., McCurdy, W., Brooks, E.B., Thomas, R.Q., and Rakestraw, J., 2021, Mapping thins to identify active forest management in southern pine plantations using Landsat time series stacks: *Remote Sensing of Environment*, v. 252, article 112127, at <https://doi.org/10.1016/j.rse.2020.112127>.
- Thome, K., and Aytac, Y., 2019, Independent calibration approach for the CLARREO Pathfinder Mission, *in* Imaging Spectrometry XXIII—Applications, Sensors, and Processing 2019, San Diego, Calif., 11–12 August 2019, Proceedings of SPIE Vol. 11130: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 111300b, at <https://doi.org/10.1117/12.2529215>.
- Thome, K.J., 2001, Absolute radiometric calibration of Landsat 7 ETM+ using the reflectance-based method: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 27–38, at [https://doi.org/10.1016/S0034-4257\(01\)00247-4](https://doi.org/10.1016/S0034-4257(01)00247-4).
- Thome, K.J., 2005, Sampling and uncertainty issues in trending reflectance-based vicarious calibration results, *in* Earth Observing Systems X, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5882: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 588216, at <https://doi.org/10.1117/12.618178>.
- Thome, K.J., 2005, Solar radiometry studies of Tucson’s Aspen fire smoke, *in* 2005 IEEE Workshop on Remote Sensing of Atmospheric Aerosols, Tucson, Ariz., 5–6 April 2005, Proceedings: Piscataway,

- N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 26–31, at <https://doi.org/10.1109/AERSOL.2005.1494145>.
- Thome, K.J., 2006, Vicarious calibration of aster backward-looking telescope, *in* Earth Observing Systems XI, San Diego, Calif., 14–16 August 2006, Proceedings of SPIE Vol. 6296: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 629611, at <https://doi.org/10.1117/12.680648>.
- Thome, K.J., 2012, Characterization approaches to place invariant sites on sitraceable scales, *in* 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Munich, Germany, 22–27 July 2012, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 7019–7022, at <https://doi.org/10.1109/IGARSS.2012.6351955>.
- Thome, K.J., 2015, Calibration demonstration system for the reflected solar, *in* Hyperspectral Imaging and Sounding of the Environment, HISE 2015, Lake Arrowhead, Calif., 1–4 March 2015, Fourier Transform Spectroscopy and Hyperspectral Imaging and Sounding of the Environment, OSA Technical Digest: Washington, D.C., Optical Society of America, paper no. HW1B.3, at <https://doi.org/10.1364/HISE.2015.HW1B.3>.
- Thome, K.J., 2016, Calibration/validation error budgets, uncertainties, traceability and their importance to imaging spectrometry, *in* 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1912–1915, at <https://doi.org/10.1109/IGARSS.2016.7729492>.
- Thome, K.J., 2017, Importance of calibration/validation traceability for multi-sensor imaging spectrometry applications, *in* 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, Tex., 23–28 July 2017, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3055–3058, at <https://doi.org/10.1109/IGARSS.2017.8127643>.
- Thome, K.J., Arai, K., Tsuchida, S., and Biggar, S.F., 2008, Vicarious calibration of ASTER via the reflectance-based approach: IEEE Transactions on Geoscience and Remote Sensing, v. 46, no. 10, p. 3285–3295, at <https://doi.org/10.1109/TGRS.2008.928730>.
- Thome, K.J., Aral, K., Hook, S., Kieffer, H., Lang, H., Matsunaga, T., Ono, A., Palluconi, F.D., Sakuma, H., et al., 1998, ASTER preflight and inflight calibration and the validation of level 2 products: IEEE Transactions on Geoscience and Remote Sensing, v. 36, no. 4, p. 1161–1172, at <https://doi.org/10.1109/36.701023>.
- Thome, K.J., Barnes, R., Baize, R., O’Connell, J., and Hair, J., 2010, Calibration of the reflected solar instrument for the Climate Absolute Radiance and Refractivity Observatory, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2275–2278, at <https://doi.org/10.1109/IGARSS.2010.5651486>.
- Thome, K.J., Barnes, R., and Feldman, G., 2002, Intercomparison of ETM+, MODIS, and SeaWiFS using a land test site, *in* Sensors, Systems, and Next-Generation Satellites VI, Agia Pelagia, Crete, 23–26 September 2002, Proceedings of SPIE Vol. 4881: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 319–326, at <https://doi.org/10.1117/12.463005>.
- Thome, K.J., Biggar, S., and Choi, H.J., 2004, Vicarious calibration of Terra ASTER, MISR, and MODIS, *in* Earth Observing Systems IX, Denver, Colo., 2–6 August 2004, Proceedings of SPIE Vol. 5542:

- Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 290–299, at <https://doi.org/10.1117/12.559942>.
- Thome, K.J., Biggar, S., and Slater, P., 2001, Effects of assumed solar spectral irradiance on intercomparisons of Earth-observing sensors, *in* Sensors, Systems, and Next-Generation Satellites V, Toulouse, France, 17–20 September 2001, Proceedings of SPIE Vol. 4540: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 260–269, at <https://doi.org/10.1117/12.450668>.
- Thome, K.J., Biggar, S.F., and Wisniewski, W., 2003, Cross comparison of EO-1 sensors and other Earth resources sensors to Landsat-7 ETM+ using Railroad Valley Playa: IEEE Transactions on Geoscience and Remote Sensing, v. 41, no. 6 pt. 1, p. 1180–1188, at <https://doi.org/10.1109/TGRS.2003.813210>.
- Thome, K.J., Cattrall, C., D'Amico, J., and Geis, J., 2005, Ground-reference calibration results for LANDSAT-7 ETM+, *in* Earth Observing Systems X, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5882: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 58820b, at <https://doi.org/10.1117/12.618185>.
- Thome, K.J., Crowther, B.G., and Biggar, S.F., 1997, Reflectance- and irradiance-based calibration of Landsat-5 thematic mapper: Canadian Journal of Remote Sensing, v. 23, no. 4, p. 309–317, at <https://doi.org/10.1080/07038992.1997.10855217>.
- Thome, K.J., Czaplá-Myers, J., and Biggar, S., 2003, Vicarious calibration of Aqua and Terra MODIS, *in* Earth Observing Systems VIII, San Diego, Calif., 3–6 August 2003, Proceedings of SPIE Vol. 5151: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 395–405, at <https://doi.org/10.1117/12.506364>.
- Thome, K.J., Czaplá-Myers, J., and Biggar, S., 2004, Ground-monitor radiometer system for vicarious calibration, *in* Imaging Spectrometry X, Denver, Colo., 2–4 August 2004, Proceedings of SPIE Vol. 5546: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 223–232, at <https://doi.org/10.1117/12.559950>.
- Thome, K.J., Czaplá-Myers, J., Kuester, M., and Anderson, N., 2008, Accuracy assessment for the radiometric calibration of imaging sensors using preflight techniques relying on the sun as a source, *in* Earth Observing Systems XIII, San Diego, Calif., 11–13 August 2008, Proceedings of SPIE Vol. 7081: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 708118, at <https://doi.org/10.1117/12.795681>.
- Thome, K.J., Czaplá-Myers, J., Leisso, N., McCorkel, J.T., and Buchanan, J., 2008, Intercomparison of imaging sensors using automated ground measurements, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. IV1332–IV1335, at <https://doi.org/10.1109/IGARSS.2008.4779977>.
- Thome, K.J., Czaplá-Myers, J., and McCorkel, J.T., 2007, Retrieval of surface BRDF for reflectance-based calibration, *in* Earth Observing Systems XII, San Diego, Calif., 26–28 August 2007, Proceedings of SPIE Vol. 6677: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 66770T, at <https://doi.org/10.1117/12.734847>.
- Thome, K.J., Czaplá-Myers, J., Wenny, B., and Anderson, N., 2017, Calibration and use of an ultra-portable field transfer radiometer for automated vicarious calibration, *in* Earth Observing Systems XXII, San Diego, Calif., 6–10 August 2017, Proceedings of SPIE Vol. 10402: Bellingham,

- Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 104020I, at <https://doi.org/10.1117/12.2275498>.
- Thome, K.J., D'Amico, J., and Hugon, C., 2006, Intercomparison of terra ASTER, MISR, and MODIS, and Landsat-7 ETM+, *in* 2006 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Denver, Colo., 31 July–4 August 2006, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1772–1775, at <https://doi.org/10.1109/IGARSS.2006.458>.
- Thome, K.J., and Fox, N., 2011, 2010 CEOS field reflectance intercomparisons lessons learned, *in* 2011 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Vancouver, Canada, 24–29 July 2011, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3879–3882, at <https://doi.org/10.1109/IGARSS.2011.6050078>.
- Thome, K.J., Geis, J., and Cattrall, C., 2005, Comparison of ground-reference calibration results for Landsat-7 ETM+ for large and small test sites, *in* Earth Observing Systems X, San Diego, Calif., 31 July–1 August 2005, Proceedings of SPIE Vol. 5882: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 58820a, at <https://doi.org/10.1117/12.617856>.
- Thome, K.J., Goldberg, M., Mita, D., and Stensaas, G.L., 2013, JACIE—A model partnership: Photogrammetric Engineering and Remote Sensing, v. 79, no. 8, p. 681–682, at <http://onlinedigitalpublishing.com/publication/?m=7922&i=168203&p=10&ver=html5>.
- Thome, K.J., Gubbels, T., and Barnes, R., 2011, Preliminary error budget for the reflected solar instrument for the Climate Absolute Radiance and Refractivity Observatory, *in* Earth Observing Systems XVI, San Diego, Calif., 23–25 August 2011, Proceedings of SPIE Vol. 8153: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 81530r, at <https://doi.org/10.1117/12.894177>.
- Thome, K.J., Helder, D.L., Aaron, D.B., and DeWald, J.D., 2004, Landsat-5 TM and Landsat-7 ETM+ absolute radiometric calibration using the reflectance-based method: IEEE Transactions on Geoscience and Remote Sensing, v. 42, no. 12, p. 2777–2785, at <https://doi.org/10.1109/TGRS.2004.839085>.
- Thome, K.J., Kuester, M., and Reagan, J., 2002, Cirrus spectral optical depths retrieved from solar transmittance measurements, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2017–2019, at <https://doi.org/10.1109/IGARSS.2002.1026431>.
- Thome, K.J., LaMarr, J., Scott, K., and Gustafson-Bold, C., 1998, Methods for the calibration of SPOT-4 HRVIR and vegetation, *in* Earth Observing Systems III, San Diego, Calif., 19–21 July 2002, Proceedings of SPIE Vol. 3439: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 439–449, at <https://doi.org/10.1117/12.325650>.
- Thome, K.J., LaMarr, J.H., Biggar, S.F., and Lopez, A.S., 1999, Ground-reference calibration of Landsat-7 ETM+, *in* Sensors, Systems, and Next-Generation Satellites III, Florence, Italy, 20–23 September 1999, Proceedings of SPIE Vol. 3870: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 234–242, at <https://doi.org/10.1117/12.373191>.
- Thome, K.J., Lockwood, R.B., Biggar, S.F., Anderson, N., Czapla-Myers, J., Miller, S.J., Chrien, T.G., Schiller, S.J., Silny, J.F., et al., 2008, Preflight and vicarious calibration of artemis, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July

- 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1249–1252, at <https://doi.org/10.1109/IGARSS.2008.4778840>.
- Thome, K.J., Lunsford, A., Montanaro, M., Reuter, D., Smith, R., Tesfaye, Z., and Wenny, B., 2011, Calibration plan for the thermal infrared sensor on the Landsat data continuity mission, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XVII, Orlando, Fla., 25–28 April 2011, Proceedings of SPIE Vol. 8048: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 804813, at <https://doi.org/10.1117/12.886473>.
- Thome, K.J., Markham, B., Barker, J., Slater, P., and Biggar, S., 1997, Radiometric calibration of Landsat: Photogrammetric Engineering and Remote Sensing, v. 63, no. 7, p. 853–858, at https://www.asprs.org/wp-content/uploads/pers/1997journal/jul/1997_jul_853-858.pdf.
- Thome, K.J., and McCorkel, J.T., 2012, Cross-calibration of imaging sensors using modelbased, SI-traceable predictions of at-sensor radiance, *in* Earth Observing Systems XVII, San Diego, Calif., 13–16 August 2012, Proceedings of SPIE Vol. 8510: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 85100n, at <https://doi.org/10.1117/12.930309>.
- Thome, K.J., McCorkel, J.T., and Czapla-Myers, J., 2013, In-situ transfer standard and coincident-view intercomparisons for sensor cross-calibration: IEEE Transactions on Geoscience and Remote Sensing, v. 51, no. 3, p. 1088–1097, at <https://doi.org/10.1109/TGRS.2013.2243841>.
- Thome, K.J., McCorkel, J.T., Hair, J., McAndrew, B., Daw, A., Jennings, D., and Rabin, D., 2012, Test plan for a calibration demonstration system for the reflected solar instrument for the climate absolute radiance and refractivity observatory, *in* Remote Sensing System Engineering IV, San Diego, Calif., 12–13 August 2012, Proceedings of SPIE Vol. 8516: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 851602, at <https://doi.org/10.1117/12.930337>.
- Thome, K.J., McCorkel, J.T., and McAndrew, B., 2013, Error budget for a calibration demonstration system for the reflected solar instrument for the climate absolute radiance and refractivity observatory, *in* Imaging Spectrometry XVIII, San Diego, Calif., 26–27 August 2013, Proceedings of SPIE Vol. 8870: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 887008, at <https://doi.org/10.1117/12.2024562>.
- Thome, K.J., McCorkel, J.T., and McAndrew, B., 2015, Demonstrating the error budget for the Climate Absolute Radiance and Refractivity Observatory through solar irradiance measurements, *in* Earth Observing Systems XX, San Diego, Calif., 9–13 August 2015, Proceedings of SPIE Vol. 9607: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 96071c, at <https://doi.org/10.1117/12.2188849>.
- Thome, K.J., and Nandy, P., 2000, Accuracy of ground-reference calibration of imaging spectroradiometers at large sensor view angles, *in* Imaging Spectrometry VI, San Diego, Calif., 31 July–2 August 2000, Proceedings of SPIE Vol. 4132: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 260–268, at <https://doi.org/10.1117/12.406595>.
- Thome, K.J., Palluconi, F.D., Takashima, T., and Masuda, K., 1998, Atmospheric correction of ASTER: IEEE Transactions on Geoscience and Remote Sensing, v. 36, no. 4, p. 1199–1211, at <https://doi.org/10.1109/36.701026>.
- Thome, K.J., Reagan, J., Geis, J., Bolt, M., and Spinhirne, J., 2004, Validation of GLAS calibration using ground- and satellite-based data, *in* 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J.,

- Institute of Electrical and Electronics Engineers (IEEE), p. 2468–2471, at <https://doi.org/10.1109/IGARSS.2004.1369793>.
- Thome, K.J., Reuter, D., Richardson, C., and Smith, R., 2010, Calibration of the thermal infrared sensor on the Landsat Data Continuity Mission, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1660–1663, at <https://doi.org/10.1109/IGARSS.2010.5652758>.
- Thome, K.J., Schiller, S., Conel, J., Arai, K., and Tsuchida, S., 1998, Results of the 1996 Earth Observing System vicarious calibration joint campaign at Lunar Lake Playa, Nevada (USA): *Metrologia*, v. 35, no. 4, p. 631–638, at <https://doi.org/10.1088/0026-1394/35/4/70>.
- Thome, K.J., Smith, N., and Scott, K., 2001, Vicarious calibration of MODIS using Railroad Valley Playa, *in* 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1209–1211, at <https://doi.org/10.1109/IGARSS.2001.976794>.
- Thome, K.J., Wenny, B., Anderson, N., McCorkel, J.T., Czapla-Myers, J., and Biggar, S., 2018, Ultra-portable field transfer radiometer for vicarious calibration of Earth imaging sensors: *Metrologia*, v. 55, no. 3, p. S104–S117, at <https://doi.org/10.1088/1681-7575/aab311>.
- Thome, K.J., Whittington, E., LaMarr, J., Anderson, N., and Nandy, P., 2000, Early ground-reference calibration results for Landsat-7 ETM+ using small test sites, *in* Algorithms for Multispectral, Hyperspectral, and Ultraspectral Imagery VI, Orlando, Fla., 24–26 April 2000, Proceedings of SPIE Vol. 4049: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 134–142, at <https://doi.org/10.1117/12.410334>.
- Thome, K.J., Whittington, E., and Smith, N., 2002, Radiometric calibration of MODIS with reference to Landsat-7 ETM+, *in* Earth Observing Systems VI, San Diego, Calif., 29 July–3 August 2001, Proceedings of SPIE Vol. 4483: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 203–210, at <https://doi.org/10.1117/12.453455>.
- Thome, K.J., Whittington, E., Smith, N., Nandy, P., and Zalewski, E., 2000, Ground-reference techniques for the absolute radiometric calibration of MODIS, *in* Earth Observing Systems V, San Diego, Calif., 30 July–4 August 2000, Proceedings of SPIE Vol. 4135: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 51–59, at <https://doi.org/10.1117/12.494219>.
- Thomlinson, J.R., Bolstad, P.V., and Cohen, W.B., 1999, Coordinating methodologies for scaling landcover classifications from site-specific to global—Steps toward validating global map products: *Remote Sensing of Environment*, v. 70, no. 1, p. 16–28, at [https://doi.org/10.1016/S0034-4257\(99\)00055-3](https://doi.org/10.1016/S0034-4257(99)00055-3).
- Thompson, D.R., Bearden, D., Brosnan, I., Cawse-Nicholson, K., Chrono, J., Green, R.O., Glenn, N., Guild, L., Hook, S.J., et al., 2021, NASA's surface biology and geology concept study—Status and next steps, *in* 2021 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Brussels, Belgium, 12–16 July 2021, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 112–114, at <https://doi.org/10.1109/IGARSS47720.2021.9554480>.
- Thompson, D.R., Guanter, L., Berk, A., Gao, B.C., Richter, R., Schläpfer, D., and Thome, K.J., 2019, Retrieval of atmospheric parameters and surface reflectance from visible and shortwave infrared imaging spectroscopy data: *Surveys in Geophysics*, v. 40, no. 3, p. 333–360, at <https://doi.org/10.1007/s10712-018-9488-9>.

- Thompson, S.D., Nelson, T.A., Coops, N.C., Wulder, M.A., and Lantz, T.C., 2017, Global spatial–temporal variability in terrestrial productivity and phenology regimes between 2000 and 2012: *Annals of the American Association of Geographers*, v. 107, p. 1519–1537, at <https://doi.org/10.1080/24694452.2017.1309964>.
- Thompson, S.D., Nelson, T.A., White, J.C., and Wulder, M.A., 2015, Mapping dominant tree species over large forested areas using Landsat best-available-pixel image composites: *Canadian Journal of Remote Sensing*, v. 41, no. 3, p. 203–218, at <https://doi.org/10.1080/07038992.2015.1065708>.
- Thorp, K.R., Wang, G., West, A.L., Moran, M.S., Bronson, K.F., White, J.W., and Mon, J., 2012, Estimating crop biophysical properties from remote sensing data by inverting linked radiative transfer and ecophysiological models: *Remote Sensing of Environment*, v. 124, p. 224–233, at <https://doi.org/10.1016/j.rse.2012.05.013>.
- Thrasher, B., Xiong, J.U.N., Wang, W., Melton, F., Michaelis, A., and Nemani, R.R., 2013, Downscaled climate projections suitable for resource management: *Eos*, v. 94, no. 37, p. 321–323, at <https://doi.org/10.1002/2013EO370002>.
- Tian, Y., Dickinson, R.E., Zhou, L., Myneni, R.B., Friedl, M., Schaaf, C.B., Carroll, M., and Gao, F., 2004, Land boundary conditions from MODIS data and consequences for the albedo of a climate model: *Geophysical Research Letters*, v. 31, no. 5, p. L05504 1–5, at <https://doi.org/10.1029/2003GL019104>.
- Tian, Y., Woodcock, C.E., Wang, Y., Privette, J.L., Shabanov, N.V., Zhou, L., Zhang, Y., Buermann, W., Dong, J., et al., 2002, Multiscale analysis and validation of the MODIS LAI product I. Uncertainty assessment: *Remote Sensing of Environment*, v. 83, no. 3, p. 414–430, at [https://doi.org/10.1016/S0034-4257\(02\)00047-0](https://doi.org/10.1016/S0034-4257(02)00047-0).
- Tian, Y., Woodcock, C.E., Wang, Y., Privette, J.L., Shabanov, N.V., Zhou, L., Zhang, Y., Buermann, W., Dong, J., et al., 2002, Multiscale analysis and validation of the MODIS LAI product II. Sampling strategy: *Remote Sensing of Environment*, v. 83, no. 3, p. 431–441, at [https://doi.org/10.1016/S0034-4257\(02\)00058-5](https://doi.org/10.1016/S0034-4257(02)00058-5).
- Tigges, J., Lakes, T., and Hostert, P., 2013, Urban vegetation classification—Benefits of multitemporal RapidEye satellite data: *Remote Sensing of Environment*, v. 136, p. 66–75, at <https://doi.org/10.1016/j.rse.2013.05.001>.
- Timmermans, W.J., Kustas, W.P., Anderson, M.C., and French, A.N., 2007, An intercomparison of the Surface Energy Balance Algorithm for Land (SEBAL) and the Two-Source Energy Balance (TSEB) modeling schemes: *Remote Sensing of Environment*, v. 108, no. 4, p. 369–384, at <https://doi.org/10.1016/j.rse.2006.11.028>.
- Timpe, M., Barnes, R., Kopparapu, R., Raymond, S.N., Greenberg, R., and Gorelick, N.S., 2013, Secular behavior of exoplanets—Self-consistency and comparisons with the planet-planet scattering hypothesis: *Astronomical Journal*, v. 146, no. 3, article 63, at <https://doi.org/10.1088/0004-6256/146/3/63>.
- Tinkham, W.T., Smith, A.M.S., Affleck, D.L.R., Saralecos, J.D., Falkowski, M.J., Hoffman, C.M., Hudak, A.T., and Wulder, M.A., 2016, Development of height-volume relationships in second growth *Abies grandis* for use with aerial LiDAR: *Canadian Journal of Remote Sensing*, v. 42, no. 5, p. 400–410, at <https://doi.org/10.1080/07038992.2016.1232587>.
- Tischler, M., Garcia, M., Peters-Lidard, C., Moran, M.S., Miller, S., Thoma, D., Kumar, S., and Geiger, J., 2007, A GIS framework for surface-layer soil moisture estimation combining satellite radar

- measurements and land surface modeling with soil physical property estimation: *Environmental Modelling and Software*, v. 22, no. 6, p. 891–898, at <https://doi.org/10.1016/j.envsoft.2006.05.022>.
- Tollerud, H., Brown, J., Loveland, T., Mahmood, R., and Bliss, N., 2018, Drought and land-cover conditions in the great plains: *Earth Interactions*, v. 22, article 17, at <https://doi.org/10.1175/EI-D-17-0025.1>.
- Tollerud, H.J., Brown, J.F., and Loveland, T.R., 2020, Investigating the effects of land use and land cover on the relationship between moisture and reflectance using Landsat time series: *Remote Sensing*, v. 12, no. 12, article 1919, at <https://doi.org/10.3390/rs12121919>.
- Tollerud, H.J., Zhu, Z., Smith, K., Wellington, D.F., Hussain, R.A., and Viola, D., 2023, Toward consistent change detection across irregular remote sensing time series observations: *Remote Sensing of Environment*, v. 285, article 113372, at <https://doi.org/10.1016/j.rse.2022.113372>.
- Tompalski, P., Coops, N.C., Marshall, P.L., White, J.C., Wulder, M.A., and Bailey, T., 2018, Combining multi-date airborne laser scanning and digital aerial photogrammetric data for forest growth and yield modelling: *Remote Sensing*, v. 10, no. 2, article 347, at <https://doi.org/10.3390/rs10020347>.
- Tompalski, P., Coops, N.C., Marshall, P.L., White, J.C., Wulder, M.A., and Bailey, T., 2018, Reply to Vauhkonen—Comment on Tompalski et al. Combining multi-date airborne laser scanning and digital aerial photogrammetric data for forest growth and yield modelling. *Remote Sens.* 2018, 10, 347: *Remote Sensing*, v. 10, no. 9, article 1432, at <https://doi.org/10.3390/rs10091432>.
- Tompalski, P., Coops, N.C., White, J.C., Goodbody, T.R.H., Hennigar, C.R., Wulder, M.A., Socha, J., and Woods, M.E., 2021, Estimating changes in forest attributes and enhancing growth projections—A review of existing approaches and future directions using airborne 3D point cloud data: *Current Forestry Reports*, v. 7, p. 1–24, at <https://doi.org/10.1007/s40725-021-00135-w>.
- Tompalski, P., Coops, N.C., White, J.C., Goodbody, T.R.H., Hennigar, C.R., Wulder, M.A., Socha, J., and Woods, M.E., 2021, Publisher Correction—Estimating changes in forest attributes and enhancing growth projections—A review of existing approaches and future directions using airborne 3D point cloud data (*Current Forestry Reports*, (2021), 7, 1, (1-24), 10.1007/s40725-021-00135-w): *Current Forestry Reports*, v. 7, no. 1, p. 25–30, at <https://doi.org/10.1007/s40725-021-00139-6>.
- Tompalski, P., Coops, N.C., White, J.C., and Wulder, M.A., 2014, Simulating the impacts of error in species and height upon tree volume derived from airborne laser scanning data: *Forest Ecology and Management*, v. 327, p. 167–177, at <https://doi.org/10.1016/j.foreco.2014.05.011>.
- Tompalski, P., Coops, N.C., White, J.C., and Wulder, M.A., 2015, Augmenting site index estimation with airborne laser scanning data: *Forest Science*, v. 61, no. 5, p. 861–873, at <https://doi.org/10.5849/forsci.14-175>.
- Tompalski, P., Coops, N.C., White, J.C., and Wulder, M.A., 2015, Enriching ALS-derived area-based estimates of volume through tree-level downscaling: *Forests*, v. 6, no. 8, p. 2608–2630, at <https://doi.org/10.3390/f6082608>.
- Tompalski, P., Coops, N.C., White, J.C., and Wulder, M.A., 2016, Enhancing forest growth and yield predictions with airborne laser scanning data—Increasing spatial detail and optimizing yield curve selection through template matching: *Forests*, v. 7, no. 11, article 255, at <https://doi.org/10.3390/f7110255>.

- Tompalski, P., Coops, N.C., White, J.C., Wulder, M.A., and Pickell, P.D., 2015, Estimating forest site productivity using airborne laser scanning data and Landsat time series: *Canadian Journal of Remote Sensing*, v. 41, no. 3, p. 232–245, at <https://doi.org/10.1080/07038992.2015.1068686>.
- Tompalski, P., Coops, N.C., White, J.C., Wulder, M.A., and Yuill, A., 2017, Characterizing streams and riparian areas with airborne laser scanning data: *Remote Sensing of Environment*, v. 192, p. 73–86, at <https://doi.org/10.1016/j.rse.2017.01.038>.
- Tompalski, P., White, J.C., Coops, N.C., and Wulder, M.A., 2019, Demonstrating the transferability of forest inventory attribute models derived using airborne laser scanning data: *Remote Sensing of Environment*, v. 227, p. 110–124, at <https://doi.org/10.1016/j.rse.2019.04.006>.
- Tompalski, P., White, J.C., Coops, N.C., and Wulder, M.A., 2019, Quantifying the contribution of spectral metrics derived from digital aerial photogrammetry to area-based models of forest inventory attributes: *Remote Sensing of Environment*, v. 234, article 111434, at <https://doi.org/10.1016/j.rse.2019.111434>.
- Tonooka, H., and Palluconi, F.D., 2002, Verification of the ASTER/TIR atmospheric correction algorithm based on water surface emissivity retrieved, *in* *Infrared Spaceborne Remote Sensing IX*, San Diego, Calif., 29 July–3 August 2001, *Proceedings of SPIE Vol. 4486*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 51–58, at <https://doi.org/10.1117/12.455143>.
- Tonooka, H., and Palluconi, F.D., 2005, Validation of ASTER/TIR standard atmospheric correction using water surfaces: *IEEE Transactions on Geoscience and Remote Sensing*, v. 43, no. 12, p. 2769–2777, at <https://doi.org/10.1109/TGRS.2005.857883>.
- Tonooka, H., Palluconi, F.D., Hook, S.J., and Matsunaga, T., 2005, Vicarious calibration of ASTER thermal infrared bands: *IEEE Transactions on Geoscience and Remote Sensing*, v. 43, no. 12, p. 2733–2745, at <https://doi.org/10.1109/TGRS.2005.857885>.
- Torbick, N., Huang, X., Ziniti, B., Johnson, D.M., Masek, J.G., and Reba, M., 2018, Fusion of moderate resolution Earth observations for operational crop type mapping: *Remote Sensing*, v. 10, no. 7, article 1058, at <https://doi.org/10.3390/rs10071058>.
- Toreti, A., Belward, A., Perez-Dominguez, I., Naumann, G., Luterbacher, J., Cronie, O., Seguini, L., Manfron, G., Lopez-Lozano, R., et al., 2019, The exceptional 2018 European water seesaw calls for action on adaptation: *Earth's Future*, v. 7, no. 6, p. 652–663, at <https://doi.org/10.1029/2019EF001170>.
- Torresan, C., Strunk, J., Zald, H.S.J., Zhiqiang, Y., and Cohen, W.B., 2014, Comparing statistical techniques to classify the structure of mountain forest stands using CHM-derived metrics in Trento province (Italy): *European Journal of Remote Sensing*, v. 47, no. 1, p. 75–94, at <https://doi.org/10.5721/EuJRS20144706>.
- Torres-Rua, A., Aboutalebi, M., Wright, T., Nassar, A., Guillevic, P., Hipps, L., Gao, F., Jim, K., Alsina, M.M., et al., 2019, Estimation of surface thermal emissivity in a vineyard for UAV microbolometer thermal cameras using NASA HyTES hyperspectral thermal, and Landsat and AggieAir optical data, *in* *Autonomous Air and Ground Sensing Systems for Agricultural Optimization and Phenotyping IV 2019*, SPIE Defense + Commercial Sensing, Baltimore, Md., 14–18 April 2019, *Proceedings of SPIE Vol. 11008*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1100802, at <https://doi.org/10.1117/12.2518958>.
- Tortini, R., Mayer, A.L., Hermosilla, T., Coops, N.C., and Wulder, M.A., 2019, Using annual Landsat imagery to identify harvesting over a range of intensities for non-industrial family forests:

- Landscape and Urban Planning, v. 188, p. 143–150, at <https://doi.org/10.1016/j.landurbplan.2018.04.012>.
- Tottrup, C., Rasmussen, M.S., Samek, J., and Skole, D.L., 2007, Towards a generic approach for characterizing and mapping tropical secondary forests in the highlands of mainland Southeast Asia: *International Journal of Remote Sensing*, v. 28, no. 6, p. 1263–1284, at <https://doi.org/10.1080/01431160600928575>.
- Townshend, J., Latham, J., Justice, C.O., Janetos, A., Conant, R., Arino, O., Balstad, R., Belward, A.S., Feuquay, J., et al., 2011, International coordination of satellite land observations—Integrated observations of the land, *in* Ramachandran, B., Justice, C.O., and Abrams, M.J., eds., *Land remote sensing and global environmental change*: New York, N.Y., Springer, p. 835–856, at https://doi.org/10.1007/978-1-4419-6749-7_36.
- Townshend, J.R., Masek, J.G., Huang, C., Vermote, E.F., Gao, F., Channan, S., Sexton, J.O., Feng, M., Narasimhan, R., et al., 2012, Global characterization and monitoring of forest cover using Landsat data—Opportunities and challenges: *International Journal of Digital Earth*, v. 5, no. 5, p. 373–397, at <https://doi.org/10.1080/17538947.2012.713190>.
- Townshend, J.R.G., and Justice, C.O., 2002, Towards operational monitoring of terrestrial systems by moderate-resolution remote sensing: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 351–359, at [https://doi.org/10.1016/S0034-4257\(02\)00082-2](https://doi.org/10.1016/S0034-4257(02)00082-2).
- Tran, H.T., Campbell, J.B., Wynne, R.H., Shao, Y., and Phan, S.V., 2019, Drought and human impacts on land use and land cover change in a vietnamese coastal area: *Remote Sensing*, v. 11, no. 3, article 333, at <https://doi.org/10.3390/rs11030333>.
- Tran, N.N., Huete, A., Nguyen, H., Grant, I., Miura, T., Ma, X., Lyapustin, A., Wang, Y., and Ebert, E., 2020, Seasonal comparisons of Himawari-8 AHI and MODIS vegetation indices over latitudinal Australian grassland sites: *Remote Sensing*, v. 12, no. 15, article 2494, at <https://doi.org/10.3390/RS12152494>.
- Trezza, R., Allen, R.G., Robison, C.W., Kramber, W.J., Kjaersgaard, J., Tasumi, M., and Garcia, M., 2008, Enhanced resolution of evapotranspiration from riparian systems and field edges by sharpening the Landsat thermal band, *in* *World Environmental and Water Resources Congress*, Honolulu, Hawaii, 12–16 May 2008, *Proceedings*: Reston, Va., American Society of Civil Engineers, p. 1–12, at [https://doi.org/10.1061/40976\(316\)98](https://doi.org/10.1061/40976(316)98).
- Trezza, R., Allen, R.G., and Tasumi, M., 2013, Estimation of actual evapotranspiration along the Middle Rio Grande of New Mexico using MODIS and Landsat imagery with the METRIC model: *Remote Sensing*, v. 5, no. 10, p. 5397–5423, at <https://doi.org/10.3390/rs5105397>.
- Trigg, S., Dempewolf, J., Elgamri, M., Justice, C.O., and Gorsevski, V., 2012, Fire and land use change heighten tensions between pastoral nomads and mechanized farmers in Kordofan and White Nile States, Sudan: *Journal of Land Use Science*, v. 7, no. 3, p. 275–288, at <https://doi.org/10.1080/1747423X.2011.565372>.
- Trigg, S.N., and Roy, D.P., 2007, A focus group study of factors that promote and constrain the use of satellite-derived fire products by resource managers in southern Africa: *Journal of Environmental Management*, v. 82, no. 1, p. 95–110, at <https://doi.org/10.1016/j.jenvman.2005.12.008>.
- Trigg, S.N., Roy, D.P., and Flasse, S.P., 2005, An in situ study of the effects of surface anisotropy on the remote sensing of burned savannah: *International Journal of Remote Sensing*, v. 26, no. 21, p. 4869–4876, at <https://doi.org/10.1080/01431160500141923>.

- Trlica, A., Hutyra, L.R., Schaaf, C.L., Erb, A., and Wang, J.A., 2017, Albedo, land cover, and daytime surface temperature variation across an urbanized landscape: *Earth's Future*, v. 5, no. 11, p. 1084–1101, at <https://doi.org/10.1002/2017EF000569>.
- Trnka, M., Hayes, M., Jurečka, F., Bartošová, L., Anderson, M., Brázdil, R., Brown, J., Camarero, J.J., Cudlín, P., et al., 2018, Priority questions in multidisciplinary drought research: *Climate Research*, v. 75, no. 3, p. 241–260, at <https://doi.org/10.3354/cr01509>.
- Troufleau, D., Vidal, A., Beaudoin, A., Moran, M.S., Wertz, M.A., Goodrich, D.C., Washburn, J., and Rahman, A.F., 1997, Optical-microwave synergy for estimating surface sensible heat flux over a semi-arid rangeland: *Remote Sensing Reviews*, v. 15, no. 1–4, p. 113–132, at <https://doi.org/10.1080/02757259709532334>.
- Tsendbazar, N.E., Herold, M., de Bruin, S., Lesiv, M., Fritz, S., Van De Kerchove, R., Buchhorn, M., Duerauer, M., Szantoi, Z., and Pekel, J.F., 2018, Developing and applying a multi-purpose land cover validation dataset for Africa: *Remote Sensing of Environment*, v. 219, p. 298–309, at <https://doi.org/10.1016/j.rse.2018.10.025>.
- Tsuchida, S., Yamamoto, H., Kouyama, T., Obata, K., Sakuma, F., Tachikawa, T., Kamei, A., Arai, K., Czaplak-Myers, J.S., et al., 2020, Radiometric degradation curves for the ASTER VNIR processing using vicarious and lunar calibrations: *Remote Sensing*, v. 12, no. 3, article 427, at <https://doi.org/10.3390/rs12030427>.
- Tsui, O.W., Coops, N.C., Wulder, M.A., and Marshall, P.L., 2013, Integrating airborne LiDAR and spaceborne radar via multivariate kriging to estimate above-ground biomass: *Remote Sensing of Environment*, v. 139, p. 340–352, at <https://doi.org/10.1016/j.rse.2013.08.012>.
- Tsui, O.W., Coops, N.C., Wulder, M.A., Marshall, P.L., and McCardle, A., 2012, Using multi-frequency radar and discrete-return LiDAR measurements to estimate above-ground biomass and biomass components in a coastal temperate forest: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 69, p. 121–133, at <https://doi.org/10.1016/j.isprsjprs.2012.02.009>.
- Tsvetsinskaya, E.A., Schaaf, C.B., Gao, F., Strahler, A.H., and Dickinson, R.E., 2006, Spatial and temporal variability in Moderate Resolution Imaging Spectroradiometer-derived surface albedo over global arid regions: *Journal of Geophysical Research Atmospheres*, v. 111, no. 20, article D20106, at <https://doi.org/10.1029/2005JD006772>.
- Tsvetsinskaya, E.A., Schaaf, C.B., Gao, F., Strahler, A.H., Dickinson, R.E., Zeng, X., and Lucht, W., 2002, Relating MODIS-derived surface albedo to soils and rock types over Northern Africa and the Arabian peninsula: *Geophysical Research Letters*, v. 29, no. 9, p. 67–1 – 67–4, at <https://doi.org/10.1029/2001GL014096>.
- Tucker, C.J., and Goward, S.N., 2019, Satellite remote sensing of drought conditions, in Wilhite, D., Easterling, W., Wood, D.A., and Rasmusson, E., eds., *Planning for drought—Toward a reduction of societal vulnerability*: Abingdon, UK, Routledge, p. 145–151, at <https://doi.org/10.4324/9780429301735-11>.
- Tucker, C.J., Pinzon, J.E., Brown, M.E., Slayback, D.A., Pak, E.W., Mahoney, R., Vermote, E.F., and El Saleous, N., 2005, An extended AVHRR 8-km NDVI dataset compatible with MODIS and SPOT vegetation NDVI data: *International Journal of Remote Sensing*, v. 26, no. 20, p. 4485–4498, at <https://doi.org/10.1080/01431160500168686>.
- Tulbure, M.G., Broich, M., Perin, V., Gaines, M., Ju, J., Stehman, S.V., Pavelsky, T., Masek, J.G., Yin, S., et al., 2022, Can we detect more ephemeral floods with higher density harmonized Landsat

- Sentinel 2 data compared to Landsat 8 alone?: ISPRS Journal of Photogrammetry and Remote Sensing, v. 185, p. 232–246, at <https://doi.org/10.1016/j.isprsjprs.2022.01.021>.
- Tulbure, M.G., Hostert, P., Kuemmerle, T., and Broich, M., 2022, Regional matters—On the usefulness of regional land-cover datasets in times of global change: Remote Sensing in Ecology and Conservation, v. 8, no. 3, p. 272–283, at <https://doi.org/10.1002/rse2.248>.
- Tulbure, M.G., Wimberly, M.C., Roy, D.P., and Henebry, G.M., 2011, Spatial and temporal heterogeneity of agricultural fires in the central United States in relation to land cover and land use: Landscape Ecology, v. 26, no. 2, p. 211–224, at <https://doi.org/10.1007/s10980-010-9548-0>.
- Tuli, F.T.Z., Pinto, C.T., Angal, A., Xiong, X., and Helder, D., 2019, New approach for temporal stability evaluation of Pseudo-Invariant Calibration Sites (PICS): Remote Sensing, v. 11, no. 12, article 1502, at <https://doi.org/10.3390/rs11121502>.
- Turner, D.P., Cohen, W.B., and Kennedy, R.E., 2000, Alternative spatial resolutions and estimation of carbon flux over a managed forest landscape in western Oregon: Landscape Ecology, v. 15, no. 5, p. 441–452, at <https://doi.org/10.1023/A:1008116300063>.
- Turner, D.P., Cohen, W.B., Kennedy, R.E., Fassnacht, K.S., and Briggs, J.M., 1999, Relationships between leaf area index and Landsat TM spectral vegetation indices across three temperate zone sites: Remote Sensing of Environment, v. 70, no. 1, p. 52–68, at [https://doi.org/10.1016/S0034-4257\(99\)00057-7](https://doi.org/10.1016/S0034-4257(99)00057-7).
- Turner, D.P., Göckede, M., Law, B.E., Ritts, W.D., Cohen, W.B., Yang, Z., Hudiburg, T., Kennedy, R.E., and Duane, M., 2011, Multiple constraint analysis of regional land-surface carbon flux: Tellus, Series B—Chemical and Physical Meteorology, v. 63, no. 2, p. 207–221, at <https://doi.org/10.1111/j.1600-0889.2011.00525.x>.
- Turner, D.P., Gower, S.T., Cohen, W.B., Gregory, M., and Maiersperger, T.K., 2002, Effects of spatial variability in light use efficiency on satellite-based NPP monitoring: Remote Sensing of Environment, v. 80, no. 3, p. 397–405, at [https://doi.org/10.1016/S0034-4257\(01\)00319-4](https://doi.org/10.1016/S0034-4257(01)00319-4).
- Turner, D.P., Jacobson, A.R., Ritts, W.D., Wang, W.L., and Nemani, R.R., 2013, A large proportion of north american net ecosystem production is offset by emissions from harvested products, river/stream evasion, and biomass burning: Global Change Biology, v. 19, no. 11, p. 3516–3528, at <https://doi.org/10.1111/gcb.12313>.
- Turner, D.P., Ritts, W.D., Cohen, W.B., Gower, S.T., Running, S.W., Zhao, M., Costa, M.H., Kirschbaum, A.A., Ham, J.M., et al., 2006, Evaluation of MODIS NPP and GPP products across multiple biomes: Remote Sensing of Environment, v. 102, no. 3-4, p. 282–292, at <https://doi.org/10.1016/j.rse.2006.02.017>.
- Turner, D.P., Ritts, W.D., Cohen, W.B., Gower, S.T., Zhao, M., Running, S.W., Wofsy, S.C., Urbanski, S., Dunn, A.L., and Munger, J.W., 2003, Scaling Gross Primary Production (GPP) over boreal and deciduous forest landscapes in support of MODIS GPP product validation: Remote Sensing of Environment, v. 88, no. 3, p. 256–270, at <https://doi.org/10.1016/j.rse.2003.06.005>.
- Turner, D.P., Ritts, W.D., Cohen, W.B., Maeirsperger, T.K., Gower, S.T., Kirschbaum, A.A., Running, S.W., Zhao, M., Wofsy, S.C., et al., 2005, Site-level evaluation of satellite-based global terrestrial gross primary production and net primary production monitoring: Global Change Biology, v. 11, no. 4, p. 666–684, at <https://doi.org/10.1111/j.1365-2486.2005.00936.x>.

- Turner, D.P., Ritts, W.D., Kennedy, R.E., Gray, A.N., and Yang, Z., 2015, Effects of harvest, fire, and pest/pathogen disturbances on the West Cascades ecoregion carbon balance: *Carbon Balance and Management*, v. 10, article 12, at <https://doi.org/10.1186/s13021-015-0022-9>.
- Turner, D.P., Ritts, W.D., Kennedy, R.E., Gray, A.N., and Yang, Z., 2016, Regional carbon cycle responses to 25 years of variation in climate and disturbance in the US Pacific Northwest: *Regional Environmental Change*, v. 16, no. 8, p. 2345–2355, at <https://doi.org/10.1007/s10113-016-0956-9>.
- Turner, D.P., Ritts, W.D., Law, B.E., Cohen, W.B., Yang, Z., Hudiburg, T., Campbell, J.L., and Duane, M., 2007, Scaling net ecosystem production and net biome production over a heterogeneous region in the western United States: *Biogeosciences*, v. 4, no. 4, p. 597–612, at <https://doi.org/10.5194/bg-4-597-2007>.
- Turner, D.P., Ritts, W.D., Styles, J.M., Yang, Z., Cohen, W.B., Law, B.E., and Thornton, P.E., 2006, A diagnostic carbon flux model to monitor the effects of disturbance and interannual variation in climate on regional NEP: *Tellus, Series B—Chemical and Physical Meteorology*, v. 58, no. 5, p. 476–490, at <https://doi.org/10.1111/j.1600-0889.2006.00221.x>.
- Turner, D.P., Ritts, W.D., Yang, Z., Kennedy, R.E., Cohen, W.B., Duane, M.V., Thornton, P.E., and Law, B.E., 2011, Decadal trends in net ecosystem production and net ecosystem carbon balance for a regional socioecological system: *Forest Ecology and Management*, v. 262, no. 7, p. 1318–1325, at <https://doi.org/10.1016/j.foreco.2011.06.034>.
- Turner, J., Barrand, N.E., Bracegirdle, T.J., Convey, P., Hodgson, D.A., Jarvis, M., Jenkins, A., Marshall, G., Meredith, M.P., et al., 2014, Antarctic climate change and the environment—An update: *Polar Record*, v. 50, no. 3, p. 237–259, at <https://doi.org/10.1017/S0032247413000296>.
- Turner, W., Rondinini, C., Pettorelli, N., Mora, B., Leidner, A.K., Szantoi, Z., Buchanan, G., Dech, S., Dwyer, J.L., et al., 2015, Free and open-access satellite data are key to biodiversity conservation: *Biological Conservation*, v. 182, p. 173–176, at <https://doi.org/10.1016/j.biocon.2014.11.048>.
- Turpie, K.R., Casey, K.A., Crawford, C.J., Guild, L.S., Kieffer, H., Lin, G., Kokaly, R., Shrestha, A.K., Anderson, C., et al., 2023, Calibration and validation for the Surface Biology and Geology (SBG) Mission Concept—Recommendations for a multi-sensor system for imaging spectroscopy and thermal imagery: *Journal of Geophysical Research Biogeosciences*, v. 128, no. 9, article e2023JG007452, at <https://doi.org/10.1029/2023JG007452>.
- Turubanova, S., Potapov, P., Hansen, M.C., Li, X., Tyukavina, A., Pickens, A.H., Hernandez-Serna, A., Arranz, A.P., Guerra-Hernandez, J., et al., 2023, Tree canopy extent and height change in Europe, 2001–2021, quantified using Landsat data archive: *Remote Sensing of Environment*, v. 298, article 113797, at <https://doi.org/10.1016/j.rse.2023.113797>.
- Turubanova, S., Potapov, P., Krylov, A., Tyukavina, A., McCarty, J.L., Radeloff, V.C., and Hansen, M.C., 2015, Using the Landsat data archive to assess long-term regional forest dynamics assessment in Eastern Europe, 1985–2012, in *36th International Symposium on Remote Sensing of Environment*, Berlin, Germany, 11–15 May 2015, Proceedings: International Society for Photogrammetry and Remote Sensing, p. 531–537, at <https://doi.org/10.5194/isprsarchives-XL-7-W3-531-2015>.
- Turubanova, S., Potapov, P.V., Tyukavina, A., and Hansen, M.C., 2018, Ongoing primary forest loss in Brazil, Democratic Republic of the Congo, and Indonesia: *Environmental Research Letters*, v. 13, no. 7, article 074028, at <https://doi.org/10.1088/1748-9326/aacd1c>.

- Tyukavina, A., Baccini, A., Hansen, M.C., Potapov, P.V., Stehman, S.V., Houghton, R.A., Krylov, A.M., Turubanova, S., and Goetz, S.J., 2015, Aboveground carbon loss in natural and managed tropical forests from 2000 to 2012: *Environmental Research Letters*, v. 10, no. 7, article 074002, at <https://doi.org/10.1088/1748-9326/10/7/074002>.
- Tyukavina, A., Baccini, A., Hansen, M.C., Potapov, P.V., Stehman, S.V., Houghton, R.A., Turubanova, S., and Goetz, S.J., 2018, Corrigendum—Aboveground carbon loss in natural and managed tropical forests from 2000 to 2012 (*Environmental Research Letters* (2015) 10 (074002)—DOI—10.1088/1748-9326/10/7/074002): *Environmental Research Letters*, v. 13, no. 10, article 109501, at <https://doi.org/10.1088/1748-9326/aae31e>.
- Tyukavina, A., Hansen, M.C., Potapov, P., Parker, D., Okpa, C., Stehman, S.V., Kommareddy, I., and Turubanova, S., 2018, Congo Basin forest loss dominated by increasing smallholder clearing: *Science Advances*, v. 4, no. 11, article eaat2993, at <https://doi.org/10.1126/sciadv.aat2993>.
- Tyukavina, A., Hansen, M.C., Potapov, P.V., Krylov, A.M., and Goetz, S.J., 2016, Pan-tropical hinterland forests—Mapping minimally disturbed forests: *Global Ecology and Biogeography*, v. 25, no. 2, p. 151–163, at <https://doi.org/10.1111/geb.12394>.
- Tyukavina, A., Hansen, M.C., Potapov, P.V., Stehman, S.V., Smith-Rodriguez, K., Okpa, C., and Aguilar, R., 2017, Types and rates of forest disturbance in Brazilian Legal Amazon, 2000–2013: *Science Advances*, v. 3, no. 4, article e1601047, at <https://doi.org/10.1126/sciadv.1601047>.
- Tyukavina, A., Stehman, S.V., Potapov, P.V., Turubanova, S.A., Baccini, A., Goetz, S.J., Laporte, N.T., Houghton, R.A., and Hansen, M.C., 2013, National-scale estimation of gross forest aboveground carbon loss—A case study of the Democratic Republic of the Congo: *Environmental Research Letters*, v. 8, no. 4, article 044039, at <https://doi.org/10.1088/1748-9326/8/4/044039>.
- Ulbrich, G., Meynart, R., Nieke, J., Itten, K.I., Nieke, J., Schlaepfer, D., Chorier, P., Vuillermet, M., Neukom, A., et al., 2004, APEX-Airborne Prism Experiment—The realization phase of an airborne hyperspectral imager, in *Sensors, Systems, and Next-Generation Satellites VIII*, Maspalomas, Spain, 13–15 September 2004, *Proceedings of SPIE Vol. 5570*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 453–459, at <https://doi.org/10.1117/12.566471>.
- Ulsig, L., Nichol, C.J., Huemmrich, K.F., Landis, D.R., Middleton, E.M., Lyapustin, A.I., Mammarella, I., Levula, J., and Porcar-Castell, A., 2017, Detecting inter-annual variations in the phenology of evergreen conifers using long-term MODIS vegetation index time series: *Remote Sensing*, v. 9, no. 1, article 49, at <https://doi.org/10.3390/rs9010049>.
- Uribe, A.S., Healey, S.P., Moisen, G.G., Rivas, R.P., Aguilar, E.G., Tovar, C.L.M., Diaz Ponce Davalos, E.S., and Mascorro, V.S., 2008, Mexican forest inventory expands continental carbon monitoring: *Eos*, v. 89, no. 47, p. 470–471, at <https://doi.org/10.1029/2008EO470002>.
- Uribe, S.V., Estades, C.F., and Radeloff, V.C., 2020, Pine plantations and five decades of land use change in central Chile: *PLoS ONE*, v. 15, no. 3, article e0230193, at <https://doi.org/10.1371/journal.pone.0230193>.
- Uvsh, D., Gehlbach, S., Potapov, P.V., Munteanu, C., Bragina, E.V., and Radeloff, V.C., 2020, Correlates of forest-cover change in European Russia, 1989–2012: *Land Use Policy*, v. 96, article 104648, at <https://doi.org/10.1016/j.landusepol.2020.104648>.

- Vadrevu, K., Gutman, G., Tsuneo, M., and Justice, C., in press, Land use changes, degradation, and impact on ecosystem services in Asia and Southeast Asia: Land Degradation and Development, at <https://doi.org/10.1002/ldr.4971>.
- Vadrevu, K., Heinimann, A., Gutman, G., and Justice, C., 2019, Remote sensing of land use/cover changes in South and Southeast Asian Countries: International Journal of Digital Earth, v. 12, no. 10, p. 1099–1102, at <https://doi.org/10.1080/17538947.2019.1654274>.
- Vadrevu, K., Ohara, T., and Justice, C.O., 2017, Land cover, land use changes and air pollution in Asia—A synthesis: Environmental Research Letters, v. 12, no. 12, article 120201, at <https://doi.org/10.1088/1748-9326/aa9c5d>.
- Vadrevu, K.P., Csizsar, I., Ellicott, E., Giglio, L., Badarinath, K.V.S., Vermote, E.F., and Justice, C.O., 2012, Hotspot analysis of vegetation fires and intensity in the Indian region: IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, v. 6, no. 1, p. 224–238, at <https://doi.org/10.1109/JSTARS.2012.2210699>.
- Vadrevu, K.P., Dadhwal, V.K., Gutman, G., and Justice, C., 2019, Remote sensing of agriculture—South/Southeast Asia research initiative special issue: International Journal of Remote Sensing, v. 40, no. 21, p. 8071–8075, at <https://doi.org/10.1080/01431161.2019.1617507>.
- Vadrevu, K.P., Ellicott, E., Badarinath, K.V.S., and Vermote, E.F., 2011, MODIS derived fire characteristics and aerosol optical depth variations during the agricultural residue burning season, north India: Environmental Pollution, v. 159, no. 6, p. 1560–1569, at <https://doi.org/10.1016/j.envpol.2011.03.001>.
- Vadrevu, K.P., Ellicott, E., Giglio, L., Badarinath, K.V.S., Vermote, E.F., Justice, C.O., and Lau, W.K.M., 2012, Vegetation fires in the Himalayan region—Aerosol load, black carbon emissions and smoke plume heights: Atmospheric Environment, v. 47, p. 241–251, at <https://doi.org/10.1016/j.atmosenv.2011.11.009>.
- Vadrevu, K.P., Giglio, L., and Justice, C.O., 2013, Satellite based analysis of fire-carbon monoxide relationships from forest and agricultural residue burning (2003-2011): Atmospheric Environment, v. 64, p. 179–191, at <https://doi.org/10.1016/j.atmosenv.2012.09.055>.
- Vadrevu, K.P., Justice, C.O., Prasad, T., Prasad, N., and Gutman, G., 2015, Land cover/land use change and impact on environment in South Asia - (Continuation of January, 2015 special issue): Journal of Environmental Management, v. 161, p. 431–432, at <https://doi.org/10.1016/j.jenvman.2015.07.054>.
- Vadrevu, K.P., Justice, C.O., Prasad, T., Prasad, N., and Gutman, G., 2015, Land cover/land use change and impacts on environment in South Asia: Journal of Environmental Management, v. 148, p. 1–3, at <https://doi.org/10.1016/j.jenvman.2014.12.005>.
- Vadrevu, K.P., Lasko, K., Giglio, L., and Justice, C.O., 2014, Analysis of Southeast Asian pollution episode during June 2013 using satellite remote sensing datasets: Environmental Pollution, v. 195, p. 245–256, at <https://doi.org/10.1016/j.envpol.2014.06.017>.
- Vadrevu, K.P., Lasko, K., Giglio, L., and Justice, C.O., 2015, Vegetation fires, absorbing aerosols and smoke plume characteristics in diverse biomass burning regions of Asia: Environmental Research Letters, v. 10, no. 10, article 105003, at <https://doi.org/10.1088/1748-9326/10/10/105003>.

- Vadrevu, K.P., Lasko, K., Giglio, L., Schroeder, W., Biswas, S., and Justice, C., 2019, Trends in vegetation fires in South and Southeast Asian countries: *Scientific Reports*, v. 9, no. 1, article 7422, at <https://doi.org/10.1038/s41598-019-43940-x>.
- Vadrevu, K.P., Le Toan, T., Ray, S.S., and Justice, C., eds., 2022, Remote sensing of agriculture and land cover/land use changes in South and Southeast Asian countries: Cham, Switzerland, Springer, 617 p., at <https://doi.org/10.1007/978-3-030-92365-5>.
- Vadrevu, K.P., Le Toan, T., Ray, S.S., and Justice, C., 2022, Agricultural information needs and research priorities for remote sensing in South and Southeast Asian countries, *in* Vadrevu, K.P., Le Toan, T., Ray, S.S., and Justice, C., eds., Remote sensing of agriculture and land cover/land use changes in South and Southeast Asian countries: Cham, Switzerland, Springer, p. 1-29, at https://doi.org/10.1007/978-3-030-92365-5_1.
- Vadrevu, K.P., Le Toan, T., Ray, S.S., and Justice, C., 2022, Preface, *in* Vadrevu, K.P., Le Toan, T., Ray, S.S., and Justice, C., eds., Remote sensing of agriculture and land cover/land use changes in South and Southeast Asian countries: Cham, Switzerland, Springer, p. ix-xvii, at <https://doi.org/10.1007/978-3-030-92365-5>.
- Vadrevu, K.P., Ohara, T., and Justice, C., 2023, Preface, *in* Vadrevu, K.P., Ohara, T., and Justice, C., eds., Vegetation fires and pollution in Asia: Cham, Switzerland, Springer, p. ix–xvi, at <https://doi.org/10.1007/978-3-031-29916-2>.
- Vadrevu, K.P., Ohara, T., and Justice, C., 2023, Vegetation fires and biomass burning in South/Southeast Asia—An Overview, *in* Vadrevu, K.P., Ohara, T., and Justice, C., eds., Vegetation fires and pollution in Asia: Cham, Switzerland, Springer, p. 1–17, at https://doi.org/10.1007/978-3-031-29916-2_1.
- Vadrevu, K.P., Ohara, T., and Justice, C.O., 2014, Air pollution in Asia: *Environmental Pollution*, v. 195, p. 233–235, at <https://doi.org/10.1016/j.envpol.2014.09.006>.
- Vaisfeld, M.A., Baskin, L.M., Gubar, Y.P., Radeloff, V.C., Sitnikova, E.F., and Novoselova, N.S., 2008, Dynamics of the southern borders of brown bears range in European Russia: *Reports of Russian Academy of Science, series Geographical*, v. 3, no. 3, p. 81–91, at <http://www.greenfox.anynotes.com/summaries.htm#bear>.
- Valayamkunnath, P., Sridhar, V., Zhao, W., and Allen, R.G., 2018, Intercomparison of surface energy fluxes, soil moisture, and evapotranspiration from eddy covariance, large-aperture scintillometer, and modeling across three ecosystems in a semiarid climate: *Agricultural and Forest Meteorology*, v. 248, p. 22–47, at <https://doi.org/10.1016/j.agrformet.2017.08.025>.
- Valayamkunnath, P., Sridhar, V., Zhao, W., and Allen, R.G., 2019, A comprehensive analysis of interseasonal and interannual energy and water balance dynamics in semiarid shrubland and forest ecosystems: *Science of the Total Environment*, v. 651, p. 381–398, at <https://doi.org/10.1016/j.scitotenv.2018.09.130>.
- Valayamkunnath, P., Sridhar, V., Zhao, W., and Allen, R.G., 2019, Corrigendum to “A comprehensive analysis of interseasonal and interannual energy and water balance dynamics in semiarid shrubland and forest ecosystems” [*Sci. Total Environ.* 651 (2019) 381–398](S0048969718335721)(10.1016/j.scitotenv.2018.09.130): *Science of the Total Environment*, v. 686, p. 847–847, at <https://doi.org/10.1016/j.scitotenv.2019.06.059>.
- Valayamkunnath, P., Sridhar, V., Zhao, W., and Allen, R.G., 2019, Corrigendum to “Intercomparison of surface energy fluxes, soil moisture, and evapotranspiration from eddy covariance, large-aperture scintillometer, and modeling across three ecosystems in a semiarid climate”

- (Agricultural and Forest Meteorology (2018) 248 (22–47), (S0168192317302812), (10.1016/j.agrformet.2017.08.025)): Agricultural and Forest Meteorology, v. 278, article 107646, at <https://doi.org/10.1016/j.agrformet.2019.107646>.
- Van Aardt, J.A.N., and Wynne, R.H., 2001, Spectral separability among six southern tree species: Photogrammetric Engineering and Remote Sensing, v. 67, no. 12, p. 1367–1375, at https://www.asprs.org/wp-content/uploads/pers/2001journal/december/2001_dec_1367-1375.pdf.
- van Aardt, J.A.N., and Wynne, R.H., 2007, Examining pine spectral separability using hyperspectral data from an airborne sensor—An extension of field-based results: International Journal of Remote Sensing, v. 28, no. 2, p. 431–436, at <https://doi.org/10.1080/01431160500444772>.
- Van Aardt, J.A.N., Wynne, R.H., and Oderwald, R.G., 2006, Forest volume and biomass estimation using small-footprint lidar-distributional parameters on a per-segment basis: Forest Science, v. 52, no. 6, p. 636–649, at <https://doi.org/10.1093/forestscience/52.6.636>.
- Van Aardt, J.A.N., Wynne, R.H., and Scriver, J.A., 2008, Lidar-based mapping of forest volume and biomass by taxonomic group using structurally homogenous segments: Photogrammetric Engineering and Remote Sensing, v. 74, no. 8, p. 1033–1044, at <https://doi.org/10.14358/PERS.74.8.1033>.
- Van Berkel, D.B., Rayfield, B., Martinuzzi, S., Lechowicz, M.J., White, E., Bell, K.P., Colocousis, C.R., Kovacs, K.F., Morzillo, A.T., et al., 2018, Recognizing the ‘sparsely settled forest’—Multi-decade socioecological change dynamics and community exemplars: Landscape and Urban Planning, v. 170, p. 177–186, at <https://doi.org/10.1016/j.landurbplan.2017.10.009>.
- van der Linden, S., and Hostert, P., 2009, The influence of urban structures on impervious surface maps from airborne hyperspectral data: Remote Sensing of Environment, v. 113, no. 11, p. 2298–2305, at <https://doi.org/10.1016/j.rse.2009.06.004>.
- Van Der Linden, S., Janz, A., Waske, B., Eiden, M., and Hostert, P., 2007, Classifying segmented hyperspectral data from a heterogeneous urban environment using support vector machines: Journal of Applied Remote Sensing, v. 1, no. 1, article 013543, at <https://doi.org/10.1117/1.2813466>.
- van der Linden, S., Okujeni, A., Canters, F., Degerickx, J., Heiden, U., Hostert, P., Priem, F., Somers, B., and Thiel, F., 2019, Imaging spectroscopy of urban environments: Surveys in Geophysics, v. 40, no. 30, p. 471–488, at <https://doi.org/10.1007/s10712-018-9486-y>.
- van der Linden, S., Rabe, A., Held, M., Jakimow, B., Leitão, P.J., Okujeni, A., Schwieder, M., Suess, S., and Hostert, P., 2015, The EnMAP-box-A toolbox and application programming interface for EnMAP data processing: Remote Sensing, v. 7, no. 9, p. 11249–11266, at <https://doi.org/10.3390/rs70911249>.
- van der Linden, S., Rabe, A., Jakimow, B., Thiel, F., Cooper, S., Okujeni, A., and Hostert, P., 2021, Integrating imaging spectroscopy and GIS – Free and open source image analysis in QGIS with the EnMAP-Box 3, in Hyperspectral Imaging and Sounding of the Environment, HISE 2021 - Part of OSA Optical Sensors and Sensing Congress 2021, Washington, D.C., 19–23 July 2021, OSA Technical Digest: Washington, D.C., Optical Society of America, paper no. HF4E.2, at <https://www.osapublishing.org/abstract.cfm?URI=HISE-2021-HF4E.2>.
- Van Donkelaar, A., Hammer, M.S., Bindle, L., Brauer, M., Brook, J.R., Garay, M.J., Hsu, N.C., Kalashnikova, O.V., Kahn, R.A., et al., 2021, Monthly global estimates of fine particulate matter and their

- uncertainty: *Environmental Science and Technology*, v. 55, no. 22, p. 15287–15300, at <https://doi.org/10.1021/acs.est.1c05309>.
- Van Donkelaar, A., Martin, R.V., Brauer, M., Hsu, N.C., Kahn, R.A., Levy, R.C., Lyapustin, A.I., Sayer, A.M., and Winker, D.M., 2016, Global estimates of fine particulate matter using a combined geophysical-statistical method with information from satellites, models, and monitors: *Environmental Science and Technology*, v. 50, no. 7, p. 3762–3772, at <https://doi.org/10.1021/acs.est.5b05833>.
- Van Leeuwen, M., Coops, N.C., Hilker, T., Wulder, M.A., Newnham, G.J., and Culvenor, D.S., 2013, Automated reconstruction of tree and canopy structure for modeling the internal canopy radiation regime: *Remote Sensing of Environment*, v. 136, p. 286–300, at <https://doi.org/10.1016/j.rse.2013.04.019>.
- Van Leeuwen, M., Coops, N.C., and Wulder, M.A., 2010, Canopy surface reconstruction from a LiDAR point cloud using Hough transform: *Remote Sensing Letters*, v. 1, no. 3, p. 125–132, at <https://doi.org/10.1080/01431161003649339>.
- Van Leeuwen, M., Hilker, T., Coops, N.C., Frazer, G., Wulder, M.A., Newnham, G.J., and Culvenor, D.S., 2011, Assessment of standing wood and fiber quality using ground and airborne laser scanning—A review: *Forest Ecology and Management*, v. 261, no. 9, p. 1467–1478, at <https://doi.org/10.1016/j.foreco.2011.01.032>.
- Van Wessem, J.M., Ligtenberg, S.R.M., Reijmer, C.H., Van De Berg, W.J., Van Den Broeke, M.R., Barrand, N.E., Thomas, E.R., Turner, J., Wuite, J., et al., 2016, The modelled surface mass balance of the Antarctic Peninsula at 5.5 km horizontal resolution: *Cryosphere*, v. 10, no. 1, p. 271–285, at <https://doi.org/10.5194/tc-10-271-2016>.
- Vancutsem, C., Achard, F., Pekel, J.F., Vieilledent, G., Carboni, S., Simonetti, D., Gallego, J., Aragão, L.E.O.C., and Nasi, R., 2021, Long-term (1990–2019) monitoring of forest cover changes in the humid tropics: *Science Advances*, v. 7, no. 10, article eabe1603, at <https://doi.org/10.1126/sciadv.abe1603>.
- Vancutsem, C., Pekel, J.F., Bogaert, P., and Defourny, P., 2007, Radiometric correction for linear change-detection techniques—Analysis in bi-temporal space: *International Journal of Remote Sensing*, v. 28, no. 22, p. 5123–5141, at <https://doi.org/10.1080/01431160701253212>.
- Vancutsem, C., Pekel, J.F., Evrard, C., Malaisse, F., and Defourny, P., 2009, Mapping and characterizing the vegetation types of the Democratic Republic of Congo using SPOT VEGETATION time series: *International Journal of Applied Earth Observation and Geoinformation*, v. 11, no. 1, p. 62–76, at <https://doi.org/10.1016/j.jag.2008.08.001>.
- Vancutsem, C., Pekel, J.F., and Kayitakire, F., 2011, Dynamic mapping of cropland areas in Sub-Saharan Africa using MODIS time series, *in* 2011 6th International Workshop on the Analysis of Multi-Temporal Remote Sensing Images, Multi-Temp 2011, Trento, Italy, 12–14 July 2011, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 25–28, at <https://doi.org/10.1109/Multi-Temp.2011.6005038>.
- Vancutsem, C., Pekel, J.F., Kayitakire, F., Duveiller, G., Meroni, M., Baethgen, W., and Ceccato, P., 2013, Mapping winter and summer crops in Uruguay using MODIS time series, *in* Information for Sustainable Agriculture—2nd International Conference on Agro-Geoinformatics, Agro-Geoinformatics 2013, Fairfax, Va., 12–16 August 2013, Proceedings: Piscataway, N.J., Institute of

- Electrical and Electronics Engineers (IEEE), p. 292–295, at <https://doi.org/10.1109/Argo-Geoinformatics.2013.6621924>.
- Vandal, T., Ganguly, S., Kodra, E., Nemani, R.R., Dy, J., and Ganguly, A.R., 2018, Quantifying uncertainty in discrete-continuous and skewed data with Bayesian deep learning, *in* 24th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, KDD 2018, London, UK, 19–23 August 2018, Proceedings: New York, N.Y., Association for Computing Machinery, p. 2377–2386, at <https://doi.org/10.1145/3219819.3219996>.
- Vandal, T., Kodra, E., Ganguly, S., Michaelis, A., Nemani, R., and Ganguly, A.R., 2018, Generating high resolution climate change projections through single image super-resolution—An abridged version, *in* International Joint Conference on Artificial Intelligence, 27th, Stockholm, Sweden, 13–19 July 2018, Proceedings: New York, N.Y., Association for Computing Machinery, p. 5389–5393, at <https://www.ijcai.org/proceedings/2018/0759.pdf>.
- Vandal, T., Kodra, E., Ganguly, S., Michaelis, A., Nemani, R.R., and Ganguly, A.R., 2017, DeepSD—Generating high resolution climate change projections through single image super-resolution, *in* 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, KDD 2017, Halifax, NS, Canada, 13–17 August 2017, Part F129685: New York, N.Y., Association for Computing Machinery, p. 1663–1672, at <https://doi.org/10.1145/3097983.3098004>.
- Vandal, T.J., Duffy, K., McCarty, W., Sewnath, A., and Nemani, R., 2022, Dense feature tracking of atmospheric winds with deep optical flow, *in* 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, KDD 2022, Washington, D.C., 14–18 August 2022, Proceedings: New York, N.Y., Association for Computing Machinery, p. 1807–1815, at <https://doi.org/10.1145/3534678.3539345>.
- Vandal, T.J., McDuff, D., Wang, W., Duffy, K., Michaelis, A., and Nemani, R.R., 2022, Spectral synthesis for geostationary satellite-to-satellite translation: IEEE Transactions on Geoscience and Remote Sensing, v. 60, article 4702611, at <https://doi.org/10.1109/TGRS.2021.3088686>.
- Vandal, T.J., and Nemani, R.R., 2023, Temporal interpolation of geostationary satellite imagery with optical flow: IEEE Transactions on Neural Networks and Learning Systems, v. 34, no. 7, p. 3245–3254, at <https://doi.org/10.1109/TNNLS.2021.3101742>.
- Vanderhoof, M., Williams, C.A., Shuai, Y., Jarvis, D., Kulakowski, D., and Masek, J.G., 2014, Albedo-induced radiative forcing from mountain pine beetle outbreaks in forests, south-central Rocky Mountains—Magnitude, persistence, and relation to outbreak severity: Biogeosciences, v. 11, no. 3, p. 563–575, at <https://doi.org/10.5194/bg-11-563-2014>.
- Várnai, T., and Cahalan, R.F., 2007, Potential for airborne offbeam lidar measurements of snow and sea ice thickness: Journal of Geophysical Research Oceans, v. 112, no. 12, article C12s90, at <https://doi.org/10.1029/2007JC004091>.
- Várnai, T., and Cahalan, R.F., 2009, Modeling and analysis of offbeam lidar returns from thick clouds, snow, and sea ice, *in* International Conference on Mathematics, Computational Methods and Reactor Physics 2009, M and C 2009, Saratoga Springs, N.Y., 3–7 May 2009, Proceedings: LaGrange Park, Ill., American Nuclear Society, p. 126–138.
- Vartanian, M., Nijland, W., Coops, N.C., Bater, C., Wulder, M.A., and Stenhouse, G., 2014, Assessing the impact of field of view on monitoring understory and overstory phenology using digital repeat photography: Canadian Journal of Remote Sensing, v. 40, no. 2, p. 85–91, at <http://www.tandfonline.com/doi/full/10.1080/07038992.2014.930308>.

- Vasilkov, A., Lyapustin, A., Mitchell, B.G., and Huang, D., 2019, UV reflectance of the ocean from DSCOVR/EPIC—Comparisons with a theoretical model and AURA/OMI observations: *Journal of Atmospheric and Oceanic Technology*, v. 36, no. 11, p. 2087–2099, at <https://doi.org/10.1175/JTECH-D-18-0150.1>.
- Vasilkov, A.P., Joiner, J., Oreopoulos, L., Gleason, J.F., Veefkind, P., Bucsela, E., Celarier, E.A., Spurr, R.J.D., and Platnick, S., 2009, Impact of tropospheric nitrogen dioxide on the regional radiation budget: *Atmospheric Chemistry and Physics*, v. 9, no. 17, p. 6389–6400, at <https://doi.org/10.5194/acp-9-6389-2009>.
- Vastaranta, M., Kantola, T., Lyytikäinen-Saarenmaa, P., Holopainen, M., Kankare, V., Wulder, M.A., Hyypä, J., and Hyypä, H., 2013, Area-based mapping of defoliation of scots pine stands using airborne scanning LiDAR: *Remote Sensing*, v. 5, no. 3, p. 1220–1234, at <https://doi.org/10.3390/rs5031220>.
- Vastaranta, M., Niemi, M., Wulder, M.A., White, J.C., Nurminen, K., Litkey, P., Honkavaara, E., Holopainen, M., and Hyypä, J., 2016, Forest stand age classification using time series of photogrammetrically derived digital surface models: *Scandinavian Journal of Forest Research*, v. 31, no. 2, p. 194–205, at <https://doi.org/10.1080/02827581.2015.1060256>.
- Vastaranta, M., Wulder, M.A., White, J.C., Pekkarinen, A., Tuominen, S., Ginzler, C., Kankare, V., Holopainen, M., Hyypä, J., and Hyypä, H., 2013, Airborne laser scanning and digital stereo imagery measures of forest structure—Comparative results and implications to forest mapping and inventory update: *Canadian Journal of Remote Sensing*, v. 39, no. 5, p. 382–395, at <https://doi.org/10.5589/m13-046>.
- Vastaranta, M., Yrttimaa, T., Saarinen, N., Yu, X., Karjalainen, M., Nurminen, K., Karila, K., Kankare, V., Luoma, V., et al., 2018, Airborne laser scanning outperforms the alternative 3D techniques in capturing variation in tree height and forest density in southern boreal forests: *Baltic Forestry*, v. 24, no. 2, p. 268–277, at <http://hdl.handle.net/10138/307427>.
- Vastaranta, M., Yu, X., Luoma, V., Karjalainen, M., Saarinen, N., Wulder, M.A., White, J.C., Persson, H.J., Hollaus, M., et al., 2018, Aboveground forest biomass derived using multiple dates of WorldView-2 stereo-imagery—Quantifying the improvement in estimation accuracy: *International Journal of Remote Sensing*, v. 39, no. 23, p. 8766–8783, at <https://doi.org/10.1080/01431161.2018.1492176>.
- Vaughan, D.G., Corr, H.F.J., Bindschadler, R.A., Dutrieux, P., Gudmundsson, G.H., Jenkins, A., Newman, T., Vornberger, P., and Wingham, D.J., 2012, Subglacial melt channels and fracture in the floating part of Pine Island Glacier, Antarctica: *Journal of Geophysical Research Earth Surface*, v. 117, no. 3, article F03012, at <https://doi.org/10.1029/2012JF002360>.
- Vavrus, S.J., Wynne, R.H., and Foley, J.A., 1996, Measuring the sensitivity of southern Wisconsin lake ice to climate variations and lake depth using a numerical model: *Limnology and Oceanography*, v. 41, no. 5, p. 822–831, at <https://doi.org/10.4319/lo.1996.41.5.0822>.
- Vega-Martínez, Z., Temimi, M., Anderson, M.C., Hain, C., Krakauer, N., Rabin, R., and Khanbilvardi, R., 2012, Towards a better monitoring of soil moisture using a combination of estimates from passive microwave and thermal observations, *in* *Remote Sensing and Hydrology 2010*, Jackson Hole, Wyo., 27–30 September 2010, IAHS Publication 352: Wallingford, UK, International Association of Hydrological Sciences, p. 42–45, at <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=1e70dc525aa5d1631191c5a3a3c2f4193e76883b>.

- Velpuri, N.M., Thenkabail, P.S., Gumma, M.K., Biradar, C., Dheeravath, V., Noojipady, P., and Yuanjie, L., 2009, Influence of resolution in irrigated area mapping and area estimation: *Photogrammetric Engineering and Remote Sensing*, v. 75, no. 12, p. 1383–1395, at <https://doi.org/10.14358/PERS.75.12.1383>.
- Venkatesan, M.I., Merino, O., Baek, J., Northrup, T., Sheng, Y., and Shisko, J., 2010, Trace organic contaminants and their sources in surface sediments of Santa Monica Bay, California, USA: *Marine Environmental Research*, v. 69, no. 5, p. 350–362, at <https://doi.org/10.1016/j.marenvres.2009.12.010>.
- Verburg, P.H., Crossman, N., Ellis, E.C., Heinimann, A., Hostert, P., Mertz, O., Nagendra, H., Sikor, T., Erb, K.H., et al., 2015, Land system science and sustainable development of the Earth system—A global land project perspective: *Anthropocene*, v. 12, p. 29–41, at <https://doi.org/10.1016/j.ancene.2015.09.004>.
- Verger, A., Baret, F., Weiss, M., Kandasamy, S., and Vermote, E.F., 2011, Quantification of LAI interannual anomalies by adjusting climatological patterns, in 2011 6th International Workshop on the Analysis of Multi-Temporal Remote Sensing Images, Multi-Temp 2011, Trento, Italy, 12–14 July 2011, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 113–116, at <https://doi.org/10.1109/Multi-Temp.2011.6005061>.
- Verger, A., Baret, F., Weiss, M., Kandasamy, S., and Vermote, E.F., 2013, The CACAO method for smoothing, gap filling, and characterizing seasonal anomalies in satellite time series: *IEEE Transactions on Geoscience and Remote Sensing*, v. 51, no. 4, p. 1963–1972, at <https://doi.org/10.1109/TGRS.2012.2228653>.
- Verhoest, N.E.C., Lievens, H., Wagner, W., Álvarez-Mozos, J., Moran, M.S., and Mattia, F., 2008, On the soil roughness parameterization problem in soil moisture retrieval of bare surfaces from synthetic aperture radar: *Sensors*, v. 8, no. 7, p. 4213–4248, at <https://doi.org/10.3390/s8074213>.
- Vermote, E., McCorkel, J., Rountree, W.H., Santamaria-Artigas, A., Skakun, S., Franch, B., and Roger, J.C., 2022, Validation of high spatial resolution surface reflectance using a camera system (cAMSIS), in 2022 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Kuala Lumpur, Malaysia, 17–22 July 2022, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 7729–7732, at <https://doi.org/10.1109/IGARSS46834.2022.9883241>.
- Vermote, E., Roger, J.C., Franch, B., and Skakun, S., 2018, LASRC (Land Surface Reflectance Code)—Overview, application and validation using MODIS, VIIRS, LANDSAT and Sentinel 2 data's, in 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8173–8176, at <https://doi.org/10.1109/IGARSS.2018.8517622>.
- Vermote, E.F., and El Saleous, N., 1996, Absolute calibration of AVHRR channels 1 and 2, in D'Souza, G., Belward, A.S., and Malingreau, J.-P., eds., *Advances in the use of NOAA AVHRR data for land applications*: Dordrecht, Netherlands, Springer, p. 73–92, at https://doi.org/10.1007/978-94-009-0203-9_4.
- Vermote, E.F., El Saleous, N., Justice, C.O., Kaufman, Y.J., Privette, J.L., Remer, L., Roger, J.C., and Tanré, D., 1997, Atmospheric correction of visible to middle-infrared EOS-MODIS data over land surfaces—Background, operational algorithm and validation: *Journal of Geophysical Research Atmospheres*, v. 102, no. 14, p. 17131–17141, at <https://doi.org/10.1029/97JD00201>.

- Vermote, E.F., El Saleous, N.Z., and Justice, C.O., 2002, Atmospheric correction of MODIS data in the visible to middle infrared—First results: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 97–111, at [https://doi.org/10.1016/S0034-4257\(02\)00089-5](https://doi.org/10.1016/S0034-4257(02)00089-5).
- Vermote, E.F., El. Saleous, N., and Holben, B.N., 1996, Aerosol retrieval and atmospheric correction, *in* D’Souza, G., Belward, A.S., and Malingreau, J.-P., eds., *Advances in the use of NOAA AVHRR data for land applications*: Dordrecht, Netherlands, Springer, p. 93–124, at https://doi.org/10.1007/978-94-009-0203-9_5.
- Vermote, E.F., Ellicott, E., Dubovik, O., Lapyonok, T., Chin, M., Giglio, L., and Roberts, G.J., 2009, An approach to estimate global biomass burning emissions of organic and black carbon from MODIS fire radiative power: *Journal of Geophysical Research Atmospheres*, v. 114, no. 18, article D18205, at <https://doi.org/10.1029/2008JD011188>.
- Vermote, E.F., Justice, C.O., and Bréon, F.M., 2009, Towards a generalized approach for correction of the BRDF effect in MODIS directional reflectances: *IEEE Transactions on Geoscience and Remote Sensing*, v. 47, no. 3, p. 898–908, at <https://doi.org/10.1109/TGRS.2008.2005977>.
- Vermote, E.F., Justice, C.O., Claverie, M., and Franch, B., 2016, Preliminary analysis of the performance of the Landsat 8/OLI land surface reflectance product: *Remote Sensing of Environment*, v. 185, p. 46–56, at <https://doi.org/10.1016/j.rse.2016.04.008>.
- Vermote, E.F., Justice, C.O., and Csizsar, I., 2014, Early evaluation of the VIIRS calibration, cloud mask and surface reflectance Earth data records: *Remote Sensing of Environment*, v. 148, p. 134–145, at <https://doi.org/10.1016/j.rse.2014.03.028>.
- Vermote, E.F., and Kotchenova, S., 2008, Atmospheric correction for the monitoring of land surfaces: *Journal of Geophysical Research Atmospheres*, v. 113, no. 23, article D23S90, at <https://doi.org/10.1029/2007JD009662>.
- Vermote, E.F., and Kotchenova, S., 2011, MODIS directional surface reflectance product—Method, error estimates and validation, *in* Ramachandran, B., Justice, C.O., and Abrams, M.J., eds., *Land remote sensing and global environmental change*: New York, N.Y., Springer, p. 533–547, at https://doi.org/10.1007/978-1-4419-6749-7_23.
- Vermote, E.F., and Roger, J.C., 1996, Radiative transfer modelling for calibration and atmospheric correction, *in* D’Souza, G., Belward, A.S., and Malingreau, J.-P., eds., *Advances in the use of NOAA AVHRR data for land applications*: Dordrecht, Netherlands, Springer, p. 49–72, at https://doi.org/10.1007/978-94-009-0203-9_3.
- Vermote, E.F., Roger, J.C., Justice, C.O., Franch, B., and Claverie, M., 2016, A generic approach for inversion of surface reflectance over land—Overview, application and validation using MODIS and LANDSAT8 data, *in* 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, *Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE)*, p. 1958–1961, at <https://doi.org/10.1109/IGARSS.2016.7729504>.
- Vermote, E.F., Roger, J.C., Sinyuk, A., Saleous, N., and Dubovik, O., 2007, Fusion of MODIS-MISR aerosol inversion for estimation of aerosol absorption: *Remote Sensing of Environment*, v. 107, no. 1-2, p. 81–89, at <https://doi.org/10.1016/j.rse.2006.09.025>.
- Vermote, E.F., and Roy, D.P., 2002, Land surface hot-spot observed by MODIS over Central Africa: *International Journal of Remote Sensing*, v. 23, no. 11, p. 2141–2143, at <https://doi.org/10.1080/01431160110120379>.

- Vermote, E.F., and Saleous, N., 2006, Operational atmospheric correction of MODIS visible to middle infrared land surface data in the case of an infinite Lambertian target, *in* Qu, J.J., Gao, W., Kafatos, M., Murphy, R.E., and Salomonson, V.V., eds., *Earth science satellite remote sensing—Science and instruments*: Berlin, Germany, Springer, p. 123–153, at https://doi.org/10.1007/978-3-540-37293-6_8.
- Vermote, E.F., Saleous, N.E., Justice, C.O., Descloitres, J., Roy, D.P., Ray, J., Margerin, B., and Gonzalez, L., 2001, A SeaWiFS global monthly coarse-resolution reflectance dataset: *International Journal of Remote Sensing*, v. 22, no. 6, p. 1151–1158, at <https://doi.org/10.1080/01431160117982>.
- Vermote, E.F., and Saleous, N.Z., 2006, Calibration of NOAA16 AVHRR over a desert site using MODIS data: *Remote Sensing of Environment*, v. 105, no. 3, p. 214–220, at <https://doi.org/10.1016/j.rse.2006.06.015>.
- Vermote, E.F., and Satterfield, E.A., 2005, Cover—Southern Africa, 2 February 2002 to 16 May 2002, Moderate Resolution Imaging Spectroradiometer (MODIS) 500 m land surface reflectance: *International Journal of Remote Sensing*, v. 26, no. 19, p. 4137–4139, at <https://doi.org/10.1080/01431160500113120>.
- Vermote, E.F., Skakun, S., Becker-Reshef, I., and Saito, K., 2020, Remote sensing of coconut trees in Tonga using very high spatial resolution WorldView-3 data: *Remote Sensing*, v. 12, no. 19, article 3113, at <https://doi.org/10.3390/RS12193113>.
- Vermote, E.F., Tanré, D., Deuzé, J.L., Herman, M., and Morcrette, J.J., 1997, Second simulation of the satellite signal in the solar spectrum, 6s—An overview: *IEEE Transactions on Geoscience and Remote Sensing*, v. 35, no. 3, p. 675–686, at <https://doi.org/10.1109/36.581987>.
- Veselovskii, I., N Whiteman, D., Korenskiy, M., Suvorina, A., Kolgotin, A., Lyapustin, A.I., Wang, Y., Chin, M., Bian, H., et al., 2015, Characterization of forest fire smoke event near Washington, DC in summer 2013 with multi-wavelength lidar: *Atmospheric Chemistry and Physics*, v. 15, no. 4, p. 1647–1660, at <https://doi.org/10.5194/acp-15-1647-2015>.
- Viallefont-Robinet, F., Helder, D., Fraise, R., Newbury, A., Van Den Bergh, F., Lee, D., and Saunier, S., 2018, Comparison of MTF measurements using edge method—Towards reference data set: *Optics Express*, v. 26, no. 26, p. 33625–33648, at <https://doi.org/10.1364/OE.26.033633>.
- Viana, H., Aranha, J., Lopes, D., and Cohen, W.B., 2012, Estimation of crown biomass of Pinus pinaster stands and shrubland above-ground biomass using forest inventory data, remotely sensed imagery and spatial prediction models: *Ecological Modelling*, v. 226, p. 22–35, at <https://doi.org/10.1016/j.ecolmodel.2011.11.027>.
- Viana, H., Cohen, W.B., Lopes, D., and Aranha, J., 2010, Assessment of forest biomass for use as energy. GIS-based analysis of geographical availability and locations of wood-fired power plants in Portugal: *Applied Energy*, v. 87, no. 8, p. 2551–2560, at <https://doi.org/10.1016/j.apenergy.2010.02.007>.
- Viana-Soto, A., Okujeni, A., Pflugmacher, D., García, M., Aguado, I., and Hostert, P., 2022, Quantifying post-fire shifts in woody-vegetation cover composition in Mediterranean pine forests using Landsat time series and regression-based unmixing: *Remote Sensing of Environment*, v. 281, article 113239, at <https://doi.org/10.1016/j.rse.2022.113239>.
- Vieira, D.C., Sanches, I.D., Montibeller, B., Prudente, V.H.R., Hansen, M.C., Baggett, A., and Adami, M., 2022, Cropland expansion, intensification, and reduction in Mato Grosso state, Brazil, between

- the crop years 2000/01 to 2017/18: Remote Sensing Applications—Society and Environment, v. 28, article 100841, at <https://doi.org/10.1016/j.rsase.2022.100841>.
- Villaescusa-Nadal, J.L., Franch, B., Roger, J.C., Vermote, E.F., Skakun, S., and Justice, C., 2019, Spectral adjustment model's analysis and application to remote sensing data: IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, v. 12, no. 3, p. 961–972, at <https://doi.org/10.1109/JSTARS.2018.2890068>.
- Villaescusa-Nadal, J.L., Franch, B., Vermote, E., Roger, J.C., and Justice, C., 2019, Improving the AVHRR's BRDF correction using MODIS, in 2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 9067–9070, at <https://doi.org/10.1109/IGARSS.2019.8899243>.
- Villaescusa-Nadal, J.L., Franch, B., Vermote, E.F., and Roger, J.C., 2019, Improving the AVHRR long term data record BRDF correction: Remote Sensing, v. 11, no. 5, article 502, at <https://doi.org/10.3390/rs11050502>.
- Villaescusa-Nadal, J.L., Vermote, E., Franch, B., Santamaria-Artigas, A.E., Roger, J., and Skakun, S., 2022, MODIS-based AVHRR cloud and snow separation algorithm: IEEE Transactions on Geoscience and Remote Sensing, v. 60, article 5400513, at <https://doi.org/10.1109/TGRS.2021.3059428>.
- Vodacek, A., Kremens, R.L., Fordham, A.J., Vangorden, S.C., Luisi, D., Schott, J.R., and Latham, D.J., 2002, Remote optical detection of biomass burning using a potassium emission signature: International Journal of Remote Sensing, v. 23, no. 13, p. 2721–2726, at <https://doi.org/10.1080/01431160110109633>.
- Vogeler, J.C., and Cohen, W.B., 2016, A review of the role of active remote sensing and data fusion for characterizing forest in wildlife habitat models: Revista de Teledeteccion, v. 2016, no. 45, p. 1–14, at <https://doi.org/10.4995/raet.2016.3981>.
- Vogeler, J.C., Yang, Z., and Cohen, W.B., 2016, Mapping post-fire habitat characteristics through the fusion of remote sensing tools: Remote Sensing of Environment, v. 173, p. 294–303, at <https://doi.org/10.1016/j.rse.2015.08.011>.
- Vogeler, J.C., Yang, Z., and Cohen, W.B., 2016, Mapping suitable Lewis's woodpecker nesting habitat in a post-fire landscape: Northwest Science, v. 90, no. 4, p. 421–432, at <https://doi.org/10.3955/046.090.0404>.
- Vogelmann, J.E., and De Felice, T.P., 2003, Characterization of intra-annual reflectance properties of land cover classes in southeastern South Dakota using Landsat TM and ETM+ data: Canadian Journal of Remote Sensing, v. 29, no. 2, p. 219–229, at <https://doi.org/10.5589/m02-097>.
- Vogelmann, J.E., Gallant, A.L., Shi, H., and Zhu, Z., 2016, Perspectives on monitoring gradual change across the continuity of Landsat sensors using time-series data: Remote Sensing of Environment, v. 185, p. 258–270, at <https://doi.org/10.1016/j.rse.2016.02.060>.
- Vogelmann, J.E., Helder, D.L., Morfitt, R., Choate, M.J., and Merchant, J.W., 1998, Characterization of Landsat thematic mapper radiometry and geometry for land cover analysis, in 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2405–2407, at <https://doi.org/10.1109/IGARSS.1998.702228>.

- Vogelmann, J.E., Helder, D.L., Morfitt, R., Choate, M.J., Merchant, J.W., and Bulley, H., 2001, Effects of Landsat 5 Thematic Mapper and Landsat 7 Enhanced Thematic Mapper plus radiometric and geometric calibrations and corrections on landscape characterization: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 55–70, at [https://doi.org/10.1016/S0034-4257\(01\)00249-8](https://doi.org/10.1016/S0034-4257(01)00249-8).
- Vogelmann, J.E., Howard, S.M., and Sohl, T., 1996, Regional land cover characterization using multiple sources of intermediate-scale data, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 246–247, at <https://doi.org/10.1109/IGARSS.1996.516305>.
- Vogelmann, J.E., Howard, S.M., Yang, L., Larson, C.R., Wylie, B.K., and Van Driel, N., 2001, Completion of the 1990s National Land Cover Data set for the conterminous United States from Landsat thematic mapper data and ancillary data sources: *Photogrammetric Engineering and Remote Sensing*, v. 67, no. 6, p. 650–662, at https://www.asprs.org/wp-content/uploads/pers/2001journal/june/2001_jun_highlight.pdf.
- Vogelmann, J.E., Kost, J.R., Tolk, B., Howard, S., Short, K., Chen, X., Huang, C., Pabst, K., and Rollins, M.G., 2011, Monitoring landscape change for LANDFIRE using multi-temporal satellite imagery and ancillary data: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 4, no. 2, p. 252–264, at <https://doi.org/10.1109/JSTARS.2010.2044478>.
- Vogelmann, J.E., Sohl, T., and Howard, S.M., 1998, Regional characterization of land cover using multiple sources of data: *Photogrammetric Engineering and Remote Sensing*, v. 64, no. 1, p. 45–57, at https://www.asprs.org/wp-content/uploads/pers/1998journal/jan/1998_jan_45-57.pdf.
- Vogelmann, J.E., Sohl, T.L., Campbell, P.V., and Shaw, D.M., 1998, Regional land cover characterization using Landsat thematic mapper data and ancillary data sources: *Environmental Monitoring and Assessment*, v. 51, no. 1–2, p. 415–428, at <https://doi.org/10.1023/A:1005996900217>.
- Vogelmann, J.E., Tolk, B., and Zhu, Z., 2009, Monitoring forest changes in the southwestern United States using multitemporal Landsat data: *Remote Sensing of Environment*, v. 113, no. 8, p. 1739–1748, at <https://doi.org/10.1016/j.rse.2009.04.014>.
- Vogelmann, J.E., Van Khoa, P., Lan, D.X., Shermeyer, J., Shi, H., Wimberly, M.C., Duong, H.T., and Van Huong, L., 2017, Assessment of forest degradation in Vietnam using Landsat time series data: *Forests*, v. 8, no. 7, article 238, at <https://doi.org/10.3390/f8070238>.
- Vogelmann, J.E., Xian, G., Homer, C., and Tolk, B., 2012, Monitoring gradual ecosystem change using Landsat time series analyses—Case studies in selected forest and rangeland ecosystems: *Remote Sensing of Environment*, v. 122, p. 92–105, at <https://doi.org/10.1016/j.rse.2011.06.027>.
- Volk, J.M., Huntington, J., Melton, F.S., Allen, R., Anderson, M.C., Fisher, J.B., Kilic, A., Senay, G., Halverson, G., et al., 2023, Development of a benchmark eddy flux evapotranspiration dataset for evaluation of satellite-driven evapotranspiration models over the CONUS: *Agricultural and Forest Meteorology*, v. 331, article 109307, at <https://doi.org/10.1016/j.agrformet.2023.109307>.
- Volk, J.M., Huntington, J.L., Melton, F., Minor, B., Wang, T., Anapalli, S., Anderson, R.G., Evett, S., French, A., et al., 2023, Post-processed data and graphical tools for a CONUS-wide eddy flux evapotranspiration dataset: *Data in Brief*, v. 48, article 109274, at <https://doi.org/10.1016/j.dib.2023.109274>.
- Volk, M., Hirschfeld, J., Schmidt, G., Bohn, C., Dehnhardt, A., Liersch, S., and Lymburner, L., 2007, A SDSS-based ecological-economic modelling approach for integrated river basin management on

- different scale levels—The project FLUMAGIS: Water Resources Management, v. 21, no. 12, p. 2049–2061, at <https://doi.org/10.1007/s11269-007-9158-z>.
- Voskarian, N., Thome, K., Wenny, B.N., Tahersima, M.H., and Yarahmadi, M., 2023, Combining RadCalNet sites for radiometric cross calibration of Landsat 9 and Landsat 8 Operational Land Imagers (OLIs): *Remote Sensing*, v. 15, no. 24, article 5752, at <https://doi.org/10.3390/rs15245752>.
- Voskarian, N., Wenny, B.N., Tahersima, M.H., and Thome, K., 2022, Inter-calibration of Landsat 8 and 9 Operational Land Imagers, in *Earth Observing Systems XXVII 2022*, San Diego, Calif., 21–26 August 2022, Proceedings of SPIE Vol. 12232: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 122320y, at <https://doi.org/10.1117/12.2633073>.
- Votava, P., Nemani, R.R., Bowker, C., Michaelis, A., Neuschwander, A., and Coughlan, J., 2002, Distributed application framework for Earth Science data processing, in *2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 717–719, at <https://doi.org/10.1109/IGARSS.2002.1025645>.
- Waga, K., Tompalski, P., Coops, N.C., White, J.C., Wulder, M.A., Malinen, J., and Tokola, T., 2020, Forest road status assessment using airborne laser scanning: *Forest Science*, v. 66, no. 4, p. 501–508, at <https://doi.org/10.1093/forsci/fxz053>.
- Wagner, F.H., Hérault, B., Rossi, V., Hilker, T., Maeda, E.E., Sanchez, A., Lyapustin, A.I., Galvão, L.S., Wang, Y., and Aragão, L.E.O.C., 2017, Climate drivers of the Amazon forest greening: *PLoS ONE*, v. 12, no. 7, article e0180932, at <https://doi.org/10.1371/journal.pone.0180932>.
- Waldner, F., Fritz, S., Di Gregorio, A., Plotnikov, D., Bartalev, S., Kussul, N., Gong, P., Thenkabail, P., Hazeu, G., et al., 2016, A unified cropland layer at 250 m for global agriculture monitoring: *Data*, v. 1, no. 1, article 3, at <https://doi.org/10.3390/data1010003>.
- Waldner, F., Hansen, M.C., Potapov, P.V., Löw, F., Newby, T., Ferreira, S., and Defourny, P., 2017, National-scale cropland mapping based on spectral-temporal features and outdated land cover information: *PLoS ONE*, v. 12, no. 8, article e0181911, at <https://doi.org/10.1371/journal.pone.0181911>.
- Walker, J., de Beurs, K., and Wynne, R.H., 2015, Phenological response of an Arizona dryland forest to short-term climatic extremes: *Remote Sensing*, v. 7, no. 8, p. 10832–10855, at <https://doi.org/10.3390/rs70810832>.
- Walker, J.J., de Beurs, K.M., and Wynne, R.H., 2014, Dryland vegetation phenology across an elevation gradient in Arizona, USA, investigated with fused MODIS and Landsat data: *Remote Sensing of Environment*, v. 144, p. 85–97, at <https://doi.org/10.1016/j.rse.2014.01.007>.
- Walker, J.J., De Beurs, K.M., Wynne, R.H., and Gao, F., 2012, Evaluation of Landsat and MODIS data fusion products for analysis of dryland forest phenology: *Remote Sensing of Environment*, v. 117, p. 381–393, at <https://doi.org/10.1016/j.rse.2011.10.014>.
- Wallace, C.S.A., Thenkabail, P.S., Rodriguez, J.R., and Brown, M.K., 2017, Fallow-land Algorithm based on Neighborhood and Temporal Anomalies (FANTA) to map planted versus fallowed croplands using MODIS data to assist in drought studies leading to water and food security assessments: *GIScience and Remote Sensing*, v. 54, no. 2, p. 258–282, at <https://doi.org/10.1080/15481603.2017.1290913>.

- Walsh, J.J., Jolliff, J.K., Darrow, B.P., Lenes, J.M., Milroy, S.P., Remsen, A., Dieterle, D.A., Carder, K.L., Chen, F.R., et al., 2006, Red tides in the Gulf of Mexico—Where, when, and why?: *Journal of Geophysical Research Oceans*, v. 111, no. 11, article C11003, at <https://doi.org/10.1029/2004JC002813>.
- Walsh, J.J., Weisberg, R.H., Lenes, J.M., Chen, F.R., Dieterle, D.A., Zheng, L., Carder, K.L., Vargo, G.A., Havens, J.A., et al., 2009, Isotopic evidence for dead fish maintenance of Florida red tides, with implications for coastal fisheries over both source regions of the West Florida shelf and within downstream waters of the South Atlantic Bight: *Progress in Oceanography*, v. 80, no. 1–2, p. 51–73, at <https://doi.org/10.1016/j.pocean.2008.12.005>.
- Walsh, S.E., Vavrus, S.J., Foley, J.A., Fisher, V.A., Wynne, R.H., and Lenters, J.D., 1998, Global patterns of lake ice phenology and climate—Model simulations and observations: *Journal of Geophysical Research Atmospheres*, v. 103, no. D22, p. 28825–28837, at <https://doi.org/10.1029/98JD02275>.
- Walter, I.A., Allen, R.G., Elliott, R., Jensen, M.E., Itenfisu, D., Mecham, B., Howell, T.A., Snyder, R., Brown, P., et al., 2004, ASCE's standardized reference evapotranspiration equation, in *Watershed Management and Operations Management 2000*, Fort Collins, Colo., 20–24 June 2000, Proceedings: Fort Collins, Colo., American Society of Civil Engineers, p. 1–11, at [https://doi.org/10.1061/40499\(2000\)126](https://doi.org/10.1061/40499(2000)126).
- Walthall, C., Dulaney, W., Anderson, M.C., Norman, J., Fang, H., and Liang, S., 2004, A comparison of empirical and neural network approaches for estimating corn and soybean leaf area index from Landsat ETM+ imagery: *Remote Sensing of Environment*, v. 92, no. 4, p. 465–474, at <https://doi.org/10.1016/j.rse.2004.06.003>.
- Walthall, C.L., Dulaney, W.P., Anderson, M.C., Norman, J., Fang, H., Liang, S., Timlin, D.J., and Pachepsky, Y., 2004, Alternative approaches for estimating leaf area index (LAI) from remotely sensed satellite and aircraft imagery, in *Remote Sensing and Modeling of Ecosystems for Sustainability*, Denver, Colo., 2–4 August 2004, Proceedings of SPIE Vol. 5544: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 241–255, at <https://doi.org/10.1117/12.559863>.
- Walthall, C.L., Williams, D.L., Dykes, W., and Young, D.C., 2001, Principles for helicopters as platforms for optical wavelength remote sensing and the NASA GSFC/WFF helicopter remote sensing system: *Remote Sensing Reviews*, v. 20, no. 3, p. 169–205, at <https://doi.org/10.1080/02757250109532434>.
- Walthall, C.L., Williams, D.L., Markham, B.L., Kalshoven, J.E., and Nelson, R.F., 1996, Development and present configuration of the NASA GSFC/WFF helicopter-based remote sensing system, in *1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1797–1799, at <https://doi.org/10.1109/IGARSS.1996.516804>.
- Waluschka, E., McCorkel, J.T., McIntire, J., Moyer, D., McAndrew, B., Brown, S.W., Lykke, K.R., Young, J.B., Fest, E., et al., 2015, VIIRS/J1 polarization narrative, in *Earth Observing Systems XX*, San Diego, Calif., 10–13 August 2015, Proceedings of SPIE Vol. 9607: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 960712, at <https://doi.org/10.1117/12.2190138>.
- Wang, C., Qi, J., Moran, M.S., and Marsett, R., 2004, Soil moisture estimation in a semiarid rangeland using ERS-2 and TM imagery: *Remote Sensing of Environment*, v. 90, no. 2, p. 178–189, at <https://doi.org/10.1016/j.rse.2003.12.001>.

- Wang, D., Liang, S., He, T., Yu, Y., Schaaf, C.B., and Wang, Z., 2015, Estimating daily mean land surface albedo from MODIS data: *Journal of Geophysical Research Atmospheres*, v. 120, no. 10, p. 4825–4841, at <https://doi.org/10.1002/2015JD023178>.
- Wang, D., Morton, D., Masek, J.G., Wu, A., Nagol, J., Xiong, X., Levy, R., Vermote, E.F., and Wolfe, R., 2012, Impact of sensor degradation on the MODIS NDVI time series: *Remote Sensing of Environment*, v. 119, p. 55–61, at <https://doi.org/10.1016/j.rse.2011.12.001>.
- Wang, J., Kessner, A.L., Aegerter, C., Sharma, A., Judd, L., Wardlow, B., You, J., Shulski, M., Irmak, S., et al., 2016, A multi-sensor view of the 2012 Central Plains drought from space: *Frontiers in Environmental Science*, v. 4, article 45, at <https://doi.org/10.3389/fenvs.2016.00045>.
- Wang, J., Sheng, Y., Gleason, C.J., and Wada, Y., 2013, Downstream Yangtze River levels impacted by Three Gorges Dam: *Environmental Research Letters*, v. 8, no. 4, article 044012, at <https://doi.org/10.1088/1748-9326/8/4/044012>.
- Wang, J., Sheng, Y., Hinkel, K.M., and Lyons, E.A., 2012, Drained thaw lake basin recovery on the western Arctic Coastal Plain of Alaska using high-resolution digital elevation models and remote sensing imagery: *Remote Sensing of Environment*, v. 119, p. 325–336, at <https://doi.org/10.1016/j.rse.2011.10.027>.
- Wang, J., Sheng, Y., and Tong, T.S.D., 2014, Monitoring decadal lake dynamics across the Yangtze Basin downstream of Three Gorges Dam: *Remote Sensing of Environment*, v. 152, p. 251–269, at <https://doi.org/10.1016/j.rse.2014.06.004>.
- Wang, J., Sheng, Y., and Wada, Y., 2017, Little impact of the Three Gorges Dam on recent decadal lake decline across China's Yangtze Plain: *Water Resources Research*, v. 53, no. 5, p. 3854–3877, at <https://doi.org/10.1002/2016WR019817>.
- Wang, J., Song, C., Reager, J.T., Yao, F., Famiglietti, J.S., Sheng, Y., MacDonald, G.M., Brun, F., Schmied, H.M., et al., 2018, Recent global decline in endorheic basin water storages: *Nature Geoscience*, v. 11, no. 12, p. 926–932, at <https://doi.org/10.1038/s41561-018-0265-7>.
- Wang, J., Song, C., Reager, J.T., Yao, F., Famiglietti, J.S., Sheng, Y., MacDonald, G.M., Brun, F., Schmied, H.M., et al., 2019, Correction to—Recent global decline in endorheic basin water storages (*Nature Geoscience*, (2018), 11, 12, (926-932), 10.1038/s41561-018-0265-7): *Nature Geoscience*, v. 12, p. 220–220, at <https://doi.org/10.1038/s41561-019-0316-8>.
- Wang, J., Walter, B.A., Yao, F., Song, C., Ding, M., Maroof, A.S., Zhu, J., Fan, C., McAlister, J.M., et al., 2022, GeoDAR—Georeferenced global dams and reservoirs dataset for bridging attributes and geolocations: *Earth System Science Data*, v. 14, no. 4, p. 1869–1899, at <https://doi.org/10.5194/essd-14-1869-2022>.
- Wang, J., Yang, D., Chen, S., Zhu, X., Wu, S., Bogonovich, M., Guo, Z., Zhu, Z., and Wu, J., 2021, Automatic cloud and cloud shadow detection in tropical areas for PlanetScope satellite images: *Remote Sensing of Environment*, v. 264, article 112604, at <https://doi.org/10.1016/j.rse.2021.112604>.
- Wang, J.A., Sulla-Menashe, D., Woodcock, C.E., Sonnentag, O., Keeling, R.F., and Friedl, M.A., 2020, Extensive land cover change across Arctic–Boreal Northwestern North America from disturbance and climate forcing: *Global Change Biology*, v. 26, no. 2, p. 807–822, at <https://doi.org/10.1111/gcb.14804>.
- Wang, K., Liang, S., Schaaf, C.B.L., and Strahler, A.H., 2010, Evaluation of Moderate Resolution Imaging Spectroradiometer land surface visible and shortwave albedo products at FLUXNET sites: *Journal*

- of Geophysical Research Atmospheres, v. 115, no. 17, article D17107, at <https://doi.org/10.1029/2009JD013101>.
- Wang, L., Bartlett, P., Pouliot, D., Chan, E., Lamarche, C., Wulder, M.A., Defourny, P., and Brady, M., 2019, Comparison and assessment of regional and global land cover datasets for use in CLASS over Canada: Remote Sensing, v. 11, no. 19, article 2286, at <https://doi.org/10.3390/rs11192286>.
- Wang, M., Xu, C., Johnson, D.J., Allen, C.D., Anderson, M., Wang, G., Qie, G., Solander, K.C., and McDowell, N.G., 2022, Multi-scale quantification of anthropogenic, fire, and drought-associated forest disturbances across the continental U.S., 2000–2014: Frontiers in Forests and Global Change, v. 5, article 693418, at <https://doi.org/10.3389/ffgc.2022.693418>.
- Wang, P., Gao, F., and Masek, J.G., 2014, Operational data fusion framework for building frequent Landsat-like imagery: IEEE Transactions on Geoscience and Remote Sensing, v. 52, no. 11, p. 7353–7365, at <https://doi.org/10.1109/TGRS.2014.2311445>.
- Wang, P., Qiu, J., Huo, Z., Anderson, M.C., Zhou, Y., Bai, Y., Liu, T., Ren, S., Feng, R., and Chen, P., 2017, Temporal downscaling of crop coefficients for winter wheat in the north china plain—A case study at the gucheng agro-meteorological experimental station: Water, v. 9, no. 3, article 155, at <https://doi.org/10.3390/w9030155>.
- Wang, S.Y.S., Santanello, J., Wang, H., Barandiaran, D., Pinker, R.T., Schubert, S., Gillies, R.R., Oglesby, R., Hilburn, K., et al., 2015, An intensified seasonal transition in the Central U.S. that enhances summer drought: Journal of Geophysical Research, v. 120, no. 17, p. 8804–8816, at <https://doi.org/10.1002/2014JD023013>.
- Wang, W., Ciais, P., Nemani, R.R., Canadell, J.G., Piao, S., Sitch, S., White, M.A., Hashimoto, H., Milesi, C., and Myneni, R.B., 2013, Erratum—Variations in atmospheric CO₂ growth rates coupled with tropical temperature (Proceedings of the National Academy of Sciences of the United States of America (2013) 110, 32 (13061-13066) DOI:10.1073/pnas.1219683110): Proceedings of the National Academy of Sciences of the United States of America, v. 110, no. 37, p. 15163–15163, at <https://doi.org/10.1073/pnas.1314920110>.
- Wang, W., Ciais, P., Nemani, R.R., Canadell, J.G., Piao, S., Sitch, S., White, M.A., Hashimoto, H., Milesi, C., and Myneni, R.B., 2013, Variations in atmospheric CO₂ growth rates coupled with tropical temperature: Proceedings of the National Academy of Sciences of the United States of America, v. 110, no. 32, p. 13061–13066, at <https://doi.org/10.1073/pnas.1219683110>.
- Wang, W., Dungan, J., Hashimoto, H., Michaelis, A.R., Milesi, C., Ichii, K., and Nemani, R.R., 2011, Diagnosing and assessing uncertainties of terrestrial ecosystem models in a multimodel ensemble experiment—1. Primary production: Global Change Biology, v. 17, no. 3, p. 1350–1366, at <https://doi.org/10.1111/j.1365-2486.2010.02309.x>.
- Wang, W., Dungan, J., Hashimoto, H., Michaelis, A.R., Milesi, C., Ichii, K., and Nemani, R.R., 2011, Diagnosing and assessing uncertainties of terrestrial ecosystem models in a multimodel ensemble experiment—2. Carbon balance: Global Change Biology, v. 17, no. 3, p. 1367–1378, at <https://doi.org/10.1111/j.1365-2486.2010.02315.x>.
- Wang, W., Ichii, K., Hashimoto, H., Michaelis, A.R., Thornton, P.E., Law, B.E., and Nemani, R.R., 2009, A hierarchical analysis of terrestrial ecosystem model Biome-BGC—Equilibrium analysis and model calibration: Ecological Modelling, v. 220, no. 17, p. 2009–2023, at <https://doi.org/10.1016/j.ecolmodel.2009.04.051>.

- Wang, W., Li, S., Hashimoto, H., Takenaka, H., Higuchi, A., Kalluri, S., and Nemani, R., 2020, An introduction to the Geostationary-NASA Earth exchange (GeoNEX) Products—1. Top-of-atmosphere reflectance and brightness temperature: *Remote Sensing*, v. 12, no. 8, article 1267, at <https://doi.org/10.3390/RS12081267>.
- Wang, W., Nemani, R., Hashimoto, H., Ganguly, S., Huang, D., Knyazikhin, Y., Myneni, R., and Bala, G., 2018, An interplay between photons, canopy structure, and recollision probability—A review of the spectral invariants theory of 3D canopy radiative transfer processes: *Remote Sensing*, v. 10, no. 11, article 1805, at <https://doi.org/10.3390/rs10111805>.
- Wang, W., and Nemani, R.R., 2016, Dynamic responses of atmospheric carbon dioxide concentration to global temperature changes between 1850 and 2010: *Advances in Atmospheric Sciences*, v. 33, no. 2, p. 247–258, at <https://doi.org/10.1007/s00376-015-5090-y>.
- Wang, W., Wang, Y., Lyapustin, A., Hashimoto, H., Park, T., Michaelis, A., and Nemani, R., 2022, A novel atmospheric correction algorithm to exploit the diurnal variability in hypertemporal geostationary observations: *Remote Sensing*, v. 14, no. 4, article 964, at <https://doi.org/10.3390/rs14040964>.
- Wang, X., Reagan, J., Catrall, C., and Thome, K.J., 2005, Spaceborne lidar aerosol retrieval approaches based on improved aerosol model constraints, *in* 2005 IEEE Workshop on Remote Sensing of Atmospheric Aerosols, Tucson, Ariz., 5–6 April 2005, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 36–42, at <https://doi.org/10.1109/AERSOL.2005.1494147>.
- Wang, X., Zhao, H., Sheng, Y., Geng, J., Wang, K., and Yang, H., 2020, Groundwater net discharge rates estimated from lake level change in Badain Jaran Desert, Northwest China: *Science China Earth Sciences*, v. 63, p. 713–725, at <https://doi.org/10.1007/s11430-019-9533-8>.
- Wang, Y., Czapla-Myers, J., Lyapustin, A.I., Thome, K.J., and Dutton, E.G., 2011, AERONET-based surface reflectance validation network (ASRVN) data evaluation—Case study for railroad valley calibration site: *Remote Sensing of Environment*, v. 115, no. 10, p. 2710–2717, at <https://doi.org/10.1016/j.rse.2011.06.011>.
- Wang, Y., and Gao, F., 2019, Mapping the chemical and mineral properties of total suspended matter in Pearl River water by multispectral optical remote sensing, *in* 2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5686–5689, at <https://doi.org/10.1109/IGARSS.2019.8898597>.
- Wang, Y., Lentilucci, E.J., Raqueno, N.G., and Schott, J.R., 2017, Landsat 8 TIRS calibration with external sensors, *in* Earth Observing Systems XXII, San Diego, Calif., 6–10 August 2017, Proceedings of SPIE Vol. 10402: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 104021h, at <https://doi.org/10.1117/12.2272766>.
- Wang, Y., Lu, Z., Sheng, Y., and Zhou, Y., 2020, Remote sensing applications in monitoring of protected areas: *Remote Sensing*, v. 12, no. 9, article 1370, at <https://doi.org/10.3390/RS12091370>.
- Wang, Y., Lyapustin, A.I., Privette, J.L., Cook, R.B., SanthanaVannan, S.K., Vermote, E.F., and Schaaf, C.B.L., 2010, Assessment of biases in MODIS surface reflectance due to Lambertian approximation: *Remote Sensing of Environment*, v. 114, no. 11, p. 2791–2801, at <https://doi.org/10.1016/j.rse.2010.06.013>.

- Wang, Y., Lyapustin, A.I., Privette, J.L., Morisette, J.T., and Holben, B., 2009, Atmospheric correction at AERONET locations—A new science and validation data set: *IEEE Transactions on Geoscience and Remote Sensing*, v. 47, no. 8, p. 2450–2466, at <https://doi.org/10.1109/TGRS.2009.2016334>.
- Wang, Y., Nemani, R.R., Dieffenbach, F., Stolte, K., Holcomb, G., Robinson, M., Reese, C.C., McNiff, M., Duhaime, R., et al., 2010, Development of a decision support system for monitoring, reporting and forecasting ecological conditions of the Appalachian Trail, *in* 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2095–2098, at <https://doi.org/10.1109/IGARSS.2010.5651835>.
- Wang, Y., Tian, Y., Zhang, Y., El-Saleous, N., Knyazikhin, Y., Vermote, E.F., and Myneni, R.B., 2001, Investigation of product accuracy as a function of input and model uncertainties—Case study with SeaWiFs and MODIS LAI/FPAR algorithm: *Remote Sensing of Environment*, v. 78, no. 3, p. 299–313, at [https://doi.org/10.1016/S0034-4257\(01\)00225-5](https://doi.org/10.1016/S0034-4257(01)00225-5).
- Wang, Y., Woodcock, C.E., Buermann, W., Stenberg, P., Voipio, P., Smolander, H., Häme, T., Tian, Y., Hu, J., et al., 2004, Evaluation of the MODIS LAI algorithm at a coniferous forest site in Finland: *Remote Sensing of Environment*, v. 91, no. 1, p. 114–127, at <https://doi.org/10.1016/j.rse.2004.02.007>.
- Wang, Y., Zhao, F., and Lyapustin, A., 2020, The AOD sensitivity comparison between MODIS multi-angle implementation of atmospheric correction (MAIAC) and standard MODIS surface reflectance, *in* 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), online virtual meeting, 26 September–2 October 2020, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4850–4853, at <https://doi.org/10.1109/IGARSS39084.2020.9324454>.
- Wang, Z., Barlage, M., Zeng, X., Dickinson, R.E., and Schaaf, C.B., 2005, The solar zenith angle dependence of desert albedo: *Geophysical Research Letters*, v. 32, no. 5, p. 1–4, at <https://doi.org/10.1029/2004GL021835>.
- Wang, Z., Erb, A.M., Schaaf, C.B., Sun, Q., Liu, Y., Yang, Y., Shuai, Y., Casey, K.A., and Román, M.O., 2016, Early spring post-fire snow albedo dynamics in high latitude boreal forests using Landsat-8 OLI data: *Remote Sensing of Environment*, v. 185, p. 71–83, at <https://doi.org/10.1016/j.rse.2016.02.059>.
- Wang, Z., Román, M.O., Sun, Q., Kalb, V., MacManus, K., Ryan, R.E., Pagnutti, M., and Helder, D., 2018, NASA's black marble product suite—Validation strategy, *in* 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 8197–8200, at <https://doi.org/10.1109/IGARSS.2018.8518106>.
- Wang, Z., Schaaf, C.B., Chopping, M.J., Strahler, A.H., Wang, J., Román, M.O., Rocha, A.V., Woodcock, C.E., and Shuai, Y., 2012, Evaluation of Moderate-Resolution Imaging Spectroradiometer (MODIS) snow albedo product (MCD43A) over tundra: *Remote Sensing of Environment*, v. 117, p. 264–280, at <https://doi.org/10.1016/j.rse.2011.10.002>.
- Wang, Z., Schaaf, C.B., Lewis, P., Knyazikhin, Y., Schull, M.A., Strahler, A.H., Yao, T., Myneni, R.B., Chopping, M.J., and Blair, B.J., 2011, Retrieval of canopy height using moderate-resolution imaging spectroradiometer (MODIS) data: *Remote Sensing of Environment*, v. 115, no. 6, p. 1595–1601, at <https://doi.org/10.1016/j.rse.2011.02.010>.

- Wang, Z., Schaaf, C.B., Philip, L., Knyazikhin, Y., Schull, M.A., Strahler, A.H., Myneni, R.B., and Chopping, M., 2010, Canopy vertical structure using modis bidirectional reflectance data, *in* 2nd Workshop on Hyperspectral Image and Signal Processing—Evolution in Remote Sensing, WHISPERS 2010, Reykjavik, Iceland, 14–16 June 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), paper no. 5594952, at <https://doi.org/10.1109/WHISPERS.2010.5594952>.
- Wang, Z., Schaaf, C.B., Strahler, A.H., Chopping, M.J., Román, M.O., Shuai, Y., Woodcock, C.E., Hollinger, D.Y., and Fitzjarrald, D.R., 2014, Evaluation of MODIS albedo product (MCD43A) over grassland, agriculture and forest surface types during dormant and snow-covered periods: *Remote Sensing of Environment*, v. 140, p. 60–77, at <https://doi.org/10.1016/j.rse.2013.08.025>.
- Wang, Z., Schaaf, C.B., Sun, Q., Kim, J., Erb, A.M., Gao, F., Román, M.O., Yang, Y., Petroy, S., et al., 2017, Monitoring land surface albedo and vegetation dynamics using high spatial and temporal resolution synthetic time series from Landsat and the MODIS BRDF/NBAR/albedo product: *International Journal of Applied Earth Observation and Geoinformation*, v. 59, p. 104–117, at <https://doi.org/10.1016/j.jag.2017.03.008>.
- Wang, Z., Schaaf, C.B., Sun, Q., Shuai, Y., and Román, M.O., 2018, Capturing rapid land surface dynamics with Collection V006 MODIS BRDF/NBAR/Albedo (MCD43) products: *Remote Sensing of Environment*, v. 207, p. 50–64, at <https://doi.org/10.1016/j.rse.2018.02.001>.
- Wang, Z., Thome, K., Lockwood, R., and Wenny, B., 2022, A detector-based absolute radiometric calibration simulation for a climate-quality imaging spectrometer, *in* Imaging Spectrometry XXV—Applications, Sensors, and Processing 2022, San Diego, Calif., 21–26 August 2022, Proceedings of SPIE Vol. 12235: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 122350h, at <https://doi.org/10.1117/12.2633431>.
- Wang, Z., Zeng, X., Barlage, M., Dickinson, R., Schaaf, C.B., and Gao, F., 2005, Impact of MODIS BRDF and albedo on land surface models, *in* Annual Meeting, 85th, San Diego, Calif., 9–13 January 2005, Poster Session 4: Boston, Mass., American Meteorological Society, p. 1863–1877, at https://ams.confex.com/ams/Annual2005/techprogram/paper_82621.htm.
- Wang, Z., Zeng, X., Barlage, M., Dickinson, R.E., Gao, F., and Schaaf, C.B., 2004, Using MODIS BRDF and albedo data to evaluate global model land surface albedo: *Journal of Hydrometeorology*, v. 5, no. 1, p. 3–14, at [https://doi.org/10.1175/1525-7541\(2004\)005<0003:UMBAAD>2.0.CO;2](https://doi.org/10.1175/1525-7541(2004)005<0003:UMBAAD>2.0.CO;2).
- Wanner, W., Strahler, A.H., Hu, B., Lewis, P., Muller, J.P., Li, X., Barker Schaaf, C.B.L., and Barnsley, M.J., 1997, Global retrieval of bidirectional reflectance and albedo over land from EOS MODIS and MISR data—Theory and algorithm: *Journal of Geophysical Research Atmospheres*, v. 102, no. 14, p. 17143–17161, at <https://doi.org/10.1029/96JD03295>.
- Ward, D.E., Hao, W.M., Susott, R.A., Babbitt, R.E., Shea, R.W., Kauffman, J.B., and Justice, C.O., 1996, Effect of fuel composition on combustion efficiency and emission factors for African savanna ecosystems: *Journal of Geophysical Research Atmospheres*, v. 101, no. 19, p. 23569–23576, at <https://doi.org/10.1029/95JD02595>.
- Ward, J.T., Lach, S.R., Schott, J.R., Sanders, N.J., and Brown, S.D., 2008, Driving realistic texture in simulated long-wave infrared imagery, *in* 2008 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Boston, Mass., 7–11 July 2008, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. III728–III731, at <https://doi.org/10.1109/IGARSS.2008.4779451>.

- Ward, M.H., Nuckols, J.R., Weigel, S.J., Maxwell, S.K., Cantor, K.P., and Miller, R.S., 2000, Identifying populations potentially exposed to agricultural pesticides using remote sensing and a geographic information system: *Environmental Health Perspectives*, v. 108, no. 1, p. 5–12, at <https://doi.org/10.1289/ehp.001085>.
- Wardlow, B., Anderson, M., Tadesse, T., Hain, C., Crow, W.T., and Rodell, M., 2015, Remote sensing of drought—Emergence of a satellite-based monitoring toolkit for the United States, *in* Thenkabail, P.S., ed., *Remote sensing of water resources, disasters, and urban studies*: Boca Raton, Fla., CRC Press, p. 367–399, at <https://doi.org/10.1201/b19321>.
- Wardlow, B.D., Anderson, M.C., Hain, C., Crow, W.T., Otkin, J., Tadesse, T., and Kouchak, A.A., 2017, Advancements in satellite remote sensing for drought monitoring, *in* Wilhite, D., and Pulwarty, R.S., eds., *Drought and water crises—Integrating science, management, and policy*, 2nd: Boca Raton, Fla., CRC Press, p. 225–258, at <https://doi.org/10.1201%2Fb22009-13>.
- Wardlow, B.D., Anderson, M.C., Sheffield, J., Doorn, B.D., Verdin, J.P., Zhan, X., and Rodell, M., 2012, Future opportunities and challenges in remote sensing of drought, *in* Wardlow, B.D., Anderson, M.C., and Verdin, J.P., eds., *Remote sensing of drought—Innovative monitoring approaches*: Boca Raton, Fla., CRC Press, p. 389–409, at <https://doi.org/10.1201/b11863-23>.
- Wardlow, B.D., Anderson, M.C., and Verdin, J.P., eds., 2012, *Remote sensing of drought—Innovative monitoring approaches*: Boca Raton, Fla., CRC Press, 450 p., at <https://doi.org/10.1201/b11863>.
- Warrior, H., and Carder, K.L., 2005, Production of hypersaline pools in shallow basins by evaporation: *Geophysical Research Letters*, v. 32, no. 18, article L18604, at <https://doi.org/10.1029/2005GL023078>.
- Warrior, H., and Carder, K.L., 2007, An optical model for heat and salt budget estimation for shallow seas: *Journal of Geophysical Research Oceans*, v. 112, no. 12, article C12021, at <https://doi.org/10.1029/2006JC003866>.
- Wasiak, F., Ochs, W.R., Johns, A., Seaton, B., Adams, C., Fatig, C., Jones, R., and Jackson, W., 2012, The building blocks for JWST I&T to operations - From simulator to flight units, *in* *Observatory Operations—Strategies, Processes, and Systems IV*, Amsterdam, Netherlands, 1–6 July 2012, *Proceedings of SPIE Vol. 8448*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 844803, at <https://doi.org/10.1117/12.921818>.
- Waske, B., Van Der Linden, S., Benediktsson, J.A., Rabe, A., and Hostert, P., 2009, Impact of different morphological profiles on the classification accuracy of urban hyperspectral data, *in* *Evolution in remote sensing, First Workshop on Hyperspectral Image and Signal Processing*, Grenoble, France, 26–28 August 2009, *Proceedings*: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), paper no. 1593142, at <https://doi.org/10.1109/WHISPERS.2009.5289078>.
- Waske, B., Van Der Linden, S., Benediktsson, J.A., Rabe, A., and Hostert, P., 2010, Sensitivity of support vector machines to random feature selection in classification of hyperspectral data: *IEEE Transactions on Geoscience and Remote Sensing*, v. 48, no. 7, p. 2880–2889, at <https://doi.org/10.1109/TGRS.2010.2041784>.
- Waske, B., van der Linden, S., Oldenburg, C., Jakimow, B., Rabe, A., and Hostert, P., 2012, ImageRF—A user-oriented implementation for remote sensing image analysis with Random Forests: *Environmental Modelling and Software*, v. 35, p. 192–193, at <https://doi.org/10.1016/j.envsoft.2012.01.014>.

- Wayman, J.P., Wynne, R.H., Scivani, J.A., and Reams, G.A., 2001, Landsat TM-based forest area estimation using iterative guided spectral class rejection: *Photogrammetric Engineering and Remote Sensing*, v. 67, no. 10, p. 1155–1166, at https://www.asprs.org/wp-content/uploads/pers/2001journal/october/2001_oct_1155-1166.pdf.
- Weber, R.N., Powers, M.D., and Kennedy, R.E., 2022, Vegetation recovery rates provide insight into reburn severity in southwestern Oregon, USA: *Forest Ecology and Management*, v. 519, article 120292, at <https://doi.org/10.1016/j.foreco.2022.120292>.
- Wehrden, H.V., Fischer, J., Brandt, P., Wagner, V., Kümmerer, K., Kuemmerle, T., Nagel, A., Olsson, O., and Hostert, P., 2012, Consequences of nuclear accidents for biodiversity and ecosystem services: *Conservation Letters*, v. 5, no. 2, p. 81–89, at <https://doi.org/10.1111/j.1755-263X.2011.00217.x>.
- Wei, J., Lee, Z., Lewis, M., Pahlevan, N., Ondrusek, M., and Armstrong, R., 2015, Radiance transmittance measured at the ocean surface: *Optics Express*, v. 23, no. 9, p. 11826–11837, at <https://doi.org/10.1364/OE.23.011826>.
- Wei, J., Lee, Z., Pahlevan, N., and Lewis, M., 2014, Transmittance of upwelling radiance at the sea surface measured in the field, *in* *Ocean Remote Sensing and Monitoring from Space*, Beijing, China, 15–16 October 2014, *Proceedings of SPIE Vol. 9261*: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 926105, at <https://doi.org/10.1117/12.2073431>.
- Wei, J., Li, Z., Chen, X., Li, C., Sun, Y., Wang, J., Lyapustin, A., Brasseur, G.P., Jiang, M., et al., 2023, Separating daily 1 km PM_{2.5} inorganic chemical composition in China since 2000 via deep learning integrating ground, satellite, and model data: *Environmental Science and Technology*, at <https://doi.org/10.1021/acs.est.3c00272>.
- Wei, J., Li, Z., Cribb, M., Huang, W., Xue, W., Sun, L., Guo, J., Peng, Y., Li, J., et al., 2020, Improved 1-km resolution PM_{2.5} estimates across China using enhanced space-time extremely randomized trees: *Atmospheric Chemistry and Physics*, v. 20, no. 6, p. 3273–3289, at <https://doi.org/10.5194/acp-20-3273-2020>.
- Wei, J., Li, Z., Lyapustin, A., Sun, L., Peng, Y., Xue, W., Su, T., and Cribb, M., 2021, Reconstructing 1-km-resolution high-quality PM_{2.5} data records from 2000 to 2018 in China—Spatiotemporal variations and policy implications: *Remote Sensing of Environment*, v. 252, article 112136, at <https://doi.org/10.1016/j.rse.2020.112136>.
- Wei, J., Wang, J., Li, Z., Kondragunta, S., Anenberg, S., Wang, Y., Zhang, H., Diner, D., Hand, J., et al., 2023, Long-term mortality burden trends attributed to black carbon and PM_{2.5} from wildfire emissions across the continental USA from 2000 to 2020—A deep learning modelling study: *The Lancet Planetary Health*, v. 7, no. 12, p. e963–e975, at [https://doi.org/10.1016/S2542-5196\(23\)00235-8](https://doi.org/10.1016/S2542-5196(23)00235-8).
- Wei, S., Fang, H., Schaaf, C.B., He, L., and Chen, J.M., 2019, Global 500 m clumping index product derived from MODIS BRDF data (2001–2017): *Remote Sensing of Environment*, v. 232, article 111296, at <https://doi.org/10.1016/j.rse.2019.111296>.
- Wei, X., Hahmann, A.N., Dickinson, R.E., Yang, Z.L., Zeng, X., Schaudt, K.J., Schaaf, C.B., and Strugnell, N., 2001, Comparison of albedos computed by land surface models and evaluation against remotely sensed data: *Journal of Geophysical Research Atmospheres*, v. 106, no. D18, p. 20687–20702, at <https://doi.org/10.1029/2001JD900218>.
- Weissteiner, C.J., Strobl, P., and Sommer, S., 2011, Assessment of status and trends of olive farming intensity in EU-Mediterranean countries using remote sensing time series and land cover data: *Ecological Indicators*, v. 11, no. 2, p. 601–610, at <https://doi.org/10.1016/j.ecolind.2010.08.006>.

- Welles, J.M., and Anderson, M.C., 2009, Historical overview of John M. Norman's involvement in the development of several key instruments for biophysical measurement: *Agricultural and Forest Meteorology*, v. 149, no. 12, p. 2064–2070, at <https://doi.org/10.1016/j.agrformet.2009.05.013>.
- Wellner, J.S., Scambos, T., Domack, E.W., Vernet, M., Leventer, A., Balco, G., Brachfeld, S., Cape, M.R., Huber, B., et al., 2019, The Larsen Ice Shelf System, Antarctica (Larissa)—Polar systems bound together, changing fast: *GSA Today*, v. 29, no. 8, p. 4–10, at <https://doi.org/10.1130/GSATG382A.1>.
- Welp, L.R., Patra, P.K., Rödenbeck, C., Nemani, R.R., Bi, J., Piper, S.C., and Keeling, R.F., 2016, Increasing summer net CO₂ uptake in high northern ecosystems inferred from atmospheric inversions and comparisons to remote-sensing NDVI: *Atmospheric Chemistry and Physics*, v. 16, no. 14, p. 9047–9066, at <https://doi.org/10.5194/acp-16-9047-2016>.
- Wen, G., Cahalan, R.F., Haigh, J.D., Pilewskie, P., Oreopoulos, L., and Harder, J.W., 2013, Reconciliation of modeled climate responses to spectral solar forcing: *Journal of Geophysical Research Atmospheres*, v. 118, no. 12, p. 6281–6289, at <https://doi.org/10.1002/jgrd.50506>.
- Wen, G., Cahalan, R.F., and Holben, B.N., 2003, Limitations of ground-based solar irradiance estimates due to atmospheric variations: *Journal of Geophysical Research Atmospheres*, v. 108, no. 14, p. AAC 1–1 – AAC 1–9, at <https://doi.org/10.1029/2003jd003431>.
- Wen, G., Cahalan, R.F., Rind, D., Jonas, J., Pilewskie, P., and Harder, J., 2013, Spectral solar UV radiation and its variability and climate responses, *in* *Radiation Processes in the Atmosphere and Ocean—International Radiation Symposium, IRS 2012, Berlin, Germany, 6–10 August 2012, Proceedings: Melville, N.Y., American Institute of Physics*, p. 788–791, at <https://doi.org/10.1063/1.4804888>.
- Wen, G., Cahalan, R.F., Rind, D., Jonas, J., Pilewskie, P., Wu, D.L., and Krivova, N.A., 2017, Climate responses to SATIRE and SIM-based spectral solar forcing in a 3D atmosphere-ocean coupled GCM: *Journal of Space Weather and Space Climate*, v. 7, no. 3, article A11, at <https://doi.org/10.1051/swsc/2017009>.
- Wen, G., Cahalan, R.F., Tsay, S.C., and Oreopoulos, L., 2001, Impact of cumulus cloud spacing on Landsat atmospheric correction and aerosol retrieval: *Journal of Geophysical Research Atmospheres*, v. 106, no. D11, p. 12129–12138, at <https://doi.org/10.1029/2001JD900159>.
- Wen, G., Marshak, A., and Cahalan, R.F., 2006, Impact of 3-D clouds on clear-sky reflectance and aerosol retrieval in a biomass burning region of Brazil: *IEEE Geoscience and Remote Sensing Letters*, v. 3, no. 1, p. 169–172, at <https://doi.org/10.1109/LGRS.2005.861386>.
- Wen, G., Marshak, A., and Cahalan, R.F., 2008, Importance of molecular Rayleigh scattering in the enhancement of clear sky reflectance in the vicinity of boundary layer cumulus clouds: *Journal of Geophysical Research Atmospheres*, v. 113, no. 24, article D24207, at <https://doi.org/10.1029/2008JD010592>.
- Wen, G., Marshak, A., Cahalan, R.F., Remer, L.A., and Kleidman, R.G., 2007, 3-D aerosol-cloud radiative interaction observed in collocated MODIS and ASTER images of cumulus cloud fields: *Journal of Geophysical Research Atmospheres*, v. 112, no. 13, article D13204, at <https://doi.org/10.1029/2006JD008267>.
- Wen, G., Marshak, A., Levy, R.C., Remer, L.A., Loeb, N.G., Várnai, T., and Cahalan, R.F., 2013, Improvement of MODIS aerosol retrievals near clouds: *Journal of Geophysical Research Atmospheres*, v. 118, no. 16, p. 9168–9181, at <https://doi.org/10.1002/jgrd.50617>.

- Wen, G., Marshak, A., Remer, L., Levy, R., Loeb, N., Várnai, T., and Cahalan, R.F., 2013, Correction of MODIS aerosol retrieval for 3D radiative effects in broken cloud fields, *in* Radiation Processes in the Atmosphere and Ocean—International Radiation Symposium, IRS 2012, Berlin, Germany, 6–10 August 2012, Proceedings: Melville, N.Y., American Institute of Physics, p. 280–283, at <https://doi.org/10.1063/1.4804761>.
- Wen, G., Tsay, S.C., Cahalan, R.F., and Oreopoulos, L., 1999, Path radiance technique for retrieving aerosol optical thickness over land: *Journal of Geophysical Research Atmospheres*, v. 104, no. D24, p. 31321–31332, at <https://doi.org/10.1029/1999JD900964>.
- Wendland, K.J., Baumann, M., Lewis, Sieber, A., and Radeloff, V.C., 2015, Protected area effectiveness in European Russia—A postmatching panel data analysis: *Land Economics*, v. 91, no. 1, p. 149–168, at <https://doi.org/10.3368/le.91.1.149>.
- Wendland, K.J., Lewis, D.J., Alix-Garcia, J., Ozdogan, M., Baumann, M., and Radeloff, V.C., 2011, Regional- and district-level drivers of timber harvesting in European Russia after the collapse of the Soviet Union: *Global Environmental Change*, v. 21, no. 4, p. 1290–1300, at <https://doi.org/10.1016/j.gloenvcha.2011.07.003>.
- Weng, Q., Fu, P., and Gao, F., 2014, Generating daily land surface temperature at Landsat resolution by fusing Landsat and MODIS data: *Remote Sensing of Environment*, v. 145, p. 55–67, at <https://doi.org/10.1016/j.rse.2014.02.003>.
- Wenny, B.N., Helder, D.L., Hong, J., Leigh, L., Thome, K.J., and Reuter, D., 2015, Pre- and post-launch spatial quality of the Landsat 8 thermal infrared sensor: *Remote Sensing*, v. 7, no. 2, p. 1962–1980, at <https://doi.org/10.3390/rs70201962>.
- Wenny, B.N., and Thome, K., 2022, Look-up table approach for uncertainty determination for operational vicarious calibration of Earth imaging sensors: *Applied Optics*, v. 61, no. 6, p. 1357–1368, at <https://doi.org/10.1364/AO.442170>.
- Wenny, B.N., Thome, K., and Czapla-Myers, J., 2020, Evaluation of vicarious calibration for airborne sensors using RadCalNet, *in* Sensors, Systems, and Next-Generation Satellites XXIV 2020, online virtual meeting, 21–25 September 2020, Proceedings of SPIE Vol. 11530: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1153017, at <https://doi.org/10.1117/12.2574014>.
- Wenny, B.N., Thome, K., and Czapla-Myers, J., 2021, Evaluation of vicarious calibration for airborne sensors using RadCalNet: *Journal of Applied Remote Sensing*, v. 15, no. 3, article 034501, at <https://doi.org/10.1117/1.JRS.15.034501>.
- Wessels, K.J., Bergh, F., Roy, D.P., Salmon, B.P., Steenkamp, K.C., MacAlister, B., Swanepoel, D., and Jewitt, D., 2016, Rapid land cover map updates using change detection and robust random forest classifiers: *Remote Sensing*, v. 8, no. 11, article 888, at <https://doi.org/10.3390/rs8110888>.
- West, J.E., Messinger, D.W., Ientilucci, E.J., Kerekes, J.P., and Schott, J.R., 2005, Matched filter stochastic background characterization for hyperspectral target detection, *in* Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XI, Orlando, Fla., 28 March–1 April 2005, Proceedings of SPIE Vol. 5806: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 1–12, at <https://doi.org/10.1117/12.605727>.
- West, J.E., Messinger, D.W., and Schott, J.R., 2007, Comparative evaluation of background characterization techniques for hyperspectral unstructured matched filter target detection:

- Journal of Applied Remote Sensing, v. 1, no. 1, article 013520, at <https://doi.org/10.1117/1.2768621>.
- Whitcraft, A.K., Becker-Reshef, I., and Justice, C.O., 2015, Agricultural growing season calendars derived from MODIS surface reflectance: *International Journal of Digital Earth*, v. 8, no. 3, p. 173–197, at <https://doi.org/10.1080/17538947.2014.894147>.
- Whitcraft, A.K., Becker-Reshef, I., and Justice, C.O., 2015, A framework for defining spatially explicit Earth observation requirements for a global agricultural monitoring initiative (GEOGLAM): *Remote Sensing*, v. 7, no. 2, p. 1461–1481, at <https://doi.org/10.3390/rs70201461>.
- Whitcraft, A.K., Becker-Reshef, I., and Justice, C.O., 2020, NASA harvest(ing) Earth observations for informed agricultural decisions, in 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), online virtual meeting, 26 September–2 October 2020, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3706–3708, at <https://doi.org/10.1109/IGARSS39084.2020.9324176>.
- Whitcraft, A.K., Becker-Reshef, I., Justice, C.O., Gifford, L., Kavvada, A., and Jarvis, I., 2019, No pixel left behind—Toward integrating Earth observations for agriculture into the United Nations Sustainable Development Goals framework: *Remote Sensing of Environment*, v. 235, article 111470, at <https://doi.org/10.1016/j.rse.2019.111470>.
- Whitcraft, A.K., Becker-Reshef, I., Justice, C.O., and Jarvis, I., 2022, GEO global agricultural monitoring and global policy frameworks, in Kavvada, A., Cripe, D., and Friedl, L., eds., *Earth observation applications and global policy frameworks*: Hoboken, N.J., American Geophysical Union and Wiley, p. 159–175, at <https://doi.org/10.1002/9781119536789.ch10>.
- Whitcraft, A.K., Becker-Reshef, I., Killough, B.D., and Justice, C.O., 2015, Meeting Earth observation requirements for global agricultural monitoring—An evaluation of the revisit capabilities of current and planned moderate resolution optical Earth observing missions: *Remote Sensing*, v. 7, no. 2, p. 1482–1503, at <https://doi.org/10.3390/rs70201482>.
- Whitcraft, A.K., Vermote, E.F., Becker-Reshef, I., and Justice, C.O., 2015, Cloud cover throughout the agricultural growing season—Impacts on passive optical Earth observations: *Remote Sensing of Environment*, v. 156, p. 438–447, at <https://doi.org/10.1016/j.rse.2014.10.009>.
- White, C.F.H., Coops, N.C., Nijland, W., Hilker, T., Nelson, T.A., Wulder, M.A., Nielsen, S.E., and Stenhouse, G., 2014, Characterizing a decade of disturbance events using Landsat and MODIS satellite imagery in Western Alberta, Canada for grizzly bear management: *Canadian Journal of Remote Sensing*, v. 40, no. 5, p. 336–347, at <https://doi.org/10.1080/07038992.2014.987082>.
- White, E.V., and Roy, D.P., 2015, A contemporary decennial examination of changing agricultural field sizes using Landsat time series data: *Geo—Geography and Environment*, v. 2, no. 1, p. 33–54, at <https://doi.org/10.1002/geo2.4>.
- White, J.C., Arnett, J.T., Wulder, M.A., Tompalski, P., and Coops, N.C., 2015, Evaluating the impact of leaf-on and leaf-off airborne laserscanning data on the estimation of forest inventory attributes with the area-based approach: *Canadian Journal of Forest Research*, v. 45, no. 11, p. 1498–1513, at <https://doi.org/10.1139/cjfr-2015-0192>.
- White, J.C., Coops, N.C., Hilker, T., Wulder, M.A., and Carroll, A.L., 2007, Detecting mountain pine beetle red attack damage with EO-1 Hyperion moisture indices: *International Journal of Remote Sensing*, v. 28, no. 10, p. 2111–2121, at <https://doi.org/10.1080/01431160600944028>.

- White, J.C., Coops, N.C., Wulder, M.A., Vastaranta, M., Hilker, T., and Tompalski, P., 2016, Remote sensing technologies for enhancing forest inventories—A review: *Canadian Journal of Remote Sensing*, v. 42, no. 5, p. 619–641, at <https://doi.org/10.1080/07038992.2016.1207484>.
- White, J.C., Gómez, C., Wulder, M.A., and Coops, N.C., 2010, Characterizing temperate forest structural and spectral diversity with Hyperion EO-1 data: *Remote Sensing of Environment*, v. 114, no. 7, p. 1576–1589, at <https://doi.org/10.1016/j.rse.2010.02.012>.
- White, J.C., Hermosilla, T., and Wulder, M.A., 2023, Pre-fire measures of boreal forest structure and composition inform interpretation of post-fire spectral recovery rates: *Forest Ecology and Management*, v. 537, at <https://doi.org/10.1016/j.foreco.2023.120948>.
- White, J.C., Hermosilla, T., Wulder, M.A., and Coops, N.C., 2022, Mapping, validating, and interpreting spatio-temporal trends in post-disturbance forest recovery: *Remote Sensing of Environment*, v. 271, article 112904, at <https://doi.org/10.1016/j.rse.2022.112904>.
- White, J.C., Saarinen, N., Kankare, V., Wulder, M.A., Hermosilla, T., Coops, N.C., Pickell, P.D., Holopainen, M., Hyypä, J., and Vastaranta, M., 2018, Confirmation of post-harvest spectral recovery from Landsat time series using measures of forest cover and height derived from airborne laser scanning data: *Remote Sensing of Environment*, v. 216, p. 262–275, at <https://doi.org/10.1016/j.rse.2018.07.004>.
- White, J.C., Stepper, C., Tompalski, P., Coops, N.C., and Wulder, M.A., 2015, Comparing ALS and image-based point cloud metrics and modelled forest inventory attributes in a complex coastal forest environment: *Forests*, v. 6, no. 10, p. 3704–3732, at <https://doi.org/10.3390/f6103704>.
- White, J.C., Tompalski, P., Coops, N.C., and Wulder, M.A., 2018, Comparison of airborne laser scanning and digital stereo imagery for characterizing forest canopy gaps in coastal temperate rainforests: *Remote Sensing of Environment*, v. 208, p. 1–14, at <https://doi.org/10.1016/j.rse.2018.02.002>.
- White, J.C., and Wulder, M.A., 2014, The Landsat observation record of Canada—1972–2012: *Canadian Journal of Remote Sensing*, v. 39, no. 6, p. 455–467, at <https://doi.org/10.5589/m13-053>.
- White, J.C., Wulder, M.A., Brooks, D., Reich, R., and Wheate, R.D., 2004, Mapping mountain pine beetle infestation with high spatial resolution satellite imagery: *Forestry Chronicle*, v. 80, no. 6, p. 743–745, at <https://doi.org/10.5558/tfc80743-6>.
- White, J.C., Wulder, M.A., Brooks, D., Reich, R., and Wheate, R.D., 2005, Detection of red attack stage mountain pine beetle infestation with high spatial resolution satellite imagery: *Remote Sensing of Environment*, v. 96, no. 3–4, p. 340–351, at <https://doi.org/10.1016/j.rse.2005.03.007>.
- White, J.C., Wulder, M.A., and Buckmaster, G., 2014, Validating estimates of merchantable volume from airborne laser scanning (ALS) data using weight scale data: *Forestry Chronicle*, v. 90, no. 3, p. 378–385, at <https://doi.org/10.5558/tfc2014-072>.
- White, J.C., Wulder, M.A., Gómez, C., and Stenhouse, G., 2011, A history of habitat dynamics—Characterizing 35 years of stand replacing disturbance: *Canadian Journal of Remote Sensing*, v. 37, no. 2, p. 234–251, at <https://doi.org/10.5589/m11-034>.
- White, J.C., Wulder, M.A., Hermosilla, T., and Coops, N.C., 2019, Satellite time series can guide forest restoration: *Nature*, v. 569, no. 7758, p. 630–630, at <https://doi.org/10.1038/d41586-019-01665-x>.
- White, J.C., Wulder, M.A., Hermosilla, T., Coops, N.C., and Hobart, G.W., 2017, A nationwide annual characterization of 25 years of forest disturbance and recovery for Canada using Landsat time

- series: *Remote Sensing of Environment*, v. 194, p. 303–321, at <https://doi.org/10.1016/j.rse.2017.03.035>.
- White, J.C., Wulder, M.A., Hobart, G.W., Luther, J.E., Hermosilla, T., Griffiths, P., Coops, N.C., Hall, R.J., Hostert, P., et al., 2014, Pixel-based image compositing for large-area dense time series applications and science: *Canadian Journal of Remote Sensing*, v. 40, no. 3, p. 192–212, at <https://doi.org/10.1080/07038992.2014.945827>.
- White, J.C., Wulder, M.A., Varhola, A., Vastaranta, M., Coops, N.C., Cook, B.D., Pitt, D., and Woods, M., 2013, A best practices guide for generating forest inventory attributes from airborne laser scanning data using an area-based approach: *Forestry Chronicle*, v. 89, no. 6, p. 722–723, at <https://doi.org/10.5558/tfc2013-132>.
- White, J.C., Wulder, M.A., Vastaranta, M., Coops, N.C., Pitt, D., and Woods, M., 2013, The utility of image-based point clouds for forest inventory—A comparison with airborne laser scanning: *Forests*, v. 4, no. 3, p. 518–536, at <https://doi.org/10.3390/f4030518>.
- White, J.D., Running, S.W., Nemani, R.R., Keane, R.E., and Ryan, K.C., 1997, Measurement and remote sensing of LAI in rocky mountain montane ecosystems: *Canadian Journal of Forest Research*, v. 27, no. 11, p. 1714–1727, at <https://doi.org/10.1139/x97-142>.
- White, M.A., Asner, G.P., Nemani, R.R., Privette, J.L., and Running, S.W., 2000, Measuring fractional cover and leaf area index in arid ecosystems—Digital camera, radiation transmittance, and laser altimetry methods: *Remote Sensing of Environment*, v. 74, no. 1, p. 45–57, at [https://doi.org/10.1016/S0034-4257\(00\)00119-X](https://doi.org/10.1016/S0034-4257(00)00119-X).
- White, M.A., de Beurs, K.M., Didan, K., Inouye, D.W., Richardson, A.D., Jensen, O.P., O’Keefe, J., Zhang, G., Nemani, R.R., et al., 2009, Intercomparison, interpretation, and assessment of spring phenology in North America estimated from remote sensing for 1982-2006: *Global Change Biology*, v. 15, no. 10, p. 2335–2359, at <https://doi.org/10.1111/j.1365-2486.2009.01910.x>.
- White, M.A., Hoffman, F., Hargrove, W.W., and Nemani, R.R., 2005, A global framework for monitoring phenological responses to climate change: *Geophysical Research Letters*, v. 32, no. 4, p. 1–4, at <https://doi.org/10.1029/2004GL021961>.
- White, M.A., and Nemani, R.R., 2003, Canopy duration has little influence on annual carbon storage in the deciduous broad leaf forest: *Global Change Biology*, v. 9, no. 7, p. 967–972, at <https://doi.org/10.1046/j.1365-2486.2003.00585.x>.
- White, M.A., and Nemani, R.R., 2004, Soil water forecasting in the continental United States—Relative forcing by meteorology versus leaf area index and the effects of meteorological forecast errors: *Canadian Journal of Remote Sensing*, v. 30, no. 5, p. 717–730, at <https://doi.org/10.5589/m04-030>.
- White, M.A., and Nemani, R.R., 2006, Real-time monitoring and short-term forecasting of land surface phenology: *Remote Sensing of Environment*, v. 104, no. 1, p. 43–49, at <https://doi.org/10.1016/j.rse.2006.04.014>.
- White, M.A., Nemani, R.R., Thornton, P.E., and Running, S.W., 2002, Satellite evidence of phenological differences between urbanized and rural areas of the eastern United States deciduous broadleaf forest: *Ecosystems*, v. 5, no. 3, p. 260–273, at <https://doi.org/10.1007/s10021-001-0070-8>.
- White, W.A., Alsina, M.M., Nieto, H., McKee, L.G., Gao, F., and Kustas, W.P., 2019, Determining a robust indirect measurement of leaf area index in California vineyards for validating remote sensing-

- based retrievals: *Irrigation Science*, v. 34, no. 3, p. 269–280, at <https://doi.org/10.1007/s00271-018-0614-8>.
- Whittington, E.E., Thome, K.J., Barnes, R.A., and Canham, K.A., 2000, Radiometric calibration of the Sea-viewing wide field of view sensor using ground-reference techniques, *in* *Earth Observing Systems V*, San Diego, Calif., 30 July–4 August 2000, Proceedings of SPIE Vol. 4135: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 294–301, at <https://doi.org/10.1117/12.494227>.
- Wickham, J., Homer, C., Vogelmann, J.E., McKerrow, A., Mueller, R., Herold, N., and Coulston, J., 2014, The multi-resolution land characteristics (MRLC) Consortium - 20 years of development and integration of USA National Land Cover Data: *Remote Sensing*, v. 6, no. 8, p. 7424–7441, at <https://doi.org/10.3390/rs6087424>.
- Wielicki, B.A., Young, D.F., Mlynczak, M.G., Thome, K.J., Leroy, S., Corliss, J., Anderson, J.G., Ao, C.O., Bantges, R., et al., 2013, Achieving climate change absolute accuracy in orbit: *Bulletin of the American Meteorological Society*, v. 94, no. 10, p. 1519–1539, at <https://doi.org/10.1175/BAMS-D-12-00149.1>.
- Wigtil, G., Hammer, R.B., Kline, J.D., Mockrin, M.H., Stewart, S.I., Roper, D., and Radeloff, V.C., 2016, Places where wildfire potential and social vulnerability coincide in the coterminous United States: *International Journal of Wildland Fire*, v. 25, no. 8, p. 896–908, at <https://doi.org/10.1071/WF15109>.
- Wild, C.T., Alley, K.E., Muto, A., Truffer, M., Scambos, T.A., and Pettit, E.C., 2022, Weakening of the pinning point buttressing Thwaites Glacier, West Antarctica: *Cryosphere*, v. 16, no. 2, p. 397–417, at <https://doi.org/10.5194/tc-16-397-2022>.
- Wildi, F., Brusa, G., Riccardi, A., Allen, R.G., Lloyd-Hart, M., Miller, D., Martin, B., Biasi, R., and Gallieni, D., 2002, Progress of the MMT adaptive optics program, *in* *Adaptive Optics Systems and Technology II*, San Diego, Calif., 29 July–3 August 2001, Proceedings of SPIE Vol. 4494: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 11–18, at <https://doi.org/10.1117/12.454789>.
- Williams, C.A., Collatz, G.J., Masek, J.G., and Goward, S.N., 2012, Carbon consequences of forest disturbance and recovery across the conterminous United States: *Global Biogeochemical Cycles*, v. 26, no. 1, article GB1005, at <https://doi.org/10.1029/2010GB003947>.
- Williams, C.A., Collatz, G.J., Masek, J.G., Huang, C., and Goward, S.N., 2014, Impacts of disturbance history on forest carbon stocks and fluxes—Merging satellite disturbance mapping with forest inventory data in a carbon cycle model framework: *Remote Sensing of Environment*, v. 151, p. 57–71, at <https://doi.org/10.1016/j.rse.2013.10.034>.
- Williams, C.A., Gu, H., MacLean, R., Masek, J.G., and Collatz, G.J., 2016, Disturbance and the carbon balance of US forests—A quantitative review of impacts from harvests, fires, insects, and droughts: *Global and Planetary Change*, v. 143, p. 66–80, at <https://doi.org/10.1016/j.gloplacha.2016.06.002>.
- Williams, D.L., Brown, M.E., Masek, J.G., Tucker, C.J., and Jarvis, C., 2011, A low-cost, small-sat mission concept to augment Landsat temporal repeat frequency, *in* *Towards operational environmental monitoring, International Symposium on Remote Sensing of Environment—The GEOSS Era, 34th*, Sydney, Australia, 10–15 April 2011, Proceedings: Tuscon, Ariz., International Center for Remote

- Sensing of Environment, p. 1–4, at <https://www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00146.pdf>.
- Williams, D.L., Goward, S.N., and Arvidson, T., 2006, Landsat—Yesterday, today, and tomorrow: Photogrammetric Engineering and Remote Sensing, v. 72, no. 10, p. 1171–1178, at <https://doi.org/10.14358/PERS.72.10.1171>.
- Williams, D.L., Irons, J.R., Barker, J.L., Markham, B.L., and Pedelty, J.A., 1998, Landsat 7—Maintaining Landsat data continuity into the 21st century, in 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 256–258, at <https://doi.org/10.1109/IGARSS.1998.702870>.
- Williams, D.L., Irons, J.R., Goward, S.N., and Masek, J.G., 2003, The first four years of the Landsat 7 mission—A review, in 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toulouse, France, 21–25 July 2003, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 251–251, at <https://doi.org/10.1109/IGARSS.2003.1293740>.
- Williams, D.L., Irons, J.R., Masek, J.G., and Goward, S.N., 2001, Systematic Earth observation—Significant progress as we enter the 21st century with Landsat 7, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 540–542, at <https://doi.org/10.1109/IGARSS.2001.976215>.
- Williams, I., and Moran, M.S., 2009, TPS data collection and data mining, in IEEE AUTOTESTCON 2009, Anaheim, Calif., 14–17 September 2009, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 155–160, at <https://doi.org/10.1109/AUTEST.2009.5314049>.
- Williams, I., and Moran, M.S., 2010, Test program set data collection and data mining: IEEE Instrumentation and Measurement Magazine, v. 13, no. 4, p. 34–40, at <https://doi.org/10.1109/MIM.2010.5521865>.
- Williams, J.W., Burke, K.D., Crossley, M.S., Grant, D.A., and Radeloff, V.C., 2019, Land-use and climatic causes of environmental novelty in Wisconsin since 1890: Ecological Applications, v. 29, no. 7, article e01955, at <https://doi.org/10.1002/eap.1955>.
- Williams, P.T., Wynne, R.H., Thomas, V.A., and DeFries, R., 2021, Mapping smallholder forest plantations in Andhra Pradesh, India using multitemporal harmonized Landsat sentinel-2 S10 data: Land Degradation and Development, v. 32, no. 15, p. 4212–4226, at <https://doi.org/10.1002/ldr.4027>.
- Wilson, M.J., and Oreopoulos, L., 2013, Enhancing a simple MODIS cloud mask algorithm for the Landsat data continuity mission: IEEE Transactions on Geoscience and Remote Sensing, v. 51, no. 2, p. 723–731, at <https://doi.org/10.1109/TGRS.2012.2203823>.
- Wilson, T.B., Meyers, T.P., Kochendorfer, J., Anderson, M.C., and Heuer, M., 2012, The effect of soil surface litter residue on energy and carbon fluxes in a deciduous forest: Agricultural and Forest Meteorology, v. 161, p. 134–147, at <https://doi.org/10.1016/j.agrformet.2012.03.013>.
- Wilson, T.G., Kustas, W.P., Alfieri, J.G., Anderson, M.C., Gao, F., Prueger, J.H., McKee, L.G., Alsina, M.M., Sanchez, L.A., and Alstad, K.P., 2020, Relationships between soil water content, evapotranspiration, and irrigation measurements in a California drip-irrigated Pinot noir vineyard: Agricultural Water Management, v. 237, article 106186, at <https://doi.org/10.1016/j.agwat.2020.106186>.

- Wilusz, D.C., Zaitchik, B.F., Anderson, M.C., Hain, C.R., Yilmaz, M.T., and Mladenova, I.E., 2017, Monthly flooded area classification using low resolution SAR imagery in the Sudd wetland from 2007 to 2011: *Remote Sensing of Environment*, v. 194, p. 205–218, at <https://doi.org/10.1016/j.rse.2017.03.005>.
- Winberry, J.P., Anandakrishnan, S., Alley, R.B., Bindschadler, R.A., and King, M.A., 2009, Basal mechanics of ice streams—Insights from the stick-slip motion of Whillans Ice Stream, West Antarctica: *Journal of Geophysical Research Earth Surface*, v. 114, no. 1, article F01016, at <https://doi.org/10.1029/2008JF001035>.
- Wing, B.M., Ritchie, M.W., Boston, K., Cohen, W.B., Gitelman, A., and Olsen, M.J., 2012, Prediction of understory vegetation cover with airborne lidar in an interior ponderosa pine forest: *Remote Sensing of Environment*, v. 124, p. 730–741, at <https://doi.org/10.1016/j.rse.2012.06.024>.
- Wing, B.M., Ritchie, M.W., Boston, K., Cohen, W.B., and Olsen, M.J., 2015, Individual snag detection using neighborhood attribute filtered airborne lidar data: *Remote Sensing of Environment*, v. 163, p. 165–179, at <https://doi.org/10.1016/j.rse.2015.03.013>.
- Winn, M.F., Wynne, R.H., and Araman, P.A., 2004, ALOG—A spreadsheet-based program for generating artificial logs: *Forest Products Journal*, v. 54, no. 1, p. 62–66, at <https://www.fs.usda.gov/treearch/pubs/6217>.
- Winther, J.G., Bindschadler, R.A., König, M., and Scherer, D., 2005, Remote sensing of glaciers and ice sheets, in Duguay, C.R., and Pietroniro, A., eds., *Remote sensing in northern hydrology—Measuring environmental change*, v. 163: Washington, D.C., American Geophysical Union, p. 39–61, at <https://doi.org/10.1029/163GM04>.
- Witt, C., Davis, R.J., Yang, Z., Ganey, J.L., Gutiérrez, R.J., Healey, S., Hedwall, S., Hoagland, S., Maes, R., et al., 2022, Linking robust spatiotemporal datasets to assess and monitor habitat attributes of a threatened species: *PLoS ONE*, v. 17, no. 3, article e0265175, at <https://doi.org/10.1371/journal.pone.0265175>.
- Wolfe, J., Hybl, T.T., and Scambos, T.A., 2000, Polar ice sheet DEMs and topographic data available from the National Snow and Ice Data Center, in 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 506–508, at <https://doi.org/10.1109/IGARSS.2000.861611>.
- Wolfe, R., Masek, J.G., Saleous, N., and Hall, F., 2004, LEDAPS—Mapping North American disturbance from the Landsat record, in 2004 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Anchorage, Alaska, 20–24 September 2004, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1–4, at <https://doi.org/10.1109/IGARSS.2004.1368929>.
- Wolfe, R.E., Esaias, W., Lyapustin, A.I., and Xiong, X., 2006, MODIS solar diffuser earthshine modeling and analysis, in *Earth Observing Systems XI*, San Diego, Calif., 14–16 August 2006, Proceedings of SPIE Vol. 6296: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 629606, at <https://doi.org/10.1117/12.681100>.
- Wolfe, R.E., Nishihama, M., Fleig, A.J., Kuyper, J.A., Roy, D.P., Storey, J.C., and Patt, F.S., 2002, Achieving sub-pixel geolocation accuracy in support of MODIS land science: *Remote Sensing of Environment*, v. 83, no. 1–2, p. 31–49, at [https://doi.org/10.1016/S0034-4257\(02\)00085-8](https://doi.org/10.1016/S0034-4257(02)00085-8).

- Wolfe, R.E., Nishihama, M., Fleig, A.J., and Roy, D.P., 1999, MODIS operational geolocation error analysis and reduction methodology, *in* 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Hamburg, Germany, 28 June–2 July 1999, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 449–451, at <https://doi.org/10.1109/IGARSS.1999.773529>.
- Wolfe, R.E., Nishihama, M., Fleig, A.J., Unger, J.M., and Roy, D.P., 2000, MODIS operational geolocation error analysis and reduction early results, *in* 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2065–2067, at <https://doi.org/10.1109/IGARSS.2000.858273>.
- Wolfe, R.E., Roy, D.P., and Vermote, E.F., 1998, MODIS land data storage, gridding, and compositing methodology—Level 2 grid: IEEE Transactions on Geoscience and Remote Sensing, v. 36, no. 4, p. 1324–1338, at <https://doi.org/10.1109/36.701082>.
- Wong, A.J., Jin, Y., Medellín-Azuara, J., Paw U, K.T., Kent, E.R., Clay, J.M., Gao, F., Fisher, J.B., Rivera, G., et al., 2021, Multiscale assessment of agricultural consumptive water use in California’s Central Valley: Water Resources Research, v. 57, no. 9, article e2020WR028876, at <https://doi.org/10.1029/2020WR028876>.
- Wood, E.C., Wylie, B.K., Brown, J.F., Meyer, D.J., Maxwell, S.K., and Reed, B.C., 2006, Range condition as input to water quality monitoring in the Northern Plains, *in* Prospecting for geospatial information integration, Annual Conference, Reno, Nev., 1–5 May 2006, Proceedings: Bethesda, Md., American Society for Photogrammetry and Remote Sensing, p. 1599–1606, at <https://www.asprs.org/a/publications/proceedings/reno2006/0170.pdf>.
- Wood, E.M., Brandt, J.S., Pidgeon, A.M., and Radeloff, V.C., 2014, Habitat–occupancy associations and tree-species use patterns by breeding birds in Tibetan sacred forests: Biodiversity and Conservation, v. 24, no. 1, p. 129–148, at <https://doi.org/10.1007/s10531-014-0795-2>.
- Wood, E.M., Pidgeon, A.M., Radeloff, V.C., Helmers, D., Culbert, P.D., Keuler, N.S., and Flather, C.H., 2014, Housing development erodes avian community structure in U.S. protected areas: Ecological Applications, v. 24, no. 6, p. 1445–1462, at <https://doi.org/10.1890/12-1992.1>.
- Wood, E.M., Pidgeon, A.M., Radeloff, V.C., Helmers, D.P., Culbert, P.D., Keuler, N.S., and Flather, C.H., 2015, Long-term avian community response to housing development at the boundary of US protected areas—Effect size increases with time: Journal of Applied Ecology, v. 52, no. 5, p. 1227–1236, at <https://doi.org/10.1111/1365-2664.12492>.
- Wood, E.M., Pidgeon, A.M., Radeloff, V.C., and Keuler, N.S., 2012, Image texture as a remotely sensed measure of vegetation structure: Remote Sensing of Environment, v. 121, p. 516–526, at <https://doi.org/10.1016/j.rse.2012.01.003>.
- Wood, E.M., Pidgeon, A.M., Radeloff, V.C., and Keuler, N.S., 2013, Image texture predicts avian density and species richness: PLoS ONE, v. 8, no. 5, article e63211, at <https://doi.org/10.1371/journal.pone.0063211>.
- Wood, J.E., Gillis, M.D., Goodenough, D.G., Hall, R.J., Leckie, D.G., Luther, J.E., and Wulder, M.A., 2002, Earth Observation for Sustainable Development of Forests (EOSD)—Project overview, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1299–1302, at <https://doi.org/10.1109/IGARSS.2002.1026097>.

- Woodcock, C.E., 2006, Uncertainty in remote sensing, *in* Foody, G.M., and Atkinson, P.M., eds., *Uncertainty in remote sensing and GIS*: Hoboken, N.J., John Wiley & Sons, p. 19–24, at <https://doi.org/10.1002/0470035269.ch2>.
- Woodcock, C.E., Allen, R.G., Anderson, M.C., Belward, A.S., Bindschadler, R.A., Cohen, W.B., Gao, F., Goward, S.N., Helder, D.L., et al., 2008, Free access to Landsat imagery: *Science*, v. 320, no. 5879, p. 1011–1011, at <https://doi.org/10.1126/science.320.5879.1011a>.
- Woodcock, C.E., Collins, J.B., Jakabhazy, V.D., Li, X., Macomber, S.A., Wu, Y., and Company, A.S., 1997, Inversion of the li-strahler canopy reflectance model for mapping forest structure: *IEEE Transactions on Geoscience and Remote Sensing*, v. 35, no. 2, p. 405–414, at <https://doi.org/10.1109/36.563279>.
- Woodcock, C.E., and Gopal, S., 2000, Fuzzy set theory and thematic maps—Accuracy assessment and area estimation: *International Journal of Geographical Information Science*, v. 14, no. 2, p. 153–172, at <https://doi.org/10.1080/136588100240895>.
- Woodcock, C.E., Gopal, S., and Albert, W., 1996, Evaluation of the potential for providing secondary labels in vegetation maps: *Photogrammetric Engineering and Remote Sensing*, v. 62, no. 4, p. 393–399, at https://www.asprs.org/wp-content/uploads/pers/1996journal/apr/1996_apr_393-399.pdf.
- Woodcock, C.E., Gopal, S., Macomber, S.A., and Pax-Lenney, M., 1998, Automated identification of temperate conifer forests in Landsat imagery—Generalization in time and space, *in* 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 801–803, at <https://doi.org/10.1109/IGARSS.1998.699588>.
- Woodcock, C.E., Loveland, T.R., and Herold, M., 2020, Preface—Time series analysis imagery special issue: *Remote Sensing of Environment*, v. 238, article 111613, at <https://doi.org/10.1016/j.rse.2019.111613>.
- Woodcock, C.E., Loveland, T.R., Herold, M., and Bauer, M.E., 2020, Transitioning from change detection to monitoring with remote sensing—A paradigm shift: *Remote Sensing of Environment*, v. 238, article 111558, at <https://doi.org/10.1016/j.rse.2019.111558>.
- Woodcock, C.E., Macomber, S.A., Pax-Lenney, M., and Cohen, W.B., 2001, Monitoring large areas for forest change using Landsat—Generalization across space, time and Landsat sensors: *Remote Sensing of Environment*, v. 78, no. 1–2, p. 194–203, at [https://doi.org/10.1016/S0034-4257\(01\)00259-0](https://doi.org/10.1016/S0034-4257(01)00259-0).
- Woodcock, C.E., Olofsson, P., Jeon, S.B., and Stehman, S., 2010, The effect of map accuracy on estimates of terrestrial carbon budgets, *in* *Accuracy 2010—International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences*, 9th, Leicester, UK, 20–23 July 2010, Proceedings: Leicester, UK, International Spatial Accuracy Research Association, p. 9–11, at <http://spatialaccuracy.org/wp-content/uploads/2021/07/Woodcock2010accuracy.pdf>.
- Woods, T., Cahalan, R.F., Denig, W., Kopp, G., Pilewskie, P., and Sparr, T., 2014, Rapid coordination extends space-based sun-climate record: *Eos*, v. 95, no. 47, p. 429–430, at <https://doi.org/10.1002/2014EO470002>.
- Wooster, M.J., Roberts, G.J., Giglio, L., Roy, D., Freeborn, P., Boschetti, L., Justice, C., Ichoku, C., Schroeder, W., et al., 2021, Satellite remote sensing of active fires—History and current status,

- applications and future requirements: *Remote Sensing of Environment*, v. 267, article 112694, at <https://doi.org/10.1016/j.rse.2021.112694>.
- Wright, P., Bergin, M., Dibb, J., Lefer, B., Domine, F., Carman, T., Carmagnola, C., Dumont, M., Courville, Z., et al., 2014, Comparing MODIS daily snow albedo to spectral albedo field measurements in Central Greenland: *Remote Sensing of Environment*, v. 140, p. 118–129, at <https://doi.org/10.1016/j.rse.2013.08.044>.
- Wright, R., Carn, S.A., and Flynn, L.P., 2005, A satellite chronology of the May-June 2003 eruption of Anatahan volcano: *Journal of Volcanology and Geothermal Research*, v. 146, no. 1–3 SI, p. 102–116, at <https://doi.org/10.1016/j.jvolgeores.2004.10.021>.
- Wright, R., De La Cruz-Reyna, S., Harris, A., Flynn, L.P., and Gomez-Palacios, J.J., 2002, Infrared satellite monitoring at Popocatepetl—Explosions, exhalations, and cycles of dome growth: *Journal of Geophysical Research Solid Earth*, v. 107, no. 8, p. ECV 2–1 – 2–16, at <https://doi.org/10.1029/2000JB000125>.
- Wright, R., and Flynn, L.P., 2003, On the retrieval of lava-flow surface temperatures from infrared satellite data: *Geology*, v. 31, no. 10, p. 893–896, at <https://doi.org/10.1130/G19645.1>.
- Wright, R., and Flynn, L.P., 2004, Space-based estimate of the volcanic heat flux into the atmosphere during 2001 and 2002: *Geology*, v. 32, no. 3, p. 189–192, at <https://doi.org/10.1130/G20239.1>.
- Wright, R., Flynn, L.P., Garbeil, H., Harris, A., and Pilger, E., 2002, Automated volcanic eruption detection using MODIS: *Remote Sensing of Environment*, v. 82, no. 1, p. 135–155, at [https://doi.org/10.1016/S0034-4257\(02\)00030-5](https://doi.org/10.1016/S0034-4257(02)00030-5).
- Wright, R., Flynn, L.P., Garbeil, H., Harris, A.J.L., and Pilger, E., 2004, MODVOLC—Near-real-time thermal monitoring of global volcanism: *Journal of Volcanology and Geothermal Research*, v. 135, no. 1–2, p. 29–49, at <https://doi.org/10.1016/j.jvolgeores.2003.12.008>.
- Wright, R., Flynn, L.P., and Harris, A.J.L., 2001, Evolution of lava flow-fields at Mount Etna, 27-28 October 1999, observed by Landsat 7 ETM+: *Bulletin of Volcanology*, v. 63, no. 1, p. 1–7, at <https://doi.org/10.1007/s004450100124>.
- Wu, T., Qin, B., Zhu, G., Huttula, T., Lindfors, A., Ventelä, A.M., Sheng, Y., and Ambrose, R.F., 2018, The contribution of wind wave changes on diminishing ice period in Lake Pyhäjärvi during the last half-century: *Environmental Science and Pollution Research*, v. 25, no. 25, p. 24895–24906, at <https://doi.org/10.1007/s11356-018-2552-7>.
- Wu, T., Sheng, Y., Chen, D., and Qin, B., 2023, Synchronism of sediment erosion and deposition processes during high-turbidity events in a large shallow lake: *Journal of Hydrology*, v. 623, article 129853, at <https://doi.org/10.1016/j.jhydrol.2023.129853>.
- Wu, Z., Thenkabail, P.S., Mueller, R., Zakzeski, A., Melton, F., Johnson, L., Rosevelt, C., Dwyer, J.L., Jones, J., and Verdin, J.P., 2014, Seasonal cultivated and fallow cropland mapping using MODIS-based automated cropland classification algorithm: *Journal of Applied Remote Sensing*, v. 8, no. 1, article 083685, at <https://doi.org/10.1117/1.JRS.8.083685>.
- Wu, Z., Thenkabail, P.S., and Verdin, J.P., 2014, Automated cropland classification algorithm (ACCA) for California using multi-sensor remote sensing: *Photogrammetric Engineering and Remote Sensing*, v. 80, no. 1, p. 81–90, at <https://doi.org/10.14358/PERS.80.1.81>.

- Wulder, M.A., 1998, Optical remote-sensing techniques for the assessment of forest inventory and biophysical parameters: *Progress in Physical Geography*, v. 22, no. 4, p. 449–476, at <https://doi.org/10.1191/030913398675385488>.
- Wulder, M.A., 1998, The prediction of leaf area index from forest polygons decomposed through the integration of remote sensing, GIS, UNIX, and C: *Computers and Geosciences*, v. 24, no. 2, p. 151–157, at [https://doi.org/10.1016/S0098-3004\(97\)00132-5](https://doi.org/10.1016/S0098-3004(97)00132-5).
- Wulder, M.A., 2002, Mapping the land cover of the forested area of Canada with Landsat data, in 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1303–1306, at <https://doi.org/10.1109/IGARSS.2002.1026098>.
- Wulder, M.A., 2008, Canadian Remote Sensing Society Gold Medal 2007/Médaille d'or de la Société Canadienne de Télédétection pour 2007: *Canadian Journal of Remote Sensing*, v. 34, no. 2, p. ix–ix, at <https://doi.org/10.5589/m08-900>.
- Wulder, M.A., Bater, C.W., Coops, N.C., Hilker, T., and White, J.C., 2008, The role of LiDAR in sustainable forest management: *Forestry Chronicle*, v. 84, no. 6, p. 807–826, at <https://doi.org/10.5558/tfc84807-6>.
- Wulder, M.A., and Boots, B., 1998, Local spatial autocorrelation characteristics of remotely sensed imagery assessed with the Getis statistic: *International Journal of Remote Sensing*, v. 19, no. 11, p. 2223–2231, at <https://doi.org/10.1080/014311698214983>.
- Wulder, M.A., and Boots, B., 2001, Local spatial autocorrelation characteristics of Landsat TM imagery of a managed forest area: *Canadian Journal of Remote Sensing*, v. 27, no. 1, p. 67–75, at <https://doi.org/10.1080/07038992.2001.10854921>.
- Wulder, M.A., Boots, B., Seemann, D., and White, J.C., 2004, Map comparison using spatial autocorrelation—An example using AVHRR derived land cover of Canada: *Canadian Journal of Remote Sensing*, v. 30, no. 4, p. 573–592, at <https://doi.org/10.5589/m04-021>.
- Wulder, M.A., Butson, C.R., and White, J.C., 2008, Cross-sensor change detection over a forested landscape—Options to enable continuity of medium spatial resolution measures: *Remote Sensing of Environment*, v. 112, no. 3, p. 796–809, at <https://doi.org/10.1016/j.rse.2007.06.013>.
- Wulder, M.A., Campbell, C., White, J.C., Flannigan, M., and Campbell, I.D., 2007, National circumstances in the international circumboreal community: *Forestry Chronicle*, v. 83, no. 4, p. 539–556, at <https://doi.org/10.5558/tfc83539-4>.
- Wulder, M.A., Cardille, J.A., White, J.C., and Rayfield, B., 2018, Context and opportunities for expanding protected areas in Canada: *Land*, v. 7, no. 4, article 137, at <https://doi.org/10.3390/land7040137>.
- Wulder, M.A., and Coops, N.C., 2014, Satellites—Make Earth observations open access: *Nature*, v. 513, no. 7516, p. 30–31, at <https://doi.org/10.1038/513030a>.
- Wulder, M.A., Coops, N.C., Hudak, A.T., Morsdorf, F., Nelson, R., Newnham, G., and Vastaranta, M., 2013, Status and prospects for LiDAR remote sensing of forested ecosystems: *Canadian Journal of Remote Sensing*, v. 39, no. Suppl. 1, p. S1–S5, at <https://doi.org/10.5589/m13-051>.
- Wulder, M.A., Coops, N.C., Roy, D.P., White, J.C., and Hermosilla, T., 2018, Land cover 2.0: *International Journal of Remote Sensing*, v. 39, no. 12, p. 4254–4284, at <https://doi.org/10.1080/01431161.2018.1452075>.

- Wulder, M.A., Dechka, J.A., Gillis, M.A., Luther, J.E., Hall, R.J., Beaudoin, A., and Franklin, S.E., 2003, Operational mapping of the land cover of the forested area of Canada with Landsat data—EOSD land cover program: *Forestry Chronicle*, v. 79, no. 6, p. 1075–1083, at <https://doi.org/10.5558/tfc791075-6>.
- Wulder, M.A., Dymond, C.C., White, J.C., Leckie, D.G., and Carroll, A.L., 2006, Surveying mountain pine beetle damage of forests—A review of remote sensing opportunities: *Forest Ecology and Management*, v. 221, no. 1-3, p. 27–41, at <https://doi.org/10.1016/j.foreco.2005.09.021>.
- Wulder, M.A., Fournier, R., Luther, J., and Magnussen, S., 2001, Spatially-explicit landscape level biomass estimation—Issues and an approach for areas where ground data is lacking, *in* 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2233–2235, at <https://doi.org/10.1109/IGARSS.2001.977959>.
- Wulder, M.A., and Franklin, S.E., 2001, Polygon decomposition with remotely sensed data—Rationale methods and applications: *Geomatica*, v. 55, no. 1, p. 11–21, at <https://doi.org/10.5623/geomat-2001-0003>.
- Wulder, M.A., and Franklin, S.E., 2002, Spatial and spectral variability due to Landsat image acquisition date—The impact on image classification, *in* 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 889–892, at <https://doi.org/10.1109/IGARSS.2002.1025719>.
- Wulder, M.A., Franklin, S.E., and Lavigne, M.B., 1996, High Spatial Resolution Optical Image Texture for Improved Estimation of Forest Stand Leaf Area Index: *Canadian Journal of Remote Sensing*, v. 22, no. 4, p. 441–449, at <https://doi.org/10.1080/07038992.1996.10874668>.
- Wulder, M.A., Franklin, S.E., and White, J.C., 2004, Sensitivity of hyperclustering and labelling land cover classes to Landsat image acquisition date: *International Journal of Remote Sensing*, v. 25, no. 23, p. 5337–5344, at <https://doi.org/10.1080/0143116042000192385>.
- Wulder, M.A., Franklin, S.E., White, J.C., Cranny, M.M., and Dechka, J.A., 2004, Erratum—Inclusion of topographic variables in an unsupervised classification of satellite imagery (*Canadian Journal of Remote Sensing* (2004) 30:2 (137-149)): *Canadian Journal of Remote Sensing*, v. 30, no. 6, p. 943–943, at <https://doi.org/10.5589/m04-064>.
- Wulder, M.A., Franklin, S.E., White, J.C., Cranny, M.M., and Dechka, J.A., 2004, Inclusion of topographic variables in an unsupervised classification of satellite imagery: *Canadian Journal of Remote Sensing*, v. 30, no. 2, p. 137–149, at <https://doi.org/10.5589/m03-063>.
- Wulder, M.A., Franklin, S.E., White, J.C., Linke, J., and Magnussen, S., 2006, An accuracy assessment framework for large-area land cover classification products derived from medium-resolution satellite data: *International Journal of Remote Sensing*, v. 27, no. 4, p. 663–683, at <https://doi.org/10.1080/01431160500185284>.
- Wulder, M.A., Hall, R.J., Coops, N.C., and Franklin, S.E., 2004, High spatial resolution remotely sensed data for ecosystem characterization: *BioScience*, v. 54, no. 6, p. 511–521, at [https://doi.org/10.1641/0006-3568\(2004\)054\[0511:HSRRSD\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2004)054[0511:HSRRSD]2.0.CO;2).
- Wulder, M.A., Han, T., White, J.C., Butson, C.R., and Hall, R.J., 2007, An approach for edge matching large-area satellite image classifications: *Canadian Journal of Remote Sensing*, v. 33, no. 1-4, p. 266–277, at <https://doi.org/10.5589/m07-035>.

- Wulder, M.A., Han, T., White, J.C., Sweda, T., and Tsuzuki, H., 2007, Integrating profiling LIDAR with Landsat data for regional boreal forest canopy attribute estimation and change characterization: *Remote Sensing of Environment*, v. 110, no. 1, p. 123–137, at <https://doi.org/10.1016/j.rse.2007.02.002>.
- Wulder, M.A., Hermosilla, T., White, J.C., and Coops, N.C., 2020, Biomass status and dynamics over Canada's forests—Disentangling disturbed area from associated aboveground biomass consequences: *Environmental Research Letters*, v. 15, no. 9, article 094093, at <https://doi.org/10.1088/1748-9326/ab8b11>.
- Wulder, M.A., Hilker, T., White, J.C., Coops, N.C., Masek, J.G., Pflugmacher, D., and Crevier, Y., 2015, Virtual constellations for global terrestrial monitoring: *Remote Sensing of Environment*, v. 170, p. 62–76, at <https://doi.org/10.1016/j.rse.2015.09.001>.
- Wulder, M.A., Kurz, W.A., and Gillis, M., 2004, National level forest monitoring and modeling in Canada: *Progress in Planning*, v. 61, no. 4, p. 365–381, at [https://doi.org/10.1016/S0305-9006\(03\)00069-2](https://doi.org/10.1016/S0305-9006(03)00069-2).
- Wulder, M.A., LeDrew, E.F., Franklin, S.E., and Lavigne, M.B., 1998, Aerial image texture information in the estimation of northern deciduous and mixed wood forest leaf area index (LAI): *Remote Sensing of Environment*, v. 64, no. 1, p. 64–76, at [https://doi.org/10.1016/S0034-4257\(97\)00169-7](https://doi.org/10.1016/S0034-4257(97)00169-7).
- Wulder, M.A., Li, Z., Campbell, E.M., White, J.C., Hobart, G., Hermosilla, T., and Coops, N.C., 2018, A national assessment of wetland status and trends for Canada's forested ecosystems using 33 years of Earth observation satellite data: *Remote Sensing*, v. 10, no. 10, article 1623, at <https://doi.org/10.3390/rs10101623>.
- Wulder, M.A., Loubier, E., and Richardson, D., 2002, Landsat-7 ETM+ orthoimage coverage of Canada: *Canadian Journal of Remote Sensing*, v. 28, no. 5, p. 667–671, at <https://doi.org/10.5589/m02-065>.
- Wulder, M.A., Loveland, T.R., Roy, D.P., Crawford, C.J., Masek, J.G., Woodcock, C.E., Allen, R.G., Anderson, M.C., Belward, A.S., et al., 2019, Current status of Landsat program, science, and applications: *Remote Sensing of Environment*, v. 225, p. 127–147, at <https://doi.org/10.1016/j.rse.2019.02.015>.
- Wulder, M.A., and Masek, J.G., 2012, Preface to Landsat Legacy Special Issue—Continuing the Landsat Legacy: *Remote Sensing of Environment*, v. 122, p. 1–1, at <https://doi.org/10.1016/j.rse.2012.01.009>.
- Wulder, M.A., Masek, J.G., Cohen, W.B., Loveland, T.R., and Woodcock, C.E., 2012, Opening the archive—How free data has enabled the science and monitoring promise of Landsat: *Remote Sensing of Environment*, v. 122, p. 2–10, at <https://doi.org/10.1016/j.rse.2012.01.010>.
- Wulder, M.A., Nelson, T., Niemann, K.O., Seemann, D., Goodenough, D.G., Dyk, A., and Bhogal, A.S., 2001, Individual tree recognition from multiple high spatial resolution image sources, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 771–773, at <https://doi.org/10.1109/IGARSS.2001.976631>.
- Wulder, M.A., Nelson, T.A., Derksen, C., and Seemann, D., 2007, Snow cover variability across central Canada (1978–2002) derived from satellite passive microwave data: *Climatic Change*, v. 82, no. 1–2, p. 113–130, at <https://doi.org/10.1007/s10584-006-9148-9>.

- Wulder, M.A., Nelson, T.A., and Seemann, D., 2007, Using spatial pattern to quantify relationship between samples, surroundings, and populations: *Environmental Monitoring and Assessment*, v. 131, no. 1-3, p. 221–230, at <https://doi.org/10.1007/s10661-006-9470-8>.
- Wulder, M.A., Niemann, K.O., and Goodenough, D.G., 2000, Local maximum filtering for the extraction of tree locations and basal area from high spatial resolution imagery: *Remote Sensing of Environment*, v. 73, no. 1, p. 103–114, at [https://doi.org/10.1016/S0034-4257\(00\)00101-2](https://doi.org/10.1016/S0034-4257(00)00101-2).
- Wulder, M.A., Niemann, K.O., and Goodenough, D.G., 2002, Error reduction methods for local maximum filtering of high spatial resolution imagery for locating trees: *Canadian Journal of Remote Sensing*, v. 28, no. 5, p. 621–628, at <https://doi.org/10.5589/m02-059>.
- Wulder, M.A., Norman, P., and Witte, C., 2003, Special Issue, Lidar remote sensing of forest structure and terrain—Preface: *Canadian Journal of Remote Sensing*, v. 29, no. 5, p. ii–iii, at <https://doi.org/10.5589/m02-914>.
- Wulder, M.A., Ortlepp, S.M., White, J.C., and Coops, N.C., 2008, Impact of sun-surface-sensor geometry upon multitemporal high spatial resolution satellite imagery: *Canadian Journal of Remote Sensing*, v. 34, no. 5, p. 455–461, at <https://doi.org/10.5589/m08-062>.
- Wulder, M.A., Ortlepp, S.M., White, J.C., Coops, N.C., and Coggins, S.B., 2008, Monitoring tree-level insect population dynamics with multi-scale and multi-source remote sensing: *Journal of Spatial Science*, v. 53, no. 1, p. 49–61, at <https://doi.org/10.1080/14498596.2008.9635135>.
- Wulder, M.A., Ortlepp, S.M., White, J.C., Coops, N.C., and Coggins, S.B., 2009, Monitoring the impacts of mountain pine beetle mitigation: *Forest Ecology and Management*, v. 258, no. 7, p. 1181–1187, at <https://doi.org/10.1016/j.foreco.2009.06.008>.
- Wulder, M.A., Ortlepp, S.M., White, J.C., and Maxwell, S.K., 2008, Evaluation of Landsat-7 SLC-off image products for forest change detection: *Canadian Journal of Remote Sensing*, v. 34, no. 1-2, p. 93–99, at <https://doi.org/10.5589/m08-020>.
- Wulder, M.A., Ortlepp, S.M., White, J.C., Nelson, T., and Coops, N.C., 2010, A provincial and regional assessment of the mountain pine beetle epidemic in British Columbia—1999–2008: *Journal of Environmental Informatics*, v. 15, no. 1, p. 1–13, at <https://doi.org/10.3808/jei.201000161>.
- Wulder, M.A., Roy, D.P., Radeloff, V.C., Loveland, T.R., Anderson, M.C., Johnson, D.M., Healey, S., Zhu, Z., Scambos, T.A., et al., 2022, Fifty years of Landsat science and impacts: *Remote Sensing of Environment*, v. 280, article 113195, at <https://doi.org/10.1016/j.rse.2022.113195>.
- Wulder, M.A., and Seemann, D., 2001, Spatially partitioning Canada with the Landsat worldwide referencing system: *Canadian Journal of Remote Sensing*, v. 27, no. 3, p. 225–231, at <https://doi.org/10.1080/07038992.2001.10854939>.
- Wulder, M.A., and Seemann, D., 2003, Forest inventory height update through the integration of lidar data with segmented Landsat imagery: *Canadian Journal of Remote Sensing*, v. 29, no. 5, p. 536–543, at <https://doi.org/10.5589/m03-032>.
- Wulder, M.A., Skakun, R.S., Dymond, C.C., Kurz, W.A., and White, J.C., 2005, Characterization of the diminishing accuracy in detecting forest insect damage over time: *Canadian Journal of Remote Sensing*, v. 31, no. 6, p. 421–431, at <https://doi.org/10.5589/m05-026>.
- Wulder, M.A., Skakun, R.S., Franklin, S.E., and White, J.C., 2005, Enhancing forest inventories with mountain pine beetle infestation information: *Forestry Chronicle*, v. 81, no. 1, p. 149–159, at <https://doi.org/10.5558/tfc81149-1>.

- Wulder, M.A., Skakun, R.S., Kurz, W.A., and White, J.C., 2004, Estimating time since forest harvest using segmented Landsat ETM+ imagery: *Remote Sensing of Environment*, v. 93, no. 1–2, p. 179–187, at <https://doi.org/10.1016/j.rse.2004.07.009>.
- Wulder, M.A., Stewart, B.P., Andrew, M.E., Smulders, M., Nelson, T., Coops, N.C., and Stenhouse, G.B., 2009, Remote sensing derived edge location, magnitude, and class transitions for ecological studies: *Canadian Journal of Remote Sensing*, v. 35, no. 6, p. 509–522, at <https://doi.org/10.5589/m10-007>.
- Wulder, M.A., White, J.C., Alvarez, F., Han, T., Rogan, J., and Hawkes, B., 2009, Characterizing boreal forest wildfire with multi-temporal Landsat and LIDAR data: *Remote Sensing of Environment*, v. 113, no. 7, p. 1540–1555, at <https://doi.org/10.1016/j.rse.2009.03.004>.
- Wulder, M.A., White, J.C., Andrew, M.E., Seitz, N.E., and Coops, N.C., 2009, Forest fragmentation, structure, and age characteristics as a legacy of forest management: *Forest Ecology and Management*, v. 258, no. 9, p. 1938–1949, at <https://doi.org/10.1016/j.foreco.2009.07.041>.
- Wulder, M.A., White, J.C., Bater, C.W., Coops, N.C., Hopkinson, C., and Chen, G., 2012, Lidar plots - a new large-area data collection option—Context, concepts, and case study: *Canadian Journal of Remote Sensing*, v. 38, no. 5, p. 600–618, at <https://doi.org/10.5589/m12-049>.
- Wulder, M.A., White, J.C., Bentz, B., Alvarez, M.F., and Coops, N.C., 2006, Estimating the probability of mountain pine beetle red-attack damage: *Remote Sensing of Environment*, v. 101, no. 2, p. 150–166, at <https://doi.org/10.1016/j.rse.2005.12.010>.
- Wulder, M.A., White, J.C., Bentz, B.J., and Ebata, T., 2006, Augmenting the existing survey hierarchy for mountain pine beetle red-attack damage with satellite remotely sensed data1: *Forestry Chronicle*, v. 82, no. 2, p. 187–202, at <https://doi.org/10.5558/tfc82187-2>.
- Wulder, M.A., White, J.C., Carroll, A.L., and Coops, N.C., 2009, Challenges for the operational detection of mountain pine beetle green attack with remote sensing: *Forestry Chronicle*, v. 85, no. 1, p. 32–38, at <https://doi.org/10.5558/tfc85032-1>.
- Wulder, M.A., White, J.C., and Coops, N.C., 2011, Fragmentation regimes of Canada's forests: *Canadian Geographer*, v. 55, no. 3, p. 288–300, at <https://doi.org/10.1111/j.1541-0064.2010.00335.x>.
- Wulder, M.A., White, J.C., Coops, N.C., and Butson, C.R., 2008, Multi-temporal analysis of high spatial resolution imagery for disturbance monitoring: *Remote Sensing of Environment*, v. 112, no. 6, p. 2729–2740, at <https://doi.org/10.1016/j.rse.2008.01.010>.
- Wulder, M.A., White, J.C., Coops, N.C., Nelson, T., and Boots, B., 2007, Using local spatial autocorrelation to compare outputs from a forest growth model: *Ecological Modelling*, v. 209, no. 2-4, p. 264–276, at <https://doi.org/10.1016/j.ecolmodel.2007.06.033>.
- Wulder, M.A., White, J.C., Coops, N.C., and Ortlepp, S., 2008, Remote sensing for studies of vegetation condition—Theory and application, in Warner, T.A., Nellis, M.D., and Foody, G.M., eds., *The SAGE handbook of remote sensing*: Los Angeles, Calif., SAGE, p. 357–367, at <https://doi.org/10.4135/9780857021052.n25>.
- Wulder, M.A., White, J.C., Cranny, M., Hall, R.J., Luther, J.E., Beaudoin, A., Goodenough, D.G., and Dechka, J.A., 2008, Monitoring Canada's forests. Part 1—Completion of the EOSD land cover project: *Canadian Journal of Remote Sensing*, v. 34, no. 6, p. 549–562, at <https://doi.org/10.5589/m08-066>.

- Wulder, M.A., White, J.C., Fournier, R.A., Luther, J.E., and Magnussen, S., 2008, Spatially explicit large area biomass estimation—Three approaches using forest inventory and remotely sensed imagery in a GIS: *Sensors*, v. 8, no. 1, p. 529–560, at <https://doi.org/10.3390/s8010529>.
- Wulder, M.A., White, J.C., Gillis, M.D., Walsworth, N., Hansen, M.C., and Potapov, P., 2010, Multiscale satellite and spatial information and analysis framework in support of a large-area forest monitoring and inventory update: *Environmental Monitoring and Assessment*, v. 170, no. 1-4, p. 417–433, at <https://doi.org/10.1007/s10661-009-1243-8>.
- Wulder, M.A., White, J.C., Goward, S.N., Masek, J.G., Irons, J.R., Herold, M., Cohen, W.B., Loveland, T.R., and Woodcock, C.E., 2008, Landsat continuity—Issues and opportunities for land cover monitoring: *Remote Sensing of Environment*, v. 112, no. 3, p. 955–969, at <https://doi.org/10.1016/j.rse.2007.07.004>.
- Wulder, M.A., White, J.C., Han, T., Coops, N.C., Cardille, J.A., Holland, T., and Grills, D., 2008, Monitoring Canada's forests. Part 2—National forest fragmentation and pattern: *Canadian Journal of Remote Sensing*, v. 34, no. 6, p. 563–584, at <https://doi.org/10.5589/m08-081>.
- Wulder, M.A., White, J.C., Hay, G.J., and Castilla, G., 2008, Pixels to objects to information—Spatial context to aid in forest characterization with remote sensing, in Blaschke, T., Lang, S., and Hay, G.J., eds., *Object-based image analysis*: Berlin, Germany, Springer, p. 345–363, at https://doi.org/10.1007/978-3-540-77058-9_19.
- Wulder, M.A., White, J.C., Hay, G.J., and Castilla, G., 2008, Towards automated segmentation of forest inventory polygons on high spatial resolution satellite imagery: *Forestry Chronicle*, v. 84, no. 2, p. 221–230, at <https://doi.org/10.5558/tfc84221-2>.
- Wulder, M.A., White, J.C., Loveland, T.R., Woodcock, C.E., Belward, A.S., Cohen, W.B., Fosnight, E.A., Shaw, J., Masek, J.G., and Roy, D.P., 2016, The global Landsat archive—Status, consolidation, and direction: *Remote Sensing of Environment*, v. 185, p. 271–283, at <https://doi.org/10.1016/j.rse.2015.11.032>.
- Wulder, M.A., White, J.C., Luther, J.E., Strickland, G., Rimmel, T.K., and Mitchell, S.W., 2006, Use of vector polygons for the accuracy assessment of pixel-based land cover maps: *Canadian Journal of Remote Sensing*, v. 32, no. 3, p. 268–279, at <https://doi.org/10.5589/m06-023>.
- Wulder, M.A., White, J.C., Magnussen, S., and McDonald, S., 2007, Validation of a large area land cover product using purpose-acquired airborne video: *Remote Sensing of Environment*, v. 106, no. 4, p. 480–491, at <https://doi.org/10.1016/j.rse.2006.09.012>.
- Wulder, M.A., White, J.C., Masek, J.G., Dwyer, J.L., and Roy, D.P., 2011, Continuity of Landsat observations—Short term considerations: *Remote Sensing of Environment*, v. 115, no. 2, p. 747–751, at <https://doi.org/10.1016/j.rse.2010.11.002>.
- Wulder, M.A., White, J.C., Nelson, R.F., Næsset, E., Ørka, H.O., Coops, N.C., Hilker, T., Bater, C.W., and Gobakken, T., 2012, Lidar sampling for large-area forest characterization—A review: *Remote Sensing of Environment*, v. 121, p. 196–209, at <https://doi.org/10.1016/j.rse.2012.02.001>.
- Wulder, M.A., White, J.C., Niemann, K.O., and Nelson, T., 2004, Comparison of airborne and satellite high spatial resolution data for the identification of individual trees with local maxima filtering: *International Journal of Remote Sensing*, v. 25, no. 11, p. 2225–2232, at <https://doi.org/10.1080/01431160310001659252>.

- Wulder, M.A., White, J.C., Stinson, G., Hilker, T., Kurz, W.A., Coops, N.C., St-Onge, B., and Trofymow, J.A., 2010, Implications of differing input data sources and approaches upon forest carbon stock estimation: *Environmental Monitoring and Assessment*, v. 166, no. 1-4, p. 543–561, at <https://doi.org/10.1007/s10661-009-1022-6>.
- Wunderle Jr, J.M., Currie, D., Helmer, E.H., Ewert, D.N., White, J.D., Ruzycski, T.S., Parresol, B., and Kwit, C., 2010, Kirtland's Warblers in anthropogenically disturbed early-successional habitats on Eleuthera, the Bahamas: *Condor*, v. 112, no. 1, p. 123–137, at <https://doi.org/10.1525/cond.2010.090134>.
- Wynne, R.H., 2003, Introduction to the special issue on remote sensing: *Forest Science*, v. 49, no. 3, p. v–vi, at <https://doi.org/10.1093/forestscience/49.3.v>.
- Wynne, R.H., 2006, Lidar remote sensing of forest resources at the scale of management: *Photogrammetric Engineering and Remote Sensing*, v. 72, no. 12, p. 1310–1314, at <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=dd9d5b0a0ca5a733cc8c3a249130e4a94b2473fd>.
- Wynne, R.H., and Carter, D.B., 1997, Will remote sensing live up to its promise for forest management?: *Journal of Forestry*, v. 95, no. 10, p. 23–26, at <https://doi.org/10.1093/jof/95.10.23>.
- Wynne, R.H., Joseph, K.A., Browder, J.O., and Summers, P.M., 2007, Comparing farmer-based and satellite-derived deforestation estimates in the Amazon basin using a hybrid classifier: *International Journal of Remote Sensing*, v. 28, no. 6, p. 1299–1315, at <https://doi.org/10.1080/01431160600928609>.
- Wynne, R.H., Lillesand, T.M., Clayton, M.K., and Magnuson, J.J., 1998, Satellite monitoring of lake ice breakup on Laurentian shield (1980-1994): *Photogrammetric Engineering and Remote Sensing*, v. 64, no. 6, p. 607–617, at https://www.asprs.org/wp-content/uploads/pers/98journal/june/1998_jun_607-617.pdf.
- Wynne, R.H., Magnuson, J.J., Clayton, M.K., Lillesand, T.M., and Rodman, D.C., 1996, Determinants of temporal coherence in the satellite-derived 1987-1994 ice breakup dates of lakes on the Laurentian Shield: *Limnology and Oceanography*, v. 41, no. 5, p. 832–838, at <https://doi.org/10.4319/lo.1996.41.5.0832>.
- Wynne, R.H., and Nelson, R.F., 2006, Foreword—SilviScan Special Issue—Lidar applications in forest assessment and inventory: *Photogrammetric Engineering and Remote Sensing*, v. 72, no. 12, p. 1337–1338.
- Wynne, R.H., Oderwald, R.G., Reams, G.A., and Scriverani, J.A., 2000, Optical remote sensing for forest area estimation: *Journal of Forestry*, v. 98, no. 5, p. 31–36, at <https://doi.org/10.1093/jof/98.5.31>.
- Xi, Y., Liu, H., Johnson, D., Zhu, C., Xiang, J., and Huang, Y., 2019, Selenium enhances *Conyza canadensis* phytoremediation of polycyclic aromatic hydrocarbons in soil: *Journal of Soils and Sediments*, v. 19, no. 6, p. 2823–2835, at <https://doi.org/10.1007/s11368-019-02274-x>.
- Xia, T., Kustas, W.P., Anderson, M.C., Alfieri, J.G., Gao, F., McKee, L., Prueger, J.H., Geli, H.M.E., Neale, C.M.U., et al., 2016, Mapping evapotranspiration with high-resolution aircraft imagery over vineyards using one-and two-source modeling schemes: *Hydrology and Earth System Sciences*, v. 20, no. 4, p. 1523–1545, at <https://doi.org/10.5194/hess-20-1523-2016>.
- Xian, G.Z., Loveland, T., Munson, S.M., Vogelmann, J.E., Zeng, X., and Homer, C.J., 2020, Climate sensitivity to decadal land cover and land use change across the conterminous United States:

- Global and Planetary Change, v. 192, article 103262, at <https://doi.org/10.1016/j.gloplacha.2020.103262>.
- Xian, G.Z., Smith, K., Wellington, D., Horton, J., Zhou, Q., Li, C., Auch, R., Brown, J.F., Zhu, Z., and Reker, R.R., 2022, Implementation of the CCDC algorithm to produce the LCMAP Collection 1.0 annual land surface change product: Earth System Science Data, v. 14, no. 1, p. 143–162, at <https://doi.org/10.5194/essd-14-143-2022>.
- Xiao, Q., Wang, Y., Chang, H.H., Meng, X., Geng, G., Lyapustin, A.I., and Liu, Y., 2017, Full-coverage high-resolution daily PM_{2.5} estimation using MAIAC AOD in the Yangtze River Delta of China: Remote Sensing of Environment, v. 199, p. 437–446, at <https://doi.org/10.1016/j.rse.2017.07.023>.
- Xiao, Q.G., Chen, W.Y., Sheng, Y.W., and Guo, L., 1996, Estimating the net primary productivity in China using meteorological satellite data: Acta Botanica Sinica, v. 38, no. 1, p. 35–39.
- Xie, D., Gao, F., and Li, L., 2018, Assessment of predictive ability of Starfm based on different MODIS-Landsat image pair date, in 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22–27 July 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 7247–7250, at <https://doi.org/10.1109/IGARSS.2018.8517833>.
- Xie, D., Gao, F., Sun, L., and Anderson, M.C., 2018, Improving spatial-temporal data fusion by choosing optimal input image pairs: Remote Sensing, v. 10, no. 7, article 1142, at <https://doi.org/10.3390/rs10071142>.
- Xie, X., Xiong, X., Wolfe, R., and Lyapustin, A.I., 2006, Improvement of MODIS RSB calibration by minimizing the earthshine impact on solar diffuser observations, in Earth Observing Systems XI, San Diego, Calif., 14–16 August 2006, Proceedings of SPIE Vol. 6296: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 629608, at <https://doi.org/10.1117/12.679081>.
- Xin, Q., Olofsson, P., Zhu, Z., Tan, B., and Woodcock, C.E., 2013, Toward near real-time monitoring of forest disturbance by fusion of MODIS and Landsat data: Remote Sensing of Environment, v. 135, p. 234–247, at <https://doi.org/10.1016/j.rse.2013.04.002>.
- Xin, Q., Woodcock, C.E., Liu, J., Tan, B., Melloh, R.A., and Davis, R.E., 2012, View angle effects on MODIS snow mapping in forests: Remote Sensing of Environment, v. 118, p. 50–59, at <https://doi.org/10.1016/j.rse.2011.10.029>.
- Xin, X., Liu, B., Di, K., Zhu, Z., Zhao, Z., Liu, J., Yue, Z., and Zhang, G., 2017, Monitoring urban expansion using time series of night-time light data—A case study in Wuhan, China: International Journal of Remote Sensing, v. 38, no. 21, p. 6110–6128, at <https://doi.org/10.1080/01431161.2017.1312623>.
- Xin, Y., Sun, L., and Hansen, M.C., 2021, Biophysical and socioeconomic drivers of oil palm expansion in Indonesia: Environmental Research Letters, v. 16, no. 3, article 034048, at <https://doi.org/10.1088/1748-9326/abce83>.
- Xin, Y., Sun, L., and Hansen, M.C., 2022, Oil palm reconciliation in Indonesia—Balancing rising demand and environmental conservation towards 2050: Journal of Cleaner Production, v. 380, article 135087, at <https://doi.org/10.1016/j.jclepro.2022.135087>.
- Xiong, J., Thenkabail, P.S., Gumma, M.K., Teluguntla, P., Poehnelt, J., Congalton, R.G., Yadav, K., and Thau, D., 2017, Automated cropland mapping of continental Africa using Google Earth Engine cloud

- computing: ISPRS Journal of Photogrammetry and Remote Sensing, v. 126, p. 225–244, at <https://doi.org/10.1016/j.isprsjprs.2017.01.019>.
- Xiong, J., Thenkabail, P.S., Tilton, J.C., Gumma, M.K., Teluguntla, P., Oliphant, A., Congalton, R.G., Yadav, K., and Gorelick, N.S., 2017, Nominal 30-m cropland extent map of continental Africa by integrating pixel-based and object-based algorithms using Sentinel-2 and Landsat-8 data on Google Earth Engine: Remote Sensing, v. 9, no. 10, article 1065, at <https://doi.org/10.3390/rs9101065>.
- Xiong, X., Wolfe, R., Barnes, W., Guenther, B., Vermote, E.F., Saleous, N., and Salomonson, V., 2011, Terra and aqua MODIS design, radiometry, and geometry in support of land remote sensing, *in* Ramachandran, B., Justice, C.O., and Abrams, M.J., eds., Land remote sensing and global environmental change: New York, N.Y., Springer, p. 133–164, at https://doi.org/10.1007/978-1-4419-6749-7_7.
- Xu, C., Hystad, P., Chen, R., Van Den Hoek, J., Hutchinson, R.A., Hankey, S., and Kennedy, R., 2021, Application of training data affects success in broad-scale local climate zone mapping: International Journal of Applied Earth Observation and Geoinformation, v. 103, article 102482, at <https://doi.org/10.1016/j.jag.2021.102482>.
- Xu, L., Myneni, R.B., Chapin, F.S., Callaghan, T.V., Pinzon, J.E., Tucker, C.J., Zhu, Z., Bi, J., Ciais, P., et al., 2013, Temperature and vegetation seasonality diminishment over northern lands: Nature Climate Change, v. 3, no. 6, p. 581–586, at <https://doi.org/10.1038/nclimate1836>.
- Xu, L., Samanta, A., Costa, M.H., Ganguly, S., Nemani, R.R., and Myneni, R.B., 2011, Widespread decline in greenness of Amazonian vegetation due to the 2010 drought: Geophysical Research Letters, v. 38, no. 7, article L07402, at <https://doi.org/10.1029/2011GL046824>.
- Xu, S., Zhu, X., Helmer, E.H., Tan, X., Tian, J., and Chen, X., 2021, The damage of urban vegetation from super typhoon is associated with landscape factors—Evidence from Sentinel-2 imagery: International Journal of Applied Earth Observation and Geoinformation, v. 104, article 102536, at <https://doi.org/10.1016/j.jag.2021.102536>.
- Xu, Y., Gao, F., and Jiang, X., 2018, Enhancement of measurement accuracy of optical stereo deflectometry based on imaging model analysis: Optics and Lasers in Engineering, v. 111, p. 1–7, at <https://doi.org/10.1016/j.optlaseng.2018.07.007>.
- Xu, Y., Gao, F., Zhang, Z., and Jiang, X., 2018, A holistic calibration method with iterative distortion compensation for stereo deflectometry: Optics and Lasers in Engineering, v. 106, p. 111–118, at <https://doi.org/10.1016/j.optlaseng.2018.02.018>.
- Xu, Y., Gao, F., Zhang, Z., and Jiang, X., 2019, A calibration method for non-overlapping cameras based on mirrored absolute phase target: International Journal of Advanced Manufacturing Technology, v. 104, no. 1–4, p. 9–15, at <https://doi.org/10.1007/s00170-018-1704-8>.
- Xue, J., Anderson, M.C., Gao, F., Hain, C., Sun, L., Yang, Y., Knipper, K.R., Kustas, W.P., Torres-Rua, A., and Schull, M., 2020, Sharpening ECOSTRESS and VIIRS land surface temperature using harmonized Landsat-Sentinel surface reflectances: Remote Sensing of Environment, v. 251, article 112055, at <https://doi.org/10.1016/j.rse.2020.112055>.
- Yan, K., Li, H., Song, W., Tong, Y., Hao, D., Zeng, Y., Mu, X., Yan, G., Fang, Y., et al., 2022, Extending a linear kernel-driven BRDF model to realistically simulate reflectance anisotropy over rugged terrain: IEEE Transactions on Geoscience and Remote Sensing, v. 60, article 4401816, at <https://doi.org/10.1109/TGRS.2021.3064018>.

- Yan, K., Park, T., Yan, G., Chen, C., Yang, B., Liu, Z., Nemani, R.R., Knyazikhin, Y., and Myneni, R.B., 2016, Evaluation of MODIS LAI/FPAR product collection 6. Part 1—Consistency and improvements: *Remote Sensing*, v. 8, no. 5, article 359, at <https://doi.org/10.3390/rs8050359>.
- Yan, K., Park, T., Yan, G., Liu, Z., Yang, B., Chen, C., Nemani, R.R., Knyazikhin, Y., and Myneni, R.B., 2016, Evaluation of MODIS LAI/FPAR product collection 6. Part 2—Validation and intercomparison: *Remote Sensing*, v. 8, no. 6, article 460, at <https://doi.org/10.3390/rs8060460>.
- Yan, L., and Roy, D.P., 2014, Automated crop field extraction from multi-temporal Web Enabled Landsat Data: *Remote Sensing of Environment*, v. 144, p. 42–64, at <https://doi.org/10.1016/j.rse.2014.01.006>.
- Yan, L., and Roy, D.P., 2015, Improved time series land cover classification by missing-observation-adaptive nonlinear dimensionality reduction: *Remote Sensing of Environment*, v. 158, p. 478–491, at <https://doi.org/10.1016/j.rse.2014.11.024>.
- Yan, L., and Roy, D.P., 2016, Conterminous United States crop field size quantification from multi-temporal Landsat data: *Remote Sensing of Environment*, v. 172, p. 67–86, at <https://doi.org/10.1016/j.rse.2015.10.034>.
- Yan, L., and Roy, D.P., 2018, Large-area gap filling of Landsat reflectance time series by spectral-angle-mapper based spatio-temporal similarity (SAMSTS): *Remote Sensing*, v. 10, no. 4, article 609, at <https://doi.org/10.3390/rs10040609>.
- Yan, L., and Roy, D.P., 2020, Spatially and temporally complete Landsat reflectance time series modelling—The fill-and-fit approach: *Remote Sensing of Environment*, v. 241, article 111718, at <https://doi.org/10.1016/j.rse.2020.111718>.
- Yan, L., and Roy, D.P., 2021, Improving Landsat Multispectral Scanner (MSS) geolocation by least-squares-adjustment based time-series co-registration: *Remote Sensing of Environment*, v. 252, article 112181, at <https://doi.org/10.1016/j.rse.2020.112181>.
- Yan, L., Roy, D.P., Li, Z., Zhang, H.K., and Huang, H., 2018, Sentinel-2A multi-temporal misregistration characterization and an orbit-based sub-pixel registration methodology: *Remote Sensing of Environment*, v. 215, p. 495–506, at <https://doi.org/10.1016/j.rse.2018.04.021>.
- Yan, L., Roy, D.P., Promkhambut, A., Fox, J., and Zhai, Y., 2022, Automated extraction of aquaculture ponds from Sentinel-2 seasonal imagery—A validated case study in central Thailand: *Science of Remote Sensing*, v. 6, article 100063, at <https://doi.org/10.1016/j.srs.2022.100063>.
- Yan, L., Roy, D.P., Zhang, H., Li, J., and Huang, H., 2016, An automated approach for sub-pixel registration of Landsat-8 Operational Land Imager (OLI) and Sentinel-2 Multi Spectral Instrument (MSI) imagery: *Remote Sensing*, v. 8, no. 6, article 520, at <https://doi.org/10.3390/rs8060520>.
- Yang, F., Ichii, K., White, M.A., Hashimoto, H., Michaelis, A.R., Votava, P., Zhu, A.X., Huete, A., Running, S.W., and Nemani, R.R., 2007, Developing a continental-scale measure of gross primary production by combining MODIS and AmeriFlux data through Support Vector Machine approach: *Remote Sensing of Environment*, v. 110, no. 1, p. 109–122, at <https://doi.org/10.1016/j.rse.2007.02.016>.
- Yang, F., White, M.A., Michaelis, A.R., Ichii, K., Hashimoto, H., Votava, P., Zhu, A.X., and Nemani, R.R., 2006, Prediction of continental-scale evapotranspiration by combining MODIS and AmeriFlux data through support vector machine: *IEEE Transactions on Geoscience and Remote Sensing*, v. 44, no. 11, p. 3452–3461, at <https://doi.org/10.1109/TGRS.2006.876297>.

- Yang, F., Zhu, A.X., Ichii, K., White, M.A., Hashimoto, H., and Nemani, R.R., 2008, Assessing the representativeness of the AmeriFlux network using MODIS and GOES data: *Journal of Geophysical Research Biogeosciences*, v. 113, no. 4, article G04036, at <https://doi.org/10.1029/2007JG000627>.
- Yang, G., Weng, Q., Pu, R., Gao, F., Sun, C., Li, H., and Zhao, C., 2016, Evaluation of ASTER-like daily land surface temperature by fusing ASTER and MODIS data during the HiWATER-MUSOEXE: *Remote Sensing*, v. 8, no. 1, article 75, at <https://doi.org/10.3390/rs8010075>.
- Yang, K., Fleig, A.J., Vermote, E.F., and Desclotres, J., 1999, Simulating observations from the MODIS instrument with variable surface and atmospheric conditions, *in* 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Hamburg, Germany, 28 June–2 July 1999, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1328–1331, at <https://doi.org/10.1109/IGARSS.1999.774620>.
- Yang, S.I., Brandeis, T.J., Helmer, E.H., Oatham, M.P., Heartsill-Scalley, T., and Marcano-Vega, H., 2022, Characterizing height-diameter relationships for Caribbean trees using mixed-effects random forest algorithm: *Forest Ecology and Management*, v. 524, article 120507, at <https://doi.org/10.1016/j.foreco.2022.120507>.
- Yang, W., Huang, D., Tan, B., Stroeve, J.C., Shabanov, N.V., Knyazikhin, Y., Nemani, R.R., and Myneni, R.B., 2006, Analysis of leaf area index and fraction of PAR absorbed by vegetation products from the terra MODIS sensor—2000-2005: *IEEE Transactions on Geoscience and Remote Sensing*, v. 44, no. 7, p. 1829–1841, at <https://doi.org/10.1109/TGRS.2006.871214>.
- Yang, W., Shabanov, N.V., Huang, D., Wang, W., Dickinson, R.E., Nemani, R.R., Knyazikhin, Y., and Myneni, R.B., 2006, Analysis of leaf area index products from combination of MODIS Terra and Aqua data: *Remote Sensing of Environment*, v. 104, no. 3, p. 297–312, at <https://doi.org/10.1016/j.rse.2006.04.016>.
- Yang, W., Tan, B., Huang, D., Rautiainen, M., Shabanov, N.V., Wang, Y., Privette, J.L., Huemmrich, K.F., Fensholt, R., et al., 2006, MODIS leaf area index products—From validation to algorithm improvement: *IEEE Transactions on Geoscience and Remote Sensing*, v. 44, no. 7, p. 1885–1896, at <https://doi.org/10.1109/TGRS.2006.871215>.
- Yang, X., Qin, Q., Yésou, H., Ledauphin, T., Koehl, M., Grussenmeyer, P., and Zhu, Z., 2020, Monthly estimation of the surface water extent in France at a 10-m resolution using Sentinel-2 data: *Remote Sensing of Environment*, v. 244, article 111803, at <https://doi.org/10.1016/j.rse.2020.111803>.
- Yang, X., Qiu, S., Zhu, Z., Rittenhouse, C., Riordan, D., and Cullerton, M., 2023, Mapping understory plant communities in deciduous forests from Sentinel-2 time series: *Remote Sensing of Environment*, v. 293, at <https://doi.org/10.1016/j.rse.2023.113601>.
- Yang, X., Schaaf, C.B., Strahler, A., Kunz, T., Fuller, N., Betke, M., Wu, Z., Wang, Z., Theriault, D., et al., 2013, Study of bat flight behavior by combining thermal image analysis with a LiDAR forest reconstruction: *Canadian Journal of Remote Sensing*, v. 39, no. Suppl. 1, p. S112–S125, at <https://doi.org/10.5589/m13-034>.
- Yang, X., Schaaf, C.B., Strahler, A., Li, Z., Wang, Z., Yao, T., Zhao, F., Saenz, E., Paynter, I., et al., 2013, Studying canopy structure through 3-D reconstruction of point clouds from full-waveform terrestrial lidar, *in* 2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS),

- Melbourne, Australia, 21–26 July 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3375–3378, at <https://doi.org/10.1109/IGARSS.2013.6723552>.
- Yang, X., Strahler, A.H., Schaaf, C.B., Jupp, D.L.B., Yao, T., Zhao, F., Wang, Z., Culvenor, D.S., Newnham, G.J., et al., 2013, Three-dimensional forest reconstruction and structural parameter retrievals using a terrestrial full-waveform lidar instrument (Echidna®): *Remote Sensing of Environment*, v. 135, p. 36–51, at <https://doi.org/10.1016/j.rse.2013.03.020>.
- Yang, X., Zhu, Z., Qiu, S., Kroeger, K.D., Zhu, Z., and Covington, S., 2022, Detection and characterization of coastal tidal wetland change in the northeastern US using Landsat time series: *Remote Sensing of Environment*, v. 276, article 113047, at <https://doi.org/10.1016/j.rse.2022.113047>.
- Yang, Y., Anderson, M., Gao, F., Hain, C., Noormets, A., Sun, G., Wynne, R., Thomas, V., and Sun, L., 2020, Investigating impacts of drought and disturbance on evapotranspiration over a forested landscape in North Carolina, USA using high spatiotemporal resolution remotely sensed data: *Remote Sensing of Environment*, v. 238, article 111018, at <https://doi.org/10.1016/j.rse.2018.12.017>.
- Yang, Y., Anderson, M., Gao, F., Hain, C., Wood, J., and Gu, L., 2019, Using daily stand-scale evapotranspiration (ET) estimated from remotely sensed data to investigate drought impact on ET in a temperate forest in the central US, *in* 2019 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Yokohama, Japan, 28 July–2 August 2019, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6035–6038, at <https://doi.org/10.1109/IGARSS.2019.8898301>.
- Yang, Y., Anderson, M., Gao, F., Xue, J., Knipper, K., and Hain, C., 2022, Improved daily evapotranspiration estimation using remotely sensed data in a data fusion system: *Remote Sensing*, v. 14, no. 8, article 1772, at <https://doi.org/10.3390/rs14081772>.
- Yang, Y., Anderson, M.C., Gao, F., Hain, C., Kustas, W., Meyers, T., Crow, W., Finocchiaro, R., Otkin, J., et al., 2017, Impact of tile drainage on evapotranspiration in South Dakota, USA, based on high spatiotemporal resolution evapotranspiration time series from a multisatellite data fusion system: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 10, p. 2550–2564, at <https://doi.org/10.1109/JSTARS.2017.2680411>.
- Yang, Y., Anderson, M.C., Gao, F., Hain, C.R., Semmens, K.A., Kustas, W.P., Noormets, A., Wynne, R.H., Thomas, V.A., and Sun, G., 2017, Daily Landsat-scale evapotranspiration estimation over a forested landscape in North Carolina, USA, using multi-satellite data fusion: *Hydrology and Earth System Sciences*, v. 21, no. 2, p. 1017–1037, at <https://doi.org/10.5194/hess-21-1017-2017>.
- Yang, Y., Anderson, M.C., Gao, F., Johnson, D.M., Yang, Y., Sun, L., Dulaney, W., Hain, C.R., Otkin, J.A., et al., 2021, Phenological corrections to a field-scale, ET-based crop stress indicator—An application to yield forecasting across the U.S. Corn Belt: *Remote Sensing of Environment*, v. 257, article 112337, at <https://doi.org/10.1016/j.rse.2021.112337>.
- Yang, Y., Anderson, M.C., Gao, F., Kustas, W.P., Hain, C., Meyers, T., Wilson, T., Sun, L., and Yang, Y., 2016, Longterm daily fieldscale evapotranspiration estimation using multisatellite data fusion in an intensively drained agricultural area in South Dakota, USA, *in* 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 3547–3550, at <https://doi.org/10.1109/IGARSS.2016.7729918>.

- Yang, Y., Anderson, M.C., Gao, F., Wardlow, B., Hain, C.R., Otkin, J.A., Alfieri, J., Yang, Y., Sun, L., and Dulaney, W., 2018, Field-scale mapping of evaporative stress indicators of crop yield—An application over Mead, NE, USA: *Remote Sensing of Environment*, v. 210, p. 387–402, at <https://doi.org/10.1016/j.rse.2018.02.020>.
- Yang, Y., Anderson, M.C., Gao, F., Wood, J.D., Gu, L., and Hain, C., 2021, Studying drought-induced forest mortality using high spatiotemporal resolution evapotranspiration data from thermal satellite imaging: *Remote Sensing of Environment*, v. 265, article 112640, at <https://doi.org/10.1016/j.rse.2021.112640>.
- Yang, Y., Anderson, M.C., Gao, F., Yang, Y., and Sun, L., 2016, Study of water use in agricultural landscapes at high spatiotemporal resolution, *in* 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 7172–7175, at <https://doi.org/10.1109/IGARSS.2016.7730871>.
- Yang, Y., Marshak, A., Mao, J., Lyapustin, A.I., and Herman, J., 2013, A method of retrieving cloud top height and cloud geometrical thickness with oxygen A and B bands for the Deep Space Climate Observatory (DSCOVR) mission—Radiative transfer simulations: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 122, p. 141–149, at <https://doi.org/10.1016/j.jqsrt.2012.09.017>.
- Yang, Y., Marshak, A., Palm, S.P., Wang, Z., and Schaaf, C.B., 2013, Assessment of cloud screening with apparent surface reflectance in support of the ICESat-2 mission: *IEEE Transactions on Geoscience and Remote Sensing*, v. 51, no. 2, p. 1037–1045, at <https://doi.org/10.1109/TGRS.2012.2204066>.
- Yang, Y., Saatchi, S.S., Xu, L., Yu, Y., Choi, S., Phillips, N., Kennedy, R.E., Keller, M., Knyazikhin, Y., and Myneni, R.B., 2018, Post-drought decline of the Amazon carbon sink: *Nature Communications*, v. 9, no. 1, article 3172, at <https://doi.org/10.1038/s41467-018-05668-6>.
- Yang, Z., Cohen, W.B., and Harmon, M.E., 2005, Modeling early forest succession following clear-cutting in western Oregon: *Canadian Journal of Forest Research*, v. 35, no. 8, p. 1889–1900, at <https://doi.org/10.1139/x05-132>.
- Yao, T., Xue, Y., Chen, D., Chen, F., Thompson, L., Cui, P., Koike, T., Lau, W.K.M., Lettenmaier, D., et al., 2019, Recent third pole's rapid warming accompanies cryospheric melt and water cycle intensification and interactions between monsoon and environment—Multidisciplinary approach with observations, modeling, and analysis: *Bulletin of the American Meteorological Society*, v. 100, no. 3, p. 423–444, at <https://doi.org/10.1175/BAMS-D-17-0057.1>.
- Yao, T., Yang, X., Zhao, F., Wang, Z., Zhang, Q., Jupp, D., Lovell, J., Culvenor, D., Newnham, G., et al., 2011, Measuring forest structure and biomass in New England forest stands using Echidna ground-based lidar: *Remote Sensing of Environment*, v. 115, no. 11, p. 2965–2974, at <https://doi.org/10.1016/j.rse.2010.03.019>.
- Yarahmadi, M., Thome, K.J., Wenny, B.N., Czapla-Myers, J., Tahersima, M., Voskanian, N., and Eftekhazadeh, S., 2023, Intercomparison of Landsat OLI and Terra ASTER solar reflective calibrations using the Radiometric Calibration Network data from Railroad Valley, Nevada, *in* Earth Observing Systems XXVIII, San Diego, Calif., 22–24 August 2023, Proceedings of SPIE Vol. 12685: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 1268515, at <https://doi.org/10.1117/12.2677409>.

- Yazdi, M.D., Kuang, Z., Dimakopoulou, K., Barratt, B., Suel, E., Amini, H., Lyapustin, A., Katsouyanni, K., and Schwartz, J., 2020, Predicting fine particulate matter (PM_{2.5}) in the greater london area—An ensemble approach using machine learning methods: *Remote Sensing*, v. 12, no. 6, article 914, at <https://doi.org/10.3390/rs12060914>.
- Ye, S., Rogan, J., Zhu, Z., and Eastman, J.R., 2021, A near-real-time approach for monitoring forest disturbance using Landsat time series—Stochastic continuous change detection: *Remote Sensing of Environment*, v. 252, article 112167, at <https://doi.org/10.1016/j.rse.2020.112167>.
- Ye, S., Rogan, J., Zhu, Z., Hawbaker, T.J., Hart, S.J., Andrus, R.A., Meddens, A.J.H., Hicke, J.A., Eastman, J.R., and Kulakowski, D., 2021, Detecting subtle change from dense Landsat time series—Case studies of mountain pine beetle and spruce beetle disturbance: *Remote Sensing of Environment*, v. 263, article 112560, at <https://doi.org/10.1016/j.rse.2021.112560>.
- Ye, S., Zhu, Z., and Cao, G., 2023, Object-based continuous monitoring of land disturbances from dense Landsat time series: *Remote Sensing of Environment*, v. 287, article 113462, at <https://doi.org/10.1016/j.rse.2023.113462>.
- Ye, X., Arab, P., Ahmadov, R., James, E., Grell, G.A., Pierce, B., Kumar, A., Makar, P., Chen, J., et al., 2021, Evaluation and intercomparison of wildfire smoke forecasts from multiple modeling systems for the 2019 Williams Flats fire: *Atmospheric Chemistry and Physics*, v. 21, no. 18, p. 14427–14469, at <https://doi.org/10.5194/acp-21-14427-2021>.
- Yeo, I.Y., Lang, M., and Vermote, E.F., 2013, Improved understanding of suspended sediment transport process using multi-temporal Landsat data—A case study from the Old Woman Creek Estuary (Ohio): *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 7, no. 2, p. 636–647, at <https://doi.org/10.1109/JSTARS.2013.2265191>.
- Yi, B., Yang, P., Baum, B.A., L'Ecuyer, T., Oreopoulos, L., Mlawer, E.J., Heymsfield, A.J., and Liou, K.N., 2013, Influence of ice particle surface roughening on the global cloud radiative effect: *Journal of the Atmospheric Sciences*, v. 70, no. 9, p. 2794–2807, at <https://doi.org/10.1175/JAS-D-13-020.1>.
- Yi, Y., Kimball, J.S., Jones, L.A., Reichle, R.H., Nemani, R.R., and Margolis, H.A., 2013, Recent climate and fire disturbance impacts on boreal and arctic ecosystem productivity estimated using a satellite-based terrestrial carbon flux model: *Journal of Geophysical Research Biogeosciences*, v. 118, no. 2, p. 606–622, at <https://doi.org/10.1002/jgrg.20053>.
- Yilmaz, M.T., Anderson, M.C., Zaitchik, B., Hain, C.R., Crow, W.T., Ozdogan, M., Chun, J.A., and Evans, J., 2014, Comparison of prognostic and diagnostic surface flux modeling approaches over the Nile River Basin: *Water Resources Research*, v. 50, no. 1, p. 386–408, at <https://doi.org/10.1002/2013WR014194>.
- Yilmaz, M.T., Crow, W.T., Anderson, M.C., and Hain, C., 2012, An objective methodology for merging satellite- and model-based soil moisture products: *Water Resources Research*, v. 48, no. 11, article W11502, at <https://doi.org/10.1029/2011WR011682>.
- Yin, H., Brandão, A., Jr., Buchner, J., Helmers, D., Iuliano, B.G., Kimambo, N.E., Lewińska, K.E., Razenkova, E., Rizayeva, A., et al., 2020, Monitoring cropland abandonment with Landsat time series: *Remote Sensing of Environment*, v. 246, article 111873, at <https://doi.org/10.1016/j.rse.2020.111873>.
- Yin, H., Butsic, V., Buchner, J., Kuemmerle, T., Prishchepov, A.V., Baumann, M., Bragina, E.V., Sayadyan, H., and Radeloff, V.C., 2019, Agricultural abandonment and re-cultivation during and after the

- Chechen Wars in the northern Caucasus: *Global Environmental Change*, v. 55, p. 149–159, at <https://doi.org/10.1016/j.gloenvcha.2019.01.005>.
- Yin, H., Pflugmacher, D., Kennedy, R.E., Sulla-Menashe, D., and Hostert, P., 2014, Mapping annual land use and land cover changes using MODIS time series: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 7, no. 8, p. 3421–3427, at <https://doi.org/10.1109/JSTARS.2014.2348411>.
- Yin, H., Pflugmacher, D., Li, A., Li, Z., and Hostert, P., 2017, Land use and land cover change in Inner Mongolia - understanding the effects of China's re-vegetation programs: *Remote Sensing of Environment*, v. 204, p. 918–930, at <https://doi.org/10.1016/j.rse.2017.08.030>.
- Yin, H., Prishchepov, A.V., Kuemmerle, T., Bleyhl, B., Buchner, J., and Radeloff, V.C., 2018, Mapping agricultural land abandonment from spatial and temporal segmentation of Landsat time series: *Remote Sensing of Environment*, v. 210, p. 12–24, at <https://doi.org/10.1016/j.rse.2018.02.050>.
- Yin, H., Tan, B., Frantz, D., and Radeloff, V.C., 2022, Integrated topographic corrections improve forest mapping using Landsat imagery: *International Journal of Applied Earth Observation and Geoinformation*, v. 108, article 102716, at <https://doi.org/10.1016/j.jag.2022.102716>.
- Yin, H., Udelhoven, T., Fensholt, R., Pflugmacher, D., and Hostert, P., 2012, How normalized difference vegetation index (NDVI) trends from advanced very high resolution radiometer (AVHRR) and système probatoire d'observation de la terre vegetation (SPOT VGT) time series differ in agricultural areas—An inner mongolian case study: *Remote Sensing*, v. 4, no. 11, p. 3364–3389, at <https://doi.org/10.3390/rs4113364>.
- Yin, J., Zhan, X., Hain, C.R., Liu, J., and Anderson, M.C., 2018, A method for objectively integrating soil moisture satellite observations and model simulations toward a blended drought index: *Water Resources Research*, v. 54, no. 9, p. 6772–6791, at <https://doi.org/10.1029/2017WR021959>.
- Ying, Q., Hansen, M.C., Potapov, P.V., Tyukavina, A., Wang, L., Stehman, S.V., Moore, R., and Hancher, M., 2017, Global bare ground gain from 2000 to 2012 using Landsat imagery: *Remote Sensing of Environment*, v. 194, p. 161–176, at <https://doi.org/10.1016/j.rse.2017.03.022>.
- Ying, Q., Hansen, M.C., Sun, L., Wang, L., and Steininger, M., 2019, Satellite-detected gain in built-up area as a leading economic indicator: *Environmental Research Letters*, v. 14, no. 11, article 114015, at <https://doi.org/10.1088/1748-9326/ab443e>.
- Yoshida, M., Murakami, H., Mitomi, Y., Hori, M., Thome, K.J., Clark, D.K., and Fukushima, H., 2005, Vicarious calibration of GLI by ground observation data: *IEEE Transactions on Geoscience and Remote Sensing*, v. 43, no. 10, p. 2167–2175, at <https://doi.org/10.1109/TGRS.2005.856113>.
- Yoshida, Y., Joiner, J., Tucker, C., Berry, J., Lee, J.E., Walker, G., Reichle, R., Koster, R., Lyapustin, A.I., and Wang, Y., 2015, The 2010 Russian drought impact on satellite measurements of solar-induced chlorophyll fluorescence—Insights from modeling and comparisons with parameters derived from satellite reflectances: *Remote Sensing of Environment*, v. 166, p. 163–177, at <https://doi.org/10.1016/j.rse.2015.06.008>.
- Younes, N., Northfield, T.D., Joyce, K.E., Maier, S.W., Duke, N.C., and Lymburner, L., 2020, A novel approach to modelling mangrove phenology from satellite images—A case study from Northern Australia: *Remote Sensing*, v. 12, no. 24, article 4008, at <https://doi.org/10.3390/rs12244008>.

- Yu, L., Ball, S.B., Blinn, C.E., Moeltner, K., Peery, S., Thomas, V.A., and Wynne, R.H., 2015, Cloud-sourcing—Using an online labor force to detect clouds and cloud shadows in Landsat images: *Remote Sensing*, v. 7, no. 3, p. 2334–2351, at <https://doi.org/10.3390/rs70302334>.
- Yu, Y., Saatchi, S., Domke, G.M., Walters, B., Woodall, C., Ganguly, S., Li, S., Kalia, S., Park, T., et al., 2022, Making the US national forest inventory spatially contiguous and temporally consistent: *Environmental Research Letters*, v. 17, no. 6, article 065002, at <https://doi.org/10.1088/1748-9326/ac6b47>.
- Yuan, F., Sheng, Y., Yao, T., Fan, C., Li, J., Zhao, H., and Lei, Y., 2011, Evaporative enrichment of oxygen-18 and deuterium in lake waters on the Tibetan Plateau: *Journal of Paleolimnology*, v. 46, no. 2, p. 291–307, at <https://doi.org/10.1007/s10933-011-9540-y>.
- Yuan, K., Thome, K.J., and McCorkel, J.T., 2015, Radiometric cross-calibration of Terra ASTER and MODIS, *in* *Earth Observing Systems XX*, San Diego, Calif., 9–13 August 2015, Proceedings of SPIE Vol. 9607: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), paper no. 960724, at <https://doi.org/10.1117/12.2185539>.
- Yuan, T., Lee, H., Yu, H., Jung, H.C., Madson, A., Sheng, Y., and Beighley, E., 2019, Mapping forested floodplain topography using insar and radar altimetry: *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, v. 12, no. 12, p. 5189–5198, at <https://doi.org/10.1109/JSTARS.2019.2956400>.
- Yuan, T., and Oreopoulos, L., 2013, On the global character of overlap between low and high clouds: *Geophysical Research Letters*, v. 40, no. 19, p. 5320–5326, at <https://doi.org/10.1002/grl.50871>.
- Yuan, T., Oreopoulos, L., Platnick, S.E., and Meyer, K., 2018, Observations of local positive low cloud feedback patterns and their role in internal variability and climate sensitivity: *Geophysical Research Letters*, v. 45, no. 9, p. 4438–4445, at <https://doi.org/10.1029/2018GL077904>.
- Yuan, T., Oreopoulos, L., Zelinka, M., Yu, H., Norris, J.R., Chin, M., Platnick, S., and Meyer, K., 2016, Positive low cloud and dust feedbacks amplify tropical North Atlantic Multidecadal Oscillation: *Geophysical Research Letters*, v. 43, no. 3, p. 1349–1356, at <https://doi.org/10.1002/2016GL067679>.
- Yuan, T., Remer, L.A., Bian, H., Ziemke, J.R., Albrecht, R., Pickering, K.E., Oreopoulos, L., Goodman, S.J., Yu, H., and Allen, D.J., 2012, Aerosol indirect effect on tropospheric ozone via lightning: *Journal of Geophysical Research Atmospheres*, v. 117, no. 17, article D18213, at <https://doi.org/10.1029/2012JD017723>.
- Yuan, T., Song, H., Wood, R., Mohrmann, J., Meyer, K., Oreopoulos, L., and Platnick, S., 2020, Applying deep learning to NASA MODIS data to create a community record of marine low-cloud mesoscale morphology: *Atmospheric Measurement Techniques*, v. 13, no. 12, p. 6989–6997, at <https://doi.org/10.5194/amt-13-6989-2020>.
- Yuan, T., Song, H., Wood, R., Wang, C., Oreopoulos, L., Platnick, S.E., Von Hippel, S., Meyer, K., Light, S., and Wilcox, E., 2022, Global reduction in ship-tracks from sulfur regulations for shipping fuel: *Science Advances*, v. 8, no. 29, article eabn7988, at <https://doi.org/10.1126/sciadv.abn7988>.
- Yuan, T., Wang, C., Song, H., Platnick, S., Meyer, K., and Oreopoulos, L., 2019, Automatically finding ship tracks to enable large-scale analysis of aerosol-cloud interactions: *Geophysical Research Letters*, v. 46, no. 13, p. 7726–7733, at <https://doi.org/10.1029/2019GL083441>.

- Zagorodnov, V., Nagornov, O., Scambos, T.A., Muto, A., Mosley-Thompson, E., Pettit, E.C., and Tyufin, S., 2012, Borehole temperatures reveal details of 20th century warming at Bruce Plateau, Antarctic Peninsula: *Cryosphere*, v. 6, no. 3, p. 675–686, at <https://doi.org/10.5194/tc-6-675-2012>.
- Zaitchik, B.F., Simane, B., Habib, S., Anderson, M.C., Ozdogan, M., and Foltz, J.D., 2012, Building climate resilience in the Blue Nile/Abay Highlands—A role for Earth system sciences: *International Journal of Environmental Research and Public Health*, v. 9, no. 2, p. 435–461, at <https://doi.org/10.3390/ijerph9020435>.
- Zakharenkova, I., Cherniak, I., Gleason, S., Hunt, D., Freesland, D., Krimchansky, A., McCorkel, J., Ramsey, G., and Chapel, J., 2023, Statistical validation of ionospheric electron density profiles retrievals from GOES geosynchronous satellites: *Journal of Space Weather and Space Climate*, v. 13, article 23, at <https://doi.org/10.1051/swsc/2023022>.
- Zald, H.S.J., Wulder, M.A., White, J.C., Hilker, T., Hermosilla, T., Hobart, G.W., and Coops, N.C., 2016, Integrating Landsat pixel composites and change metrics with lidar plots to predictively map forest structure and aboveground biomass in Saskatchewan, Canada: *Remote Sensing of Environment*, v. 176, p. 188–201, at <https://doi.org/10.1016/j.rse.2016.01.015>.
- Zalles, V., Hansen, M.C., Potapov, P.V., Parker, D., Stehman, S.V., Pickens, A.H., Parente, L.L., Ferreira, L.G., Song, X.P., et al., 2021, Rapid expansion of human impact on natural land in South America since 1985: *Science Advances*, v. 7, no. 14, article eabg1620, at <https://doi.org/10.1126/sciadv.abg1620>.
- Zalles, V., Hansen, M.C., Potapov, P.V., Stehman, S.V., Tyukavina, A., Pickens, A., Song, X.P., Adusei, B., Okpa, C., et al., 2019, Near doubling of Brazil’s intensive row crop area since 2000: *Proceedings of the National Academy of Sciences of the United States of America*, v. 116, no. 2, p. 428–435, at <https://doi.org/10.1073/pnas.1810301115>.
- Zanoni, V.M., and Goward, S.N., 2003, A new direction in Earth observations from space—IKONOS: *Remote Sensing of Environment*, v. 88, no. 1–2, p. 1–2, at <https://doi.org/10.1016/j.rse.2003.08.011>.
- Zarin, D.J., Harris, N.L., Baccini, A., Aksenov, D., Hansen, M.C., Azevedo-Ramos, C., Azevedo, T., Margono, B.A., Alencar, A.C., et al., 2016, Can carbon emissions from tropical deforestation drop by 50% in 5 years?: *Global Change Biology*, v. 22, no. 4, p. 1336–1347, at <https://doi.org/10.1111/gcb.13153>.
- Zelinka, M.D., Tan, I., Oreopoulos, L., and Tselioudis, G., 2023, Detailing cloud property feedbacks with a regime-based decomposition: *Climate Dynamics*, v. 63, p. 2983–3003, at <https://doi.org/10.1007/s00382-022-06488-7>.
- Zeng, W., Tomppo, E., Healey, S.P., and Gadov, K.V., 2015, The national forest inventory in China—History—Results—International context: *Forest Ecosystems*, v. 2, no. 1, article 23, at <https://doi.org/10.1186/s40663-015-0047-2>.
- Zeng, X., Rao, P., DeFries, R.S., and Hansen, M.C., 2003, Interannual variability and decadal trend of global fractional vegetation cover from 1982 to 2000: *Journal of Applied Meteorology*, v. 42, no. 10, p. 1525–1530, at [https://doi.org/10.1175/1520-0450\(2003\)042<1525:IVADTO>2.0.CO;2](https://doi.org/10.1175/1520-0450(2003)042<1525:IVADTO>2.0.CO;2).
- Zeng, Y., Hao, D., Park, T., Zhu, P., Huete, A., Myneni, R., Knyazikhin, Y., Qi, J., Nemani, R.R., et al., in press, Structural complexity biases vegetation greenness measures: *Nature Ecology and Evolution*, at <https://doi.org/10.1038/s41559-023-02187-6>.

- Zhai, Y., Roy, D.P., Martins, V.S., Zhang, H.K., Yan, L., and Li, Z., 2022, Conterminous United States Landsat-8 top of atmosphere and surface reflectance tasseled cap transformation coefficients: Remote Sensing of Environment, v. 274, article 112992, at <https://doi.org/10.1016/j.rse.2022.112992>.
- Zhan, H., Lee, Z., Shi, P., Chen, C., and Carder, K.L., 2003, Retrieval of water optical properties for optically deep waters using genetic algorithms: IEEE Transactions on Geoscience and Remote Sensing, v. 41, no. 5 pt. 2, p. 1123–1128, at <https://doi.org/10.1109/TGRS.2003.813554>.
- Zhan, S., Song, C., Wang, J., Sheng, Y., and Quan, J., 2019, A global assessment of terrestrial evapotranspiration increase due to surface water area change: Earth's Future, v. 7, no. 3, p. 266–282, at <https://doi.org/10.1029/2018EF001066>.
- Zhan, X., Anderson, M.C., and Liu, J., 2010, Merging thermal and microwave satellite observations for a high-resolution soil moisture data product, in 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 25–30 July 2010, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 4440–4441, at <https://doi.org/10.1109/IGARSS.2010.5652038>.
- Zhan, X., Huang, C., Townshend, J., DeFries, R., Hansen, M.C., Dimiceli, C., Sohlberg, R., Hewson-Scardelletti, J., and Tompkins, A., 1998, Land cover change detection with change vector in the red and near-infrared reflectance space, in 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Seattle, Wash., 6–10 July 1998, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 859–861, at <https://doi.org/10.1109/IGARSS.1998.699607>.
- Zhan, X., Sohlberg, R.A., Townshend, J.R.G., DiMiceli, C., Carroll, M.L., Eastman, J.C., Hansen, M.C., and DeFries, R.S., 2002, Detection of land cover changes using MODIS 250 m data: Remote Sensing of Environment, v. 83, no. 1–2, p. 336–350, at [https://doi.org/10.1016/S0034-4257\(02\)00081-0](https://doi.org/10.1016/S0034-4257(02)00081-0).
- Zhang, C., Franklin, S.E., and Wulder, M.A., 2004, Geostatistical and texture analysis of airborne-acquired images used in forest classification: International Journal of Remote Sensing, v. 25, no. 4, p. 859–865, at <https://doi.org/10.1080/01431160310001618059>.
- Zhang, C., Long, D., Zhang, Y., Anderson, M.C., Kustas, W.P., and Yang, Y., 2021, A decadal (2008–2017) daily evapotranspiration data set of 1 km spatial resolution and spatial completeness across the North China Plain using TSEB and data fusion: Remote Sensing of Environment, v. 262, article 112519, at <https://doi.org/10.1016/j.rse.2021.112519>.
- Zhang, G., Ganguly, S., Nemani, R.R., White, M.A., Milesi, C., Hashimoto, H., Wang, W., Saatchi, S., Yu, Y., and Myneni, R.B., 2014, Estimation of forest aboveground biomass in California using canopy height and leaf area index estimated from satellite data: Remote Sensing of Environment, v. 151, p. 44–56, at <https://doi.org/10.1016/j.rse.2014.01.025>.
- Zhang, G., Lowry, K., Nemani, R.R., Skiles, J.W., and Schmidt, C., 2009, Modeling current and future water use in Utah with NASA's Terrestrial Observation and Prediction System, in Reflection of the past, vision for the future, Annual Conference, Baltimore, Md., 8–13 March 2009, Proceedings: Baltimore, Md., American Society for Photogrammetry and Remote Sensing, p. 934–942, at <http://www.asprs.org/a/publications/proceedings/baltimore09/0108.pdf>.
- Zhang, G., Yao, T., Chen, W., Zheng, G., Shum, C.K., Yang, K., Piao, S., Sheng, Y., Yi, S., et al., 2019, Regional differences of lake evolution across China during 1960s–2015 and its natural and anthropogenic causes: Remote Sensing of Environment, v. 221, p. 386–404, at <https://doi.org/10.1016/j.rse.2018.11.038>.

- Zhang, H., Hoff, R.M., Kondragunta, S., Laszlo, I., and Lyapustin, A.I., 2013, Aerosol optical depth (AOD) retrieval using simultaneous GOES-East and GOES-West reflected radiances over the western United States: *Atmospheric Measurement Techniques*, v. 6, no. 2, p. 471–486, at <https://doi.org/10.5194/amt-6-471-2013>.
- Zhang, H., Lyapustin, A.I., Wang, Y., Kondragunta, S., Laszlo, I., Ciren, P., and Hoff, R.M., 2011, A multi-angle aerosol optical depth retrieval algorithm for geostationary satellite data over the United States: *Atmospheric Chemistry and Physics*, v. 11, no. 23, p. 11977–11991, at <https://doi.org/10.5194/acp-11-11977-2011>.
- Zhang, H.K., and Roy, D.P., 2016, Computationally inexpensive Landsat 8 Operational Land Imager (OLI) pansharpening: *Remote Sensing*, v. 8, no. 3, article 180, at <https://doi.org/10.3390/rs8030180>.
- Zhang, H.K., and Roy, D.P., 2016, Landsat 5 Thematic Mapper reflectance and NDVI 27-year time series inconsistencies due to satellite orbit change: *Remote Sensing of Environment*, v. 186, p. 217–233, at <https://doi.org/10.1016/j.rse.2016.08.022>.
- Zhang, H.K., and Roy, D.P., 2017, Using the 500 m MODIS land cover product to derive a consistent continental scale 30 m Landsat land cover classification: *Remote Sensing of Environment*, v. 197, p. 15–34, at <https://doi.org/10.1016/j.rse.2017.05.024>.
- Zhang, H.K., Roy, D.P., and Kovalskyy, V., 2016, Optimal solar geometry definition for global long-term Landsat time-series bidirectional reflectance normalization: *IEEE Transactions on Geoscience and Remote Sensing*, v. 54, no. 3, p. 1410–1418, at <https://doi.org/10.1109/TGRS.2015.2480684>.
- Zhang, H.K., Roy, D.P., and Kovalskyy, V., 2018, Correction to—Optimal solar geometry definition for global long-term Landsat time-series bidirectional reflectance normalization (*IEEE Transactions on Geoscience and Remote Sensing* (2016) 54:3 (1410-1418) DOI—10.1109/TGRS.2015.2480684): *IEEE Transactions on Geoscience and Remote Sensing*, v. 56, no. 6, p. 3624–3624, at <https://doi.org/10.1109/TGRS.2018.2827478>.
- Zhang, H.K., Roy, D.P., and Luo, D., 2023, Demonstration of large area land cover classification with a one dimensional convolutional neural network applied to single pixel temporal metric percentiles: *Remote Sensing of Environment*, v. 295, at <https://doi.org/10.1016/j.rse.2023.113653>.
- Zhang, H.K., Roy, D.P., Yan, L., Li, Z., Huang, H., Vermote, E.F., Skakun, S., and Roger, J.C., 2018, Characterization of Sentinel-2A and Landsat-8 top of atmosphere, surface, and nadir BRDF adjusted reflectance and NDVI differences: *Remote Sensing of Environment*, v. 215, p. 482–494, at <https://doi.org/10.1016/j.rse.2018.04.031>.
- Zhang, J., Becker-Reshef, I., and Justice, C.O., 2014, Evaluating the impacts of drought on crop production from satellite observations—A case study in Kansas, *in* Joint 2014 IEEE International Geoscience and Remote Sensing Symposium (IGARSS) and the 35th Canadian Symposium on Remote Sensing (CSRS 2014), Quebec City, Canada, 13–18 July 2014, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2058–2061, at <https://doi.org/10.1109/IGARSS.2014.6946869>.
- Zhang, J., Becker-Reshef, I., and Justice, C.O., 2015, Evaluation of the ASCAT surface soil moisture product for agricultural drought monitoring in USA, *in* 2015 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Milan, Italy, 26–31 July 2015, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 669–672, at <https://doi.org/10.1109/IGARSS.2015.7325852>.

- Zhang, J., Lee, C., Votava, P., Lee, T.J., Nemani, R.R., and Foster, I., 2015, A community-oriented workflow reuse and recommendation technique: *International Journal of Business Process Integration and Management*, v. 7, no. 3, p. 197–212, at <https://doi.org/10.1504/IJBPIIM.2015.071265>.
- Zhang, J., Lee, C., Votava, P., Lee, T.J., Wang, S., Sriram, V., Saini, N., Rao, P., and Nemani, R.R., 2015, A trust-powered technique to facilitate scientific tool discovery and recommendation: *International Journal of Web Services Research*, v. 12, no. 3, p. 25–47, at <https://doi.org/10.4018/IJWSR.2015070102>.
- Zhang, J., Lee, C., Xiao, S., Votava, P., Lee, T.J., Nemani, R.R., and Foster, I., 2014, A community-driven workflow recommendations and reuse infrastructure, *in* 8th IEEE International Symposium on Service Oriented System Engineering, SOSE 2014, Oxford, UK, 7–11 April 2014, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 162–172, at <https://doi.org/10.1109/SOSE.2014.23>.
- Zhang, J., Pourreza, M., Lee, S., Nemani, R., and Lee, T.J., 2018, Unit of work supporting generative scientific workflow recommendation, *in* International Conference on Service-Oriented Computing, 16th, Hangzhou, China, 12–15 November 2018, Lecture Notes in Computer Science, Vol. 11236: Cham, Switzerland, Springer, p. 446–462, at https://doi.org/10.1007/978-3-030-03596-9_32.
- Zhang, J., Roy, D.P., Devadiga, S., and Zheng, M., 2007, Anomaly detection in MODIS land products via time series analysis: *Geo-Spatial Information Science*, v. 10, no. 1, p. 44–50, at <https://doi.org/10.1007/s11806-007-0003-6>.
- Zhang, J., Votava, P., Lee, T.J., Adhikarla, S., Kulkumjon, I., Schlaw, M., Natesan, D., and Nemani, R.R., 2013, A technique of analyzing trust relationships to facilitate scientific service discovery and recommendation, *in* International Conference on Services Computing, 10th, Santa Clara, Calif., 27 June–2 July 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 57–64, at <https://doi.org/10.1109/SCC.2013.104>.
- Zhang, J., Votava, P., Lee, T.J., Chu, O., Li, C., Liu, D., Liu, K., Xin, N., and Nemani, R.R., 2013, Bridging VisTrails scientific workflow management system to high performance computing, *in* World Congress on Services, 9th, Santa Clara, Calif., 27 June–2 July 2013, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 29–36, at <https://doi.org/10.1109/SERVICES.2013.64>.
- Zhang, J., Zhao, Y., Abbott, A.L., Wynne, R.H., Hu, Z., Zou, Y., and Tian, S., 2019, Automated mapping of typical cropland strips in the North China Plain using small Unmanned Aircraft Systems (sUAS) photogrammetry: *Remote Sensing*, v. 11, no. 20, article 2343, at <https://doi.org/10.3390/rs11202343>.
- Zhang, K., Kimball, J.S., Nemani, R.R., and Running, S.W., 2010, A continuous satellite-derived global record of land surface evapotranspiration from 1983 to 2006: *Water Resources Research*, v. 46, no. 9, article W09522, at <https://doi.org/10.1029/2009WR008800>.
- Zhang, K., Kimball, J.S., Nemani, R.R., Running, S.W., Hong, Y., Gourley, J.J., and Yu, Z., 2015, Vegetation greening and climate change promote multidecadal rises of global land evapotranspiration: *Scientific Reports*, v. 5, article 15956, at <https://doi.org/10.1038/srep15956>.
- Zhang, L., Wylie, B., Loveland, T.R., Fosnight, E., Tieszen, L.L., Ji, L., and Gilmanov, T., 2007, Evaluation and comparison of gross primary production estimates for the Northern Great Plains grasslands:

- Remote Sensing of Environment, v. 106, no. 2, p. 173–189, at <https://doi.org/10.1016/j.rse.2006.08.012>.
- Zhang, M., Carder, K.L., Muller-Karger, F.E., Lee, Z., and Goldgof, D.B., 1999, Noise reduction and atmospheric correction for coastal applications of Landsat Thematic Mapper imagery: Remote Sensing of Environment, v. 70, no. 2, p. 167–180, at [https://doi.org/10.1016/S0034-4257\(99\)00031-0](https://doi.org/10.1016/S0034-4257(99)00031-0).
- Zhang, P., Bounoua, L., Imhoff, M.L., Wolfe, R.E., and Thome, K.J., 2014, Comparison of MODIS land surface temperature and air temperature over the continental USA meteorological stations: Canadian Journal of Remote Sensing, v. 40, no. 2, p. 110–122, at <https://doi.org/10.1080/07038992.2014.935934>.
- Zhang, P., Bounoua, L., Thome, K.J., and Wolfe, R., 2016, Modeling impact of urbanization in us cities using simple biosphere model SiB2, in 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 6758–6761, at <https://doi.org/10.1109/IGARSS.2016.7730764>.
- Zhang, P., Bounoua, L., Thome, K.J., Wolfe, R., and Imhoff, M., 2015, Modeling surface climate in U.S. cities using Simple Biosphere Model SiB2: Canadian Journal of Remote Sensing, v. 41, no. 6, p. 525–535, at <https://doi.org/10.1080/07038992.2015.1110013>.
- Zhang, Q., Cheng, Y.B., Lyapustin, A.I., Wang, Y., Gao, F., Suyker, A., Verma, S., and Middleton, E.M., 2014, Estimation of crop gross primary production (GPP)—fAPARchl versus MOD15A2 FPAR: Remote Sensing of Environment, v. 153, p. 1–6, at <https://doi.org/10.1016/j.rse.2014.07.012>.
- Zhang, Q., Cheng, Y.B., Lyapustin, A.I., Wang, Y., Xiao, X., Suyker, A., Verma, S., Tan, B., and Middleton, E.M., 2014, Estimation of crop gross primary production (GPP)—I. impact of MODIS observation footprint and impact of vegetation BRDF characteristics: Agricultural and Forest Meteorology, v. 191, p. 51–63, at <https://doi.org/10.1016/j.agrformet.2014.02.002>.
- Zhang, Q., Cheng, Y.B., Lyapustin, A.I., Wang, Y., Zhang, X., Suyker, A., Verma, S., Shuai, Y., and Middleton, E.M., 2015, Estimation of crop gross primary production (GPP)—II. Do scaled MODIS vegetation indices improve performance?: Agricultural and Forest Meteorology, v. 200, p. 1–8, at <https://doi.org/10.1016/j.agrformet.2014.09.003>.
- Zhang, Q., Devers, D., Desch, A., Justice, C.O., and Townshend, J., 2005, Mapping tropical deforestation in Central Africa: Environmental Monitoring and Assessment, v. 101, no. 1–3, p. 69–83, at <https://doi.org/10.1007/s10661-005-9132-2>.
- Zhang, Q., and Justice, C.O., 2001, Carbon emissions and sequestration potential of Central African ecosystems: Ambio, v. 30, no. 6, p. 351–355, at <https://doi.org/10.1579/0044-7447-30.6.351>.
- Zhang, Q., Justice, C.O., and Desanker, P.V., 2002, Impacts of simulated shifting cultivation on deforestation and the carbon stocks of the forests of central Africa: Agriculture, Ecosystems and Environment, v. 90, no. 2, p. 203–209, at [https://doi.org/10.1016/S0167-8809\(01\)00332-2](https://doi.org/10.1016/S0167-8809(01)00332-2).
- Zhang, Q., Justice, C.O., Jiang, M., Brunner, J., and Wilkie, D.S., 2006, A GIS-based assessment on the vulnerability and future extent of the tropical forests of the Congo Basin: Environmental Monitoring and Assessment, v. 114, no. 1–3, p. 107–121, at <https://doi.org/10.1007/s10661-006-2015-3>.

- Zhang, Q., Schaaf, C.B., and Seto, K.C., 2013, The Vegetation adjusted NTL Urban Index—A new approach to reduce saturation and increase variation in nighttime luminosity: *Remote Sensing of Environment*, v. 129, p. 32–41, at <https://doi.org/10.1016/j.rse.2012.10.022>.
- Zhang, Q., Yao, T., Huemmrich, K.F., Middleton, E.M., Lyapustin, A., and Wang, Y., 2020, Evaluating impacts of snow, surface water, soil and vegetation on empirical vegetation and snow indices for the Utqiagvik tundra ecosystem in Alaska with the LVS3 model: *Remote Sensing of Environment*, v. 240, article 111677, at <https://doi.org/10.1016/j.rse.2020.111677>.
- Zhang, Q., Yao, T., Middleton, E.M., Lyapustin, A.I., and Wang, Y., 2016, Preliminary fAPARchl products from MODIS and hyperion, in 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10–15 July 2016, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 5358–5361, at <https://doi.org/10.1109/IGARSS.2016.7730396>.
- Zhang, S., Zhao, H., Sheng, Y., Chen, S., Li, G., and Chen, F., 2022, Late Quaternary lake level record of Orog Nuur, southern Mongolia, revealed by optical dating of paleo-shorelines: *Quaternary Geochronology*, v. 72, article 101370, at <https://doi.org/10.1016/j.quageo.2022.101370>.
- Zhang, S., Zhao, H., Sheng, Y., Zhang, J., Zhang, J., Sun, A., Wang, L., Huang, L., Hou, J., and Chen, F., 2022, Mega-lakes in the northwestern Tibetan Plateau formed by melting glaciers during the last deglacial: *Quaternary Science Reviews*, v. 285, article 107528, at <https://doi.org/10.1016/j.quascirev.2022.107528>.
- Zhang, T., Gao, F., Muhamedsalih, H., Lou, S., Martin, H., and Jiang, X., 2018, Improvement of the fringe analysis algorithm for wavelength scanning interferometry based on filter parameter optimization: *Applied Optics*, v. 57, no. 9, p. 2227–2234, at <https://doi.org/10.1364/AO.57.002227>.
- Zhang, T., Haran, T., and Scambos, T.A., 2000, Spatial and temporal variations of surface albedo and snowmelt in northern Alaska using AVHRR polar pathfinder datasets, in 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1766–1768, at <https://doi.org/10.1109/IGARSS.2000.857339>.
- Zhang, T., Scambos, T.A., Haran, T., Hinzman, L.D., Barry, R.G., and Kane, D.L., 2003, Ground-based and satellite-derived measurements of surface albedo on the North Slope of Alaska: *Journal of Hydrometeorology*, v. 4, no. 1, p. 77–91, at [https://doi.org/10.1175/1525-7541\(2003\)004<0077:GBASDM>2.0.CO;2](https://doi.org/10.1175/1525-7541(2003)004<0077:GBASDM>2.0.CO;2).
- Zhang, W., Wang, J., Jin, D., Oreopoulos, L., and Zhang, Z., 2019, A deterministic self-organizing map approach and its application on satellite data based cloud type classification, in 2018 IEEE International Conference on Big Data, Big Data 2018, Seattle, Wash., 10–13 December 2018, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2027–2034, at <https://doi.org/10.1109/BigData.2018.8622558>.
- Zhang, X., Friedl, M.A., and Schaaf, C.B., 2006, Global vegetation phenology from Moderate Resolution Imaging Spectroradiometer (MODIS)—Evaluation of global patterns and comparison with in situ measurements: *Journal of Geophysical Research Biogeosciences*, v. 111, no. 4, article G04017, at <https://doi.org/10.1029/2006JG000217>.

- Zhang, X., Friedl, M.A., and Schaaf, C.B., 2009, Sensitivity of vegetation phenology detection to the temporal resolution of satellite data: *International Journal of Remote Sensing*, v. 30, no. 8, p. 2061–2074, at <https://doi.org/10.1080/01431160802549237>.
- Zhang, X., Friedl, M.A., Schaaf, C.B., and Strahler, A.H., 2004, Climate controls on vegetation phenological patterns in northern mid- and high latitudes inferred from MODIS data: *Global Change Biology*, v. 10, no. 7, p. 1133–1145, at <https://doi.org/10.1111/j.1529-8817.2003.00784.x>.
- Zhang, X., Friedl, M.A., Schaaf, C.B., Strahler, A.H., Hodges, J.C.F., and Gao, F., 2002, Using MODIS data to study the relation between climatic spatial variability and vegetation phenology in northern high latitudes, in 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1149–1151, at <https://doi.org/10.1109/IGARSS.2002.1025804>.
- Zhang, X., Friedl, M.A., Schaaf, C.B., Strahler, A.H., Hodges, J.C.F., Gao, F., Reed, B.C., and Huete, A., 2003, Monitoring vegetation phenology using MODIS: *Remote Sensing of Environment*, v. 84, no. 3, p. 471–475, at [https://doi.org/10.1016/S0034-4257\(02\)00135-9](https://doi.org/10.1016/S0034-4257(02)00135-9).
- Zhang, X., Friedl, M.A., Schaaf, C.B., Strahler, A.H., and Liu, Z., 2005, Monitoring the response of vegetation phenology to precipitation in Africa by coupling MODIS and TRMM instruments: *Journal of Geophysical Research Atmospheres*, v. 110, no. 12, p. 1–14, at <https://doi.org/10.1029/2004JD005263>.
- Zhang, X., Friedl, M.A., Schaaf, C.B., Strahler, A.H., and Schneider, A., 2004, The footprint of urban climates on vegetation phenology: *Geophysical Research Letters*, v. 31, no. 12, p. L12209 1–4, at <https://doi.org/10.1029/2004GL020137>.
- Zhang, X., Hodges, J.C.F., Schaaf, C.B., Friedl, M.A., Strahler, A.H., and Gao, F., 2001, Global vegetation phenology from AVHRR and MODIS data, in 2001 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Sydney, Australia, 9–13 July 2001, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2262–2264, at <https://doi.org/10.1109/IGARSS.2001.977969>.
- Zhang, X., Jayavelu, S., Liu, L., Friedl, M.A., Henebry, G.M., Liu, Y., Schaaf, C.B., Richardson, A.D., and Gray, J., 2018, Evaluation of land surface phenology from VIIRS data using time series of PhenoCam imagery: *Agricultural and Forest Meteorology*, v. 256–257, p. 137–149, at <https://doi.org/10.1016/j.agrformet.2018.03.003>.
- Zhang, X., Kondragunta, S., and Roy, D.P., 2014, Interannual variation in biomass burning and fire seasonality derived from geostationary satellite data across the contiguous United States from 1995 to 2011: *Journal of Geophysical Research Biogeosciences*, v. 119, no. 6, p. 1147–1162, at <https://doi.org/10.1002/2013JG002518>.
- Zhang, X., Liu, L., Liu, Y., Jayavelu, S., Wang, J., Moon, M., Henebry, G.M., Friedl, M.A., and Schaaf, C.B., 2018, Generation and evaluation of the VIIRS land surface phenology product: *Remote Sensing of Environment*, v. 216, p. 212–229, at <https://doi.org/10.1016/j.rse.2018.06.047>.
- Zhang, X., Schaaf, C.B., Friedl, M.A., Strahler, A.H., Gao, F., and Hodges, J.C.F., 2002, MODIS tasseled cap transformation and its utility, in 2002 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Toronto, Canada, 24–28 June 2002, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 1063–1065, at <https://doi.org/10.1109/IGARSS.2002.1025776>.

- Zhang, X., Schaaf, C.B., Gao, F., Friedl, M.A., Strahler, A.H., and Hodges, J.C.F., 2000, Mapping land cover and green vegetation abundance using MODIS-like data—A case study of New England, in 2000 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Honolulu, Hawaii, 24–28 July 2000, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2005–2007, at <https://doi.org/10.1109/IGARSS.2000.858246>.
- Zhang, X., Shen, Y., Gao, S., Wang, W., and Schaaf, C., 2022, Diverse responses of multiple satellite-derived vegetation greenup onsets to dry periods in the Amazon: Geophysical Research Letters, v. 49, no. 20, article e2022GL098662, at <https://doi.org/10.1029/2022GL098662>.
- Zhang, X., Wang, J., Gao, F., Liu, Y., Schaaf, C.B., Friedl, M., Yu, Y., Jayavelu, S., Gray, J., et al., 2017, Exploration of scaling effects on coarse resolution land surface phenology: Remote Sensing of Environment, v. 190, p. 318–330, at <https://doi.org/10.1016/j.rse.2017.01.001>.
- Zhang, Y., Song, C., Hwang, T., Novick, K., Coulston, J.W., Vose, J., Dannenberg, M.P., Hakkenberg, C.R., Mao, J., and Woodcock, C.E., 2021, Land cover change-induced decline in terrestrial gross primary production over the conterminous United States from 2001 to 2016: Agricultural and Forest Meteorology, v. 308-309, article 108609, at <https://doi.org/10.1016/j.agrformet.2021.108609>.
- Zhang, Y., Thenkabail, P.S., and Wang, P., 2019, A bibliometric profile of the *Remote Sensing* open access journal published by MDPI between 2009 and 2018: Remote Sensing, v. 11, no. 1, article 91, at <https://doi.org/10.3390/rs11010091>.
- Zhang, Y., Tian, Y., Myneni, R.B., Knyazikhin, Y., and Woodcock, C.E., 2002, Assessing the information content of multiangle satellite data for mapping biomes I. Statistical analysis: Remote Sensing of Environment, v. 80, no. 3, p. 418–434, at [https://doi.org/10.1016/S0034-4257\(01\)00322-4](https://doi.org/10.1016/S0034-4257(01)00322-4).
- Zhang, Y., Woodcock, C.E., Chen, S., Wang, J.A., Sulla-Menashe, D., Zuo, Z., Olofsson, P., Wang, Y., and Friedl, M.A., 2022, Mapping causal agents of disturbance in boreal and arctic ecosystems of North America using time series of Landsat data: Remote Sensing of Environment, v. 272, article 112935, at <https://doi.org/10.1016/j.rse.2022.112935>.
- Zhang, Z., Jájá, J., Bader, D.A., Kalluri, S.N.V., Song, H., El Saleous, N., Vermote, E.F., and Townshend, J.R.G., 2000, Kronos—A software system for the processing and retrieval of large-scale AVHRR data sets: Photogrammetric Engineering and Remote Sensing, v. 66, no. 9, p. 1073–1082, at https://www.asprs.org/wp-content/uploads/pers/2000journal/september/2000_sept_1073-1082.pdf.
- Zhang, Z., Liu, J., Chen, J., Chen, S., Shen, Z., Liu, X., Wu, D., Sheng, Y., and Chen, F., 2021, Holocene climatic optimum in the East Asian monsoon region of China defined by climatic stability: Earth-Science Reviews, v. 212, article 103450, at <https://doi.org/10.1016/j.earscirev.2020.103450>.
- Zhang, Z., Meyer, K., Platnick, S., Oreopoulos, L., Lee, D., and Yu, H., 2014, A novel method for estimating shortwave direct radiative effect of above-cloud aerosols using CALIOP and MODIS data: Atmospheric Measurement Techniques, v. 7, no. 6, p. 1777–1789, at <https://doi.org/10.5194/amt-7-1777-2014>.
- Zhang, Z., Meyer, K., Yu, H., Platnick, S., Colarco, P., Liu, Z., and Oreopoulos, L., 2016, Shortwave direct radiative effects of above-cloud aerosols over global oceans derived from 8 years of CALIOP and MODIS observations: Atmospheric Chemistry and Physics, v. 16, no. 5, p. 2877–2900, at <https://doi.org/10.5194/acp-16-2877-2016>.

- Zhao, F., Healey, S.P., Huang, C., McCarter, J.B., Garrard, C., Goeking, S.A., and Zhu, Z., 2018, Assessing the effects of fire disturbances and timber management on carbon storage in the Greater Yellowstone ecosystem: *Environmental Management*, v. 62, no. 4, p. 766–776, at <https://doi.org/10.1007/s00267-018-1073-y>.
- Zhao, F., Huang, C., Goward, S.N., Schleeuwis, K., Rishmawi, K., Lindsey, M.A., Denning, E., Keddell, L., Cohen, W.B., et al., 2018, Development of Landsat-based annual US forest disturbance history maps (1986–2010) in support of the North American Carbon Program (NACP): *Remote Sensing of Environment*, v. 209, p. 312–326, at <https://doi.org/10.1016/j.rse.2018.02.035>.
- Zhao, F., Strahler, A.H., Schaaf, C.B.L., Yao, T., Yang, X., Wang, Z., Schull, M.A., Román, M.O., Woodcock, C.E., et al., 2012, Measuring gap fraction, element clumping index and LAI in Sierra Forest stands using a full-waveform ground-based lidar: *Remote Sensing of Environment*, v. 125, p. 73–79, at <https://doi.org/10.1016/j.rse.2012.07.007>.
- Zhao, F., Yang, X., Schull, M.A., Román-Colón, M.O., Yao, T., Wang, Z., Zhang, Q., Jupp, D.L.B., Lovell, J.L., et al., 2011, Measuring effective leaf area index, foliage profile, and stand height in New England forest stands using a full-waveform ground-based lidar: *Remote Sensing of Environment*, v. 115, no. 11, p. 2954–2964, at <https://doi.org/10.1016/j.rse.2010.08.030>.
- Zhao, F., Yang, X., Strahler, A.H., Schaaf, C.B.L., Yao, T., Wang, Z., Román, M.O., Woodcock, C.E., Ni-Meister, W., et al., 2013, A comparison of foliage profiles in the Sierra National Forest obtained with a full-waveform under-canopy EVI lidar system with the foliage profiles obtained with an airborne full-waveform LVIS lidar system: *Remote Sensing of Environment*, v. 136, p. 330–341, at <https://doi.org/10.1016/j.rse.2013.05.020>.
- Zhao, H., Li, G., Sheng, Y., Jin, M., and Chen, F., 2012, Early-middle Holocene lake-desert evolution in northern Ulan Buh Desert, China: *Palaeogeography, Palaeoclimatology, Palaeoecology*, v. 331–332, p. 31–38, at <https://doi.org/10.1016/j.palaeo.2012.02.027>.
- Zhao, H., Sheng, Y., Li, B., and Fan, Y., 2016, Holocene environment changes around the Sara Us River, northern China, revealed by optical dating of lacustrine-aeolian sediments: *Journal of Asian Earth Sciences*, v. 120, p. 184–191, at <https://doi.org/10.1016/j.jseaes.2016.02.002>.
- Zhao, H., Sheng, Y., Zhang, J., Zhao, Y., and Li, G., 2015, Oasis evolution processes and mechanisms in the lower reaches of Heihe River, Inner Mongolia, China since 1 ka ago: *Holocene*, v. 25, no. 3, p. 445–453, at <https://doi.org/10.1177/0959683614561880>.
- Zhao, J., Wang, Y., Hashimoto, H., Melton, F.S., Hiatt, S.H., Zhang, H., and Nemani, R.R., 2013, The variation of land surface phenology from 1982 to 2006 along the appalachian trail: *IEEE Transactions on Geoscience and Remote Sensing*, v. 51, no. 4, p. 2087–2095, at <https://doi.org/10.1109/TGRS.2012.2217149>.
- Zhao, K., Wulder, M.A., Hu, T., Bright, R., Wu, Q., Qin, H., Li, Y., Toman, E., Mallick, B., et al., 2019, Detecting change-point, trend, and seasonality in satellite time series data to track abrupt changes and nonlinear dynamics—A Bayesian ensemble algorithm: *Remote Sensing of Environment*, v. 232, article 111181, at <https://doi.org/10.1016/j.rse.2019.04.034>.
- Zhao, M., Heinsch, F.A., Nemani, R.R., and Running, S.W., 2005, Improvements of the MODIS terrestrial gross and net primary production global data set: *Remote Sensing of Environment*, v. 95, no. 2, p. 164–176, at <https://doi.org/10.1016/j.rse.2004.12.011>.
- Zhao, M., Running, S., Heinsch, F.A., and Nemani, R.R., 2011, MODIS-derived terrestrial primary production, in Ramachandran, B., Justice, C., and Abrams, M.J., eds., *Remote sensing and digital*

- image processing: New York, N.Y., Springer, p. 635–660, at https://doi.org/10.1007/978-1-4419-6749-7_28.
- Zhao, M., Running, S.W., and Nemani, R.R., 2006, Sensitivity of Moderate Resolution Imaging Spectroradiometer (MODIS) terrestrial primary production to the accuracy of meteorological reanalyses: *Journal of Geophysical Research Biogeosciences*, v. 111, no. 1, article G01002, at <https://doi.org/10.1029/2004JG000004>.
- Zhao, Y., and Zhu, Z., 2022, ASI—An artificial surface Index for Landsat 8 imagery: *International Journal of Applied Earth Observation and Geoinformation*, v. 107, article 102703, at <https://doi.org/10.1016/j.jag.2022.102703>.
- Zhdanova, E.Y., Chubarova, N.Y., and Lyapustin, A.I., 2020, Assessment of urban aerosol pollution over the Moscow megacity by the MAIAC aerosol product: *Atmospheric Measurement Techniques*, v. 13, no. 2, p. 877–891, at <https://doi.org/10.5194/amt-13-877-2020>.
- Zheng, B., Campbell, J.B., Shao, Y., and Wynne, R.H., 2013, Broad-scale monitoring of tillage practices using sequential Landsat imagery: *Soil Science Society of America Journal*, v. 77, no. 5, p. 1755–1764, at <https://doi.org/10.2136/sssaj2013.03.0108>.
- Zheng, B., Myint, S.W., Thenkabail, P.S., and Aggarwal, R.M., 2015, A support vector machine to identify irrigated crop types using time-series Landsat NDVI data: *International Journal of Applied Earth Observation and Geoinformation*, v. 34, no. 1, p. 103–112, at <https://doi.org/10.1016/j.jag.2014.07.002>.
- Zhong, Y., Otkin, J.A., Anderson, M.C., and Hain, C., 2020, Investigating the relationship between the evaporative stress index and land surface conditions in the contiguous United States: *Journal of Hydrometeorology*, v. 21, no. 7, p. 1469–1484, at <https://doi.org/10.1175/JHM-D-19-0205.1>.
- Zhou, J., Zhang, S., Yang, H., Xiao, Z., and Gao, F., 2018, The retrieval of 30-m resolution LAI from Landsat data by combining MODIS products: *Remote Sensing*, v. 10, no. 8, article 1187, at <https://doi.org/10.3390/rs10081187>.
- Zhou, L., Dickinson, R.E., Tian, Y., Zeng, X., Dai, Y., Yang, Z.L., Schaaf, C.B., Gao, F., Jin, Y., et al., 2003, Comparison of seasonal and spatial variations of albedos from Moderate-Resolution Imaging Spectroradiometer (MODIS) and Common Land Model: *Journal of Geophysical Research Atmospheres*, v. 108, no. 15, p. ACL 15–1 – ACL 15–20, at <https://doi.org/10.1029/2002JD003326>.
- Zhou, L., Tian, Y., Myneni, R.B., Ciais, P., Saatchi, S., Liu, Y.Y., Piao, S., Chen, H., Vermote, E.F., et al., 2014, Widespread decline of Congo rainforest greenness in the past decade: *Nature*, v. 508, no. 7498, p. 86–90, at <https://doi.org/10.1038/nature13265>.
- Zhou, Q., Guan, K., Wang, S., Jiang, C., Huang, Y., Peng, B., Chen, Z., Wang, S., Hipple, J., et al., 2022, Recent rapid increase of cover crop adoption across the U.S. Midwest detected by fusing multi-source satellite data: *Geophysical Research Letters*, v. 49, no. 22, article e2022GL100249, at <https://doi.org/10.1029/2022GL100249>.
- Zhou, Q., Hill, M.J., Sun, Q., and Schaaf, C.B., 2016, Retrieving understorey dynamics in the Australian tropical savannah from time series decomposition and linear unmixing of MODIS data: *International Journal of Remote Sensing*, v. 37, no. 6, p. 1445–1475, at <https://doi.org/10.1080/01431161.2016.1154224>.

- Zhou, Q., Zhu, Z., Xian, G., and Li, C., 2022, A novel regression method for harmonic analysis of time series: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 185, p. 48–61, at <https://doi.org/10.1016/j.isprsjprs.2022.01.006>.
- Zhou, Y., Williams, C.A., Hasler, N., Gu, H., and Kennedy, R., 2021, Beyond biomass to carbon fluxes—Application and evaluation of a comprehensive forest carbon monitoring system: *Environmental Research Letters*, v. 16, no. 5, article 055026, at <https://doi.org/10.1088/1748-9326/abf06d>.
- Zhou, Y., Xiao, X., Zhang, G., Wagle, P., Bajgain, R., Dong, J., Jin, C., Basara, J.B., Anderson, M.C., et al., 2017, Quantifying agricultural drought in tallgrass prairie region in the U.S. Southern Great Plains through analysis of a water-related vegetation index from MODIS images: *Agricultural and Forest Meteorology*, v. 246, p. 111–122, at <https://doi.org/10.1016/j.agrformet.2017.06.007>.
- Zhu, L., Ives, A.R., Zhang, C., Guo, Y., and Radeloff, V.C., 2019, Climate change causes functionally colder winters for snow cover-dependent organisms: *Nature Climate Change*, v. 9, no. 11, p. 886–893, at <https://doi.org/10.1038/s41558-019-0588-4>.
- Zhu, L., Radeloff, V.C., and Ives, A.R., 2017, Characterizing global patterns of frozen ground with and without snow cover using microwave and MODIS satellite data products: *Remote Sensing of Environment*, v. 191, p. 168–178, at <https://doi.org/10.1016/j.rse.2017.01.020>.
- Zhu, L., Radeloff, V.C., and Ives, A.R., 2017, Improving the mapping of crop types in the Midwestern U.S. by fusing Landsat and MODIS satellite data: *International Journal of Applied Earth Observation and Geoinformation*, v. 58, p. 1–11, at <https://doi.org/10.1016/j.jag.2017.01.012>.
- Zhu, X., Chen, J., Gao, F., Chen, X., and Masek, J.G., 2010, An enhanced spatial and temporal adaptive reflectance fusion model for complex heterogeneous regions: *Remote Sensing of Environment*, v. 114, no. 11, p. 2610–2623, at <https://doi.org/10.1016/j.rse.2010.05.032>.
- Zhu, X., Gao, F., Liu, D., and Chen, J., 2012, A modified neighborhood similar pixel interpolator approach for removing thick clouds in Landsat images: *IEEE Geoscience and Remote Sensing Letters*, v. 9, no. 3, p. 521–525, at <https://doi.org/10.1109/LGRS.2011.2173290>.
- Zhu, X., and Helmer, E.H., 2018, An automatic method for screening clouds and cloud shadows in optical satellite image time series in cloudy regions: *Remote Sensing of Environment*, v. 214, p. 135–153, at <https://doi.org/10.1016/j.rse.2018.05.024>.
- Zhu, X., Helmer, E.H., Gao, F., Liu, D., Chen, J., and Lefsky, M.A., 2016, A flexible spatiotemporal method for fusing satellite images with different resolutions: *Remote Sensing of Environment*, v. 172, p. 165–177, at <https://doi.org/10.1016/j.rse.2015.11.016>.
- Zhu, X., Helmer, E.H., Gwenz, D., Collin, M., Fleming, S., Tian, J., Marcano-Vega, H., Meléndez-Ackerman, E.J., and Zimmerman, J.K., 2021, Characterization of dry-season phenology in tropical forests by reconstructing cloud-free Landsat time series: *Remote Sensing*, v. 13, no. 23, article 4736, at <https://doi.org/10.3390/rs13234736>.
- Zhu, Z., 2017, Change detection using Landsat time series—A review of frequencies, preprocessing, algorithms, and applications: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 130, p. 370–384, at <https://doi.org/10.1016/j.isprsjprs.2017.06.013>.
- Zhu, Z., 2019, Science of Landsat analysis ready data: *Remote Sensing*, v. 11, no. 18, article 2166, at <https://doi.org/10.3390/rs11182166>.
- Zhu, Z., Bi, J., Pan, Y., Ganguly, S., Anav, A., Xu, L., Samanta, A., Piao, S., Nemani, R.R., and Myneni, R.B., 2013, Global data sets of vegetation leaf area index (LAI)3g and fraction of photosynthetically

- active radiation (FPAR)3g derived from global inventory modeling and mapping studies (GIMMS) normalized difference vegetation index (NDVI3G) for the period 1981 to 2011: *Remote Sensing*, v. 5, no. 2, p. 927–948, at <https://doi.org/10.3390/rs5020927>.
- Zhu, Z., Fu, Y., Woodcock, C.E., Olofsson, P., Vogelmann, J.E., Holden, C., Wang, M., Dai, S., and Yu, Y., 2016, Including land cover change in analysis of greenness trends using all available Landsat 5, 7, and 8 images—A case study from Guangzhou, China (2000-2014): *Remote Sensing of Environment*, v. 185, p. 243–257, at <https://doi.org/10.1016/j.rse.2016.03.036>.
- Zhu, Z., Gallant, A.L., Woodcock, C.E., Pengra, B., Olofsson, P., Loveland, T.R., Jin, S., Dahal, D., Yang, L., and Auch, R.F., 2016, Optimizing selection of training and auxiliary data for operational land cover classification for the LCMAP initiative: *ISPRS Journal of Photogrammetry and Remote Sensing*, v. 122, p. 206–221, at <https://doi.org/10.1016/j.isprsjprs.2016.11.004>.
- Zhu, Z., Qiu, S., and Ye, S., 2022, Remote sensing of land change—A multifaceted perspective: *Remote Sensing of Environment*, v. 282, article 113266, at <https://doi.org/10.1016/j.rse.2022.113266>.
- Zhu, Z., Wang, S., and Woodcock, C.E., 2015, Improvement and expansion of the Fmask algorithm—Cloud, cloud shadow, and snow detection for Landsats 4-7, 8, and Sentinel 2 images: *Remote Sensing of Environment*, v. 159, p. 267–277, at <https://doi.org/10.1016/j.rse.2014.12.014>.
- Zhu, Z., and Woodcock, C.E., 2012, Object-based cloud and cloud shadow detection in Landsat imagery: *Remote Sensing of Environment*, v. 118, p. 83–94, at <https://doi.org/10.1016/j.rse.2011.10.028>.
- Zhu, Z., and Woodcock, C.E., 2014, Automated cloud, cloud shadow, and snow detection in multitemporal Landsat data—An algorithm designed specifically for monitoring land cover change: *Remote Sensing of Environment*, v. 152, p. 217–234, at <https://doi.org/10.1016/j.rse.2014.06.012>.
- Zhu, Z., and Woodcock, C.E., 2014, Continuous change detection and classification of land cover using all available Landsat data: *Remote Sensing of Environment*, v. 144, p. 152–171, at <https://doi.org/10.1016/j.rse.2014.01.011>.
- Zhu, Z., Woodcock, C.E., Holden, C., and Yang, Z., 2015, Generating synthetic Landsat images based on all available Landsat data—Predicting Landsat surface reflectance at any given time: *Remote Sensing of Environment*, v. 162, p. 67–83, at <https://doi.org/10.1016/j.rse.2015.02.009>.
- Zhu, Z., Woodcock, C.E., and Olofsson, P., 2012, Continuous monitoring of forest disturbance using all available Landsat imagery: *Remote Sensing of Environment*, v. 122, p. 75–91, at <https://doi.org/10.1016/j.rse.2011.10.030>.
- Zhu, Z., Woodcock, C.E., Rogan, J., and Kellndorfer, J., 2012, Assessment of spectral, polarimetric, temporal, and spatial dimensions for urban and peri-urban land cover classification using Landsat and SAR data: *Remote Sensing of Environment*, v. 117, p. 72–82, at <https://doi.org/10.1016/j.rse.2011.07.020>.
- Zhu, Z., Wulder, M.A., Roy, D.P., Woodcock, C.E., Hansen, M.C., Radeloff, V.C., Healey, S.P., Schaaf, C., Hostert, P., et al., 2019, Benefits of the free and open Landsat data policy: *Remote Sensing of Environment*, v. 224, p. 382–385, at <https://doi.org/10.1016/j.rse.2019.02.016>.
- Zhu, Z., Zhang, J., Yang, Z., Aljaddani, A.H., Cohen, W.B., Qiu, S., and Zhou, C., 2020, Continuous monitoring of land disturbance based on Landsat time series: *Remote Sensing of Environment*, v. 238, article 111116, at <https://doi.org/10.1016/j.rse.2019.03.009>.

- Zhu, Z., Zhang, J., Yang, Z., Aljaddani, A.H., Cohen, W.B., Qiu, S., and Zhou, C., 2020, Corrigendum to continuous monitoring of land disturbance based on Landsat time series, remote sensing of environment, 238, (2020), 11116 (Remote Sensing of Environment (2020) 238, (S0034425719301002), (10.1016/j.rse.2019.03.009)): Remote Sensing of Environment, v. 244, article 111824, at <https://doi.org/10.1016/j.rse.2020.111824>.
- Zhu, Z., Zhou, Y., Seto, K.C., Stokes, E.C., Deng, C., Pickett, S.T.A., and Taubenböck, H., 2019, Understanding an urbanizing planet—Strategic directions for remote sensing: Remote Sensing of Environment, v. 228, p. 164–182, at <https://doi.org/10.1016/j.rse.2019.04.020>.
- Zhukov, B., Oertel, D., Lehmann, F., and Strobl, P., 1996, Unmixing of satellite thermal images—Simulation and application to TM/Landsat data, in 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Lincoln, Nebr., 28–31 May 1996, Proceedings: Piscataway, N.J., Institute of Electrical and Electronics Engineers (IEEE), p. 2107–2109, at <https://doi.org/10.1109/IGARSS.1996.516903>.
- Zhukov, B., Oertel, D., Strobl, P., Kneubuehler, M., and Schaeppman, M., 1999, Absolute radiometric calibration of the DAIS-7915 thermal channels using sub-pixel targets, in Imaging Spectrometry V, Denver, Colo., 19–21 July 1999, Proceedings of SPIE Vol. 3753: Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE), p. 463–474, at <https://doi.org/10.1117/12.366309>.
- Zhuravleva, I., Turubanova, S., Potapov, P., Hansen, M.C., Tyukavina, A., Minnemeyer, S., Laporte, N., Goetz, S., Verbelen, F., and Thies, C., 2013, Satellite-based primary forest degradation assessment in the Democratic Republic of the Congo, 2000-2010: Environmental Research Letters, v. 8, no. 2, article 024034, at <https://doi.org/10.1088/1748-9326/8/2/024034>.
- Ziółkowska, E., Ostapowicz, K., Kuemmerle, T., Perzanowski, K., Radeloff, V.C., and Kozak, J., 2012, Potential habitat connectivity of European bison (*Bison bonasus*) in the Carpathians: Biological Conservation, v. 146, no. 1, p. 188–196, at <https://doi.org/10.1016/j.biocon.2011.12.017>.
- Ziółkowska, E., Ostapowicz, K., Radeloff, V.C., Kuemmerle, T., Sergiel, A., Zwijacz-Kozica, T., Zięba, F., Śmietana, W., and Selva, N., 2016, Assessing differences in connectivity based on habitat versus movement models for brown bears in the Carpathians: Landscape Ecology, v. 31, no. 8, p. 1863–1882, at <https://doi.org/10.1007/s10980-016-0368-8>.
- Ziółkowska, E.Ž., Ostapowicz, K., Radeloff, V.C., and Kuemmerle, T., 2014, Effects of different matrix representations and connectivity measures on habitat network assessments: Landscape Ecology, v. 29, no. 9, p. 1551–1570, at <https://doi.org/10.1007/s10980-014-0075-2>.
- Zolfaghari, K., Pahlevan, N., Binding, C., Gurlin, D., Simis, S.G., Verdu, A.R., Li, L., Crawford, C.J., VanderWoude, A., et al., 2022, Impact of spectral resolution on quantifying cyanobacteria in lakes and reservoirs—A machine-learning assessment: IEEE Transactions on Geoscience and Remote Sensing, v. 60, article 5515520, at <https://doi.org/10.1109/TGRS.2021.3114635>.
- Zolfaghari, K., Pahlevan, N., Simis, S.G.H., O’Shea, R.E., and Duguay, C.R., 2023, Sensitivity of remotely sensed pigment concentration via Mixture Density Networks (MDNs) to uncertainties from atmospheric correction: Journal of Great Lakes Research, v. 49, no. 2, p. 341–356, at <https://doi.org/10.1016/j.jglr.2022.12.010>.
- Zollner, P.A., Gustafson, E.J., He, H.S., Radeloff, V.C., and Mladenoff, D.J., 2005, Modeling the influence of dynamic zoning of forest harvesting on ecological succession in a northern hardwoods

landscape: *Environmental Management*, v. 35, no. 4, p. 410–425, at <https://doi.org/10.1007/s00267-003-0217-9>.

Zollner, P.A., Roberts, L.J., Gustafson, E.J., He, H.S., and Radeloff, V.C., 2008, Influence of forest planning alternatives on landscape pattern and ecosystem processes in northern Wisconsin, USA: *Forest Ecology and Management*, v. 254, no. 3, p. 429–444, at <https://doi.org/10.1016/j.foreco.2007.07.038>.

Zoogman, P., Liu, X., Chance, K., Sun, Q., Schaaf, C.B., Mahr, T., and Wagner, T., 2016, A climatology of visible surface reflectance spectra: *Journal of Quantitative Spectroscopy and Radiative Transfer*, v. 180, p. 39–46, at <https://doi.org/10.1016/j.jqsrt.2016.04.003>.