

Landsat Update

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Call for Pecora 2011 Award Nominations

The William T. Pecora Award is presented annually to individuals or groups that have made outstanding contributions toward understanding the Earth by means of remote sensing. The Department of the Interior (DOI) and the National Aeronautics and Space Administration (NASA) jointly sponsor the award. The award was established in 1974 to honor the memory of Dr. William T. Pecora, former Director of the U.S. Geological Survey and Under Secretary, Department of the Interior. Dr. Pecora was a motivating force behind the establishment of a program for civil remote sensing of the Earth from space. His early vision and support helped establish what we know today as the Landsat satellite program.

The Award Committee must receive nominations for the 2011 award by June 1, 2011. Instructions for preparing a nomination and other information about the award can be found on the Pecora Award web site: <http://remotesensing.usgs.gov/pecora.php>

Landsat 4 TM Thermal Band Calibration Update

Effective April 1, 2011, the calibration of the thermal band on the Landsat 4 Thematic Mapper (TM) was updated to correct for an offset error of $-0.43 \text{ W/m}^2 \text{ sr } \mu\text{m}$, for all data acquired after April 1, 1986.

Using the network of National Oceanic and Atmospheric Administration (NOAA) buoys deployed in open water around the continental U.S., the vicarious calibration team at the Rochester Institute of Technology was able to determine that the Landsat 4 data acquired between launch and March 31, 1984 were calibrated to within $\pm 0.99\text{K}$. Data acquired after July 1, 1986 exhibited a calibration error of $-0.43 \text{ W/m}^2 \text{ sr } \mu\text{m}$ or about 3.1K at 300K . There were no data acquired between April 1984 and July 1986 due to several failures on board Landsat 4, one of which likely led to the calibration error. The thermal band calibration for the TM instrument relies on predetermined calibration coefficients. When the instrument was turned back on in 1986, it operated at much colder temperatures. The calibration error is likely caused by not adapting the calibration coefficients to the new operating temperatures.

The Calibration Parameter Files for the affected date range were updated on April 1, 2011. All Landsat 4 TM data processed after this date are considered calibrated to within $\pm 0.80\text{K}$. For data processed before April 1, 2011, users can add $0.43 \text{ W/m}^2 \text{ sr } \mu\text{m}$ to the radiance image product and consider the data calibrated or reorder the data. This information can also be found at:

http://landsat.usgs.gov/calibration_update_L4_TM.php

LandsatLook Images

LandsatLook images are full resolution .jpeg files that are included as options when downloading Landsat data from EarthExplorer (<http://earthexplorer.usgs.gov>) or GloVis (<http://glovis.usgs.gov>). Derived from Landsat Level 1 data products, these images are useful for image selection and for visual interpretation. Bands 5, 4, 3 were used for the color composite. Algorithms applied to the images will cause minor local smoothing to the data values of the images, and while this should not affect interpretation of the images, it is not recommended that they be used in digital analysis.

<http://landsat.usgs.gov/LandsatLookImages.php>

Global Land Survey 2010 Available

In the past, the USGS and NASA collaborated on the creation of four global land data sets from Landsat images: one from the 1970s, and one each from circa 1990, 2000, and 2005. Each of these global data sets was created from the primary Landsat sensor in use at the time: the Multispectral Scanner (MSS) in the 1970s, the Thematic Mapper (TM) in 1990, Enhanced Thematic Mapper Plus (ETM+) in 2000, and a combination of TM and ETM+ in 2005.

To extend this multi-decadal Landsat data collection, NASA and the USGS have again partnered to develop the Global Land Survey 2010 (GLS2010), a new global land data set with core acquisition dates of 2009-2010. The data will consist of both Landsat TM and ETM+ images.

http://landsat.usgs.gov/science_GLS.php

Meetings – Landsat Science Team Meeting Held

The Landsat Science Team met in Mesa, AZ from March 1-3, 2011 to review the status of the Landsat Data Continuity Mission (LDCM) development, Landsat 5 and Landsat 7 activities, and recent activities and updates regarding future Landsat missions.

The team toured the Orbital Sciences facility in Gilbert, AZ where the LDCM spacecraft is being built and heard that key LDCM systems (Operational Land Imager, Thermal Infrared Sensor, spacecraft, and ground system) are on schedule for the planned December 2012 launch.

The team also discussed the President's FY2012 budget request that would establish the National Land Imaging program within the Department of the Interior and USGS, and authorize the development of Landsat 9.

Meeting presentations are available at http://landsat.usgs.gov/science_LST_mar1_3_2011.php.



Figure 1: Landsat Science Team, March 2011

Upcoming Meetings

APSRs Annual Conference

May 1-5, 2011

Milwaukee, Wisconsin

<http://www.asprs.org/milwaukee2011/>

Landsat Technical Working Group Meeting

May 23-27, 2011

USGS EROS

Sioux Falls, South Dakota

ESRI International User Conference

July 11-15, 2011

San Diego, California

<http://www.esri.com/events/user-conference/index.html>

William T. Pecora Memorial Remote Sensing Symposium – Pecora 18

November 14-17, 2011

Herndon, Virginia

www.asprs.org/Pecora18

Tips and Tricks – Landsat Download Video demonstration

A recent posting to the AmericaView Blog included a video that demonstrates how to download Landsat data from GloVis (<http://blog.americaview.org/2011/03/accessing-landsat-data-and-using-it-in.html>). It goes on to show how to work with Landsat Images in ArcGIS.

This Blog is set up by members of AmericaView, a nationwide program that focuses on satellite remote sensing data and technologies in support of applied research, K-16 education, workforce development, and technology transfer.

EROS Authors in Recent Publications

Anderson, J.E., Ducey, M.J., Fast, A., Martin, M.E., Lepine, L., Smith, M.-L., Lee, T.D., Dubayah, R.O., Hofton, M.A., Hyde, P., **Peterson, B.E.**, and Blair, J.B., 2011, Use of waveform lidar and hyperspectral sensors to assess selected spatial and structural patterns associated with recent and repeat disturbance and the abundance of sugar maple (*Acer saccharum* Marsh.) in a temperate mixed hardwood and conifer forest: *Journal of Applied Remote Sensing*, v. 5, citation identifier 053504, available only online at <http://dx.doi.org/10.1117/1.3554639>.

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. (Also available online at <http://dx.doi.org/10.1016/j.rse.2010.12.010>.)

*Previously in press, now published.

Li, A., Huang, C., Sun, G., **Shi, H.**, Toney, C., Zhu, Z., **Rollins, M.G.**, Goward, S.N., and Masek, J.G., in press, Modeling the height of young forests regenerating from recent disturbances in Mississippi using Landsat and ICESat data: *Remote Sensing of Environment*. (Also available online at <http://dx.doi.org/10.1016/j.rse.2011.03.001>.)

Landsat Image of Interest – Fires in Western Texas

April Fires in Western Texas

Sensor: L5 TM

Acquisition Date: February 27, 2001, April 16, 2011

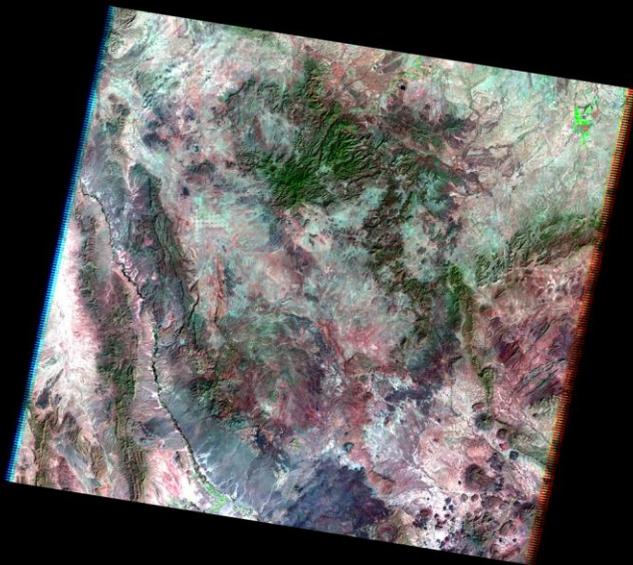
Path/Row: 31/39

Lat/Long: 30.300/-104.100

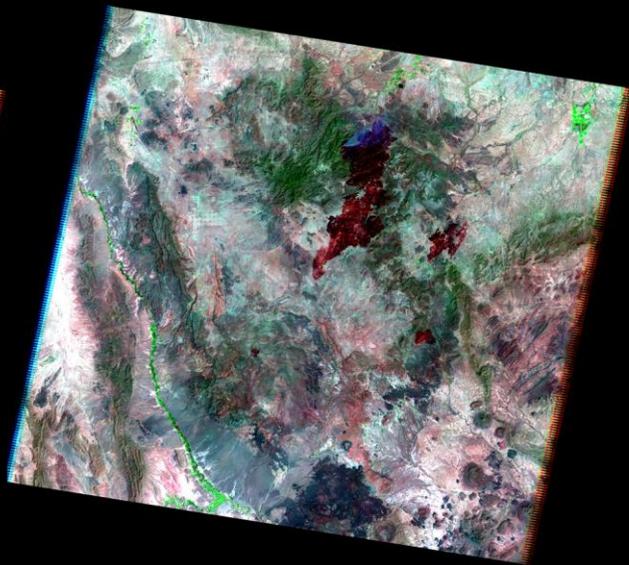
Extreme drought and high winds have fueled many wildfires in west Texas recently. More than a dozen fires have scorched at least 400 sq. miles of land since April 14, 2011.

As seen by the large, dark tone in the April 16, 2011 image, the Rock House fire has scorched more than 120,000 acres and ravaged dozens of structures in and around Fort Davis. Scars from other fires can also be seen in the image.

Landsat imagery illustrates the fire scars and smoke from burning fires. Smoke from an active fire can be seen in the northern portion of the largest scar. In the center of the large fire scar is the town of Fort Davis, one of many small towns that lost many homes and businesses because of the fire.



Landsat 5
February 27, 2011



Landsat 5
April 16, 2011



April Fires in Western Texas

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Figure 2: April Fires in Western Texas