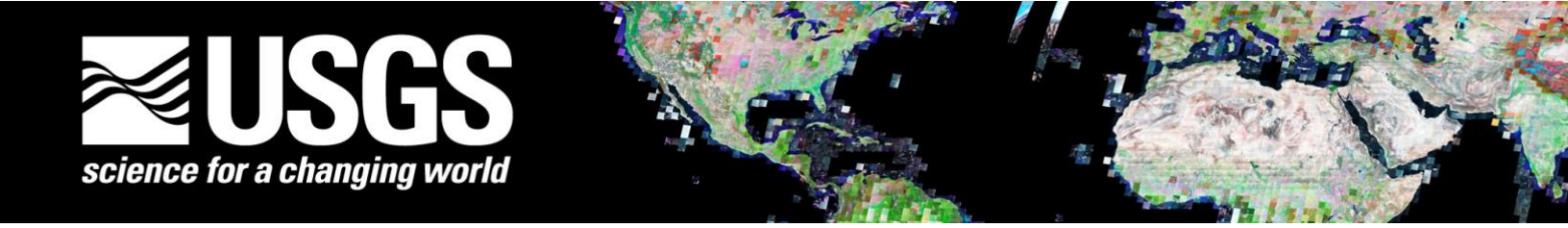


Landsat Update

Volume 10 Issue 4, 2016

Landsat Missions News

Landsat 9 Work Continues

Development of the Landsat 9 satellite and its sensors continues with plans for a late 2020 launch. As a general rebuild of Landsat 8, already-established designs and subsystems are being implemented where possible to minimize cost, schedule, and risk.

Landsat 9 will carry the Operational Land Imager-2 (OLI-2) and the Thermal Infrared Sensor-2 (TIRS-2), similar to the sensors currently carried on Landsat 8.

More details about the satellite, improvement to the sensors, and development details will continue to be announced through future Landsat Updates and the Landsat Missions website.

Landsat 8 and Landsat 7 Status

The Landsat 8 and Landsat 7 satellites continue to acquire images of the Earth at a record pace, increasing the USGS Landsat archives by about 1,200 scenes per day. Landsat 8's outstanding on-orbit performance allows the sensors to collect an average of 750 scenes per day, while Landsat 7's Enhanced Thematic Mapper Plus (ETM+) adds about 450 scenes. Acquired Landsat scenes become available for download (at no charge) from the USGS EarthExplorer (http://earthexplorer.usgs.gov), GloVis (http://glovis.usgs.gov), or the LandsatLook Viewer (http://landsatlook.usgs.gov) data portals.

Both satellites are operating nominally, even with Landsat 8's alternate B-side operations on the Thermal Infrared Sensor (TIRS) and Landsat 7's continued scan line corrector (SLC)-off data (which result in scan gaps in the Level-1 product). As the Landsat 9 satellite progresses closer to launch, the orbit of Landsat 7 will be adjusted to accommodate the new satellite. Details about this transition will be published when they become available.

Landsat Data Product News

Collection 1 Level-1 Data: Reprocessing Update, Landsat 8 Samples Available

The reprocessing of Landsat 4-5 Thematic Mapper (TM) and Landsat 7 Enhanced Thematic Mapper Plus (ETM+) scenes to create Collection 1 Level-1 data continues.

As of October 21, 2016, the Collection 1 processing for all Landsat 4-7 TM/ETM+ scenes over the United States is complete, with over 420,000 Landsat 4-5 TM scenes and over 390,000 Landsat 7 ETM+ Collection 1 scenes available for download through EarthExplorer (http://earthexplorer.usgs.gov).

Processing of Landsat 4-5 TM and Landsat 7 ETM+ scenes for the rest of the globe has begun, and should be completed in spring 2017.

The Landsat 8 OLI/TIRS Collection 1 reprocessing effort will begin in November 2016 for the United States, with data becoming available in January 2017. The remaining Landsat 8 Collection 1 scenes for the rest of the globe should be processed and available for download by May 2017.

Landsat 8 Collection 1 Level-1 sample data (http://landsat.usgs.gov//landsatcollections.php) are now available for download. Users are encouraged to review these samples and contact User Services (custserv@usgs.gov) with any questions or feedback.

Collection 1 Higher-Level Data: Public Release Plans

The ability to place processing requests for Landsat 4-5 and Landsat 7 Collection 1 Higher-Level data products (such as Surface Reflectance and Spectral Indices) through the EROS Science Processing Architecture (ESPA) is expected to begin by the end of November 2016. More announcements will be made when this becomes available.

Level-2 Quality Band Changes

Changes to the Landsat Level-2 Quality Bands are coming:

- The Level-1 Quality Assessment Band (_BQA.TIF) and the Level-1 metadata file (MTL.txt) will be delivered with all Level-2 products by default.
- The Landsat 4-7 Landsat Ecosystem Disturbance Adaptive Processing System (LEDAPS) surface reflectance algorithm Quality Assessment band will become a single bit-packed band and will no longer include fill.
- The Landsat 8 Landsat Surface Reflectance Code (LaSRC) algorithm will combine its two Quality Assessment bands ("sr_cloud" and "ipflag") into a single bit-packed band.
- The "cfmask" and "cfmask_conf" bands will no longer be delivered by default with Surface Reflectance products. Instead, users are advised to use the Level-1 Quality Assessment Band (BQA.TIF) for cloud, cloud shadow, and snow/ice information.

More information about the changes will be announced once they are finalized.

Special Journal Issue Focuses on Landsat 8

A special issue of the journal Remote Sensing of Environment details the improved capabilities and mission role of Landsat 8, the latest satellite in the world's longest, continuous program of Earth observation. (http://www.sciencedirect.com/science/journal/00344257/185/supp/C)

The compendium of 23 published papers describes how Landsat 8 is the most capable of the Landsat missions and highlights how Landsat 8's enhanced performance and new capabilities enable better science and research results. The selected articles cover topics from how the instrument's performance gives higher quality electromagnetic measurements to how its improved geometry allows for the tracking of moving ice sheets.

"I would summarize Landsat 8's science impacts in three ways," said Tom Loveland, Chief Scientist at the U.S. Geological Survey Earth Resources Observation and Science (USGS EROS) Center in Sioux Falls, S.D. "More data, better data, and improved, expanded applications. The papers in the special issue explain how the specific capabilities now available on Landsat 8 enable us to do things better."

Loveland and James Irons, Deputy Director, Earth Sciences Division and Landsat 8 Project Scientist, NASA Goddard Space Flight Center, served as the guest editors for the special issue.

Launched on Feb. 11, 2013, Landsat 8 is a joint USGS-NASA mission that sustains the legacy of continuous, moderate-resolution observations that started in 1972. The mandate of the Landsat program is to help detect and characterize global land change at a scale that enables differentiation between natural and human-induced causes.

Landsat Global Archive Consolidation Journal Article

A recently published Remote Sensing of Environment article highlights the Landsat Global Archive Consolidation (LGAC) effort (http://landsat.usgs.gov/Landsat_Global_Archive_Consolidation.php), which started in 2010 to consolidate historical Landsat data acquired by International Ground Stations around the globe into the USGS archives.

While Landsat 7 and Landsat 8 satellites collect about 1,200 new scenes each day, over 3.9 million Landsat MSS, TM, and ETM+ scenes have been added to the USGS archive since the LGAC effort began.

The article can be found at http://www.sciencedirect.com/science/article/pii/S0034425715302194.

Landsat Missions Website & Social Media Updates

In the near future, the Landsat Missions Website (http://landsat.usgs.gov) will be sporting a new look!

The Twitter feed (@USGSLandsat) continues to be another great platform for finding out what's going on – check it out!

Upcoming Important Days & User Conferences

American Geophysical Union (AGU)
December 12-16, 2016 – San Francisco, California

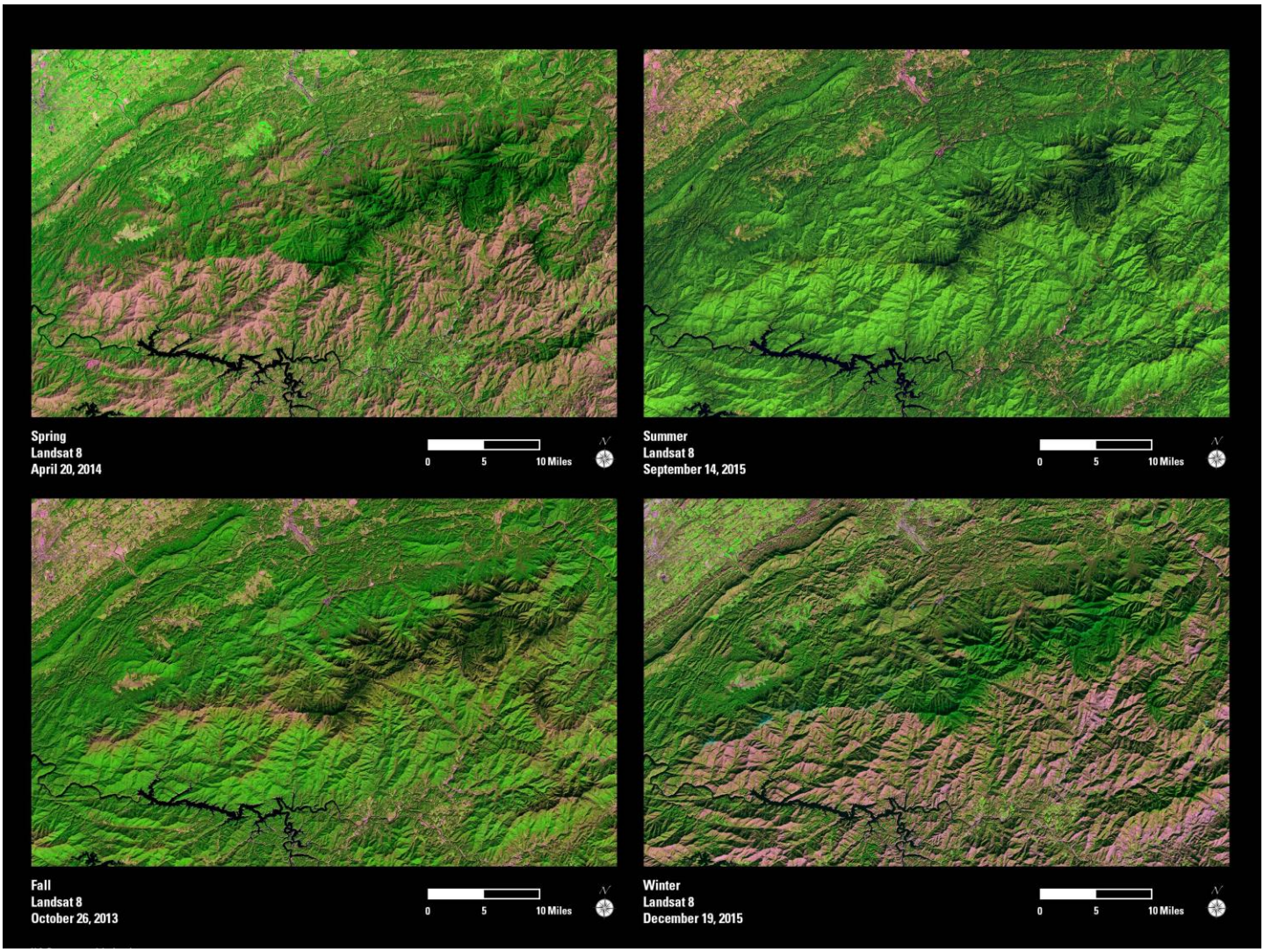
Imaging & Geospatial Technology Forum (IGTF 2017)(formerly ASPRS)
March 13 – 17, 2017 – Baltimore, Maryland

Association of American Geographers (AAG)
April 5-9, 2017 – Boston, Massachusetts

Landsat Image of Interest

Beauty of Earth Science Revealed Within Great Smoky Mountains

Earth Science reminds us that the study of Earth and its biological processes can occur anywhere—whether we realize it or not. An easy way to appreciate science is illustrated in these images vividly portraying the life cycle of vegetation and displaying seasonal change at an area within the Great Smoky Mountains National Park along the Tennessee—North Carolina border.



This and other interesting images can be found in the Landsat Image Gallery (http://landsat.usgs.gov/gallery.php).