

Landsat Update

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Note: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Landsat Mission News

Update on Increased Landsat 8 Acquisitions

In Landsat Update Volume 8 Issue 2, we reported that Landsat 8 acquisitions were going to gradually increase during the Northern Hemisphere growing season from the average 550 images per day. Lately, the satellite has acquired at least 700 scenes per day on average with a high of 714 images. Landsat 8 will continue to acquire nearly all day-lit land images until October 2014. The increased acquisitions provide more data to all users for land change monitoring and research.

This study will help us identify an optimal daily limit to meet science requirements while managing costs and spacecraft health and safety.

Landsat 7 Acquisitions Modified

The Landsat mission strives to create a systematic and objective environmental record of the Earth's surface guided by the Long-Term Acquisition Plan (LTAP). [Landsat 8](#) acquisitions create a new opportunity to define a multi-mission acquisition strategy, including supporting night campaigns (such as urban heat islands, fires, sea ice, and volcanoes) and water campaigns.

The addition of Landsat 8 data acquisitions has allowed modifications to the [Landsat 7 acquisition plan](#), primarily to allow the satellite to focus on continental landmasses to improve coverage of persistently cloudy areas and provide more scenes for gap-filling [Landsat 7 SLC-off](#) images. These changes will also eliminate routine imaging of islands, water, and Antarctica, while allowing the satellite to acquire approximately 91% of all continental land images. The acquisition of longer intervals will reduce wear on the instrument and increase the likelihood of Landsat 7 and 8 continuing the 8-day repeat cycle into early 2018.

Acquisition Calendars and Archives that show the scheduled acquisitions can be found on http://landsat.usgs.gov/tools_acq.php.

Product News

Landsat Metadata (MTL) File Changes Coming September 2014

In September, the following changes will be made to the Metadata (MTL) file distributed with the Landsat Level 1 data products:

1. Remove Padding (Extra Lines)

This change will remove the extra lines that are currently at the end of the MTL file, which were historically used to distribute a fixed-size file to support the HDF4 format. Since GeoTIFF is now the only data format provided, the bytes at the end of the file are not needed, and the extra lines will be removed. Samples of the modified MTL files are available to download from

<http://landsat.usgs.gov/documents/remtlpaddingchangestexttoreview.zip>. (4.77 KB)

2. Ground Control Point (GCP) versioning to be added to Landsat MTL File

The version number of the GCPs used to register an image will be recorded in the MTL file following the next processing system release in September 2014. The Landsat Project is improving the ground control points (GCPs) used to georegister Landsat products.

The much higher geolocation accuracy of Landsat 8 makes it possible to significantly improve the absolute accuracy of Landsat data products for all Landsat sensors. For more information about the phased GCP Improvement Plan with details on the Phase 1 GCPs to be released in September, please see the July 1, 2014, headlines at http://landsat.usgs.gov/mission_headlines2014.php.

The new metadata parameter will only be provided for any scene that processes to a Level 1 Precision and Terrain-Corrected (L1T) product (**PRODUCT_TYPE = "L1T"**). The metadata parameter names for the GCP versioning are provided below:

Group name: **IMAGE_ATTRIBUTES**

Parameter name: **GROUND_CONTROL_POINTS_VERSION**

GCP versioning and the release of the Phase 1 GCPs take effect with Landsat Level 1 Product Generation System (LPGS) releases identified below and all future releases:

PROCESSING_SOFTWARE_VERSION = "LPGS_2.4.0" for Landsat 8 products

PROCESSING_SOFTWARE_VERSION = "LPGS_12.5.0" for Landsat 1-7 products

L1T products created in prior releases will not have the versioning field. See the Landsat L1 Data Format Control Books (DFCB) for more information about the MTL files (http://landsat.usgs.gov/tools_project_documents.php).

Users can use the GCP version in combination with GCP release notes to determine which scenes are impacted with each version number. A list of the 171 path/rows with GCPs updated in GCP Improvement Phase 1 (GROUND_CONTROL_POINTS_VERSION = "2") can be found [here](#).

All images for path/rows updated in Phase 1 will be removed from the online storage and will be reprocessed. We recommend reordering all images associated with Phase 1 path/rows. Guidance for future releases will be provided at the time of their release.

Please contact Landsat Customer Services with any questions about these changes:
custserv@usgs.gov

Changes Coming to ESPA Processing and Output Options

On July 29, 2014, the EROS Science Processing Architecture (ESPA) (<https://espa.cr.usgs.gov/>) will be upgrading the interface to incorporate more high-level processing options for Landsat 4/5 TM and Landsat 7 ETM+ products.

The interface updates include:

- Spectral indices derived from surface reflectance, which include:
 - Normalized Difference Vegetation Index (NDVI)
 - Normalized Difference Moisture Index (NDMI)
 - Normalized Burn Ratio (NBR)
 - Normalized Burn Ratio 2 (NBR2)
 - Soil Adjusted Vegetation Index (SAVI)
 - Modified Soil Adjusted Vegetation Index (MSAVI)
 - Enhanced Vegetation Index (EVI)
- Re-projection options for Polar Stereographic
- Re-projection and subset functionality for L1T products
- User-defined output formats for GeoTIFF (.tif), HDF-EOS2 (.hdf), and ENVI Binary (.img)

Samples of the new products are available to download from http://espa.cr.usgs.gov/validations/espa_output_formats/.

Note: Surface Reflectance data products requested from EarthExplorer will be delivered in GeoTIFF format only.

USGS EROS to Host GOF-C-GOLD

Plans Finalized for Fourth EROS Workshop

The 2014 Global Observation of Forest Cover and Land Cover Dynamics (GOF-C-GOLD) Data Initiative Workshop will be held at the USGS Earth Resources Observation and Science (EROS) Center from July 28 to August 1, 2014.

International scientists representing the Czech Republic, Botswana, Benin, Swaziland, Bangladesh, Thailand, Tanzania, and India are attending. The workshop focuses on accessing and using USGS data products for scientific and natural resources applications.

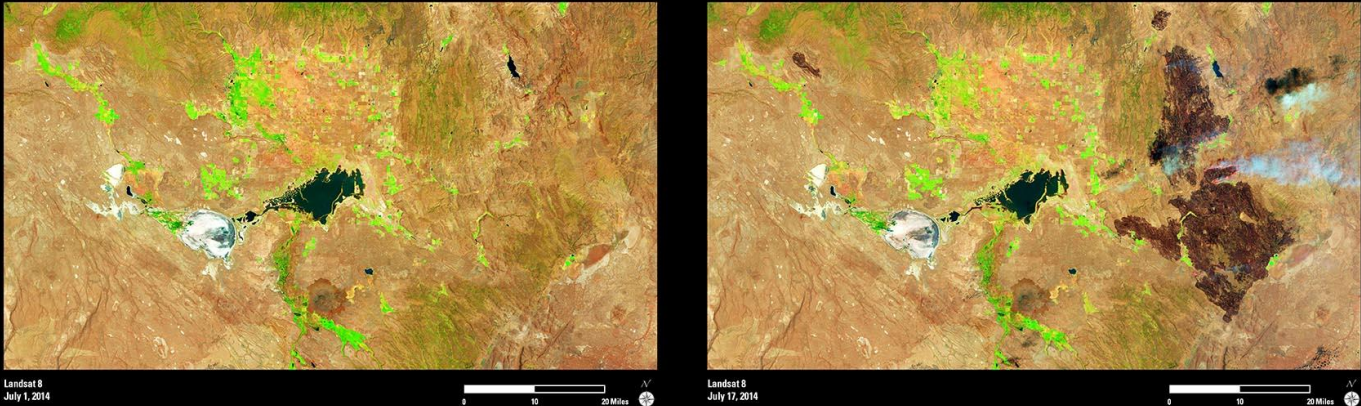
While at EROS, the group will receive Landsat and other USGS data, which they can then redistribute to their partners. The group will also give presentations on their current research in their field, and discuss applications and strategies of implementation for long-term management. After their stay in South Dakota, the group will travel to Boston University (Boston, MA) for two weeks of hands-on Landsat data analysis training.

This program is a coordinated effort designed to provide remotely sensed and ground truth data to assist with understanding carbon sequestration, sustainable management of forests, and land cover changes.

Landsat Image of Interest

Wildfires in Oregon, USA

Sensor: Landsat 8 **Path/Row:** 43/30 **Acquisition Dates:** July 1, 2014, July 17, 2014



The figure consists of two side-by-side satellite images of Malheur Lake in Oregon, USA, acquired by Landsat 8. The left image, dated July 1, 2014, shows the lake and surrounding landscape with minimal fire damage. The right image, dated July 17, 2014, shows significant fire damage, including large dark brown and black fire scars and bright orange areas indicating active fires. Both images include a scale bar (0 to 20 miles) and a north arrow. The USGS logo is in the top left, and the NASA logo is in the top right. A small inset map of the United States with a red dot in the Pacific Northwest is located below the images.

Wildfires in Oregon, USA

Dry conditions have made this year another busy one for wildfires in the western United States. For example, responders in east-central Oregon are currently fighting several separate fires that were started by lightning near Malheur Lake on July 14, 2014. The combination of high winds, low humidity, and high temperatures has been making the firefighting work difficult.

These Landsat images were acquired on July 1, 2014 (left), and again on July 17, 2014. Malheur Lake is in the center of both images. The large fire scars visible in the second image show the area burned within the Buzzard Complex as of July 17. The bright orange areas also show where the fires were continuing to burn at the time the second image was collected.

Landsat imagery can be an important tool to help evaluate the areas damaged and destroyed by fire, and can assist in response planning and identifying areas of further risk. Future images from Landsat will also be helpful for monitoring the land recovery after major fires such as this.

U.S. Department of the Interior
U.S. Geological Survey

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Landsat imagery can be an important tool to help evaluate the areas damaged and destroyed by fire, and can assist in response planning and identifying areas of further risk. Future images from Landsat will also be helpful for monitoring the land recovery after major fires such as this. This poster and additional Landsat Images of Interest can be found in the Landsat Image Gallery:

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