



Land Remote Sensing Program Update

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- ✧ SLI is the joint NASA/USGS Sustainable Land Imaging program
- ✧ The 3+1 part program, with the essential investments in technology and observational innovation to ensure a world class, sustainable, and responsible land imaging program through 2035:
 1. Class D Thermal Infrared Free Flyer (TIR-FF) to launch ASAP (estimated NLT 2019) and to fly in constellation with a reflective band imager
 - Low cost mitigation against an early loss of the Landsat 8 Class C TIRS, while demonstrating feasibility of constellation flying
 2. Landsat 9 (fully Class-B rebuild of Landsat 8) to launch NLT 2023
 - Low programmatic risk implementation of a proven system with upgrades to bring the whole system to Class B
 3. Land Imaging Technology and Systems Innovation (e.g., ACMS, hyperspectral)
 - Conducts hardware, operations and data management/processing investments to reduce risk in next generation missions.
 4. Landsat 10, Class B full spectrum, launch in 2030
 - Mission definition to be informed by the Technology investments in 2015 – 2018, leading to a key decision point around 2019

Landsat Operational Satellite Status

Landsat 8

- Collecting approximately 725 new scenes per day; supports 8-day revisit cycle
- An anomaly in the electronics associated with the Thermal Infrared Sensor (TIRS) has been under investigation while normal optical imaging operations continued with the Operational Land imager (OLI)
- Thermal imaging was recently suspended while the Flight Operations Team switched over to redundant circuitry; normal thermal imaging will resume following recalibration of TIRS



Landsat 7

- Collecting about 475 new scenes per day; about 22% of pixels missing per scene (faulty scan-line corrector)
- L7 collection strategy modified to concentrate on continental coverage; L8 capturing islands and reefs
- Sufficient fuel for a few more years of operation; limited subsystem redundancy



Landsat-based Information Products -- Status

- Standard orthorectified L1T calibrated radiance Landsat scenes (10M in 2014 alone)
- LandsatLook (full-resolution JPEGs browse/print images)
- TM/ETM+ surface reflectance Climate Data Record product released in EE May 2013
- Global 30m Land Cover Forest Gain/Loss product available through Google Earth Engine
- Landsat 8 OLI “provisional” surface reflectance product released December 2014
- Coming soon:
 - Burned Area Extent ECV available in “provisional” status
 - Dynamic Surface Water Extent ECV available in “provisional” status
 - Global 30m Land Cover Percent Tree Cover 2010 and validation data available for evaluation via USGS Visualization tool
 - Landsat TM/ETM+ “provisional” surface temperature scheduled for June 2015
- Further out:
 - Fractional Snow Covered Area ECV available in “provisional” status Q4 FY15
 - Biomass ECV in early stages of development (modeling and estimation)

LRS Requirements, Capabilities & Analysis (RCA) Project

RCA is a key LRS Program project to:

- Establish traceable, solution-agnostic processes enabling true data-driven decision making for EO programs
- Support program and budget justification and inform program direction
- Process was exercised within NOAA over the last decade and refined by OSTP during the 2012 National Earth Observation Assessment and more recently in the 2013 USGS National Land Imaging Requirements Pilot Project
- Process Requirements-elicitation team has begun data collection within USGS programs, with DOI and other agencies to follow

Questions the RCA Project will help answer:

- What needs do users have for Earth observing (EO) data?
- What potential data sources are available to meet those needs?
- What are the comparative contributions and impacts of current EO data sources on accomplishment of strategic goals?
- Where would incremental improvements in performance produce the largest improvement in achieving strategic goals?
- What changes in data services, if implemented, would have the biggest impact?

Landsat Advisory Group (LAG) Papers

2012:

- ✓ 1) The Value Proposition for Ten Landsat Applications
- ✓ 2) Statement on Landsat Data Use and Charges

2013:

- ✓ 1) Product Improvement
- ✓ 2) Cloud Computing: Potential New Approaches to Data Management & Distribution
- ✓ 3) Review of National Research Council report on implementing a Sustained Land Imaging Program

2014:

- ✓ 1) The Value Proposition for Landsat Applications – 2014 Update

2015 Guidance to LAG

Non-Federal Land Imaging User Requirement Compilation. The USGS will share with the LAG its plans and current progress toward identifying Federal user requirements for remotely sensed data. A USGS presentation will be followed by LAG members providing information about non-Federal data requirements that could include both LAG member input plus information obtained from non-Federal users contacted by LAG members. This could include a paper describing user perspectives on future requirements (perhaps based on interviews with non-Federal Landsat download customers, focusing on what they see as the needs of the future). This project would begin in March/April 2015 and conclude with specific information provided to USGS by late 2015.

Sentinel Satellite Series User Feedback and Recommendations. Regarding the Sentinel 1 (radar), Sentinel 2 (land-imaging) satellites, and new commercial smallsats and microsats, the USGS is interested in learning what success non-Federal users are having with data access and delivery mechanisms, data-use policies, and data applications. The USGS would also be interested in hearing what recommendations the LAG may have for USGS actions associated with these systems. This project could be a white paper assembled in the fall of 2015 to highlight initial user experiences and recommendations.

Previous Task Follow-up. In 2013, the LAG wrote several white papers requested by the USGS which made specific recommendations on the use of new technologies like cloud computing and on potential steps to improve USGS products. In 2015, the USGS will brief the LAG on progress made to date in regard to those topics. In the course of these briefings the USGS and LAG may recognize possible follow-up activities requiring further study and recommendations to enable improved USGS support to the non-federal remote sensing community.