

A Land Product Validation System (LPVS) for enhanced data access, retrieval, and analysis of GOES-R ABI and JPSS-VIIRS land data and products

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The National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey (USGS) Earth Resources Observation and Science (EROS) Center are collaborating on the development of a Land Product Validation System (LPVS) that will facilitate the application of multi-satellite and in-situ data for characterization and validation of land products (e.g., surface reflectance, normalized difference vegetation index (NDVI), and land surface temperature) derived from satellite sensors. Developed for evaluation of Geostationary Operational Environmental Satellite – R Series (GOES-R), Suomi National Polar-orbiting Partnership (NPP), and Joint Polar Satellite System (JPSS) products, LPVS will provide capabilities for cross-comparisons between multiple data sets. Data and products from satellites such as the U.S. Geological Survey (USGS) Landsat 8, the European Space Agency (ESA) Sentinel series of satellites, and other moderate to high spatial resolution sensors, will be added to LPVS when available.

The LPVS includes data inventory, access, and analysis functions that will allow data from multiple archive facilities to be easily identified, retrieved, co-registered, and compared statistically through a single interface. This functionality is evolving through a recently completed prototype phase (September 2012) towards a beta operational phase (September 2013) that will transition to full operations in late 2014.



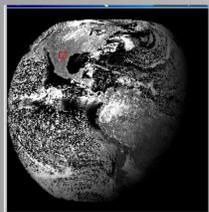
<http://landsat.usgs.gov/LPVS.php>



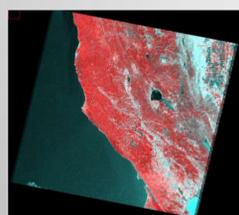
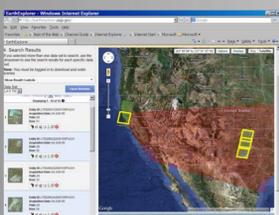
<http://lpvsexplorer.cr.usgs.gov/>

INPUT: Multiple Satellite Products

GOES-R : Simulated GOES-R ABI image for 4 June 2005, 20:00 Coordinated Universal Time (UTC). *Derived from the National Severe Storms Laboratory Weather Research and Forecasting model (NSSL-WRF) by the University of Wisconsin Cooperative Institute for Meteorological Satellite Studies (CIMSS).*



Landsat: Several Landsat Thematic Mapper (TM) scenes covering clear-sky regions of the simulated GOES-R ABI image above.

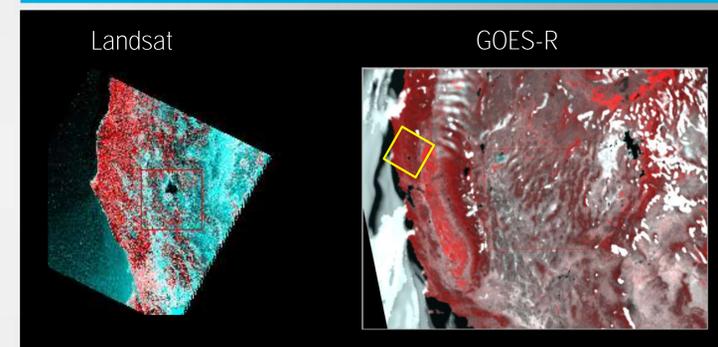


The LPVS will serve as a much needed tool for intercomparison of products from multiple satellites, including Landsat and GOES-R ABI as represented here, and for Suomi NPP and JPSS VIIRS, and Landsat 8 Operational Land Imager (OLI) as those data become available. LPVS is planning to add in-situ collections to its inventory as well, further enhancing its capability to provide data stacks and statistics from a single system for comparative analyses. Please visit the Web interfaces mentioned above for additional information and direct access to the LPVS.

SERVICE PROCESSING OPTIONS

1	File Format	NetCDF
2	Band Subsets	Custom
3	Map Projection	Lambert Azimuthal
4	Resampling	Cubic Convolution
5	Spatial Subset	Input Lat/Lon
6	Statistical Analysis	Mean
7	Statistical Analysis	Standard Deviation

OUTPUT: Processed Products with Statistics



Landsat scenes (left) reprojected to Lambert Azimuthal and resampled to 1,164 meters to match simulated GOES-R ABI (right).

NDVI derived from simulated GOES-R ABI top of atmosphere reflectance (U. Wisc. CIMSS) and Landsat TM surface reflectance (USGS EROS). Standard deviations associated with ABI and TM data are displayed as error bars.

