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LANDSAT MONTHLY UPDATE

February 2004

The Landsat Program is managed by the U.S. Geological Survey under authority established by Presidential Decision Directive NSTC-3.

Editor's Note:

While the problem with the scan line corrector aboard Landsat 7 appears to be permanent, the USGS and NASA continue to work with the science community to develop techniques to make the best possible use of the partially degraded data.

A number of related announcements have gone out to subscribers of the Landsat Monthly Update. It is our intention to keep you fully informed of plans for the changes to the released data. If you have questions or concerns, please contact Ron Beck at beck@usgs.gov. Additionally, please check the Landsat Web site for regular updates at landsat7.ugs.gov

USGS Announces New Product Line

The Landsat Project at the USGS EROS Data Center in Sioux Falls, South Dakota has been taking steps to increase the utility of the ETM+ data that includes non-functional scan line corrector (SLC) artifacts. The SLC on the Landsat 7 ETM+ instrument failed May 31, 2003.

A technique to estimate radiometric values in Landsat 7 data gaps has been selected, and the resulting new products will be available to customers in June 2004. In the planned products, the gap pixels are replaced with data from a previously acquired SLC-on scene that is registered and histogram-matched to the SLC-off image. The histogram matching technique is a localized linear transform performed in a moving window throughout the missing pixels.

In March 2004, the current ETM+ SLC-off product will be available to the public with a user-selectable amount of interpolation to replace missing gap pixels. The USGS is continuing to research other methods of providing better gap pixel estimates/merged data products and will continue to provide information resulting from this work as it becomes available. A sample product, with a comparison with the degraded data, further information, and regular updates on the planned product release can be found at http://landsat7.usgs.gov/slc_enhancements/.

This image is a preview of the new Gap-Filled products that will soon be available from the U.S. Geological Survey (USGS) Earth Resources Observation System (EROS) Data Center (EDC). The left image is from path 39 row 37, acquired over the Salton Sea in southern California on 9/17/2003, and shows the scan gaps caused by the failed Scan Line Corrector (SLC). The right image represents the same data, but with the gaps filled by histogram-matched data acquired 9/14/2002 over the same area.

Status of the Landsat 5 X-Band Transmitter Investigation

The Landsat 5 Flight Operations Team (FOT) has recently completed the testing and assessment of the X-band transmitter performance and, in particular, the traveling wave tube amplifier (TWTA). An over-current protection circuit for the TWTA has tripped on multiple occasions since last summer. In mid-January, a technical peer review was held with communications experts to present the history, symptoms, theories, testing, and analysis of the observed TWTA behavior. The outcome of this review included a proposed new operating profile for the x-band transmitter that will have a direct impact on the science data mission.

These results will be presented to the Landsat Flight Systems manager who will produce a proposal for a new mission concept of operations for Landsat 5 that will be presented to USGS Landsat Project Chief. A final decision will then be made on the operations profile the mission will adopt for the future.

NASA's Commercial Remote Sensing Program Released Two New Landsat 7 Products

Through cooperative efforts between NASA and the commercial remote sensing community, the USGS EROS Data Center released two new Landsat 7 products on December 23, 2003. The Landsat orthorectified ETM+ imagery and Landsat orthorectified Pan sharpened ETM+ Imagery data sets joined the Landsat orthorectified TM imagery data set, which was used as to establish the baseline for these two new products. Together, these products form a suite of quality-screened, high-resolution satellite images with global coverage over the Earth's landmasses, which will provide users with remote sensing data for tracking change over much of the Earth. The Earth Satellite Corporation, Rockville, Maryland, in cooperation with NASA and the USGS, provided the "orthorectification" process used to enhance the quality of the remote sensing data by using geodetic and elevation control data to correct for the positional accuracy and relief displacement of the imagery. For further information: http://edcimswww.cr.usgs.gov/pub/imswelcome/

The Landsat Monthly Update is an informal communication tool, prepared monthly and distributed electronically to USGS Landsat partners, to provide information about Landsat activities and related topics of interest. If you have any ideas, comments, corrections, or successes you would like to share with the Landsat community, please contact Ronald Beck, USGS Landsat team, at the following e-mail address: beck@usgs.gov.