

DEVELOPMENT AND PROCESSING OF LANDSAT TM AND ETM+ IMAGERY TO HIGH-LEVEL PRODUCTS

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ABSTRACT:

Images from the Landsat missions are frequently used for global land cover and change detection studies. To derive higher-order products from Landsat's Thematic Mapper (TM) and Enhanced Thematic Mapper Plus (ETM+), the burden has been on the user to transform images to remove atmospheric distortion and to calculate various spectral indices (SI). The Landsat Ecosystem Disturbance Adaptive Processing System (LEDAPS) implemented at the U.S. Geological Survey (USGS) Earth Resources Observation and Science (EROS) Center reduced end-user processing time by providing validated and automated atmospheric correction algorithms. The latest addition from the Center is the EROS Science Processing Architecture (ESPA) web interface, allowing users to process bulk orders of Landsat TM and ETM+ scenes through LEDAPS to various high-level Landsat products: (Current: Top of Atmosphere (TOA) Reflectance, Surface Reflectance (SR) and Band 6 Brightness Temperature; Future: Land Surface Temperature) and SIs processed with SR-derived imagery (vegetation indices, a moisture index, and burn ratios). Users are able to re-project datasets to multiple mapping grids, can modify image extents and re-sample cells. Upcoming processing features include the addition of Landsat 8 products, additional map projection options, and hosting products from the MODerate-resolution Imaging Spectroradiometer (MODIS) platform.

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