

GeoCover™

Product Description Sheet

Orthorectified Landsat Enhanced Thematic Mapper (ETM+) Compressed Mosaics

Mosaic Product Specifications:

- **Spectral Bands:** Three Landsat ETM+ bands, each sharpened with the panchromatic band.
 - Band 7 (mid-infrared light) is displayed as red
 - Band 4 (near-infrared light) is displayed as green
 - Band 2 (visible green light) is displayed as blue
- **Coverage:** The GeoCover Landsat mosaics are delivered in a Universal Transverse Mercator (UTM) / World Geodetic System 1984 (WGS84) projection. The mosaics extend north-south over 5 degrees of latitude, and span east-west for the full width of the UTM zone. For mosaics below 60 degrees north latitude, the width of the mosaic is the standard UTM zone width of 6 degrees of longitude. For mosaics above 60 degrees of latitude, the UTM zone is widened to 12 degrees, centered on the standard even-numbered UTM meridians. To insure overlap between adjacent UTM zones, each mosaic extends for at least 50 kilometers to the east and west, and 1 kilometer to the north and south.
- **Pixel size:** 14.25 meters,
- **Contrast Enhancement:** In order to maximize the information of each mosaic, EarthSat has applied a company proprietary contrast stretch known as LOCAL (Locally Optimized Continuously Adjusted Look-up-tables) stretch. This stretch uses multiple, locally collected histograms, to create a radiometrically seamless blend of contrast adjustment across areas of potentially extreme contrast ranges. The suffix “_loc” is added to the mosaic name to signify the application of the LOCAL stretch.
- **Absolute Positional Accuracy:** ±75 (ROSE: I am comfortable with a 50 meter RMSE, but wouldn't want to override your V&V folks) meters RMSEr.
- **File Naming Convention:** Within each UTM zone the “partitions” extend from the equator to the north and south (in the northern and southern hemisphere respectively) in 5 degree increments. The naming convention for the mosaics is comprised of three components, separated by hyphens; the first element is the hemisphere (either N or S), the second is the UTM zone number (1-60), the last element is the latitude of the southern edge of the mosaic in the northern hemisphere and the northern edge of the mosaic in the

southern hemisphere.

For example:

- N-13-25_2000_loc: names a LOCAL stretched mosaic partition in the northern hemisphere, in UTM zone 13, extending between 25 and 30 degrees north latitude.
- S-21-10_2000_loc names a LOCAL stretched mosaic partition in the southern hemisphere, in UTM zone 21, extending between 10 and 15 degrees south latitude.
- GeoCover Mosaic Image Product Delivery Format: The GeoCover Landsat image mosaics are being delivered to NASA both as uncompressed color imagery in GeoTIFF format and as compressed color imagery in MrSID™ file format. The data are delivered in 24-bit color. More information on the MrSID compression format and viewing software can be found at <http://www.lizardtech.com>.
- Non-standard UTM definition: For the southern hemisphere, the GeoTiff files contain positive zone numbers with negative northing coordinates.

Source (Input) Data:

Imagery:

- Spectral Bands: Landsat ETM+ bands 7, 4, and 2,
- Coverage: 5x6 degrees (south of 60 degrees North), and 5x12 degrees (north of 60 degrees North),
- Projection/Datum: UTM / WGS84,
- Pixel Size: Mixture of 14.25,
- Interpolation Method: Cubic Convolution,
- Orientation: North Up,
- Coverage Date: Scene dependent (nominally 2000 +/- 3 years).

Control:

- Horizontal: Image matching to 1990 GeoCover scenes where available, otherwise Landsat-7 ephemeris was used.
- Vertical: DTM with 3-arc second postings, where available. Where 3-arc second data not available, GTOPO30 (30-arc second) digital elevation models are used.

Digital Image Processing:

- Mosaicing:
Radiometrically balanced across automatically collected seam lines.
- Image Enhancements:
The data are spatially and spectrally unenhanced.