# *GeoCover™*
# *Product Description Sheet*

# Orthorectified Landsat Thematic Mapper Mosaics

**Mosaic Product Specifications:**

- Spectral Bands: 3 - Landsat TM bands
  - 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 generally extend north-south over 5 degrees of latitude, and span east-west for the full width of the UTM zone. For mosaics between 60 degrees north and 60 degrees south 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 UTM meridian. 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: 28.5 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: 50 meters Root Mean Square Error.
- 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 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 (there are some exceptions). For example:
    - N-13-25_loc: names a mosaic partition in the northern hemisphere, in UTM zone 13, extending between 25 and 30 degrees north latitude.

    - S-21-10_loc names a 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 as 24-bit color uncompressed GeoTIFF files and as 24-bit color MrSID compressed files. The MrSID compressed file format is rapidly becoming accepted as the compression format of choice within a geodetic environment. More information on the 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: All seven Landsat TM bands,
- Coverage: Single Landsat WRS Path/Row,
- Projection/Datum: SOM / WGS84,
- Pixel Size: Mixture of 28.5 and 30 meters,
- Interpolation Method: Cubic Convolution,
- Orientation: Path oriented,
- Coverage Date: Scene dependent (nominally 1990 +/- 3 years).

***Control*:**

- Horizontal: Controlled scenes contained 6 to 12 photo-identifiable points with absolute positional accuracy not greater then 15.0 meters RMS.
- Vertical: DTM with 3-arc second postings, where available. Where 3-arc second data are not available, GTOPO30 (30-arc second ) digital elevation models are used.

**Digital Image Processing:**

- Photogrammetric Block Adjustment:
  Performed using Earth Satellite Corporation's proprietary photogrammetric software.
- Orthorectification:
  Resampled to a UTM/WGS84 projection using nearest neighbor (i.e. no interpolation).
- Image Enhancements:
  The data are spatially and spectrally unenhanced.

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www.earthsat.com