

# LBA-ECO LC-10 Landsat TM Data for Legal Amazon: 1986-1994

## Summary:

This data set includes Landsat TM scenes from across the Legal Amazon region. A single image is provided for each spatial tile, representing the most cloud-free retrieval from 9/21/86 to 9/17/94. All files are in a single directory, including one band-sequential (bsq) file and one database (ddr) file for each scene.

## Data Citation:

### Cite this data set as follows:

TRFIC (Tropical Rain Forest Information Center, Basic Science and Remote Sensing Initiative, Michigan State University (<http://www.trfic.msu.edu>)). 2007. LBA-ECO LC-10 Landsat TM Data for Legal Amazon: 1986-1994. Data set. Available on-line [<http://www.daac.ornl.gov>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A

## Implementation of the LBA Data and Publication Policy by Data Users:

The LBA Data and Publication Policy [[http://daac.ornl.gov/LBA/lba\\_data\\_policy.html](http://daac.ornl.gov/LBA/lba_data_policy.html)] is in effect for a period of five (5) years from the date of archiving and should be followed by data users who have obtained LBA data sets from the ORNL DAAC. Users who download LBA data in the five years after data have been archived must contact the investigators who collected the data, per provisions 6 and 7 in the Policy.

This data set was archived in August of 2007. Users who download the data between August 2007 and July 2012 must comply with the LBA Data and Publication Policy.

Data users should use the Investigator contact information in this document to communicate with the data provider. Alternatively, the LBA Web Site [<http://lba.inpa.gov.br/lba/>] in Brazil will have current contact information.

Data users should use the Data Set Citation and other applicable references provided in this document to acknowledge use of the data.

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## 1. Data Set Overview:

**Project:** LBA (Large-Scale Biosphere-Atmosphere Experiment in the Amazon)

**Activity:** LBA-ECO

**LBA Science Component:** Land Use and Land Cover

**Team ID:** LC-10 (Skole / Pedlowski)

The investigators were Skole, David Lewis; Pedlowski, Marcos A.; Caldas, Marcellus Marques; Cameron, Stephen Robert; Chomentowski, Walter H.; Cochrane, Mark Alan; Matricardi, Eraldo A. T.; Oliveira, Pedro Mourao de; Salas, William A.; Silva, Andrea Maria Silveira e; Silva, Luiz Guilherme Teixeira de; Walker, Robert T.; Wood, Charles H. and Zhou, Yushuang . You may contact Skole, David Lewis (skole@msu.edu)

**LBA Data Set Inventory ID:** LC10\_Landsat\_TM

This data set includes Landsat-4 and Landsat-5 TM coverage of the Legal Amazon region, for the period from 1989 - 1994.

**For additional information, please see the following web sites:**

- Tropical Rain Forest Information Center at Michigan State University ( <http://www.trfic.msu.edu> )

**Related Data Sets:**

- LBA-ECO LC-10 Orthorectified Landsat ETM+ Data for Legal Amazon: 1999-2001.
- LBA Regional Boundary for the Legal Amazon of Brazil, 8-km.

## 2. Data Characteristics:

A single image is provided for each spatial tile, representing the most cloud-free retrievals from 1989 to 1994. Dates vary quite a bit, ranging from 9/21/86 to 9/17/94. All files for each scene are in a single directory, including one band sequential (bsq) file and one metadata (ddr) file. BSQ files include bands 1-5 and 7, which have 30m or 28.5m spatial resolution. Approximate scene size = 170 x 183 kilometers (106 x 115 miles). Files have different projections, including Transverse Mercator, zone = 62, and UTM, zones can be 18, 19, 20 etc. Datum varies (Clarke 1866 and Australian National).

### Landsat TM Sensor Bands

The TM sensor is an advanced Earth resources multispectral scanning instrument. The TM data are scanned simultaneously in seven spectral bands. Band 6 scans thermal (heat) infrared radiation. Spectral range of the bands and spatial resolution for the TM sensor are:

Landsats 4-5	Wavelength (micrometers)	Resolution (meters)
Band 1	0.45 - 0.52	30
Band 2	0.52 - 0.60	30
Band 3	0.63 - 0.69	30
Band 4	0.76 - 0.90	30
Band 5	1.55 - 1.75	30
Band 6	10.40 - 12.50	120
Band 7	2.08 - 2.35	30

**Site boundaries:** (All latitude and longitude given in degrees and fractions)

Site (Region)	Westernmost Longitude	Easternmost Longitude	Northernmost Latitude	Southernmost Latitude	Geodetic Datum
Legal Amazon (Legal Amazon)	-75.18	-42.59	5.23	-19.68	Clarke 1866

### Time period:

- The data set covers the period 1986/09/21 to 1994/09/17.

### Platform/Sensor/Parameters measured include:

- LANDSAT-4 (LAND REMOTE-SENSING SATELLITE-4) / LANDSAT TM (LANDSAT THEMATIC MAPPER) / LAND COVER
- LANDSAT-5 (LAND REMOTE-SENSING SATELLITE-5) / LANDSAT TM (LANDSAT THEMATIC MAPPER) / LAND COVER

### **3. Data Application and Derivation:**

These data were collected from the Landsat TM sensor. Due to their high resolution, they are especially appropriate for small-scale/mesoscale land cover change studies. The individual images should be highly useful as they include very little cloud cover, but care should be used if they are mosaicked together since retrieval dates vary.

### **4. Quality Assessment:**

The data have been systematically corrected. This correction included geometric and radiometric corrections on the images based on the satellite model and ephemeris data. The image data are embedded in a common row and column matrix and are map oriented. UTM coordinate tic marks are embedded in the fill data surrounding the image data. These coordinates are also provided in an ASCII text file (extension \*.ddr) associated with each scene. These coordinates can be used to rectify the image (to UTM north-up). A more accurate method for georeferencing the data would require a series of ground control points. These points may be obtained from appropriate orthophotographs, orthorectified images or ground based measurements. Using the ground control points, the images can then be registered using a warping process. This georegistration can be done on standard image processing platforms such as ERDAS Imagine or ENVI.

### **5. Data Acquisition Materials and Methods:**

The data have been acquired from 1) the U.S. National Archives held at the EROS Data Center, 2) foreign ground stations, and 3) directly from the EOSAT Corporation. A computerized Information Management System was constructed to sort through over 3 million metadata entries obtained from the EROS Data Center and the foreign ground stations. The EROS Data Center provided the full digital metadata listing of its own archives as well as the most current listing of metadata for selected ground stations through the Landsat Ground Station Operators Working Group (LGSOWG). These listings were supplemented with a significant number of additional entries provided directly by the ground stations. Images having less than 20% cloud cover within the optimal leaf-on period for the region were identified using this computerized information management system.

**Sensors used include:**

- LANDSAT TM (LANDSAT THEMATIC MAPPER)

### **6. Data Access:**

This data is available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC) or the EOS Data Gateway.

## **Data Archive Center:**

### **Contact for Data Center Access Information:**

E-mail: [uso@daac.ornl.gov](mailto:uso@daac.ornl.gov)

Telephone: +1 (865) 241-3952

FAX: +1 (865) 574-4665

## **7. References:**

No references available.

### **Related Publications**

No references available.