



CLPX-Satellite: Landsat Thematic Mapper Imagery, Version 1

USER GUIDE

How to Cite These Data

As a condition of using these data, you must include a citation:

Land Processes Distributed Active Archive Center. Compiled by R. Davis. 2003. *CLPX-Satellite: Landsat Thematic Mapper Imagery, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center.
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FOR QUESTIONS ABOUT THESE DATA, CONTACT NSIDC@NSIDC.ORG

FOR CURRENT INFORMATION, VISIT <https://nsidc.org/data/NSIDC-0149>



National Snow and Ice Data Center

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1 DETAILED DATA DESCRIPTION

1.1 Format

Image files are in Geographic Tagged Image-File Format (GeoTIFF). GeoTIFF defines a set of publicly available TIFF tags that describe cartographic and geodetic information associated with TIFF images. GeoTIFF enables referencing a raster image to a known geodetic model or map projection. The initial tags are followed by image data, that in turn, may be interrupted by more descriptive tags. By using the GeoTIFF format, both metadata and image data can be encoded into the same file.

The GeoTIFF images in this data set are delivered as a greyscale, uncompressed, 8-bit string of unsigned integers. Each Landsat 7 ETM+ and Landsat 5 TM scene has a Level 1 Product "Readme" file (in ASCII) containing generic information that describes the format, organization, general information and documentation of Landsat data. In addition, Landsat 7 ETM+ data has an accompanying metadata file consisting of an ASCII header containing image parameters (e.g., map projection, horizontal datum, resampling methods, pixel format, etc.).

1.2 File and Directory Structure

Data are available on the HTTPS site in the https://daacdata.apps.nsidc.org/pub/DATASETS/nsidc0149_c1px_sat_landsat/ directory. Within this directory, there are 25 folders: 17 for Landsat-7 files and 8 for Landsat-5 files. The Landsat-7 folders' names begin with LE, i.e. LE70340320001203, and Landsat-5 folders' names begin with LT, i.e. LT50350320002061.

1.3 File Naming Convention

This section explains the file naming convention used for this product with two examples: one for Landsat-7 and one for Landsat-5.

Example File Names: L7fppprrr_rrrYYYYMMDD_AAA.TIF

LTNppprrr00YYDOY10_AA.TIF

Refer to Table 1 for the valid values for the Landsat-7 file name variables and Table 2 for Landsat-5 file name variables listed above.

Table 1. Landsat-7 File Naming Convention Description

Variable	Description
L7	Landsat-7 mission
f	ETM+ data format (1 or 2)
ppp	starting path of the product
rrr_rrr	starting and ending rows of the product
YYYYMMDD	acquisition date of the image
AAA	file type:
B10	band 1
B20	band 2
B30	band 3
B40	band 4
B50	band 5
B61	band 6L (low gain)
B62	band 6H (high gain)
B70	band 7
B80	band 8
MTL	Level-1 metadata
TIF	GeoTIFF file extension

Table 2. Landsat-5 File Naming Convention Description

Variable	Description
LT	Landsat thematic mapper
N	satellite number. This should be validated against the satellite field if used exclusively
ppp	starting path of the product
rrr	starting row of the product
OO	WRS row offset (set to 00)
YY	last two digits of the year of acquisition
DOY	Julian date of acquisition
1	instrument mode
0	instrument multiplexor (MUX)
AA	file type:
B1	band 1
B2	band 2
B3	band 3

Variable	Description
B4	band 4
B5	band 5
B6	band 6
B7	band 7
TIF	GeoTIFF file extension

Each folder has an ASCII readme file, named README.GTF, and an ASCII metadata file named *filename*_MTL.txt.

1.4 File Size

GeoTIFF image files range in size from 14 to 219 MB. The ASCII Readme files are approximately 8 KB, and the ASCII metadata files are approximately 7 KB.

1.5 Spatial Coverage

Images were taken over the CLPX LRSA, located at 39.35 - 41.31 N, 104.52 - 107.24 W. Two scenes from the Landsat orbital cycle are required to cover all three MSAs within the LRSA.

Coverage of the LRSA required scenes described by Path/Row specifications 34/32, covering Fraser and North Park Meso-cell Study Areas (MSA), and 35/32, which covers the Rabbit Ears MSA and the western part of the North Park MSA. Scenes have an approximate size of about 170 x 183 km (106 x 115 mi). The spatial accuracy is typically within 250 m.

1.5.1 Spatial Resolution

Image data from both sensors consists of seven spectral bands, spanning 0.45-2.35 microns with a spatial resolution of 30 m for bands 1-5, and 7. Band 6, the thermal infrared, measures between 10.4-12.5 microns and has a spatial resolution of 60 m using the ETM+ sensor and 120 m using the TM sensor.

1.6 Temporal Coverage

Images were collected between 22 July 2001 and 22 March 2003. 25 scenes were collected during cloud sparse periods, fall through winter and spring.

Table 3. Images Collected from 22 July 2001 to 22 March 2003

Sensor (Landsat Satellite Number)	Starting Path/Row of Product	Acquisition Date of Image
ETM+ (7)	034/032	2001 07 22
ETM+ (7)	034/032	2001 08 07
ETM+ (7)	034/032	2001 09 24
ETM+ (7)	035/032	2001 11 02
ETM+ (7)	034/032	2002 02 15
ETM+ (7)	034/032	2002 03 03
ETM+ (7)	035/032	2002 03 10
ETM+ (7)	034/032	2002 03 19
ETM+ (7)	034/032	2002 04 04
ETM+ (7)	034/032	2002 05 06
ETM+ (7)	035/032	2002 05 13
ETM+ (7)	034/032	2002 08 10
ETM+ (7)	034/032	2002 10 13
ETM+ (7)	034/032	2002 11 30
ETM+ (7)	035/032	2003 01 08
ETM+ (7)	035/032	2003 03 13
ETM+ (7)	034/032	2003 03 22
TM (5)	035/032	2001 11 10
TM (5)	034/032	2001 11 19
TM (5)	034/032	2002 02 07
TM (5)	035/032	2002 03 02
TM (5)	034/032	2002 08 18
TM (5)	034/032	2002 10 21
TM (5)	034/032	2002 11 06
TM (5)	034/032	2003 01 09

1.7 Parameter or Variable

This data set presents Level 1G (radiance) radiometrically and geometrically corrected Landsat TM imagery.

2 DATA ACQUISITION AND PROCESSING

Image data from both sensors consists of seven spectral bands, spanning 0.45-2.35 microns with a spatial resolution of 30 meters for bands 1-5, and 7. Band 6, the thermal infrared, measures

between 10.4-12.5 microns and has a spatial resolution of 60 meters using the ETM+ sensor and 120 meters using the TM sensor. The ETM+ sensor on Landsat 7 separates band 6 into a low gain product (6L) and a high gain product (6H). The TM sensor on Landsat 5 only produces a single band 6 output. In addition to bands 1-7 the ETM+ also carries a panchromatic band that is visible through the near infra-red at a 15 m resolution. The panchromatic band is used to 'sharpen' multispectral images.

3 REFERENCES AND RELATED PUBLICATIONS

Additional information and documentation on the Landsat project, satellites, instruments, and data is available at the [USGS Landsat Project site](#).

4 CONTACTS AND ACKNOWLEDGMENTS

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5 DOCUMENT INFORMATION

5.1 Publication Date

09 September 2003

5.2 Date Last Updated

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