



SMEX03 Landsat Thematic Mapper Imagery: Alabama, Version 1

USER GUIDE

How to Cite These Data

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

Jackson, T. and M. Cosh. 2007. *SMEX03 Landsat Thematic Mapper Imagery: Alabama, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. doi: <https://doi.org/10.5067/QL4HIMU3TQ3U>. [Date Accessed].

FOR QUESTIONS ABOUT THESE DATA, CONTACT NSIDC@NSIDC.ORG

FOR CURRENT INFORMATION, VISIT <https://nsidc.org/data/NSIDC-0331>



National Snow and Ice Data Center

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1 DETAILED DATA DESCRIPTION

This data set provides imagery developed from Landsat 5 Thematic Mapper (TM) and Landsat 7 Enhanced Thematic Mapper (ETM+) data for use in studying land cover features during the Soil Moisture Experiment 2003 (SMEX03).

For this study, TM and ETM+ bands 2, 3, and 4 were combined to make false color composites.

- Vegetation appear as shades of red. Brighter reds indicate thicker vegetation.
- Soils with little or no vegetation appear as shades from white (sands) to green or brown, depending on moisture and vegetation content.
- Water appears blue.
- Urban areas appear as blue-gray.
- Clouds and snow appear bright white.

1.1 Format

Data are provided as GeoTIFF image files. 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.

1.2 File Naming Convention

Files are named according to the following convention:

AL_SMEX03_MMDDYY_RR_PP.tif

Where

MM = month

DD = day

YY = year

RR = row

PP = path

Example File Names: AL_SMEX03_062303_21_36.tif and AL_SMEX03_Mosaicked.tif

AL_SMEX03_Mosaicked.tif is a mosaicked scene of AL_SMEX03_070702_20_36.tif and AL_SMEX03_062303_21_36.tif.

1.3 Spatial Coverage

Southernmost Latitude: 34.6° N

Northernmost Latitude: 35.2° N

Westernmost Longitude: 87.1° W

Easternmost Longitude: 85.7° W

1.3.1 Spatial Resolution

The Landsat TM and ETM+ data are high-resolution 30 m data.

1.3.2 Projection and Grid Description

Universal Transverse Mercator (UTM) Zone 15.

1.4 Temporal Coverage

7 July 2002 and 23 June 2003

1.5 Parameter or Variable

Infrared Imagery (Band 4)

Visible Imagery (Bands 2 and 3)

1.5.1 Parameter Description

Bands 2, 3, and 4 as blue, green, and red are used to generate false color images that can be used to identify land cover and vegetation.

1.5.2 Parameter Source

TM scenes from Landsat 5 and ETM+ scenes from Landsat 7 were acquired during the study period. The following table details the Landsat coverage for the dates of the study.

Table 1: Landsat Coverage Details

File Name	Date	Landsat Number	Path / Row
AL_SMEX03_070702_20_36.tif	7 July 2002	7	20 / 36
AL_SMEX03_062303_21_36.tif	23 June 2003	5	21 / 36
AL_SMEX03_Mosaicked.tif	7 July 2002 and 23 June 2003	5 and 7	20 / 36 and 21 / 36

1.5.3 Sample Data Record



Figure 1: False Color Image of the Huntsville Area, Sample from Image File AL_SMEX03_070702_20_36.tif.

2 SOFTWARE AND TOOLS

A program which recognizes the GeoTIFF file format is recommended for these images.

3 DATA ACQUISITION AND PROCESSING

3.1 Sensor or Instrument Description

TM is a multispectral scanning radiometer carried on Landsats 4 and 5. The TM has seven spectral bands, with a spatial resolution of 30 m for most bands.

ETM+, an improved version of TM, is carried on Landsat 7. The ETM+ has eight spectral bands with a spatial resolution of 30 m for most bands.

4 REFERENCES AND RELATED PUBLICATIONS

As a condition of using these data, you must cite the use of this data set using the following citation. For more information, see our [Use and Copyright](#) page.

Jackson, T. and M. Cosh. 2007. SMEX03 Landsat Thematic Mapper Imagery: Alabama. [indicate subset used]. Boulder, Colorado USA: NASA National Snow and Ice Data Center Distributed Active Archive Center. doi: [10.5067/QL4HIMU3TQ3U](https://doi.org/10.5067/QL4HIMU3TQ3U).

U.S. Geological Survey (USGS). Landsat Missions. 1 May 2008. <http://landsat.usgs.gov/> 1 May 2008.

Sheffner, Ed. Landsat Program. 5 October 1991. <http://geo.arc.nasa.gov/sge/landsat/landsat.html> 31 October 2007.

Please see the [USDA SMEX03](#) Web site for in depth information on the science mission and goal of the SMEX project.

4.1 Related Data Collections

[AMSR-E/Aqua Data at NSIDC](#): AMSR-E standard products available at NSIDC

5 CONTACTS AND ACKNOWLEDGMENTS

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6 DOCUMENT INFORMATION

6.1 Publication Date

26 November 2007

6.2 Date Last Updated

1 May 2008 - Updated new USGS Landsat web page