SMEX02 Landsat Thematic Mapper Imagery, Iowa, 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. 2003. *SMEX02 Landsat Thematic Mapper Imagery, Iowa, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. https://doi.org/10.5067/8QWI10VRE06I. [Date Accessed].

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

FOR CURRENT INFORMATION, VISIT https://nsidc.org/data/NSIDC-0199

National Snow and Ice Data Center

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1 DETAILED DATA DESCRIPTION

For this study, TM and ETM+ bands 4, 3, and 2 were combined to make false-color composites. This band combination makes 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. Blue indicates water. Urban areas appear as blue-gray. Clouds and snow appear bright white.

1.1 Format

Data are provided as GeoTIFF image files with associated .TFW files containing georeferencing information. 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.

TFW files provide georeference information for the image with the same file name. Each TFW file is a text file with six numbers, described below:

1st row: the dimension of a pixel in map units in the x direction
2nd row: rotation term for row (0)
3rd row: rotation term for column (0)
4th row: the dimension of a pixel in map units in the y direction
5th row: x coordinate for upper left corner
6th row: y coordinate for upper left corner

1.2 File Naming Convention

All file names use the following convention:

MMDDYY.TIF and MMDDYY.TFW.
MM = month, DD = day, and YY = year (after 2000).

1.3 File Size

File sizes are approximately 20 MB each.

1.4 Volume

Total volume is approximately 100 MB.

1.5 Spatial Coverage

Southernmost Latitude: 41.7°N
Northernmost Latitude: 42.7°N
Westernmost Longitude: 93.8°W
Easternmost Longitude: 93.2°W

1.5.1 Spatial Resolution

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

1.5.2 Projection Description

Universal Transverse Mercator (UTM) Zone 15.

1.6 Temporal Coverage

Data were available over five days from 6 June 2002 to 17 July 2002.

1.7 Parameter or Variable

1.7.1 Parameter Description

The data are false-color images that can be used to identify land cover and vegetation.

1.7.2 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

Date	Landsat Number	Path
June 6	7	27
June 23	5	26
July 1	7	26
July 8	7	27
July 17	7	26

1.7.3 Sample Data Record

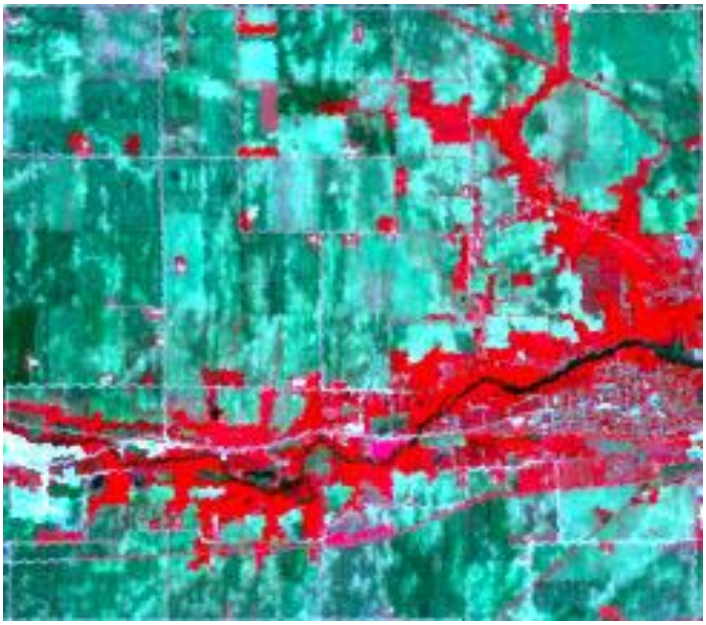

Figure 1. A screen shot of a portion of the image file "060602.tif."

2 SOFTWARE AND TOOLS

Open these files in an appropriate image processing or image viewing application.

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

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.

5 CONTACTS AND ACKNOWLEDGMENTS

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6 DOCUMENT INFORMATION

6.1 Publication Date

November 2003

6.2 Date Last Updated

22 March 2021