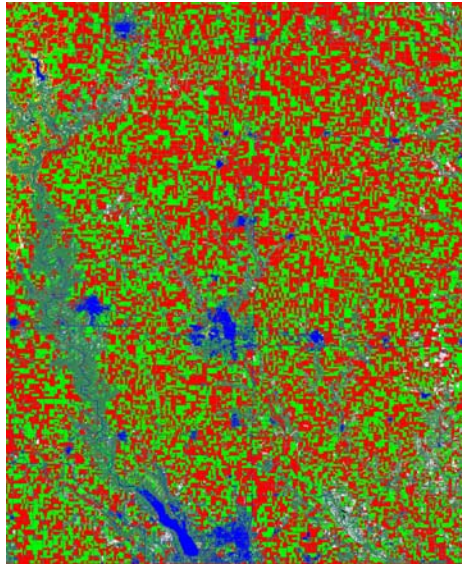


Notice to Data Users:

The documentation for this data set was provided solely by the Principal Investigator(s) and was not further developed, thoroughly reviewed, or edited by NSIDC. Thus, support for this data set may be limited.

SMEX05 Land Use Classification Data: Iowa



SMEX05 Land Cover Sample Image

Summary

This data set contains land use classification data for the Walnut Creek watershed area of Ames, Iowa USA. Land cover classification was necessary for the modeling and scaling of hydrologic variables of concern in the Soil Moisture Experiment 2005 (SMEX05). For the Ames study region, the National Agricultural Statistical Service (NASS) Land Cover Estimate was used to represent land cover classes. High accuracy was achieved with respect to a test data set. The data were collected from 06 June 2005 through 17 July 2005. The total volume of the data set is approximately 28 megabytes. Data are provided in one Band Interleaved by Line (BIL) file with a corresponding Environment for Visualizing Images (ENVI) header file. Data are available via FTP.

The Advanced Microwave Scanning Radiometer - Earth Observing System (AMSR-E) is a mission instrument launched aboard NASA's Aqua satellite on 04 May 2002. AMSR-E validation studies linked to SMEX are designed to evaluate the accuracy of AMSR-E soil moisture data. Specific validation objectives include: assessing and refining soil moisture algorithm performance; verifying soil moisture estimation accuracy; investigating the effects of vegetation, surface temperature, topography, and

soil texture on soil moisture accuracy; and determining the regions that are useful for AMSR-E soil moisture measurements.

Citing These Data:

Hunt, E. Raymond. 2009. *SMEX05 Land Use Classification Data: Iowa*. Boulder, Colorado USA: NASSA DAAC at the National Snow and Ice Data Center.

Overview Table

| Category | Description |
|---|---|
| Data format | Band Interleaved by Line (BIL) format |
| Spatial coverage | <u>Study Area</u> 41.8666° to 42.0666° N, 93.5166° to 94.0166° W Northwestern Corner: 413459 meters Easting, 4705830 meters Northing 2444 columns, 2999 Rows UTM Zone 15, WGS84 30 meter resolution |
| Temporal coverage | 06 June 2005 - 17 July 2005 |
| File naming convention | SMEX05_Land_Cover.bil |
| File size | 28 MB |
| Parameter(s) | land cover |
| Procedures for obtaining data | Data are available via FTP. |

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1. Contacts and Acknowledgments:

Technical Contact:

NSIDC User Services
National Snow and Ice Data Center
CIRES, 449 UCB
University of Colorado
Boulder, CO 80309-0449 USA
phone: (303)492-6199
fax: (303)492-2468
form: [Contact NSIDC User Services](#)
e-mail: nsidc@nsidc.org

Acknowledgements:

The United States Department of Agriculture Agricultural Research Service (USDA ARS) National Laboratory for Agriculture and the Environment and the many graduate students and volunteers who collected the field data.

2. Detailed Data Description:

Format:

Data consist of a Band Interleaved by Line (BIL) file and an associated Environment for Visualizing Images (ENVI) header file.

File Naming Convention:

SMEX05_Land_Cover.bil
SMEX05_Land_Cover.hdr

File Size:

The SMEX05_Land_Cover.bil file is approximately 28 MB.
The SMEX05_Land_Cover.hdr file is 1 KB.

Spatial Coverage:

Study Area
Southernmost Latitude: 41.8666° N
Northernmost Latitude: 42.0666° N

Westernmost Longitude: 94.0166° W
Easternmost Longitude: 93.5166° W

Northwestern Corner: 413459 meters Easting, 4705830 meters Northing
UTM Zone 15, WGS84
2444 columns, 2999 Rows
30 meter resolution

Temporal Coverage:

Data span 06 June 2005 through 17 July 2005.

Parameter or Variable:

The digital numbers contained in the SMEX05_Land_Cover.bil file indicate land cover classification as shown in Table 1.

Table 1. Land Cover Classification

| Classification Number | Land Cover |
|------------------------------|---|
| 1 | Corn |
| 5 | Soybean |
| 6 | Sunflower |
| 25 | Other Small Grains & Hay |
| 28 | Oats |
| 32 | Flaxseed |
| 36 | Alfalfa |
| 44 | Other Crops (Canola, Flaxseed, Safflower) |
| 61 | Fallow/Idle Cropland |
| 62 | Pasture/Range/CRP/Non Ag |
| 63 | Woods, Woodland Pasture |
| 70 | Christmas Trees |
| 81 | Clouds |
| 82 | Urban |
| 83 | Water |
| 87 | Wetlands |
| 88 | Grassland |

3. Data Access and Tools:

Data Access:

Data are available via FTP at: ftp://sidads.colorado.edu/pub/DATASETS/AVDM/data/soil_moisture/SMEX05/ancillary_data/landuse_classification/

Software and Tools:

Most image software will display these data.

4. Data Acquisition and Processing:

The data were generated using Interactive Data Language (IDL) and ENVI. Table 2 summarizes the accuracy assessment of the National Agricultural Statistics Service (NASS) land cover classification product. The overall accuracy is 92%.

Table 2. NASS Land Cover Classification Accuracy

| | | Classification Accuracy | | | | | | | |
|--------|---------|-------------------------|-----|--------|---------|-------|-------|-----------------------|--|
| | | Classification | | | | | TOTAL | Producer Accuracy (%) | |
| | | corn | soy | forest | alfalfa | other | | | |
| Ground | corn | 211 | 1 | 12 | - | - | 224 | 94 | |
| | soy | 3 | 123 | - | - | - | 126 | 98 | |
| | forest | 1 | - | 49 | - | 1 | 51 | 96 | |
| | alfalfa | - | 6 | - | 8 | - | 14 | 57 | |
| | TOTAL | 215 | 130 | 61 | 8 | 1 | 415 | | |

5. References and Related Publications:

Yilmaz, M. T., E. R. Hunt, and T. J. Jackson. 2008. Remote Sensing of Vegetation Water Content from Equivalent Water Thickness Using Satellite Imagery. *Remote Sensing of Environment*. 112, 5, 2514-2522.

6. Document Information:

List of Acronyms

The following acronyms are used in this document:

AMSR-E – Advanced Microwave Scanning Radiometer – Earth Observing System

BIL – Band Interleaved by Line format

CIRES – Cooperative Institute for Research in Environmental Science

CRP – Conservation Reserve Program

ENVI – Environment for Visualizing Images

FTP – File Transfer Protocol

IDL – Interactive Data Language

NASS - National Agricultural Statistics Service

Non Ag – Non-Agricultural
NSIDC – National Snow and Ice Data Center
SMEX05 – Soil Moisture Experiment 2005
USDA ARS – United States Department of Agriculture Agricultural Research Service
UTM – Universal Transverse Mercatur
WGS84 – World Geodetic System 1984

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