SMEX03 Regional Ground Soil Moisture Data: Alabama, Version 1

USER GUIDE

How to Cite These Data

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

Archer, F. and C. Laymon. 2006. *SMEX03 Regional Ground Soil Moisture Data: Alabama, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. https://doi.org/10.5067/IW5SNOPDGNOZ. [Date Accessed].

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

FOR CURRENT INFORMATION, VISIT https://nsidc.org/data/NSIDC-0287

National Snow and Ice Data Center

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1 DETAILED DATA DESCRIPTION

1.1 File Descriptions

Table 1 lists the files contained in this data set.

Table 1: Files Contained in this Data Set

File Name	Parameter	File Size
GSM_AL_v2.txt	Ground Soil Moisture	54 KB
BD_AL_v2.txt	Bulk Density	11 KB

1.2 Format

Data are provided as comma-delimited text files. Table 2 and Table 3 list the column headings in each data file, and give a description of the type of information found under each column heading.

Table 2: Column Headings and Description for the GSM_AL _v2.txt

Column Heading	Description
Date	Date readings made
DOY	Numerical day of the year
Site ID	Alabama site number (1-59)
Latitude	Latitude in decimal degrees
Longitude	Longitude in decimal degrees
0-3 cm Can wt. (g)	Weight (g) of can at the 0-3 cm depth
0-3 cm Wet wt. (g)	Weight (g) of soil and can at the 0-3 cm depth prior to drying
0-3 cm Dry wt. (g)	Weight (g) of soil and can at the 0-3 cm depth after drying
0-3 cm GSM (g/g)	Gravimetric soil moisture (g/g) of sample at the 0-3 cm depth
3-6 cm Can wt. (g)	Weight (g) of can at the 3-6 cm depth
3-6 cm Wet wt. (g)	Weight (g) of soil and can at the 3-6 cm depth prior to drying
3-6 cm Dry wt. (g)	Weight (g) of soil and can at the 3-6 cm depth after drying
3-6 cm GSM (g/g)	Gravimetric soil moisture (g/g) for sample at the 3-6 cm depth
Data Quality Flag	Data defined as missing and erroneous

Table 3: Column Headings and Description for the BD_AL_v2.txt

Column Heading	Description
Date	Date readings made
DOY	Numerical day of the year
Site ID	Alabama site number (1-59)
Latitude	Latitude in decimal degrees
Longitude	Longitude in decimal degrees
0-3 cm Can wt. (g)	Weight (g) of can at the 0-3 cm depth
0-3 cm Dry wt. (g)	Weight (g) of soil and can at the 0-3 cm depth after drying
0-3 cm BD g/cm3	Bulk density (g/cm^3) for sample at the 0-3 cm depth
3-6 cm Can wt. (g)	Weight (g) of can at the 3-6 cm depth
3-6 cm Dry wt. (g)	Weight (g) of soil and can at the 3-6 cm depth after drying
3-6 cm BD g/cm3	Bulk density (g/cm^3) for sample at the 3-6 cm depth

1.3 Spatial Coverage

Southernmost Latitude: 34.71° N

Northernmost Latitude: 35.14° N

Westernmost Longitude: 87.05° W

Easternmost Longitude: 85.82° W

1.4 Temporal Coverage

Data were collected daily from 22 June 2003 to 2 July 2003.

1.4.1 Temporal Resolution

Cores were taken daily between 11:00 A.M. and 3:00 P.M. local time.

1.5 Parameter or Variable

1.5.1 Parameter Description

Parameters in this data set include gravimetric soil moisture (g/g) and soil bulk density (g/cm).

1.5.2 Sample Data Record

Below is a partial sample record from the GSM_AL_v2.txt data file. The first four columns and last four columns of the data file are shown, and only the first four data records are shown.

Date	DOY	Site ID	Latitude	...	3-6 cm Can wt. (g)	3-6 cm Wet wt. (g)	3-6 cm Dry wt. (g)	3-6 cm GSM (g/g)
6/22/03	173	AL 01	35.111351	...	38.18	169.60	144.89	0.232
6/22/03	173	AL 02	35.125375	...	37.04	104.51	92.88	0.208
6/22/03	173	AL 03	35.050518	...	37.95	133.97	119.62	0.176
6/22/03	173	AL 04	35.042841	...	37.70	124.58	94.25	N/A

1.6 Error Sources

Missing and erroneous data were identified based on field notes and post-experiment examination of output. Missing data are represented by the text -999.000, and suspect or questionable data values are noted in the last data column, titled Data Quality Flag.

2 DATA ACQUISITION AND PROCESSING

The 0-6 cm soil moisture profile was measured using a standard soil core sampler, the barrel of which was loaded with two metal cylinders 3 cm high and hammered into the soil. Following extraction of the sampler, the cylinder containing the soil sample was removed from the barrel. The core was sliced with a wide spatula at 3 cm intervals and each slice was analyzed separately. Refer to Figure 2. If soil moisture conditions were favorable and the soil was relatively free from gravel and plant residue, samples suitable for bulk density determination were obtained. The samples that were suitable for bulk density determination were noted in the field. For AMSR-E validation purposes, soil moisture was sampled each day between 11:00 a.m. and 3:00 p.m. local time.

Figure 1: Demonstration of the Sliced Core Sampling Technique

2.1 Processing Steps

The soil samples were weighed, dried, and then weighed again. Then the bulk density was computed using the following formula:

Bulk Density = dry soil mass extracted / soil volume extracted

And the gravimetric soil moisture was computed using the following formula:

Gravimetric soil moisture = (wet weight - dry weight) / dry weight

3 REFERENCES AND RELATED PUBLICATIONS

Please see the AMSR-E Web site to access data.

4 CONTACTS AND ACKNOWLEDGMENTS

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5 DOCUMENT INFORMATION

5.1 Publication Date

April 2006

5.2 Date Last Updated

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