SMAPVEX12 Core-Based Soil Texture Data, Version 1

USER GUIDE

How to Cite These Data

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

Bullock, P., A. Berg, and G. Wiseman. 2014. *SMAPVEX12 Core-Based Soil Texture Data, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. https://doi.org/10.5067/376D19WSS9VT. [Date Accessed].

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

FOR CURRENT INFORMATION, VISIT https://nsidc.org/data/SV12CST

NSIDC National Snow and Ice Data Center

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1 DATA DESCRIPTION

This data set contains in situ soil texture data collected with coring devices at several sites as part of the Soil Moisture Active Passive Validation Experiment 2012 (SMAPVEX12).

1.1 Parameters

Parameters in this data set include soil texture fractions and soil texture class. Specifically, the parameters are:

- sand fraction
- silt fraction
- clay fraction
- very fine sand fraction
- fine sand fraction
- medium sand fraction
- coarse sand fraction
- very coarse sand fraction
- abbreviated texture name
- texture name

All parameters (expect for the texture names) are expressed as percentages.

1.2 File Information

1.2.1 Format

Format and File Contents

Data are provided in ASCII text files.

`SV12CST_Soil_Txt_Properties_ver4.txt` contains the soil texture from ground sampling.

`Field_Sites_ver4_coords.txt` contains the UTM coordinates for the sampling points.

Table 1 describes the data columns of the sampling data file, while Table 2 describes the columns of the geolocation file.

Table 1. Data Fields and Descriptions for SV12CST_Soil_Txt_Properties_ver4.txt

Column Heading	Description
SV12CST	Data Set Short Name
OBJECT_ID	ID of the sample
Site_ID	ID of the field and the sample point within the field
Sand	Percentage of the total soil contained in the sand fraction
Silt	Percentage of the total soil contained in the silt fraction
Clay	Percentage of the total soil contained in the clay fraction
SF_Very_Fine	Percentage of the total soil contained in the very fine sand fraction (<106 um)
SF_Fine	Percentage of the total soil contained in the fine sand fraction (106-250 um)
SF_Medium	Percentage of the total soil contained in the medium sand fraction (250-500 um)
SF_Coarse	Percentage of the total soil contained in the coarse sand fraction (500 um-1 mm)
SF_Very_Coarse	Percentage of the total soil contained in the very coarse sand fraction (>1 mm)
Texture_Abbrev	Abbreviated soil texture name
Texture	Soil texture name

Table 2. Data Fields and Descriptions for Field_Sites_ver4_coords.txt

Column Heading	Description
OBJECTID	ID of the data record
Site_ID	ID of the field and the sample point within the field
X	UTM X coordinate
Y	UTM Y coordinate

1.3 Spatial Information

1.3.1 Coverage

Southernmost Latitude: 49.44°N

Northernmost Latitude: 49.96°N

Westernmost Longitude: 98.51°W

Easternmost Longitude: 97.85°W

1.3.2 Resolution

The spatial resolution was approximately 3.2 km. Sampling was performed on sites approximately one quarter section (0.8 km by 0.8 km) in size.

1.3.3 Geolocation

Data are provided in Universal Transverse Mercator (UTM), Zone 14 N, World Geodetic System 1984 (WGS84) coordinates.

1.4 Temporal Information

1.4.1 Coverage

Measurements were taken one time for each field site within the study period from 07 June 2012 through 19 July 2012.

2 DATA ACQUISITION AND PROCESSING

2.1 Background

A particle size analysis of soil core samples was conducted to determine the textural class of the samples.

2.2 Processing

During flight days, crews were instructed to collect one bulk density core per field (the primary reason for this was the calibration of the handheld sensors). The location of the one bulk density site was moved each flight day such that by the end of the campaign, one sample had been collected at each sampling location within each field. This strategy yielded more than 850 cores during the course of SMAPVEX12. The dimensions of the soil cores were approximately 4.6 cm in height and 4.7 cm in diameter with a core volume of 80 cm^3. When the crew arrived at the designated bulk density site for that particular sampling day, they took their three standard probe readings. As well, the crew collected a soil core and three additional probe readings. These three additional readings were located in close proximity to the location of the soil core extraction, and were recorded separately on the field sheets. Crews were careful to collect an undisturbed soil sample. These samples (soil and core) were placed in a soil tin with a lid, with the tin then being placed in a re-sealable plastic bag to minimize moisture loss. Soil cores were transported back to Winnipeg for weighing and drying. The entire sample (soil, core, tin and bag) was weighed. The tin was then removed from the plastic bag and placed in a soil drying oven. The samples were oven dried for 24 hours at 105°C. Following drying, the entire sample (soil, core, tin) was then re-weighed. The particle size analysis was conducted using the dried samples.

See more details in Section 2.1.1 of the SMAPVEX12 Database Report, released 18 December 2012.

2.3 Quality, Errors, and Limitations

Error Sources

Representation error is assumed to be relatively small due to the fact that a core sample was analyzed from each soil moisture measurement location at each site. Refer to the Data Acquisition and Processing section of this document.

Quality Assessment

The quality of the data corresponds to the quality of the soil texture analysis carried out in similar soil moisture field experiments.

3 SOFTWARE AND TOOLS

No special tools are required to read these data. Any text editor or Web browser will display the ASCII text files.

4 CONTACTS AND ACKNOWLEDGMENTS

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5 REFERENCES

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6 DOCUMENT INFORMATION

6.1 Publication Date

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6.2 Date Last Updated

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