SMAPVEX16 Manitoba Soil Texture Data, Version 1

USER GUIDE

How to Cite These Data

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

McNairn, H., K. Gottfried, and J. Powers. 2018. *SMAPVEX16 Manitoba 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/A05VHIXID3FN. [Date Accessed].

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

FOR CURRENT INFORMATION, VISIT https://nsidc.org/data/SV16M_ST

National Snow and Ice Data Center

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1 DATA DESCRIPTION

1.1 Parameters

This data set contains soil texture and organic matter observations.

1.2 File Information

1.2.1 Format

Data are available in a single Comma-Separated Values (.csv) file.

Location information for the relevant field sites are available in a Keyhole Markup Language zipped (.kmz) file.

Extensible Markup Language (.xml) files with associated metadata are also provided.

1.2.2 File Contents

Soil properties are presented in a single CSV file, SV16M_ST_SoilPropertiesVers3.csv. Table 1 includes details on this file's contents; Figure 1 displays the file's headers and 14 rows of sample data.

Table 1. File Contents

Column Headers	Description
SITE_ID	Unique ID of the field site where sampling occurred. Each field had 16 possible sample locations
SAND	Percentage of soil contained in the sand fraction (%)
SILT	Percentage of soil contained in the silt fraction (%)
CLAY	Percentage of soil contained in the clay fraction (%)
SF_VERY_FINE	Percentage of soil contained in the very fine sand (<106 µm) fraction (%)
SF_FINE	Percentage of soil contained in the fine sand (106-250 µm) fraction (%)
SF_MEDIUM	Percentage of soil contained in the medium sand (250-500 µm) fraction (%)
SF_COARSE	Percentage of soil contained in the coarse sand (500 µm - 1 mm) fraction (%)
SF_VERY_COARSE	Percentage of soil contained in the very coarse sand (≥ 1 mm) fraction (%)
TEXTURE	Abbreviated soil texture name (Table 2)

Column Headers	Description
SOM	Percentage of organic matter in the soil (%)

Table 2. Abbreviated Soil Texture Names

Label	Definition
HC	Heavy Clay
C	Clay
CL	Clay Loam
SiCL	Silty Clay Loam
SCL	Sandy Clay Loam
SL	Sandy Loam
LS	Loamy Sand
S	Sand

SITE_ID	SAND	SILT	CLAY	SF_VERY_FINE	SF_FINE	SF_MEDIUM	SF_COARSE	SF_VERY_COARSE	TEXTURE	SOM
14-1	91.7	3.4	5	34.8	54.6	1.9	0.2	0.1	S	2.728
14-2										2.286
14-11										1.792
14-13										2.373
14-14										3.251
31-1										8.333
31-2										8.41
31-11										9.047

Figure 1. File Headers and Ten Rows of Sample Data

1.2.3 Naming Convention

File names are:

SV16M_ST_SoilPropertiesVers3.csv

SV16M_ST_FieldSites.kmz

SV16M_ST is short for SMAPVEX16 (Soil Moisture Active Passive Validation Experiment 2016) Manitoba Soil Texture Data.

1.2.4 File Size

The CSV file is approximately 7 KB.

The KMZ file is approximately 29 KB.

1.3 Spatial Information

1.3.1 Coverage

Northernmost Latitude: 49.761171° N
Southernmost Latitude: 49.384076° N
Easternmost Longitude: 97.756264° W
Westernmost Longitude: 98.098417° W

1.3.2 Resolution

Data are point measurements. The distance between measurements varied.

1.3.3 Geolocation

Table 3 provides information on the coordinate reference system for this data set.

Table 3. Coordinate Reference System

Geographic coordinate system	NAD83(CSRS)
Projected coordinate system	NAD83(CSRS) / UTM Zone 14N
Longitude of true origin	-99
Latitude of true origin	0
Scale factor at longitude of true origin	0.9996
Datum	NAD83 Canadian Spatial Reference System
Ellipsoid/spheroid	GRS 1980
Units	meter
False easting	500000
False northing	0
EPSG code	3158
PROJ4 string	+proj=utm +zone=14 +ellps=GRS80 +towgs84=0,0,0,0,0,0,0 +units=m +no_defs
Reference	https://epsg.io/3158

1.4 Temporal Information

1.4.1 Coverage

Data were collected between June and July 2016.

1.4.2 Resolution

N/A

2 DATA ACQUISITION AND PROCESSING

2.1 Background

This data set was collected as part of the 2016 Soil Moisture Active Passive Validation Experiment (SMAPVEX16) conducted in the Carman/Elm Creek region of Manitoba, Canada. The experiment was designed to calibrate and increase the accuracy of NASA's Soil Moisture Active Passive (SMAP) products. For this data set, soil texture analysis coincided with SMAP satellite overpasses and Passive Active L- and S-band Sensor (PALS) flights.

2.2 Acquisition

These data show the results from particle size and soil organic matter (SOM) analyses for 50 agricultural fields. Prior to the campaign, the location of each sample site was determined in ArcGIS. During the campaign, sites were identified using Garmin GPS units. The accuracy of each GPS unit was approximately 3 m.

For the SMAPVEX16 campaign, particle size analysis was limited to those agricultural fields not included in the 2012 SMAP Validation Experiment (SMAPVEX12). As a result, new samples were only taken from 35 of the 50 available fields, with results from the 2012 particle size analysis provided for the other 15. Though each field had 16 possible sampling locations, soil was only collected from Site 1; during SMAPVEX12 samples were collected from Site 12 or Site 3. The University of Manitoba Soil Science Department performed the particle size analysis and calculated the percent sand, silt, clay, and sand fraction for each soil sample.

The SMAPVEX16 campaign also includes soil organic matter (SOM) analyses from all 50 agricultural fields. For each field, SOM was measured at Sites 1, 2, 3, 11, 13, and 14, using three soil samples collected at each location. The University of Manitoba Soil Science Department tested SOM using a loss on ignition method.

3 RELATED DATA SETS

SMAP Data | Overview

4 RELATED WEBSITES

SMAP at NASA

SMAPVEX12

SMAPVEX16

5 CONTACTS AND ACKNOWLEDGMENTS

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6 DOCUMENT INFORMATION

6.1 Publication Date

8 August 2018

6.2 Date Last Updated

27 September 2018