



SMAPVEX16 Manitoba Soils Geodatabase, 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 Soils Geodatabase, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. <https://doi.org/10.5067/OLKTT40AC6OL>. [Date Accessed].

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

FOR CURRENT INFORMATION, VISIT https://nsidc.org/data/SV16M_SDB



National Snow and Ice Data Center

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1 DATA DESCRIPTION

1.1 Parameters

This data set contains soil classifications for the Carman/Elm Creek region of Manitoba, Canada.

1.2 File Information

1.2.1 Format

Data are available for download in a Tape Archive Gzip, or tarball, file (.tar.gz).

Stored within the tarball file is a geodatabase (.gdb), a folder containing a collection of both spatial and non-spatial data files. The geodatabase can be opened in ArcGIS.

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

1.2.2 File Contents

The file geodatabase contains one polygon feature class, three tables, and three relationship classes (Figure 1).

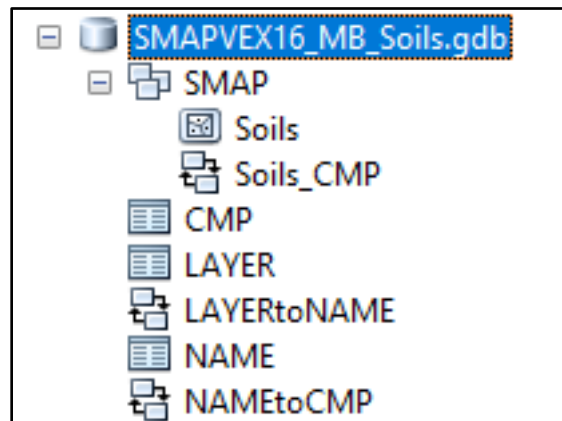


Figure 1. Contents of the file geodatabase, as they appear in ArcCatalog

The Soils polygon attribute table contains only information about the shape and size of each polygon, as described in Table 1.

Table 1. Soils Polygon Attribute Table Summary

Field Name	Description
POLY_ID	Polygon identification number
Hectares	Total area of the polygon (hectares)
<i>OBJECTID</i>	<i>A mandatory field maintained by ArcGIS</i>
<i>Shape</i>	<i>A mandatory shapefile field maintained by ArcGIS</i>
<i>Shape_Length</i>	<i>Geometry of the polygon calculated within ArcGIS (meters)</i>
<i>Shape_Area</i>	<i>Geometry of the polygon calculated within ArcGIS (square meters, m²)</i>

The Component (CMP), Soil Name (NAME), and Soils Layer (LAYER) tables contain the soil classification and characterizations associated with each polygon in the Soils data set. The contents of the CMP, NAME, and LAYER table are described in more detail in Tables 2, 3, and 4, respectively.

Table 2. CMP Table Summary

Field	Description
POLY_ID	Polygon identification number
CMP	Component number, identifies a unique part of a polygon
PERCENT	Percent of polygon occupied by the component
SLOPE_P	Slope steepness
SLOPE_LEN	Slope length
STONINESS	Surface stoniness class
PROVINCE	Province code
SOIL_CODE	Soil code
MODIFIER	Soil code modifier
PROFILE	Type of soil profile
SOIL_ID	Soil name
CMP_ID	Polygon component identifier
<i>OBJECTID</i>	<i>A mandatory field maintained by ArcGIS</i>
<i>Shape_Length</i>	<i>Geometry of the polygon associated with the POLY_ID, calculated in ArcGIS (meters)</i>
<i>Shape_Area</i>	<i>Geometry of the polygon associated with the POLY_ID, calculated in ArcGIS (square meters, m²)</i>

Table 3. NAME Table Summary

Field	Description
SOIL_ID	Soil name
PROVINCE	Province code
SOIL_CODE	Soil code
MODIFIER	Soil code modifier
PROFILE	Type of soil profile
SOILNAME	Soil name
KIND	Kind of surface material
WATERTBL	Water table characteristics
ROOTRESTRI	Soil layer that restricts root growth
RESTR_TYPE	Type of root restricting layer
DRAINAGE	Soil drainage class
PMTEX1	Parental material texture - first (uppermost)
PMTEX2	Parental material texture - second
PMTEX3	Parental material texture - third
PMCHEM1	Parental material chemical property - first (uppermost)
PMCHEM2	Parental material chemical property - second
PMCHEM3	Parental material chemical property - third
MDEP1	Mode of deposition - first (uppermost)
MDEP2	Mode of deposition - second
MDEP3	Mode of deposition - third
ORDER2	Soil order (2nd edition)
G_GROUP2	Soil great group (2nd edition)
S_GROUP2	Soil subgroup (2nd edition)
ORDER3	Soil order (3rd edition)
G_GROUP3	Soil great group (3rd edition)
S_GROUP2	Soil subgroup (3rd edition)

Table 4. LAYER Table Summary

Field	Description
SOIL_ID	Soil name
PROVINCE	Province code
SOIL_CODE	Soil code
MODIFIER	Soil code modifier
PROFILE	Type of soil profile
LAYER_NO	Layer number
UDEPTH	Upper depth
LDEPTH	Lower depth
HZN_LIT	Horizon lithological discontinuity
HZN_MAS	Horizon master code
HZN_SUF	Horizon suffix
HZN_MOD	Horizon modifier
COFRAG	Course fragments
DOMSAND	Dominant sand fraction
VFSAND	Very fine sand
TSAND	Total sand
TSILT	Total silt
TCLAY	Total clay
ORGCARB	Organic carbon
PHCA	pH in calcium chloride
PH2	pH as per project report
BASES	Base saturation
CEC	Cation exchange capacity
KSAT	Saturated hydraulic conductivity
KP0	Water retention at 0 kP
KP10	Water retention at 10 kP
KP33	Water retention at 33 kP
KP1500	Water retention at 1500 kP
BD	Bulk density
EC	Electrical conductivity
CACO3	Calcium carbonate equivalent
VONPOST	Von post
WOOD	Woody material

There are three relationship classes in the geodatabase: Soils_CMP, NAMEtoCMP, and LAYERtoNAME. Relationship classes associate objects in one class (e.g. polygon) to another class (e.g. table). In this geodatabase, the Soils_CMP relationship class joins the CMP table to the Soils polygon attribute table. The NAMEtoCMP relationship class joins the NAME table to the CMP table, and the LAYERtoNAME relationship class joins the LAYER table to the NAME table.

The CMP, NAME, and LAYER tables can also be manually joined to the Soils polygon in ArcGIS using common attributes and shared fields (Figure 2). First, the CMP table must be joined to the Soils polygon through their shared POLY_ID field. Then the NAME and LAYER tables can be joined to the CMP table, and by extension the Soils polygon, through their shared SOIL_ID fields.



Figure 2. The Soils polygon and CMP table can be joined through their shared POLY_ID fields (in red). The CMP table can also be joined to the NAME and LAYER tables through their shared SOIL_ID fields (in blue). Within each feature class's table, italicized fields are specific to ArcGIS and do not represent soil classification.

1.2.3 Naming Convention

File names are the following:

SV16M_SDB_SMAPVEX16_MB_Soils.tar.gz
 SV16M_SDB_SMAPVEX16_MB_Soils.tar.gz.MET.xml

where SV16M_SDB and SMAPVEX16_MB are both abbreviations for Soil Moisture Active Passive Validation Experiment 2016 Manitoba Soils Geodatabase.

1.2.4 File Size

The tarball file is approximately 48 MB.

1.3 Spatial Information

1.3.1 Coverage

Northernmost Latitude: 49.797634° N
 Southernmost Latitude: 49.358546° N
 Easternmost Longitude: 97.737866° W
 Westernmost Longitude: 98.130123° W

1.3.2 Resolution

N/A

1.3.3 Geolocation

Table 5 provides information for geolocating this data set.

Table 5. Geolocation Details

Geographic coordinate system	North American Datum (NAD) 1983
Projected coordinate system	NAD83 / UTM Zone 14 North
Longitude of true origin	-99
Latitude of true origin	0
Scale factor at longitude of true origin	0.9996
Datum	NAD 1983
Ellipsoid/spheroid	Geodetic Reference System 1980
Units	Meter
False easting	500000
False northing	0

EPSG code	26914
PROJ4 string	+proj=utm +zone=14 +ellps=GRS80 +towgs84=0,0,0,0,0,0,0 +units=m +no_defs
Reference	https://epsg.io/26914

1.4 Temporal Information

1.4.1 Coverage

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](#) conducted in the Carman/Elm Creek region of Manitoba, Canada. The experiment was designed to calibrate and increase the accuracy of NASA Soil Moisture Active Passive (SMAP) products. For this data set, a soil classification map of the study area was derived from the Details Soil Survey Compilations data developed by the Canadian Soil Information Service (CanSIS). This data set represents only a subset of the information available through the CanSIS National Soil DataBase (NSDB).

2.2 Acquisition

The SMAPVEX16 Manitoba soils geodatabase is a subset of the Manitoba Province Detailed Soil Survey Compilation, available through the CanSIS NSDB. Spatial resolution, soil classifications, and naming conventions are consistent between the two data products. The Manitoba Province Detailed Soil Survey Compilations is available on the [CanSIS NSDB Detailed Soil Surveys](#) website.

3 RELATED DATA SETS

[CanSIS NSDB Detailed Soil Survey Compilations](#)

[SMAP Data | Overview](#)

4 RELATED WEBSITES

[SMAP at NASA](#)

[SMAPVEX16](#)

5 CONTACTS AND ACKNOWLEDGMENTS

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6 DOCUMENT INFORMATION

6.1 Publication Date

22 August 2018

6.2 Date Last Updated

10 October 2018