



SMAPVEX16 Manitoba Land Cover Classification Map, 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 Land Cover Classification Map, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. <https://doi.org/10.5067/2JBTORD9BCBN>. [Date Accessed].

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

FOR CURRENT INFORMATION, VISIT https://nsidc.org/data/SV16M_LC



National Snow and Ice Data Center

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1 DATA DESCRIPTION

1.1 Parameters

The parameter for this data set is land cover classification (Table 1).

Table 1. Land Cover Classification Designations

Value Code	Land Cover Type
20	Water - Water bodies (lakes, reservoirs, rivers, streams, salt water, etc)
30	Exposed Land and Barren - Land that is predominately non-vegetated and non-developed. Includes: glacier, rock, sediments, burned areas, rubble, mines, other naturally occurring non-vegetated surfaces. Excludes: fallow agriculture
34	Urban and Developed - Land that predominantly built-up or developed and vegetation associated with these land covers. This includes road surfaces, railway surfaces, buildings and paved surfaces, urban areas, industrial sites, mine structures, golf courses, etc.
50	Shrubland - Predominantly woody vegetation of relatively low height (generally +/-2 meters). May include grass or wetlands with woody vegetation, regenerating forest
80	Wetland - Land with a water table near/at/above soil surface for enough time to promote wetland or aquatic processes (semi-permanent or permanent wetland vegetation, including fens, bogs, swamps, sloughs, marshes etc)
110	Grassland - Predominantly native grasses and other herbaceous vegetation, may include some shrubland cover
122	Pasture and Forages - Periodically cultivated. Includes tame grasses and other perennial crops such as alfalfa and clover grown alone or as mixtures for hay, pasture or seed
130	Too Wet to be Seeded - Agricultural fields that are normally seeded that remain unseeded due to excess spring moisture
133	Barley
135	Millet
136	Oats
137	Rye
139	Triticale
145	Winter Wheat
146	Spring Wheat
147	Corn
153	Canola and Rapeseed

Value Code	Land Cover Type
154	Flaxseed
157	Sunflower
158	Soybeans
162	Peas
167	Beans
174	Lentils
177	Potatoes
193	Herbs
195	Buckwheat
196	Canaryseed
197	Hemp
210	Coniferous - Predominantly coniferous forests or treed areas
220	Broadleaf - Predominantly broadleaf/deciduous forests or treed areas
230	Mixedwood - Forest that is a combination of both the coniferous and broadleaf classes

1.2 File Information

1.2.1 Format

Data are provided in Georeferenced Tagged Image File Format (GeoTIFF).

Ancillary files are available in a Tape Archive Gzip file (.tar.gz).

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

1.2.2 Naming Convention

File names are:

SV16M_LC_LandCover2016.tif
 SV16M_LC_LandCover2016.tar.gz

SV16M_LC is short for SMAPVEX16 (Soil Moisture Active Passive Validation Experiment 2016) Manitoba Land Cover.

1.2.3 File Size

The GeoTIFF file is approximately 740 KB.

The TAR file is approximately 338 KB.

1.3 Spatial Information

1.3.1 Coverage

Northernmost Latitude: 49.997539° N

Southernmost Latitude: 49.145916° N

Easternmost Longitude: 97.435997° W

Westernmost Longitude: 98.363559° W

1.3.2 Resolution

30 m x 30 m

1.3.3 Geolocation

The following tables provide information for geolocating this data set

Table 2. Coordinate Reference System

Geographic coordinate system	Geographic Coordinate System (GCS) North American 1983
Projected coordinate system	Canada Albers Equal Area Conic
Longitude of true origin	N/A
Latitude of true origin	N/A
Scale factor at longitude of true origin	N/A
Datum	North American Datum 1983
Ellipsoid/spheroid	Geodetic Reference System (GRS) 1980
Units	meter
False easting	0
False northing	0
EPSG code	102001
PROJ4 string	+proj=area +lat_1=50 +lat_2=70 +lat_0=40 +lon_0=-96 +x_0+0 +datum=NAD83 +units=m +no_defs
Reference	https://epsg.io/102001

Table 3. Grid Details

Grid cell size (x, y pixel dimensions)	30 m, 30 m
Number of rows	3118
Number of columns	2148
Geolocated lower left point in grid	49.145916° N, 98.363559° W
Nominal gridded resolution	30 meters
Grid rotation	N/A
ulxmap – x-axis map coordinate of the center of the upper-left pixel (XLLCORNER for ASCII data)	98.363559° W
ulymap – y-axis map coordinate of the center of the upper-left pixel (YLLCORNER for ASCII data)	49.997539° N

1.4 Temporal Information

1.4.1 Coverage

June and July 2016

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's Soil Moisture Active Passive (SMAP) products. For this data set, a map of the study area was derived from a land use classification effort by the Earth Observation Team of the Science and Technology Branch (STB) at Agriculture and Agri-Food Canada (AAFC).

The Earth Observation Team of STB at AAFC generates a digital crop inventory map of Canada every year as part of their efforts to maintain a national crop inventory and to better understand trends in food production. Land use classification codes are assigned using Decision Trees (DTs) and optical- (Landsat-8, Sentinel-2, Gaofen-1) and radar-based (RADARSAT-2) satellite images. AAFC corroborates satellite imagery with information from provincial crop insurance companies in Alberta, Saskatchewan, Manitoba, and Quebec; from point observations from the BC Ministry of Agriculture and the Ontario Ministry of Agriculture, Food, and Rural Affairs; and from data provided by the regional AAFC Research and Development Centers in St. John's, Kentville, Charlottetown, Fredericton, Guelph, and Summerland.

2.2 Acquisition

The SMAPVEX16 Manitoba land use classification map represents a subset of the Canada-wide AAFC 2016 digital crop inventory map. Spatial resolution, land use classification values, and land use naming conventions are consistent between the two data products. The AAFC 2016 digital crop inventory map is available from the [Government of Canada Open Data Portal](#).

2.3 Quality, Errors, and Limitations

The overall target accuracy for this map was at least 85%. Land cover classification from remotely sensed data uses the term "accuracy" to express a map's degree of "correctness," or the degree to which it provides an unbiased representation of the region's land cover. Therefore, the land use classifications provided in this data set agree with reality or "ground truth" at least 85% of the time.

3 RELATED DATA SETS

[AAFC 2016 Annual Crop Inventory](#)
[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

9 August 2018

6.2 Date Last Updated

12 November 2020