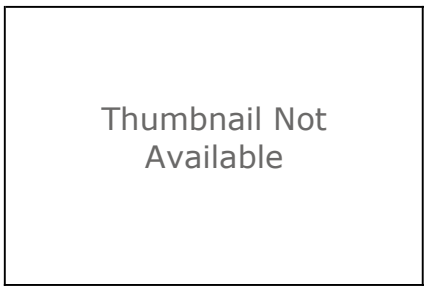
# Station_Soil_Moisture_MAFRI

**File Geodatabase Table**




**Tags**

SMAPVEX12, MAFRI, precipitation, soil moisture, soil temperature, real dielectric constant, calibration

## Summary

This table was generated for use in analysis and validation associated with the SMAPVEX12 (Soil Moisture Active-Passive Validation Experiment 2012) project.

## Description

This table presents data recorded at hourly intervals during the course of the SMAPVEX12 field campaignbetween June 7 and July 19at four permanent soil moisture stations operated by Manitoba Agriculture, Food and Rural Initiatives (MAFRI). Data include recorded and calibrated soil moisture, real dielectric constant, soil temperature, and total precipitation.

## Credits

Grant Wiseman Senior Geomatics Scientist – Scientifique principal en géomatique Agriculture and Agri-Food Canada – Agriculture et Agroalimentaire Canada Telephone - Téléphone: 204-984-4080 Cellular - Cellulaire: 204-293-6074 Facsimile - Télécopieur: 204-983-2178 200-303 Main Street, Winnipeg, MB R3C 3G7 grant.wiseman@agr.gc.ca

## Use limitations

All SMAPVEX12 data (except those already on public domain servers) will be placed on the University of Sherbrooke site. Access will be limited by password that will be provided to principle investigators and co-investigators listed below. It will be up to the principle investigators and co-investigators to ensure that staff, graduate students and post docs respect the terms of the agreement on usage and distribution. Access to the website will be restricted until July 1, 2013 for preliminary research and quality control. After July 1, 2013 all data will be transferred to a SMAP DAAC. Principle Investigators Heather McNairn, Agriculture and Agri-Food Canada Tom Jackson, USDA, ARS Hydrology and Remote Sensing Laboratory Co-Investigators Aaron Berg, University of Guelph Amine Merzouki, Agriculture and Agri-Food Canada Andreas Colliander, JPL Anne Walker, Environment Canada Brenda Toth, Environment Canada/MSC/HAL Catherine Champagne, Agriculture and Agri-Food Canada Craig Smith, Environment Canada Dara Entekhabi, MIT Eni Njoku, JPL Grant Wiseman, Agriculture and Agri-Food Canada Jarrett Powers, Agriculture and Agri-Food Canada Jiali Shang, Agriculture and Agri-Food Canada John Fitzmaurice, Agriculture and Agri-Food Canada Mahta Moghaddam, University Southern California Mike Cosh, USDA, ARS Hydrology and Remote Sensing Laboratory Narendra Das, JPL Paul Bullock, University of Manitoba Peggy O'Neill, NASA GSFC Ramata Magagi, University of Sherbrooke Rotimi Ojo, University of Manitoba Sab Kim, JPL Stéphane Bélair, Environment Canada - NWP and Data Assimilation Alicia Joseph, NASA GSFC Erika Podest, JPL John Kimball, University of Montana Kalifa Goïta, University of Sherbrooke Marco Carrera, Environment Canada, Meteorological Research Division Steven Chan, JPL Vanessa Escobar, NASA GSFC

## ArcGIS Metadata ►

## Topics and Keywords ►

THEMES OR CATEGORIES OF THE RESOURCE environment, geoscientificInformation

* CONTENT TYPE Downloadable Data

*Hide Topics and Keywords ▲*

## Citation ►

* TITLE Station_Soil_Moisture_MAFRI

PRESENTATION FORMATS * digital table

*Hide Citation ▲*

## Resource Details ►

DATASET LANGUAGES * English (CANADA)
DATASET CHARACTER SET utf8 - 8 bit UCS Transfer Format

SPATIAL REPRESENTATION TYPE * text table

* PROCESSING ENVIRONMENT Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; ESRI ArcGIS 10.0.5.4400

CREDITS

Grant Wiseman
Senior Geomatics Scientist – Scientifique principal en géomatique
Agriculture and Agri-Food Canada – Agriculture et Agroalimentaire Canada
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200-303 Main Street, Winnipeg, MB R3C 3G7
grant.wiseman@agr.gc.ca

ARCGIS ITEM PROPERTIES

* NAME Station_Soil_Moisture_MAFRI
* LOCATION file://\\mbwinnfs106\gis$\data8\projects\land\soil\SMAPVEX12\data\Geodatabase\SMAPVEX_MASTER.gdb
* ACCESS PROTOCOL Local Area Network

*Hide Resource Details ▲*

## Resource Points of Contact ►

POINT OF CONTACT

INDIVIDUAL'S NAME Grant Wiseman
ORGANIZATION'S NAME Agriculture and Agri-Food Canada – Agriculture et Agroalimentaire Canada
CONTACT'S POSITION Senior Geomatics Scientist – Scientifique principal en géomatique
CONTACT'S ROLE point of contact

CONTACT INFORMATION ►

PHONE

VOICE 204-984-4080
FAX 204-983-2178

ADDRESS
TYPE
DELIVERY POINT 200-303 Main Street
CITY Winnipeg
ADMINISTRATIVE AREA Manitoba
POSTAL CODE R3C 3G7
COUNTRY Canada
E-MAIL ADDRESS grant.wiseman@agr.gc.ca

*Hide Contact information ▲*

*Hide Resource Points of Contact ▲*

## Resource Maintenance ►

RESOURCE MAINTENANCE
UPDATE FREQUENCY as needed

*Hide Resource Maintenance ▲*

## Resource Constraints ►

CONSTRAINTS
LIMITATIONS OF USE

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Principle Investigators
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Co-Investigators
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Kalifa Goïta, University of Sherbrooke
Marco Carrera, Environment Canada, Meteorological Research Division
Steven Chan, JPL
Vanessa Escobar, NASA GSFC

*Hide Resource Constraints ▲*

## Data Quality ►

SCOPE OF QUALITY INFORMATION ►
RESOURCE LEVEL non-geographic dataset

*Hide Scope of quality information ▲*

*Hide Data Quality ▲*

## Geoprocessing history ►

PROCESS
PROCESS NAME
DATE 2012-11-22 13:40:17
TOOL LOCATION c:\program files (x86)\arcgis\desktop10.0\ArcToolbox\Toolboxes\Data Management Tools.tbx\DeleteField
COMMAND ISSUED
```
DeleteField Station_Soil_Moisture_MAFRI2
NoName;NoName_1;NoName_12;NoName_12_13;NoName_12_13_14
```
INCLUDE IN LINEAGE WHEN EXPORTING METADATA No

PROCESS
PROCESS NAME
DATE 2012-11-26 10:11:04
TOOL LOCATION c:\program files (x86)\arcgis\desktop10.0\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
COMMAND ISSUED
```
CalculateField Station_Soil_Moisture_MAFRI2 Rain_mm "NULL" VB #
```
INCLUDE IN LINEAGE WHEN EXPORTING METADATA No

PROCESS
PROCESS NAME
DATE 2012-11-26 10:11:18
TOOL LOCATION c:\program files (x86)\arcgis\desktop10.0\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
COMMAND ISSUED
```
CalculateField Station_Soil_Moisture_MAFRI2 Rain_mm NULL VB #
```
INCLUDE IN LINEAGE WHEN EXPORTING METADATA No

PROCESS
DATE 2012-11-27 15:55:20
TOOL LOCATION C:\Program Files (x86)\ArcGIS\Desktop10.0\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField

COMMAND ISSUED
CalculateField Station_Soil_Moisture_MAFRI Field_ID2 [Field_ID] VB #
INCLUDE IN LINEAGE WHEN EXPORTING METADATA No

PROCESS
DATE 2012-11-27 15:56:00
TOOL LOCATION C:\Program Files (x86)\ArcGIS\Desktop10.0\ArcToolbox\Toolboxes\Data Management Tools.tbx\CalculateField
COMMAND ISSUED
CalculateField Station_Soil_Moisture_MAFRI Field_ID [Field_ID2] VB #
INCLUDE IN LINEAGE WHEN EXPORTING METADATA No

*Hide Geoprocessing history ▲*

## Distribution ►

DISTRIBUTION FORMAT
* NAME File Geodatabase Table

*Hide Distribution ▲*

## Fields ►

DETAILS FOR OBJECT Station_Soil_Moisture_MAFRI ►
* TYPE Table
* ROW COUNT 3153
DEFINITION
Data recorded at four permanent MAFRI soil moisture stations during the SMAPVEX12 field campaign.

DEFINITION SOURCE
AAFC

FIELD OBJECTID ►
* ALIAS OBJECTID
* DATA TYPE OID
* WIDTH 4
* PRECISION 0
* SCALE 0
* FIELD DESCRIPTION
Internal feature number.

* DESCRIPTION SOURCE
ESRI

* DESCRIPTION OF VALUES Sequential unique whole numbers that are automatically generated.

*Hide Field OBJECTID ▲*

FIELD Field_ID ►
* ALIAS Field_ID
* DATA TYPE String
* WIDTH 10
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION
Identification number of the field in which the soil moisture station was situated.

DESCRIPTION SOURCE
AAFC

*Hide Field Field_ID ▲*

FIELD Sample_Date ►
* ALIAS Sample_Date
* DATA TYPE Date
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION
Date of recording.

DESCRIPTION SOURCE
AAFC

*Hide Field Sample_Date ▲*

FIELD Sample_Time ►
* ALIAS Sample_Time
* DATA TYPE Date
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION
Time of recording (military).

DESCRIPTION SOURCE
AAFC

*Hide Field Sample_Time ▲*

FIELD Crop_Type ►
* ALIAS Crop_Type
* DATA TYPE String
* WIDTH 255
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION
Amount of precipitation (mm).

DESCRIPTION SOURCE
AAFC

*Hide Field Crop_Type ▲*

FIELD Rain_mm ►
* ALIAS Rain_mm
* DATA TYPE String
* WIDTH 255

* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Amount of precipitation (mm).

DESCRIPTION SOURCE

AAFC

*Hide Field Rain_mm ▲*

FIELD SM_5cm ►

* ALIAS SM_5cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Proportional soil moisture measured at a depth of 5 cm.

DESCRIPTION SOURCE

AAFC

*Hide Field SM_5cm ▲*

FIELD Temp_5cm ►

* ALIAS Temp_5cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Temperature (°C) measured at a depth of 5 cm.

DESCRIPTION SOURCE

AAFC

*Hide Field Temp_5cm ▲*

FIELD RDC_5cm ►

* ALIAS RDC_5cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Real dielectric constant measured at a depth of 5 cm.

DESCRIPTION SOURCE

AAFC

*Hide Field RDC_5cm ▲*

FIELD Calib_5cm ►

* ALIAS Calib_5cm

* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Calibrated soil moisture at a depth of 5 cm. The following calibrations were used, depending upon clay percent content and real dielectric constant value: 0.09704√x - 0.12478 < 20% clay);
0.07642√x - 0.05692 (20-40% clay); (-0.0007x3 + 0.0725x2 – 1.64x + 39.39)/100 (> 40% clay); (0.687x + 16.276)/100 (RDC<14 or RDC>52).

DESCRIPTION SOURCE

AAFC

*Hide Field Calib_5cm ▲*

FIELD SM_20cm ►

* ALIAS SM_20cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Proportional soil moisture measured at a depth of 20 cm.

DESCRIPTION SOURCE

AAFC

*Hide Field SM_20cm ▲*

FIELD Temp_20cm ►

* ALIAS Temp_20cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Temperature (°C) measured at a depth of 20 cm.

DESCRIPTION SOURCE

AAFC

*Hide Field Temp_20cm ▲*

FIELD RDC_20cm ►

* ALIAS RDC_20cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Real dielectric constant measured at a depth of 20 cm.

DESCRIPTION SOURCE

AAFC

*Hide Field RDC_20cm ▲*

FIELD Calib_20cm ►
* ALIAS Calib_20cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Calibrated soil moisture at a depth of 20 cm. The following calibrations were used, depending upon clay percent content and real dielectric constant value: 0.09704√x - 0.12478 < 20% clay); 0.07642√x - 0.05692 (20-40% clay); (-0.0007x3 + 0.0725x2 – 1.64x + 39.39)/100 (> 40% clay); (0.687x + 16.276)/100 (RDC<14 or RDC>52)

DESCRIPTION SOURCE
AAFC

*Hide Field Calib_20cm ▲*

FIELD SM_50cm ►
* ALIAS SM_50cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Proportional soil moisture measured at a depth of 50 cm.

DESCRIPTION SOURCE
AAFC

*Hide Field SM_50cm ▲*

FIELD Temp_50cm ►
* ALIAS Temp_50cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Temperature (°C) measured at a depth of 50 cm.

DESCRIPTION SOURCE
AAFC

*Hide Field Temp_50cm ▲*

FIELD RDC_50cm ►
* ALIAS RDC_50cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0

* SCALE 0

FIELD DESCRIPTION

Real dielectric constant measured at a depth of 50 cm.

DESCRIPTION SOURCE

AAFC

*Hide Field RDC_50cm ▲*

FIELD Calib_50cm ►

* ALIAS Calib_50cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Calibrated soil moisture at a depth of 50 cm. The following calibrations were used, depending upon clay percent content and real dielectric constant value: 0.09704√x - 0.12478 < 20% clay); 0.07642√x - 0.05692 (20-40% clay); (-0.0007x3 + 0.0725x2 – 1.64x + 39.39)/100 (> 40% clay); (0.687x + 16.276)/100 (RDC<14 or RDC>52)

DESCRIPTION SOURCE

AAFC

*Hide Field Calib_50cm ▲*

FIELD SM_100cm ►

* ALIAS SM_100cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Proportional soil moisture measured at a depth of 100 cm.

DESCRIPTION SOURCE

AAFC

*Hide Field SM_100cm ▲*

FIELD Temp_100cm ►

* ALIAS Temp_100cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Temperature (°C) measured at a depth of 100 cm.

DESCRIPTION SOURCE

AAFC

*Hide Field Temp_100cm ▲*

FIELD RDC_100cm ►
* ALIAS RDC_100cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Real dielectric constant measured at a depth of 100 cm.

DESCRIPTION SOURCE
AAFC

*Hide Field RDC_100cm ▲*

FIELD Calib_100cm ►
* ALIAS Calib_100cm
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Calibrated soil moisture at a depth of 100 cm. The following calibrations were used, depending upon clay percent content and real dielectric constant value: 0.09704√x - 0.12478 < 20% clay); 0.07642√x - 0.05692 (20-40% clay); (-0.0007x3 + 0.0725x2 – 1.64x + 39.39)/100 (> 40% clay); (0.687x + 16.276)/100 (RDC<14 or RDC>52)

DESCRIPTION SOURCE
AAFC

*Hide Field Calib_100cm ▲*

*Hide Details for object Station_Soil_Moisture_MAFRI ▲*

*Hide Fields ▲*

## Metadata Details ►

* METADATA LANGUAGE English (CANADA)
METADATA CHARACTER SET utf8 - 8 bit UCS Transfer Format

METADATA IDENTIFIER 8096C3BE-980E-465F-9040-36BC9A608679

SCOPE OF THE DATA DESCRIBED BY THE METADATA * non-geographic dataset
SCOPE NAME * dataset

* LAST UPDATE 2013-01-10

ARCGIS METADATA PROPERTIES
METADATA FORMAT ArcGIS 1.0
METADATA STYLE FGDC CSDGM Metadata
STANDARD OR PROFILE USED TO EDIT METADATA NAP

CREATED IN ARCGIS FOR THE ITEM 2012-12-20 12:37:02

LAST MODIFIED IN ARCGIS FOR THE ITEM 2013-01-10 16:13:05

AUTOMATIC UPDATES
HAVE BEEN PERFORMED Yes
LAST UPDATE 2013-01-10 16:13:05

*Hide Metadata Details ▲*

## Metadata Maintenance ►

MAINTENANCE
UPDATE FREQUENCY as needed

*Hide Metadata Maintenance ▲*

# FGDC Metadata (read-only) ►

## Entities and Attributes ►

DETAILED DESCRIPTION
ENTITY TYPE
ENTITY TYPE LABEL Station_Soil_Moisture_MAFRI
ENTITY TYPE DEFINITION
Data recorded at four permanent MAFRI soil moisture stations during the SMAPVEX12 field campaign.
ENTITY TYPE DEFINITION SOURCE AAFC

ATTRIBUTE
ATTRIBUTE LABEL OBJECTID
ATTRIBUTE DEFINITION
Internal feature number.
ATTRIBUTE DEFINITION SOURCE ESRI
ATTRIBUTE DOMAIN VALUES
UNREPRESENTABLE DOMAIN
Sequential unique whole numbers that are automatically generated.

ATTRIBUTE
ATTRIBUTE LABEL Field_ID
ATTRIBUTE DEFINITION
Identification number of the field in which the soil moisture station was situated.
ATTRIBUTE DEFINITION SOURCE AAFC

ATTRIBUTE
ATTRIBUTE LABEL Sample_Date
ATTRIBUTE DEFINITION
Date of recording.
ATTRIBUTE DEFINITION SOURCE AAFC

ATTRIBUTE
ATTRIBUTE LABEL Sample_Time
ATTRIBUTE DEFINITION
Time of recording (military).
ATTRIBUTE DEFINITION SOURCE AAFC

ATTRIBUTE
ATTRIBUTE LABEL Crop_Type

ATTRIBUTE DEFINITION
Amount of precipitation (mm).
ATTRIBUTE DEFINITION SOURCE AAFC

ATTRIBUTE
ATTRIBUTE LABEL Rain_mm
ATTRIBUTE DEFINITION
Amount of precipitation (mm).
ATTRIBUTE DEFINITION SOURCE AAFC

ATTRIBUTE
ATTRIBUTE LABEL SM_5cm
ATTRIBUTE DEFINITION
Proportional soil moisture measured at a depth of 5 cm.
ATTRIBUTE DEFINITION SOURCE AAFC

ATTRIBUTE
ATTRIBUTE LABEL Temp_5cm
ATTRIBUTE DEFINITION
Temperature (°C) measured at a depth of 5 cm.
ATTRIBUTE DEFINITION SOURCE AAFC

ATTRIBUTE
ATTRIBUTE LABEL RDC_5cm
ATTRIBUTE DEFINITION
Real dielectric constant measured at a depth of 5 cm.
ATTRIBUTE DEFINITION SOURCE AAFC

ATTRIBUTE
ATTRIBUTE LABEL Calib_5cm
ATTRIBUTE DEFINITION
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ATTRIBUTE DEFINITION SOURCE AAFC

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Proportional soil moisture measured at a depth of 20 cm.
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ATTRIBUTE LABEL Temp_50cm
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Proportional soil moisture measured at a depth of 100 cm.
ATTRIBUTE DEFINITION SOURCE AAFC

ATTRIBUTE
ATTRIBUTE LABEL Temp_100cm
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Temperature (°C) measured at a depth of 100 cm.
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ATTRIBUTE DEFINITION SOURCE AAFC

*Hide Entities and Attributes ▲*