SMAPVEX19-21 Millbrook Temporary Soil Moisture Network, Version 1

USER GUIDE

How to Cite These Data

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

Cosh, M., V. Kelly, and A. Colliander. 2020. *SMAPVEX19-21 Millbrook Temporary Soil Moisture Network*, Version 1. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. https://doi.org/10.5067/NXNJWN9933UI. [Date Accessed].

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

FOR CURRENT INFORMATION, VISIT https://nsidc.org/data/SV19MB_TNET

National Snow and Ice Data Center

TABLE OF CONTENTS

1 DATA DESCRIPTION 2
1.1 Parameters 2
1.2 File Information 2
1.2.1 Format 2
1.2.2 File Contents 2
1.2.3 Naming Convention 3
1.3 Spatial Information 3
1.3.1 Coverage 3
1.4 Temporal Information 4
1.4.1 Coverage 4
1.4.2 Resolution 4
2 DATA ACQUISITION AND PROCESSING 5
2.1 Acquisition 5
2.2 Processing 5
2.3 Quality, Errors, and Limitations 5
2.4 Instrumentation 5
2.4.1 Description 5
3 SOFTWARE AND TOOLS 5
4 RELATED DATA SETS 5
5 RELATED WEBSITES 5
6 CONTACTS AND ACKNOWLEDGMENTS 5
7 REFERENCES 6
8 DOCUMENT INFORMATION 6
8.1 Publication Date 6

1 DATA DESCRIPTION

These data consist of ground-based soil moisture, soil temperature, and air temperature measurements recorded by twenty-five temporary stations located in the vicinity of Millbrook, NY during the SMAPVEX19-21 campaign. The stations were installed across an area of 30 km by 40 km in May 2019 and operated through late October 2019.

1.1 Parameters

This data set includes the following parameters for ground-based observations:

- Surface temperature
- Air temperature
- Soil moisture
- Soil temperature

1.2 File Information

1.2.1 Format

Data available as Comma Separated Values, .csv, files.
Total data volume: 10MB

1.2.2 File Contents

The data file contains the real part of the dielectric constant measured by soil moisture sensors at depths of 5 cm and 10 cm, and air temperature measured at 1.5 m.

Table 1. Data Fields and Descriptions

Variable	Description
ID	The station ID ((501-525)
Date/Time	Date and time (yyyy/mm/dd HH:MM:SS)
RDC-v	Real part of the dielectric constant measured by the vertically installed sensor; Unitless
RDC-5	Real part of the dielectric constant measured by the sensor installed at 5 cm depth; Unitless
RDC-10	Real part of the dielectric constant measured by the sensor installed at 10 cm depth; Unitless
TS-v	Soil temperature measured by the vertically installed sensor; °C
TS-5	Soil temperature measured by the sensor installed at 5 cm depth; °C

Variable	Description
TS-10	Soil temperature measured by the sensor installed at 10 cm depth; °C
Tair	Air temperature; °C

1.2.3 Naming Convention

File Name: SMAPVEX19-21_TNET_MB_ver[N].csv

Name Compnents:
Campaign: SMAPVEX19-21
TNET: temporary network
Site: MB; Millbrook, NY
Version Number: verN
File format or extension: .csv

1.3 Spatial Information

1.3.1 Coverage

The Millbrook, NY site may be defined by the following set of coordinates:
Latitude: 41.68N to 42.03N
Longitude: 73.44W to 73.79W
Coordinate Reference System: WGS 84

Figure 1. SMAPVEX1921 Campaign Sites

Table 2. Station ID Number and Coordinates

ID	Latitude	Longitude
501	41.940084	-73.49722
502	41.94195	-73.4951
503	41.95597	-73.57178
504	41.924	-73.5794
505	41.9501	-73.61745
506	41.9501	-73.61913
507	41.8385	-73.50703
508	41.8278	-73.58717
509	41.79884	-73.73929
510	41.80126	-73.73325
511	41.802	-73.6272
512	41.96187	-73.71193
513	41.94754	-73.74296
514	41.90908	-73.74947
515	41.89083	-73.78043
516	41.8766	-73.76864
517	41.81892	-73.66515
518	41.86077	-73.64758
519	41.71343	-73.63094
520	41.84286	-73.62103
521	41.76746	-73.51102
522	41.75289	-73.51743
523	41.75341	-73.52047
524	41.73453	-73.73219
525	41.7342	-73.73128

1.4 Temporal Information

1.4.1 Coverage

Start Date: 01 May 2019
End Date: 20 October 2020

1.4.2 Resolution

Hourly

2 DATA ACQUISITION AND PROCESSING

2.1 Acquisition

The soil moisture and soil temperature measurements were conducted with Stevens HydraProbe sensors. Three sensors were installed. One sensor was installed vertically, facing top down, while the other two were positioned horizontally, in the soil at depths of 5 cm and 10 cm respectively.

2.2 Processing

These data include only very basic quality checks and reformatting of the data.

2.3 Quality, Errors, and Limitations

This version 0 data was not calibrated or corrected. Some obviously erroneous data were filtered out. Where found, the value “10,000”, represents invalid data.

2.4 Instrumentation

2.4.1 Description

Stevens HydraProbe

3 SOFTWARE AND TOOLS

Access data with software applications used to view comma separated value, .csv, documents.

4 RELATED DATA SETS

SMAPVEX19-21 Massachusetts Temporary Soil Moisture Network
SMAPVEX19-21 Massachusetts Vegetation Optical Depth

5 RELATED WEBSITES

SMAP Validation Data
SMAP Overview

6 CONTACTS AND ACKNOWLEDGMENTS

Andreas Colliander, Ph.D.
Terrestrial Hydrology Group

Jet Propulsion Laboratory
Pasadena, CA

Michael H. Cosh, Ph.D.
Research Hydrologist
USDA-ARS Hydrology and Remote Sensing Laboratory
Bldg. 007, Rm. 104, BARC-West
Beltsville, MD

Vicky Kelly
Cary Institute of Ecosystem Studies
Millbrook, NY

7 REFERENCES

Colliander, A., Cosh, M. H., Kelly, V. R., Kraatz, S., Bourgeau-Chavez, L., Siqueira, P., Roy, A., Konings, A. G., Holtzman, N., Misra, S., Entekhabi, D., O'Neill, P., & Yueh, S. H. (2020). SMAP Detects Soil Moisture Under Temperate Forest Canopies. *Geophysical Research Letters*, 47(19). https://doi.org/10.1029/2020gl089697

8 DOCUMENT INFORMATION

8.1 Publication Date

04 January 2021

8.2 Revision Date

11 January 2021