



SMAPVEX19-22 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. *SMAPVEX19-22 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

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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 SMAPVEX19-22 campaign. The stations were installed across an area of approximately 25 km by 30 km in May 2019 and operated through 2022. Note that the product is named SMAPVEX19-22 because, although the current coverage is through 2021, it is projected to include 2022 data in the future.

1.1 Parameters

This data set includes surface temperature, soil moisture, soil temperature, and air temperature for ground-based observations.

1.2 File Information

1.2.1 Format

Data provided as Comma Separated Values (.csv) files.

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

1.2.3 Naming Convention

Files are named according to the following convention:

SV19MB_TNET_v1.csv

Table 2. File Naming Convention

Variable	Description
SV19MB	SMAPVEX19-22 campaign; Millbrook, New York site
TNET	Temporary network
v1	Version number
.csv	File extension

1.3 Spatial Information

1.3.1 Coverage

The Millbrook, NY site coverage spans from approximately 41.68° N to 42.03° N and 73.44° W to 73.79° W.

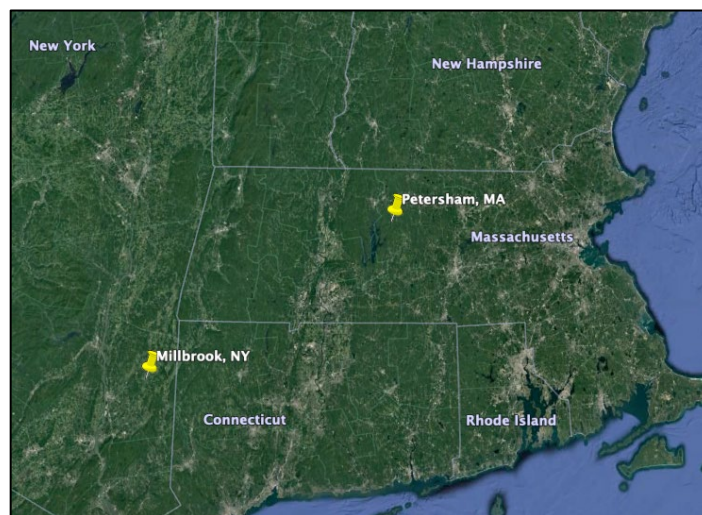


Figure 1. SMAPVEX1922 Campaign Sites

Table 3. Station Location ID Numbers 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

1.3.2 Resolution

These data are point observations.

1.3.1 Geolocation

The following table provides information for geolocating this data set:

Table 4. World Geodetic System 1984 (EPSG:4326)

Geographic Coordinate System	WGS 84
Projected Coordinate System	N/A
Longitude of True Origin	0°
Latitude of True Origin	N/A
Scale factor at longitude of true origin	N/A
Datum	World Geodetic System 1984
Ellipsoid/spheroid	WGS 84
Units	degree

False Easting	N/A
False Northing	N/A
EPSG Code	4326
PROJ4 String	+proj=longlat +datum=WGS84 +no_defs
Reference	http://epsg.io/4326

1.4 Temporal Information

1.4.1 Coverage

This data set spans 1 May 2019 to 31 October 2021.

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 at each station location. 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 basic quality checks and reformatting of the data.

2.3 Quality, Errors, and Limitations

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

3 RELATED DATA SETS

[SMAPVEX19-22 Massachusetts Temporary Soil Moisture Network](#)

[SMAPVEX19-21 Massachusetts Vegetation Optical Depth](#)

4 RELATED WEBSITES

[SMAP Validation Data](#)

[SMAP Overview](#)

5 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>

6 DOCUMENT INFORMATION

6.1 Publication Date

January 2021

6.2 Revision Date

May 2023