

Surface Atmospheric Measurement Stations Network Five Minute Average Data Surrounding Granite Peak

SAMS

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1.0 Data Set Overview

1.1 Time period covered by the data

Approximately October 2012 and May 2013. For specific times please refer to individual file names.

1.2 Physical location (latitude, longitude, elevation)

The exact coordinates are contained in each individual data file for each specific station., 0, 0

1.3 Instrument type

MesoNET

1.4 Data provider

Dugway Proving Ground

1.5 Web address references

<http://www3.nd.edu/~dynamics/materhorn/>

https://www.eol.ucar.edu/field_projects/materhorn-x

2.0 Instrument Description

A network of thirty-one surface atmospheric measurement systems (SAMS). The exact coordinates are contained in each individual data file for each specific station. These towers are 10-m towers with vane anemometers (RM Young model 05103) at 2 and 10 m above ground level (AGL). Temperature and Relative Humidity are measured at 2 m AGL. Also included: surface barometric pressure, and solar radiation.



2.1 Instrument website

<http://www.youngusa.com/products/7/5.html>

<https://www.campbellsci.com/hmp45c-l>

<https://www.campbellsci.com/cs106>

<https://www.campbellsci.com/solar-radiation>

<https://www.campbellsci.com/solar-panels>

<https://www.campbellsci.com/cr3000>

<http://www.alumatower.com/>

2.2 Table of specifications

Accuracy	Range	Frequency	Resolution
See individual instrument websites	See individual instrument websites	See individual instrument websites	See individual instrument websites

3.0 Data Collection and Processing

3.1 Description of data collection

Continuous data collection was conducted during the entire field campaign, with 5 minute averages.

3.2 Description of derived parameters and processing techniques used

Original output files were split by station, field campaign, and saved as MATLAB mat files in table variables including units in the properties of the table.

3.3 Description of quality assurance and control procedures

This dataset was not subject to any quality control or processing it has been provided in its original form.

3.4 Data intercomparisons

4.0 Data Format

4.1 Data file structure

MAT files, with table variables for each station.

4.2 File naming convention

dataProvider_instrument[_identifier]_rate_instrumentType_startDateAndTime_endDateAndTime.extension

4.3 Data format

MATLAB MAT files, v7

4.4 Data layout

In each MAT file data for a single station is provided with timestamp.

4.5 List of parameters with units, sampling intervals, frequency, range

Battery(V) -

Datenum(Datenum) - MATLAB datenum format. See MATLAB help on datenum.

Elevation(m) - Elevation above sea level.

FullDateUTC(YYYY-MM-DD hh:mm:ss) -

Latitude(deg) -

Longitude(deg) -

PressureMaximum(hPa) - Maximum barometric pressure for a given average period, measured at the location of the data logger.

PressureMean(hPa) - Average barometric pressure measured at the location of the data logger.

PressureMinimum(hPa) - Minimum barometric pressure for a given average period, measured at the location of the data logger.

RelativeHumidity2Maximum(%) - Maximum relative humidity for a given average period, measured at 2m AGL.

RelativeHumidity2Mean(%) - Average relative humidity measured at 2m AGL.

RelativeHumidity2Minimum(%) - Minimum relative humidity for a given average period, measured at 2m AGL.

SurfaceNetDownwellingShortwaveFluxInAirMaximum(W/m²) - Maximum surface net downwelling short wave flux in air for a given average period.

SurfaceNetDownwellingShortwaveFluxInAirMean(W/m²) - Average surface net downwelling short wave flux in air.

SurfaceNetDownwellingShortwaveFluxInAirMinimum(W/m²) - Minimum surface net downwelling short wave flux in air for a given average period.

Temperature2Maximum(C) - Maximum temperature for a given average period, measured at 2m AGL.

Temperature2Mean(C) - Average temperature measured at 2m AGL.

Temperature2Minimum(C) - Minimum temperature for a given average period, measured at 2m AGL.

U10Mean(m/s) - Average east-west wind velocity component measured at 10m AGL. Positive flowing from the west to the east.

U2Mean(m/s) - Average east-west wind velocity component measured at 2m AGL. Positive flowing from the west to the east.

V10Mean(m/s) - Average north-south wind velocity component measured at 10m AGL. Positive flowing from the south to the north.

V2Mean(m/s) - Average north-south wind velocity component measured at 2m AGL. Positive flowing from the south to the north.

WindDescription10Mean() - 1-3 letter description of the approaching direction of the wind provided by the average wind direction, measured at 10m AGL. For example: N - from the north, Calm - the wind speed is below the instrument threshold, SSW - from the South-Southwest

WindDescription2Mean() - 1-3 letter description of the approaching direction of the wind provided by the average wind direction, measured at 2m AGL. For example: N - from the north, Calm - the wind speed is below the instrument threshold, SSW - from the South-Southwest

WindDirection10Mean(deg) - Average wind direction measured from North, at 10m AGL. North = 0, East = 90, South = 180, West = 270.

WindDirection10StandardDeviation(deg) - Standard deviation of wind direction measured from North for a given average period, at 10m AGL.

WindDirection2Mean(deg) - Average wind direction measured from North, at 2m AGL. North = 0, East = 90, South = 180, West = 270.

WindDirection2StandardDeviation(deg) - Standard deviation of wind direction measured from North for a given average period, at 2m AGL.

WindSpeed10Gust(m/s) - Wind gust magnitude for a given average period, measured at 10m AGL.

WindSpeed10Mean(m/s) - Average wind magnitude measured at 10m AGL.

WindSpeed2Gust(m/s) - Wind gust magnitude for a given average period, measured at 2m AGL.

WindSpeed2Mean(m/s) - Average wind magnitude measured at 2m AGL.

4.6 Data version number and date

raw, v1.0, October 2016

4.7 Description of flags, codes used in the data, and definitions

NaN means either out of range or missing data

4.8 Data sample

Sample dataset is not suitable for display in this document.
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5.0 Data Remarks

5.1 PI's assessment of the data

5.2 Missing data periods

5.3 Software compatibility

MATLAB 2006a (version 7.0) or later

6.0 References

- [1] Fernando, H. J. S., E. R. Pardyjak, S. Di Sabatino, F. K. Chow, S. F. J. DeWekker, S. W. Hoch, J. Hacker, J. C. Pace, T. Pratt, Z. Pu, J. W. Steenburgh, C. D. Whiteman, Y. Wang, D. Zajic, B. Balsley, R. Dimitrova, G. D. Emmitt, C. W. Higgins, J. C. R. Hunt, J. G. Kniervel, D. Lawrence, Y. Liu, D. F. Nadeau, E. Kit, B. W. Blomquist, P. Conry, R. S. Coppersmith, E. Creegan, M. Felton, A. Grachev, N. Gunawardena, C. Hang, C. M. Hocut, G. Huynh, M. E. Jeglum, D. Jensen, V. Kulandaivelu, M. Lehner, L. S. Leo, D. Liberzon, J. D. Massey, K. McEnerney, S. Pal, T. Price, M. Sghiatti, Z. Silver, M. Thompson, H. Zhang, T. Zsedrovits, 2015: The MATERHORN – Unraveling the Intricacies of Mountain Weather, BAMS, doi: <http://dx.doi.org/10.1175/BAMS-D-13-00131.1>.