

**Flux Tower data measured at 20Hz and 1Hz provided by Dugway
Proving Ground from the ES4 tower site on the East Slope of
Granite
ES4**

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1.0 Data Set Overview

1.1 Time period covered by the data

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

1.2 Physical location (latitude, longitude, elevation)

40.09586, -113.25252, 1393.781316

1.3 Instrument type

Flux Tower

1.4 Data provider

Dugway Proving Ground, University of Utah

1.5 Web address references

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

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

2.0 Instrument Description

Surface tower including six levels of RM Young Ultrasonic 81000 anemometers mounted at 0.5m, 2m, 5m, 10m, 20m, 32m above ground level. Also included are Temperature Relative Humidity Measurements, Barometric Pressure, and Thermocouples.



2.1 Instrument website

<http://www.alumatower.com/>, (Aluminum Tower)

<https://www.campbellsci.com/cr5000>, (CR5000 Datalogger)

<https://s.campbellsci.com/documents/us/manuals/loggernet.pdf>

TOA5 file format description (Appendix B, pages: B-4, B-3)

<https://www.campbellsci.com/hmp45c-1>, (Temperature / Relative Humidity Probe)

<https://www.campbellsci.com/cs106>, (Barometer)

<http://www.youngusa.com/products/6/3.html>, (RM Young 81000)

<http://www.omega.com/pptst/5TC.html>, (Thermocouples 5TC-GG-K-36-36)

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

3.2 Description of derived parameters and processing techniques used

Original data files are provided.

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

TOA5, (ASCII csv with header)

4.2 File naming convention

dataProvider_instrument[_identifier]_tableNumber_rate_instrumentType_startDateAndTime_endDateAndTime.extension

4.3 Data format

comma delimited ASCII

4.4 Data layout

Each file has four header lines. First header line contains information on the logger and the consecutive three lines provides the column headers (variables, units and measurement types) for all subsequent rows of data contained within the file.

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

Variable names usually contain the variable type and the height of the measurement in meters. 05 refers to a measurement taken at 0.5m. As an example u16 means "u" wind component measured at 16 m.

4.6 Data version number and date

raw, v1.0, October 2016

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

4.8 Data sample

The data sample is provided in the `Filtered_Headers.txt`. Please look for the file name in the `Filtered_Headers.txt` for the corresponding data sample.

5.0 Data Remarks

5.1 PI's assessment of the data

- 1) Tower fell on October 16, 2012 at 22:54 UTC. Sonics at 2 and 5 meters were unharmed and the half meter sonic was repaired by 22:05 UTC on October 17, 2012.
- 2) HMPs at 0.5, 2, and 5 meters read good data the entire time.
- 3) For the U and V wind components' direction, please consult the sensor's reference manual.

5.2 Missing data periods

5.3 Software compatibility

6.0 References

- [1] Fernando, H. J. S., E. R. Pardyjak, S. Di Sabatino, F. K. Chow, S. F. J. DeWecker, 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>.