

# Flux Tower data measured at 20Hz and 1Hz provided by the University of Notre Dame from the Canyon Tower 1 site

CAN1

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## 1.0 Data Set Overview

### 1.1 Time period covered by the data

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

### 1.2 Physical location (latitude, longitude, elevation)

40.095, -113.2625833, 1489

### 1.3 Instrument type

Flux Tower

### 1.4 Data provider

University of Notre Dame

### 1.5 Web address references

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

[https://www.eol.ucar.edu/field\\_projects/materhorn-x](https://www.eol.ucar.edu/field_projects/materhorn-x)

## 2.0 Instrument Description

Surface tower including two RM Young Ultrasonic 81000 anemometers mounted at 2m and 7m 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/cr1000>, (CR1000 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]\_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.

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File CA1\_20Hz (tower1- canyon site at east Granite)

DATA recorded from Oct 17th to Nov 21st 2012

TIMESTAMP=time,

RECORD=record number,

u2\_can1=young sonic u-component at 2 meters,

v2\_can1=young sonic v-component at 2 meters,

w2\_can1=young sonic w-component at 2 meters,

ts2\_can1=young sonic temperature at 2 meters,

u7\_can1=young sonic u-component at 7 meters,

v7\_can1=young sonic v-component at 7 meters,  
w7\_can1=young sonic w-component at 7 meters,  
ts7\_can1=young sonic temperature at 7 meters,  
T05\_can1= fine thermocouple K Temperature at 0.5meters,  
T2\_can1=fine thermocouple K Temperature at 2 meters ,  
T7\_can1=fine thermocouple K Temperature at 7 meters

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File CA1\_1Hz (tower1- canyon site at east Granite)

DATA recorded from Oct 17th to Nov 21st 2012

TIMESTAMP=time,

RECORD=record number,

RH2\_can1=hmp45 relative humidity at 2 meters,

Trh2\_can1=hmp45 temperature at 2 meters,

RH7\_can1=hmp45 relative humidity at 7 meters,

Trh7\_can1=hmp45 temperature at 7 meters,

batt\_volt=datalogger battery

T1\_can1=thermocouple K Temperature at 1 meter,

T3\_can1=thermocouple K Temperature at 3 meters,

T4\_can1=thermocouple K Temperature at 4 meters,

T5\_can1=thermocouple K Temperature at 5 meters,

b\_pressure=barometric pressure

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Please note that heights are from ground level.

Smp denotes "sampled" variables

#### **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) For the U and V wind components' direction, please consult the sensor's reference manual.
- 2) Further notes (when available) for each recorded period is in the records.xlsx file.

### 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. 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. Kniewel, 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>.