

Extensive Energy Balance data provided by the University of Utah measured at the East Slope ES3 site

SEB-ES3

Author(s):	Regarding data questions contact:
Harindra Joseph S. Fernando Mailing address: 156 Fitzpatrick Hall of Engineering, Notre Dame, IN, USA, 46556 Tel./Fax.: 574-631-9346/ 574-631-9236, E-mail and web: Fernando.10@nd.edu , http://ceees.nd.edu/profiles/hfernando	Laura S. Leo / Zachariah Silver Mailing address: 156 Fitzpatrick Hall of Engineering, Notre Dame, IN, USA, 46556 Tel./Fax.: 574-631-8419/574-631-9236 E-mail and web: LauraSandra.Leo.13@nd.edu / zsilver@nd.edu , https://engineering.nd.edu/profiles/lleo / https://engineering.nd.edu/profiles/zsilver

1.0 Data Set Overview

Note that this dataset is part of ES3 tower dataset.

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)

40.09567, -113.24405, 1354.161185

1.3 Instrument type

Extensive Energy Balance

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

2.0 Instrument Description

Soil Moisture sensors, Net radiometer CNR1 mounted at 3m, Soil Heat Flux Plate HFP 01SC,



2.1 Instrument website

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

<https://www.campbellsci.com/cr3000>, (CR3000 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-l>, (Temperature / Relative Humidity Probe)

<https://www.campbellsci.com/cnr1-l>, (Net Radiometer CNR1-L)

<https://www.campbellsci.com/hfp01sc-l>, (Soil Heat Flux Plate HFP01SC-L)

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

TIMESTAMP UTC

RECORD Record number

batt_volt Battery voltage

b_pressure Barometer pressure

Trh2_ES3 Relative humidity module temperature, 2m

RH2_ES3 Relative humidity module 2m

cm3up Incident solar UV radiation

cm3dn Reflected solar UV radiation

cg3up Incident infrared radiation

cg3dn Reflected infrared radiation

T_cnr1K temp from radiometer in K

NetRsw Net short wave radiation

NetRlw Net long wave radiation

Albedo Diffuse reflectivity of the ground surface

NetTotR Net total radiation

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

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. Knievel, D. Lawrence, Y. Liu, D. F. Nadeau, E. Kit, B. W. Blomquist, P. Conry, R. S. Coppersmith, E. Cregan, 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>.