Scintec SoDAR/RASS Half Hour Average Data
SOD-UND

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1.0 Data Set Overview

1.1 Time period covered by the data

from 22:30 09/24/2012 to 22:00 09/28/2012

from 20:30 10/03/2012 to 16:00 10/30/2012

1.2 Physical location (latitude, longitude, elevation)

40.101380, -113.33759000000001, 1309.85300248

1.3 Instrument type

SoDAR/RASS

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

Scintec SoDAR system capable of measuring horizontal wind speed and direction averaged over half hour periods from the surface to 400m above ground level

2.1 Instrument website

http://www.scintec.com/english/web/scintec/Details/A031002.aspx

2.2 Table of specifications

Accuracy	Range	Frequency	Resolution
Accuracy of horizontal wind speed: 0.1 to 0.3 m/s (depending on mode, average over varying conditions) Accuracy of vertical wind speed: 0.03 to 0.1 m/s (depending on mode, average over varying conditions) Accuracy of wind direction: < 1.5° (at wind speeds > 2 m/s)	Height range: 10 m - 500 m Measurement range of horizontal wind speed: 0 to 50 m/s (nominal) Measurement range of vertical wind speed: -10 to 10 m/s (nominal)	Frequency range: 2525 - 4850 Hz Averaging time: 1 - 60 min (user-defined)	5 m

3.0 Data Collection and Processing

3.1 Description of data collection

Continuous data collection was conducted during the entire field campaign, with 30 minute average settings.

3.2 Description of derived parameters and processing techniques used

Original output 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

MND files (special ASCII text files containing header and the data in blocks) for each day of the campaign.

4.2 File naming convention

dataProvider_instrument[_identifier]_rate_instrumentType_startDateAndTime_endDateAndTime.extension

4.3 Data format

tab delimited ASCII with header

4.4 Data layout

The data header contains information on the instrument and also on data layout and units. It shows also the special value used to indicate missing or out of range data (for example for height it is 99999).

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

measurement#header code in data block#unit#type#error maks#gap value

height # z # m # Z1 # 0 # 99999

wind speed # speed # m/s # G1 # 0 # 99.99

wind direction # dir # deg # R1 # 0 # 999.9

wind W # W # m/s # S # 0 # 99.99

sigma W # sigW # m/s # S # 0 # 99.99

temperature # T # deg C # S # 0 # 999.99

backscatter # bck # # S # 0 # 9.99E+37

more info at pp 19-26 in http://www.scintec.com/english/CustomUpload/374O357O340O370O356O369O350O340O365O360O373O356O369O370O372O364O/APRun_Manual_1_24.pdf

4.6 Data version number and date

raw, v1.0, October 2016

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

Special flags are defined in the operation manual of the APRun software at the sections 4.5.2 and 4.5.4
(http://www.scintec.com/english/CustomUpload/374O357O340O370O356O369O350O340O365O360O373O356O369O370O372O364O/APRun_Manual_1_24.pdf)

4.8 Data sample

```
FORMAT-1
2012-09-25 00:30:00 0
MFAS
6 7 37
#
# file information
#
device serial number       : A-C-0070
station code               : utah-MATERHORN
software version           : APRun 1.35
antenna azimuth angle [deg] : 0
height above ground [m]    : 1
height above sea level [m]  : 1310
#
# file type
#
Main Data
#
# variable definitions
#
height # z # m # Z1 # 0 # 99999
wind speed # speed # m/s # G1 # 0 # 99.99
wind direction # dir # deg # R1 # 0 # 999.9
wind W # W # m/s # S # 0 # 99.99
sigma W # sigW # m/s # S # 0 # 99.99
temperature # T # deg C # S # 0 # 999.99
backscatter # bck #  # S # 0 # 9.99E+37
error code # - - - - - - - - - groundclutter - - - - - - -  #  # E #
IIIIIIIIWIIIIIII
#
# beginning of data block
#
2012-09-25 00:30:00 00:30:00
#   z   speed    dir     W   sigW       T       bck   error
   40  99.99  999.9  99.99  99.99   15.49  9.99E+37       0
   50  99.99  999.9  99.99  99.99   15.45  9.99E+37       0
   60  99.99  999.9  99.99  99.99   15.43  9.99E+37       0
   70  99.99  999.9  99.99  99.99   15.33  9.99E+37       0
   80  99.99  999.9  99.99  99.99   15.33  9.99E+37       0
   90  99.99  999.9  99.99  99.99   15.31  9.99E+37       0
  100  99.99  999.9  99.99  99.99   15.27  9.99E+37       0
  110  99.99  999.9  99.99  99.99   15.23  9.99E+37       0
  120  99.99  999.9  99.99  99.99   15.18  9.99E+37       0
  130  99.99  999.9  99.99  99.99   15.14  9.99E+37       0
```

```
140   99.99   999.9   99.99   99.99   15.10   9.99E+37        0
150   99.99   999.9   99.99   99.99   15.05   9.99E+37        0
160   99.99   999.9   99.99   99.99   14.99   9.99E+37        0
170   99.99   999.9   99.99   99.99   14.92   9.99E+37        0
180   99.99   999.9   99.99   99.99   14.85   9.99E+37        0
190   99.99   999.9   99.99   99.99   14.84   9.99E+37        0
200   99.99   999.9   99.99   99.99   14.71   9.99E+37        0
210   99.99   999.9   99.99   99.99   14.70   9.99E+37        0
220   99.99   999.9   99.99   99.99   14.59   9.99E+37        0
230   99.99   999.9   99.99   99.99   14.59   9.99E+37        0
240   99.99   999.9   99.99   99.99   14.59   9.99E+37        0
250   99.99   999.9   99.99   99.99   14.63   9.99E+37        0
260   99.99   999.9   99.99   99.99   14.65   9.99E+37        0
270   99.99   999.9   99.99   99.99   14.79   9.99E+37        0
280   99.99   999.9   99.99   99.99   14.82   9.99E+37        0
290   99.99   999.9   99.99   99.99   15.00   9.99E+37        0
300   99.99   999.9   99.99   99.99   15.11   9.99E+37        0
310   99.99   999.9   99.99   99.99   15.16   9.99E+37        0
320   99.99   999.9   99.99   99.99   15.22   9.99E+37        0
330   99.99   999.9   99.99   99.99   15.25   9.99E+37        0
340   99.99   999.9   99.99   99.99   15.29   9.99E+37        0
350   99.99   999.9   99.99   99.99   15.31   9.99E+37        0
360   99.99   999.9   99.99   99.99   15.35   9.99E+37        0
370   99.99   999.9   99.99   99.99   15.36   9.99E+37        0
380   99.99   999.9   99.99   99.99   15.38   9.99E+37        0
390   99.99   999.9   99.99   99.99   15.39   9.99E+37        0
400   99.99   999.9   99.99   99.99   15.42   9.99E+37        0
```

5.0 Data Remarks

5.1 PI's assessment of the data

5.2 Missing data periods

5.3 Software compatibility

Scintec APRun

6.0 References

[1] http://www.scintec.com/english/web/scintec/Details/A031002.aspx
[2] http://www.scintec.com/english/CustomUpload/374O357O340O370O356O369O350O340O365 O360O373O356O369O370O372O364O/APRun_Manual_1_24.pdf
[3] 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. 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.