Army Research Lab Leosphere 100S LiDAR Data Captured During the Spring Campaign

LID-ARL-SPRING

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1.0 Data Set Overview

1.1 Time period covered by the data

List of days when scans are available:

2013/05/11

2013/05/12

2013/05/13

2013/05/14

2013/05/17

2013/05/20

2013/05/21

2013/05/22

2013/05/24

2013/05/25

1.2 Physical location (latitude, longitude, elevation)

40.126690, -113.23295, 1325.8800000000001

1.3 Instrument type

LIDAR

1.4 Data provider

Army Research Lab

1.5 Web address references

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

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

2.0 Instrument Description

Leosphere scanning Doppler wind LiDAR with 50m range gates measuring radial velocities along each ray.

2.1 Instrument website

http://www.leosphere.com/en/

2.2 Table of specifications

Accuracy	Range	Frequency	Resolution
Consult the manufacturer specifications.	Consult the manufacturer specifications.	Consult the manufacturer specifications.	Consult the manufacturer specifications.

3.0 Data Collection and Processing

3.1 Description of data collection

Data collection, when available, was only conduted during intense observation periods (IOP).

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

ASCII tab separated, the exact structure provided by the file description.

4.2 File naming convention

The Leosphere 100s saves individual *.jpg images of each scan as well as an ASCII tab separated data file with the extension *.rtd. The file names show the start date and time of the scan. Additionally, there are two other files called Config_AP.ini and Scenario.ini for each individual grouping of scans.

4.3 Data format

Varies.

4.4 Data layout

The Leosphere 100s saves individual *.jpg images of each scan as well as an ASCII tab separated data file with the extension *.rtd. The first line of the header indicates how many header lines are contained within the file. The header explains details regarding the setup of the system. Following the individual descriptions, the last header line contains the column headers. Each line, or row, in the data file following the header corresponds to the data for a given ray. Each column corresponds to all of the variables along the ray. The first few columns of each ray include the Timestamp or date, GPS UTC (ddmmyyhhmmss.ss), Int Temp (°C), Ext Temp (°C), Pressure (hPa), Rel Humidity (%), Azimuth Angle (°), Elevation Angle (°). The Azimuth and Elevation angles provided for each ray indicate they type of scan that is performed. Following these columns, each range gate, every 50m, beginning at 100m contains the following columns: Radial Wind Speed (m/s), Radial Wind Speed Dispersion (m/s), Carrier To Noise Ratio (dB), Wind Speed (m/s), Wind Direction (°), X-Wind (m/s), Y-Wind (m/s), Z-Wind (m/s). Columns which do not have data are populated with NaN values. The key values are the Radial Wind Speed and the Carrier To Noise Ratio. Additionally, there are two other files called Config_AP.ini and Scenario.ini for each individual grouping of scans. The Config_AP.ini is an ASCII file that defines all the configurations parameters and is self explanatory. The Scenario.ini file is again an ASCII file that tabulates the type of scan, the azimuth and elevation angles.

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

Consult individual file headers, additionally see file description provided above.

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

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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

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. 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.