Plains Elevated Convection at Night (PEACN)

MFAS SODAR with RASS

A Component of

Millersville University Atmospheric Research and Aerostat Facility

(MARAF)

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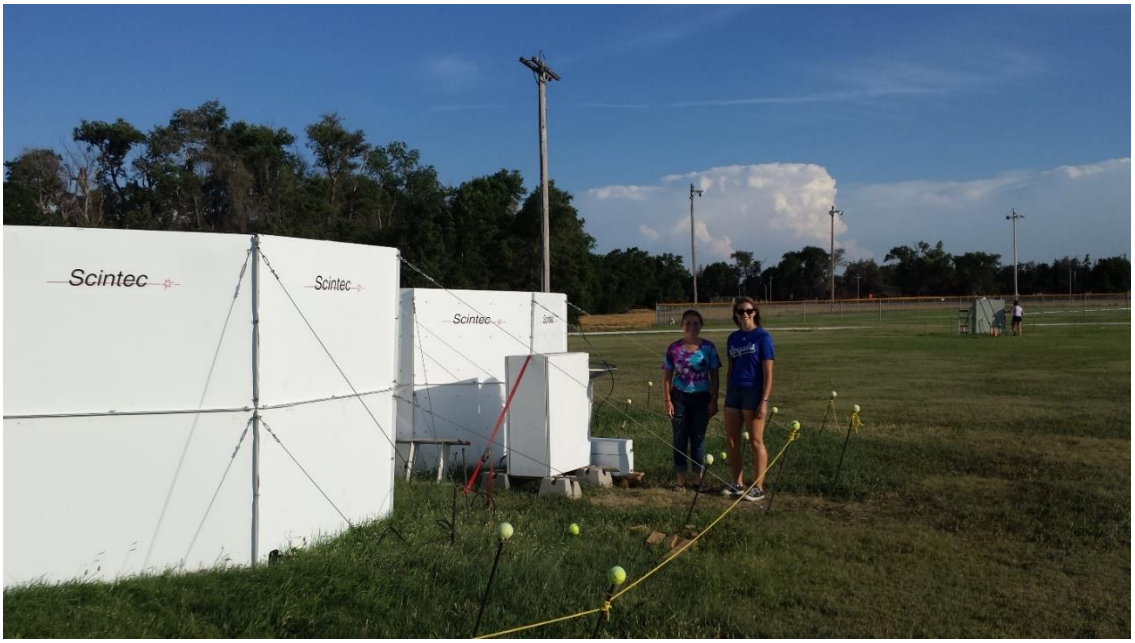

1.0 Data Set Overview:

This dataset contains data from the Millersville University MFAS SODAR with RASS located at 38.9361°N, 99.5592°W at 646 meters above sea level from 1 June 2015 to 15 July 2015.

2.0 Instrument Description:

SODAR

Description	Specifications	Remarks
No. of antenna elements	64	piezo-electric
Electric (acoustic) output power	50 W (7.5 W)	maximum, user selectable
Frequency range	1650 - 2750 Hz	auto-configuration or user-defined
Multi-frequency	sequential and polyphonic	
Multi-beam operation	up to 9 beams in two configurations	
Beam angles	0°, ±9°, ±16° or 0°, ±22°, ±29°	selectable
No. of range gates	100	maximum setting
Vertical resolution	10 m	finest setting
Minimum height	30 m	depending on settings, environment and atmosphere
Maximum height	1000 m	
Averaging time	1 - 60 min	user-defined
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	
Accuracy of wind direction	< 1.5°	at wind speeds > 2 m/s
Measurement range of horizontal wind speed	0 to 50 m/s	nominal
Measurement range of vertical wind speed	-10 to 10 m/s	
Operating temperature	-35 to +55 °C (-30 to +130 °F)	
Power requirement DC operation	12 or 24 VDC, 25 to 50 W	average, depending on settings
Power requirement AC line operation	100 to 240 VAC, 45 to 90 W	
Size	74 x 72 x 20 cm	Antenna without Enclosure
Weight	32 kg	

RASS

Description	Specifications	Remarks
Radio antenna	parabolic	low wind-load construction
Radio frequency	1290 MHz	others on request
Vertical resolution	5 / 10 / 20 m with SFAS / MFAS / XFAS	depending on sodar model
Minimum range	40 m	depending on settings, environment and atmosphere
Maximum range	600 / 800 / 1000 m with SFAS / MFAS / XFAS	
Averaging time	1 - 60 min	user-defined
Accuracy	0.2 °C	virtual temperature
Measurement range	-50 to +60 °C (-60 to +140 °F)	
Operating temperature	-35 to +50 °C (-30 to +120 °F)	
Power requirement DC operation	14 VDC, 90 W	depending on mode
Power requirement AC line operation	100 to 240 VAC, 150 W	

3.0 Data Collection and Processing:

This data was collected and averaged over 30 min time intervals, and assimilated over 120 min time intervals, using APRun 1.46.

Each individual parameter is in .jpg format as daily files.

4.0 Naming Convention

The 30-minute averages are compiled into daily files which make up the data set for one UTC day.

The files were saved using this name:
upperair.Millersville_FP3_sodar.yyyymmddhhmm.parameter

Where yyyymmddhhmm is the UTC year, month, day, hour, and minute for each specific parameter.

Measured parameters:

wind vector arrow, wind vector barb, wind speed, wind direction, wind W wind sigma U,wind W wind sigma V, temperature, Wind U, V, W, sigma U_r, sigma V_r, sigma W, temperature virtual: result, QC class, QC ignore, QC significance cumulative, QC significance density

Assimilated parameters:

wind vector arrow, wind vector barb, wind speed, wind direction, wind U, wind V, wind W,

wind sigma U, wind sigma V, wind sigma U_r, wind sigma V_r, wind sigma W, temperature, virtual temperature

Derived parameters:

wind shear, wind shear direction, wind sigma speed, wind sigma lateral, wind sigma phi,

wind sigma theta, wind turbulence intensity, PG stability, turbulent kinetic energy,

eddy dissipation rate, temperature ID

Additional parameters:

backscatter raw, backscatter, backscatter ID, CT^2

Vertical profiles every 30 min are also available which include:

Measured and assimilated parameters:

wind speed, wind direction, wind UV, wind W, wind sigma UV, wind sigma UV radial,

wind simga w, temperature, termperature virtual

Derived parameters:

wind shear, wind shear direction, wind sigma speed, wind sigma lateral, wind sigma phi,

wind sigma theta, wind turbulence intensity, PG stability, turbulent kinetic energy,

eddy dissipation rate

Additional parameters:

backscatter raw, backscatter, CT^2

*wind direction is measured in degrees and wind speed in meters per second

5.0 Data Remarks:

On the following dates and times, measurement was stopped which may be evident in data uploaded:

June 7 19:09 UTC

June 8 19:29 UTC

June 8 21:24 UTC

June 10 23:58 UTC

June 12 1:15 UTC

June 17 20:59 UTC

June 20 00:05 UTC

June 23 00:04 UTC

July 1 22:00 UTC

July 4 18:33 UTC

July 9 18:55 UTC

6.0 References:

http://www.scintec.com/english/web/Scintec/