Title: VORTEX-SE Meso18-19 UAH M3V Dataset

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1.0 Dataset Overview

The UAH Mobile Meteorological Mesonet vehicle (UAH M3V) is used to gather surface measurements in and around the near storm environment. Each data file contains surface information and M3V GPS position. Data was collected during each IOP unless otherwise noted.

2.0 Instrument Description

M3V is outfitted with 5 surface measurement instruments:

- Vaisala HMP 45C Temp/RH sensor
- Vaisala 107 L temperature sensor
- Eppley Labs PSP Pyranometer
- RM Young Wind Monitor
- Vaisala PTB Pressure Sensor

3.0 Data Collection and Processing

All data is raw data with no processing. Data is collected every 1 second.

4.0 Data format

M3V data file names follow the naming convention m3v_YYYYDDHHMM.dat where:

YYYY -> year
MM   -> month
DD   -> day
.dat   -> sfc station data

The M3V data logger logs two seperate lines. The first line is information from the data logger. The 2nd line is the GPS information. Each line begins with "Logger" or "GPS" to indicate the data type, then provides date and time in brackets. Sample data is provided below:

Logger<Sat Apr 22 19:31:46 GMT 2017>: 2017, 112, 19, 31, 41.25, 13.77, 78.815, 78.954, 49.178, 58.0, 22.736, 0.0, -99999.0 3.737574999999996, 213.5999999999999, 41.4, 987.76

GPS<Sat Apr 22 19:31:46 GMT 2017>: 011949, 040417, 38.738883333333334, -99.32013333333333, -999999.0, -999.0, -999.0, 0, 0, V

The column information for the "Logger" line is provided below:


```
COLUMN      VARIABLE
-------------------------------------
0         -> Year
1         -> Julian Day
2         -> Hour (UTC)
3         -> Minute (UTC)
4         -> Seconds
5         -> Battery Voltage
6         -> HMP 45C Temp (F)
7         -> 107-L Temp (F)
8         -> Relative Humidity
9         -> Dew Point (F)
10         ->  Measured Wind Speed (mph)
11         ->  Measured Wind Direction (deg)
12         ->  Solar Radiation
13         ->  Actual Wind Speed (mph)
14         -> Actual Wind Direction (deg)
15         -> Compass Heading (deg)
16         -> Pressure (hPa)
```


The column information for the "GPS" line is provided below:


```
COLUMN      VARIABLE
-------------------------------------
0         -> GPS Date
1         -> GPS Time
2         -> Latitude (deg)
3         -> Longitude( deg)
4         -> Altitude (ASL)
5         -> Heading (deg)
6         -> Number of Satellites
7         ->  GPS Quality
8         -> GPS Status
```

5.0 Data Remarks

- When the vehicle shuts off, the data logger loses power. When this happens, a new data file is created. Therefore, there will tend to be a discontinuity in how many Logger lines are written before a new GPS line is printed (i.e., there may be 1 logger line and then 1 GPS line for the first hour of the data. Once the car is restarted, there may be 5 logger lines written before another GPS line is printed). So please be aware of this when analyzing the data.

- The Pyranometer was damaged during this project and was not replaced.

- No data for: IOP2, IOP4