

Title: VORTEX-SE 2017 UAH M3V Dataset

Authors:

Preston Pangle	ptp0001@uah.edu	University of Alabama In Huntsville
Kevin Knupp(PI)	kevin.knupp@uah.edu	University of Alabama In Huntsville
Dustin Phillips	phillips@nsstc.uah.edu	University of Alabama in Huntsville

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 targeted certain features or storms. Data was collected during each IOP unless otherwise noted.

2.0 Instrument Description

M3V is outfitted with 4 surface measurement instruments:

- Campbell Scientific 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 YYYYDDHHMM.dat where:

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

The M3V data logger logs two separate 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 3.7375749999999996, 213.59999999999999, 41.4, 987.76
```

```
GPS<Sat Apr 22 19:31:46 GMT 2017>: 011949, 040417, 38.738883333333334,  
-99.32013333333333, -99999.0, -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	-> Averaged Air Temp (F)
7	-> Raw Air 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

No data for IOPs:

- 1A
- 1B
- 2
- 3B

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.