Title: PERiLS 2022 UAH MAPNet MAX Surface Meteorological Data

Authors:

Preston Pangle   preston.pangle@uah.edu   University of Alabama In Huntsville
Kevin Knupp (PI)   kevin.knupp@uah.edu   University of Alabama In Huntsville

1.0 Dataset Overview

The UAH Mobile Atmospheric Profiling Network (MAPNet) Mobile Alabama X-Band radar (MAX) is a mobile radar platform that has an X-Band radar and a mounted surface station. Surface data is collected via a 10-meter, retractable meteorological tower. When high winds or lightning is in the vicinity, the tower is often lowered. Logbooks have been provided to help the user determine if/when the tower was lowered among other references. This data has undergone preliminary quality control and should be considered final.

IOP 1
Time Period: 2022/03/22 1636Z to 2022/03/22 2313Z
Location: 33.1325, -88.495401 elevation: 67 m

IOP 2
Time Period: 2022/03/30 1515Z to 2022/03/31 0205Z
Location: 33.8400270, -88.640854 elevation: 98 m

IOP 3
Time Period: 2022/04/05 1142Z to 2022/04/05 1753Z
Location: 32.277645, -86.346100 elevation: 67 m

IOP 4
Time Period: 2022/04/13 1551Z to 2022/04/13 2208Z
Location: 36.282502,-89.499301 elevation: 85 m

2.0 Instrument Description:

The surface station is mounted on a tower that is raised to 10m above ground level. The tower is outfitted with the following instruments:

- Campbell Scientific CR800 Data Logger
- RM Young Wind Monitor
- Campbell Scientific HMP45AC Temperature and relative humidity sensor
- Vaisala WXT520 Weather Transmitter (Mounted at 5 m AGL at all times)

The WXT 520 Transmitter provides:
- Pressure
- Temperature
- relative humidity
- 2-D sonic wind
- precipitation rate/type

For detailed information regarding MAX, see the link below:
https://www.nsstc.uah.edu/mapnet/facilities/max.php

3.0 Data Collection and Processing
Data is collected at 1 second intervals. Data have been quality controlled to remove erroneous data. Orientation corrections of the anemometer were also applied when necessary.

4.0 Data Format

Two data files per day are available (one for the measurements at 10m and one for the measurements at 5 m via the WXT520).

10 m measurements
The 10 m data files arenamed max_YYYYMMDD_sfc.dat, where:

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

The data file records, column by column, are:

COLUMN   VARIABLE
----
0   -> Program Constant
1   -> Year
2   -> Julian Day
3   -> Hour (UTC)
4   -> Minute (UTC)
5   -> Second (UTC
6   -> Wind Speed at 10m (m/s)
7   -> Wind Direction at 10m (deg)
8   -> Relative Humidity at 10 m (%)
9   -> Temperature at 10m (C)

WXT520 measurements

The WXT data files arerenamed max_YYYYMMDD_wxt.dat, where:

YYYY -> year
MM   -> month
DD   -> day
wxt.dat -> wxt520 station data

The data file records, column by column, are:

COLUMN   VARIABLE
----
0   -> Year
1   -> Julian Day
2   -> Hour, Minute, Seconds (UTC)
3   -> Data Flag
5   -> wind direction (deg)
6   -> wind speed (m/s)
7   -> air temperature (F)
8   -> Humidity (%)
9   -> pressure (hPa)
10   -> Rain accumulation (mm)
11   -> Rain Intensity (mm/hr)
12   -> hail accumulation (hits/cm^2)
13   -> hail Intensity (hits/cm^2/hr)
14   -> Heater Temperature (F)
15   -> Heater Voltage (V)
16   -> Sensor voltage (V)