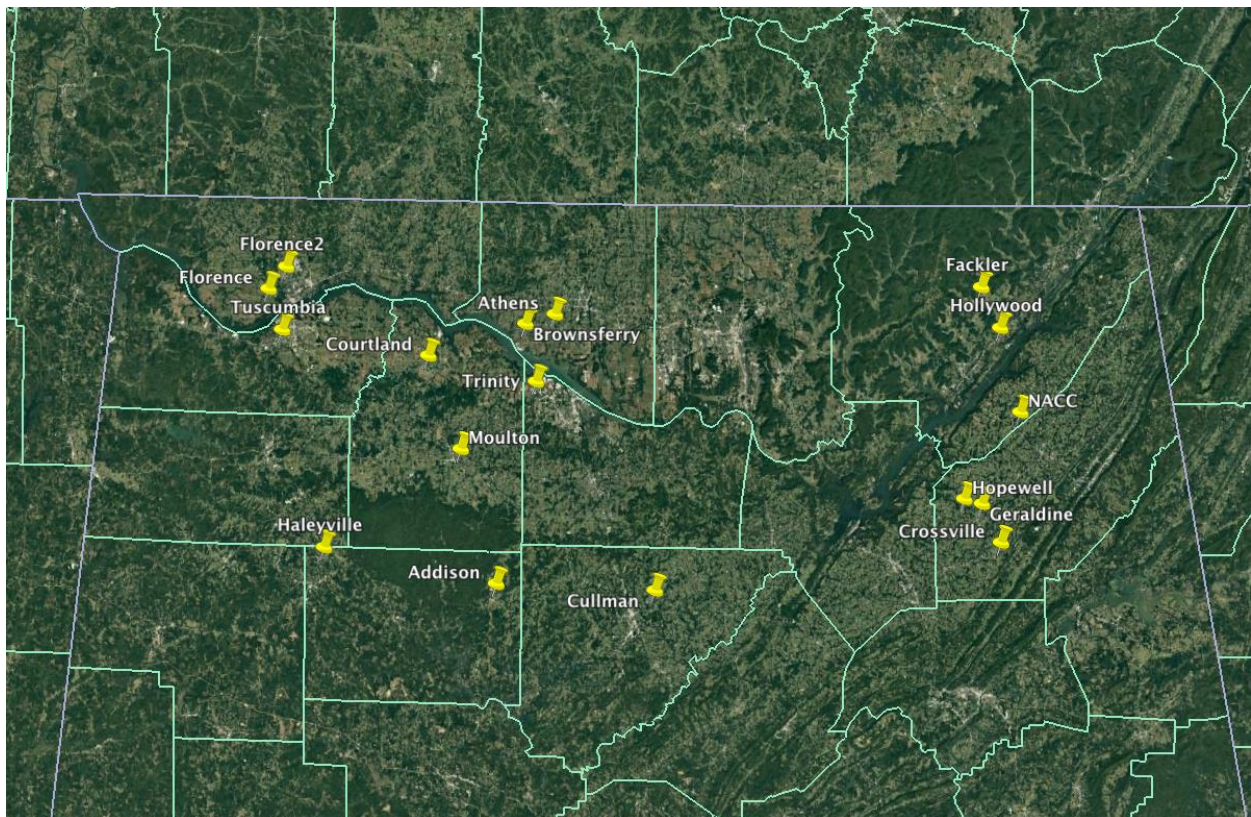


**Title:** Verification of the Origins of Rotation in Tornadoes Experiment-Southeast 2017 (VORTEX-SE\_2017) ULM Mobile Radiosonde Data Set

**Author:** Todd Murphy  
Department of Atmospheric Science  
University of Louisiana at Monroe  
Phone: 318.342.3428  
Email: [murphy@ulm.edu](mailto:murphy@ulm.edu)

## 1.0 Dataset Overview

ULM utilized two mobile radiosonde systems to release radiosondes at locations around northern Alabama (Figure 1) during VORTEX-SE\_2017 Intensive Observation Periods (IOPs). The choices for the locations and times of the releases were made in collaboration with other VORTEX-SE PIs. This data set includes 79 high vertical resolution (5-second), quality controlled ULM mobile soundings released for the VORTEX-SE\_2017 field phase (25 March to 1 May 2016).



**Figure 1.** Location of the ULM mobile radiosonde sites.

## 2.0 Instrument Description

ULM utilized InterMet's iMet-1-ABxn 403 MHZ radiosondes with pressure sensor and GPS wind finding during VORTEX-SE\_2017 and using iMetOS-II software version 03.90.0C.

**Table 1:** Manufacturer-stated accuracy and resolution for each of the variables sampled by the iMet-1-ABxn radiosondes (available from [http://intermetrsystems.com/ee/pdf/iMet-1-ABxn\\_Data\\_150316.pdf](http://intermetrsystems.com/ee/pdf/iMet-1-ABxn_Data_150316.pdf)).

Temperature resolution	0.01 °C
Temperature accuracy	0.2 °C
Humidity resolution	0.1%
Humidity accuracy	5%
Pressure resolution	0.01 hPa
Pressure accuracy	0.5 hPa
Wind velocity accuracy	1.0 m/s
Position accuracy	10 m
Altitude accuracy	15 m

### 3.0 Data Collection and Processing

Data collection occurred at the sites shown in Figure 1. The raw iMet data were initially processed using the iMetOS-II software. Additional post-processing were performed that included filtering obvious outlier data and removing any data after balloon burst.

### 4.0 Data Format

The ULM post-processed data are given as CSV text files at five-second temporal resolution. The data are stored as individual files for each radiosonde launch. The file naming convention is:

YYYYMMDD\_HHMMZ\_ULM\_CityState.txt where YYYY is the year, MM is the month, DD is the day, HHMM are the UTC hour and minute, and CityState indicate the approximate radiosonde launch location.

Each file contains a standard header (marked by #) that gives the following:

Line 1: Data set title

Line 2: Launch date, time, approximate launch location, and launch height (m MSL)

Line 3: Included variables (units)

An example header is given below:

```
# VORTEX-SE 2017 ULM Radiosonde Data
# 2017-03-25, 1702 UTC, Hollywood, AL, 187 m MSL
# latitude (deg),longitude (deg),UTC time (HH:MM:SS),height (m AGL),pressure
(mb),temp (deg C),RH (%),dewpoint (deg C),wind speed (m/s),wind direction
(deg)
```

Variables include the following:

Latitude	degree decimal format
Longitude	degree decimal format
Time	UTC (HHMMSS)
Height	m AGL
Pressure	mb
Temperature	°C
Relative humidity	%
Dewpoint	°C
Wind speed	m/s
Wind direction	degree from north

No special missing data marker is given – filtered data at each time interval are simply not included.

## 5.0 Data Remarks

Version 1.0 of this data set (released in October 2017) used wind speed units of m/s only for the first day of operations (25 March 2017) and used knots for the remainder of the operations. Version 1.1 of this data set (released in April 2018) has all of the wind speed data in m/s.

**Surface data** – Independent surface data were generally not collected. In some instances, ULM launched near locations where TTU sticknet data were available and these values were used for surface data. Otherwise, the radiosonde measurements near the surface were inserted as “surface measurements” and data from a Kestrel 3500 was used as secondary confirmation.

### Other issues:

<b>20170327_1933 CourtlandAL</b>	no data above 492mb
<b>20170327_1947 NaccAL</b>	Temperature and RH (dewpoint) data bad above 290mb
<b>20170327_2100 MoultonAL</b>	temperature and and moisture data appear suspect above 800mb
<b>20170327_2250 NaccAL</b>	no data above 505mb; temperature and moisture data noisy and suspect between 800 and 700mb
<b>20170328_0115 FlorenceAL</b>	temperature and moisture data suspect; no data above 466mb
<b>20170330_2345 HollywoodAL</b>	RH sensor failure; no data above 850mb
<b>20170405_1105 HollywoodAL</b>	moisture data looks suspect
<b>20170405_1347 GeraldineAL</b>	no data above 734mb
<b>20170405_1349 HollywoodAL</b>	no data above 460mb

<b>20170405_1728 GeraldineAL</b>	no data above 313mb; noisy moisture data above 600mb
<b>20170405_1849 HollywoodAL</b>	RH sensor failure; no data above 688mb
<b>20170405_1902 GeraldineAL</b>	no data above 800mb
<b>20170405_1910 HollywoodAL</b>	RH sensor failure; no data above 522mb
<b>20170405_1950 GeraldineAL</b>	no data above 556mb
<b>20170427_0254 HaleyvilleAL</b>	no data above 427mb
<b>20170427_0553 AddisonAL</b>	no data above 680mb
<b>20170427_0603 CullmanAL</b>	no data above 614mb
<b>20170428_2047 BrownsFerryAL</b>	no data above 612mb
<b>20170430_1954 HollywoodAL</b>	temperature and RH (dewpoint) data bad above 210mb