NOAA/ARL/ATDD Rawinsonde Metadata

Spring 2017 VORTEX-SE

PIs

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1.0 Data set overview

To support research activities during the Verification of the Origins of Rotation in Tornadoes EXperiment-Southeast (VORTEX-SE), NOAA/ARL/ATDD (NOAA Air Resources Laboratory Atmospheric Turbulence and Diffusion Division) launched rawinsondes during each of the intensive observation periods (IOPs) that comprised the spring 2017 campaign. The choices for the locations of the launches and the times for each launch were made in collaboration with other PIs during the VORTEX-SE briefings prior to each IOP. During most IOPs, two teams (ATDD1 and ATDD2) from NOAA/ARL/ATDD launched rawinsondes at select locations.

2.0 Instrument description

NOAA/ARL/ATDD used GRAW DFM-09 rawinsondes which were initialized using the GRAW software package, version 5.10.12.3, installed onto two Dell laptops (Dell Latitude E5570). The accuracy and resolution of the variables measured by the rawinsondes are listed in Table 1.

Table 1: Manufacturer-stated accuracy and resolution for each of the variables sampled by the GRAW DFM-09 rawinsondes.

Temperature resolution	0.1°C
Temperature accuracy	<0.2°C
Humidity resolution	1%
Humidity accuracy	<5%
Pressure accuracy	<0.3 mb
Geopotential height accuracy	<10 m
Wind speed accuracy	<0.2 m s^{-1}
Horizontal position accuracy	<5 m

3.0 Data Collection and Processing

During the post-processing, we filtered times during which the rawinsonde was on the ground. Data recorded when the rawinsondes were descending were also removed from the post-processed files, as were any obvious data outliers. Missing values are denoted as 9999.

4.0 Data Format

The naming convention for each of the rawinsonde files is: date_timeZ_team_location. For example, the file entitled *20170325_1510Z_ATDD2_CullmanAL.txt* contains data from the rawinsonde launch occurring at 25 March 2017 at 1510 UTC from Cullman, AL by team ATDD2. The format of the data columns contained within each file is listed in Table 2.

Table 2: Description of each column contained in the rawinsonde data files.

Column	Variable Description (units)
1	Latitude (°)
2	Longitude (°)
3	Time in HHMMSS (UTC, UTC=LST+6)
4	Height above ground level (m)
5	Pressure (mb)
6	Temperature (°C)
7	Water vapor mixing ratio (g kg^{-1})
8	Wind speed (m s^{-1})
9	Wind direction (°)

5.0 Data Remarks

There are no known data quality issues with the NOAA/ARL/ATDD rawinsonde measurements. Any questions about the data set should be directed to Temple R. Lee (temple.lee@noaa.gov).