Utilizing Mobile Integrated Profiling System Data for Operational Forecasting

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The Mobile Integrated Profiling System (MIPS) is a meteorological instrument pack operated by the University of Alabama in Huntsville. The MIPS records continuous vertical measurements of the atmospheric boundary layer using the following equipment: a 2KHz SODAR, a 915MHz Profiler, a Lidar Ceilometer, a Microwave Profiling Radiometer (MPR), and various surface instruments. These measurements are available in real-time or through an archive.

In a collaborative effort between the National Weather Service Weather Forecast Office in Huntsville, Alabama and the University of Alabama in Huntsville, research is being conducted in order to show the positive impacts that local boundary layer data can have on short term forecasting and warning issuances. Preliminary research has shown that data from the MIPS accurately represents the atmosphere during clear, homogeneous weather and severe weather. The MPR soundings provide information about the vertical structure of the atmosphere at a location that relies on forecast soundings or satellite derived products. The 915MHz Profiler provides data pertaining to the environmental winds and vertical velocity. These instruments, along with the others housed on the MIPS, provide valuable information on the stability of the surrounding environment.

In-depth case studies are being conducted on several events using data from the MIPS and archived model and observational data from the National Weather Service. Conclusions will be made for each case illustrating how the MIPS could have been utilized during each event. Processes for integrating the data from the Microwave Profiling Radiometer and 915MHz Profiler into one dataset will be outlined. Finally, this research will show that the MIPS can provide added value to forecasts and other weather products.