

Advances in Wind Measurements and Their Impacts on Severe Weather Forecasting: Progress and Prospects

Wednesday, 9 January 2019: 2:00 PM

North 131AB (Phoenix Convention Center - West and North Buildings)

Zhaoxia Pu, Univ. of Utah, Salt Lake City, UT; and R. Atlas, G. D. Emmitt, and C. Velden

[Recorded Presentation](#)

Wind measurements are essential for numerical prediction of severe weather systems, such as tropical cyclones and mesoscale convective systems. In recent years, significant progress has been made in developing new sources of wind measurements and estimates. Except for the conventional weather network, Doppler radar, satellite-derived atmospheric motion vectors (AMVs), satellite ocean surface winds (e.g., these from QuickSCAT, CYGNSS, ASCAT, etc.), as well as airborne and space-based Doppler wind lidar profiles (e.g., DAWN; Aeolus) become available. Recent data assimilation experiments prove that assimilation of various type of wind data have positive impacts on the analysis and forecasts of severe weather systems. However, due to limited spatial coverage of each type of wind measurements, there is still large room for future improvements in developing the new observing system for winds.

This presentation will overview the past and current wind measurements and their influences on numerical weather prediction, especially the severe weather forecasting. Results from both data assimilation and observing system simulation experiments (OSSEs) will be presented. The pros and cons of each available platform of wind measurements, as well as the needs of global or regional, four-dimensional wind profile measurements, will be addressed. The requirements for future development will also be discussed.