# The impact of Doppler Lidar wind profiles on numerical simulations of mesoscale weather systems

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Abstract

A series of data assimilation experiments are conducted to evaluate the impact of Doppler lidar wind profiles on numerical simulations of mesoscale weather systems. In this study, we first conduct two case studies with real observations from both ground-based and airborne Doppler lidar wind instruments during recent field experiments to examine the impact of the lidar wind profile data on numerical simulations of a mesoscale convective initiation and a tropical cyclone, respectively. Then we move to observing system simulation experiments to evaluate the impact of the potential future satellite-based Doppler lidar wind observations on mesoscale numerical simulations of hurricane and precipitation systems. Different configurations of the measurements are evaluated based on their potential in improving the mesoscale simulations. The study uses a mesoscale community weather research and forecasting (WRF) model and its 3DVAR and 4DVAR data assimilation systems. Results from different data assimilation methods are also compared.

Recorded presentation