國立中央大學大氣物理研究所書報討論

Multiscale EnKF Assimilation of Radar and Conventional Observations and Ensemble Forecasting for a Tornadic Mesoscale Convective System

ABSTRACT

This paper employs the Ensemble Kalman Filter (EnKF) to assimilate radar data (WSR-88D and the Center for Collaborative Adaptive Sensing of the Atmosphere (CASA) radar data) and conventional observations (including surface, wind profiler, and upper-air observations) for a tornadic mesoscale convective system (MCS) that occurred over Oklahoma and Texas on 9 May 2007. The study includes four main experiments to compare the results with and without assimilating radar data and conventional observations.

In the experiments, six different components will be compared, namely impact of data sources during the analysis period, impact of data sources on ensemble precipitation forecasts, impact of data sources on precipitation forecast bias, Impact of data sources on mesovortex prediction, Verification of surface temperature and dewpoint and impact of localization radius for conventional observations. The final conclusion reveals that assimilating radar data and conventional observations yields the best performance, and assimilating conventional observations can provide valuable information on near-surface conditions.

Keyword

Ensemble Square Root Filters (EnSRF)

Reference

Snook, N., M. Xue, and Y. Jung, 2015: Multiscale EnKF Assimilation of Radar and Conventional Observations and Ensemble Forecasting for a Tornadic Mesoscale Convective System. *Monthly Weather Review*, **143**, 1035–1057, https://doi.org/10.1175/MWR-D-13-00262.1.