

5.19 THE IMPORTANCE OF ASSIMILATING THERMODYNAMIC FIELDS WITH RADAR OBSERVATIONS IN CONVECTIVE-SCALE WEATHER SYSTEMS

CHING-YIN KE¹, KAO-SHEN CHUNG¹

¹ Department of Atmospheric Sciences, National Central University, Zhongli, Taiwan
cyke812@g.ncu.edu.tw

At convective scale, the evolution of severe weather is rapid and nonlinear. Radar observations have been assimilated to improve the quantitative precipitation forecast at the convective scale, and many studies have shown the positive impact of it. By using the Ensemble Kalman filter system and conducting observing system simulation experiments (OSSEs), this study investigates the importance of assimilating three dimensional thermodynamic variables with radar data. A case study of frontal system with extremely heavy rainfall on 11 June 2012 is selected. The results show that: 1) assimilating temperature and humidity fields are more important in the stratiform area than in the convective region; 2) with less cycling process, the position error of precipitation can be corrected, and extend the performance of the short-term forecast.