



Data Assimilation Effects of WISE Urban Observations and Radiosonde Balloon Drift Information over the Seoul Metropolitan Area

Seung On Hwang and Jun Park

Weather Information Service Engine (WISE), Korea, Republic Of (hwangso@hufs.ac.kr)

The impact of assimilating urban meteorological observation data in a high-resolution regional atmospheric model as part of the Weather Information Service Engine (WISE) project over the Seoul metropolitan area was investigated. Data from automatic weather stations, wind lidars, and radiometers in an observation network were additionally combined in the assimilation system LAPS. Assimilation-forecast experiments performed for July 2016 were compared with operational products based on six-hour precipitation forecasts from WRF high-resolution model. It is found that precipitation forecast skills are moderately enhanced with the assimilation of surface parameters and vertical profile data measured using urban ground-based WISE observation systems. Results from the assimilation exhibit slightly positive impacts on the distribution of rain bands in rainfall events. In addition, effects of balloon drift information on the assimilation of radiosonde observations were investigated. Drift information was originated from a field campaign for intensive radiosonde observations that was held over Seoul in early autumn 2016. An experiment ingesting radiosonde observation data in WRF 3DVAR assimilation system shows considerably positive impact on the forecast skills of rainfall cases. Another WRF 4DVAR assimilation experiment by use of radiosonde balloon drift information including exact three dimensional position and elapsed time exhibits moderate impact on the skills. More details will be given at presentation.