

30-second-update ensemble Kalman filter experiments using JMA-NHM at a 100-m resolution

KUNII, Masaru^{1*} ; RUIZ, Juan² ; LIEN, Guo-yuan³ ; USHIO, Tomoo⁴ ; SATOH, Shinsuke⁵ ; BESSHO, Kotaro⁶ ; SEKO, Hiromu¹ ; MIYOSHI, Takemasa³

¹Meteorological Research Institute, ²University of Buenos Aires, ³RIKEN Advanced Institute for Computational Science, ⁴Osaka University, ⁵National Institute of Information and Communications Technology, ⁶Meteorological Satellite Center

Local severe rainstorms may cause serious damage such as flooding and landslide, but its precise simulation is difficult mainly due to limited spatial and temporal resolutions of numerical weather prediction (NWP). To tackle this challenge, a 100-m-resolution NWP system is designed, so that the forecasts are updated every 30 seconds by assimilating observational data from the phased array weather radars (PAWR) at Osaka and Kobe. In addition, the next-generation geostationary satellite Himawari-8 will have a 30-second scanning mode for a limited domain, and using the Himawari-8 data is within the scope. An observation operator and quality control algorithm are developed for PAWR, and data assimilation experiments using the Local Ensemble Transform Kalman Filter (LETKF) are performed for the local heavy rainfall case that caused a disaster in Kyoto on 13 July 2013. In this presentation, a brief introduction to the experiments and the results will be presented.

Keywords: data assimilation, ensemble Kalman filter, phased array weather radar