30-second cycle LETKF assimilation of dual-phased array weather radar observations to short-range convective forecasts

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This study represents the first attempt at assimilating dual PAWR observations for the purpose of improved short-range weather forecasts of a sudden convective rainfall event. We focus on a case which brought intense rainfall to the Kansai region and was well observed by both Kobe and Osaka PAWR. Simulations are performed with 30-second-cycling of PAWR observations within a high-resolution mesh. We employ the SCALE-LETKF system which couples the Local Ensemble Transform Kalman Filter (LETKF) with the Scalable Computing for Advanced Library and Environment (SCALE)-RM model. We aim to develop an effective data assimilation method which fully exploits the availability of two PAWR systems to observe a single convective rainfall event and show how the data can be optimally combined to improved analyses and short-range forecasts compared to assimilating observations from a single PAWR.