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A Preliminary Application of Ensemble Transform Kalman Filter System to Rainfall Forecast

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The Ensemble Transform Kalman Filter(ETKF) method is applied to WRF model(Weather Research & Forecast Model system) Version 3.5.1, and the ETKF based data assimilation system is constructed. The accurate of forecast result and the sensitivity of initial data error on a heavy rainfall from 5th to 7th July 2003 in Jiangsu province China are investigated. The numerical result indicated that the ETKF method could decrease the forecast error and improves the forecast result either the synoptic scale system and the meso-scale system, the RMSEs of wind decrease less than 18 percent, while the temperature and humidity decrease about 6 precent. The forecast of precipitation, especially the 12h accumulated precipitation is improved significant after ETKF assimilation.

Keywords: intense rainfall, prediction error, Ensemble Transform Kalman Filter(ETKF), WRF model