



An operational high resolution ensemble kalman filter data assimilation cycle over South America

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The Brazilian Center for Weather Forecast and Climate Studies (CPTEC/INPE) has recently initiated an effort to develop operationally a high resolution probabilistic mesoscale analysis over the continental South America and portions of the surrounding south Pacific and Atlantic oceans. This work presents a high resolution regional ensemble Kalman filter (EnKF) system with the WRF model. It uses the gridpoint statistical interpolation (GSI) maintained by the Developmental Testbed Center (DTC) for observational data processing and observation operators. The initial tests were run at approximately 9 Km of spatial resolution and 20 members with 6-hourly data assimilation cycles using all regional observations and selected satellite radiances (AMSU-A, MHS and HIRS). The impact of the choice of covariance localization and covariance inflation in the model performance is assessed to demonstrate the sensitivity to the tuning. A two-weeks simulation is performed to illustrate the system adjustment (spin up) and how the model errors and innovation respond during the first days of run. Furthermore, the relative contribution of satellite brightness temperature assimilation to the analysis increments is also evaluated.