REAL-TIME GLOBAL AND REGIONAL CONVECTION-PERMITTING FORECASTS FOR THE PRECIP FIELD CAMPAIGN

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ABSTRACT

The modeling component of the PRECIP field campaign comprises two different models: the MPAS model provides deterministic forecasts initialized from GFS analyses with a global variable-resolution convection-permitting mesh, and the PSU WRF-EnKF data assimilation and forecasting system provides ensemble forecasts with a regional nesting convection-permitting mesh and frequent assimilation of all-sky infrared brightness temperature from the Japanese Himawari-8 geostationary satellite. This talk will present the results of these two models for the past two years in Taiwan/western North Pacific and other regions, including verifications of their rainfall forecasts and evaluations on the impacts of assimilating all-sky infrared brightness temperature on the subsequent forecasts. Both models show decent skills in short-term rainfall forecasts. When comparing with retrospective forecasts that exclude all-sky infrared brightness temperature assimilations, it is clear that assimilating these observations improves the rainfall forecasts out to about 6 hours, which is comparable to the benefits that previously achieved with the assimilation of Doppler weather radar observations.

Keywords: heavy rainfall; numerical weather prediction; ensemble prediction