

Evaluations of Extended-Range tropical Cyclone Forecasts in the Western North Pacific by using the Ensemble Reforecasts: Preliminary Results

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The objective of this study is to evaluate the predictability of the extended-range forecasts of tropical cyclone (TC) in the western North Pacific using reforecasts from National Centers for Environmental Prediction (NCEP) Global Ensemble Forecast System (GEFS) during 1996-2015, and from the Climate Forecast System (CFS) during 1999-2010. Tsai and Elsberry have demonstrated that an opportunity exists to support hydrological operations by using the extended-range TC formation and track forecasts in the western North Pacific from the ECMWF 32-day ensemble. To demonstrate this potential for the decision-making processes regarding water resource management and hydrological operation in Taiwan reservoir watershed areas, special attention is given to the skill of the NCEP GEFS and CFS models in predicting the TCs affecting the Taiwan area.

The first objective of this study is to analyze the skill of NCEP GEFS and CFS TC forecasts and quantify the forecast uncertainties via verifications of categorical binary forecasts and probabilistic forecasts. The second objective is to investigate the relationships among the large-scale environmental factors [e.g., El Niño Southern Oscillation (ENSO), Madden-Julian Oscillation (MJO), etc.] and the model forecast errors by using the reforecasts. Preliminary results are indicating that the skill of the TC activity forecasts based on the raw forecasts can be further improved if the model biases are minimized by utilizing these reforecasts.