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Evaluation of Experimental Models for Tropical Cyclone Forecasting in Support of the NOAA Hurricane Forecast Improvement Project (HFIP)

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The Tropical Cyclone Modeling Team (TCMT) in NCAR's Joint Numerical Testbed (JNT) Program focuses on the verification of experimental forecasts of tropical cyclones (TCs). Activities of the team include the development of new verification methods and tools for TC forecasts and the design and implementation of diagnostic verification experiments to evaluate the performance of tropical cyclone forecast models. For the Hurricane Forecast Improvement Project (HFIP), the TCMT has designed and conducted verification studies involving various regional and global forecast models that participate in the annual HFIP retrospective and real-time forecast demonstration studies. The TCMT has also developed new statistical approaches that provide statistically meaningful diagnostic evaluations of TC forecasts. These methods include new diagnostic tools to aid, for example, in the evaluation of track and intensity errors and ensemble forecasts. Recently, the TCMT conducted a retrospective evaluation of eight experimental tropical cyclone forecast models that ranged from deterministic to ensemble forecast systems. These models were evaluated for storms that occurred in the 2008-2010 hurricane seasons in the North Atlantic and Eastern Pacific Oceans. The forecasts from these models were also evaluated for the 2011 HFIP demonstration experiment. This presentation will provide an overview of the evaluation methodology including new methods along with a summary of key results from the 2011 HFIP retrospective and demonstration studies.