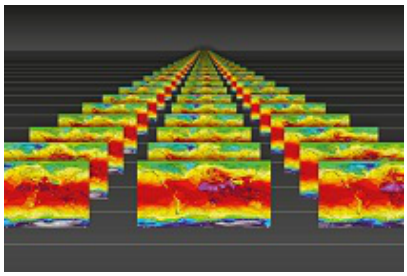

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Ensemble Tropical Cyclone Forecast Performance and Prediction of Ensemble Forecast Error

Thursday, 4 April 2019 09:00 (30 minutes)

The primary variables forecast by the U.S. tropical cyclone (TC) forecast centers, National Hurricane Center (NHC) and Joint Typhoon Warning Center (JTWC), are TC track, intensity, and radius of gale-force winds. For all three variables the primary forecast guidance products used by the forecasters are multi-model ensemble mean or consensus forecasts derived using the forecasts from global and regional numerical weather prediction (NWP) models and from a number of statistical models. The consensus forecast guidance for TC track is derived entirely from NWP model forecasts while that for TC intensity and radius of gale-force winds use a combination of NWP and statistical model forecasts.
Predicted consensus error (GPCE) products for TC track, intensity, and radius of gale-force winds have been developed and installed on the Automated Tropical Cyclone Forecasting system (ATCF) to provide "guidance on guidance"for the forecasters at both NHC and JTWC.

In this presentation the TC track forecast performance of the multi-model consensus guidance used by NHC is shown along with that for the best of the TIGGE single-model ensembles (ECMWF, MetOffice, and NCEP) for the 2017 Atlantic hurricane season. The TC track forecast errors for the various ensemble means and members are displayed along with the degree of independence of the members of the multi-model and single-model ensembles. Next, the GPCE products for TC track, intensity, and radius of gale-force winds used by the forecasters at NHC and JTWC are illustrated along with their performance. Finally, the techniques used to derive the multi-model consensus TC track GPCE are applied to the ECMWF single-model ensemble for the 2017 Atlantic hurricane season. The results are shown and compared with those for the multi-model consensus.

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Session Classification: Prediction and Verification Multi-model approaches to prediction

Track Classification: Workshop on Predictability, dynamics and applications research using the TIGGE and S2S ensembles