



Utilization of multi-model ensemble for tropical cyclone track-forecast uncertainty

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The accuracy of track forecasts for tropical cyclones (TCs) is well studied, but less attention has been paid for the representation of track-forecast uncertainty. A classical probability information is based on the empirical cumulative density (ECD) function of forecast-track error distances. Despite the intuitive and efficient way of treating track errors, the ECD approach is statistically less informative. This study develops a technique for real-time probability circle radius through multi-model ensemble results. The multi-model ensemble results come from Korea Meteorological Administration (KMA), Geophysical Fluid Dynamics Laboratory (GFDL), and European Center for Medium-Range Weather Forecasts (ECMWF). Then, Bayesian approach is applied to continuously update the uncertainty through newly observed data, and calculate the probability distribution of position error for each model. Final distribution of forecast uncertainty is provided as the marginal distribution of the individuals. The results shows the usefulness of using Bayesian technique for the representation of the real-time forecast uncertainty.

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