

Typhoon Intensity Consensus Predictions Based on Various Performance Evaluations for Guidance Models

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New consensus techniques for typhoon intensity prediction in the western North Pacific have been developed on the basis of various performance evaluations of 11 TC intensity guidance models during 2011-2014. From the evaluation using total errors up to 72 hours, we found that HWRF (Hurricane Weather Research and Forecasting model) outperforms all others overall although GFS (Global Forecast System), KWRF (Korea Meteorological Administration WRF) and JGSM (Japan meteorological agency Global Spectral Model) also shows a good performance in some forecast lead times. For initial intensity error, two Japanese models, JGSM and TEPS (Typhoon Ensemble Prediction System), had the smallest error. On the basis of these evaluations, we have developed various consensus techniques according to the number of model used, training period, rank criteria (correlation or absolute error), and averaging methods (equally or weighted mean). Prediction tests for 2012-2014 reveals that (i) the CON2 (using one consensus method showing the smallest error up to 72 hours during training period) generally outperformed CON1 (using the best performance consensus methods at individual forecast lead time during training period), (ii) the consensus using 1-year training outperformed using 2-year training, (iii) the weighted (equally) averaging consensus method using 4 or 5 models revealed the best performance when the model selection is evaluated using correlation (absolute error) criteria.

Key words: tropical cyclone, intensity prediction, consensus, guidance models.

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