The Initialization Process of the Numerical Typhoon Track Forecasting Model : Comparisons of The Forecast Errors from Two Bogus Methods

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ABSTRACT

For lack of complete observations, a special vortex bogus procedure is usually employed for most of the operational forecast model to begin the typhoon track forecast. This study compares the impact of two vortex bogus procedures to the model track forecast errors. Two methods studied are the operational system used at the Central Weather Bureau in 1996 and a new vortex bogus procedure. The new vortex bogus procedure includes a vortex filtering scheme similar to Kurihara et al. (1993), implanting a wave number one asymmetric beta gyre generated by an equivalent barotropical model, and allowing the observations to modify the bogused vortex through the objective analysis. From the analysis of 52 simulations by using the Typhoon Track Forecasting Model/Central Weather Bureau, we found the model track forecast is significantly affected by the vortex bogus procedure. Applying the new vortex bogus procedures reduce the mean 24 hours track forecast error by 12 km, and reduce the mean 48 hours track forecast error by 148 km. We also found that for some cases, which the CLIPER (CLImatology-PERsistence) forecast errors are small, the 24 hours forecast error increased when the new vortex bogus procedure is applied.

Key words : Typhoon track forecasting, Model initialization process.

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