

Improving Performance of Statistical Typhoon Intensity Prediction Model using Typhoon Landfall Model in the Western North Pacific

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The statistical-dynamical typhoon intensity prediction model (STIPS2015) has been developed using a track-pattern clustering method and ocean-coupled potential predictors at National Typhoon Center/ Korea Meteorological Administration in 2015. STIPS2015 shows a remarkably good skill compared with other guidance models(Global Forecast System, Unified Model, Hurricane Weather Research Forecast). However, it is pointed out that the intensity predictions are overestimated during landfall. In this study, in order to correct this positive bias, a statistical typhoon landfall model (LSTIPS) is developed using linear regression method for each predicted time based on initial intensity and landmass ratio. Considering the difference in geographical characteristics between the sub-regions, we divide the western North Pacific into four regions (Philippines, Taiwan, Korea & Japan, and South China Sea) and develop the models separately. The Philippines region made up of a number of islands. Therefore, typhoon landing time is short. In the Taiwan region, typhoons landing inland after passed through the island. Korea and Japan region is relatively high latitude area. In the South China Sea region, typhoon is landing after passed through the Philippines. Because of the different interactions between typhoon and land, we divided into four regions. The training results show that typhoon intensity prediction of the LSTIPS is improved by 8% compared with STIPS2015 at 72-hour lead time. For the test periods, the LSTIPS is improved by 12% in mean absolute error particularly for 102-hour lead time. In the future if the model more subdivide with land types (islands or continents), it is expected that the intensity prediction performance will be improved.

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