Improvement of Prediction Accuracy of 3-second gust caused by Typhoon –FDDA and High Resolution SST -

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As industrialization has progressed rapidly since the 1980s, global warming is steadily going on. According to a study by the IPCC(2015), as global warming progresses, SST increases, the number of typhoons occurs decreases and intensity becomes stronger. In fact, SST around the western Pacific and the Korean Peninsula have recently increased at a faster rate than the average global increase in SST, and the intensity of typhoons affecting the Korean Peninsula has become stronger. In order to reduce the damage caused by typhoons in Korea, Typhoon Pre-prevention Disaster Model is developed and operated to calculate 3-second gust(maximum instantaneous wind speed) and damage cost that could occur during the typhoon’ s effect. In studies related to Typhoon Pre-prevention Disaster Model, studies on the development process and the characteristics of the Korean Peninsula impact typhoon applied to Typhoon Pre-prevention Disaster Model were preceded mainly by studies that conducted basic analysis to develop Typhoon Pre-prevention Disaster Model. However, studies to improve the accuracy of the 3-second gust, the result of the Typhoon Pre-prevention Disaster Model, were not preceded. Therefore, in this study, we apply the High resolution SST and FDDA to the WRF model used to derive input informations from the typhoon pre-prevention model, and then analyse the improvement of predictive accuracy of 3-second gust calculated from the Typhoon Pre-prevention Disaster Model. A total of four experiments were performed with the default experiment(EXP1) with no application, the experiment with adding high resolution SST(EXP2), the experiment with adding FDDA(EXP3) and the experiment with applying high resolution SST and FDDA simultaneously(EXP4). As a result, 3-second gust was best simulated when the results of the experiment using both high resolution SST and meteorological data FDDA were used as input data for the Typhoon Pre-prevention Disaster Model.

This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Education(2017R1D1A3B03036152)

Keywords: Typhoon Pre-prevention Disaster Model, UM, GDAPS SOIL, GFS SOIL

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