



The simulation of the extreme storm waves due to Typhoon CHABA

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On October, 2016 Category 4 typhoon CHABA landed the southeast coast of the Korean peninsula. Due to the typhoon CHABA, flood inundation and wave overtopping damages occurred in many ports and coasts. Especially, damages of Gamcheon Port and Dadaepo Port were the greatest. The maximum significant wave height at the Korea Straits Buoy Station (KS) of the Korea Hydrographic and Oceanographic Agency (KHOA) which is the closest observation station from above two ports was recorded 13.0 m, and the wave direction is S ~ SSW. Meantime, the observed wind speeds during the passage of typhoon CHABA at KS were 25 ~ 27 m / s.

Considering the path of typhoon CHABA, 13.m of extreme was height at KS was an unusual event. Because two wave observing stations which were experienced the effect of CHABA earlier than KS were recorded 11.5 m (at GeoJe station where is 25 km southwest of KS) and 11.4 m (at South-East station where is 100 km southwest of KS), respectively.

In this study, we tried to find the cause of the difference of extreme waves within relatively short distance using numerical experiments. In order to simulate the typhoon winds, we used a typhoon parameter model and WRF with 4 km spatial resolution. For wave simulation, the WaveWatch III with a 2 km spatial resolution is used. A wave-current coupled model was constructed to simulate the effect of interaction between wave and currents, where, the currents include 3 dimension oceanic and tidal components.