Integrated Storm Surge Forecasting Model System for the Changjiang Estuary, China

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A coupled weather-wave-current model system has been developed aiming to forecast the tropical cyclone- or typhoon-induced storm surge around the Changjiang Estuary and adjacent shallow coastal regions. This integrated mode system is consisted of three parts, 1) an analytical tropical cyclone model which provides the wind forcing and atmosphere pressure; 2) a surface wave model SWAN which calculates the wind-induced wave propagation; 3) two-dimensional coastal ocean model which forecasts the storm surges combined with river discharge, wind, wave and astronomical tide. The model system has been validated with twenty historical typhoon impacts and two forecasting processes, Hurricane Mastsa and Khanum happened in 2005. For the operational forecasting, this model system has been integrated into the network-based GUI software. The realistic forecasting cases have been given with Typhoon 0713 and 0908, which caused significant coastal surges recently around the Changjiang Estuary.