# Operational Forecasting and Warning systems for Coastal hazards in Korea

Kwang-Soon Park, Jae-Il Kwon, Jin-Ah Kim, Ki-Young Heo, and Kicheon Jun
Korea Institute of Ocean Science and Technology, Ansan, Korea

Coastal hazards caused by both Mother Nature and humans cost tremendous social, economic and environmental damages. To mitigate these damages many countries have been running the operational forecasting or warning systems. Since 2009 Korea Operational Oceanographic System (KOOS) has been developed by the leading of Korea Institute of Ocean Science and Technology (KIOST) in Korea and KOOS has been operated in 2012. KOOS is consists of several operational modules of numerical models and real-time observations and produces the basic forecasting variables such as winds, tides, waves, currents, temperature and salinity and so on. In practical application systems include storm surges, oil spills, and search and rescue prediction models.

In particular, abnormal high waves (swell-like high-height waves) have occurred in the East coast of Korea peninsula during winter season owing to the local meteorological condition over the East Sea, causing property damages and the loss of human lives. In order to improve wave forecast accuracy even very local wave characteristics, numerical wave modeling system using SWAN is established with data assimilation module using 4D-EnKF and sensitivity test has been conducted. During the typhoon period for the prediction of sever waves and the decision making support system for evacuation of the ships, a high-resolution wave forecasting system has been established and calibrated.