



## **Application systems in Korea Operational Oceanographic System (KOOS): Storm surge prediction system, operational Search and Rescue modeling system, Oil Spill Prediction System**

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Storm surge prediction system, operational search and rescue (SAR) modeling system and oil spill prediction system have been developed as a part of Korea Operational Oceanographic System (KOOS) which produces nowcasts and forecasts of ocean information around the Korean Peninsula. Three application systems rely on the basic inputs from KOOS and can predict up to 72-hour period.

Storm surge prediction system in KOOS is 2D depth averaged hydrodynamic model incorporated with two atmospheric models, typhoon parameter model for typhoon period and WRF for the non-typhoon period. This surge system has been proved the prediction capability on storm surge height and peak arrival time throughout the hindcast of typhoon events.

An operational search and rescue (SAR) modeling system in KOOS employs a Monte Carlo ensemble technique to estimate the leeway (motion relative to the wind) of the drifting objects and uses the forcing inputs, wind and currents, from KOOS. Several drifting buoy experiments have been carried out to evaluate the performance of operational SAR model and results showed reasonable agreement.

To reduce the damage caused by the spilled oil in the coastal areas around the Korean peninsula, MOHID based oil spill prediction system has been setup and tested. This oil spill prediction system also relies on major inputs such as initial and boundary condition of temperature and salinity and wind field are from KOOS. For validation of this oil spill system, the Hebei Spirit accident in 2007 was successfully simulated.