



High resolution regional and coastal operational storm surges/tide forecasting system in Korea

Dr. You and Ms. Lee

Global Environment Research Lab, NIMR/KMA, Republic Of Korea (shyou@kma.go.kr/+82-2-841-2787)

The coastal areas around Korean peninsula are one of the challenging places in ocean modeling for reasonable prediction of nearshore storm surges/tide conditions. Establishing of newly devised ocean prediction system of KMA is underway in conjunction with high computing environment. The development of high resolution model is very essential to predict the storm surges patterns in the complex coastal area of Korea. The main objective of this study is to develop and apply the high resolution regional and coastal storm surges/tide operational prediction system in Korea. The NIMR (National Institute of Meteorological Research)/KMA(Korea Meteorological Administration) has operated numerical regional wave and storm surges/tide prediction system. At present, the regional operational storm surges/tide model, called STORM (Storm surge/Tide Operational Model), area covers 115°-150°E, 20°-52°N based on POM (Princeton Ocean Model) with 8km horizontal resolutions including the Yellow Sea, East China Sea and the East Sea, marginal seas around Korea. From July 2006, the STORM have been applied to formal forecasting model in KMA. Also we developed the high resolution coastal storm surges/tide prediction system (CoSTORM : Coastal STORM) in order to produce detailed ocean forecasting field. Developed CoSTORM covers 6 coastal areas around Korea peninsula. The horizontal grid intervals are 1km for each area. The model output from regional storm surges/tide prediction system is used for boundary condition of coastal storm surges/tide prediction system. In the near future, the CoSTORM will be applied operational storm surges/tide forecasting system in NIMR/KMA. In this study, Sea surface wind and mean sea level pressure from the RDAPS (Regional Data Assimilation and Prediction System) and KWRF (Korea Weather and Research Forecasting) are used for forcing input of storm surges/tide model. Both the RDAPS and KWRF are the operational weather forecasting system in KMA. The horizontal resolutions of RDAPS and KWRF are 30 and 10 km, respectively. The storm surges/tide were hindcasted using sea wind and pressure fields of Typhoon which is approaching Korean Peninsula. In conclusion, the coastal storm surges/tide models, CoSTORM, using input from KWRF simulate very well the storm surges/tide pattern in the complex coastal areas. The result showed that the storm surges by the coastal storm surges/tide model with high resolution input was in well agreement with the observed sea level occurred by high tide and storm surges in the coastal areas.