

Modeling Tsunami Interaction with Coastal Structures A SPH Method

Application

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Abstract

Modeling of nearshore circulation of southern coastal waters of Caspian Sea is performed by using a coupled ocean-wave system model (ROMS-SWAN) with nesting capability. Regard to absence of persuaded boundary and initial data, coupled model is performed on whole of Caspian Sea for both regional and local grids over the same grid size.

Seasonal-monthly climatological data from CODAS, atmospheric forcing data from ECMWF ERA-Interim and initial data from WOA are used for simulations in 2012 without sea-ice consideration.

According to the regional model results, circulation pattern shows two western and eastern gyres in the southern part of Caspian Sea which are in good consistence with previous results, espatically in the warm season. In addition, distribution of coastal currents resulted by local (nested) model is also noticeable because low accuracy of the results. It seems that despite the physical consistancy, they are not sufficiently

accurate and reliable. Considering the effects of ice and configuring the model with sea-ice module of ROMS model and providing accurate bathymetry for nearshore region in local model could be improve the nearshore results.

Keywords

Coastal circulation, ROMS, SWAN, ECMWF, Caspian Sea