

Updated Oman Sea Hindcast

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Reliable wave information is essential to the design of any coastal facility and to the assessment of coastal processes, such as sediment transport. A detailed investigation of the wave climate on the Oman Sea coastline of Iran is being carried out in support of a comprehensive study of coastal zone processes (project MONITOR SB&B by PSO). The Oman Sea coast is subject to a complex wave climate with two distinct components: (1) seas that are generated in the Gulf of Oman and approach from a westerly to southwesterly direction; and (2) long-period swells that are generated in the Indian Ocean and approach from southerly to southeasterly directions. This paper presents preliminary results based on the work completed to date.

A twenty-five year hindcast of wave conditions in the Oman Sea and Indian Ocean will be completed using the Wavewatch III wave model. Wavewatch III, a 3rd generation wave model, was selected based on a recent comprehensive wave model comparison carried out for the Pacific Ocean (Hanson et al., 2006), in which it showed greater predictive skill than similar models, such as WAM. The overall model domain extended over the entire Indian Ocean with a 1.25° and 1.0° resolution in longitude and latitude, respectively. Within in this overall grid, a nested, higher resolution (0.25°) grid of the Oman Sea is employed.

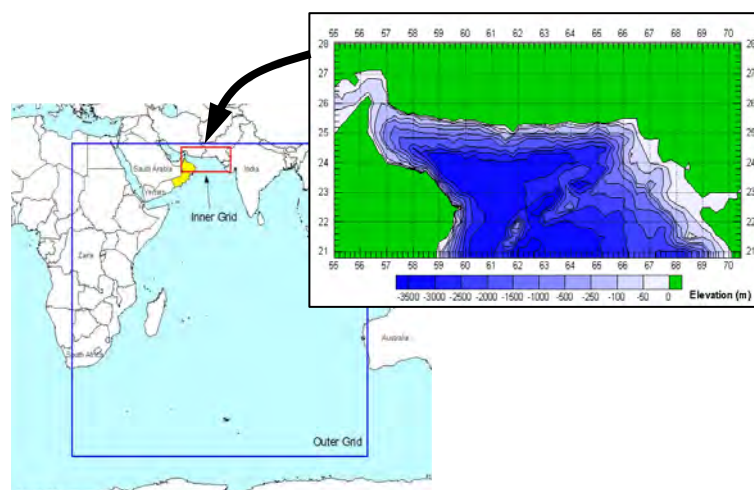


Figure 1 Wavewatch outer and inner model domains

Wind fields to drive the wave model are derived from a global atmospheric re-analysis model, statistically corrected through comparisons to QuikSCAT satellite scatterometer measurements of overwater wind speeds and directions. In addition, recorded wind data from Chabahar and Jask synoptic stations will later be blended into the overall wind field.

The following input parameters are assumed in the WAVEWATCH III model simulations: