

عنوان مقاله:

A GP-BASED APPROACH FOR IMPROVING WIND-WAVE SIMULATIONS OVER THE PERSIAN GULF

محل انتشار:

دوازدهمین همایش بین المللی سواحل، بنادر و سازه های دریایی (سال: 1395)

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خلاصه مقاله:

Reliable coastal structure design, sediment transport predictions and future planning all depend on the use of accurate long-term wave data. Wave measurements are not usually available everywhere and on a long-term basis; hence, numerical simulations are to be adopted to obtain such data in locations of interest. It is while the most important role in obtaining reliable simulated wave data is played by well-established and reliable simulated wind field data sets over the study area. Numerical weather prediction models can be used as a tool to estimate marine surface winds and for providing input parameters to the sea surface wave and ocean circulation numerical models (e.g., Chen et al., 2005; Schulz, et al., 2007, Sousa, et al., 2013; Liu, et al., 2011). In addition, the model results which are to be verified with observational data usually show remarkable bias from the real situation which can be attributed to the very dynamic and unstable nature of the atmospheric phenomena affecting simulation results. The present study aims to reproduce measured wind data from an offshore wave buoy in the central Persian Gulf. The simulated wind data are modified through a Genetic Programming (GP) framework to obtain an optimum correlation factor between the simulated results and observations. This data is used to provide input parameters to the sea surface wave model. The native and modified wind data sets are introduced to the 3rd generation WaveWatch III wave model to simulate the time series of wave characteristics at the buoy location. The output wave data are compared with the observations to evaluate the efficiency of GP-based method for improving wind/wave simulations over the Persian Gulf

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