عنوان مقاله:

Identification of Characteristics Influencing Wave Height and Current Velocity in MIKE Model for Simulation of Wind-induced Ocean Currents and Waves in Southeast of Caspian Sea

محل انتشار:

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نویسندگان:

S. Heshmat - *Department of Civil Engineering, University of Sistan and Baluchestan, Zahedan, Iran*

S. A. Hashemi Monfared - *Department of Civil Engineering, University of Sistan and Baluchestan, Zahedan, Iran*

D. Yousefi Kebria - *Department of Civil Engineering, Babol University of Technology, Babol, Iran*

S. M. Banihashemi - *Head of the National Centre for the Studies and Research of the Caspian Sea, Water Research Institute, Iran*

خلاصه مقاله:

Due to climate change and the necessity of paying attention to the preservation of energy resources to deal with the impacts of climate change, the enhancement of renewable energy portions via different resources has been considered in recent years. Therefore, it is necessary to study characteristics influencing the modeling of water streams and waves to monitor the movement of sea waves as a large resource of renewable energy in the generation of electricity, desalination, and water pumping. The dominant currents in the Caspian Sea, a constituent of which is wind-induced waves, the disconnectedness of the Caspian Sea from oceans, complex topography, shoreline configuration, and considerable temperature and density differences, which make it complicated to examine ocean current patterns, are of great importance. This study investigated bottom friction, wave breaking, white capping, solution technique, and the number of directions in the MIKE-SW model and meshes, solution technique, bed resistance, and wind friction in the MIKE-FM module to model the wave height and current velocity. The effectiveness and contributions of characteristics in the simulation were found by the MIKE-SW model as the wave propagation model of sea waves toward the coastal areas and in the current model. As a result, to perform reliable and realistic simulations, it is required to investigate every component. The investigation of all the simulation indexes showed that the MIKE numerical model yielded acceptable results for the simulation of ocean currents and waves in both MIKE-SW and MIKE-FM modules.

کلمات کلیدی:

MIKE 21-SW, MIKE Flow-FM, Numerical modeling, Sea currents, waves