عنوان مقاله:

A Hydrodynamic Model of Tidal Current in the Strait of Hormuz

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خلاصه مقاله:

This research presents a model for prediction of tidal currents in shallow sea areas. This hydrodynamic model is based on the solution of shallow water equations. Also contains effects of earth rotation, topographic changes, and influences of bottom friction. One of the results of solving these equations is the dispersion relation of tidal wave in the study area by which the wave number of each tidal constituent is obtainable. Finding velocity and direction of tidal currents is among other results of solving these equations. Thus, for low-amplitude waves in shallow water, the direction and velocity of tidal currents can be calculated hourly and on different days throughout the year. In order to facilitate calculations, a computer program was written in C++ programming software by which the tidal currents in the Strait of Hormuz have been computed at different times and the results have been diagrammed accordingly. This research indicates that the average velocity of tidal currents at the sea surface of the Strait of Hormuz during Spring tide is 0.35 m/s and ranges between 0.02 m/s - 1.7 m/s. The maximum tidal current velocities occur in shallow coastal waters, whereas in other areas these values are lower. As a result, the range of tidal currents in the Strait of Hormuz is more than that of the Persian Gulf. In addition, results showed that the tidal current direction upon entrance and exit in the Strait indicates the anticlockwise circulation of currents in the Persian Gulf.

کلمات کلیدی:

Tidal current, Strait of Hormuz, Hydrodynamic model, Shallow water, Persian Gulf

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