

عنوان مقاله:

Modelling the Dispersion of Harmful Algal Bloom (HAB) in the Coastal Area of Oman Sea

محل انتشار:

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خلاصه مقاله:

The increasingly growing world population and the contamination of rivers and coasts due to human activities have given rise to serious problems in the marine habitats. One of the most recent and challenging issues involves harmful algal blooms also known as red tides. The algal bloom has geographically spread in the entire coastal areas of the world, and the Iranian southern coast is no exception. However, any potential damage in coastal areas can be prevented by accurately predicting the dispersion and advection of the blooming species. This study intended to examine the dispersion and advection of harmful algal cells through hydrodynamic modules MIKE 3-FM and ECO Lab, which simulated the hydrodynamics and quality of water as well as the distribution of chlorophyll-a across the southeast coast of Iran. After calibration of the model, the results of simulation were adequately consistent with the measured data on variations of chlorophyll-a, i.e. the cause of algal bloom. In fact, the modeling was successful in simulation of currents across the Gulf of Oman in hydrodynamic and quality terms. For validation of model the root mean square error (RMSE) is used. RMSE of calibrated and field data for chlorophyll a values equal to 0.016, obtained under 0.1 indicates that accuracy is very high and also for water level equal to 0.19, which represents the accuracy of hydrodynamic model is good. Since the dispersion of *Cochlodinium polykrikoides* was first observed at mid- April 2009 in the nearest station to the Strait of Hormuz. The bloom spread toward eastern stations of Chabahar at mid-May and then persisted for two months. The results were consistent with those obtained through software modeling on the dispersion of chlorophyll-a, the major cause of algal boom. The validated model in this study can be employed to provide on-time warning and prevent any adverse social and economic consequences.

کلمات کلیدی:

Harmful algal bloom, Nutrient, Chlorophyll a, Numerical modeling, Distribution

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