عنوان مقاله:

Sensitivity Analysis of Makran Subduction Zone's Seismic Parameters for Optimizing the Number of Potential Tsunami Scenarios

محل انتشار:

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خلاصه مقاله:

Given the necessity of knowing the risk of future tsunamis in actions related to tsunami hazard mitigation, the Probabilistic Tsunami Hazard analysis (PTHA) approach has been accepted as the basis for tsunami risk assessment studies for high-risk areas such as the Makran region. Considering the uncertainties associated with fault parameters and the random nature of earthquake in PTHA, simulation a large number of potential tsunami scenarios is required in future tsunami studies of the Makran Subduction Zone (MSZ). To optimize the number of scenarios in these studies, appropriate values for the ranges and change intervals of some uncertain seismic parameters in different scenarios are determined in the present study. For this, the values used in previous studies for earthquake magnitude and depth as well as dip and rake angles of MSZ's tsunamigenic earthquakes are investigated; and the effects of variations in these parameters on the tsunami waves are evaluated through numerical modeling and sensitivity analysis. The results show a minimum value of Mw۰.۱ for the interval of earthquake magnitude variations must set in developing potential tsunami scenarios. Also, considering two or three values in the range of ۲º to ۲۰º and ۱۰km to ۳۰km, respectively, as probable values for the dip angle of the MSZ and the depth of tsunamigenic earthquakes seems sufficient. However, if the minimum number of scenarios is desired, selecting a unit value for the dip angle in the range of ۱۰º to ۱۵º and a constant earthquake depth of ۱۰km can be acceptable.

کلمات کلیدی:

Tsunami, Makran Subduction Zone, Earthquake Magnitude, Dip Angle, rake angle