

## عنوان مقاله:

Effects of Change in the Parameters of Initial Water Displacements on Energy and Amplitude Amplification of Tsunamis

## محل انتشار:

فصلنامه زلزله شناسی و مهندسی زلزله، دوره 21، شماره 2 (سال: 1398)

تعداد صفحات اصل مقاله: 10

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## خلاصه مقاله:

In tsunami modeling, usually, the source parameter of an earthquake or landslide is computed by geophysicists, and an initial water displacement precisely similar to the seabed dislocation created by the source is obtained. Next, the initial water displacement is propagated in a predefined mesh grid using Computational Fluid Dynamics (CFD). Here, aside from the source of an earthquake or landslide, we have proposed a formula consisting of three scaling's and one rotation parameter, for creating a 3-D Initial Water Displacement (IWD). Each time one parameter was changed, and the resulting initial water displacements were modeled in a sea like modeling area. The propagated wave was recorded by the four arbitrary tide gauges at different depths near the shore. The finite difference method was used as our numerical modeling scheme in a mesh grid consisting of  $100 \times 150$  km with an equal grid resolution of 500 m having reflective boundaries. The ratio of maximum amplitude and energy of the signal was computed in all of the arbitrary tide gauges. The results show that if an IWD is extended in the direction of the shoreline, the impact would be much lower than when the IWD is extended perpendicularly to the shoreline. The result of this study is beneficial in obtaining maximum amplitude and energy of IWD's with variable scaling and rotation parameters. Moreover, our method can be further extended to obtain charts with more values assigned to these parameters.

## کلمات کلیدی:

Numerical Modeling, Computational Fluid Dynamics (CFD), Initial Water Displacement

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