

Calculating Tsunami Travel Time Using Arcgis Along West-Coast Of India

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Abstract

Tsunamis are destructive waves have the ability to completely inundate coastal communities with seawater causing heavy property damage and loss of life. One of the main causes of its occurrence is earthquake in oceanic crust due to tectonic activities and has potential to travel at a high speed for very long distances. Hence, they have a huge potential to damage coastal life, not only at the origin but coasts away from it. However, if probable travel time for tsunami waves is calculated, then many lives can be saved using tsunami warning. Makran Subduction Zone is one of the potential zones which may generate earthquakes of such magnitude leading to tsunamis and many countries in the gulf and South Asia may experience damages. In our research, travel time of tsunami at different locations along the West coast of India has been calculated using Geographic Information System (GIS) software. It is done by using different methods in ArcGIS software like 'Con-tool method', 'Contour-line method', and 'Profile method'. The result of this process shows probable travel time of tsunami waves from Makran Subduction zone to important coastal places in western India. The expected outcome of our research is the approximate time taken by the tsunami to travel from the epicenter to some of locations on the west-coast of India which defines our study area. This study needs further research so that a robust model would provide an easy way to use prediction tool to assist decision making and disaster management due to tsunamis.