



Study on tsunami flood occurrence due to Makran subduction zone (case study BERIS)

[شهمیر اقتصادی . Shahmir . Eghtesadi]
[بهزاد لایقی . Behzad . layeghi]

Key Words: flood, tsunami, Makran Subduction zone, BERIS

Abstract

According to scientific and historical evidences, MAKRAN subduction zone has high destruction potential due to making tsunami in southeastern coasts of Iran. So, studying and simulating tsunami flood due to probable earthquakes in MAKRAN subduction zone at SISTAN & BALUCHESTAN coasts, especially in Port BERIS is so important. In this research, tsunamis flood on MAKRAN subduction zone was simulated and studied on SISTAN & BALUCHESTAN province coasts at Port BERIS by using COMMIT software. Various cases on this research were 8, 8.5 and 9 Richter earthquakes. Result shows that maximum run-up for this region for 8, 8.5 and 9 Richter earthquakes are 0.5 m, 3.4 m and 14 m. In addition, maximum flood width is close to 1.4 km and the time of first arriving waves to coast is around 22 min. the results of this research can be used in structure plan of the region.

1-Introduction

Numerical modeling of Tsunami is so important to understand past phenomena and simulation of predicted future events. However consideration of the processed data based on past events is necessary but not sufficient. A suitable scientific method would be to use numerical modeling for determining flood and run up based on local or offshore tsunami. In 1945, a Tsunami had occurred in Pakistan which was a useful warning hint for possible dangers for the Oman Sea coastal areas. The quantity of tsunami induced by subduction zone earthquake depends on different factors such as magnitude, source geometry and location. Magnitude and source geometry of earthquake determine surface disturbance which will assess size and length scale of tsunami. Source geometry should be calculated from practical formula that considers fault length, width, slope and the time of accident. In this research, COMMIT¹ was used which is a common internet-based interface for tsunami. This tool is developed by National Center of Tsunami Research (NCTR).

Flood modeling was done for coastal regions of Iranian province of SISTAN AND BALUCHESTAN to assess size and length scale of tsunami and finally find out the effects of tsunami that is induced by a probable earthquake in subduction zone. The secondary goal of this study is to determine maximum wave height on coastline of SISTAN AND BALUCHESTAN Province.

2-Sources of threatening tsunamis for Iran's coasts

¹ Common Model Interface for Tsunami