

عنوان مقاله:

Probabilistic Seismic Hazard Assessment of Babol, Iran

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نویسندگان:

Gholamreza Abdollahzadeh - Faculty of Civil Engineering, Babol University of Technology, Babol, Iran

Mohsen Shahaky - Department of Civil Engineering, Islamic Azad University, Shahrekord, Iran

خلاصه مقاله:

This paper presents a probabilistic seismic hazard assessment of Babol, one of big cities in north of Iran. Many destructive earthquakes happened in Iran in the last centuries. It comes from historical references that at least many times; Babol has been destroyed by catastrophic earthquakes. In this paper, the peak horizontal ground acceleration over the bedrock (PGA) is calculated by a probabilistic seismic hazard assessment (PSHA). For this reason, at first, a collected catalogue, containing both historical and instrumental events that occurred in a radius of 200 km of Babol city and covering the period from 874 to 2004 have been gathered. Then, seismic sources are modeled and recurrence relationship is established. After elimination of the aftershocks and foreshocks, the main earthquakes were taken into consideration to calculate the seismic parameters (SP) by Kijko method. The calculations were performed using the logic tree method and four weighted attenuation relationships Ghodrati, 0.35, Khademi, 0.25, Ambraseys and Simpson, 0.2 and Sarma and Srbulov, 0.2. Seismic hazard assessment is then carried out for 8 horizontal by 7 vertical lines grid points using SEISRISK III. Finally, two seismic hazard maps of the studied area based on Peak Horizontal Ground Acceleration (PGA) over bedrock for 2 and 10% probability of exceedance in one life cycles of 50 year are presented. These calculations have been performed by the Poisson distribution of two hazard levels. The results showed that the PGA ranges from 0.32 to 0.33 g for a return period of 475 years and from 0.507 to 0.527 g for a return period of 2475 years. Since population is very dense in Babol and vulnerability of buildings is high, the risk of future earthquakes will be very significant

کلمات کلیدی:

Historical earthquakes · Probabilistic seismic · Hazard assessment · Uniform hazard spectra

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