Seismic Hazard Zonation of Shahr-e-kord Region, Central Iran, Using Probabilistic Approach

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This paper presents a research on seismic zonation of Shahr-e-Kord region using probabilistic and deterministic approaches. Based on historical and instrumental earthquake dada, seismic faults, focal mechanisms and geological structures a seismotectonic model and seismic sources of the region are defined. Then seismicity parameters are calculated using Kijko software (assuming Mmin= 4). The results are processed for all attenuation relationships using PSHA program and finally the mean PGA for each point is calculated. These results are then used to produce isoacceleration maps of Shahr-e-Kord region for horizontal and vertical components based on deterministic and probabilistic approaches (75 & 475 years return period).

The comparison of the maps shows that deterministic approach is not reliable and its results heavily depend on the value of maximum credible earthquakes. In probabilistic approach maximum acceleration is 0.49 g for horizontal component in 475 years return period. This is higher than the acceleration from former seismic hazard zonation maps of Iran. Finally, potential hazard of an earthquake with a hypocenter located in the urban area is discussed, concentrating fault dip and its distance with the city. Occurrence such event is compared with a real example. At the end there are some recommendations to release disaster in such areas. Base on this research the main effective faults in possible shahr-e-kord earthquake are the faults in Zagros fault zone.

In addition fault dip in Zagros fault zone is toward city and it improves importance of this area in hazard estimation of such region in Sanandaj-Sirjan fault zone.