

RECENT FINDINGS IN SEISMIC HAZARD MODELS OF IRAN

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Taking into account the sesimotectonic framework and high seismicity with destructive earthquakes as well as the large population density settled in the earthquake-prone areas, the necessity for the development of a database with field investigations for the seismic hazard and risk assessment is critical. It should be noted that reliable seismic hazard studies depend on having a robust earthquake catalog, good knowledge of tectonic conditions and relevant attenuation model applied for the hazard analysis. The better input for hazard analysis results in more reliable parameters and the seismic hazard assessments. The uncertainties associated with the seismic hazard analysis and level of success of the methodology in the region is also treated.

It is essential to revise maps permanently and to move forward in re-evaluation of seismic hazard algorithms and models.

In summary, our aim is to move from the current status toward a favorable status using all the potential approaches and new models. The research steps are as below:

- Compilation of existing seismicity catalogues
- Reevaluating the historical earthquake catalogues
- Incorporating the new sources of information
- Assembly of strong ground-motion database
- Development of predictive model for peak ground motion and spectral values
- Evaluation of site amplification and soil linear and nonlinear behavior

Since the mid-1970s, seismic hazard zoning maps have been developed in Iran. The first coherent efforts are related to the works concentrated on the ‘*intensity*’ assessment as the hazard parameter (e.g. Neghabat and Liu, 1977; Berberian and Mohajer-Ashjai, 1977; Mohajer-Ashjai and Nowroozi, 1978; Berberian, 1981). Since 1982, researchers started to calculate the probable ground motion parameters especially peak ground acceleration (PGA) and spectral acceleration (SA) using the PSHA method.

After some earthquakes in Iran (such as the 1978 M_w 7.4 Tabas, 1990 M_w 7.3 Majil, and 2003 M_w 6.5 Bam earthquakes), some discussions have been raised about the reliability of the different existing seismic hazard zoning maps and a comparison between the recorded and previously assessed ground motions. Thus, beside the several hazard maps developed during the last four decades for Iran, there are still ongoing challenges in hazard analysis such as the detailed evaluation of M_{max} and seismic potential of seismic source, soil considerations, consistency of seismic gap models with the earthquake data and etc.; all these will be the challenges of the future seismic hazard maps.

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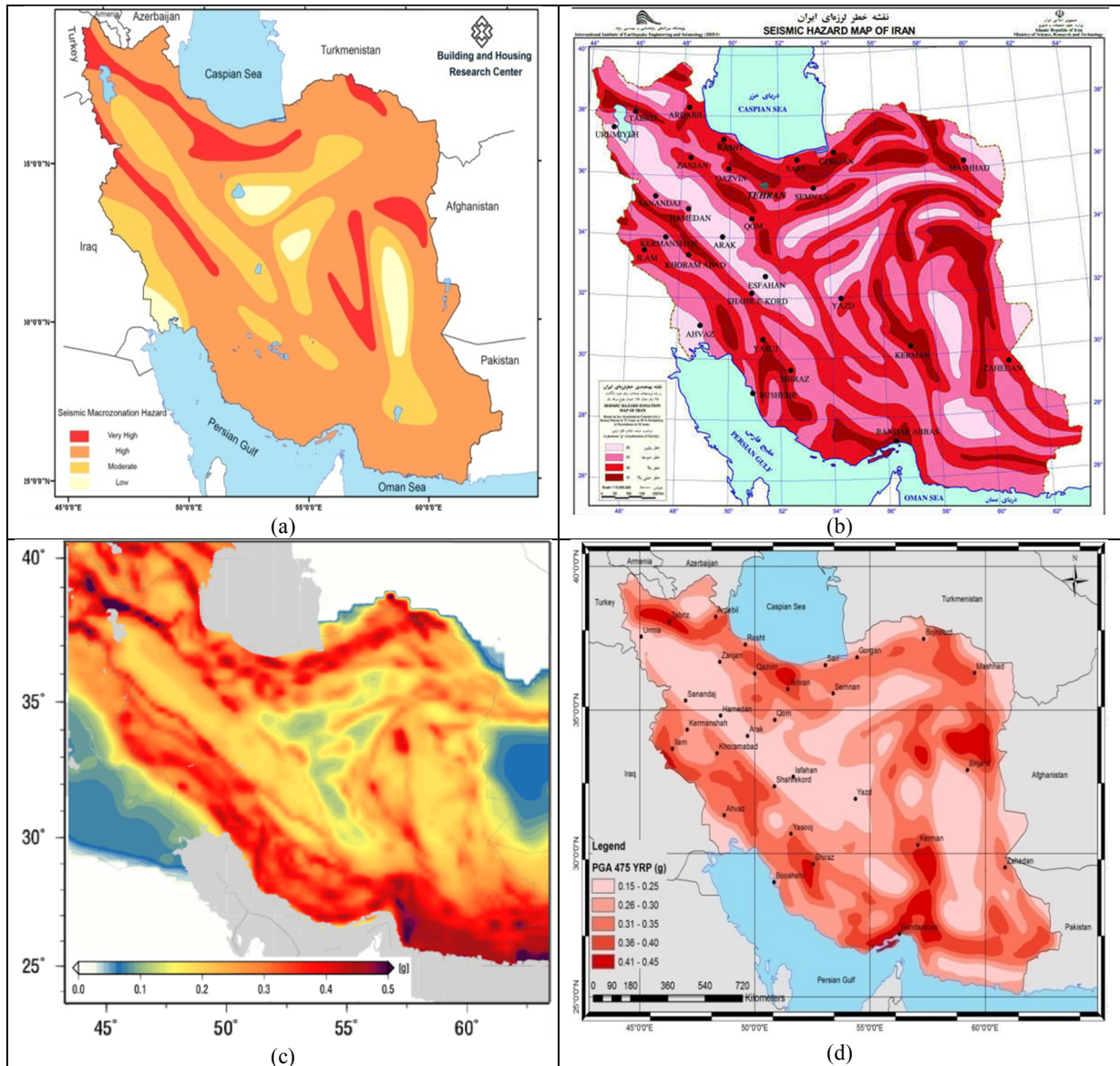


Figure 1. Seismic hazard zoning map of Iran in terms of PGA_{475} by (a): Iranian seismic code, 2012; (b): GSHAP, 1999; (c): EMME project, 2014; (d): Karimiparidari, 2014.