

Prediction of Earthquake Event Susceptibility in Low Seismic Regions by Numerical Modeling, Case Study of Zagros Fold-Belt

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Abstract

Numerical modeling of stress pattern and displacement field in Eghlid-Deh Bid area as an apparently aseismic or low seismic region in the northeastern part of the Iranian-Arabian collision zone indicated increase of tectonic activity southward between the Zagros Thrust Line on the west side and Deh-Shir Baft Fault in the east side of the modeled area. The modeling which is based on a three dimensional multi layering approach embraces a triangular region of nearly 4000 km² and revealed a possible southward strike-slip motion along the central part of the Zagros Thrust Fault which has not been mentioned in the previous researches. Although there is not any instrumental record of seismic event in the area except for one, the modeling results suggest that seismic potential is increasing southwards. Such a conclusion could be important in future sustainable development plans regarding to its human and economic effects. The tectonic pattern deduced from the present model is supported by results of similar researches for other parts of the fold-thrust belt.

Key words: seismic potential, Iranian-Arabian collision zone, numerical modeling, stress pattern