



Evaluation of Active Tectonics of Regions Using Morphotectonic, Structural and Seismicity Studies: Mashhad Plain, NE Iran

Ahmad Zamani, Ahmad Nourbakhsh*, and Jafar Samiee Ardabili

Department of Earth Sciences, College of Sciences, Shiraz University, Shiraz, Iran

Investigations that are related to active tectonics of urban areas in Iran are very important because this country is located on one of the most seismogenic belts of the world and has suffered from many causative earthquakes. To reach true results with minimum errors using from various methods and different evidences is essential. Following this pattern we have tried to use from morphotectonic, structural geology and seismicity studies for determining the state of tectonic activity of Mashhad plain, NE Iran. In this research three morphometric indices have been used for morphotectonic study namely SL, Smf and T-factor and we used from some of computer software for preparing satellite images and topographic models and extraction of data from them. Then the obtained results from morphotectonic, structural geology and seismicity studies have been compared with each other. With respect to the multiple studies that have been performed in this investigation we suggest that the operation of Binalud fault set in southern part of the study area in comparison with northern part is caused to relatively more uplifts of Binalud Mountains and occurring earthquakes with greater magnitude. Also morphology, structural configuration and seismicity of northern part of study area is due to the strike-slip movements of Kashaf rud fault set and continues folding of Hezar masjed mountains. Based on presented evidences we can conclude that vast faulting and fracturing, continuation of folding and relatively high seismicity are caused to low stress accumulation in the northern part; so we can expect low magnitude earthquakes in northern part in the future. Whilst low seismicity, reverse fault movements on pre-existing faults, low faulting and fracturing will cause to relatively high stress accumulation; so we expect earthquakes with larger magnitude than northern part of study area.