



Study and comparison of the maximum stress directions and main fault orientations in some active zones in Iran

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The Iranian plateau is the widest active zone in Alpine-Himalayan collision system that is located between two stable platforms, the Arabia in southwest and Eurasia in northeast. The convergence of these two platforms towards each other is the main reason for seismicity and different styles of deformation observed in Iran. In this study, the Iranian plateau is divided into 7 regions based on their seismotectonic characteristics. These regions are; Zagros, Makran, East Iran, Alborz, Kopeh Dagh, Central Iran and Azarbayejan (northwest of Iran). In each region, focal mechanism solutions of early and modern instrumental earthquakes (the only source of information suitable to use for stress distribution study in Iran) with magnitudes more than 5.0 and their relations to active faults are considered. By studying each maximum stress direction based on a group of earthquake focal mechanisms and considering main fault orientations, each region is studied individually. According to these data, some of these regions are divided into smaller parts. These sub-divided parts have some characters that make them different from their neighbors in the same region. In this regard, Zagros is studied in detail based on seismotectonic characteristics and divided into three parts, with N-S maximum stress direction (compressional) in one part and two different kind of NE-SW direction in two other. We use this information to investigate the style and distribution of active faulting in the Zagros and the relationships of this activity with shortening of the Arabia-Eurasia collision. It is worth to mention that as the fault slip will almost occur in the direction of maximum resolved shear stress on the fault plane, probably strain is almost estimated according to these stress directions and this issue can be considered in further studies in this region.