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Studying the active tectonic in the northern flank of the Bozqush Mountains, NW Iran

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The NW-striking North Tabriz Fault is one of the most important basement faults in the northwest of the Iranian plateau. This fault defines the boundary between the two tectonic blocks with different stress regimes in its northern and southern parts as characterized with NW-SE and NE-SW direction of maximum horizontal compression, respectively. In the southern termination of the North Tabriz fault, part of deformation is concentrated along its EW-striking splay faults extending along northern and southern boundaries of the Bozqush Mountains. The occurrence of medium-magnitude earthquakes, as well as morphotectonic evidence reveal that modern deformation is dominantly concentrated along ~EW-striking dextral/reverse dextral and NNE-striking sinistral faults in the southern flank of the Bozqush Mountains. It is still not known to what extent the deformation is also accommodated in the northern flank of the Bozqush Mountain. The approach of this research is to answer the question by studying the state of stress along the northern border of the Bozqush Mountains by applying the inversion method on the fault slip data measured during the field studies, studying their related morphotectonic evidence, and comparing the results with the state of stress and the morphotectonic evidence reported throughout the southern flank of the Bozqush Mountains. Fault kinematic data were collected at 35 sites along the northern boundary of the Bozqush Mountains. Evidence of the modern NW-SE stress regime is found at five sites measured within the Quaternary detrital deposits in the western part of the study area. At the other sites, evidence of the older stress regime, with NE-SW direction of maximum horizontal compression is obtained. Also, the systematic deflection of the stream channels, especially in the eastern part of the region, indicates the sinistral displacement along the EW-striking faults, consistent with the old stress regime in the region. Evidence of dextral deflection was observed along few EW-striking faults cutting the Quaternary deposits only in the western parts of the region. Therefore, by comparing these kinematic data and morphotectonic evidences with those reported from the southern flank of the Bozqush Mountains, it can be concluded that the modern deformation is dominantly absorbed along the splay faults in the southern flank of the Bozqush.

Key Words: North Tabriz fault, Modern stress state, NW Iran, Northern flank of Bozqush

Mountains, Stress inversion