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# Active Faults and Their Earthquake Activity in the Orumieh Area, Iran.

A. ALIZADEH
*University of Shiraz*

The Orumieh area is one of the tectonically and seismically active areas of the northwest Iran, but its activity is not uniform and evenly distributed. The examination of local earthquake data reveals that the higher earthquake activity mainly takes place within two en echelon, NE-SW trending seismic zones in the northern and southern mountainous parts of the area and activity in the other parts of area is remarkably lower and scattered. The study of exiting faults also reveals that the position of mentioned seismic zones coincides with the position of two en echelon fault zones of several, major, right-lateral, strike-slip, active faults, and the position of scattered earthquake activity coincide with the position of other scattered, strike-slip or dip-slip active faults, mainly in the western mountainous parts of the area, along the Iran-Turkey border. Most of these scattered faults are high-angle, dip-slip, reverse faults and their movements usually requires higher amount of regional stresses, the earthquakes generated by them usually have a higher magnitude and takes place after a very long recurrence interval. The other scattered faults in the central and eastern parts of the Orumieh area are mainly medium or small-scale, strike-slip or dip-slip faults and their reactivations generally generate lower magnitude earthquakes. The regional compressive stresses generated by the anticlockwise rotational motion of the Arabian Plate towards the Central Iranian plate around an imaginary pole in Syria is the main cause or source of the present seismic activity in the Orumieh area. This is because, the axis of maximum compressive stress generated by this plate motion has a NE-SW direction in northwestern Iran, and according to the Anderson's law, it is a suitable direction for the reactivation of existing active faults in the Orumieh area. The calculation of the maximum expected magnitude for the major active faults in the Orumieh area also reveals that the maximum potential magnitude is 6.7mb, and it is expected from the Salamas Faults at about 40 km northeast of Orumieh, the capital city of western Azarbayjan province. Finally, from the results of the mentioned studies, it can be concluded that there are three seismically distinct zones in the Orumieh area. Zone 1 has higher activity and potential of larger earthquakes. Zone 2 has lower activity and potential of larger earthquakes, and Zone 3 has lower activity and potential of only smaller earthquakes.

Keywords: Fault; earthquake; activity; magnitude; stress, zone.