

On early morning of December 19, 1980, at about forty-seven minutes past four, local time, a destructive earthquake with magnitude  $M_b = 5.8$  strongly shock an area between Qum, Saveh and Arak. A study of the seismicity of the region shows that, the mentioned area has not been seismically very active in the past, which shows a new phase in the activity of the region.

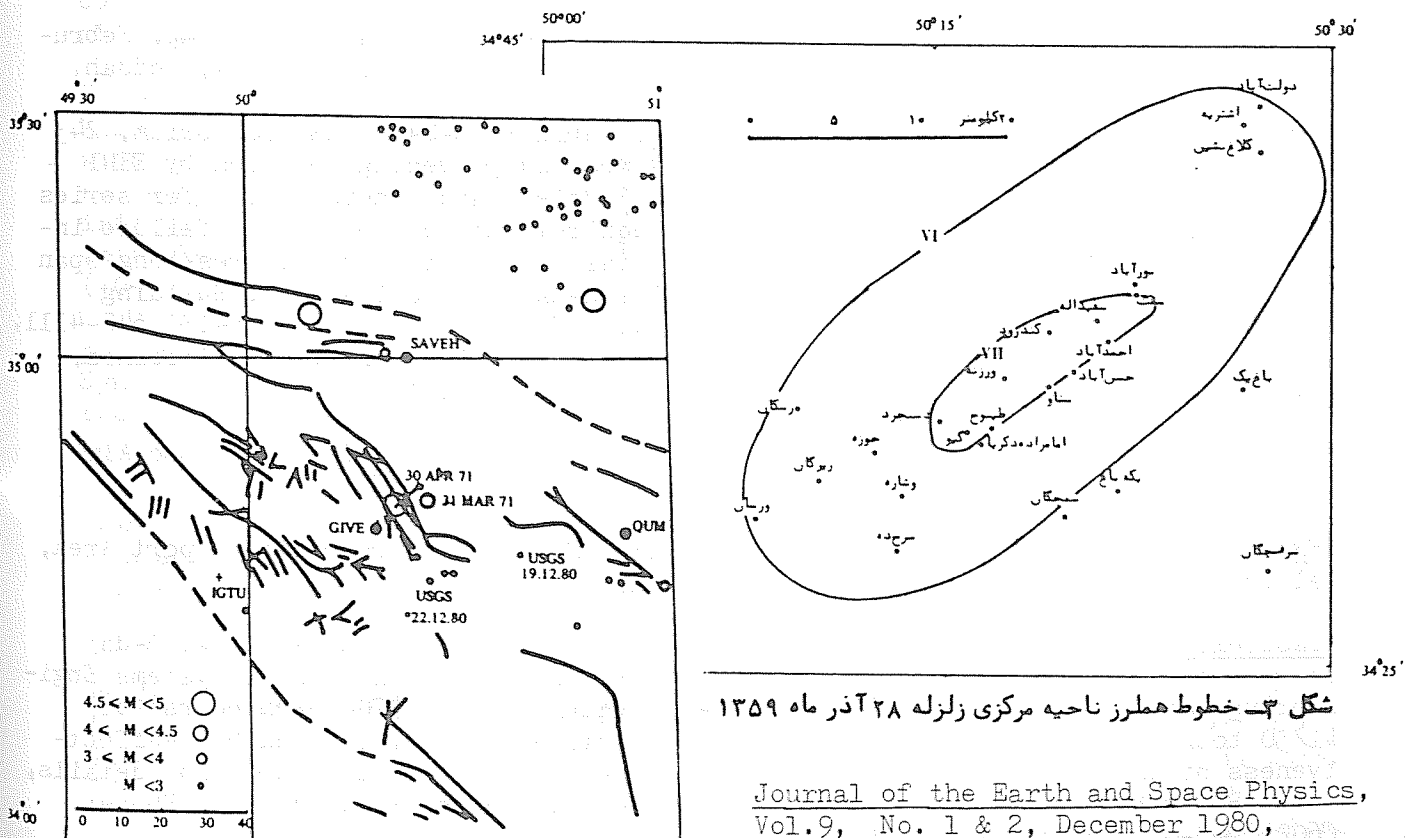
Foci of earthquakes with magnitude greater than 4 in this region are normally deeper than 30 kilometers. Therefore, they are distinguishable from central Alborz earthquakes.

Three days latter in the evening of December 22, 1980, at about 5 P.M. (local time), a second strong shock occurred, and buildings, which had been damaged in the first earthquake, were brought up to the point of collapse.

Brick masonry buildings in the region, built by local builders, with usual method of floor construction, (steel I beam joists laid directly on the brick wall at one meter intervals, with eleven centimeters thick brick jack arches filling between the I beams) and clay-lime mortar, were damaged as severely as buildings constructed with adobe material, with flat roof made of wood beams covered by clay and straw mix. Brick masonry buildings with brick walls in cement mortar with typical jack arches built by different government agencies, even near epicentral region, were not damaged at all.

Considering the geological condition and past earthquakes mechanism of the region, it is suspected that one of the south-east branches of fault number 1 (Figure 1) which is near Give village had become active.

Estimation of energy release by Give earthquake and its comparison with other earthquakes, shows that, the depth of this earthquake had been shallow.



شکل ۳ - خطوط همپلرز ناحیه مرکزی زلزله ۲۸ آذر ماه ۱۳۵۹