

## THE 2012 EARTHQUAKE SWARM IN NE ARAK, IRAN

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An unexpected earthquake swarm has been occurred in northwest of Arak, which is located in a very low seismicity region compare to other parts of Iran. The earthquake swarm was started in January 14, 2012 and continued to April 9, 2012. A local network has been installed at 9 stations for monitoring and analyzing the recorded earthquakes.

The study area is generally monitoring by the permanent network of state agencies, such as International Institute of Earthquake Engineering and Seismology (IIEES) and Institute of Geophysics, Tehran University (IGTU). The closest permanent seismic stations to the study area are located at Ashtian (DB08), Khomein (DE48) and Qom (DE61) stations from IIEES network. These stations have recorded the earthquake sequence, which started from January 14, 2012. However, due to geometry of location of these stations with respect to earthquakes epicenters, a local temporary network has been installed by IIEES at nine stations. More than 780 events have been recorded from January 25, 2012 to April 9, 2012, during the earthquake sequence at NE Arak and near Davood-Abad.

The largest earthquake occurred with  $M_L=4.3$  on January 26, 2012 with a focal depth of 10 Km. This event was also recorded by the local network. The magnitude of earthquakes are estimated in a range of 0.1 to 4.3 with focal depth of less than 20 km. Figure 2 shows the velocity model, Wadati diagram and focal mechanism estimated for the magnitude 4.3 earthquake. The result shows approximately a vertical fault with NW-SE direction, which related to Farahan fault (Figures 1 and 2).

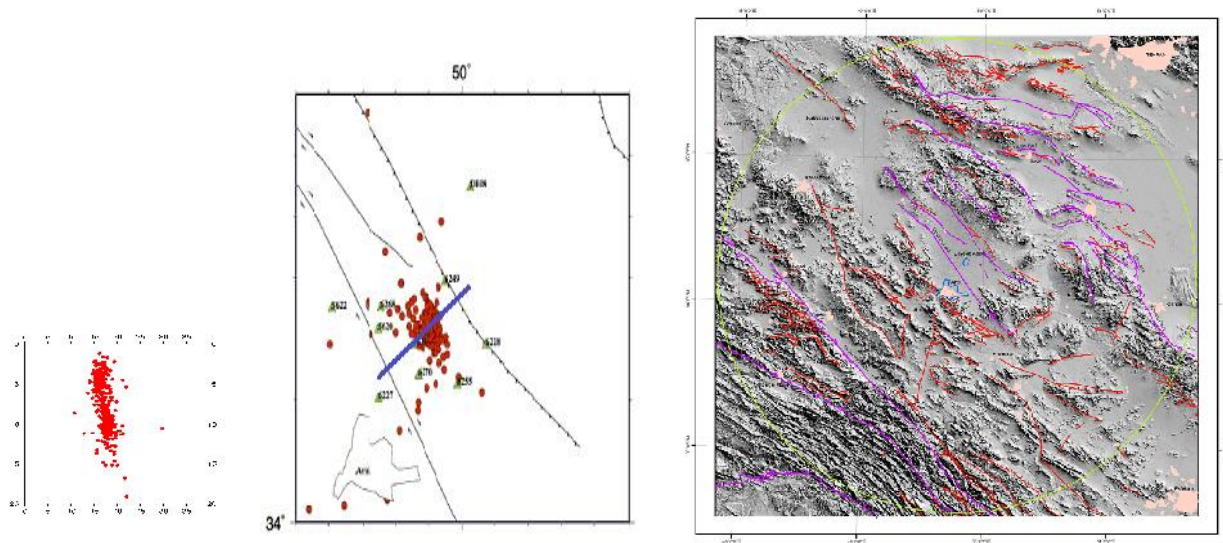


Figure 1. Active fault of the region (right), location of temporary network and located earthquakes (middle), and depth cross section (left)

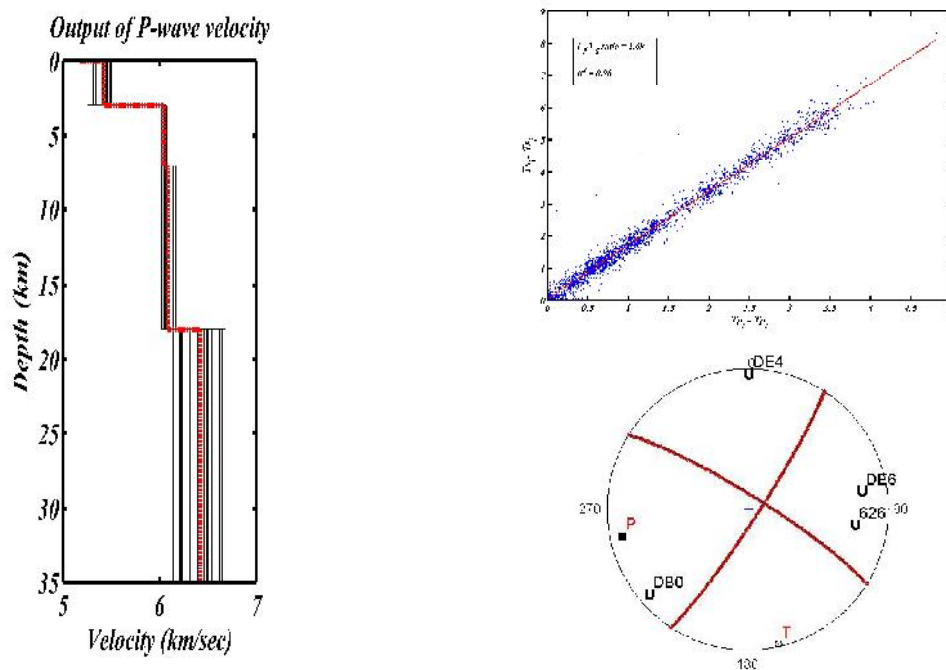


Figure 2. P- Wave velocity model (left), Wadati diagram (right top) and focal mechanism of the January 26, 2012 earthquake with magnitude 4.3

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