



Foreshocks study as earthquake precursor in Doroud- Broujerd region, north-west of Iran

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The study area is located at the junction of Zagros and Sanandaj-Sirjan zone. This area is associated with a small right-step faulting in Main Recent fault (MRF) and is a pull-apart basin (Doroud-Broujerd basin).

In this paper, the foreshocks related to Doroud fault which is a segment of MRF have been studied in order to investigate a possible premonitory phenomenon preceding an earthquake event. For this study the existing International Institute of Earthquake Engineering and Seismology (IIEES) catalog generated based on Iranian National Broad-Band Network and an integrated data-base using internationally available data has been used. The events utilized cover two periods, from 1960-2004 and from 2004 to 2006. For this type of study the removal of aftershocks from the data-base is essential. Therefore after applying magnitude threshold and removing dependent events from each cluster, each remaining main-shock has been considered to find its foreshocks in a time- space window. This study showed that in period of 2004-2006, 262 events have been recorded. After applying the aftershock removal of the mentioned events, 24 main-shocks remained, from which 6 events had magnitude greater than 4. From these events 3 main-shocks out of 6 with magnitude greater than 4 were preceded by foreshocks. These foreshocks had happened in a distance of 10-13 km from their related main-shock associated to the Doroud fault within 1-3 days before the event. But in period 1960- 2004 only one earthquake were preceded by foreshocks. However the latest period suffers from the number of events due to lack of data.

In this presentation after general review of the utilization of foreshocks as earthquake precursory, the above mentioned results will be discussed.