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of foreshock sequences in the Iranian plateau

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We analyze foreshock activity in the Iranian plateau by investigating the occurrence patterns for isolated $M \geq 5.5$ earthquakes from 1968 to 2018. Among the 165 mainshocks with $M \geq 5.5$ (after excluding 12 aftershocks, 6 swarms and 9 doublets), 18 percent are preceded by at least one foreshock within 30 days and 20 km. However, the number of events in each foreshock sequence is significantly higher in the last ten years of the catalog. This difference is partly explained by the rapid expansion of the Iranian national seismographic network in the recent years. Based on our analysis, the completeness magnitude of the catalog is declined over years and reached to 3.4 (2008-2018) from 5.1 (1968-1998). Foreshock occurrence appears correlated with mainshock faulting type and depth; however, it is not correlated with mainshock magnitude. These results suggest that foreshock occurrence is largely controlled by the regional tectonic stress field and fault zone properties. In special cases, foreshock activity is considered as one of the most promising precursory changes for the main shock prediction in the short term; however, foreshock properties are not reliably predictive of the magnitude of the eventual mainshock.

Promotional text

In this study, we investigate foreshock activity of large earthquakes in the Iranian plateau by using available catalogs. Also, we provide a summary of expansion and modernization of the Iranian national seismic network over 50 years.

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