

THE MULTI-FAULT SURFACE RUPTURE OF HOJEDK EARTHQUAKE, DEC. 2017 IN KERMAN PROVINCE, SOUTHEAST IRAN, THE BEDDING SLIP OF YOUNG FOLD

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On December 2017, a triple earthquakes occurred in the Kerman province of SE Iran during 12 days (IRSC) (Table 1). Epicentral region is located in a flood plain (Miankouhi) which is enclosed by mountainous topography (Figure 1). There is no surface evidence of previous tectonic activity in this plain.

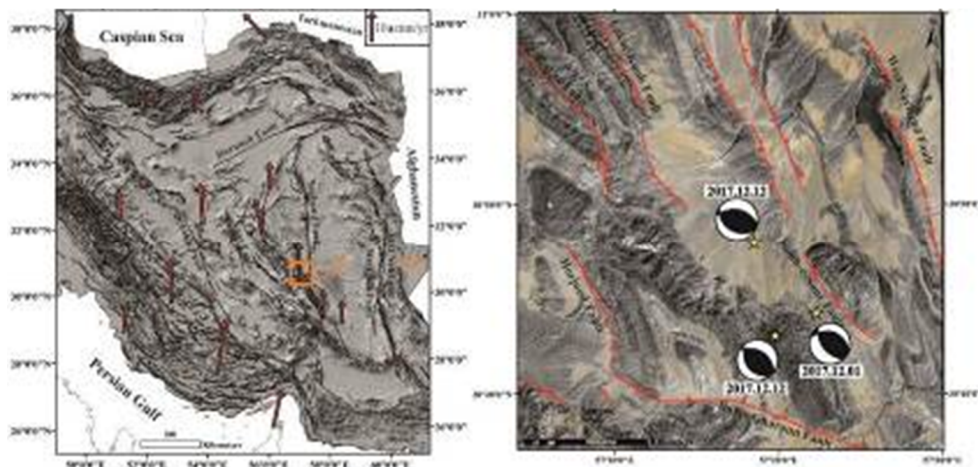


Figure 1. a) Map of the major active faults in Central and Eastern Iran superimposed on the SRTM. GPS velocities (red arrows) in Eurasian-fixed reference frame with 95% confidence ellipse for ZABO site. ZABO is located on the Hellmand block which is part of Eurasia (Tavakoli, 2007) (orange arrows) is from Vernant et al. (2004) and Masson et al. (2007). IRS image of Hojedk province, focal mechanisms are for earthquakes in Table 1.

Our InSAR modelling results showed the last event created a surface rupture. We traversed and mapped accurately the surface rupture of earthquake to determine the mechanism of the event and its related and causal structure. We opened two small trenches crossing the scarp to measure the geometric parameters of the fault plane. Our results indicate the reverse component (Figure 2) with a little displacement of right-lateral strike slip with NW-SE direction. We found a dispersed surface rupture (Figure 3) that can be classified into two categories and some surface features that suggested a reverse fault causing a bedding slip of young fold in area (Burbank and Anderson, 2001).

Table 1. Source parameters of the Hojedk earthquakes. Epicenters, magnitudes and depth are from the IRSC.

Date	Time (UTC)	Lat	Lon	Depth	M_w	Reference
1 Dec 2017	2:32:44	30.738	57.372	8.1	6.2	IRSC
12 Dec 2017	8:43:16	30.718	57.330	8.7	6.2	IRSC
12 Dec 2017	21:41:29	30.800	57.309	8.2	6.0	IRSC

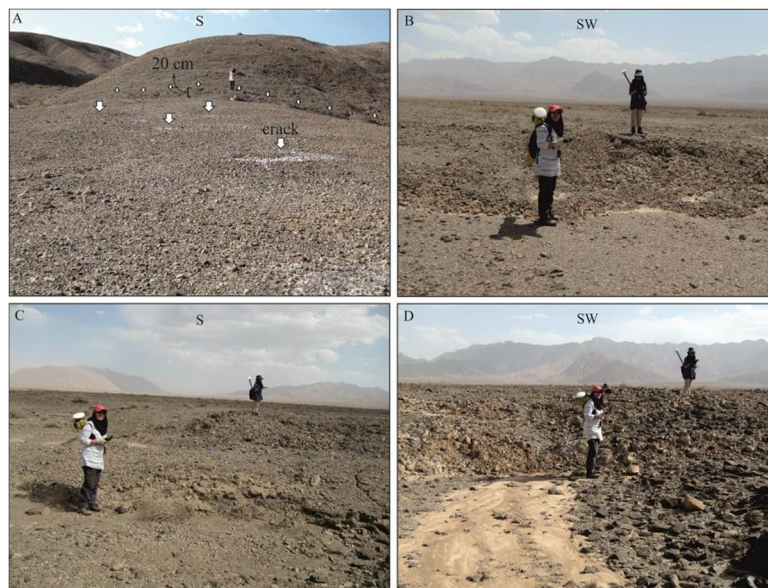


Figure 2. Field photographs of the surface rupture.

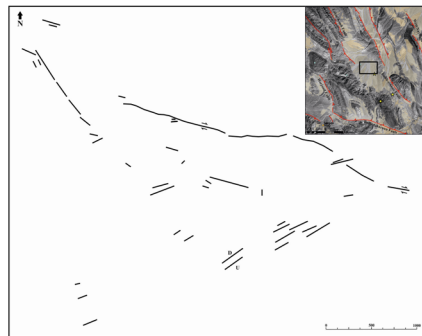


Figure 3. Simplified map of surface rupture of Hojedk earthquake Dec. 2017.

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