

Co-Seismic deformation of the 2017 *Ms*6.6 JingHe, China earthquake derived from Sentinel-1 data and speculate seismogenic fault

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An M_s 6.6 earthquake hit JingHe County in Bortala Mongol Autonomous Prefecture of Xinjiang Uygur Autonomous region on August 9, 2017, with the epicenter (44.3°N, 82.9°E). The earthquake occurred in the eastern part of the Kusongmuxieke front fault in the southwest of Junggar Basin. By using two pairs of coseismic SAR image data for the ascending and descending tracks gained from Sentinel-1 (ESA), according to the 90m SRTM V4 data, this paper remove the topographic phase to get the differential interferograms, and the binomial fitting method is used to remove track residual phase in deformation field, MCF (Minimum cost flow) solution is used for phase unwrapping to obtain the data of coseismic deformation field of ascending and descending tracks. The data is used to calculate the fault slip distribution of the earthquake based on the elastic semi-space rectangular dislocation model.

The result shows that this earthquake deformation field has the typical characteristics of thrust seismic deformation. The deformation field is about 28km-long, and 20km-wide, uplift is clear near the epicenter, LOS (Line of Sight) to ascending and descending tracks are 49 mm (20170808-20170814, T85A), 68 mm (20170807-20170813, T63D) respectively, and main slipping dislocation concentrated in depth of 10-14 km, the average momentum is about 0.6 m.

The maximum deformation area is located on the west side of the main earthquake and the characteristics of the unilateral rupture mainly distributed on the west side of the main earthquake are mutually confirmed. Combined with the existing geological knowledge, the existing 2-3 small scale thrust faults with oblique columnar distribution in this area are inferred to be the seismogenic fault of this earthquake.

Keywords: JingHe earthquake, InSAR, Kusongmuxieke front fault

