

Primary surface rupture and slip distribution associated with Mw7.8& Mw7.5 earthquakes in southern Turkey

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On 6th February in 2023, two destructive earthquakes occurred on the southern section and branch of the East Anatolian fault system (EAFS). USGS has reported immediately after the occurrence of the earthquakes, that the magnitude was estimated to be Mw7.8 and Mw 7.5, respectively. The each epicenter was located at the depth of 10 km during the Mw 7.8 event and that of 13.1 km during Mw 7.5 event (USGS web site). The focal mechanism reported by USGS implies that the complexed rupture extended during the individual large earthquakes.

Since 2014, we have worked under an international cooperative research on ‘Paleoseismological Study on the East Anatolian Fault System, Turkey’. We here report primary surface rupture and slip distributions associated with both Mw7.8 and Mw 7.5 events, based on air-/satellite-photo based mapping and photogrammetrical slip measurement. In addition, we compare with the surface rupture distribution and re-located precise aftershock distribution, in order to discuss the relations with source faults of the devastating earthquakes. The surface rupture and slip distribution suggests that both earthquakes were multi-segment earthquakes, including seismic gap on particular fault segments along the EAFS and branch active fault.

The detailed contents and references have been uploaded on GSJ web site, that is firstly released on 13 February, as follows;

<https://www.gsj.jp/en/hazards/earthquake-hazards/turkey2023.html>

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