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Western termination of 1950 surface faulting at Hemi village, Subansiri river valley, Eastern Himalayan Front, India

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Abstract
In eastern Himalaya, many historically documented earthquakes have been reported by palaeoseismic trenches but the enigma still exists regarding their rupture length and the amount of slip ensued with the earthquake. We present here the report of earthquake occurred during 20th century which shook the major cities of eastern Himalaya with more than 90 aftershocks following the main shock.
At Himebasti (27.54˚ N, 94.36˚ E), a tectonic scarp was identified with ∼E-W strike, and it is perpendicular to the Hime creek and it lies east of the Subansiri River along HFT (Himalayan Frontal thrust). A micro-topographic survey of the disjointed youngest geomorphic marker was carried out to quantify its vertical offsets, using RTK-GPS (Real Time Kinematics-Global Positioning System) and RTS (Robotics Total Station). The scarp extends ∼0.5 km with height varies from 8 m to 12 m and it displaces the youngest T1 terrace. Aerial photography was performed using Drone to generate a high resolution digital elevation model (DEM) for selection of a site for trenching and lateral extension of scarp. A trench (30 m long × 8-m width × 9-m depth) was excavated across an 8-m high fault scarp to investigate the paleoearthquake history.

Charcoal samples were collected from both the trench walls, OSL samples were collected from the adjoining truncated surfaces. For precise dating, two vertical Cesium (137Cs) profiles at 10 cm intervals were collected, one below the fault zone and the other in the growth stratigraphy. 38 charcoal samples were dated using the AMS radiocarbon dating. The radiocarbon ages range from > 43000 BP to 1960 A.D. Based on these radiocarbon dates together with fall-out isotopes ages suggesting a 20th century earthquake associated surface rupture. Our inferred surface rupture events correspond to the documented A.D. 1950 earthquake and discovered surface faulting lies within the meisoseismal zone of the earthquake.