

## Co-seismic offsets and damage associated with the Hundalee Fault during the 2016 Kaikoura, New Zealand, M7.8 earthquake

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The 14 November 2016 Kaikoura M 7.8 earthquake occurred in the northern part of South Island, New Zealand. Complex co-seismic faults and crustal deformations occurred over a strike length of at least 150 km, both on land and off shore, with extensive landsliding that caused great damage to the national highway and railway.

We conducted a field survey on the Hundalee Fault and associated features from 19-21 December 2016 as one of multi-institutional teams. Field investigation started by 5 hours air reconnaissance from a helicopter. At temporary landing sites (site A and B, Figure) on a NNW-SSE fault in mountain terrain, we found up-down relative movement with eastern side uplifted ~1m at A but western side uplifted ~0.6m at B suggested a complex dip-slip movement possibly with some sinistral strike-slip.

On ground survey, co-seismic fault displacements recorded mainly at C, D, E, F and G (Figure). Nearby the previously mapped line of the NE-SW Hundalee Fault on GNS Science geological map, surface rupture had the NW side uplifted at D, F, while a SE side uplift at E, suggests that the Hundalee Fault rupture was complex. The maximum vertical displacement on the Hundalee Fault was ~1.5 m, there accompanied by as much as ~3.7 m dextral offset, as measured across offset road and railway at F. The coast around beach G was uplifted coseismically ~1-2 m. Residence house damaged at H as well as some other houses along the Hundalee Fault.

According to the updated survey results of the multi-institutional research team (GNS, 2016), the Hundalee Fault was one of more than 12 individual faults that collectively ruptured during the earthquake.

We will present the updated work and more observed points based on the on-going summary.

Reference: GNS, 2016, <http://info.geonet.org.nz/pages/viewpage.action?pageId=20971550>

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