The Southern Liquiñe-Ofqui Fault Zone, Chile: Preliminary Characterization of Recent Motions Using High Resolution Topography and Fieldwork

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The Liquiñe-Ofqui Fault Zone (LOFZ) is a >1200 km long fault system in the southern Andes in Patagonia which is described as a dextral strike-slip intra-arc system; however, the earthquake geology remains uncharacterized.

To evaluate recent motion along the southernmost LOFZ, between near the Laguna San Rafael we first analyzed high resolution Digital Elevation Models (DEM), including from drone-photography derived structure from motion (SfM) elevation models in addition to light detection and ranging (lidar)-derived topography. North-northeast striking master faults displace Quaternary moraines and outwash plains (both vertically and dextrally). One moraine along the master fault trace shows a horizontal dextral strike-slip offset of ~ 90 m and vertical displacement with at least 25 m.

Vertical topographic profiles along the master's fault trace show faults scarps up to at least 15 m high on the presumed (although undated) oldest surfaces, while up to 6-km away on the youngest sediments have vertical scarps of 3-7 meters.

Publication:	American Geophysical Union, Fall Meeting 2019, abstract #T41H-0349
Pub Date:	December 2019
Bibcode:	2019AGUFM.T41H0349P
Keywords:	8036 Paleoseismology; STRUCTURAL GEOLOGY; 8118 Dynamics and mechanics of faulting; TECTONOPHYSICS; 8123 Dynamics: seismotectonics; TECTONOPHYSICS; 8175 Tectonics and landscape evolution; TECTONOPHYSICS