

Geological evidence of crustal deformation associated with great earthquakes along the coast of south-central Chile

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We present estuarine evidence of crustal deformation in Chile subduction zones. Postseismic uplift of the 1960 Chilean earthquake provided stratigraphic and paleoecological evidence. The delta of the Rio Coihuin is in middle along the 1960 rupture zone and 10 km east of Puerto Montt, which was at the inland limit of the coseismic downwarp in 1960. The delta contains three terraces and a family that has farmed the terrace provided detailed accounts of changes in land level since the 1960 earthquake. The highest terrace had been inundated by tidal water during the monthly high tide and dominated by a tidal marsh plant, *Salicornia* sp., before the 1960 event. The middle terrace had been also dominated by other tidal marsh plant, *Juncus balticus* and *Scripus americanus* that the family used for their craft. However, after the event, the terraces emerged and the tidal vegetation changed. The highest terrace became freshwater upland forest, and the middle terrace increased *Agrostis alba* and *Salicornia* sp. Tidal flat changed to the present lowest terrace dominated by *Puccinellia* sp. Guided by this testimony, we checked deposits beneath the middle terrace beside the family's house. These deposits consist of peat, mud, sand, and volcanic ash layers.

The uppermost peat-over-mud contact probably represents emergence that the family has been watching after the 1960 earthquake. Judging from the present vegetation and changes in vascular plant fossils around peat-mud contact, land-level change after the 1960 event shows at least 1m.