



Geochemical evidence of past earthquakes in sediments of the Reloncaví fjord (Chilean Patagonia) during the last ~1000 years

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The Chilean fjords are excellent archives of paleoearthquakes, tsunamis and landslides (St-Onge et al., 2012 in *Sedimentary Geology* 243-244: 89–107). Here we report on new sedimentological and geochemical evidence of past earthquakes in sediments of the Reloncaví fjord, Northern Patagonia (41°S, 72°W), during the last ~1000 years. We recovered four sediment cores from the Reloncaví fjord (RH-5B, RH-5C, RH-6B, RH7B, water depth range = 90–260 m; core length range = 45–75 cm). Age models were based on ^{210}Pb , AMS- ^{14}C and the first appearance of the diatom *Rhizosolenia setigera* cf. *pungens* in the fossil record as stratigraphic marker. The cores span the last ~122 to 800 years of sedimentation with sedimentation rates ranging between 0.1 and 0.24 cm yr⁻¹.

The cores revealed evidence of turbidites associated with the historical earthquakes of 1960, 1837, 1737 and 1575 AD, and an earlier period for which there is no historical information, 1200–1400 AD. The turbidites exhibit a grading-up pattern with sand layers, and are characterized by a decrease in organic carbon and biogenic opal, an increase in the C/N molar ratio, negative values of $\delta^{13}\text{C}_{org}$ (average -27‰), and an increase in the relative abundance of *Paralia sulcata*, a diatom associated with sandy environments, being the turbite layers mainly freshwater in origin.

We suggest that these turbidite layers were triggered by past earthquakes that produced movement of land from the cliff areas that surround the Reloncaví fjord.

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