



## **Transient uplift of a long-term quiescent coast inferred from raised fan delta sediments**

Andrea Madella (1), Romain Delunel (1), Onno Oncken (2), Sönke Szidat (3), and Fritz Schlunegger (1)

(1) University of Bern, Institute of Geological Sciences, Bern, Switzerland (andrea.madella@geo.unibe.ch), (2) Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences, Potsdam, Germany, (3) University of Bern, Department of Chemistry and Biochemistry & Oeschger Centre for Climate Change Research, Bern, Switzerland

We present the first example of a short-term uplift transient within the long-term subsiding forearc of the Arica Bend, northernmost Chile. We date through radiocarbon a storm deposit embedded into fan delta sediments, which were deposited close to sea level and are now located 50 m higher. The radiocarbon age is ca. 10 ka, which yields an average uplift rate of about 5 mm/yr. The section, in addition, is cut by the Lluta River, whose long profile shows geomorphic response to coastal uplift. The coast of the Arica bend is characterized by Myr-scale relative subsidence and current GPS-surveyed quiescence. We therefore interpret the inferred uplift signal to represent a transient increase in uplift rates during the Holocene. Similar short-term transients have been globally documented in relation to various subduction zones, although their causes still remain a matter of debate and need further investigation. We propose that periods of increased surface uplift may occur also in long-term quiescent forearcs, possibly due to temporal variations of plate interface strength that induce thickening beneath the coast.