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Timing and focus of denudation in the southern Peruvian Andes

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The evolution of topographic relief of large mountain belts has major influences on changes in Earth's climate through dynamic coupling with erosion and tectonics (Small, 1999). Understanding Earth's climatic evolution therefore requires knowledge of long-term changes in topography (*Beaumont et al. 2000; Willet, 1999; Koons, 1989; Montgomery and Brandon, 2002*). In order to quantify the processes that influence an orogens' development a key requirement is the establishment of the chronologies and rates of landscape changes that extend from the present back to geological time.

The aim of this project is to combine conventional low temperature thermochronometry techniques with also cosmogenic nuclides to study the topographic evolution of the eastern Andes in Southern Peru. This part of the Andes exhibits the very contrasting orographic features with high summits (6372m asl.) and steep gradients towards the Amazon lowlands (300m asl.). We sampled (A) bedrock outcrops from the hinterland, but also present-day river sediments along the eastern slope of the Andes (*Rio Madre de Dios, Rio Urubamba, Rio Inambari, Rio Yanatile*) to which were performed (B) in situ cosmogenic isotopic measurements on detrital quartz, and (C) fission-track analysis to detrital apatites and zircons from the same sediment. This, to verify whether the short-term erosion rates of these drainage basins deduced from in situ cosmonuclides measurements (B) are comparable with long-term erosion rates estimates based on detrital thermochronology (C) (Brewer et al., 2003) but also direct thermochronological ages from the hinterland (A). Such approach provide, for the first time, detailed insight into the growth and erosional history of the Eastern Peruvian Andes that will be compared with similar data from Peru to generate a comprehensive overview of topography evolution in the southern Peruvian Andes.