

Precipitation dependent erosion rates along the western Peruvian margin

REGINA REBER*¹, CAMILLE LITTY¹, ANDREA MADELLA¹,
NAKI AKÇAR¹, ROMAIN DELUNEL¹ AND
FRITZ SCHLUNEGGER¹

¹University of Bern, Institute of Geological Sciences,
Baltzerstrasse 1+3, CH-3012 Bern

*correspondence: rreber@geo.unibe.ch

The Western Andean margin of Peru is characterized by large precipitation gradients from nearly tropical conditions in northern Peru to an arid/semiarid climate near the political border with Chile. Although these climate gradients have been illustrated, a possible erosional response has to be thoroughly explored. Here, we measure erosion rates in different river catchments along the western Peruvian margin with the scope to explore possible dependencies to today's precipitation pattern. To this extent, we sampled river-born sand in active stream beds from about 30-40 catchments along the Peruvian margin between 5° S to 20° S latitude. These bedload samples will be used to measure ¹⁰Be-based catchment-averaged denudation rates. In addition to the N-S decreasing trend of rainfall amount, the catchments reveal different morphometric properties (relief, hypsometry, slopes, size etc.), which potentially influences the pattern of erosion rates. Despite of these differences, they all share the same trend of downstream decreasing precipitation rates from their sources on the Altiplano to the Pacific coast, and they are all affected by the along-strike N-S decreasing trend in the rainfall amount. We thus expect to be capable to disentangle between these intrinsic and extrinsic driving forces.