



Rates and Modes of Subduction Erosion along the Peru-Chile Margin

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At least half of the world's active margin length now is attributed to the non-accretive or erosive type with regard to their mass transfer modes. However, the mechanisms, loci and rates of subduction erosion still are not fully understood. Among factors contributing to subduction erosion, subduction of asperities, roughness of the downgoing plate, and rheological properties of the overriding plate are thought to be of major importance in determining the styles and amounts of subduction erosion. The Central South American margin, with the Peruvian margin, the southern portion of which has experienced collision of the Nazca Ridge, and the north Chilean margin, is an exceptionally suitable location to study subduction erosion. Here it is possible to compare portions of a margin that have either been affected or not affected, respectively, by the subduction of major asperities as well as possible influences of obliquity of convergence on subduction erosion.

Constraints to estimate subduction erosion along the Central Andean margin come from e.g. paleo-bathymetry or subsidence analysis and wide angle seismic data. Such data are available at several latitudes between 5S and 34S. Here, we present newly derived estimates as well as a compilation of published estimates for subduction erosion along the Central Andean margin. Separating the strong increase in subduction erosion rates caused by Nazca Ridge passage reveals that along the Peruvian margin, rates of subduction erosion generally significantly increase from north to south and also slightly increase with time. Analysis of swath bathymetry data additionally reveals that in northern Peru a major transtensional borders the lower slope. Here, subduction erosion mainly takes place close to the trench, whereas further south, basal erosion becomes more important. Rates and probably also styles of subduction ero-

sion along the north Chilean margin are similar to those along south Peru. Along the Chilean margin, rates of subduction erosion increase towards the south.