



## **Water and sediment dynamics in the context of climate change and variability (Cañete river, Peru).**

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Water erosion is one of the main environmental problems in Peru. The elevated rates of soil erosion are related to the rough topography of the Andes, shallow soils, highly erosive climate and the inappropriate land use management. Agricultural activities are directly affected by the elevated soil erosion rates, either through reduced crop production and/or damage to irrigation infrastructure. Similarly, the development of water infrastructure and hydropower facilities can be negatively affected by high sedimentation rates. However, critical information about sediment production, transport and deposition is still mostly lacking.

This paper focuses on sediment dynamics in the context of land use and climate change in the Peruvian Andes. Within the Peruvian Coastal Range, the catchment of the Cañete River is studied as it plays an important role in the social and economic development of the region, and due to its provision of water and energy to rural and urban areas. The lower part of the basin is an arid desert, the middle sub-humid part sustains subsistence agriculture, and the upper part of the basin is a treeless high-elevation puna landscape. Snow cover and glaciers are present at its headwaters located above 5000 m asl.

The retreat of glaciers due to climate change is expected to have an impact on water availability, and the production and mobilization of sediment within the river channels. Likewise, climate variability and land cover changes might trigger an important increase of erosion and sediment transport rates. The methodology applied to face this issue is principally based on the analysis of sediment samples recollected in the basin in the period 1998 to 2001, and the application of a water and sediment routing model. The paper presents new data on the sensitivity of water infrastructure and hydropower facilities to climate-induced changes in sediment mobilization.