



Large rock avalanches and river damming hazards in the Andes of central Chile: the case of Pangal valley, Alto Cachapoal

Sergio A. Sepulveda (1,2), Diego Chacon (2), Stella M. Moreiras (3), and Fernando Poblete (1)

(1) Universidad de O'Higgins, Instituto de Ciencias de la Ingeniería, Rancagua, Chile (sergio.sepulveda@uoh.cl), (2) Universidad de Chile, Departamento de Geología, Santiago, Chile, (3) CONICET – IANIGLA- CCT, Mendoza, Argentina

A cluster of five rock avalanche deposits of volumes varying from 1.5 to 150 millions of cubic metres located in the Pangal valley, Cachapoal river basin in the Andes of central Chile is studied. The landslides are originated in volcanic rocks affected by localised hydrothermal alteration in a short section of the fluvial valley. The largest rock avalanches, with deposit thicknesses of up to about 100 m, have blocked the valley to be later eroded by the Pangal river. Lacustrine deposits can be found upstream. A detailed geomorphological survey of the valley and dating of the landslide deposits is being performed, in order to assess the likelihood of new large volume landslide events with potential of river damming. Such events would endanger hydroelectric facilities and human settlements downstream. A total of eighteen potential landslide source areas were identified, with potential of damming up to 107 million cubic metres. This case study illustrates a poorly studied hazard of large slope instabilities and related river damming in the Chilean Andes, extensively covered by large landslide deposits along their valleys. Understanding of these large volume landslides failure mechanisms, triggering and conditioning factors remain a challenge in this region. This project is funded by the Pacific Hydro Chile - Alto Cachapoal Scientific Fund Program.