



Cachet 2 Glacial-Lake Outburst Floods in the Colonia valley, Patagonia

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Since April 2008, jokulhlaups that have re-started in the Colonia valley in Patagonia after being absent for more than 40 years. Seven already have occurred in 2008-2010, and may be signalling some tipping point behaviour in relation with climate change (Dussaillant et al. 2010). Glacial hazards have been poorly studied in Chile, and Patagonia in particular has few data and increasing development pressures. One large hydropower dam, of several planned in the vicinity of the icefields, would be located downstream of the Baker confluence with the Colonia river. Despite the past & present events, recent environmental and engineering studies do not analyse these extreme floods with appropriate consideration of relevant processes, while performed probabilistic analyses err when lumping GLOFs with hydrometeorological floods. Palaeoflood evidence suggests that larger floods have occurred, surpassing the dam capacity (Harrison & Winchester 2000; Dussaillant et al. 2010). GLOF magnitudes could also increase with a changing mechanism of ice dam breakage, as happened at other Andes sites (Walder & Costa 1996). In September 2010 we installed some level sensors in the Colonia floodplain and surveyed with RTK GPS to study flood propagation and hazard assessment. During November 2010 a new event occurred, alerted by our Chilean water authority collaborators. Remote sensing data from old and new events will be presented, as well as the latest data from the sensor network, and current work on the flood propagation modelling of events and scenarios. And discuss relevance given the natural and human impacts of past and probable future events, to this region, and similarities and differences to other GLOF-impacted regions of the world.