



Characterisation of the hydrological regime of Patagonian river systems

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Chilean Patagonia is one of the most pristine regions in the world. It is host to a very dynamic environment, characterised by extreme climate gradients, volcanism, a very active geomorphology and a highly complex hydrology. Global climate change is expected to have a strong impact on this system, through various mechanisms including glacier melt, changes in the precipitation pattern, and alterations of the vegetation pattern. However, the hydrological regime of the rivers in the region is very poorly described. In this study, the hydrological regime of 8 rivers in the Baker river basin, northern Patagonia are analysed. The hydrological response, in terms of water production and attenuation, is highly variable. Major factors influencing the flow duration curves are topography, the presence of glaciers and wetlands, and the characteristics of the local precipitation gradients. We will also show how these characteristics influence the occurrence of extreme events such as glacial lake outburst floods, which are frequent in the region. Finally, the predictive capacity of hydrological models is discussed as a function of the available data. Finally, we will discuss the consequences of the predictive uncertainty for the design and operation of hydropower dams in the region.