**Water contribution of glaciers at an alpine basin in the central Andes of Chile and future projections**

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Glacier meltwater contribution is assessed for Yerba Loca basin, located in the central Andes of Chile, 30 km east of Santiago, 33º15’ S. This is a nivo-glacial basin, spanning an elevation between 1300 m and 5352 m a.s.l., with a total area of 110 km2 and a glacier area of 9.5 km3, including debris-free glaciers (2.1 km2), debris-covered glaciers (1.5 km2) and rock glaciers (5.9 km2). During the summer seasons of 2013/14 and 2014/15 several field campaigns were performed on 4 representative glaciers located in the upper Yerba Loca basin. The information provided by the glaciological and geodetic mass balances (including airborne LiDAR data), together with the energy balance and the analysis of water runoff data allows determining the monthly water yield during the summer and also the annual water yield. The hydrological year 2014-15 was extremely dry (~95% exceedance probability) with an unusually warm summer, resulting in practically no snow accumulation on the glaciers by the end of the summer. Subtracting the water contribution due to snow melt and also subtracting the loss of mass through sublimation, the annual water yields are 0.26 l/s/ha for the debris-free glacier, 0.17 l/s/ha for the debris-covered glacier, 0.07 l/s/ha for the “large” rock glacier (> 25 ha) and 0.03 l/s/ha for the “small” rock glacier (<25 ha), which correspond to geodetic mass balance losses of 1.31 m water equivalent (w.eq.), 0.75 m w.eq., 0.26 m w.eq. and 0.09 w.eq. for each glacier, respectively. The debris-free and debris-covered glaciers represent only 39% of the total glacier area, yet they provide 88% of the glacier runoff, whereas the rock glaciers (small and large) represent 61% of the total glacier area but they contribute only 12% of the glacier runoff. Based on these results a distributed energy-mass balance model was applied to the Yerba Loca basin and also to the whole Maipo basin which constitutes the main water supply to the city of Santiago (population 7 million). The model allows calculating the glacier meltwater contribution during a dry year such as 2014-2015, during a normal year and also the future water contribution under climate warming scenarios. As small and medium-sized glaciers start to reduce significantly within a few decades, their water yields will become less relevant until they are completely extinct.