

GLOFs in the Chilean Andes and their relation with recent glacier variations

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We analyze the evolution and present state of 7 GLOF occurrences in the Chilean Andes, from the Dry Andes in the north to the Wet Andes in the south. The GLOF sites include the Glacier Rio Seco de los Tronquitos (28°34' S, 69°43' W); Lake Soler, Northern Patagonia Icefield (NPI) (46°54' S, 73°10' W); Lake Cachet II, NPI (47°12' S, 73°16' W); Lake Arco, NPI (47°17' S, 73°15' W); Lake Tempano, Southern Patagonia Icefield (SPI) (48°41' S, 73°56' W); Lake Dickson, SPI (50°47' S, 73°12' W); and Lake NW, Gran Campo Nevado (52°43' S, 73°07' W). In addition, the site of a devastating 1987 rockfall and subsequent debris flow at River Parraguirre, Maipo basin (33°18' S, 70°02' W) was analyzed for testing the hypothesis of a possible GLOF occurrence at that time. High resolution satellite imagery from recent years (SPOT 4, 5, FORMOSAT 2, ASTER, LANDSAT ETM) and from earlier years (LANDSAT TM) are used for assessing the extent of the glacial lakes and the associated glaciers. Field studies conducted at Glacier Rio Seco de los Tronquitos, River Parraguirre, Lake Cachet II and Lake NW are also reported. A generalized retreat is observed on most glaciers, which has been linked to recent regional warming due to climate change. The retreat of the glaciers is resulting in many cases in a growth of the glacial lakes and an associated GLOF hazard potential. We acknowledge the support of Planet Action, a SPOT Image initiative.