

First glacier inventory and recent changes in Glacier area in the Monte San Lorenzo Region (47 S), Southern Patagonian Andes, South America

Falaschi, Daniel

Bravo, Claudio

Masiokas, Mariano

Villalba, Ricardo

Rivera, Andrés

We present the first glacier inventory of the Monte San Lorenzo region (47°35'S, 72°18'W) in the southern Patagonian Andes of Chile and Argentina. This region contains the largest and easternmost glaciers at these latitudes in South America. The inventory was developed using a combination of ASTER and Landsat ETM+ scenes from 2005 and 2008, respectively, and a semi-automatic band ratio approach to map glacier ice. Manual corrections were applied to include debris-covered ice and ice in cast shadows. We inventoried 213 glaciers that cover a 2005/2008 total area of ca. 207 km² and lie between 520 m and 3700 m in elevation. Landsat TM images acquired in 1985 and 2000 were subsequently used to assess changes in glacierized area over the 1985-2008 interval. Based on all available information, we determined an 18.6% reduction in the total glacier area since 1985. Glaciers smaller than 1 km² have shown highly variable (0-100%) relative areal reduction, whereas the formation and growth of prog