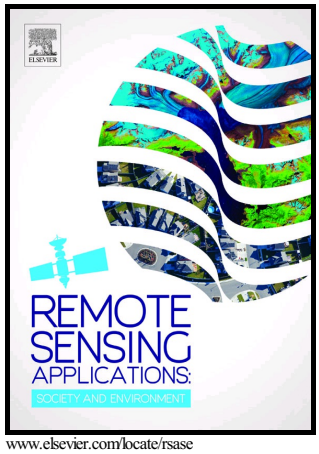

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ABSTRACT

Glaciers located in the Subtropical Central Andes region, play an important role in the surrounding hydrological system due to their significant contribution to the runoff of Andean rivers. Furthermore, they constitute a natural water reservoir that can buffer the impact of meteorological droughts seasons on socioeconomic activities in the region. The Intergovernmental Panel on Climate Change (IPCC, 2013) has concluded that glaciers have clearly shrunk at global scale. Nevertheless there is a need to quantify variations at a local-to-regional scale. In this interdisciplinary work we make use of the Geographic Information System tool in a climatic study with the purpose of visualizing spatial and temporal changes in glaciers' extension through a multi-temporal analysis of satellite images in the period 1989-2015. Two glaciers in the Subtropical Central Andes region were selected: Alto del Plomo glacier (32.98°S – 70.01°W) in the Plomo river basin and Volcán Maipo glacier (34.16°S-69.8ºW). The accumulation zones for both glaciers are found at similar altitudes and distant only by less than 130 km, but they have different morphological characteristics and the Volcán Maipo glacier is located within a protected area in the natural reserve of Laguna del Diamante. The results of the analysis indicate a decrease in the total area (18%) of Alto del Plomo glacier that is especially evident in its glacier tongue. In contrast, the Volcán Maipo glacier presented almost no change in the 27-year period considered. The climate factors, temperature and nival precipitation, that affect the evolution of the areal extent of the glaciers do not seem to fully explain the different behavior seen in these two glaciers. It is suggested here that the environmental factors that surround them might explain the observed behavior.