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The Use of Software for Valuation of the Glacial and Periglacial Environment of the Chaschuil Valley, Fiambalá, Argentina, Using Satellites Images

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The Chaschuil Valley is located in Fiambalá above 4,500 meters altitude, at the NW of Catamarca Province. This is a long valley, with cold semi-arid climate conditions, and a nighttime temperature below 0°C throughout the year and a large range daily temperature. It shows evidence of permanent ice both as glacier ice and as snow, as well as rock glaciers, frozen ground and permafrost. In the piedmont area there is evidence for wind activity producing both accumulation and of deflation of aeolian sediment. The main channel is the Chaschuil River and its main tributaries are Cazadero Grande, Las Lozas and San Francisco. The Chaschuil Valley is limited to north by the Sierra de San Buenaventura, to the east by the Sierra de Las Planchadas and to the west by the Cordillera de los Andes.

For the analysis of the glacial and periglacial environment of the region, technologies and procedures were applied that allow the generation of an innovative method for the cadastral survey of glaciers and periglacial landforms from satellite images. Considering the need to be able to separate and delineate clearly the frozen freshwater bodies existing in the region, and taking as a basis the applications that have the satellites images in the study of extensive zones, an updated methodology is proposed that uses spatial products of national origin (SAOCOM - CONAE) and international origin (LANDSAT, COSMOS, others).

To locate areas with features such as glaciers and periglacial environments, the use of satellite images has an important role because they enable the incorporation of legal land objects of the public character to the land registration, provide high resolution basis for landform definition and information on the role of these features in freshwater supply in a region with a raised of water deficit.

From the utilization of satellite images is possible to orchestrate a methodology updated to reveal and to register the bodies of ice (glaciers, snow, glaciers of rubble, permafrost, etc.) of the glacier and periglacial region of Chaschuil's Valley.

Given that the water present in the glacial and periglacial systems constitute a strategic future resource, it must be more accurately inventoried, identified and registered to guarantee it as natural accessible resource for the use of the future generations, especially as the meltwater detours through a neighboring country. The investigation will be continued by fieldwork for the measurement of points of control in the area, the analysis of the possible systems of projection to using and the choice of the most suitable system.

