

Title:

Glacier monitoring system in Colombia: insights on one of the last tropical glacier zones

Authors:

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Abstract;

Andean glaciers represent around 99% of the all tropical glaciers in the world, being an important supply of meltwater during dry seasons and critical droughts events, an ecosystem services source to the closest population and cultural heritage symbols for mountain communities mainly. Colombia only has roughly 2% of this total, its glaciated area covered 35 km² in 2020 by 4 main mountain glacier areas and they are all protect by national parks. Unfortunately, Colombian glaciers are melting quite fast, following the current world trend of, making their study essential.

The Institute of hydrology, meteorology and environment studies of Colombia has been leading the monitoring of Colombian glaciers using direct and indirect glaciology methods since 2006. The longest and the most important technique is the glaciological mass balance over two study areas (Conejeras and Ritacuba glaciers). There is also a hydro-meteorological network composed by 15 weather stations and 5 gauged river streams covering the main different mountain ecosystems between 2500 and 5000 m a.s.l.. Drone photogrammetry and remote sensing analyses are also applied to estimate glacier wastage and shrinkage for different ice bodies.

The monitoring system is looking to improve the current knowledge of these tropical glaciers, not less important for the cryosphere understanding, and to contribute reliable information for public policies and territorial and economic strategies to stem climate change implications.