

GEODYNAMICS AND GLACIER RETREAT ON THE SOUTH FACE OF MT. SACSARAYOC (CORDILLERA VILCABAMBA, PERU)

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The retreat of glaciers implies a series of consequences that directly or indirectly affect humanity. The most relevant are the shortage of water for nearby populations and on the other hand mass movements (avalanches, debris flows among others) that have caused huge losses in human lives and infrastructure. The Central Andes of Peru, and specifically the Vilcabamba mountain range, is considered an area of very high susceptibility to geodynamic processes. Due to the steep relief of the snowy peaks of this part of the mountain range. The Gorge of the Yanama River and the Moya Gorge towards the south face of Mt. Sacsarayoc snowfall (Pumasillo) records a series of mass movement events due to a strong geodynamic activity in both valleys. The different geomorphological units mapped show evidence that a sequence of floods has occurred in these valleys, probably because of the breakage of moraine dikes and subsequent overflow of glacial lagoons due to the fall of ice blocks or other factors that triggered this type of geodynamic events. These types of events have taken place at least during the last 20,000 years in different periods of advance and retreat of the glaciers. The present work has as a priority to reconstruct the interaction between the different geodynamic events and the glacier evolution, taking into account multiple parameters such as the paleo-temperature, ELAs, paleo-ELAs, volume and paleo-volume. This reconstruction is of vital importance to project future trends in glacier behavior and with it the possibility of new occurrences of avalanches or other geodynamic events. Finally, the contribution of the results of this work is essential for decision-making by government political authorities, managing resources to implement prevention, mitigation and adaptation policies to this type of phenomenon caused by climate change.

Keywords: *Glacier retreat, ELA, paleo-ELA, paleotemperature, volume, paleovolume, geomorphology, geodynamics*