
Regional evaluation of rock glacier activity in the semi-arid Andes using optical and radar satellite imagery

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Abstract

As evidenced by existing inventories, the semi-arid Andes (Chile and Argentina) has a high density of active rock glaciers and host some of the largest ones in the world. The movement of rock glaciers, which is crucial for understanding the effects of climate on mountain cryosphere, remains largely based on subjective interpretation of geomorphological signs visible on ortho-imagery. In order to get a regional assessment of rock glacier's activity levels, we combined two type of satellite imagery, Synthetic Aperture Radar and optical. Both SAR-derived interferograms and maps of displacement derived from optical image correlation were used to evaluate to mean activity level of more than 200 active rock glaciers. Base on this, a geospatial analysis was performed to assess the main controlling factor on the rock glaciers kinematic.

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