Supplementary Material

A climate-driven, altitudinal transition in rock glacier dynamics detected through integration of geomorphological mapping and InSAR-based kinematic information

Bertone et al., in review
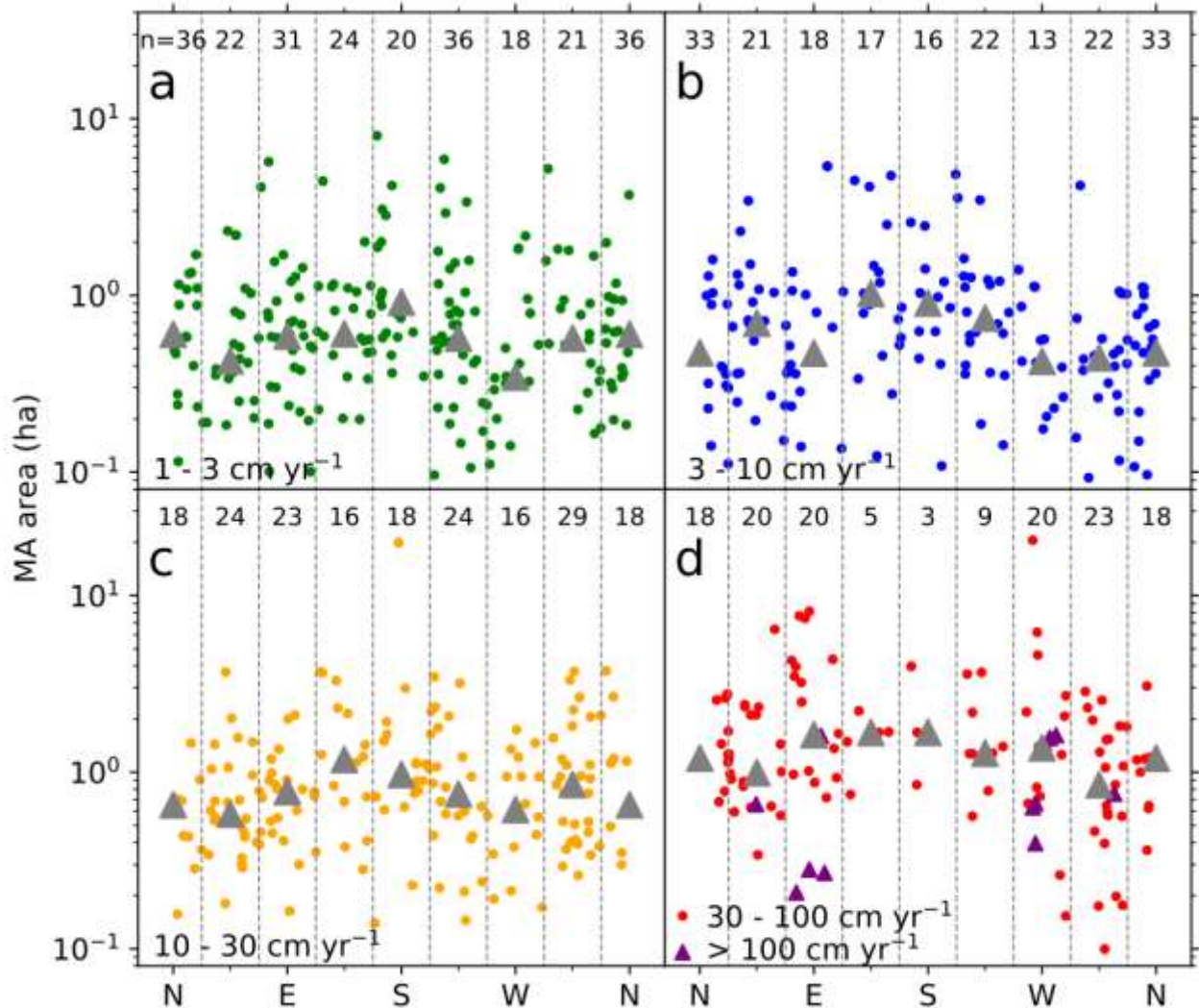
Figure S1. Moving area (MA) size represented as a function of slope aspect, stratified by moving area velocity classes: (a) $1 - 3$ cm yr^{-1}; (b) $3 - 10$ cm yr^{-1}; (c) $10 - 30$ cm yr^{-1}; (d) $30 - 100$ cm yr^{-1} and > 100 cm yr^{-1}. Grey triangles indicate median MA values across aspect sectors, bounded by dashed lines.
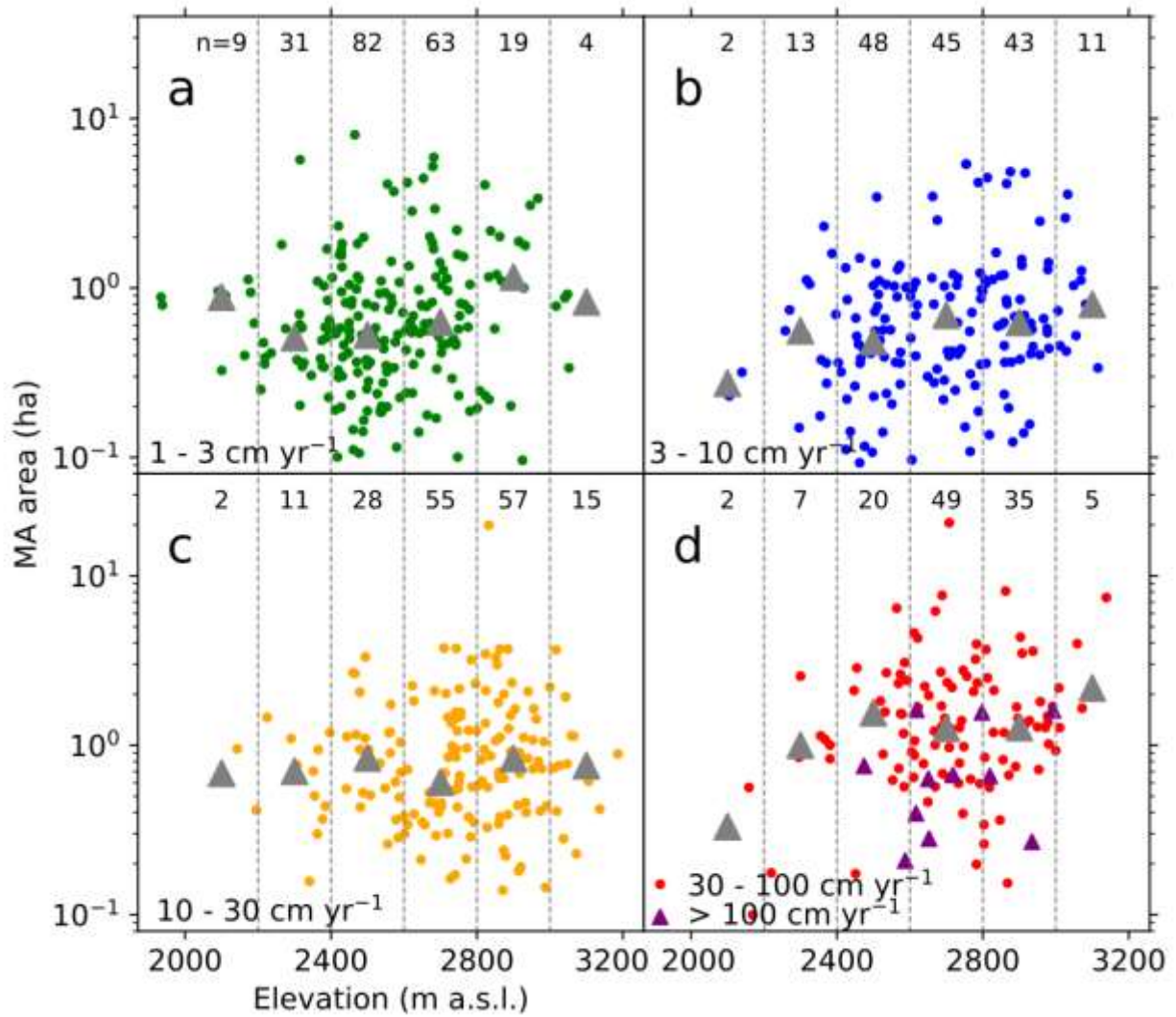
Figure S2. Moving area (MA) size represented as a function of elevation, stratified by moving area velocity classes: (a) 1 – 3 cm yr^{-1}; (b) 3 – 10 cm yr^{-1}; (c) 10 – 30 cm yr^{-1}; (d) 30 – 100 cm yr^{-1} and > 100 cm yr^{-1}. Grey triangles indicate median MA values across altitudinal zones, bounded by dashed lines.
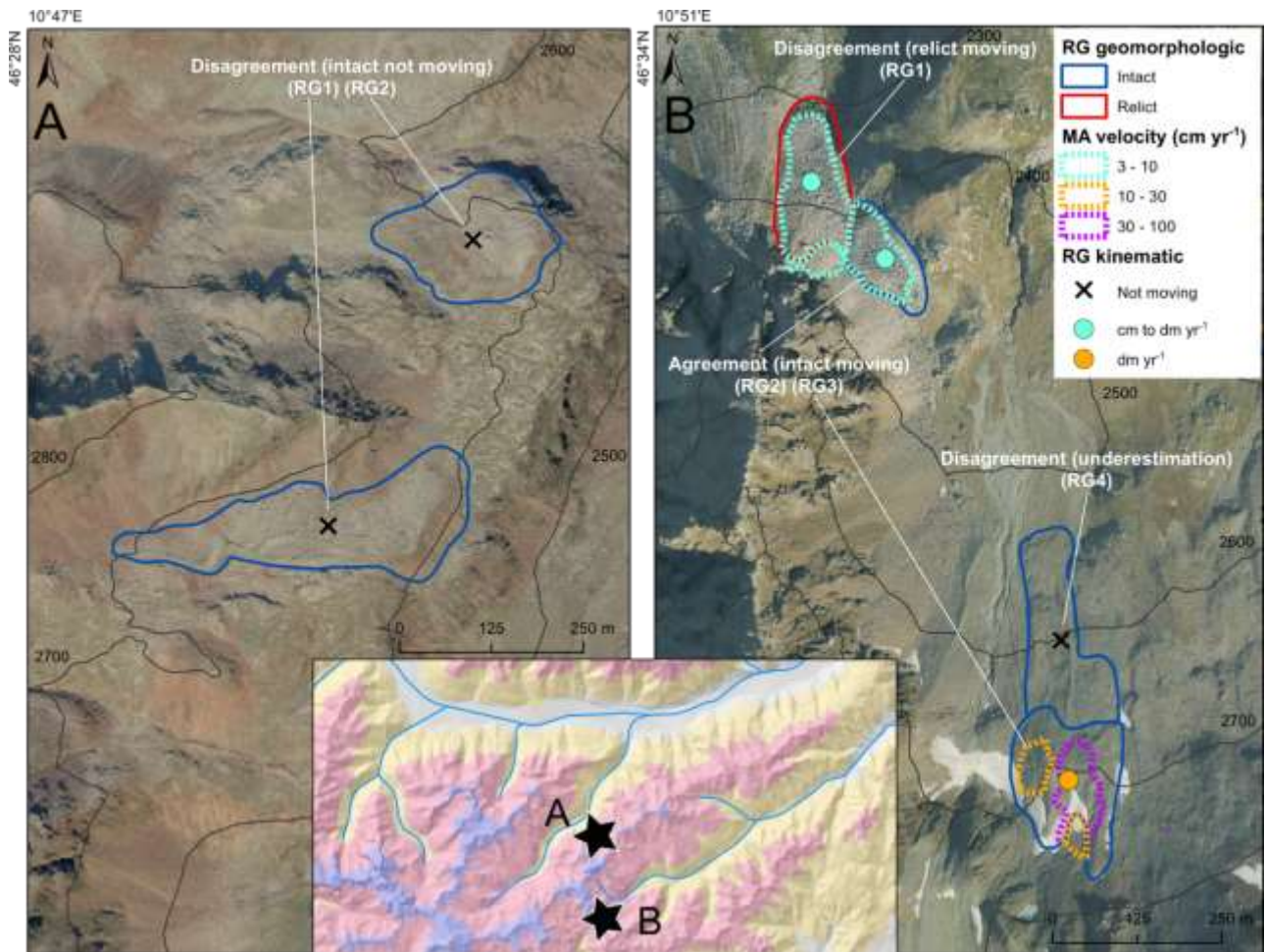
Figure S3. (a) Example of two rock glaciers in Ultental/Val d'Ultimo (RG1 and RG2) originally classified as intact. Considering the lack of moving areas and the limited SAR underestimation rate (20%), the two rock glaciers become relict (not moving) in the integrated classification. The relatively high elevation of these landforms (front elevation ranges from 2575 to 2585 m a.s.l.) contributes to increasing the median elevation of relict landforms. (b) Example of four rock glaciers in Martelltal/Val Martello affected by InSAR underestimation comprised between 39% and 57%. Despite signal underestimation, moving areas are detected on RG1, RG2 and RG3. As for originally intact RG4 (2520 m a.s.l.), the lack of moving areas may be an artefact associated with the high rate of signal underestimation and therefore uncertainty remains. Orthoimages from the Autonomous Province of Bolzano (https://geoportale.retecivica.bz.it/geodati.asp; last access: June 2023).