



Comparison of two active rockglaciers: Sannjarriep'pi rockglacier, Kåfjord area, Troms, Northern Norway - Gianda Grisca rockglacier, Upper Engadine, Swiss Alps

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Velocity, ice content, mean annual ground surface temperature (MAGST) and age are compared for two active rockglaciers, one in Northern Norway and one in the Swiss Alps.

The Sannjarriep'pi rockglacier is situated in a small side valley of the Nordmannvikdalen valley in the Kåfjord area, Troms, Northern Norway. The rockglacier lies on the western slope of a 1207 m high peak, composed mainly of garnet-mica-schist. The rockglacier is approximately 700 m long and 700 m wide and situated between 580 and 780 m a.s.l. It consists of two adjacent tongues, both characterized by a ridge-and-furrow topography and different lobes, presumably reflecting different generations. Velocities since the early 1990s are determined by terrestrial survey. Average values for the last 17 years are between 2.2 and 5.3 mm/year (Tolgensbakk & Kverndal 1995, 1996). The geophysical survey (2D electrical resistivity imaging) indicates that the rockglacier contains ice-rich permafrost in its central part, whereas the source zone and the frontal area seem to be characterized by less ice-rich permafrost. Mean annual air temperature at the rockglacier is c. -1.5°C (3.0°C at sea-level). MAGST temperature measurements have been started in summer 2006, first results are expected this summer. Samples for exposure dating have been taken on two conspicuous ridges and at the front of the rockglacier, laboratory preparation of the samples is under way.

The Gianda Grischa rockglacier is situated on the western slopes of Piz Julier (3384 m a.s.l.) and creeps into a side valley of the Vallun valley, Upper Engadine, Eastern Swiss Alps. This rockglacier is approximately 1000 m long and between 170 and 390 m wide and lies at an altitude of 2540 to 2800 m a.s.l. The rocks within its contributing headwalls are primarily different types of granites, diorites and para-gneiss. The rockglacier exhibits a flat root zone separated from the moderately inclined tongue by a steep slope. While the flatter areas show some ridges and furrows, such structures are absent in the steep slope. Horizontal average annual surface velocities were determined photogrammetrically between 1971 and 1998. During the 27 years under observation, the rockglacier crept downslope with an average velocity of approximately 0.4 to 0.5 m/year, reaching maximum velocities of up to 0.8 m/year. The geophysical surveys (2D electrical resistivity imaging) show that the rockglacier contains ice-rich permafrost or even massive ice cores. Mean annual air temperature at the rockglacier front is approximately -1.8°C . MAGST measurements are ongoing since autumn 2005. During the first year of measurement, MAGST at five different sites on the rockglacier was between -1.0 and -2.1°C . Streamlines interpolated from the surface velocity field of the active part of the rockglacier indicate a minimum surface age of 4 to 5 ka.