

Analyse av overflatekarstformer i Glomfjellområdet

Glomfjell article.

Glomfjord, north of Svartisen, takes up the southern part of a huge marble sequence of more than 200 km². The alpine plateau is situated at 500-800 meter, surrounded by mountain peaks of 1100-1300 m. The area has ample precipitation, as snow during large parts of the year.

Glomfjell is very rich in karst forms, providing an opportunity to determine postglacial corrosion relief and to analyse karrenfields. Totally, 211 projecting quartz lenses have been registered (with max. thickness 60 cm) as well as 153 pedestals in the investigated part of Glomfjell. 19 large karren fields are registered.

Mean height for quartz lenses and pedestals is 14.6 cm and 12.8 cm respectively. Assuming that the field area has been free of ice for 10,000-10,500 C14 years, this give a mean corrosion rate of 12-14 mm/1000 C14 years. However, there are a number of factors that either retard, promote or supplement corrosion, particularly of pedestals.

The data of quartz lenses indicate that the postglacial corrosion relief is about 15 cm even if thin lenses (0-5 cm) are excluded from the calculation. (The correlation is low between thickness and height of quartz lenses.) The corrosion relief varies with lithology, being 16.7 cm and 13.7 cm respectively for grey and yellow marble.

The Kolmogorov-Smirnov two sample test shows that quartz lenses with a thickness of more than 20 cm in grey marble are significantly different from other groups in grey and yellow marble. Many of these lenses are from the Ruffen area, more specifically at a height of 550-700 m northwest of Gåsvatn. Apart from variation in local circumstances which may have influenced the rate of denudation, the high mean values may be explained by the solution process having worked during a longer period than elsewhere in Glomfjell. The solution process may have started under bölling and alleröd, and the glacier advance in younger dryas may not have had sufficient erosive power to whittle down the lenses, in particular lenses with a thickness over 20 cm if the glacier reached them. The area this side of Ruffen is relatively far away from the glacier centre (Svartisen) and protected by Ruffen from the advance of the Glom glacier in younger dryas.

Pedestal height varies with very many factors, such as lithology, texture, form and size of the block. Factors like orientation on the pedestal, runoff and vegetation may also be of importance. Based on the assumption that pedestal height increases with increasing thickness of the short axis, a good correlation has been found for pedestals with flat form and no runoff:

$$Y = 0.10x + 6.57 \quad (r = 0.84)$$

where x is the thickness in cm of the short axis of the block and Y is pedestal height in cm. However, for pedestals with short axis exceeding a certain thickness it is not to be expected that the height will increase further.

Due to factors that slow down the pedestal development it is reasonable to assume that the postglacial corrosion relief is greater than the average pedestal height. If one calculates a mean pedestal height for pedestals with assumed optimal characteristics of the block (flat block and short axis > 1 m) the mean increases from 12.8 cm to 21.6 cm. This, together with findings of high, optimal lenses and pedestals, suggests that the postglacial corrosion relief may be greater than 15 cm.

Snowdrifts appear to have both a form giving and a destructive effect on subnivale solution runnels in Glomfjell. Snow probably contributes to the distribution of moisture in the same way as vegetation cover does for rounded solution runnels, while melting water collected in the snow projections may form ditches and microchannels in and around the channels. The lower parts of karren fields in ravines appear to be particularly exposed to crevice formation, probably due to freeze-thaw processes under the snow cover.