

2. Physical Sciences (Geosciences)

2.1. Geology and Geomorphology

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The program of geoscientific course in 2014 consists of three main parts: sedimentological research, periglacial processes research and field excursion.

Sedimentological research

The field party continued with the research of glaciomarginal delta sediments in the southern part of the Bertilbreen valley, which started in 2013. Sediments have been deposited during the Pleistocene-Holocene transition and nowadays form a terrace at 50 m a.s.l. New clast lithological analyses from till and deltaic foreset and topset have been undertaken. Each analysis comprised 100 clasts of the 32–64 mm b-axis fraction. Petrology, clast axes lengths for shape analysis, roundness and presence of striation on clast surfaces have been determined. Facies description (basing on grain-size and bedding types) has been performed at natural section faces. Fabrics of platy pebbles in topset sediments have been measured. Four profiles have been surveyed using ground penetrating radar to ascertain the geometry of the whole accumulation. Horizon with bivalves in living positions has been found in deltaic sediments. The following species have been detected: *Mya truncata*, *Macoma calcaera*, *Hiatella arctica*. Striae alignment has also been measured in a few bedrock exposures below the deltaic sediments.



Fig. 2.1.1. Students during the clast petrological analyses of the 50m terrace, Bertilbreen valley.

Periglacial processes research

Periglacial processes research continued with the backup of ground temperature data recorded in patterned ground and solifluction lobes. In addition, horizontal displacement of clasts was measured on the surface of sorted stripes monitored since 2011.

Field excursions

Excursion to the Nordenskiöldbreen northern margin with the presentation of terminoglacial environment, Little Ice Age and pre-LIA roche moutonnées and lateral moraine (Fig. 2.1.2.).

Excursion to Ebbadalen with the presentation of ice-cored moraines and medial moraine of Ebbabreen and proglacial stream with well-evolved facies changes of sediments in the downstream direction.

Excursion to Hørbyebreen with the presentation of typical facies of an esker, hummocky moraine (supraglacial tills) and braided outwash fan.

Excursion to the Mumien summit with the presentation of sorted polygons and stripes and the bird's view of the whole Petuniabukta topography.

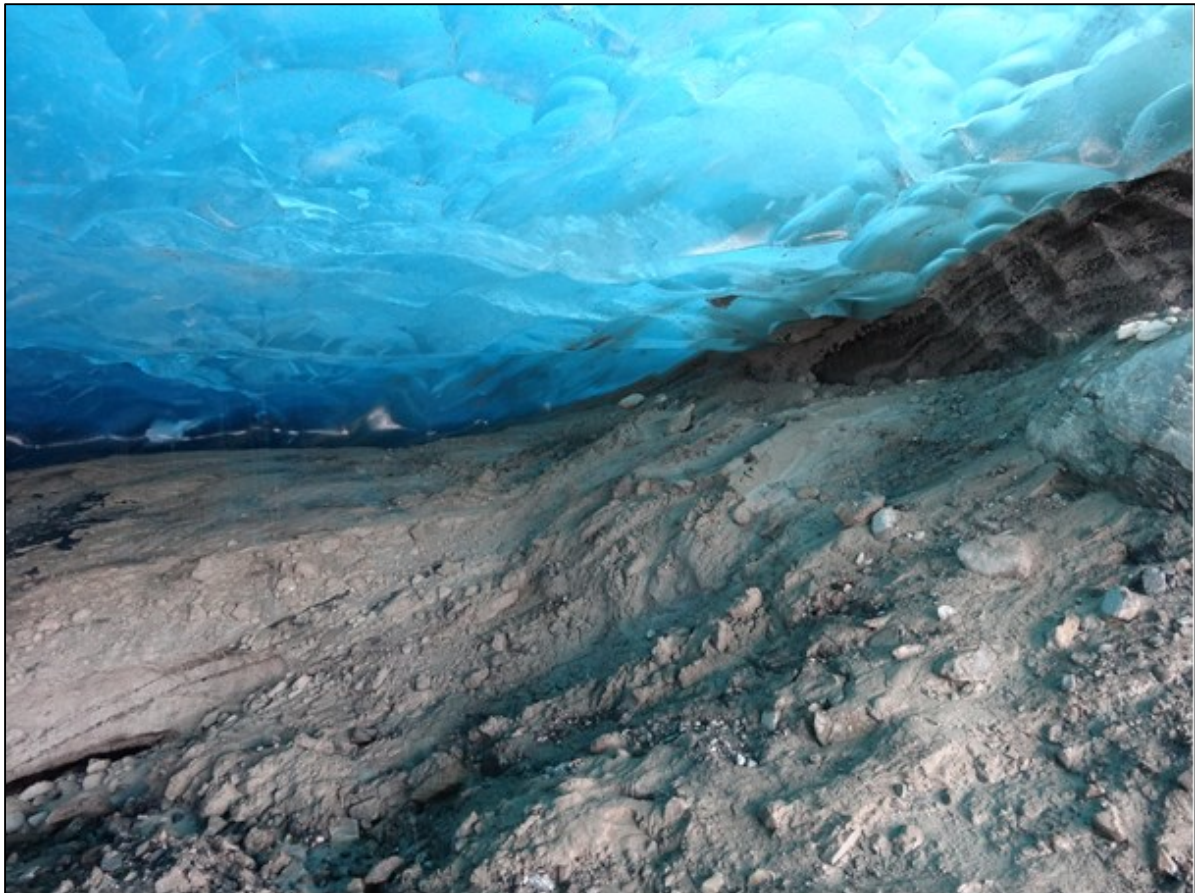


Fig. 2.1.2. Subglacial cavity at the Nordenskiöldbreen front.