



Submarine paleo-failure morphology on a glaciated continental margin from 3D seismic data

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During the late Pliocene – Pleistocene period, a thick wedge of glacial sediments was deposited along the western Barents Sea continental margin. This is due to profound erosion of the Barents Sea continental shelf during repeated glacial episodes. In this study we have focused on the early – middle Pleistocene interval. The morphology of two closely lying paleo-surfaces, about 150-200 milliseconds (tw) apart have been mapped out in detail based on commercial 3D seismic data covering an area of about 2900 km².

On the lower surface, escarpments are seen on the upper part of the slope. Further downslope, the relief is dominated by a downslope oriented, elongated ridge separating a northern and a southern area of small-scale irregularities, most pronounced near the escarpment. The morphology is inferred to represent the upper part of a paleo-slide scar, it is relatively similar to modern slide scar morphology on the Norwegian continental margin.

The upper surface display several straight channels, up to 40-50 ms (tw) deep and 1 km wide. They can be followed across the survey area except for one of them which terminate upslope in a headwall area. The headwall is amphitheatre-formed, about 3 km wide, and second-order channels are seen. The morphology of the upper surface is suggested to be caused by downslope flow of sediment-laden meltwater and/or mass wasting on the paleo-slope.

The origin of the two paleo-slope surfaces and their paleoenvironmental implications will be discussed.

Acknowledgement

This work is part of the GlaciPet project (<http://www.ngu.no/index.asp>) funded by the Research Council of Norway and Norsk Hydro ASA.