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# On the glacial erosion of the south-western Barents Sea shelf

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The Barents Sea has experienced profound glacial erosion during the late Pliocene and Pleistocene which resulted in the development of a characteristic glacial morphology of the continental shelf and deposition of a several km thick sediment wedge/fan along the western margin prograding into the deep sea. During the middle and late Pleistocene, glacial erosion was most severe beneath the paleo-ice streams of the Barents Sea Ice Sheet and affected mainly the trough areas (∼200.000 km2). The total erosion is estimated to 435 - 530 m, the average erosion 0.6 - 0.8 mm/yr and the average sedimentation rates on the continental slope were 18 - 22 cm/kyr. The first-order control on the amount of erosion was probably the glaciations duration and velocity of the ice streams. Erosion by paleo-ice streams affected a larger area (∼575.000 km2) during the early and middle Pleistocene because they were less topographically stable due to a less pronounced paleo-relief. Also, glaciotectonism was more extensive during this period. The total erosion was estimated to 330 - 420 m and the average erosion 0.4 - 0.5 mm/yr. The average sedimentation rates were 50 - 64 cm/kyr, 2 - 3 times higher than during the succeeding period. In the late Pliocene – early Pleistocene period, proglacial processes including glacifluvial erosion dominated. The total erosion was found to be 170 - 230 m, the average erosion 0.15 - 0.2 mm/yr and the average sedimentation rates were 16 - 22 cm/kyr. In total, the glacial erosion of the troughs has been relatively high throughout the late Pliocene – Pleistocene period, about 1000 – 1100 m. For the banks the erosion is inferred to have increased from late Pliocene to peak in early – middle Pleistocene, later there has been little erosion in these areas which implies a total of 500 – 650 m of erosion. The average glacial erosion during the whole late Pliocene and Pleistocene period is 38 cm/kyr, one order of magnitude higher than the average glacial erosion of the east Greenland continental shelf. This demonstrates that there have been large variations in the glacial erosion affecting the northern, high-latitude continental margins.

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