

Late Cenozoic stratigraphy and environment in the Barents Sea

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Evaluation of the geology of the late Cenozoic Barents Sea is based upon several thousand km of seismic profiles, several hundred gravity cores and some ten 100 m deep corings taken by drilling vessels.

An upper unconformity with a glacial relief has a regional extent. This unconformity was probably initiated at the inter Oligocene sea level lowstand, and glacially reshaped during the Late Cenozoic glaciations (Vorren et al. 1986). Up to 300 m of sediments overlie the upper unconformity (Andreassen & Vorren 1987), and most of these sediments are of glaciogenic origin. Some of these sediments are tills and some are glacially tectonized glaciomarine deposits, indicating widespread glaciations (Hald & Vorren 1987a). Results of seismic stratigraphy suggest that there were at least five periods during which grounded ice sheets reached the shelf break (Solheim & Kristoffersen 1984).

Submarine ridges suggest that the last glaciation may have covered most of the Barents Sea (Vorren & Kristoffersen 1986). A raised marine sequence on the adjacent coast indicates that the maximum extent was reached between 19,000 and 18,500 B.P. and lasted until about 16,000 B.P. (Vorren et al. 1988). Radiocarbon datings of samples recovered from the Barents Sea itself indicate that deglaciation occurred before 13,000 B.P. (Vorren & Kristoffersen 1986). A tentative reconstruction of the deglaciation pattern is shown in Fig. 1. In the south, Atlantic water replaced Arctic water about 10,000 B.P. (Vorren et al. 1984; Thomsen & Vorren 1986; Hald & Vorren 1987b, 1987c).

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Fig. 1. A tentative model of the deglaciation pattern and chronology of the Barents Sea. The model is based on several sources, e.g. Elverhøi & Solheim (1983), Vorren & Kristoffersen (1986), Mangerud et al. (1987), Vorren et al. (1988) and some unpublished data. The contour interval is 100 m on the shelf and 200 m on the slope.

