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BATHYMETRY AND COARSE FRACTION COMPOSITION OF VIKING-  
TROUGH CENOZOIC SEDIMENTS

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Establishing paleobathymetric estimates for the Cenozoic North Sea is still a major problem. Benthic foraminifer assemblages indicate water depth of more than 3 km for the Paleogene, a figure far from being reasonable for an epicontinental sea. As an alternative source for information on sea-level changes, sequence stratigraphy and the Haq-curve were utilized to give estimates on the bathymetric development in the Cenozoic northern Viking Trough. A water depth of at least 900 m can be attributed to the early Paleogene basin center, whereas a middle Miocene to early Pliocene hiatus indicates 0-value water depth.

The estimated paleo-water depth allows one to isolate the dependency of the sediment composition on water depth from the observed sedimentation history. Planktic foraminifers, for instance, turned out to be most common in northern Viking Trough sediments of an assigned depositional water depth close to 400 m. Non-calcareous benthos, on the other hand, shows maximum amounts for values of 500 to 600 m (agglutinated foraminifers) and 100 to 250 m (siliceous sponge spicules). Similar evaluations are performed for different biogenic, clastic and authigenic sediment components and component groups.

MELTWATER EPISODES IN THE NORWEGIAN-GREENLAND SEA DURING  
THE LAST 60,000 YEARS

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High-resolution stable isotope records of *Neogloboquadrina pachyderma* sin. from the Norwegian-Greenland Sea and the northern North Atlantic show five to seven short meltwater episodes in isotope stage 3 (at 60,000 - 26,000 years BP), one distinct episode centered at the Last Glacial Maximum (18,000 radiocarbon yrs ago), and two major deglacial meltwater pulses culminating near 13.6 and 12.3 ky, slightly subsequent to the Heinrich events. Age control is based mainly on AMS-<sup>14</sup>C ages from 8 cores, revealing sedimentation rates of 6 - 100 cm/1000yrs, the dating of  $\delta^{18}\text{O}$  event 3.33 is based on the SPECMAP time scale.

Based on  $\delta^{18}\text{O}$  records from up to 60 sediment cores, the iceberg and meltwater dispersion during stage 3 was traced from source regions near of the Lofotes and possibly on the eastern Greenland Shelf into small scale anti-clockwise circulation gyres, including a narrow branch of warm water advection penetrating to 65°N. In contrast, the peak glacial and early deglacial meltwater plumes spread from the western Barents Shelf (71 - 73°N) and suggest clockwise circulation gyres reaching south to the west of Ireland. The deglacial and peak glacial meltwater episodes were linked to low planktic  $\delta^{13}\text{C}$  values which almost covered the complete Norwegian-Greenland Sea and show strong minima along the northeastern margin and in the North Atlantic west of Ireland. The preglacial episodes, however, showed a more patchy  $\delta^{13}\text{C}$  distribution pattern with modest maxima northeast of Iceland (up to 0.35‰ PDB), which suggest local deep water formation in the Norwegian Greenland Sea, the overflow of which is also recorded in the benthic  $\delta^{13}\text{C}$  record west of Rockall Bank during this time.