Geophysical Research Abstracts, Vol. 7, 06287, 2005
SRef-ID: 1607-7962/gra/EGU05-A-06287

Cenozoic Depositional Environments and Mega-slides on the SW Barents Sea Margin

B.O. Hjelstuen (1), O. Eldholm (1), J. I. Faleide (2)

1. Department of Earth Science, University of Bergen, Allegt. 41, 5007 Bergen, Norway, (2) Department of Earth Sciences, University of Oslo, POB 1047 Blindern, 0316 Oslo, Norway (berit. hjelstuen@geo.uib.no)

The SW Barents Sea margin represents a sediment repository, which reflects the combined effects of tectonic, magmatic and paleoceanographic processes within the widening and deepening Norwegian-Greenland Sea. High-quality multichannel seismic profiles allow us to suggest a regional stratigraphic framework, and to address sedimentary processes, volumes, rates and depositional environments. The stratigraphy is based on oceanic basement age, seismic sequence signature, and ties to scientific and commercial wells on the Barents Sea continental margin. Throughout the Eocene the sedimentation was strongly controlled by the basement relief, and small basins evolved between topographical highs. Modest sedimentation continued in the Oligocene, and in the Miocene the relief had partly been smoothed. The Eocene-Miocene is furthermore characterized by deposition of predominantly hemipelagic material at low rates. A dramatic change in the depositional environment took place in the Pliocene, and is reflected by a distinct unconformity and changes in the seismic facies at the lowermost slope and in the Lofoten Basin. This change in depositional regime is related to the onset of the main Northern Hemisphere glaciations, during there was an order of magnitude increase in depositional rate along the margin. Throughout this time period glacigenic debris flows transported material far down slope and into the Lofoten Basin during shelf edge glaciations, i.e. when an ice stream occupied the Bear Island Trough. The Late Plio-Pleistocene glacial succession is also dominated by chaotic seismic facies, which we interpret as slides. These slides have dissected the Late Pliocene-Pleistocene deposits in the same manner as have been documented for the North Sea Fan and in the Storegga Slide region. We have mapped three mega-slides, of which two have affected an area of about 120 000 km^2 and a

sediment volume of about 25 000 km^3.