

GLOBAL CLIMATIC CHANGE: A MAJOR CONTROL ON CENOZOIC SEQUENCE DEVELOPMENT IN THE INTRACRATONIC NORTH SEA BASIN (NW EUROPE)

CLAUSEN, O.R., HUUSE, M. and MICHELSEN, O. Department of Earth Sciences, University of Aarhus, DK-8000, Århus C, Denmark.

The Cenozoic North Sea Basin is situated above the Mesozoic Central Graben, where rifting ceased during the early Cretaceous. It was surrounded by land areas throughout the Cenozoic; Fennoscandia to the E-NE, and the British Isles to the west. The Cenozoic succession constitutes more than 3000 meters of sediment in the central parts of the basin, decreasing in thicknesses towards the margins, due to extensive uplift and erosion.

Factors controlling Cenozoic deposition in the North Sea Basin have been discussed for decades, to a great extent following the trends in state of the art models. Consequently, perceptions have varied from: regional tectonic pulses, eustatic changes, tectonic uplift of the basin margins contemporaneous with basin-centred subsidence, and back to regional tectonic pulses.

The Cenozoic siliciclastic succession has been divided into 7 major units and a large number of depositional sequences based on conventional seismic data, exploration wells, and outcrops in Denmark. Detailed correlation of Cenozoic global $\delta^{18}\text{O}$ variations and major changes in North Sea sequence development - changes in sedimentation rate, changes in sediment input directions, clay mineralogy, and the character of erosion at major boundaries – indicates that creation of sequence boundaries was highly influenced by global climatic changes, but also affected by circum-basinal variations in source areas and tectonics. Effects of large-scale deltaic lobe switching are also recognized, albeit their cause is difficult to pinpoint.