Geophysical Research Abstracts, Vol. 8, 02805, 2006
SRef-ID: 1607-7962/gra/EGU06-A-02805

Maximum style glaciations and freshwater perturbations of thermohaline overturning circulation in the Atlantic/Arctic gateway over the past 0.8 Mio years

J. Knies (1), J. Matthiessen (2), S.I. Nam (3), T. Frederichs (4), C. Vogt (4), A. Mackensen (2) and R. Stein (2)

(1) Geological Survey of Norway, Leiv Eirikssons vei 39, NO-7491 Trondheim, Norway, (2) Alfred Wegener Institute for Polar and Marine Research (AWI), Columbusstrasse, D-27568 Bremerhaven, Germany, (3) Korean Institute for Geology and Mineral Resources, 30 Kajeong-dong, Yuseong-gu 305-350, Korea, (4), University of Bremen, Klagenfurther Strasse, D-28359 Bremen, Germany (jochen.knies@ngu.no / Fax +47 73921620 / Phone +47 73904116)

The Arctic region has been attributed a major role in the climate system and may both respond sensitively to climate perturbations and, in turn, may be itself a forcing factor of global climate change. Oceanographers consider the Arctic Mediterranean Sea as the most important source for the North Atlantic Deep Water, and the Arctic Ocean, often neglected in this respect, may provide a significant amount of the overflow waters crossing the Greenland – Scotland Ridge in the North Atlantic. Furthermore, changes in freshwater outflow from the Arctic Ocean may be considered an important trigger for changes in the thermohaline circulation of the North Atlantic. Increased discharge from the circum-arctic rivers into the Arctic Ocean might have triggered onset of major glaciations during the late Pliocene, however paleoceanographic data and sound chronologies are not available to test this hypothesis.

The latter is still the major issue for all ongoing research in the Arctic. A high-resolution Late Cenozoic chronology needs still to be established before accurate climate correlation and interpretation are possible. So far, the Palaeogene/Neogene history of Arctic paleoceanography and its impact on global climate is so poorly known that scientists can look at the recovery of any material as a true exploration that will,

by definition, increase the knowledge and understanding of this critical region for climate change. Here, we present the high-resolution planktic stable isotope records and magnetic data for ODP Hole 910A. Glacial/Interglacial cycles and meltwater outburst (δ^{13}C lows) as well as post-erosional changes in carbon reservoir due to gas hydrate dissociations may be well displayed. This outstanding record is exceptional for the Arctic Ocean and shows both regional and global impact on global climate changes over the past $\sim$0.8 Ma.