Geophysical Research Abstracts
Vol. 12, EGU2010-13378, 2010
EGU General Assembly 2010

Dinoflagellate cysts at the base of ODP Hole 911A (Yermak Plateau) indicate surface water warming during the Lower Pliocene or Upper Miocene

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On the basis of dinoflagellate cyst (dinocyst) analyses it is attempted to find the age of the sediments at the base of the drill core ODP Hole 911A, located at the Yermak Plateau, northwest of Svalbard. The dinocyst assemblages in this part of the core (503.6 and 503.7 mbsf) stand out from the rest of the analysed samples by being relatively diverse. Additionally, they contain a lot of reworked (Eocene and Cretaceous) dinocysts and other palynomorphs (spores and pollen). Unfortunately, there are few biostratigraphic markers and most of the species occur in both the Miocene and Pliocene. At present it is not possible to assign a high-resolution age to the base of the core based on dinocysts. However, the dinocysts at 503.6 and 503.7 mbsf. indicate an Early Pliocene or Upper Miocene age.

The dinocysts indicate warm surface waters and ice-free conditions in the marginal areas of the Arctic Ocean. The occurrence of Operculodinium centrocarpum combined with the absence of species associated with sea-ice indicate North Atlantic Current activity and ice-free conditions. In addition, other species point toward warm surface waters (e.g. Lingulodinium machaerophorum indicating summer sea surface temperatures not below 12ºC). Although it is not possible to detect any hiatus, or condensed sediment sequence at the base of the core, the dinocysts indicate very different sea surface conditions above 503.6 mbsf. compared to those below this stratigraphic level.

This study is part of a collaboration project between the Geological Survey of Norway and the University of Oslo, and partly funded by the petroleum industry (Det Norske, Statoil and BG Norge).