



Palynostratigraphy of Arctic and Subarctic Sediments in the Neogene

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Despite being a sensitive region for climate change on various timescales the chronostratigraphy of high northern latitude Neogene sediments is still a matter of intensive debate. Although a number of ODP and IODP sites have been drilled during the past decades in the Nordic Seas and Arctic Ocean, a consistent biostratigraphy that allows to place e.g. magnetostratigraphy and beryllium isotope stratigraphy into an absolute temporal framework is still not available.

To overcome this obstacle we investigated marine palynomorphs (e.g. inoflagellate cysts and acritarchs) at ODP Holes 907A, 909C and IODP Hole M2A which are the only microfossil group continuously present in subarctic sediments and occurring irregularly in Arctic Ocean sediments throughout the Neogene. They have been proven valuable in solving correlative and chronostratigraphic problems related to ODP/IODP drillings. Because of a well-constrained magnetostratigraphy supported by biosiliceous stratigraphy Hole 907A in the Icelandic Sea forms a key section in order to establish a palynostratigraphy for the cold-water domain of the High Northern Latitudes.

The study of 907A identified certain stratigraphically useful marker species and several datums have been calibrated to the Astronomical Tuned Neogene Timescale (ATNTS 2004). The identification of these datums in Holes 909C and M2A from the Fram Strait and the Central Arctic Ocean reveal that previous age models must be partly revised, having implications for published paleoenvironmental reconstructions that were based on these sites.

Although numerous potentially valuable palynomorph datums have been identified at our sites the comparison with other occurrences in the High Northern Latitudes is hampered by taxonomically problematic species and many of the previously recorded taxa have not yet been described or listed under open nomenclature. Additionally, our study displays the need for new marker species in order to establish a consistent and comprehensive palynostratigraphic framework for the cold-water as well as for the warm-water domain of the Nordic Seas and the Arctic realm and to allow comparison with previously published dinoflagellate cyst zonations of other High Northern Latitude sites.