Stratigraphy and paleoenvironmental changes across the Eocene – Oligocene succession in the Labrador Sea (DSDP Site 112) elucidated with dinocysts - master thesis on palynology without a microscope.

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The coolhouse climate of the Oligocene epoch in the North Atlantic region is not yet fully understood due to incomplete stratigraphic successions. A challenge exists in completing these records and to close the knowledge gap in order to establish a stratigraphically complete succession from the upper Eocene to Oligocene. Traditionally, deep-time records are put into a palaeoclimatic perspective by using calcareous plankton groups for microfossil-based biostratigraphy. A utility trade-off of these groups is their diminished diversity and poor preservation at higher latitudes during the Oligocene. Instead, organic-walled dinocysts are resistant to chemical dissolution and have a high species diversity in the Late Eocene to Oligocene.

This study presents the first comprehensive analysis of dinocyst assemblages of the upper Eocene to Oligocene succession penetrated by Deep Sea Drilling Program (DSDP) Site 112 located in the Labrador Sea. Abundant and well preserved dinocysts were analysed by using the high-resolution images of palynological slides digitised under the AVATARA project, as opposed to using a transmitted light microscope.

Five biostratigraphic events are recorded in the Labrador Sea covering the late Eocene to early Chattian; the first occurrence (FO) of *Chiropteridium galea/lobospinosum* complex, last occurrence (LO) of *Licracysta semicirculata*, FO *Svalbardella clausii* and LO *Enneadocysta pectiniformis*.

The palaeoenvironmental reconstruction of Site 112 reveals a change from outer to inner neritic conditions related to glacioeustatic sea-level fall throughout the Eocene and Oligocene. The Rupelian is characterised by higher productivity and is linked to the Bell River output into the Labrador Sea, whereas the early Chattian is characterised by surface water cooling related with the Oi-2b cooling event as reflected in the appearance interval of *S. clausii*. The results of this work contribute to an improved biostratigraphic framework of Site 112 and aiding a more accurate palaeoenvironmental reconstructions of the high latitude North Atlantic region during the Eocene warmhouse climate transition into the Oligocene coolhouse climate.