Palynology of Lower Cretaceous methane seep carbonates and mudstones from Wollaston Forland, North-East Greenland

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Lower Cretaceous methane-derived carbonate bodies are present in the Kuhnpasset Beds, Wollaston Forland, North-East Greenland and were previously considered to be Barremian in age (Kelly et al., 2000; Nakrem et al., 2020). We have sampled these seeps and associated mudstones for biostratigraphy, palynofacies and statistical analysis of dinoflagellate diversity, and made comparison with published East Greenland palynostratigraphic zonation of Nøhr-Hansen (1993) and Nøhr-Hansen et al. (2019).

The preservation of the palynological material from the seeps and mudstones is very good and includes dinoflagellate cysts together with a large amount of terrestrial material (e.g., pollen and spores) and some freshwater algae. Based on the presence of the age diagnostic dinoflagellate species Batioladinium longicornutum, Pseudoceratium anaphrissum, P. toveae and Odontochitina nuda in the samples, we assign an early Barremian to early Aptian age to the sampled sequence.

We also compare the Kuhnpasset Beds dinoflagellate occurrences to other publications of Lower Cretaceous Boreal realm dinoflagellates. The comparison shows many similarities between the dinoflagellate cyst assemblages in the Kuhnpasset Beds and the Boreal realm. The statistical analysis of the dinoflagellate cysts suggests a small, but not significant difference in diversity between the mudstone and carbonate samples. The palynofacies analysis suggests that the Kuhnpasset Beds were deposited in a proximal shelf setting.

References: