

## Early Maastrichtian palaeoecology of the chalk at Kronsmoor (Saturn quarry, northern Germany): an integrated approach

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The Saturn quarry near Kronsmoor (northern Germany) offers an undisturbed section of upper Campanian to lower Maastrichtian chalks. The target interval of this study comprises the belemnite biozones of *Belemnella obtusa* and the lower–middle part of *B. sumensis* (lower Maastrichtian). The benthic body fossils of the section were studied based on a collection of more than 1,000 specimens. Two successive benthic macrofossil assemblages were recognised. The upper interval (*B. sumensis* Zone) shows an eight times higher macroinvertebrate abundance than the lower part (*B. obtusa* Zone) without apparent lithofacies changes (ENGELKE et al. 2016). In order to quantify the observed palaeoecological changes of the low-resolution body fossil study, 33 bulk samples of about 6 kg each were retrieved in a distance of 0.75 m. The fraction 500 µm–1 mm and >1 mm were picked, sorted and counted, the coarse size fraction also weighted. A diverse assemblage of bryozoans, foraminifers, shell fragments of brachiopods and bivalves, spines and test fragments of different echinoid taxa, parts of asteroids and ophiuroids, sponge debris, crinoids and small serpulids is present. Reduced abundances in the lower part and generally higher abundances in the upper part are recognised. The palaeoecological analysis of both datasets indicates different guilds, of which epifaunal suspension feeders (fixo-sessile and libero-sessile guilds), comprising ca. 50 % of the fauna in the lower interval, increase to a dominance of ca. 80 % in the upper interval, including a considerable proportion of rhynchonelliform brachiopods. The increasing abundance of the total benthic community of Kronsmoor and changes in the guild structure suggested a higher nutrient availability during the early Maastrichtian. However, there is no evidence of change in productivity in the overlying photic zone (calcareous nannofossil data; LINNERT et al. 2016), a lateral input (upwelling) of nutrient-rich waters onto the shelf to fuel the benthic ecosystem has to be considered. This view is supported by records of contemporaneous changes in latest Cretaceous ocean circulation that followed the latest Campanian cooling event, inclusive of a southward spread of waters of intermediate depth from high-latitudes. Stable isotopes and geochemical proxies have been collected as well and will contribute to the understanding of the palaeoenvironmental change at Kronsmoor during the early Maastrichtian.

ENGELKE, J. et al., 2016. Acta Geol. Pol., **66**/4, 671–694.

LINNERT, C. et al., 2016. Paleocenaography, **31**/6, 694–714.