

## Lithostratigraphy of Upper Cretaceous deposits of the southern Münsterland (Northwest Germany) – correlations of borehole lithostratigraphical, biostratigraphical and natural gamma radiation (GR) log data

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Along the southern margin of the Münsterland Cretaceous Basin (MCB, NW Germany) over a distance of 125 km, 22 cores and approximately 80 chipped drillings of Cenomanian–Campanian strata (Upper Cretaceous) have been logged in detail for lithology and natural gamma radiation (GR). Additionally, biostratigraphical investigations have been carried out for stratigraphical classification of the calcareous to siliciclastic deposits using foraminifera (DÖLLING et al., 2014; DÖLLING et al., *subm.*). In the westerly sandy-glaucopitic facies also nannofossils have been considered for selected cores (cf. PÜTTMANN et al., *subm.*). The strata were lithostratigraphically assigned to the Essen Greensand, Baddeckenstedt, Brochterbeck, Hesseltal, Büren, Duisburg, Oerlinghausen, Salder, Erwitte, Emscher, Recklinghausen, Haltern and Bottrop formations including the Wamel, Ascheloh, Hoppenstedt, Bochum Grünsand, Soest Grünsand, Mülheim Grünsand, Emscher Grünsand and Osterfeld members. In the west, the dominating lithofacies are glauconitic sandstones and glauconitic (marly-sandy) limestones as well as clayey-silty marls and spiculitic marly limestones (see BERENSMEIER et al., *subm.*). Here, non-separable strongly glauconitic sandy marls and marlstones (“greensands”) constitute the complete stratigraphy from the middle Turonian to the lower Coniacian. For this succession, the Duisburg Formation is introduced, including the Bochum Grünsand and Soest Grünsand members. Additionally, the formation includes an early Coniacian glauconitic succession that is introduced as the Mülheim Grünsand Member (DÖLLING et al., *subm.*). Eastward, calcareous marlstones, marly limestones and limestones (locally spiculitic) are predominant, partially interrupted by strongly glauconitic greensands (Bochum Grünsand and Soest Grünsand members of the Duisburg Fm).

The drillings have been successfully correlated using an integrated approach of microbiostratigraphy and GR log based stratigraphy. Correlations of 51 boreholes are shown in three cross-sections. Although a bed-by-bed correlation by GR log is not possible over long distances, significant curve progressions can be well correlated. Additionally, several sequence boundaries investigated by RICHARDT & WILMSEN (2012) and by Berensmeier et al. (*subm.*) could be correlated by GR logs. In the southwestern part of the MCB, several local depositional gaps concerning the Turonian strata (biostratigraphically proven) have been recorded within the drill cores, which cannot be explained by regressive eustatic events. They are induced by syndimentary tectonic movements (see DÖLLING et al., *subm.*).

BERENSMEIER, M. et al., *subm. Cret. Res.*

DÖLLING, B. et al., 2014. *German J. Geosci.*, **165/4**, 521–545.

DÖLLING, B. et al., *subm. Cret. Res.*

PÜTTMANN, T. et al., *subm. Cret. Res.*

RICHARDT, N. & WILMSEN, M., 2012. *Newsletters on Stratigraphy*, **45/1**, 1–24.