

Facies analysis and facies model of proximal deposits of the Cenomanian to Coniacian epicontinental sea in SW Münsterland Cretaceous Basin (NW Germany)

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Cenomanian–Coniacian sedimentary rocks have been drilled at the southwestern margin of the Münsterland Cretaceous Basin (MCB, NW Germany). These deposits correspond to the proximal facies zone of the epicontinental MCB that has been poorly known due to the lack of surface exposures. The strata have been related to four lithostratigraphical formations: Essen Grünsand Formation, Büren Formation, Duisburg Formation and Emscher Formation.

The integrated approach of litho-and biofacies analysis is based on detailed logging and careful description of the drill cores, supplemented by thin sections analysis of characteristic facies (BERENSMEIER et al., subm.). Three principal facies associations (FA) have been differentiated: transgression conglomerates (FA I), glauconitic sandstones (FA II) and spiculitic, silty-sandy marlstones (FA III). By identifying characteristic components and fabrics, nine subordinated facies types (FT) have been recognized (FT IA–B, FT II A–E, FT III A–B). The three principal FAs furnish evidence of the depositional environment associated with the inner shelf (FA I–II) and the proximal middle shelf (FA III). Five principal sediment sources are evident: (1) south-derived siliciclastic input (Rhenish Massif), (2) skeletal grains of calcareous macrobenthic organisms, (3) planktic carbonate (c-dinocysts, planktic foraminifera, calcareous nannofossils), (4) biogenic silica (mainly from siliceous sponges), and (5) autigenic glauconies. The latter source leads to deposition of in part very strongly glauconitic sediments, related to suitable chemical (e.g. diffusion of K⁺ and Fe²⁺) and physical conditions (e.g. permeability, porosity and tortuosity of sediment) of the depositional environment (MEUNIER & ALBANI, 2007). The integrated facies analysis results in the development of a depositional facies model and illustrates the strong impact of glaucony formation related to the sedimentary dynamics and warm-temperate to subtropical conditions at southern margin of the late Cretaceous epicontinental sea in NW Germany.

BERENSMEIER, M. et al., sub. Cretac. Res.

MEUNIER, A. & EL ALBANI, A., 2007. *Terra Nova*, **19**, 95–104.