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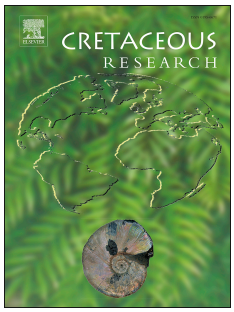

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Facies analysis of proximal Upper Cretaceous deposits from the southwestern Münsterland Cretaceous Basin (northwest Germany)

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A B S T R A C T

Three new Cenomanian–Coniacian cores from the Ruhrgebiet (northwestern Germany) provide the opportunity to study the otherwise poorly exposed proximal zone of the southwestern Münsterland Cretaceous Basin. The strata formed in an epicontinental shallow-marine environment and are assigned to four lithostratigraphical units, i.e., the Essen Grünsand Formation, Büren Formation, Duisburg Formation and Emscher Formation. The cores have been logged and described in detail with respect to litho- and biofacies, dated using an integrated approach and sampled for microfacies analysis. The litho- and biofacies analyses as well as the microscopic study of thin sections resulted in the differentiation of three principle facies associations (FA): transgression conglomerates (FA I), sandstones rich in glauconies (FA II) and spiculitic, silty-sandy marls (FA III). These can be associated with the depositional environment of an inner shelf (FA I–II) and a proximal middle shelf (FA III). The facies associations contain characteristic components and fabrics, resulting in the differentiation of nine facies types (FT). Five principal sediment sources are evident: (1) siliciclastics shed from the south (Rhenish Massif), (2) skeletal grains of calcareous