

**Drill-core analysis of Cenomanian–Coniacian sedimentary rocks deposited on the North German epicontinental shelf:  
An integrated stratigraphical, geophysical and geochemical approach**

**Berensmeier, M.<sup>1,\*</sup>, Dölling, B.<sup>2</sup>, Linnert, C.<sup>3</sup>, Frijia, G.<sup>4</sup>, Wilmsen, M.<sup>1</sup>**

- 1) *Senckenberg Naturhistorische Sammlungen Dresden, Museum für Mineralogie und Geologie, Dresden, Germany, \*E-mail: michaela.berensmeier@web.de*
- 2) *Geologischer Dienst NRW, Krefeld, Krefeld, Germany*
- 3) *Ruhr Universität Bochum, Bochum, Germany*
- 4) *Sultan Qaabos University, Muscat, Oman*

Three drill cores of Cenomanian–Coniacian sedimentary rocks from the southwestern margin of the Münsterland Cretaceous Basin (MCB, NW Germany) have been logged in great detail and stratigraphically interpreted. The drilling sites (Essen and Gelsenkirchen) were part of a shallow marine epicontinental environment, where glauconitic sands, glauconitic (marly–sandy) lime muds, argillaceous-silty marls and spiculitic marly lime muds have been deposited during Late Cretaceous times. The resultant sedimentary rocks were lithostratigraphically assigned to the four lithostratigraphic formations: Essen Grünsand Formation, Büren Formation, Duisburg Formation and Emscher Formation.

The integrated approach of bio- (mainly calcareous nannofossils), chemo- and sequence stratigraphy as well as geophysical borehole data (gamma radiation) resulted in the calibration and correlation of the studied strata. The nannofossil biozones UC1–3 and UC6–10 have been recognised including a potential gap in the latest Cenomanian (UC4, 5). Furthermore, eight 3<sup>rd</sup>-order sequence bounding unconformities (SB) are present within the records: SB Cenomanian (Ce) 1/2?, SB Ce 3–5 and SB Turonian (Tu) 1–4, dividing the strata into depositional sequences (DS): DS Ce 1–5, DS Ce–Tu 1 and DS Tu 2–5 (sequence terminology after Janetschke et al., 2015). These depositional sequences are stacked into two 2<sup>nd</sup>-order cycles separated by SB Tu 1 in the lower–middle Turonian boundary interval. The carbon-stable isotope curve of one drill core has been correlated to the Cretaceous standard section for northwestern Europe (Dover) and the regional standard of the southern MCB (Werl/Anröchte). The major positive isotope excursion of the oceanic anoxic event 2 (OAE 2) has been recognised, along with some other subordinate Cenomanian–Turonian isotope events. The integrated stratigraphic analysis provides a better understanding of depositional environments and sedimentary dynamics at the southern margin of the late Cretaceous epicontinental sea in northwest Germany. Furthermore, the improved stratigraphic calibration allows a detailed correlation to the offshore areas of the MCB and into other Cretaceous basins.

BERENSMEIER, M., 2016. 98 pp., MSc. thesis, University of Potsdam.  
JANETSCHKE, N., 2015. *Cretac. Res.*, **56**, 530–549.