Orbital calibration of the late Campanian carbon isotope event in the North Sea

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Introduction

Many studies have considerably improved the Time Scale of the Maastrichtian stage. However, the stratigraphy of the Campanian still needs improvement, particularly in the Boreal Realm where it is poorly exposed. This study presents a new high-resolution carbon isotope record for the Late Campanian of the North Sea (ADDA-3 borehole, Danish Central Graben, North Sea) which is then calibrated to cyclostratigraphy and calcareous nannofossil biostratigraphy.

Materials and Methods

▪ Nannofossil biostratigraphy on 35 samples
▪ Stable isotopes analysis on 273 samples (20 cm on avg.)
▪ 844 Handheld-VRF measurements of Fe
▪ Logging γ-ray data (460 data points)

Results

First occurrences of Revinhardtites levis, Prediscosphaera sloveni, at 2249.07 m and 2250.14 m respectively, and a single occurrence of Orastrum campanensis at 2203.73 m. Elphidium eximius is present throughout the record. These findings contradict the previous age interation (late Coniacian-Santonian) and indicate a late Campanian age with the presence of baiocenes UC15c and UC15d of Burnet (1998) (Fig. 2).

Discussion

▪ The Late Campanian Event (LCE) as defined by Jarvis et al. (2002) can be identified in the ADDA-3 record and correlates well to the English Chalk and to North Germany (Figs. 5-6).

References

These results have been published in Perdiou et al. (in press). Orbital calibration of the late Campanian carbon isotope event in the North Sea, J. Geol. Soc. London, doi:10.1144/jgs2015-120.