

## ***Interactive comment on “Freshwater discharge controlled deposition of Cenomanian-Turonian black shales on the NW European epicontinental shelf (Wunstorf, North Germany)” by N. A. G. M. van Helmond et al.***

**A. Å. S. Gale (Referee)**

andy.gale@port.ac.uk

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This is an important paper, as it uses a multidisciplinary approach in order to tease out the respective controls of temperature and hydrology through OAE2, in relation to the orbital signal. The results are convincing and interesting, and attribute much of the anoxia to variation in the hydrological cycle driven by precession, separate from a cooling event.

There are however unanswered questions surrounding the Plenus Cold Event, which

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could be usefully addressed. Firstly, the precise timing of this event is in some doubt; the original description was based on rather sound isotopic (heavy  $d_{18}\text{O}$  excursion) and faunal evidence, and showed the event extending from Bed 4-8 of the Plenus Marl, exactly coincident with the range of the boreal belemnite *Actinocamax*. However, Jarvis et al. 2012, fig. 8 used rather poor quality (probably diagenetically compromised) oxygen isotope data (Eastbourne, Grobern) to extend the event down to the lower part of the carbon excursion. I know that one of your authors is unhappy about this. I see that your sampling around this level is a bit sparse (Fig. 6), but it looks as if the 86 Tex cold event is entirely above the Plenusbank. Some discussion of this would be really useful. A few more samples would be even better, but beyond the scope of this paper. The precision of timing is quite critical to interpretation.

You should also refer to Zheng et al. 2013 EPSL [doi.org/10.1016/j.epsl.2013.05.053i](https://doi.org/10.1016/j.epsl.2013.05.053i), who described a negative neodymium isotope excursion also coincident with the Plenus Cold Event, and attribute this to the incursion of a northerly water mass. Discussion of this paper in the light of your results would be helpful and interesting.

Andy Gale

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