

## Response to editor's and reviewers' comments

[Responses in square brackets]

### Editor

Technical:

P5 L159. Space between roesnasensis. And Stable [Done]

P6 L173. By convention, please identify Equations on the right side of the page so that they can be easily found back. [Done for Equations 1 to 5]

P6 L177-179. Was non-carbonate acidified fraction (salts) determined? [No, statement added to that effect]

P6 L194. ICPMS; write out acronym first time used [Already there on L83, added LA to page L194]

P15 L496. Would be good to cite the first paper that discussed this issue [Sluijs et al, 2006? Added]

P17 L559. Supplemental material is available on the same page as the paper. No need to include this sentence here. [Done]

Up to authors:

P16 L 515 and further. Section might become even more complete with a piece on pre-CIE warming, despite that it is not observed here. Important because you claim that the onset is complete, although perhaps not sufficiently expanded to record it. [we don't have anything to say on this topic]

P16 L528-536. Dinocyst info at Site 1172: Apectodinium pre-CIE; Goniodomids, a tropical group only within the PETM and then return [Sentence incomplete? Also not keen to discuss dinocysts in this paper]

### Kozdon

Line 159: It is very challenging to find information about the foraminiferal species "S. roesnasensis". Therefore, the authors may consider to include a reference describing/characterizing this foraminiferal species. [Clarified on L134-135 that taxonomy is based on 3 publications, with this species described in Pearson et al., 2006. Would be inconsistent to treat this species differently from others]

line 152: it shall read praemundulus. [Done]

line 186 ArF laser [Done]

line 199-203: the two sentences are almost identical in their content. The authors may consider to merge them into a single sentence [Disagree. First sentence relates to visual screening. Second relates to ICPMS screening]

line 352: if this is a primary feature [Done]

line 415: I think it shall read 'whole-shell', not wholesale [No, wholesale is the word we chose meaning, extensive, comprehensive, but not necessarily whole shell]

line 421: it think it shall read 'studied', not 'studies'. The whole sentence is somehow redundant (diagenetic impact was already mentioned in the previous paragraph). [Studied is right but sentence is not redundant. Here we are discussing planktics not bulk carbonate]

line 479: here; P/E boundary, P-E boundary at other locations within the text [Done]

line 496: I am not sure if a manuscript 'under revision' is a suitable reference. 'under revision' does not guarantee that the manuscript will be published. [This MS is now accepted and available on-line]

spelling: be consistent in capitalization (Paleocene-Eocene thermal maximum or Paleocene-Eocene Thermal Maximum). [only inconsistency is in the references, which we have left in original form]

Supplementary Material:

Figure S1: Please mention the core depths where the samples showing different degrees of diagenesis were taken. [Done]

File "Hollis&\_Supplement.doc", caption S2: The scale on horizontal axes also changed for Ba/Ca. [Done]

## **Pearson**

L174-176 I am somewhat confused (not for the first time) about these quoted offsets in the paleotemp equation for  $d_{18}O_{sw}$ . The whole issue is rehearsed in my oxygen isotope review (Pearson, 2012, *Pal Soc Papers* vol 18) on pp. 7-8 and pp. 13-14. How is your value -1.23 composed? First, the ice free value of -1.0 ought to be attributed to Shackleton and Kennett (1975) if that is the calculation used and perhaps a nod given to other more recent calculations that differ quite a bit but don't agree. Then what is the remaining -0.23? If it is the PDB conversion it should be -0.27 and is an error. If it is the Zachos et al latitude equation then the text is wrong by saying 'also converted' and no explicit mention is made of the PDB conversion which must also be there. Please clarify and check the temps are correct.

[Thanks for the reference to the excellent review paper (Pearson 2012), which we had overlooked. The text is poorly worded but the calculations are correct. We use the ice volume correction of Zachos et al. (1994), which is -0.96 per mil (p. 365), thus  $-0.96 + -0.27 = -1.23$  per mil.]

L288 *D. multiradiatus* in italics [Done]

L354 Maybe the d18O is better described as accentuated by diagenesis rather than all an artefact?  
[Good point but we prefer “amplified” to accentuated, which means “to focus attention on, emphasise, highlight]