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Climate of the Past Discussions

# *Interactive comment on* "Revisiting carbonate chemistry controls on planktic foraminifera Mg/Ca: implications for sea surface temperature and hydrology shifts over the Paleocene–Eocene Thermal Maximum and Eocene–Oligocene Transition" *by* D. Evans et al.

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Nice story, would like to see this published. Some remarks:

3160: Text: Finally, Zachos et al. (2006) reconstruct an negative d18Osw shift at the coastal proximal Wilson Lake (US Gulf Coast), which may be related to increased freshwater runoff, given that the PETM is known to be associated with seasonally increased precipitation (Schmitz and Pujalte, 2007).



Remark: Wilson Lake (and Bass River) are in New Jersey, not on the US Gulf Coast. In view of the fact that we expect regional effects in hydrological regime, I am not sure how valid it is to compare with Schmitz and Pujalte without mentioning that their records are for the Pyrenees (Spain).

Text: If this was the only previously unaccounted for source of error, this would result in a reduction of the reconstructed SST shift from 4.5 to 3o_C (Fig. 6). Remark: For Wilson Lake, how does this compare to Tex86 estimate? I note that this is addressed for Bass River below, maybe mention here that this will be discussed later?

Text: This fully corrected record is characterised by d18Osw within $\pm$0.25‰ of zero, essentially implying little surface hydrology change at this site over the PETM. Remark: What is 'this site'? Are we still talking about 1209?

3162: Text: It is possible that the small Mg/Ca shift at DSDP Site 401 is a result of poor foraminifera preservation, however the raw ratios are not abnormal for this time interval, and the high clay content 5 and relatively shallow palaeo-water depth of 1.5–2 km (D'haenens et al., 2012) means that differential preservation across the PETM is potentially unlikely.

Remark: However, it is well possible that the PETM clay layer is in part missing at that site due to core-deformation by rotary drilling (see core photgraph), with only very little true clay material preserved. It is thus possible that proxies have not been measured on coeval material.

3164: Text: salinity effects Remark: I thought that these were indicated by dinocysts analysis for the New Jersey sites (Sluijs & Brinkhuis 2009, Biogeosciences) www.biogeosciences.net/6/1755/2009/ 'Apectodinium spp. became outnumbered by typical low salinity-tolerant dinocysts during phases of the PETM (Figs. 2, 3)'

Interactive comment on Clim. Past Discuss., 11, 3143, 2015.