**Climate
of the Past
Discussions**

Interactive comment on "Southern Ocean warming and hydrological change during the Paleocene–Eocene thermal maximum" *by* A. Sluijs et al.

## G. Dickens

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To clarify and expand on my previous comment: I think there is very strong evidence that TEX-86 does record SST in most locations. At issue is whether, at high latitudes, this is mean annual temperature or something closer to summer temperature. In response to Chris, it is important to stress that correspondence between TEX-86 and foraminifera based proxies does not address this issue; indeed, it only enhances my point. This is because foraminifera production and fluxes to the seafloor at high-latitudes are highly seasonal and largely during the summer (e.g., King and Howard, Paleoceanography, 2003). (This is not surprising. It is hard to make a living – and a
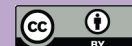
carbonate home - when there is nothing to eat in the darkness of winter!) I maintain my commentary: there is no good rationale for why biologically based proxies at high-latitudes should record mean annual temperature. Until good rationale and supporting data is provided (which I suspect is impossible), the a priori assumption should be that such proxies are recording summer temperatures. The authors should fix this. At the very least, they should state the problem, and suggest the alternative explanations. (Again, however, it is important to note that the temporal change in temperature may be independent of this problem; i.e., summer temperatures increased by T).

Interactive comment on Clim. Past Discuss., 6, 1701, 2010.