

## ***Interactive comment on* “Temperate Oligocene surface ocean conditions offshore Cape Adare, Ross Sea, Antarctica” by Frida S. Hoem et al.**

### **Anonymous Referee #2**

Received and published: 8 March 2021

The manuscript of Hoem et al, fills in an important gap in the understanding of the Oligocene Antarctic ice sheet. The results, interpreted as evidence for relatively warm SST's offshore Antarctica during the Oligocene, are consistent with the lack of ice-rafted debris from the Wilkes Land core. Overall, I find the manuscript compelling, and my comments are limited to minor revisions, with the exception of a comment about the age model. The manuscript is well structured and organized. My one criticism are some awkward turns of phrase, that could be remedied easily during the pre-publication phase.

Line 33: awkward wording, “from warm influence from. . .

Line 114-115: Sentence is a fragment. Also do not begin a sentence with a numerical symbol (e.g. 200. . .)

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Line 225: “central part of the site”, change to “upper Oligocene section of the core”

Line 324 and elsewhere: latin phrases like *a priori* should be italicized

Line 358-359: change to “the region could have been under the influence of. . .”

Line 428-429: awkward sentence structure, suggest rewording

Line 451: mid-Oligocene is not a recognized stratigraphic interval. Maybe say “latest early Oligocene to earliest late Oligocene”.

### Age model

There is considerable uncertainty in the age determinations for the early Oligocene. For example the age model datums indicate  $\sim 400$  m/Myr between the *ornata* and *labradori* datums.

Would the authors also please comment and justify the assignment of the normal magnetozone in core 40 to C12n? I also note the tie line between the normal magnetozone in core 40 and C12n is incorrectly placed (discussed below in the figures comments).

Overall, the discussion of the uncertainty in the age model is honest and realistic.

### Figures

#### Fig 2

I suggest plotting the age of the biostrat datums as well as indicating the depth.

The tie line between the reversal boundary at approx. 373 m and the base of C12n has been incorrectly placed. The line tied to the base of C12n cannot be tied to the top of a normal chron in the magstrat record.

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Interactive comment on Clim. Past Discuss., <https://doi.org/10.5194/cp-2020-139>, 2020.

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