

Interactive comment on “A Late Quaternary climate record based on long chain diol proxies from the Chilean margin” by Marijke W. de Bar et al.

Anonymous Referee #2

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de Bar et al. test the applicability of different paleoenvironmental proxies based on long chain diols (LDI, Diol Index, and NDI) by studying the ODP Site 1234 located within the Peru-Chile upwelling system and covering the last 150 kyrs. They compare LDI-derived SSTs with other temperature proxies (TEXH86, UK'37) and with the Diol index and NDI with other phytoplankton production proxies (accumulation rates of TOC and lipid biomarkers). Their results suggest that the Diol Index should not be considered as an upwelling proxy per se, and that the NDI might not be suitable as a more general paleonutrient proxy. I find this is an interesting study. I particularly appreciated the multi-proxy comparison for SST and productivity reconstructions. The overall manuscript is well structured and well written, even though some parts would need

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clarification. The data are robust and in general the conclusions are well supported by the data. I however think that some points in the discussion could be clarified/more detailed, as it is sometimes difficult to understand. Please find my comments below.

P. 2, l. 12: “mean annual sea surface temperature” instead of “annual mean sea surface temperature”.

P. 4, l. 16: throughout the text you use either “ka” or “kyr”. I would be consistent and choose one or another.

P. 9, l. 10: delete “average” as you talk about ranges.

P. 9, l. 13: it would be good to indicate the Terminations on the figures.

P. 10, l. 8-9: the alkenone AR does not show this decrease around the boundary of MIS 4 and 5.

P. 12, l. 16-19: this sentence is not very clear and in contradiction. Please clarify.

P. 12, l. 19-32: this part is not really clear and relatively difficult to follow. Please rephrase.

P. 13, l. 1: “individual lipid biomarkers” instead of “individual biomarker lipids”.

P. 13, l. 1-12: How do you explain the peak of MARTOC in MIS 4 which does not correspond to a peak in loliolide concentration/Chaetoceros abundance? There is also no peak for the other lipid biomarkers, except for the 1,13 and 1,15-diols. Who are the potential producers of the 1,13 and 1,15-diols?

P. 15, l. 12-15: this sounds surprising as you state in P. 4, l. 2 that ODP 1234 “lies in the vicinity of two large Andean river systems”. Has the influence of terrestrial input on diols been observed for recent times in this site?

P. 15, l. 25-30: you could provide more details on the comparison with the other sites. Even though the general trend agrees well, there are clear differences with sites at

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proximity of ODP 1234 (GIK 17748-2; GeoB 3302-1).

P. 28, l. 8: a bracket is missing.

Figures 3, 4, 6, A1: the tick marks on the axes (especially the axis with the Age) are missing. Please add them so the reader can associate more easily the values with the data points.

Interactive comment on Clim. Past Discuss., <https://doi.org/10.5194/cp-2018-88>, 2018.