

Interactive comment on “Highly branched isoprenoids for Southern Ocean semi-quantitative sea ice reconstructions: a pilot study from the Western Antarctic Peninsula” by Maria-Elena Vorrath et al.

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Dear reviewers, thank you very much for the very helpful comments. We revised our manuscript under consideration of your comments and uploaded the final, revised version of the manuscript (see supplements). (response to the first reviewers comments can be found in AC1).

Page 3, line 3: Initially,.. - We corrected this.

Page 5, 3.1. It would have been useful to date the surface sediment with ^{210}Pb , to

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constrain the time period the surface sediments represent. ^{210}Pb is more suited for dating surface sediments than ^{14}C . I am not asking the authors to conduct this now, but it is something to consider for future work. - Unfortunately, we did not have the resources for ^{210}Pb dating but our colleagues from Chile confirmed recent ages for a single sample (PS97/071-2) in the Bransfield Strait (personal communication).

Page 6, 3.3.: Insufficient information is given for diatom methodology. In addition to references given, at least a brief summary of the sample preparation should be provided, whereas the transfer function technique used should be presented with much greater detail! - We revised the diatom methodology part.

Page7, line 1: The diatom species *Fragilariopsis*... - We corrected this.

Page 9, line 1 – Rontani et al. (2019) Autoxidation of the sea ice biomarker proxy IPSO25 in the near-surface oxic layers of Arctic and Antarctic sediments. - We included this publication.

Page 9, line 13...seasonally ice-free + line 17:... ice-covered..., + line 27: phytoplankton... - We corrected this.

Page 9, line 29: remove comma after “both” - We corrected this.

Page 10, line 4: add comma after 2015) - We corrected this.

Page 12, lines 7-9: The likelihood of winnowing in Drake Passage should be brought up also here in the discussion. - We added this.

Page 13, lines 25-29: Although an attractive idea – and circumventing the time window issue when calibrating against satellite data - calibration of the PIPSO25 index against diatom data faces issues around the reliability and robustness of diatom-based quantitative inferences, which should certainly be mentioned! - We removed this.

Please also note the supplement to this comment:

<https://www.biogeosciences-discuss.net/bg-2018-518/bg-2018-518-AC2->

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