

Interactive comment on “Do pelagic grazers benefit from sea ice? Insights from the Antarctic sea ice proxy IPSO₂₅” by Katrin Schmidt et al.

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We would like to thank the Anonymous Referee #2 for her/his positive comments on our manuscript ‘Do pelagic grazers benefit from sea ice? Insights from the Antarctic sea ice proxy IPSO₂₅’. The reviewer acknowledges the broad scientific interest of our study, which aims to understand the impact that changing sea ice conditions in the Arctic and Antarctic may have on the marine ecosystem (particularly on pelagic grazers). The reviewer also gives us credit for linking the relative importance of sea ice diatoms in the krill diet to their performance, which she/he sees as a ‘very promising’ step forward. However, the reviewer recommends ‘Major revision’ as she/he feels that the manuscript is too wordy, needs a better focus on the most important results and a ‘trim down’ of the number of figures to half.

Reply: We agree with the reviewer that some of our figures and their description could be moved to ‘Supplementary information’ – e.g. Fig. 7 and Fig. 11, as the reviewer suggested, and also Fig. 1 not mentioned by the reviewer. This would shorten the ‘Result’ part of the manuscript substantially. However, we are somewhat reluctant to remove Fig. 6 and Fig. 8 from the main part of the manuscript. Fig. 6 is related to our evaluation of the HBI approach, looking at differences in the physical environment at stations where the two markers occurred. Even though the HBI approach has previously been used to trace the role of ice diatoms within Southern Ocean food webs (Goutte et al. 2013, 2014a, 2014b), these publications have not received the number of citations they deserve. Therefore, we think that presenting evidence for the overall reliability of this approach (including a fair discussion of its strength and weaknesses) would help the acceptance and further application of this valuable method. Fig. 8 illustrates the link between winter sea ice cover, vertical salinity gradient after ice melt and stratification of the upper water column in spring. While there is focus on the role of sea ice as a platform for life cycle activities and hunting, and on ice biota as an important food source, much less attention seems to be paid to the role of melting sea ice in ‘conditioning’ the water column for spring and summer blooms. Our Fig. 8 draws attention to this aspect of seasonal sea ice.

A count of display items in 20 papers recently published in Biogeosciences, shows a range of 6 to 14 items, with a mean of 9-10. We therefore think reducing our number of display items from 13 to 10 would be sufficient. Any further reduction would in our opinion compromise the demonstration of the multiple aspects of sea ice and the value of this manuscript to a broad readership.

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Discussion paper

