

## Response to Caterina Bergami

*We would like to take this opportunity to thank Caterina Bergami for her helpful comments on our manuscript. Below we provide a detailed response to her comments (in italics), indicating the changes that have been made. Line numbers refer to those of the revised manuscript that includes all tracked changes.*

*With kind regards,*

*Mattia Greco (on the behalf of all co-authors)*

The paper provides interesting paired planktonic foraminifera and environmental data from an important oceanographic region both from new and yet published data in order to better understand the habitat depth preferences of *N. pachyderma*. This type of studies can help to better understand in which way environmental parameters control the habitat depth and behaviour of this important planktonic calcifier and has an impact on future palaeoecological and palaeoceanographic studies in this area and in other high latitude environments. The authors also compare their evidence to the outcome of the PLAFOM2.0 model, with limited results. The manuscript is well structured and the data well presented and relevant for future studies on the same issues. The amount of figures and tables is adequate to illustrate the results discussed in this paper. The paper deserves to be published in Biogeoscience after some minor revisions that I listed below and in the attached pdf file.

I also suggest to the author a further check of the English language.

Technical points:

- please check the use of the acronyms along the text. Once you define them the first time, please use the same along the text (check in particular DVM, SST and SSS).

*We will make corrections in the text to ensure the correct use of the acronyms once introduced in the text.*

- choose between the term “habitat depth” and “depth habitat (DH)” as defined in the text and use it accordingly. - please check along the text the use of the term “compilation”. I would prefer dataset.

*Reviewer 1 and Robert Spielhagen also pointed out that we used these two terms interchangeably in the manuscript. We will correct and homogenize the terminology adopting only the term “depth habitat”.*

*Since our analyses are based on an array of data pulled from different sources (PANGAEA, NSIDC, and digitization of existing data from literature), we believe that the term ‘compilation’ better describes the nature of our dataset.*

- Material and methods sections (from page 5/line 16 to page 6/line 11: In this part of the text some results are mixed with M&M. Please, check and move the results to the following section.

*This is a valid point. However, we consider that part of the methods section more as an evaluation of the methods employed in the analyses and not results. We therefore prefer to keep it in the methods section.*

- Page 4/line 3-4: “We retained all other profiles, despite the differences in the mesh size, counted size fraction and vertical resolution”. This phrase is not clear, please re-phrase. What do you mean?

*We refer to the differences in sampling design (mesh size of the nets and sampled depth intervals) and in size fraction analysed. We re-wrote the sentence to increase the clarity:*

*'We retained all other profiles, despite the differences in the sampling design (mesh size and vertical resolution of the sampled depth intervals,) and in the counted size fraction and vertical resolution.'*

- page 9/line 11-12: "sedimentary and plankton specimens". Do you mean fossils and living specimens?

*We use the terms 'sedimentary' and 'plankton' to refer to the source from where the specimens analysed in the cited studies were collected (sediment/cores, water column/sediment traps-plankton hauls). We feel that the distinction suggested by the reviewer is incorrect for two reasons, i) strictly speaking specimens from recent sediments are not fossil or fossilised and ii) dead specimens can also be collected from the water column. However, the distinction is not entirely necessary here and we will delete it.*