

Meilland et al. present an interesting study on the population dynamics of modern planktic foraminifera in the Western Barents Sea. As planktic foraminifera are a sensitive indicator of environmental changes in the Arctic, a region particularly affected by global temperature changes, the authors address a relevant scientific question within the scope of BG. The authors use a novel multiproxy approach combining the use of plankton net, core-top, molecular biology, environmental parameters and phytoplankton characterization. The manuscript has certainly been improved in response to the previous referees' comments. However, in my opinion, it still needs some minor revisions. I further suggest that the manuscript is read and corrected by an English native speaker or a professional author service due to numerous linguistic issues, only some of which I have listed below. In some places, they make following the manuscript difficult. I am looking forward for the authors' response and further discussion.

General comments:

Your vertical plankton hauls sampled only the uppermost 100 m, while for example, *N. pachyderma* can live as deep as 280 m (Greco et al., 2019). This might perhaps partly explain the discrepancy between living and fossil assemblages and should be discussed in the manuscript.

The authors interchangeably use terms such as “fossil assemblages”, “core-top assemblages” or “assemblages in surficial sediments”. It is not clear whether all these terms mean the same or not. Please be more consistent in using these terms.

Another issue is that some information given in Material and Methods are repeated in the Results (see specific comments below but please also check the entire manuscript for repetitions).

Specific/technical comments:

Keywords: I suggest adding „planktonic foraminifera” as a keyword

1. Introduction

The introduction is somewhat mixed-up. Paleooceanographic information is mixed with modern assemblage studies, habitat depth mixed with seasonal variability, foraminifera with other organisms... In some places, too much details is given (e.g., 104 tow hauls in Greco et al. 2019). Suddenly the Southern Indian Ocean pops out... Please consider rewriting to better structure this section.

40: Add a comma after “As a response”

45-46: Either “Such phenomenon (...) is” or “Such phenomena (...) are”

48-51: I suggest deleting the sentence “Eynaud (2011) noticed...” as irrelevant to the study of modern assemblages.

54: Change “observed PF by the means of plankton tows,” to “analyzed PF collected with plankton tows”. Please note that Pados and Spielhagen (2014) analyzed both forams living in Polar and Atlantic waters and used both plankton tows and core top samples.

73: Change “planktonic foraminifera” to PF (be consistent in using the abbreviations that you introduced)

79: Change "planktonic foraminifera from a same species" to "PF of the same species"

2. Oceanographic setting

84: Change "Spitsbergen Banken and shallow Bjørnøya; Storfjordrenna and Bjørnøyrenna glacial troughs" to "Storfjordrenna and Bjørnøyrenna glacial troughs separated by shallow Spitsbergen Banken". Please verify if it's Spitsbergen Banken or Spitsbergenbanken.

87: Nothing is written about the currents carrying Arctic Water to the study area.

From 88 onwards: To my understanding, the Oceanographic section should only contain the state-of-the-art on the subject. If the authors performed some oceanographic measurements, please move the information to "Material and Methods" and "Results" sections.

98: "above described" => "described above"

3. Material and Methods

112 and elsewhere: You use either "Spitsbergen", "Spitzbergen" or "Spitzberg". Please unify. To my knowledge, "Spitsbergen" is the English spelling, while "Spitzbergen" is German and "Spitzberg" French.

118: Change "collection" to e.g., "sampling strategy"

124: "All living PF" – if they were preserved with ethanol, they were not living anymore. Change to, e.g., "All foraminiferal tests containing coloured cytoplasm ("living")...". Where the samples stained with Rose Bengal? If so, this should be mentioned. Otherwise, how were they coloured?

130: "separately numbered" => "counted separately"

137: "Individual" => "The individuals"

146: Referee#2 suggested using "core-top" instead of "subfossil". I think it also concerns the term "fossil".

147: INSU¹ – please check if the journal accepts footnotes.

149: Delete "the more horizontal" – something is horizontal or not, it can't be more or less horizontal.

149-150: Change "The core-top sediment (0- 0.5 cm slice)" to "The uppermost 0.5 cm of the core"

152-156: Please rewrite the two sentences so that they are more related to each other.

4. Results

162: CTD, not CDT! "5 values" – what values? Please specify.

163-166: The paragraph gives absolutely no information about the results and most (if not all) the info were already given in the methods.

169: The highest PF concentrations were found at the edge of the NwCW range (station 7) so I would refrain from saying that the highest concentrations were found in NwCW.

173: It should be specified which species are considered polar and which subpolar by the authors.

188: “analyse” => “analysis” or “analyses”

194-195: The information in brackets was already given in the methods and is unnecessary here.

195: “successfully” – I assume you wouldn’t mention them at all in the manuscript if they were unsuccessful.

204: Is it exactly equal (down to 0.00000001 μm) or close enough to say that the size distribution of the picked tests is symmetric?

206: μm => μg

207: μg => $\mu\text{g}/\mu\text{m}$ (or $\mu\text{g}\cdot\mu\text{m}^{-1}$)

209: “slightly (but not significantly)” – this is not very specific, please rephrase by, e.g., giving some numbers

212-215: This was already written in the methods.

217: Please add station numbers to Figure 7.

218: I would rather write that *N. pachyderma* was the most abundant species. Dominance suggests that it reached >50% which is the case only in one station.

5. Discussion

234-236: I don’t understand the sentence. Please rephrase.

238: In my opinion, low abundances at the two ends of the transect do not suggest patchiness. Low abundances in the middle of the transect would suggest it.

274: Shouldn’t it be station 7 instead of 8?

275: The location of the Polar Front should be marked in Figure 1.

6. Conclusions

363-365: Please specify that the percentages concern the living (plankton haul) population.

375: “is” => “in”