

Biogeosciences Discuss., author comment AC2
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Reply on RC1

Thore Friesenhagen

Author comment on "Test-Size Evolution of the planktonic foraminifer *Globorotalia menardii* in the Eastern Tropical Atlantic since the Late Miocene" by Thore Friesenhagen, *Biogeosciences Discuss.*, <https://doi.org/10.5194/bg-2021-67-AC2>, 2021

Comment: "Review of *Friesenhagen Test-Size Evolution of the planktonic Foraminifera *Globorotalia menardii* in the Eastern Tropical Atlantic since the Late Miocene*, submitted to *Biogeosciences*. I believe this manuscript has the potential to contribute to the understanding of the test-size evolution of the *menardii* lineage. It provides a new, supported hypothesis to the previously studied giant *menardii* form observed in other locations, that can also be further tested. The data is produced using both reputable and novel methods, allowing for this hypothesis to be fully evaluated. The author is clearly well read on previous studies and results regarding the topic, and the manuscript is well written and concise. However, corrections need to be made to the manuscript; some sentences can be rewritten to make it easier to read and a final proof reading is needed. I have made some suggestions as follows:"

Response: I thank the anonymous reviewer for the comments and suggestions to improve the manuscript. A detailed answer to each of the suggestions is given below.

Comment: "L19 – remove comma after (ETAO)"

Response: This suggestion is adopted.

Comment: "L35 – remove "as" before "for example" and add comma after"

Response: This suggestion is adopted.

Comment: "L37-39 – "One interesting case in the long-term test-size evolution of PF was observed by Knappertsbusch (2007; 2016), when he investigated the test-size evolution of the *G. menardii*–*G. limbata*–*G. multicamerata* lineage since the late Miocene." – is hard to read. Suggestion: "**Knappertsbusch (2007; 2016) observed interesting long-term testsize evolution of PF in studies of the *G. menardii*–*G. limbata*–*G. multicamerata* lineage from the late Miocene.**"

Response: The reviewer's suggestion will be used to improve the texts' flow.

Comment: "L48 – change watermasses to water masses (check throughout manuscript); separate to separates"

Response: This suggestion is adopted.

Comment: "L51 – The NHG"

Response: This suggestion is adopted.

Comment: "L58 – after the onset"

Response: This suggestion is adopted.

Comment: "L59 – ommitt comma after investigates"

Response: This suggestion is adopted.

Comment: "L63 – reword: it seeks new insight into the underlying... ; In this context, [add comma]"

Response: This suggestion is adopted.

Comment: "L64 – allow us to"

Response: Probably the reviewer refers to line 68. To follow to the used style of writing, I would like to avoid "us".

Comment: "L65 – should be: Here, the (change . to ,)"

Response: This suggestion is adopted.

Comment: "Figure 1.: check latitude numbers: looks like O not zero on some of the numbers"

Response: Indeed, the numbers are not coherent and will be corrected.

Comment: "L75: change "waters, the known habitat for"..."

Response: This suggestion is adopted.

Comment: "L77-78 – Reword: The core location is outside, or within the peripheral, of the NW African upwelling system (Fig. 1) and therefore, only marginally affected for the investigated time interval of the last 8 Ma (Weaver and Raymo, 1989). Thus, there is a relatively long-term water-column stability on the geological timescale at ODP 667."

Response: The suggestion is adopted.

Comment: "**Suggestion for section 2.2.:** omit table 1 – fig. 2 shows the same information and is easier to read. Write how many samples, and what resolution at beginning of section."

Response: I disagree with a removal of table 1. It contains crucial, basic information for scientists who want to reproduce this study. If the reviewer insists on this point or thinks that it would improve the readers flow, I would offer to move the table into the supplementary materials.

Comment: "L109 & 111 – weighted should be weighed"

Response: This suggestion is adopted.

Comment: "L115 – P.A.S.I srl should be written in full for first use."

Response: "P.A.S.I." is the abbreviation for the Italian company "Prodotti e Apparecchiature Scienze e Industria". It will be added to the manuscript.

Comment: "L130 – State developer for AMOR software"

Response: Information on the AMOR hardware system and software version 3.28 are given in Knappertsbusch et al. (2009), as was cited in L132. For clarification, I will add this citation in L130 as well. In addition, the program "AutoIt" (Mary, 2013. Dissertation) was used for an automated processing of the imaging. It will be added to the text.

Comment: "L163-165 – Sentence looks incomplete/editing error – double check bold section:

"Knappertsbusch (2016) refers to the disappearance of *G. limbata* as a possible pseudo extinction because of the occurrence of singular specimens of menardiforms with seven chambers in the last whorl after **2.39 Ma. with seven chambers are accounted as G.**

***limbata*, a form which became extinct during the early Pleistocene.”**

Response: Indeed, a sentence was accidentally split. It will be corrected.

Comment: “I think it would also be useful to mention the difference between *limbata* and *menardii* in the first paragraph, alongside the *multicamerata* differences.”

Response: The correction mentioned above will solve this suggestion.

Comment: “L175 – change to “gridded files”: obtained by plotting...”

Response: The reviewer’s suggestion will be used to improve the texts’ flow.

Comment: “L208 – change to: “This is the simplest analysis for...”

Response: This suggestion is adopted.

Comment: “L210 – omit: “as will be demonstrated in the following section.”

Response: This suggestion is adopted.

Comment: “L224 – On average,”

Response: This suggestion is adopted.

Comment: “L285 – this is the first time *G. menardii cultrata* is mentioned and it is without context. Why is this important to note?”

Response: The plotted line should help the reader to compare CFDs. The use of this line, suggested by Knappertsbusch (2007) to distinguish the more delicate *G. menardii cultrata* from the thicker keeled and obviously bulgier *G. menardii menardii*, may also help to visually detect long-term shifts in the δX - δY morphospace.

Comment: “L284 – this information may be better in the figure caption”

Response: In my opinion, placing this information in the main text improves the likelihood to draw the reader’s attention to this interactive figure. If the reviewer still recommends to move this sentence into the figure’s caption, I will adopt his suggestion.

Comment: “L323 – change to: “the giant sinistral specimens ($\partial Y = >1000 \mu m$) appeared

0.5 Myr earlier, at 2.58 Ma, in the eastern tropical Pacific Ocean Site 503 than in the Atlantic

Ocean"

Response: This suggestion is adopted.

Comment: "L326 – change striking to substantial"

Response: This suggestion is adopted.

Comment: "L344 – omit rather"

Response: This suggestion is adopted.

Comment: "L357 – possible correction: South Atlantic rings, they may have drifted closer to the coast of SW Africa."

Response: This suggestion is adopted.

Comment: "L367 – change to: which possibly resulted in unfavourable"

Response: This suggestion is adopted.

Comment: "L390 – within short time periods."

Response: This suggestion is adopted.

Comment: "L391 – omit classic case of fast"

Response: This suggestion is adopted.

Comment: "L394 – italicise plesio"

Response: This suggestion is adopted.

Comment: "I think is it safe to remove examples of other microfossils as it is irrelevant and you have enough examples with foraminifera"

Response: Mentioning this additional reference gives another example for a rapid

evolution within 50 Kyr and shows that rapid evolution is also suggested for other planktonic organisms. If the reviewer still recommends the remove of this example, I will follow this suggestion.

Comment: "L403 – change only occur between 2.3 Ma ...; omit "and not earlier or later?"

Response: This suggestion is adopted.

Comment: "L414 – correct reference format Author (date)"

Response: The reference format will be corrected.

Comment: "L816 – not sure if (ä) is meant to be there"

Response: This mistake will be corrected.