

Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on **essd-2021-337**

Ralf Schiebel (Referee)

Referee comment on "World Atlas of late Quaternary Foraminiferal Oxygen and Carbon Isotope Ratios" by Stefan Mulitza et al., Earth Syst. Sci. Data Discuss.,
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The foraminifer isotope atlas of Stefan Mulitza and coauthors is much appreciated as a contribution to paleoceanography and paleoclimate, and should be published as soon as possible. In general, the manuscript is well written, and I would suggest only minor changes. I provide an annotated pdf file, which may allow for quick finding of some typos, and explains some suggestions.

To account for the ecology of planktic and benthic foraminifers, I would suggest to define the depths habitats in a bit more explicit way. The terms "shallow" and "deep" dwelling may be misleading. I would suggest to use the term "surface mixed layer" and "sub-thermocline" dwelling. For example, *Neogloboquadrina pachyderma* may live as deep as 200 m water depth, but which is still in the surface mixed layer of the deep mixed polar ocean. In contrast, *Globorotalia truncatulinoides* may usually dwell at 200 m water depth in the tropical to temperate ocean, but which is well below the thermocline, at sub-surface water depth. When specifying the habitats more clearly, the isotope ranges of the different taxa may be better explained. This would still not account for the largely latitudinal and seasonal distribution of many taxa.

The benthic foraminifer genera *Cibicides* and *Cibicidoides* are not generally epi-faunal. Only two species, *Cibicidoides wuellerstorfi* and *C. lobatulus* are epifaunal, and most of the many species of the genus are shallow infaunal. Some are even deep infaunal. Please refer to the books of Murray (e.g., 2008) and Schiebel and Hemleben (2017), in which the ecology of benthic and planktic foraminifers are explained, respectively.

The term Foraminifera is a systematic term (not foraminifers, foraminiferal), which starts in upper case. By convention, only genus and species names are given in italic style; any addition to the name, such as spp. and sinistral, is not given in italic style, but in normal style.

The genus name of the species *sacculifer* has changed from *Globigerinoides* to *Trilobatus* some time ago, and which may be mentioned at some place in the text, where *T. sacculifer* is discussed (e.g., on page 5, line 10).

Creseis (spp. and *acicula*) is a pteropod, i.e., a pelagic snail, and not a foraminifer. This may be discussed in the text. However, given the very different nature (aragonite, not calcite) and ecology (fast swimmer over great water depths, not passive plankton), it may be easier not to present the pteropod in the atlas on Foraminifera.

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2021-337/essd-2021-337-RC1-supplement.pdf>