



EGUsphere, referee comment RC2
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Comment on egusphere-2022-711

Anonymous Referee #2

Referee comment on "Calcification response of planktic foraminifera to environmental change in the western Mediterranean Sea during the industrial era" by Thibault M. Bédard et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-711-RC2>, 2022

The manuscript entitled "Calcification response of planktic foraminifera to environmental change in the Western Mediterranean Sea during the industrial era" by Bédard and colleagues represents an interesting contribution of planktonic foraminifera calcification variability as a tool to understand changes in the future carbon cycle with feedbacks on climate.

The text is clear. I am not a mother tongue but it seems to me that the language used is appropriate.

I also believe that the theme of this paper is in line with the journal "Biogeosciences", analyzing a very contemporary issue and presenting a possible interpretation through the analysis of calcareous plankton.

I found the discussions interesting and detailed, the methods are appropriate but I believe it is necessary to make some clarifications especially regarding the ecology of the species examined, for all these reasons I recommend the publication of the paper after **minor revisions** on "Biogeosciences".

Specific comments:

Abstract:

I found it to be a bit too methodological, too much information to move into the materials and methods (i.e. As the traditionally used sieve fractions method is considered unreliable because of the effect of morphometric parameters on the foraminifera weight, we measured area and diameter to constrain the effect of these parameters).

Paragraph 3:

It is missing (and is instead necessary) a paragraph that deals with the **ecology** of the species that have been chosen for this type of analysis. Above all because calcification is a highly specific character depending on the ecology and living depth so I think it is necessary to analyse the ecology to understand if it can interfere in some way with the analyses proposed in this work.

Here is an example of what I mean for *G. truncatulinoides* which I believe is important to take into consideration:

"...Reproduction of the species (*G. truncatulinoides*) is believed to occur during the winter at depth, where vertical mixing of the water column is required for the migration of juveniles to surface waters (Lohmann and Schweitzer., 1990). *G. truncatulinoides* continues its life cycle by migrating down through the water column, adding an additional calcite layer (secondary crust) (Bé and Lott, 1964) at ~350m depth when reaching cooler waters below the thermocline (Orr, 1967; Lohmann and Schweitzer, 1990; Wilke et al., 2009). Le Grand (2004) suggests that 30% of the test calcification of *G. truncatulinoides* occurs in surface layers and 70% in the thermocline."

I believe that this should be inserted and contextualized in the paper because this species (*G. truncatulinoides*) is the one that presents more marked variations compared to the other two in yours results.

Technical corrections:

Line 133: It is not necessary to repeat the name of the genus, just bring it back pointed (*G. bulloides*). This inaccuracy is present many times in the text, pay attention on this.

Line 135: the same for *N. pachyderma*.

Line 187: I don't know if it is a problem with the pdf that was generated by the automatic system but the references must be formatted like the rest of the text, now here have different font and size.

Line 207: the same of line 187.

Table 1: Format the last "*bulloides*".

Lines 232, 233: do not repeat the genus.

Line 286: Format as line 187.

Line 320: do not repeat the genus.

Line 430: Seasonal and not Seasonnal.

Line 757: Format as line 187.

Lines 822, 823: do not repeat the genus.

References: In many cases, the species name is not given in italics in the references. I.e.
Lines: 875, 917, 1009, 1021, 1061, 1084.