

Thanks a lot to Dr. Saavedra for the very positive and helpful feedback. This reviewer has suggested moving some supplementary materials to the main text, and we agree with the suggestion in the case of two figures, where the information and analysis outcomes both support the main messages of the study and could be broadly useful to other phytoplankton ecology in the region. That change will not lead to an increase in the text length, and we consider will substantially improve the manuscript.

We intersperse our responses (bold italic for explanation, bold for and in quote marks for proposed changes) with the enumerated comments of the reviewer.

Specific comments / minor suggestions

1.- Line 76: Specify where was this observed.

It relates to Smith et al. 2012... We propose to define that it was observed in the Bay of Biscay: “Likewise, Smith et al. (2012) observed in the Bay of Biscay (North Atlantic) ...”

2.- Line 181: I find interesting the information regarding the malformed coccospheres, although they are just marginally mentioned in the introduction and here. Maybe the supplementary material Figure S2 (i.e. the plate) could be moved to the main text and the authors could mention a bit more about malformations in the results section.

This is something interesting that we have struggled with. We prefer to keep this in the supplementary information because it is a poorly defined “group” so much more difficult to interpret or speculate about. As malformed coccoliths or coccospheres may be the result of a range of processes from the physiological to even post-mortem (in contrast with other morphotypes which are thought to be principally genetically determined), it creates the complication that it cannot be included in a simple way in the statistical analyses we later do (such as the OMI analysis) and could detract from the paper’s main focus. For example, if we were to try to put examples of all the malformation types, the Fig. 2 might end up with as many or more malformed “types” than the morphotypes we could classify, even though they actually represent a small fraction of the total. Thus it would provide a lot more “information” that would not actually be clearly interpretable with respect to the main questions.

3.- Lines 202-205. I am not a diatom specialist, but I am aware that in the Southern Ocean, many diatoms are colonial and chain-forming, and thus it is difficult to enumerate at a quick glance. Can the authors specify if the diatoms were counted (or semiquantitatively estimated) as frustules or valves? can they specify if the diatoms were broken or intact? I think that only frustules (= cells) should be compared to coccospheres. Maybe the authors can elaborate more on this point.

This is an important question we can clarify. The work in 2015 was made from counting the valves. In 2017, it was only at qualitative and semi-quantitative manner from SEM, where proper abundance counts were not possible with the resources we had for costly SEM time. We will replace “cells” with “valves” to be clear.

4.- Lines 374-375: I am aware that supplementary material Figure S10 contains a lot of information. It is up to the authors, but I consider that it could be also moved to section 3.3 of the manuscript.

We are glad to know this information is found to be valuable (they represent quite a lot of work both in counting and in the analyses). We will move S11 and S10 to the main manuscript. It will not require a change to the text other than renumbering the figures.

5.- The following point has already been mentioned by #Reviewer 2. The authors already uploaded all the scanning electron micrograph image datasets in <https://doi.org/10.5281/zenodo.4292020> and they state that all data resulting from this study are available from the corresponding author upon request, which is great for the scientific community. However, I think it would be worthy to also upload the rest of the valuable data shown in some of the tables from the supplementary material in an Open Access library/repository such as PANGAEA.

We will put the data in PANGAEA, as suggested also by the other reviewers. We will put pictures used to measure carbon biomass up, as well as SEM. All the rest of the data is in the supplementary tables, but they can be included in the same dataset for convenience.

Technical corrections

6.- Line 69: I recommend using either CO_3^{2-} or $[\text{CO}_3^{2-}]$, just for consistency (e.g., see lines 40, 449, Table 2...)

In line 40, we have to use $[\text{CO}_3^{2-}]$ because it is in a chemical formula. However, from then on, to make reading simpler, we prefer to use without brackets, and so will correct $[\text{Ca}^{2+}]$ to Ca^{2+} on line 448 and $[\text{CO}_3^{2-}]$ to CO_3^{2-} on line 449, and on lines 223-224 similarly will correct.

7.- Line 100: “and” instead of “but”.

We will change to “however”... because the point is that blooms have not been reported, however, that might be just because that there haven't been observations of coccolithophores. Nevertheless, in our response to RC2 we offer figures of monthly PIC climatologies, showing that blooms of the intensity seen in the North Sea at least do not appear to be regular phenomenon.

8.- Line 111: “and” instead “Focusing on the cosmopolitan *E. huxleyi*”

Suggestion accepted.

9.- Line 233: Double check if you need “in situ” here.

Suggestion to remove “in situ” accepted.

10.- Line 235: “We also included CO_2 , which was moderately correlated with pH (Spearman correlation = 0.8)...”

Ok... We will eliminate “To these four,”

11.- Line 244: Are diatom abundances cells/L? Can the authors specify?

We will add “(in cells L⁻¹)”

12.- Lines 277-278: Either: “the potential biases from comparing data from both SEM and Utermöhl counts were minimized” or “the potential bias from comparing data from both SEM and Utermöhl counts was minimized”.

We accept the first suggestion and keep plural... Thanks!

13.- Line 308: “were corrosive to calcite” sounds rather dramatic. I would use: “where undersaturated occurred”.

We accept and propose to change to “where conditions were undersaturated with respect to calcite”

14.- Line 309: Here and elsewhere in the text. Because it is the beginning of a sentence the whole name (i.e. “Emiliana huxleyi”) should be written instead of the abbreviation (“E. huxleyi”)

We will accept the correction.

15.- Line 344: Add “taxa” or “species” after coccolithophore.

We will accept the correction.

16.- Line 475: “Niche analysis of E. huxleyi morphotypes...”

Ok... we will add “of”

17.- Line 564: E. huxleyi (in italics)

Ok

18.- Figure 1: Is it possible to make the station numbers lighter to see them more clearly?

Yes... We will do as suggested.

19.- Figure 2 (caption). Since there is a coccosphere of E. huxleyi morphotype O in this figure, I guess the authors mean “The main E. huxleyi morphotypes recorded...” (delete A)

Good catch! We agree to the change.

20.- Figures 4 and 6: In the text of the manuscript, salinity does not have any units, I would delete “(psu)” for consistency.

We agree to the change.