

Response to reviewers' comments on egusphere-2024-847- R2: Ocean Alkalinity Enhancement (OAE) does not cause cellular stress in phytoplankton in a mesocosm experiment by Ramírez et al. 2024

RC2: Anonymous referee

I have read the response and the revised manuscript. The authors have done an excellent job addressing all the reviewers' comments. However, I have a few minor comments, mainly regarding the abstract and the conclusion, to give a precise and concise study result. This primarily concerns the wording and requires only a few adjustments.

1.-In the Abstract it is stated “Taken all data together, this study shows that there is minimal evidence indicating a harmful impact of high alkalinity on the plankton community.

The Conclusions says” According to this, we can conclude that OAE did not cause stress in the phytoplankton community studied”.

Result: “none of the groups showed significant changes with respect to treatments except for *Synechococcus* ssp. (Fig. 4B; Table 1).

Is there “little evidence” or not. I think the author should be more precise. Please modify the abstract and conclusions accordingly and also make clear that most of the drawdown in phytoplankton was caused by nutrient limitations (N and P below detection limit), not by Alkalinity increase.

Agree. Seems we did not provide a cristal clear message afterall. We have changed the last part of the abstract. It now reads in Lns 39-41 as :

“Taken all data together, this study shows that OAE did not cause cellular stress in the phytoplankton community studied and physiological fitness was not impaired. Most likely the drawdown in phytoplankton cell numbers observed at times seemed to have been caused by nutrient limitation. “

And in Ln 726-727as:

“This study demonstrates that there is no evidence of a detrimental influence of high alkalinity in the natural phytoplankton community that occurs in the oligotrophic environment of the sub-tropical Atlantic Ocean...”

2.-L3: Rather add the information, how many mesocosms instead of the volume (or both).

Done

3.-L144: “Δ0 (lowest) -Δ2400 (highest), better use “to” or “and” In between both alkalinity levels.

Done

4.-Figure 1: Maybe you could mark the start of the OAE treatment as well with a dashed line

Done

5.-Figure 6: The numbers for the different Alkalinity treatments are very small. It would be good to have an extra legend in the figure, as none of the other figures in the main text include the gradient as a legend.

Done. We have also inlcuded the legend in Fig 2A.

We thank the reviwer for more helpful comments that help to the final polishing of the ms. and hope that our responses are found satisfactory.

Sincerely,

María Segovia