

## ***Interactive comment on “Particulate trace metal dynamics in response to increased CO<sub>2</sub> and iron availability in a coastal mesocosm experiment” by M. Rosario Lorenzo et al.***

**Anonymous Referee #2**

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Review for

Particulate trace metal dynamics in response to increased CO<sub>2</sub> and iron availability in a coastal mesocosm experiment

by Lorenzo and colleagues

General comments. This study examines the changes in particulate trace metal concentrations in response to CO<sub>2</sub> and Fe manipulations in a coastal mesocosm experiment. While the data of the study are interesting and research of this kind is very important and should be encouraged, the quality of the manuscript needs to be improved considerably before it is suitable for publication. I found it very hard to follow the

C1

description of the data in the Results, as most of them have been presented in tables, which is especially not good for presenting the time dependent changes in for example trace metal concentrations. I also found that the Discussion for the most part was on trace metal chemistry and physiology in general, but not specifically relative to the key objective of the study, i.e., the effects of CO<sub>2</sub> and Fe availability on particulate trace metal dynamics.

Specific comments. Line 91. “(Hutchings, 2011)”, which was not included in the References.

Line 108. 10 uM nitrate: 0.3 uM PO<sub>4</sub> = 33:1 - was there a particular reason to use such a P limited nutrient condition? How may this affect the observed particulate trace metal concentration?

Line 109. what is the ratio of Fe to DFB? 1:1?

Line 137. Oxalate-EDTA wash can remove not only extracellular Fe, but also other metals. Change “...extracellular Fe” to “...extracellular metals”.

Results: I would strongly suggest that the data should be presented as figures instead of tables. In addition, albeit statistical analyses were conducted and presented together in Table 5, I would suggest they should also be presented in each individual table (or figure, if the authors decide to follow my suggestion above in revising the manuscript).

Lines 170-181. “days 1-10, phase I”, “day 7” and “After day 10” were mentioned when describing the data, but none of them can be found in Table 2.

Line 221. “(Figure 5)” should be Table 5.

Discussion: Again the Discussion mostly did not center around the influence of acidification and/or Fe availability on trace metal dynamics, except for the last, very short section 4.4. I thus encourage the authors to considerably revise the Discussion, focusing on how the chemistry and utilization of trace metals were affected by changes in CO<sub>2</sub>/pH and Fe levels and how these may be related to the proliferation of *Ehux* in the

C2

mesocosm.

Lines 366-367. Should be Table 2, not Table 1.

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Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2018-448>, 2018.