

Response to the review

We thank the reviewer for constructive comments and noting the shortcomings that still were present in the manuscript. We have addressed all the issues below as author response (AR) in red.

Reviewer #1

The manuscript is now more clearly focused on the influence of OMZ water on the surface layer than it was previously in the manuscript. This is especially the case in the introduction and the description of the methods which has been expanded. This makes the manuscript more consistent and easier to understand. The illustrations describing the courses in the individual mesocosms have been retained. This was possibly done to be consistent with the other publications in this special volume. In my view, the results would be better expressed by summarising the 4 parallels of a treatment. Perhaps the authors could insert a sentence at the beginning of the results saying that the parallels of a treatment do not always develop in the same way in all parameters. Then this form of presentation would be more justified. It is already mentioned in the manuscript elsewhere, but should be placed here.

AR. Thank you, and good point. We added a sentence to the results chapter under the community paragraph:

“The parallels of the same treatment did not develop in the same way in all the mesocosms, and this was particularly evident from the phytoplankton community composition (Fig 4).”

I still recommend the following minor changes:

Page 5, line 89-91: „In this study, a mesocosm experiment off the coast of Peru was carried out to study the effect of upwelling of OMZ water to the surface, with several papers covering different aspects in this special issue.

Comment: The words “of upwelling” should be deleted

AR: deleted as suggested

Page 6, line 107: “The main aim of the experiment was to simulate different upwelling events.”

Comments: In the authors' response to the reviewer's comments, the objective stated that effects of OMZ water on surface water should be studied.

The sentence should be changed because it is not consistent with the content of the manuscript.

AR: we agree and deleted the sentence

Page 15, line 319- 321: “The addition of OMZ-water increased the phosphate concentrations whereas the dissolved inorganic nitrogen (DIN) was $>2 \mu\text{mol L}^{-1}$ in the mesocosms until after the addition of OMZ-water (days 11 and 12 of the experiment)”.
Comment: the word “after” should be deleted.

AR: deleted

Page 21, line 434-436: “This was also seen in our mesocosm as the dinoflagellate *Akashiwo sanguinea*, a mixotrophic species that may form red tides (Jeong et al., 2005; Badylak et al., 2014), that quickly appeared in most mesocosm after OMZ water was added with some exceptions.”

Comment: With a small change, the sentence would sound better: “This was also seen in our mesocosm after OMZ water addition as the dinoflagellate *Akashiwo sanguinea*, a mixotrophic species that may form red tides (Jeong et al., 2005; Badylak et al., 2014), quickly appeared with some exceptions.”

AR: changed according to suggestion

Page 24, line 514- 515:” In our experiment, the initial decrease in DOP and increase in PO_4^{3-} indicates that the AP hydrolysis of DOP added to the PO_4^{3-} -pool.”

Comment: The sentence should be changed marginally: In our experiment, the initial decrease in DOP and increase in PO_4^{3-} concentrations indicates that P released by AP hydrolysis was added to the PO_4^{3-} -pool.

AR: Changed according to suggestion

When the suggested minor changes have been taken into account, the manuscript can be published.

Reviewer #2

Overall, the authors have done a very good job clarifying the experimental setup and focusing the manuscript.

For Fig. 6, it was difficult to tell which was the revised figure, presumably because the track changes pdf version had the old as well as new figures. In any case, three individual figures were shown for Fig. 6. Presumably the new figure that will be used is the one in the middle – the top figure had blocks of red and blue that obscured the actual data points, the bottom figure was the ‘cumulative hydrolysis’ that didn’t make much biological sense.

AR: yes, this must be due to the track changes.

In terms of the text, some minor points of word choice and phrasing could be fixed:

Line 136: ‘were’ instead of ‘where’

AR: corrected

Line 143: ‘was’ instead of ‘were’

AR: corrected

Final word of Line 455: change 'that' to 'which'

AR: Corrected

Line 475: 'linked' to the nutrient availability? ('liked' is what is written, but it seems out of place)

AR: yes, corrected

Line 490: change to 'It is worth noting...'

AR: corrected

Line 498: change 'were' to 'was'

AR: corrected

Line 525: change to 'It is worth noting...'

AR: corrected

Line 559: change 'were likely' to 'was likely'

AR: corrected