Biogeosciences Discuss.,
doi:10.5194/bg-2015-612-RC1, 2016

Biogeosciences Discussions
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Interactive comment on "Dynamics of transparent exopolymer particles (TEP) during the VAHINE mesocosm experiment in the New Caledonia lagoon" *by* I. Berman-Frank et al.

Anonymous Referee #1

Received and published: 24 February 2016

This is a straightforward study with rather clear results showing that the TEP pool in the VAHINE experiment was fairly consistent and not greatly affected by the addition of phosphate or the reduction in currents caused by the mesocosms themselves. This is an interesting (although admittedly frustrating) result. I would like to see a little more discussion of the fact that the lagoon sample showed very similar temporal dynamics to the mesocosms, although not as pronounced. What might have been happening there? The researchers did a good job with methodology and interpretation. The interpretation of results are hampered by the lack of methods to specifically look at production and consumption of the TEP pool, but this is acknowledged by the authors and not within their control. Specific comments are below:

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Line 128: I think you mean microM, rather than micromol.

Line 134-135: describe briefly here the rationale for the delineation of the P1 and P2 time periods. I know they are described in other parts of this special issue, but if someone were to read only this paper, it would be good to describe why this choice was made here.

Line 230: close parentheses around Synechococcus

Line 274-277: I think the reader would benefit from a slightly different description of the trends seen in the first days. Upon my first reading, I only imagined the spike that occurred after the phosphate addition, but the TEP was increasing during the entire P0 phase, spiked in the hours after phosphate addition, then decreased during P1

Line 284-285: the sections seem to be mixed up here. Do you mean that the lagoon increased in TEP during P0 and P2, but decreased during P1?

Line 350-351: DIP turnover rates indicate DIP stress or deficiency. That cannot fully indicate limitation without some sort of calibration

Line 353: meaning that TDIP needs to be >2d?

Line 467: I suspect the organic matrix around the UCYN-C was EPS produced by and remaining close to the cells (similar to what some phenotypes of UCYN-B do), rather than material that was released and then aggregated free-living cells of UCYN-C. I know it's a small distinction, and perhaps meaningless to many, but I also think it's worth noting that this is a possible scenario and there is precedent to believe that is what happened.

Lines 473-490: was this Trichodesmium bloom at the lagoon control sampling site, or elsewhere in the lagoon? Does it explain any of the results from the experiment or the lagoon results? If not, I don't really think it belongs here, as it is a description of a non-related phenomenon.

Figure 1: I would like to see all the figures put on the same X axis to make them more directly comparable. I know it will be harder to see patterns, but the comparison is more important, I think

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