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Comment

Interactive comment on “Growth and specific P-uptake rates of bacterial and phytoplanktonic communities in the Southeast Pacific (BIOSOPE cruise)” by S. Duhamel et al.

Anonymous Referee #2

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This manuscript concerns the use of P-based uptake rate and biomass estimates to calculate specific growth rates (μ) for phytoplankton and bacteria.

As recognized by the authors, the idea is not new. However, it has not been used much in the literature, and data are given for a very different environment than investigated in the original work. I therefore think the work would be of interest to the readers of Biogeosciences.

Using P-based estimates in this manner has a series of potential complications including: - Separating phyto- and bacterioplankton P from particulate-P contained in grazers and in detritus - Variable stoichiometry over time, species and environments - Potential

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diel cycles - The need to use SRP as an estimate for bioavailable orthophosphate, making the method useless in most P-limited areas where SRP probably grossly overestimates the bioavailable pool. - The lack of knowledge on direct uptake of P from DOP. - The potential leakage of P from cells as shown in freshwater in systems and in cultures.

The P-based method however also has some clear advantages like using the same technique for phytoplankton and heterotrophic bacteria.

In my opinion the authors have presented a detailed discussion of the problems. The C-based estimates also have a long series of methodological problems and if these should seem less serious it may be because these methods have been more commonly used, than because the problems for C are smaller than for P.

I think it is important to gather estimates for specific growth rate using such alternative techniques to the traditional C-based approach and recommend publication.

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