

Interactive
Comment

Interactive comment on “Marine viral populations detected during a nutrient induced phytoplankton bloom at elevated pCO₂ levels” by J. B. Larsen et al.

Anonymous Referee #2

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This manuscript reports on a highly interesting topic in microbial aquatic ecology, i.e. the impact of virus on dynamics of organisms and organic matter throughout the aquatic food web. Due to the steady increase in pCO₂ and related drop in surface seawater pH it is of major concern to gain knowledge whether pCO₂ induced changes will also effect the viral loop and, hence, oceanic organic matter cycling. I greatly appreciate that the authors of the present manuscript have combined quantitative methods (flow cytometry) with more qualitative (molecular) methods. The authors succeed in characterizing the most abundant virus and linking their dynamics to temporal changes in phytoplankton and bacterial abundance.

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However, I have some concerns with the present version of the manuscript: 1) The authors do not clearly distinguish between direct effects of increased pCO₂ or decreased pH and indirect effects (via the virus hosts) on viral plankton dynamics. Since surface charges are crucial for viral host infection and since they are highly dependent on pH I wonder whether there are some indications from the literature that pH (and ionic strength) effect the coupling between virus and their respective hosts. May be the authors may reevaluate the current literature?

2) I wonder whether -and I am sure that- there are data available on cell-specific primary and bacterial production which could be related to the observed viral dynamics. The study would greatly gain if such linkages could be uncovered.

3) Is there a way to calculate burst sizes for the respective viral groups..?

4) Although only 3 of the nine mesocosms have been sampled some statistical analyses could be helpful to support the described findings.

Figure 2 is very small and the single plots are very hard to read!

Minor comments: Abstract: PeECE III mesocosm Introduction, p3963, line 15-17 please also cite Riemann and Middelboe 2002, *Ophelia* 56: 57-68 Mat and Met, p3965, l10 please explain SSC (has been done in the figure legend) p3967, line 3: the primers...were ... p3970, line 18 (own unpublished work) which tests have been performed to check for reliability in detection of your newly designed primers?! p3971, line 22: ...around 1:10... p3975, lines 2ff please state whether you are dealing with direct or indirect of pCO₂ increases and subsequent reduction in seawater pH (see above). p3976, line 2:...of masked effects...

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