

Interactive comment on “Coupling of heterotrophic bacteria to phytoplankton bloom development at different pCO₂ levels: a mesocosm study” by M. Allgaier et al.

M. Allgaier et al.

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Response to the comments:

Reviewer #1: Introduction: We have tried to better focus the introduction and large parts have been rewritten. The length of the discussion has been shortened by more than one page. We have added a sentence in the discussion to clarify the seeming contradiction of no significant pCO₂ effect on single parameters but significant differences between pCO₂ levels in the regressions of bacterial growth parameters and C:N of suspended matter. We do share your concerns about autocorrelations in mesocosms in general. Using repeated measures ANOVA does somewhat take care of the problem, the procedure being specifically designed for multiple subsequent measures

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on the same subject. Thus it is better suited than e.g. an ANCOVA using time as a covariate. There were triplicate mesocosms for all three pCO₂ levels, in order to avoid attributing random specifics of a single mesocosm to the respective pCO₂ level. We do agree that this does not exclude false significances due to strong autocorrelations and significant results would have to be retested with more sophisticated methods. But as you pointed rightly out, this is no concern in our case since we did not find significances here.

P319, L12: This part has been deleted.

P320, L20: The sentence: However, it has been suggested that viruses primarily influence bacterial community composition, while grazers have a greater impact on total bacterial biomass (Thingstad 2000) has been added.

P330, L22: You are totally right. We have corrected the formula and indeed it does not have any influence on the regression analysis.

Reviewer #3: Introduction: We have tried to better focus the introduction and large parts have been rewritten. We now refer to Riebesell et al., 2008 who have summarized all papers and their major results obtained by the previous and present mesocosm studies. In the discussion we also mention potential effects of the sudden shift in pCO₂ on the development of organisms. Methods: we have added some more detail to the stats section. The Kolmogorov-Smirnov test on normality and the Levene test on the homogeneity of variances revealed no violation of the ANOVA assumptions, thus data transformation was not necessary.

Results: Tables have been changed according to the comment.

We have used colours for figures.

We did not modify the DGGE picture since the banding pattern will give an indication on the quality and band number of our gels.

We want to thank both reviewers for their valuable help!!!!

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