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Comment

***Interactive comment on “Dynamics of dimethylsulphoniopropionate and dimethylsulphide under different CO<sub>2</sub> concentrations during a mesocosm experiment” by M. Vogt et al.***

**R. Bellerby (Referee)**

richard.bellerby@bjerknes.uib.no

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General comment This paper concerns a description and analysis of the DMS, DMSp and DMSP-lyase response of a natural pelagic ecosystem to perturbations to the marine carbonate system. The manuscript is generally well written and the data is adequately described. The analysis is in parts confusing. Due to the early submission of the manuscript to the special issue, for which the authors should be congratulated, the discussion would benefit greatly from including more information from other manuscripts submitted later to the special issue. Once this has been done, and the

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changes detailed below considered, the manuscript will be publishable and of benefit to the research community.

The manuscript switches from the present tense to past. I suggest that the past tense should be used throughout.

Detailed comments:

Abstract P 3676 line 1. We. The rest of the paper is written in the third person and I suggest that this is corrected to be consistent

Introduction P3677 line 7. Although there is debate as to whether anthropogenic CO<sub>2</sub> release should be considered to have started before the onset of the industrial revolution, it is generally written that it started around 1860 and thus it is incorrect to write 200 years.

P3678 line 2. This sentence is untidy "If these results can be extrapolated to the globe" and should be rephrased.

P3678 line 12. There is no Norwegian National Mesocosm Centre. This should be changed. The Biological Station, Espegrand will suffice

P3678 Material and Methods and throughout the document. Change the scenario description from P, F and FF to 1xCO<sub>2</sub>, 2xCO<sub>2</sub> and 3xCO<sub>2</sub> to be consistent with the other Special Issue papers.

P3681 line 25. Please give more detail on the quality of the chlorophyll a measurement. More information should be given on the counts.

P3681 line 5,6. Remove the description of the pCO<sub>2</sub> measurement. The data is not shown or discussed in this manuscript. You should reference the Bellerby et al paper in the special issue which describes the method and results.

P3681 line 11, 17. The use of replicates and triplicates is incorrect. Although great effort was taken to fill the bags simultaneously and thus limit the variability between en-

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closures, they are not replicates or triplicates but individual experiments. This is clear from the different initial nutrient concentrations and can be seen through the development of different plankton species concentrations. I suggest just using "enclosures".

P3681 line 20. Gentle is a vague description. Please use a quantitative description.

P3684 line 3-5. Hence, rather than... This statement is rather strange. It is clear that both arguments are equally valid.

P3685 line 6. This figure.. Remove this sentence.

P3685 line 7. "Constant parts in the graph" rephrase this sentence.

P3685 line 12. ..split up.. use an alternative word. I suggest "diverge".

P3685 line 18. The analytical uncertainty you describe is not consistent with the methodological description on Page 3680. The summation of the analytical uncertainty in DMSPt is  $1.6 \text{ nmol.L}^{-1}$  and yet the concentrations at the end of the bloom are around 100 in Figure 2. Unfortunately, no information is given on the Chl a measurement quality.

P3686 line 11. Reference Schulz et al 2007 for this statement about the light levels during the experiment.

P3687 line 2. Canon. Please could you qualify the use of this word to describe the compounds.

P3687 line 6. It is not a plausible explanation when you immediately disprove it in the next sentence. You could relate to previous work that found this to be a cause.

P3690 line 7. Do you mean this manuscript when you say this study or the mesocosm experiment itself. I suggest that you also include the other responses e.g. production, stoichiometry that can be found in Egge et al and Bellerby et al. The review paper by Riebesell et al. also lists the PEECE responses.

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References The references from the special issue now have to be included in the reference list now they have been published.

P3693 line 30. Please update the reference.

P3694 line 30. Surname missing from the last author.

Acknowledgements: Please update the acknowledgement of the Biological Station Staff with "The staff at the Marine Biological Station, University of Bergen, in particular Tomas Sørli and Agnes Aadnesen, and the Bergen Marine Research infrastructure (RI) are gratefully acknowledged for support in mesocosm logistics".

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**BGD**

4, S2090–S2093, 2007

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