

## ***Interactive comment on “Mesocosm CO<sub>2</sub> perturbation studies: from organism to community level” by U. Riebesell et al.***

### **Anonymous Referee #1**

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### GENERAL COMMENTS

The authors provide a preface to the BG special issue on the PEECE-III experiment.

### SPECIFIC COMMENTS

P642 L2-4 : this statement should be corroborated by references

P642 L4-6 : this statement should be corroborated by references

P642 L10-22 : A note of caution could be added here, since some of the cited experiments have used chemical conditions that are not realistic. For instance the study of Kurihara & Shirayama (2004) used pCO<sub>2</sub> values of 10,000 ppm that induced pH values down to 6.8.

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P642 L10-22 : The work of Kurihara et al. (2007) reports on acidification effects on oyster larvae.

P642 L10-22 : Kikkawa et al. (2004) reports on acidification effects on red sea bream larvae.

P642 L265-27: A conceptual diagram summarizing the feed-back loops at pelagic ecosystem level due to acidification would be a nice addition.

P643 L3: references for the iron and phosphate enrichment experiments could be added.

P646 L14: According to Vogt et al. (2007) previous results on effects of acidification on DMS (Avgoustidi et al. 2007) were different from those obtained during PEECE-III

P648 L1: Here or elsewhere, it would be interesting to speculate on how far or close we are to develop 'simple' parameterizations that can be included in GC models (e.g. Gehlen et al. 2007), or if this is realistic or not considering the complexity of the responses to acidification.

P649 L21-28: I'm aware of at least 2 ongoing initiatives that are looking into this, that could be cited

## REFERENCES

Avgoustidi et al.: Dimethyl sulphide production in a double-CO<sub>2</sub> world, in preparation, 2007.

Gehlen et al.: The fate of pelagic CaCO<sub>3</sub> production in a high CO<sub>2</sub> ocean: a model study, Biogeosciences, 4, 505 - 519, 2007

Kikkawa et al.: Comparison of the lethal effect of CO<sub>2</sub> and acidification on red sea bream (*Pagrus major*) during the early developmental stages, Marine Pollution Bulletin, 48, 108 - 110, 2004

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Kurihara H. et al.: Effects of increased seawater pCO<sub>2</sub> on early development of the oyster *Crassostrea gigas*, *Aquat Biol.*, 1, 91 - 98, 2007

Kurihara, H. and Shirayama, Y.: Effects of increased atmospheric CO<sub>2</sub> on sea urchin early development, *Mar. Ecol.-Prog. Ser.*, 274, 161 - 169, 2004.

Vogt et al.: Dynamics of dimethylsulphoniopropionate and dimethylsulphide under different CO<sub>2</sub> concentrations during a mesocosm experiment, *Biogeosciences Discuss.*, 4, 3673 - 3699, 2007

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