

***Interactive comment on “Short and long term consequences of larval stage exposure to constantly and ephemerally elevated carbon dioxide for marine bivalve populations” by C. J. Gobler and S. C. Talmage***

**Anonymous Referee #1**

Received and published: 8 January 2013

The manuscript of Gobler and Talmage presents data from various experiments aiming at assessing the effects of ocean acidification on the larval development and the subsequent juvenile period of 2 bivalve species. This manuscript provides very interesting data as it shows direct evidence of deleterious effects of OA on gross calcification rates as measured by the  $^{45}\text{Ca}$  incorporation technique, that the early larval stages are the most sensitive to decreasing pH levels, and that larval exposure to low pH has significant impacts on survival and subsequent juvenile growth. I can only recommend this manuscript for publication in Biogeosciences although I would like the authors to

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consider the following suggestions.

Introduction: P15903, L11: Kurihara studies should not be cited in that context as pH values that were considered were well below the ones expected for the next 100-300 years.

Methods: 2.3. For clarity, please mention for how long the larvae were cultivated at the start of the paragraph. Furthermore, it would have been interesting to provide data on hatching rates and survival for this experiment (until veliger and pediveliger stages). How many replicated incubation did you have for  $^{45}\text{Ca}$  incorporation? This is unclear as it was mentioned in P15904L16 “(n=4 except for calcium uptake experiments)”

Results: 3.2. P15912L7: please change shell length-based by shell diameter-based

Discussion: P15917L16-17: although this part of the study is very interesting and provides very important data, the experimental setup does not allow assessing the effects of  $\text{CO}_2$  variations at the same frequency than in estuarine habitats (as mentioned by the authors: tidal and daily fluctuations). The protocol considered exposures to certain levels of  $\text{CO}_2$  for several days. L25: reference should be Gillikin et al., 2007.

Overall, congratulations to the authors.

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Interactive comment on Biogeosciences Discuss., 9, 15901, 2012.

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