

Interactive comment on “Ocean acidification increases photosynthate translocation in a coral–dinoflagellates symbiosis” by P. Tremblay et al.

Anonymous Referee #1

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General Comments

Tremblay et al., present an interesting examination of carbon production, translocation, and loss in corals and Symbiodinium under different seawater pH conditions. This study would be strengthened by inclusion and statistical analysis of all time points and response variables for a more complete picture of carbon budgets. In addition, a pH of 7.2 and a pCO₂ of ~4000 are extreme far future scenarios for OA and should be discussed as such.

Specific Comments

There are no methods or background provided for any of the seawater chemistry anal-
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ysis. How often were pH and alkalinity sampled through the 6 months and during the incubations? How were they sampled and processed/analyzed?

It seems arbitrary to only statistically analyze initial and final time points, especially when it appears for some variables that the initial and final points don't differ as much as the middle time points (e.g., Figures 3 and 4). Is there a reason all time points are presented but not analyzed? Is there a difference in integrated carbon loss that is being obscured by only analyzing the initial and final time points?

What symbionts does *S. pistillata* host? How specific or flexible is this, and would you expect it to change with CO₂ exposure after 6 months? Are your results due to symbiont type and not pH?

Not all statistical values appear to be available in text or table. Table 3 could be expanded from only two variable and two time points to include all time points for the four variables of incorporation, carbon remaining, carbon lost, and translocation.

Technical Corrections

Page 85, Line 16: Replace “for” with “to”

Page 85, Line 18: Not the only taxon with form II Rubisco (Zhang and Lin 2003; Robinson et al 2003; Tourova et al 2010)

References Cited

Robinson, J. J., Scott, K. M., Swanson, S. T., O'Leary, M. H., Horken, K., Tabita, F. R., & Cavanaugh, C. M. (2003). Kinetic isotope effect and characterization of form II RubisCO from the chemoautotrophic endosymbionts of the hydrothermal vent tubeworm *Riftia pachyptila*. *Limnology and oceanography*, 48-54.

Tourova, T. P., Kovaleva, O. L., Sorokin, D. Y., & Muyzer, G. (2010). Ribulose-1, 5-bisphosphate carboxylase/oxygenase genes as a functional marker for chemolithoautotrophic halophilic sulfur-oxidizing bacteria in hypersaline habitats. *Microbiology*,

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Zhang, H., & Lin, S. (2003). Complex gene structure of the form II RUBISCO in the dinoflagellate *Prorocentrum minimum* (DINOPHYCEAE) *Journal of Phycology*, 39(6), 1160-1171.

Interactive comment on *Biogeosciences Discuss.*, 10, 83, 2013.