

Interactive comment on “Mechanism of O and C isotope fractionation in magnesian calcite skeletons of *Octocorallia* corals and an implication on their calcification response to ocean acidification” by T. Yoshimura et al.

Anonymous Referee #2

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While the data are interesting they do not rise to the level at which they merit a dedicated paper. The authors provide no information as regards the state of the corals and it is well known that there is considerable heterogeneity within the skeletons of such animals. Therefore I am recommending rejection. The C isotopic data might fit with their B paper (which I have not seen).

Notwithstanding the use of bulk samples, the authors have derived information on the O and C isotopic composition of the waters from databases and therefore these might not even be appropriate. I am not sure how accurately the GODAP reflect the actual

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values at a particular site and whether there is annual variability which is important.

The paper has many references to papers which are not correct or the first reference to point out a particular phenomenon. I have indicated some of these in my more detailed comments.

P3 25- This is not an appropriate reference for the solubility of carbonates in seawater.

P4 17-24- Are these bulk samples? If so then I am not sure there is much value in this particular study. We have no idea as to the state of preservation, degree of contamination, diagenesis, bioerosion, actual mineralogy, size of the samples used, sample preparation, and so on. Not sure if any of this information was previously reported but it should be presented here. The large variations could a consequence of some of these factors.

P5 16- Which isotope are we talking about here? I assume it is oxygen but this was not defined. In this section which is the results section you are discussing the data. This should be moved into the discussion under a separate heading.

P7 11-This is not an appropriate reference for this statement. Use the original reference. Keith and Weber (1965) or Weber and Woodhead (1970)

P7 21- This is a circular argument pH controls CO₂ and CO₂ controls pH. Suggest you remove this and this (down to line 4 on page 8) is known and nothing new.

P8 6-7- The relationship between C and O isotopes in aragonite corals is only strongly linear in non-symbiotic corals. Once again this was known and published before the work of McConnaughey and Adkins.

Pg8 17-Once again incorrect reference.

P10 5-I suggest that you should include the C isotopic data in the B paper (which I have not seen).

P12 25-Incorrect reference

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