

Interactive comment on “Intercomparison of four methods to estimate coral calcification under various environmental conditions” by Miguel Gómez Batista et al.

Anonymous Referee #1

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This is an interesting study that compares 4 different methods for quantifying calcification rates under high and low pH conditions. The authors conclude that that alkalinity anomaly, Ca anomaly, and Ca45 methods are all in close agreement, but the 13C method is not. This is a helpful study for researchers that are trying to calculate calcification rates of individual corals. The methods are rigorous. However, I personally have only done the TA anomaly technique so hopefully the other reviewers have hands-on experience with the other 3 methods. My comments below are minor. I believe this will make a nice contribution to the coral biogeochemistry literature.

Abstract:

C1

Line 27: add a comma after calcification

Line 41: This is a bit of a meta comment, but what if the 13C method is accurate and the other 3 are highly correlated, but wrong. How do we know which of these methods are “true” net calcification?

Introduction:

Line 77: You can account for changes in nutrients (by measuring nitrate, phosphate, and ammonium and incorporating into the delta TA) as well as evaporation (normalize to salinity) in the alkalinity anomaly technique.

Line 96: Replace comma with semi-colon and add comma after “therefore”.

Line 113 – 114: Incorporate this sentence into the last paragraph

Methods: Line 147: replace “a” with “and”

Line 180: remove “a”

Line 265 states that initial levels are not necessary to compute calcification and only final values with and without corals are used, but line 269 says that T1 are concentrations are the start of the incubations. This is a bit confusing. Please clarify.

Line 275 – 276: Please explain the parameters in the equations.

Line 280: There is an empty box on the equation. I think it is worth discussing why different incubation times were used. Why not do them all at the same time to reduce error with changing carbonate chemistry in the background (i.e. the longest time needed to get a result from all 4 methods)?

Please add incubation temperatures to table 1 or 2

Results section throughout: Instead of saying X and Y are presented in Figures 1 and 2, make a statement about the result and cite the figure and table after. (For example, see like 368).

C2

