

We are grateful to the original reviewers for providing useful feedback on this manuscript again and thank them for their commitment to improving this work for publication. We have provided our responses to their comments below in blue.

Associate editor decision: Publish subject to technical corrections

by [Ny Riavo G. Voarintsoa](#)

Public justification (visible to the public if the article is accepted and published):

Dear authors,

I have sent your revised manuscript to the original reviewers, who graciously agreed to review the revised documents you provided.

Both responses are positive towards the acceptance, but until then, please note that there are some technical corrections that were suggested by the reviewers. These are copied below:

In this reviewed version, the authors have included mineralogical data from one of the samples analyzed for stable isotopes, rather than from other samples collected at the same location. The main change (which is not minor) is that previous samples (EA-13 and EA-14) analyzed via XRD had >20 % aragonite, while current sample (EA-11b and EA-11d) have <5% aragonite. This update does change slightly the conclusions that can be drawn from this study, but this is not reflected in the manuscript in the current state. Below I suggest some minor changes regarding this issue, and some others. Line numbers are referring to the corrected version of the manuscript (not the one with tracked changes).

In section 4.2.3. Calcite versus aragonite mineralogy, the authors correctly identify the variable mineralogy present in *E. fissurata* and make a point that “mineralogy must be considered as an important variable [...] use as a paleoceanographic archive. This should be included also in section 4.4 Considerations for paleoceanographic reconstructions, but there is no mention of mineralogy. [We have added a statement in the beginning of section 4.4 to clarify that the discussion of paleotemperatures from these corals is based on the calcite mineralogy determined in this study. We have added that future projects should take careful consideration of the mineralogy of corals as it will affect interpretations of isotopic records.](#)

Furthermore, on Line 493 the authors state “we recommend sampling of the white center using more spacially precise[...].”. This would only be a viable sampling method for those samples that were >95% (Like EA-11b and EA-11d) but could be problematic for other samples that present mixed mineralogy. The authors have proved that even within the same location, mineralogy of samples can be variable, therefore, it is important to remark that testing for mineralogy is essential before proceeding with any geochemical measurement.

[We have added language in this paragraph to emphasize the importance of coral mineralogy, and that our interpretations apply to instances where coral mineralogy is spatially consistent.](#)

Similarly, in the Conclusions, Line 526 “Thus, we recommend sampling this taxon along the center, white region where the carbonate geochemical record is closest to seawater equilibrium and environmental isotopic signal”, there is absolutely no mention of the need to confirm that the

specimens chosen for paleoceanographic reconstructions need to be tested for mineralogy. The same applied with the last sentence of the abstract.

We have edited the conclusions and abstract to include the importance of determining mineralogy before applying our prescribed sampling plan.

The fact that sample EA-11 is >95% calcite and shows higher isotopic composition towards the center is indicating that these specimens might be following a different calcification process than other stylasterid corals (as said on the text), but this is contingent on mineralogy. Therefore, testing for mineralogy is imperative and as such must be included in the abstract and conclusions.

We agree, and appreciate this reviewer noticing the small oversight. We have added appropriate language to emphasize this conclusion.

Line 38 to 41: I find confusing the description of slow calcification, and then biological calcification as the opposite. I am not sure the authors are referring to abiotic calcification when talking about slow calcification, or about slow growth that allows calcium carbonate to grow in isotopic equilibrium with seawater (in this case it would still be biologically mediated growth, but at a slower pace?). Maybe the authors can rewrite for clarity.

Done

Line 290: “Erinna”. I would describe it as *E. antarctica*, or the aragonitic *E. antarctica* as it is the way this specimen was referred to earlier.

This line was referring to two species within the *Errina* genus, but we have edited for clarity and stated *E. dabneyi* and *E. antarctica*.

Line 303: “This contrasts the increase we observe in our corals”. Missing “with”?

Done

Section 4.2.1. Organic contribution to outer skeletal portion. This is a nice addition.

Thank you

Line 441: “The stylasterid *Errina* (*Errina*) *labiata* [...]”. Why that double *Errina* and one within parenthesis?

The double *Errina* was because that was the name of the subgenus. Upon rechecking the name, it was listed as no longer accepted, so we have edited this line to include the updated, accepted name, *Inferiolabiata labiata*.

Line 487: “but (a) closer approach is possible”.

Done

Line 512: “*E. fissurata*, a predominantly calcitic taxon”. I disagree with this statement given evidence of XRD analysis of previous samples. Also, it is not in line with what it is stated in Line 366.

We agree and have removed this statement.

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In addition to these comments, please ensure that the contribution is free of errors and typos as

possible (e.g., Figure S4: there is a typo, it should be "bottom"; Table S4: "Temperatures" is not countable and should not be in plural)

[Done](#)