

Dear Editor and Reviewers,

We would like to thank you for your support and constructive review of our manuscript. We have carefully considered the comments and outline below our responses and manuscript revisions. To address these comments, we have updated the manuscript text and updated the GBRCDB database to better convey that the database is open, and database fields have been created or amended to accommodate future updates. We have made minor edits to further improve the readability of the manuscript.

Following, please find our detailed responses to the reviewers' comments.

Authors' responses are shown in blue.

Reviewer #1 – Niels de Winter

Dear Sebastiaan van de Velde, dear authors,

As requested, I read and reviewed the manuscript titled “Coral Skeletal Proxy Records Database for the Great Barrier Reef, Australia” submitted by Ariella Arzey and colleagues for publication in Earth System Science Data. In their manuscript, the authors present and discuss the new online Great Barrier Reef Coral Skeletal Records Database (GBRCDB) which compiles a large quantity of data gathered in studies into skeletal coral records in the Great Barrier Reef in Australia. The main aim of this study, and the database, is to compile this proxy data from various sources to make it available and machine readable for future research projects. Given the wide distribution of this type of data in different formats and in various repositories and supplements, this database presents an important effort to making the hard work of coral researchers more easily available for meta-analyses and comparison studies.

The authors provide a clear introduction explaining the need for a comprehensive database of coral records in the Great Barrier Reef and a thoughtful background section on the reef setting and the types of proxies contained in the dataset. A small point of feedback would be that it is not immediately clear that this is an open dataset and that more data can be added. However, this becomes clear at the end of the manuscript. The two formats of the database (LiPd + CSV) ensure ease of access of all the data both through manual downloading and data processing and by machine reading. Figures 3-5 give a nice sneak peek into the spread and location of geochemical records in GBR.

In conclusion, I believe this manuscript and the database it presents represent a valuable contribution to the field of (coral) sclerochronology and paleoclimatology and I would be happy to support its publication more or less as is.

Thank you for your positive comments on our manuscript. We greatly appreciate your feedback and your willingness to support its publication. We have clarified throughout the manuscript that the GBRCDB is an open database with future updates planned. In addition, we have added a sentence to the abstract making this point:

“The intention is to update the GBRCDB annually, depending on the availability of relevant new GBR records or submission of legacy records to the GBRCDB for archiving.”

Below, I detail a few minor textual comments I had while reading through the manuscript, but beside these I think the manuscript is in pretty good shape.

We have addressed the minor textual suggestions you provided as follows:

Minor comments

Line 152: “The GBRCDB is along the lines of” should probably be rephrased to something like “The aim of the GBRCDB is similar to”

This sentence has been amended to read:

“The GBRCDB is similar to the Coral Trait Database (Madin et al., 2016), but focuses on the GBR and coral proxy measurements (i.e. geochemical and luminescence measurements)”

Line 157: The past tense in this criterion and others suggests that the database is done and not a living product. Perhaps this can be rephrased.

References to past tense of criteria have been amended to:

- “■ *Length. The records are continuous (multi-year) measurements from coral skeletons.*
- *Age model. Each record includes a relevant chronology (i.e. an estimate of age as the independent variable) or has a chronology that could be recreated relatively easily based on available data.”*

Line 208: It is unclear to me how a Mg/Ca ratio can have a value <0 , since it is a ratio of two concentrations. Perhaps the authors can use another example of “abnormal data”.

To address the issue of the abnormal data example, it was decided to clarify the sentence rather than replace the example as it is indicative of clearly abnormal data across fields of coral geochemistry research and emphasises the following suggestion that it is “up to the user to determine appropriate screening procedures”. The example has been amended to:

“Potentially abnormal data (e.g. values <0 for Mg/Ca [after correcting against a method and/or lab standard]) were not removed from the datasets as they may be indicative of climate or environmental events, and it is up to the user to determine appropriate screening procedures when using the database.”

Best wishes,

Niels de Winter