

Earth Syst. Sci. Data Discuss., referee comment RC2  
<https://doi.org/10.5194/essd-2021-394-RC2>, 2022  
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## **Comment on essd-2021-394**

Mohamad Bazzi (Referee)

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Referee comment on "A novel specimen-based mid-Paleozoic dataset of antiarch placoderms (the most basal jawed vertebrates)" by Zhaohui Pan et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-394-RC2>, 2022

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### **General comments**

I reviewed this paper with great interest. Pan et al. has compiled a novel taxonomic/occurrence-based dataset of antiarch placoderms. This is important for understanding patterns of early vertebrate diversity, abundance, and turnover during the Palaeozoic Era. It also complements previous work on stem-gnathostomes which has largely focused on their anatomy and phylogenetic relationship with other stem and crown lineages. To my knowledge this represent the first attempt to reconstruct the richness and spatiotemporal distribution of antiarchs using a multi-technique approach. My complements to the author for taking the lead in filling this critical gap in knowledge.

### **Specific comments:**

Most of my specific comments are embedded in the annotated PDF file, and I urge the authors to go through these. Most of my remarks are related to language issues, and less on the scientific content presented in this manuscript. I believe it would be helpful if the authors received the assistance of a professional text and language editor.

Main issues include:

- Richness assessment
- Presentation of results
- Discussion of how the DeepBone project differs from the PBDB
- Lack of home-take messages

Point 1. While the prime objective of this study is clearly focused on presenting the database, the authors do however generate diversity curves and discuss the results. I would strongly recommend that the authors complement their richness assessment by computing sample-corrected curves via rarefaction, SQS, or other available method. I would also suggest that the authors expand the method section and provide detail information about the various analytical steps. The current version of the manuscript lacks sufficient detail to understand the main results. Additionally, the use of 'rate of variation' within the context of their richness assessment is vague and should be elaborated on. Finally, the inclusion of the kernel density estimator equation does not add anything here, and it would have been better if you made use of citations were appropriate.

Point 2. As a rule of thumb, it is always better to separate results (i.e., literal reading of the data) from the discussion (i.e., the interpretation). This will make the text much easier to follow.

Point 3. I think the authors should consider including a rationale for creating a new paleontological database. For instance what makes the DeepBone Database unique in comparison to the Paleobiology Database?

Point 4. The conclusion section does not really bring together or synthesis the core findings of this study. Consider re-stating the main objective of this study and how the data and results relate to it.

## **Summary**

I'm broadly supportive of the work and its eventual publication. I hope that my comments will provide a nudge in the right direction, and it is possible that the work is of sufficient interest for publication. As currently structured and with the type of language currently used I really don't think the significance will be clear to a general readership. My opinion is that the author need really to spend time dealing with the structure and language issues. The abstract and discussion need to cut through some of the details and really lay out take-home points more clearly.

## **Figure Captions.**

I really like figure 5, but the occurrence points could be made bigger with the use of transparency to deal with the issue of overlapping.

Sincerely yours,

Mohamad Bazzi

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2021-394/essd-2021-394-RC2-supplement.pdf>