

Clim. Past Discuss., referee comment RC2
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Reply on RC1

Patrick De Deckker (Referee)

Referee comment on "Hydrological change in southern Australia over 1750 years: a bivalve oxygen isotope record from the Coorong Lagoon" by Briony Kate Chamberlayne et al., Clim. Past Discuss., <https://doi.org/10.5194/cp-2022-39-RC2>, 2022

Review of the paper by Chamberlayne et al. entitled: **1750 years of hydrological change in southern Australia: a bivalve oxygen isotope record from the Coorong Lagoon**

Reviewer Patrick De Deckker, Australian National University

Paper received for review on 13 October 2022 and reviewed on 20 October, 2022

- Does the paper address relevant scientific questions within the scope of CP? **YES**
- Does the paper present novel concepts, ideas, tools, or data? **YES IN A WAY THAT IT USES DIFFERENT TOOLS TO SOLVE AN IMPORTANT ENVIRONMENTAL ISSUE CONCERNING THE SALINITY CHANGES IN THE COOROOMG LAGOON THROUGH TIME**
- Are substantial conclusions reached? **YES BUT THEY DO NOT RELATE TO THE LST 2 FIGURES WHICH ALSO WILL NEED TO BE CHANGED**
- Are the scientific methods and assumptions valid and clearly outlined? **YES**
- Are the results sufficient to support the interpretations and conclusions? **REFER TO ITEM 3**
- Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? **Definitely yes**
- Do the authors give proper credit to related work and clearly indicate their own new/original contribution? **Definitely yes, except that they misinterpreted some of the marine core data**
- Does the title clearly reflect the contents of the paper? **YES**
- Does the abstract provide a concise and complete summary? **YES**
- Is the overall presentation well structured and clear? **YES**
- Is the language fluent and precise? **YES**
- Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? **YES**

- Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? **Figure 3 will have to be changed in line with the comments placed on the figure using stickies**
- Are the number and quality of references appropriate? **YES**
- Is the amount and quality of supplementary material appropriate? **I did not see any and also recommend that the data be deposited in a database such as pangea.de**

I enjoyed reading the paper which aims at addressing 2 important scientific questions.

- The last 2 millennia of climate change in SE Australia
- Address issues that have so far been controversial concerning the 'health' of The Coorong which has recently been modified by human activities and perhaps also as a result of 'climate change'. This is a Ramsar site of great importance and therefore deserves better understanding with respect to its past, present and future.

I have placed a number of comments directly on the manuscript. Many are trivial such as the need to hyphenate and place commas, but towards the end of the manuscript, especially for some figures changes are necessary. The correlation with the crater maar lake records of western Victoria need changing and more importantly the comparison with the marine cores [2611 and MUC3] need changing. The record by Perner [as referred to in the manuscript] does not cover the period mentioned in the manuscript and needs to be replaced. The data by De Deckker et al. (2020) are available at the Pangaea.de web site. I will send the relevant data to the corresponding author as it was not possible to attach more than one file.

I also disagree that the Little Ice Age was not discussed by those authors who dealt with core records in Australia. See my comments using stickies.

Overall, this is an important study that needs to be published but only after amendments. I ticked the box recommending major revision. I would have preferred to tick a box saying 'moderate revision' as the suggested changes concern figure 3 especially and comments on some of the features in it that figure are not discussed in the paper and, as yet, they are very important.

Best wishes

Patrick De Deckker

Please also note the supplement to this comment:

<https://cp.copernicus.org/preprints/cp-2022-39/cp-2022-39-RC2-supplement.pdf>