

Review for Du et al., revised version AR1  
By Cécile Blanchet (GFZ Potsdam), 21 September 2022

Thanks to the authors for the extensive corrections they have performed on the manuscript and their detailed responses. I have only a few minor corrections before this paper can be published.

- The goals of the paper are clearer.
- The complexity of source versus sink determination in the third pole is well explained.
- The three poles are better defined in the text and Fig. 1 is very helpful.
- The figures have been largely improved, with number of data analysed for each box plot (Fig. 3 and 6), proper legends (Fig. 4 and 7) and isoscapes (Fig. 8).

I quickly checked the attached dataset, which is a lot clearer and better organised than the previous version. However, a **metadata description** is still missing, indicating what kind of information is given in the columns and the different spreadsheets. It is an important part of the dataset that help users to select and reuse the data.

L. 111: (...) and literature from the three poles (which refers to the high mountainous regions in Asia, the Arctic and Antarctica).

L. 166: what is the “pan-Third pole”?

Section 3.1: I am not sure how much of this section is really useful for the paper. All considerations on paleoceanography seems a bit out of scope.