

## Remarks from authors

If still possible, we like to add an acknowledgement to the two reviewers to the start of the acknowledgement section:

“The authors thank Bo Liu and an anonymous reviewer for their helpful comments.”

## Remarks from the language copy-editor

CE1 Please note minor edit to this sentence (comma changed to “and” for grammatical correctness).

I think a “to” needs to be inserted after “and” to make the sentence intelligible:

“Insight into model-simulated hydroclimate variability could thus be highly beneficial with regard to moisture source and transport changes to interpret paleoclimate records and to provide ground truth for model-simulated present-day hydroclimate, as well as enable more reliable future climate projections.”

CE2 “Geophysical” changed to “Geoscientific”. Please check this is the correct journal.

## Remarks from the typesetter

TS1 Please confirm.

confirmed.

TS2 Please confirm that you last accessed this link more than 4 years ago.

For the purpose of the present study, I last accessed this link 4 years ago to obtain data files. The last time I practically accessed this link was 10 May 2023. Please use the date that makes sense from your perspective. It is not clear to me what the access date is used for.

TS3 Due to the requested changes, we have to forward your requests to the handling editor for approval. To explain the corrections needed to the editor, please send me the reason why these corrections are necessary. Please note that the status of your paper will be changed to “Post-review adjustments” until the editor has made their decision. We will keep you informed via email.

We have discovered a mistake in the specification of the methane level used in one of the climate model simulations. Instead of the correct number of 350 ppbv, we by mistake repeated the same number as for CO<sub>2</sub> of 185 ppmv. We want to correct this oversight on our side before publication of the manuscript.

TS4 Please provide a reference list entry including creators, title, repository/publisher, and date of last access.

insert reference: (Cassiani et al. 2016)

TS5 Please provide a reference list entry including creators, title, repository/publisher, and date of last access.

insert reference: (Ilana Stern, CCSM4/CESM Model Output, NCAR Climate Data Gateway, date of last access: 10 May 2023)

TS6 Please check DOI (not resolving) and provide the corresponding reference list entry.

The dataset was not published yet, only the doi reserved. The dataset is now public and the doi does resolve.

TS7 Please note that there still is a discrepancy ("Norges Forskningsråd grant UTF-2016-long-term/10030"). Please check.

Please rephrase as

This research has been supported by the Schweizerischer Nationalfonds zur Förderung der Wissenschaftlichen Forschung (grant no. 200021\_143436) and the Norges Forskningsråd (grant nos. 229771, NS9054K, NN9555K, NS2345K, and UTF-2016-long-term/10030).

TS8 Please confirm volume number and page range. The information you provided was for a different paper.

Please correct: Volume122. Pages are correct.

TS9 Please confirm volume number and page range as provided on the website.

Confirmed.