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Climate of the Past
Discussions

Interactive comment on "Intensified Atlantic vs. weakened Pacific meridional overturning circulations in response to Tibetan Plateau uplift" *by* Baohuang Su et al.

Anonymous Referee #1

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In the paper, Su and co-authors demonstrate that the uplift of TP leads to the weakening of AMOC, but the intensification of PMOC. The paper is well written. If the authors can address or discuss the two fundamental weaknesses below, I think the revised version will be largely improved.

1) Why removal of TP leads to the intensified westerlies over the North Atlantic and weakened subtropical anticyclones and trade winds over the Pacific? Are these changes a direct atmospheric response of TP removal, or including feedbacks of SST? In the revised version, the authors should explain why these atmospheric changes appear in their simulations. This explanation is helpful to judge if the weakening of AMOC

is an amplified result due to feedbacks of ocean circulations and SST.

2) In the NTP experiment, the net freshwater flux increases by 0.005 Sv at the initial stage, but by 0.025 Sv at the final stage. The author should discuss a little bit in the revised version, if fresh water flux of 0.005Sv is strong enough to trigger the weakening of AMOC. Is the model too sensitivity to a small change in fresh water flux?

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