Dear Suning Hue et al.,
**Reply:** actually Suning Hou et al.,

Thanks for submitting your revised manuscript, "Reconciling equatorward migration of Southern Ocean fronts with minor Antarctic ice volume change during Miocene cooling" and "Southern Ocean control on atmospheric CO2 changes across late-Pliocene Marine Isotope Stage M2".
**Reply:** We would like to thank the editor for reviewing and accepting our manuscript. This is the title of the dataset; the manuscript is only the latter one.

I appreciate that you have taken most comments into account.
I have added a few very minor comments to the new version (see attachment).
**Reply:** all corrected accordingly

I also agree with the reviewer questioning the approach to settle age model by tuning to maximum/minimum. Sure, between records in your own core absolute ages is less important. However, a key point here is the relation to the 999 CO2 record. I will ask you to acknowledge the uncertainties associated with the age model(s) and how/if age model uncertainty may affect the results/interpretations.
**Reply:** We have made additional slope-based tie points where possible. Fig.5d has shown the stratigraphic correlation between Site 999 and Site 1168. A small offset between the STF and pco2 is possible but has little effect on our interpretation**.**
**Proposed changes:**
**Section 4.2 Southern Ocean carbon outgasssing as pCO2 regulator across M2**
By combining our reconstructed STF migrations with the available $pCO_2$ reconstructions of the late-Pliocene, we note a coincidence that the northernmost position of the STF is likely synchronous with the lowest $pCO_2$, which are both 10–20 kyrs later than MIS M2 (De la Vega et al., 2020). **The offset between $pCO_2$ from Site 999 and the SST and isotope data shown from Site 1168 is age model independent. Although $\delta^{18}O$ records of Site 1168 and Site 999 have demonstrated a reliable stratigraphic match (Fig. 5d), uncertainties remain whether the northernmost position of STF and declined $pCO_2$ are really so directly coupled, given the errors in respective age models and the resolution of both records. These give room for a small offset between the STF migration and $pCO_2$ decline, but cannot explain the offset between global $CO_2$ and SST at Site 1168.**

Best regards,
Bjørg Risebrobakken
Editor, Climate of the Past