

Referee Comment

General comments

Huang et al. addressed most of my comments well. However, a few of the comments were not sufficiently addressed, and there are certain points where the text remains confusing or logically inconsistent.

I think this paper could be published with minor revisions to address these issues.

Specific comments

Line 64, “In this scenario, Antarctica’s melting ice sheets would raise sea level 20 meters in coming centuries (Grant et al., 2019).”: This is not necessarily inaccurate, but it’s confusing given that the aspect of AIS reduction of concern in this study is not the sea level rise but the change in the volume of the ice sheet. As you describe, Could you make a statement here about the volume of ice lost, rather than the resulting sea level rise?

Line 65, “we use the Pliocene as an idealized test case to investigate how large changes in the East AIS (EAIS) height affect the climate.”: This is a minor tweak, but I think it would be clearer to say something like, “we use a model of the Pliocene to investigate how large, hypothetical changes in East AIS (EAIS) height would affect the climate.” I suggest this change because the Pliocene itself is not the test-case; rather, the test-cases are the hypothetical scenarios which are perturbations on the Pliocene case.

Lines 123-127, “All these sensitivity experiments are hypothetical scenarios, because changes in surface albedo due to ice sheet removal have not been accounted explicitly in the present study through increasing the sea level.”: My previous comment was concerned with ice sheet volume, not surface albedo. In the mid-Pliocene warm period, the climate had time to adjust to near-modern levels of CO₂. Thus, the ice sheet volume in the PRISM4 reconstruction is meant to represent a longer-term adjustment than we have thus far experienced in the present (as you mention in your introduction). The 0%, 25%, 50%, and 75% scenarios therefore represent a somewhat arbitrary further reduction *against* mid-Pliocene ice sheet volume. Would these ice sheet *volumes* correspond to any projected future scenarios, and if so which scenarios? If you make clear that these experiments are hypothetical, I don’t think you necessarily need to discuss surface albedo here, since you already mention it elsewhere.

Line 136-138, “The results are presented as anomalies from the control for the sensitivity experiments, thereby estimating the EAIS height effect during the mid-Pliocene warm period.”: I suggest you remove “thereby estimating the EAIS height effect during the mid-Pliocene warm period.” Again, unless I’m missing some important information, the 0%, 25%, 50%, and 75% scenarios were not Pliocene scenarios. Your *control* in this study is the mid-Pliocene warm period, and the anomaly plots you show are hypothetical effects.