

Response to Reviewer 1

May 21, 2019

page 1, line 17-18: This is formulated ambiguously: do you mean with “.. and apply them to more realistic regional configurations” that further work should try to assess their validity in more realistic setups or that more work is in general needed before one can test them in realistic configurations at all? In the latter case, please specify why.

We replaced the last sentence of the abstract by “Further work is therefore needed to assess the validity of these melting parameterizations in more realistic setups”

page 17, line 33-34: Do you mean that the pulse in the “Cold0” scenario only shows for the coupled runs and not for the parameterisations? Please clarify.

This is correct, we have clarified

page 22, line 2-4: It’s hard to tell, but for some coupled runs, melt rates in the “Warm0” case seem to increase first and then drop after 75 years.

Yes indeed. It also seems to be the case for some coupled run of the “Warm1”. It’s hard to tell why actually.

page 22, line 7-8: “50 to 100 Gt/a”? (about 50Gt/a for PME2 in Cold1, 100Gt/a for coupled in Cold1)

Yes thanks, corrected

page 22, line 8: maybe reformulate to “4 to 12mm of sea-level equivalent mass” since this is an idealized setup

This is right. Changed

page 23, line 5 and following: You could add that both, the plume emulator and the box parameterisation seem to do better than the simpler parameterisations for “Cold0”. Also the plume emulator seems to do quite okay for the “Cold1” case.

We already say that the plume emulator does good for the “Cold_0” scenario. For the rest, It is not that obvious to me so I prefer to keep the text as it is.

page 23, line 16: Interesting to add: if you look at Figure 6, e.g., during the melt pulse in the beginning, the order seems to be reversed and melting decreases with the number of boxes.

Good remark, we added this point

page 25, line 2: “Plume parameterisation configuration” instead of “coupled model configuration”?

Corrected

Technical comments:

Page 17, line 17: get

Corrected

Page 21, line 1: compared

Corrected

Page 25, line 33: idealized

We used British English all over the text