

Dear Dr. Dijkstra,

Thank you again for your editorial work. We are glad that the revised manuscript met the expectations of both reviewers.

The minor comments from Referee #1 (Bas de Boer) are all processed. Answers can be found in this document, changes in the manuscript are highlighted in blue.

We are looking forward to your further communication.

Best regards,
Basil Neff on behalf of all authors

Referee #1 (Bas de Boer)

First of all I would like to mention that the author has been very thorough in going through both reviews. Most of the remarks are well taken care of or properly explained. I do have a few comments on the reply, given below:

General comments

3. I think you explained this very well. This should also be stated in the introduction in the same way!

Response: A sentence highlighting the long simulations enabled by the high numerical efficiency of the model was added to the last paragraph of the introduction.

4. Good response and properly described in the current version of the manuscript.

Response: Thank you. No further action needed.

10. It is good to keep the structure of section 4 this way. Please include a sentence in Section 4.2 then about the reasoning of performing the PI tests, as have you stated in the reply.

Response: It is correct that the purpose of this forcing was not introduced. A sentence was added in the first paragraph of section 4.2.

As is generally used in the literature I strongly recommend you do replace mSLE with m s. l. e. everywhere in the manuscript. Explain the acronym the first time it is used on page 12: "... is not equal to 0 meter sea level equivalent (m s. l. e.). "

Response:
The manuscript is updated with the new abbreviation.

Minor comments on revised manuscript

Page 2

Line 6: Perhaps the full sentence: "Bedrock ... volume" can be left out.

Response: Sentence removed

Page 3

L6: Change 'more recently' to 'over the past 800 kyr'.

Response: Part of the sentence changed.

L 17: Change 'Topographic changes' to 'Changes in topography'.

Response: Beginning of the sentence changed.

L 18: Change 'changes' to 'alter'.

Response: Changed to "alter".

Page 9

L 14-15: Mention in this sentence that you refer here to the simulations that use the GCM climate forcing of the LGM.

Response: Information about the climate forcing has been added.

Page 12

L 19: Remove sentence: "All ice ... (SLE)".

Response: Sentence removed.

L 21: Change to: is not equal to 0 meter sea level equivalent (m s. l. e.).

Response: Sentence changed.

Page 13

Could you make the title of section 3 shorter please? Change to something like: 'Idealized simulations using EISMINT'

Response: Name of section changed, "conservation of mass" left in the title.

Page 14

L 4: Replace 'irreducible' with 'negligible'.

Response: That would change the intended meaning of the sentence. We think it is important to highlight that a residual mismatch is expected and can not be reduced due to fundamental mathematical reasons in the design of digital computers.

L 19: Why use here liter as a unit? Change to m³.

Response: The preceding discussion and the corresponding figure use m³ as unit. However, for the illustrative at the end of the paragraph, we prefer to keep the unit of one liter, e.g., one bottle of water, that is lost on the entire Northern Hemisphere per simulated year.

Page 21

L 20: Replace 'mio' with million.

Response: Replaced

Page 25

I think it would be good to mark the end points of the fast cooling/warming experiments more clearly in Figure 13. Indicate for example with a cross or square box, in the colour of the specific experiment (blue for decrease, red for increase). Also, to make figure 13 easier to interpret, remove the arrows from the background figure, and add (smaller) arrows to the experiments illustrated in this figure. If possible, refer to these points in the text more directly...

Response: We revised figure 13. The arrows are smaller and the end of the transient simulations is now marked with an asterisk.

Page 26

L 21: change to cannot

Response: We are not 100% certain about this comment, because line 21 on page 25 comprises only a citation. We assume that you meant line 14 on the same page and change “can not” to “cannot”? This is done, as well on page 6 line 18 (revised manuscript) where the same typo occurred.

Page 29

L 6-7: I think here, only the reference to Le Meur and Huybrechts is sufficient.

Response: Reference removed.

Page 31

L 26: resources

Response: Typo removed.

Page 32

L 1: Remove de Boer (2014) here, this is only ice-sheet model.

Response: Reference removed.

Figure 6

First explain panel a), then panels b-d.

Response: Explanation rephrased, order changed.

Figure 13

See comments for page 25 above.

Response: See response for page 25 above.