

General statement

This is the second round of review for this manuscript. Three major comments and a number of more minor comments were raised by the three reviewers. The authors did a great job at addressing the comments and this led to extensive re-writing of some parts of the manuscript, as well as additional test simulations.

In general, I think that taking into account the reviewers' comments greatly improved an already really interesting manuscript.

In particular, the introduction now addresses a major remark made by all three reviewers about the lack of a definition for tipping point. This section has also been re-written to address a minor comment by reviewer 3. The readability of this section has much improved in the revised version and the point of the paper (existence of a tipping point) and the competing effects (SMB-elevation feedback vs GIA and other negative feedbacks) are now clearly described.

I found that the major comment of reviewer 1 to add a simulation where the SMB was kept constant in the coastal region of central West Greenland (to test the hypothesis that the ice sheet being pinned to a high topography point in this region has a stabilising effect) was a really interesting approach. The new simulations do show that, if the ice sheet is kept pinned on that point, nearly complete loss is prevented at higher levels of warming than if the SMB-elevation feedback is taken into account. The complete disappearance of the «medium melt» category and more abrupt threshold behaviour is to me a further clue of the stabilising effect of this pinning point. Adding a new subsection (3.4) to address this also puts more focus on this phenomenon and justifies the title of the paper more than in the first version.

Finally, I have some additional remarks (listed below). They are very minor and mostly concern typos and grammar. Therefore, I'm not expecting a response at all and I am just listing them so the authors can make the appropriate corrections before sending the manuscript to the copy-editing team.

Good job!

Minor comments

General remark: there's a mix of nonlinear and non-linear

Abstract

L 20: **towards** as you're using British English

Introduction

L 56: References need to be in brackets

L 88: **(GIA)** not needed anymore since introduced earlier in introduction

L 96: same with **(GIA)**

L 99-100: it's four subsections now. Correct number and add sec 3.4

Method

L 116: has previously been applied

L 143: space missing between ° and **land**

L 156: not sure but space might be missing between **Fig.** and **1a**

L 181: as a consequence

Results

L 195-196: don't need the PI SMB value anymore here as it's been added to L194

L 201-202: This sentence is a bit as there as 2 references to the PI value
(**compared to the BG-PI control run** and **above pre-industrial**)

L 217: 8 kyr or fewer

L 242: space missing between **Fig.** and **3**

L 243: 488±91 Gt/yr

L 243: twice as high as rather than two times higher than ?

L243-245: I think it would be better to separate into 2 sentences and remove the brackets. The sentence is already a bit long and there would be more emphasis on the fact that there is no « medium melt » anymore.

We find that, when GIA is not accounted for, complete GrIS melt is achieved for an initial SMB forcing of 488±91 Gt/yr, which is twice as high as when GIA is included and corresponds to a global mean warming above pre-industrial of 1.6 K. The GrIS threshold behaviour is also exacerbated, with the final GrIS state switching directly from “low melt” to “complete melt” (Fig. 4).

L 255-256: repeat of **in our simulations** makes it a bit more difficult to read. First one is not really necessary.

As we do not account for ocean forcing at the marine-terminating outlet glacier, we triggered in our sensitivity simulations an increase in ice discharge ...

L 257: (instead of , before **see Subsection 2.3**

L 258: , after **(+3.2 K)**

L 269: Fig. 6 doesn't have the red box, only Fig. 7 has it. Better to add it to Fig. 6 than changing the reference though in this case

L284: remove ,

L285: will or will not pass the threshold (remove extra **or not**)

Discussion

L 288: remove **we will**

L 288: **analyse** as you're using British English

L 300: , missing between **radiation** and **van Kampenhout**

L 304: remove **it** in and **it remains** (or needs to add something after analyse, i.e it remains complicated to analyse what?)

L 347: is also limited

L 349: has consistently been simulated
L 399: does not account