Response to Reviewer Comments

Journal: The Cryosphere
Title: **Impact of the melt-albedo feedback on the future evolution of the Greenland Ice Sheet with PISM-dEBM-simple**
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MS Type: Research article

First of all, we would like to thank the editor Kerim Nisancioglu and the two reviewers, Signe Hillerup Larsen and Mario Krapp again for their helpful and excellent comments and their efforts to create the detailed reviews! In our second revision of the manuscript we only addressed stylistic issues pointed out by the second reviewer Mario Krapp. Following his suggestion, we decided to replace Figure A1 to increase clarity.

Review: Impact of the melt–albedo feedback on the future evolution of the Greenland Ice Sheet with PISM-dEBM-simple

M. Krapp

This is a review of the revised manuscript submitted by Zeitz et al.
I am grateful to the authors for having put a lot of effort in the revision of their paper. The presentation quality is excellent and guides the reader through the thorough and comprehensive analysis of the mass balance module description. A few minor revisions remain before I can recommend it for publication. Most of them are typos and a few stylistic changes.
- The use of hyphens ("-"): Please check the correct use of hyphens in composites such as in P1L8: "present day values" -> "present-day values" . In general, I recommend using hyphenated composites but more importantly, use them consistently. Some examples:
o Ice volume
We made an effort to correct the use of hyphens
- Use of "parameterization" and "parametrization" (There are, in fact 4! different ways to spell it: parametrization, also spelled parameterization, parametrisation or parameterisation) please pick one, consistently.
done
- P2L5 "lighter surface" -> "brighter surfaces"
done
- Spell out "dEBM-simple" on P3L2, as it's the first time you use it in the main text, it is actually spelled out on P4L15
done

- P4L8 “at 0.5193 m/yr”, add “, the default PISM value”
done
- P5L3: “Ice melt” -> “melt water”
done
- P3L11/12: There is no “on the one hand” which would go with the phrase “On the other hand”
done
- P3L26: “as long as the used does not..” -> “user” (is meant here, I guess)
done
- P7L24: “respective” (typo)
done
- Fig 3 caption: “temperature” (typo)
done
- P14L6: “an precipitation”
done
- P15L5: “an approximately”
done
- P17L27: “coming of” -> “due to”
done
- Same line: “linear in the frequency of darkening years.” -> “linear in event frequency.”
done
- P18L5: “corridor” -> “range”
done
- P19L9: “, as well as” -> “and”
done
- P19L11: “complete” -> “close”
done
- P19L13 “therefore”
done
- P19L20 “in turn”
done
- P20L6: “parameterization”
done
- P20L19: “...positive degree model, PISM-dEBM-simple” (add a comma for clarity)
done
- P20L33: “The share of melt, driven by albedo changes, is...”(add commas for clarity)
done
- P21L10: “ice losses” (check later occurrences as well)
done
- P21L10: “albedo- and insolation-dependent melt” (hyphened)
done
- P21L25: LaTeX formatting of Teff
done

- P21L32: “but also by the sky conditions, “

done

- P30L11: “increase.”, period is missing

done

- P31L2: “...drawn randomly from a uniform distribution, creating...” add this information here and delete that sentence: “We use uniform random distributions instead of Gaussian for all parameters.”

done

- P32L8: I would delete this sentence: “However, the ensemble size of 100 is not large enough for a thorough statistical analysis.” Because you’re showing the uncertainty and not doing any statistical tests, anyway.

done

- As the authors noted in their response, it is hard to make out where point cloud is densest. I would prefer the 2D histogram for Fig. A1 instead of the markers. It is a pretty good figure and much more useful for this purpose (but I leave that decision to the authors or the editor).

We have changed the figure to a histogram, as the reviewer suggested.