

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
- 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.
- P2L5 “lighter surface” -> “brighter surfaces”
- 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
- P4L8 “at 0.5193 m/yr”, add “, the default PISM value”
- P5L3: “Ice melt” -> “melt water”
- P3L11/12: There is no “on the one hand” which would go with the phrase “On the other hand”
- P3L26: “as long as the used does not..” -> “user” (is meant here, I guess)
- P7L24: “respective” (typo)
- Fig 3 caption: “temperature” (typo)
- P14L6: “an precipitation”
- P15L5: “an approximately”
- P17L27: “coming of” -> “due to”
- Same line: “linear in the frequency of darkening years.” -> “linear in event frequency.”
- P18L5: “corridor” -> “range”
- P19L9: “, as well as” -> “and”
- P19L11: “complete” -> “close”
- P19L13 “therefore”
- P19L20 “in turn”
- P20L6: “parameterization”
- P20L19: “...positive degree model, PISM-dEBM-simple” (add a comma for clarity)
- P20L33: “The share of melt, driven by albedo changes, is...”(add commas for clarity)
- P21L10: “ice losses” (check later occurrences as well)
- P21L10: “albedo- and insolation-dependent melt” (hyphenated)
- P21L25: LaTeX formatting of T_{eff}

- P21L32: “but also by the sky conditions, “
- P30L11: “increase.”, period is missing
- 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.~~”
- 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.
- 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).