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Interactive comment on "Influence of temperature fluctuations on equilibrium ice sheet volume" *by* Troels Bøgeholm Mikkelsen et al.

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This paper highlights the impact of taking into account the temperature variability in future projections of the GrIS SMB using a simple idealized model. As shown by Fettweis et al. (2013) and well mentioned in this paper, the temperature dependence of melt is not linear while precip increases linearly with temperature. Therefore, forcing a model with a mean climate or a climate resolving the interannual variability will be different. But, don't forget that such effect is explicitly taken into account in all of the simulations forced by GCMs. However, in the idealized models, this effect is often neglected and this paper evaluates the additional mass loss if the interannual variability is taken into account. This (technical) paper is well written, fits well with TC and deserves to be published.

However, we can not forget that the results presented here (13% of additional mass loss) are only valid for

- idealized models.

- for GrIS (where the future changes will be driven by melt increase) and not Antarctica (where the future changes will be driven by precip changes).

Therefore, any references to Antarctica in Abstract and Conclusion should be avoid at maximum (e.g. lines 23-27, pg 11) as the Antarctica SMB is, in a 1st order, linearly temperature dependent and the fact that this effect is already explicitly taken into account in all of the more complex/realistic GCMs forced simulations should be more clearly stated into Abstract and Conclusion (e.g. lines 15-19, pg 11).

Finally, the fact that the interannual variability of temperature could likely be not the dominant missing process (vs positive feedbacks) in idealized models should clearly be mentioned into the conclusion.

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