

Interactive comment on “Evaluation of Greenland near surface air temperature datasets” by J. E. Jack Reeves Eyre and Xubin Zeng

Anonymous Referee #2

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This is a timely and fairly novel comparison of Greenland near-surface air temperature (SAT) bias trends between various reanalysis/regional climate model and instrumental-based gridded SAT products and in situ meteorological SAT data, and an analysis of Greenland SAT trends over time since 1900.

The paper is clear and well-written, and makes some interesting and useful conclusions about the likely accuracy and reliability of the various gridded SAT products that are analysed. It provides a valuable contribution to the relatively limited literature base on this topic, especially given the recent plethora of available reanalysis and regional climate model products for Greenland (including several products spanning the first half of the twentieth century).

I would like to have seen a bit more spatial analysis of Greenland SAT trends, e.g.

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gridded maps of trends from several different datasets, showing how the trends spatially vary, where they are most significant and reliable for different time periods, and summarising the differences and explanations in these.

page 2, line 3: I don't follow why "the benefit for SAT [of high resolution] is less clear [than for SMB]" Why should this be the case, given that melt and runoff strongly correlate with SAT which is much more directly elevation-dependent than accumulation?

p.2, l.17: "The LATTER SAT reconstruction was compared..."

p.2, l.29 remove comma after "SAT observations".

p.5, l.9 How were the 31 model configurations selected from the CMIP5 ensemble?

p.5, l.20: add that 20CR also has a positive bias in the central-most regions.

p.6, l.5 "MERRA2 closely matches the observed seasonal cycle at all stations" - does MERRA2 assimilate data from these meteorological stations and is this therefore a non-independent comparison and unsurprising result?

p.9, l.27: "variability in the downscaled RCM".

Figure 3: need to distinguish the two faint lines more clearly.

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