

Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on **essd-2021-80**

Anonymous Referee #1

Referee comment on "Programme for Monitoring of the Greenland Ice Sheet (PROMICE) automatic weather station data" by Robert S. Fausto et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-80-RC1>, 2021

Review of

PROMICE automatic weather station data

by Fausto and others, submitted to ESSD

General

This paper presents an overview of the near-surface climate, surface mass balance, and GPS data collected by the PROMICE network of AWS on the Greenland ice sheet. The PROMICE data have been transformational for the study of the climate of the Greenland ice sheet, the evaluation of (regional) climate models, and the validation of satellite data. The paper is generally well and concisely written and the figures/tables are clear. So I recommend publication after some minor issues have been addressed, see below.

Major comments

p. 1, l 10, section tilt correction: It would be illustrative to provide the average corrections that were obtained for SWin for the various AWS.

Section 4: instead of presenting time series of two selected AWS, which comes across as somewhat arbitrary, I would have preferred a table with climatological averages, including the SEB terms, simply to demonstrate that the stations are suitable to base a climatology on in the first place and that they are in climatologically distinct regions, which is the main asset of PROMICE. This could be accompanied by a brief analysis of basic climate information e.g. near-surface lapse rate, SWin/SW_TOA, etc.

Minor and textual comments

p1, l. 18: "Presently, the PROMICE AWS data are not included in any reanalysis product such as ERA5, aiding studies with an independent assessment of the performance of regional climate models, and other numerical models that aim 20 to quantify surface mass or energy fluxes (Fettweis et al., 2020)." Has this been a deliberate choice? Is it an option to reverse this in the future, to improve the reanalysis products themselves?

p. 2, l. 11: "allows full coverage of the ice sheet," suggest: "allows coverage in various climate zones" as full coverage is evidently not possible and/or aimed for.

p. 3, l. 23: "snow and ice ablation/accumulation" suggest: "snow ablation/accumulation and ice ablation"

p. 8, l. 11: "to quantify ice dynamics" suggest "to quantify ice floe velocity"