

Review of revised: “Glacier Energy and Mass Balance (GEMB): A model of firn processes for cryosphere research”

By Alex S. Gardner, Nicole-Jeanne Schlegel, Eric Larour

General comments:

I thank the authors for their thoughtful and thorough responses to my prior comments. After reviewing the updated draft, I am satisfied with the revisions. The new draft is much clearer, both in the description of the model and discussion of their model experiments. I am happy to recommend the paper for publication. I do have several minor comments, listed below, that the authors may consider addressing.

Line by line comments:

100: ice sheet wide should have hyphens in both instances: ice-sheet-wide changes and ice-sheet-wide estimation

114: do you mean stand-alone rather than stand-along?

114: “It is a column model...” consider breaking into two sentences.

155: energy fluxes **are** small

168: consider changing word ‘master’ to something like ‘main’, ‘core’, ‘primary’, or similar (here and elsewhere)

Section 2.4: consider mentioning how GEMB handles the advective component of heat transfer (i.e., you are using a Lagrangian framework so advective heat transport is handled implicitly).

Equation 11: consider using ρ_{water} rather than δ_{water} for consistency with density notation.

Equation 16: Consider using \dot{b} rather than C to be consistent with Ligtenberg et al. (2011).

553: You changed the text regarding ‘State of the art’; consider changing the Section title to “7. Comparison to RACMO2.3 and IMAU-FDM” or similar.

609: Consider: “IMAU-FDM is a widely used firn model product” or similar.

641: change to “... calibration, as IMAU-FDM had ...”

Table 1: Sturm is misspelled as Strum

Figures 6 and 7: change panel titles to be consistent – Fig. 6 uses IMAU-FDM in the caption but FDM on the figure; Fig. 7 uses IMAU-FDM in caption but RACMO/FDM on the figure. Likewise Figure 10.