

Dear Dr. Sandells,

Thank you for your question. It is our pleasure to address it as follows.

- *Please could you clarify what the improvements are for your work over the Mousavi work, especially if you have a narrower range of applicability? It is not at all clear how this is an extension and an improvement over the Mousavi look up table.*

The primary motivation of this paper is to present a validation attempt for liquid water retrieval based on Mousavi's approach. Previous studies (Mousavi et al., 2021; 2022, and also Houtz et al., 2019; 2021) did not present a validation approach for the liquid water retrievals against any reliable reference. To the best of our knowledge, our comparison with the two state-of-the-art surface energy balance models (GEMB and Samimi et al., 2021) forced with in situ observations (PROMICE and GC-Net AWS) represents the first attempt to validate the liquid water retrieval.

Regarding the look-up table generation, upon reviewing the Mousavi algorithm, we realized that some values used in the look-up building were unphysical, such as deep ice sheet temperatures below 200 K. Therefore, we updated these parts and documented the changes accordingly in the paper.

Thank you for your time.

Sincerely,

Alamgir, on behalf of all the authors. 5/28/2025