

Review 2

I like the idea of this paper. I believe not enough attention is placed on error slinked to both study design and data collection, and numerical approaches. This paper discusses both these issues extensively concerning the calculation of the thermal diffusivity, a key parameter in calculating the diffusion heat flux to the surface, and the subsequent ice melt. Specifically, the influence of temporal and spatial temperature sampling intervals in the data collection, as well as the influence of truncation errors in the calculations, is explored along a gradient of idealized data to observed data. While this approach has limitations, like assuming a homogeneous debris layer, I think drawing attention to often ignored sources of uncertainty is valuable.

However, there are some flaws in the manuscript that I think should be addressed. First, the manuscript would benefit from closer attention to the writing. In many places, the writing is highly informal and imprecise. While I value directness and simplicity to convey a clear message, in some cases, the manuscript reads more like a blog post, with vague statements and a lack of structure.

We thank the reviewer for their review and critical comments about the manuscript and work. In particular the comments about the presentation which motivated a substantial overhaul and re-writing of the text, through which we have addressed all the comments raised.

The text would benefit from being streamlined to allow for a clearer flow. There are also some sections of methods that read like introduction and discussions that also read like methods.

The discussion lacks a section on the limitations of this study

There is no conclusion, simply a long list of broad best practice guidelines that are very general.

We have restructured the manuscript and by doing so have improved the flow and also the division of material across the sections, we have stated the aims in a new section and discuss the limitations of the study and the scope of this study, as well as adding a conclusion that covers aspects of the general application of this method in both numerical and real-world terms.

Citations are formatted wrong and many places and general lack of commas throughout the text.

Overall, I found the text hard to follow and found it hard to see the key points in the study. Therefore, despite my support of this study, I think it needs a lot of clarification and rewriting before it can be published.

We apologise that the readability was not up to standard first time round, and have now re-written the whole manuscript and improved the readability and logical flow of the manuscript. We have checked citation formatting and grammar.