

The reviewers’ comments are highlighted in grey and our responses in white.

**Response to Referee 1 (RC1, Report 2)**

The authors thoroughly addressed all of my remarks.
Nevertheless, I still deplore their decision not to include the meteo data (at least some part of it is evidently available, processed and analyzed, so the reasons given "not saved, not processed, not analyzed") clearly do not apply. In agreement with Reviewer 2, I still encourage to reconsider, but I assume other reasons (data embargo) are of concern.
We only used meteorological data from one automatic weather station (Tuluka AWS) with a more or less complete time series. The time series from some of the other AWS have longer data gaps and may contain artefacts. As stated in our previous response, the evaluation, post-processing, and analysis of these time series has not yet been completed. From our point of view, it does not make sense to publish a single time series (of the Tuluka AWS) while the processing of the rest of the meteo dataset is still in progress. However, we clearly state in the manuscript that individual access can be granted to the meteorological data upon request (see Section 6).
Supporting Reviewer 3's suggestion, I would also recommend including the covered time period in the title, or at least in the abstract. Continued measurements are no argument here, as the paper describes the current status.
We revised the title and abstract to include the requested information. The new title is: <i>An hourly ground temperature dataset for 16 high-elevation sites (3493–4377 m a.s.l.) in the Bale Mountains, Ethiopia (2017–2020)</i>
Figure B2: Please add units to x-axis
The unit (km) was added.
I have no further comments and recommend publication after addressing these minor issues.

### Response to Referee 2 (RC2, Report 1)

I can see that the authors have made detailed revisions in response to my previous comments and the result is a much better paper. I still have some very minor comments but these are minor revisions.

As I remarked last time Figure 1 only shows 8 weather stations, yet 10 are mentioned in the text as being part of the network. This anomaly needs to be explained at the very least, if the map is not to be expanded to include all 10 sites (my original recommendation which still stands). If you cannot expand the map then put arrows on the edge of the map with distances showing where the other two stations are.

The two weather stations missing in the map are located far south of Rira. If we would expand the map, we would lose the focus on the actual study area (the Bale Mountains and Sanetti Plateau). We therefore followed your suggestions and put arrows in the map.

My comment “also the solar angle is lowest in Dec/Jan – with a maximum elevation of only around 60° at the December solstice – yet it is overhead in Apr/Aug” was I admit a little unclear. It was meant to refer to the unusual observation that the dry season when solar input appears highest is also the time with the lowest air temperatures. It so happens that the sun is overhead during the wet and cloudy periods of the year, and has a lower angle during the dry (but sunny) season – this in part also accounts for why there is a mismatch between solar radiation input and air temperatures, since even though there are more sunshine hours in Dec/Jan, the solar elevation is lower.

Thanks for the clarification. We added this information in the results section (4.2., second paragraph): “*In contrast to that, daily air temperatures are highest during the rainy seasons when the sun is overhead and lowest during the dry season when the solar elevation is lower (Fig. 5b). The asynchronicity between the seasonal maxima of daily air temperature and incoming shortwave radiation can be further explained by potential variations in the net longwave radiation flux,[...]*”

Figure C1 is excellent and I wonder why it is not in the main text? – that would be my recommendation given the emphasis on permafrost.

We support this suggestion and shifted former Figure C1 from the Appendix to the main text.

Finally, if you can include the video showing cold air ponding in an appendix this would be excellent. If you cannot then the snapshot of Mount Wasama shown in the rebuttal is worth including as a figure in the supplementary information. I presume that the valley drains from left to right (with the lowest areas in the bottom right). This might be worth stating in any caption.

We included the thermal infrared image from the rebuttal in the Appendix (new Fig. C1) and added the following caption based on your suggestion: “*Thermal infrared photo of the Wasama Valley from 23 January 2020 at about 6 AM local time (EAT). Orange to red colours indicate higher temperatures and blue to black colours show lower temperatures The location of the camera was close to the ground temperature logger TM03t (see Fig. 1). The view is to the east. The valley drains from the left and right in the photo background to the lowest areas in the bottom right.*”

We are currently trying to upload the video to an official repository with the aim to link it then to the final publication.