Comments to the study by Bakken-French et al.

General comments

While I appreciate the dedication of the authors to provide full details about the observed changes of each investigated glacier on Mt. Hood (richly illustrated with before-after images from the field), the study has unfortunately taken a decision that makes the results section largely obsolete: In L95 it is written that 'debris-covered stagnant ice was separated from debris-covered active ice'. Apart from the difficulties in deciding about stagnant vs. active ice (have flow velocities been used for this?), this is not allowed for change assessment. The ice is still there and the larger glaciers flowing to the north are well connected to their upper ice body. The glacier termini are still close to the orange circles in Fig. 2B (please add A, B, C, etc. to *all* panels) and frontal retreat is minimal. Even on the low-resolution Sentinel-2 image one can see that the terminus for Coe and Elliot is about where the orange circle is. For Ladd Glacier the terminus is actually above the icon for the camera named *6A*. Indeed, the ice is highly debris covered and might not move much, but it is a part of the glacier,

Also for the area changes the authors have disregarded debris-covered ice under debris cover and found area changes that are much too high. For example, the central part of Zigzag Glacier is only covered by a large rock avalanche and still there. The northern part of the ice has been included but the central part under the debris and the southern part (to the right of the blue circle) is not considered because of stagnation (L168: 'no actively maintained crevasses'). But this is not the definition of a glacier. Of course, when the ice is disconnected and no longer fed by ice avalanches we have dead ice that requires special attention. This has to be elaborated and considered for a study with a focus on area and length changes. But here the 'unprecedented' glacier loss is due to a change of the rules rather than real changes and the obtained changes have thus no meaning.

As a note, also Glisan is not gone but very small and still there. The size limit that is usually used for glaciers is 0.01 km^2 rather than 0.1 km^2. For the classification of very small glaciers please have a loo the study by Leigh et al. (doi.org/10.1017/jog.2019.50). If a glacier fragmented over time in several parts, all parts have to be summed up for change assessment, independent of their status (e.g. being dead ice).

There are some further issues with the study such as the relation of length and area changes to climate data from the same period (which is not possible as glaciers have a response time) or the missing annotation and outlines on most of the field images (so that the reader can not see what is what) but this can be adjusted by removing the climatic interpretation and adding proper annotation to each picture. What is more a problem, is the qualitative nature of the images and the missing visualization of the applied delineation at a proper scale. For such small (and often debris-covered) glaciers as in this region the green lines on Fig. 2 B tell me nothing. This is much too coarse to properly follow what has been decided. One can certainly show clearer close-ups from the Sentinel-2 image, but for this region we have a very high-resolution image available from the ESRI Basemap that was acquired just a few days before the Sentinel-2 image. Please use it for a more sound assessment.

As a first step, I would save the available image as a geotif files at different spatial resolutions (i.e. in many pieces) so that it can also be used when the image is no longer available in the Basemap. Then redo the digitization at a high magnification and consider ice under debris cover as a part of the glacier. In the main paper you can then have a couple of these very high-resolution images with outline overlays for each of the glaciers and a detailed description of

the interpretation, in particular for the critical parts (remaining glaciers could be shown in a supplement). The photos from the field might be used to support the information, but they need to be properly annotated to follow the interpretation. Still, there could be an analysis of the changes according to certain criteria (as in Figs. 7, 8 and 10), but be aware that the results will be different. As a further note here, please omit all change rates in km^2 (Section 3.3 and Fig. 9) as they scale with glaciers size and are incomparable across glaciers and please provide relative area change rates in % per year rather than per decade.

Finally, please stick to what has been investigated. Peak water can be discussed when glacier mass balance and future volume change has been the topic, but this study is about past area and length changes. Please use the opportunity and elaborate on what we can do these days with freely available and geocoded very high-resolution imagery (when they are acquired at the right point in time) and show us where the problems are in such a region (with frequent rock fall) to get glacier maps at the highest possible quality. Of course, the change assessment is also very welcome but what would likely be even more beneficial is to present and discuss limits and possibilities of such images.

Specific comments

L29, 40, 45, etc.: For contemporary glaciers, please use glacierized instead of glaciated.

All Figures: Please provide A, B, C, etc. to all images in a panel and not just to the left ones or a few of them (as in Fig. 4). Please annotate all photos from the field so that the readers know what can be seen.

L20: The Hugonnet study is not about glacier retreat (change in length) but glacier volume and mass change.

L23: There is only a Pelto study from 2022. Maybe also cite the WGMS database (it has a doi) here, as this is likely the original source of the data.

L25: The glaciers will likely not disappear but melt away. Apart from that, more important than the number of glaciers is likely the volume loss. Please report this

L35: Figure 2 might serve as an overview for the study region, but it is way too coarse to illustrate what has been delineated (and what not)

L61: of importance

L95: This is the step that is responsible for my recommendation for rejection of the study (see general comments).

L129: One cannot compare length or area changes to climate data (T, P) of the same period as glaciers have a response time. It might be short in this region but it is not zero. Glacier length changes are a delayed, filtered and enhanced signal that might reflect climatic conditions from a very different and averaged period. A direct comparison is only possible for mass balance. Please remove the climatic interpretation,

L134: What is a 'prior-30-year average'

L166 (Zigzag): See general comments, the glacier is still there. Please note, as images with elevation contour lines or a readable scale are not shown, there is no possibility to follow the numbers given here (and for all other glaciers). This has to be changed in the revised version for all glaciers.

L174: effluent glacier flow

L183: The cited paper does not describe the separation of Zigzag. Indeed, a close view at the image of the ESRI Basemap reveals that both might still be connected. The ice is under debris cover and likely very thin, but there is a connection.

L192: None of these elevation changes can be seen on the photos.

L196: ‘Remnant ice’ => Please mark it on the image.
L213: Where is this landslide? Mark it on the image
L225: From which source do you know that the ice is stagnant, are there any velocity measurements?
L233: But they still had to be counted as a part of the total glacier area.
L243: Also Coe’s (real) terminus is 100% debris covered.
L246: A small part of it seems still to be connected.
L259: Please include the (stagnant) ice under debris cover to determine area changes.
L267: No, the glacier is also visible in Fig. 6B (right) from 2023.
L277: What does ‘communicated’ mean?
L280: Instead of ‘blanketing’ I would write ‘covering’.
L293: Why is ‘Seven glaciers’ bold? Please provide change rates in a table.

L301-306: Please do not show figures before they are cited in the text. Fig. 8: As mentioned above the acceleration for some of the glaciers is due to a change of the rules applied to interpret the images. Please redo the mapping and adjust the numbers to their correct values.
L322: See above, the strong retreat of Coe and Eliot is due to the missing consideration of their tongues.
L337: Please give change rates in per cent and per year as in other studies. Remove the changes in km^2, they cannot be compared across glaciers.
L366: Please remove Section 3.4. It makes no sense for area and length changes without considering response times.
L395: The discussion Section will likely change very much once the correct numbers are available.
L409: This is not a proper publication to define the minimum size of glaciers. Please use official ones.
L414: Why should Coalman shrink further? The glacier is fully in the accumulation area.
L496: I am not sure if this threat is real. At least it cannot be derived from the length and area changes analysed here.
L499: The maps are not sufficient. Please provide a shape file of your 2023 outlines to show where the interpretation is wrong. The figures are way too small to see the relevant details.

L513ff: I think all Rsch. should be Res.
L535: Please cite here the paper in the Annals of Glaciology
L545: cite as doi.org/jog.2023.86