

Author's response on manuscript 'Atmospheric and cryospheric observations at the high-altitude Zarafshon River Basin and the Hydrographic Party Glacier (GHP), Tajikistan, 2018-2025' by Svensson et al.

We are thankful for the responses to our revised manuscript from the referees. In this comment we address the minor comments given by referee #1 below (our responses are italicized in Times New Roman font, while the referee's comments are in Aptos font). In addition, we gave the manuscript a round of proof reading, resulting in grammatical fixes and more precise language (all of which resulted in a few very minor changes to the text). Once again, we thank the referees, as well as the editor, for his efforts throughout this manuscript review.

Anonymous Referee #1

I thank the authors for their responses to the earlier comments and the work that has gone into revisions. I find the manuscript much improved, particularly regarding the structure of the different sections and separation of methods and results/discussions. It now presents an easy to follow overview of the considerable data collection efforts at this site, with enough context for potential users to make the most of the provided data sets. I re-downloaded the DSM files and orthomosaics and am now able to open all of them, thank you for fixing that issue.

I have a few mostly very minor remaining comments - see below - and look forward to seeing this work published in ESSD. (Note: a final round of proof reading for grammar and concise phrasing may be beneficial.)

L 30 the runoff are critical —> is?

Fixed.

L91 Sentinel-2 satellite carries —> Sentinel-2 satellites carry ? (There are multiple)

Fixed.

L125 positions were marked with red crosses of about 2 m arm length —> in the responses you mention that you marked them with spray paint. I suggest including this information here as it may be of interest to others that this approach (spray paint on ice) apparently does not work well.

Fixed. We have now added that red crosses were marked with spray paint in the text.

L126 only one out of four recorded red cross marks on stakes' position were found on images, and three moving target problems (MTPs) —> Not sure I understand this. The crosses were found on moving target problems? What does that mean? Can this be explained or phrased more clearly?

This is an error that made its way into the manuscript. MTP should stand for manual tie point, which in the Pix4D software stands for is a recognizable physical feature in the project area that can manually be identified and clicked on across multiple overlapping images. In the revised manuscript this has been corrected where it is applicable in section 2.2.

L216 two snow pits were excavated, with the first one located in the higher section of the glacier —> add reference to the figure showing the locations

Fixed.

L255 three spectras, which are —> I think the plural of spectrum is spectra. To match the rest of the paragraph, use past tense here (were)

Fixed.

L276 This section and its subchapters present some data results for the different measured parameters, including also some initial context commentary to the acquired results. --> This could be omitted as the section headings are pretty self-explanatory. If you keep it, consider more concise phrasing (e.g.,: some data results -> results)

It is true that this sentence can be omitted and that is now fixed.

Figure 6: Thank you for adding the GPS points to this figure. Please add the purple/brown markers in a and c to the legend. The green markers for 2024 are hard to see - maybe try making them larger or a higher contrast color?

Fixed.

Section 3.5 Ablation stakes

I still struggle a bit with the description of the stake movement. Thank you for confirming in the responses that you do actually mean lateral as in sideways. Does that mean there was no longitudinal movement, or is this simply a way of saying “horizontal” movement as opposed to vertical change (ablation, dynamic emergence)? Perhaps I misunderstand what you mean -I

think this could be clarified easily by briefly explaining your reference system for the movement, for example by stating that lateral refers to movement perpendicular to the center line of the glacier (if that is what you mean?). If your movement data is not split into sideways and lengthwise components (my current interpretation), it could be phrased as “Xm horizontal displacement in a northwest direction from the initial stake position” or something similar to avoid confusion re. lateral/longitudinal. I think it would also be good to explicitly state the uncertainty of the GPS again in this section.

What the referee here assumes is correct, in the sense that there indeed was “horizontal” movement, which was a feature we wanted to highlight in the results text. The suggested wording ‘that lateral refers to movement perpendicular to the center line of the glacier’ does solve this issue. This has now been added to the revised manuscript.

L400 this paper presents

Fixed.

L419 The general results of the GGP front, displays —> no comma, display without s (results...display). Or: The GGP front displays ...

I suggest changing “diminishing” to “low” in the next sentence.

Fixed.