Thank you very much for your thoughtful review of many of my queries about your manuscript. I am, on the whole, satisfied with these responses. I do have a few points that remained unclear in my rereading of the manuscript that I hope are helpful in extending the reach of this work.

Thank you for your comments and suggestions. Please find our point-by-point response below (in blue). The line numbers in our responses are related to the revised version.

Q_glacier versus Q_snow conclusion:
1. Q_glacier to Q variability: Could you add something discussion about the limitations here. Mostly I'm interested in why the correlation between daily runoff and daily Q_glacier is much weaker than other runoff components, but the annual associations seem to drive a key finding of the paper. This seems particularly critical given that there are overall very few points and the majority of them are modeled based on limited observational data (which you do a nice job of explaining!)

a. As someone predominately focused on snow versus glaciers, I'm genuinely curious about whether we would expect associations at different timescales. Moreover, what does that mean for conclusions about inter-annual variability (if anything)?

Thank you for the comment. It is difficult to fully identify the drivers leading to different runoff responses on different time scales as more detailed in-situ observations of the runoff components are missing in the study area.

Nevertheless, one of the reasons for the lower correlations between daily runoff and daily $Q_{glacier}$ compared to other runoff components is probably that glacier melt in each elevation zone is simulated only in the case of the snow-free glacier (as mentioned on L166). In contrast to snow and rain contributions, this resulted in a reduced number of days in the study period where $Q_{glacier}$ contributed to total runoff (57% of days with non-zero runoff) leading to a reduced correlation coefficient.

Additionally, glacier runoff often follows after snowmelt runoff, so total runoff on a given day often includes both glacier and snowmelt runoffs from that day (snowmelt runoff occurs from higher elevations zones where the snow is still present) and snowmelt runoff from previous days (the response time is controlled by the calibrated MAXBAS parameter of the HBV model response function). All these factors cause the total runoff during glacier melt to be mixed from different water sources, resulting in a lower correlation coefficient.

On seasonal and annual scales, $Q_{glacier}$ is driven by air temperature and has a similar variability as total runoff. In warm years, snow melts first, followed by glacier ice, leading to higher total runoff. In contrast, in colder years, snow melt still occurs (although slower and later than in warm years), but glacier melt is negligible or even absent, reducing its contribution to total runoff (as mentioned in L417). Thus, despite weaker daily correlations, there are strong annual associations of Q and $Q_{glacier}$.

We enlarged the related discussion section in the revised manuscript to include the above explanations (L425-432, L496-498).

In addition to the above explanation, there are certainly some methodological aspects which might affect the correct interpretation of the results. Most of all we analyzed only an 11-year study period, which may not include a full range of different climate conditions. For example, warm and wet years are not present in this study period as shown in Fig. 10. We addressed this aspect better in L419-422.

2. Correlations between Q_snow and Q_rain and Q (Line 343). What do you mean “no specific pattern was found for Q_snow and Q_rain”? I find it slightly hard to compare these given that the color bar is the same, but the values represented by that color change.

a. For example, a dark blue in Figure 10c isn’t a dark blue in 10b or d. I recognize that they would all be blue, but I find the saturation and coloring to overemphasize the correlations a bit since by my interpretation that would diminish the blues in Quadrant 4. I’m not trying to nitpick it just seems important given that there are so few points and the axes aren’t consistent.

The phrase “no specific pattern…” was a relic of the previous version of the manuscript which we forgot to rephrase, thank you for double checking. We have reformulated it on L347-348.

Regarding Fig. 10., we have prepared several alternatives to this figure (some of them already for the previous round of reviews related to one of your comments). After careful consideration of the pros and cons, we think the one we used in the previous revised manuscript is the most informative. We are aware that using the same color map for different value ranges could potentially lead to misleading interpretations. However, we believe that the color bar labels and the disclaimer in the figure caption should be sufficient for the reader to interpret the figure correctly. Therefore, we consider the current version of the figure to be an acceptable compromise. Individual alternatives are shown at the end of this response together with our comments.

Figures:
I understand and accept that the presentation of cumulative and daily results is the best format according to your investigations, however, I would strongly consider a different color palette—I still find these very challenging to read and I’m likely spending much more time on them than your average reader (e.g., Figure 5 and 7).

We understand that it might be difficult to present as much information as possible in one plot by preserving readability (and keeping the color pallet of the individual variables the same across all figures in the manuscript, if possible). Besides, we need to keep the colors to be readable for different color blindnesses (as required by the journal). Therefore, it is not easy to meet all these expectations. Nevertheless, we have changed the colors and styling of the figures and we hope that they are more readable now. Regarding the above changes, we also modified Figures 4, 6 and 8 so that each variable has the same color in all figures.

1. For Figure 7, it’s not clear to me that there’s immediate value in having the axes and text in different colors, particularly if your reader may have challenges with different color palettes.

The colored axis has been implemented based on Reviewer 1's suggestion as it made sense to us. There are also labels to make it clear what each axis refers to. We checked this figure with the color blindness simulator and did not find any potential problems. Therefore, we prefer to keep the figure as is.

2. In the case of Figure 10 (per the above), I’m curious as to whether you considered my suggestion of a different color palette for the different scales or at least having the color associated with the same value across scales as I find it slightly misleading that dark blue can be both 20% and 100%.

As mentioned in our response above, we tested several options. We created two versions of the figure with the same color scale for all panels (Fig. 1 and Fig. 2 of this response). Fig. 1 of this response has a value range from -40 to 40. Although it shows the above (below) average years well, we found this figure misleading because it seems that all variables have the same variance.

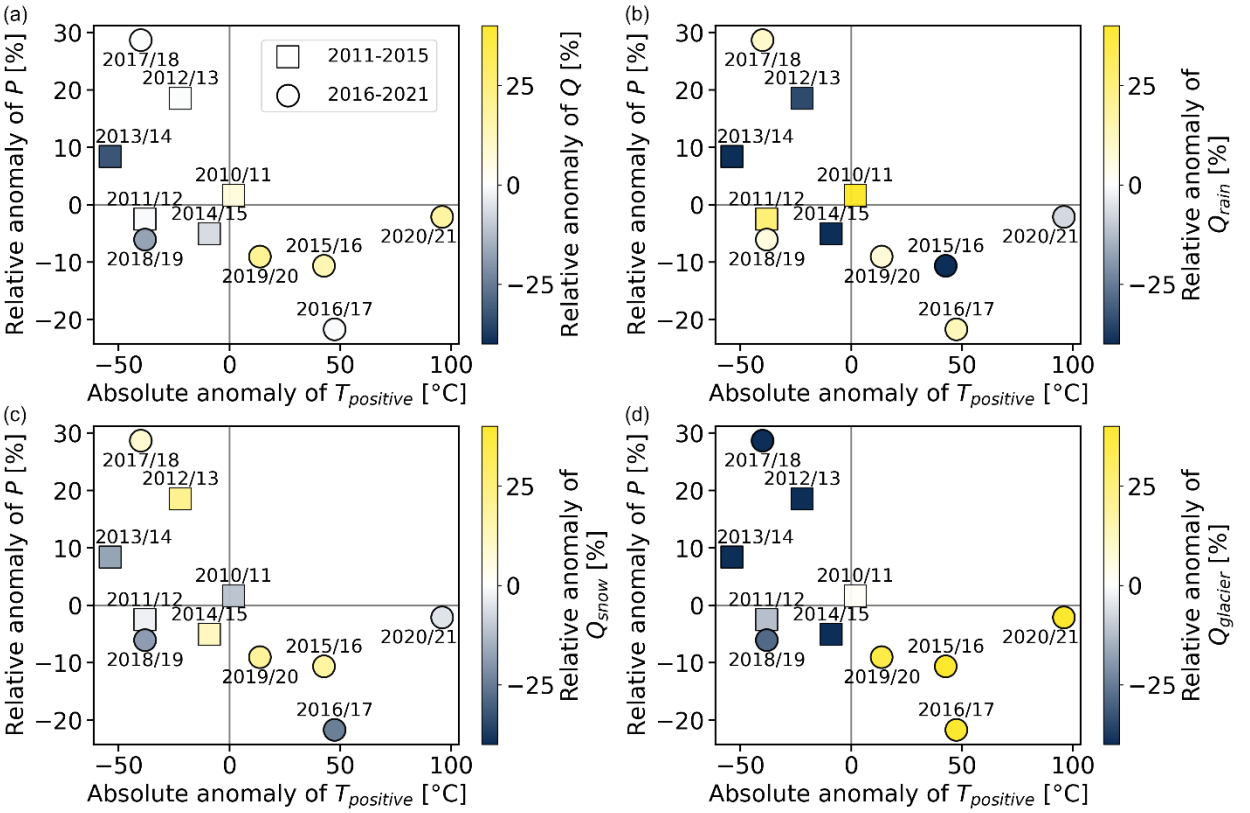

Fig 1: Manuscript Fig. 10 with the same color scale for all panels with the range (-40, 40).

In contrast, Figure 2 of this response has a scale of -160 to 160 covering the variance of the most variable component, so the colors are the same for all panels. While this is a good solution for b) and d) panels, the variability in a) and c) panels is poorly visible.

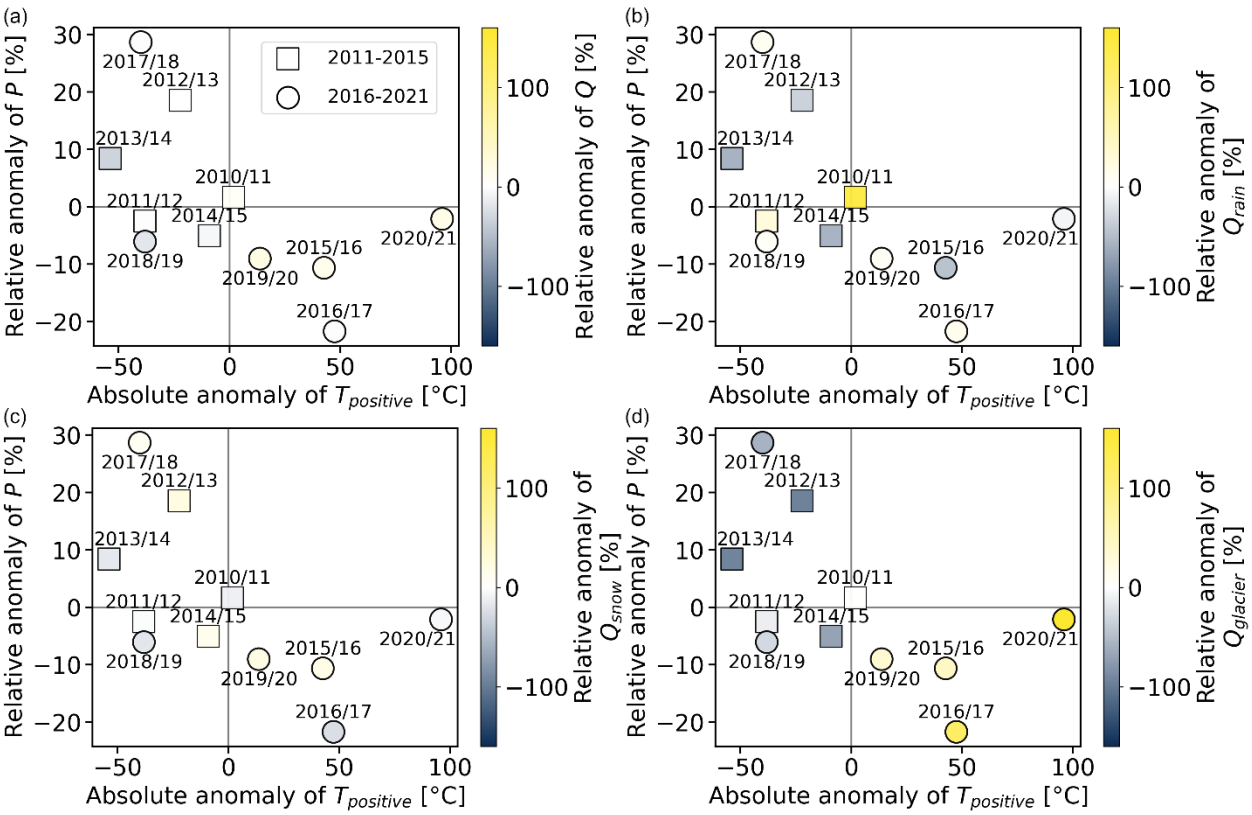

Fig. 2: Manuscript Fig. 10 with the same color scale for all panels with maximal range calculated from all data.

The third option (Fig. 3 of this response) represents the reviewer's suggestion (if we understood correctly). After consideration, we found the use of the two different color scales rather confusing as it suggests two different variables to be displayed in the figures.

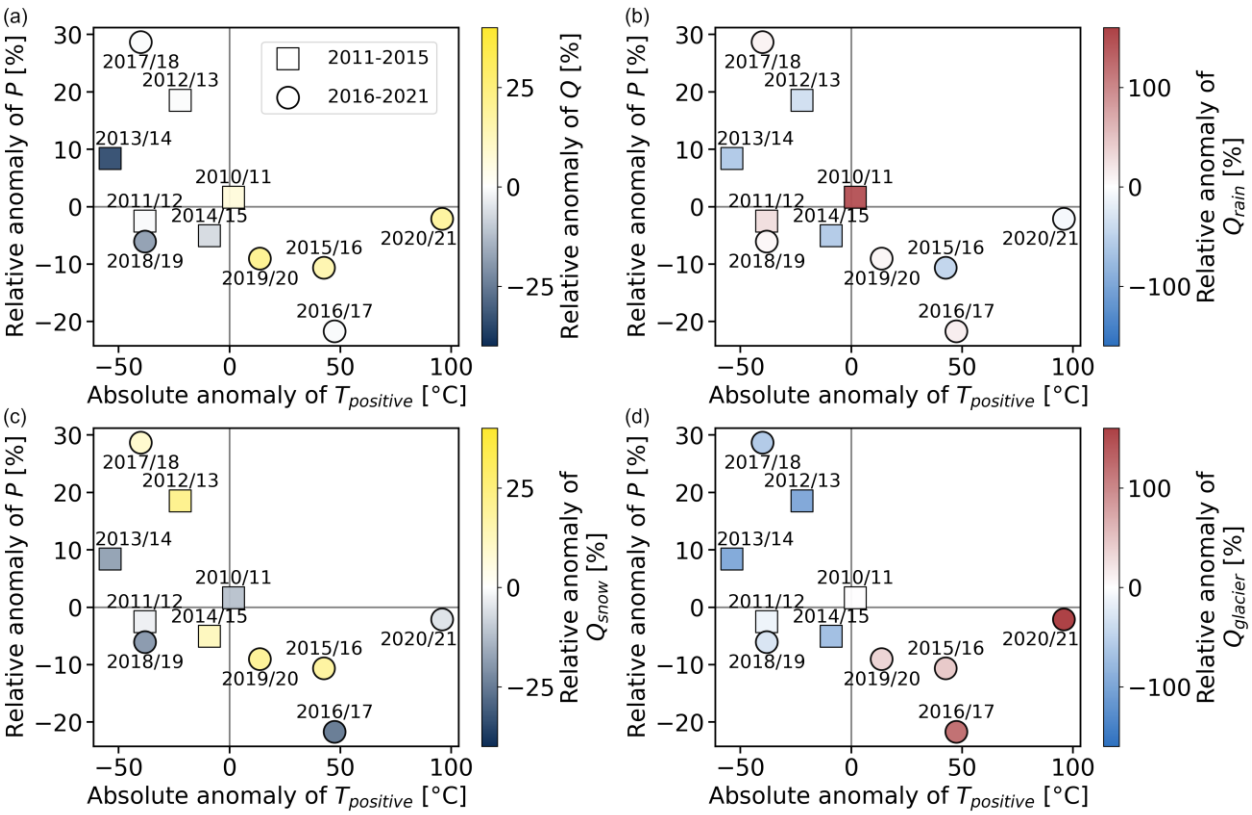

Fig. 3: Manuscript Fig. 10 with two different color scales.

a. I would also note that it seems like T_positive is defined in different ways on lines 191, 341, and 416. It took me a little bit to work out that I think it's the sum of positive temperatures over an annual period (I think*).

We agree with the reviewer. $T_{positive}$ is the annual sum of positive daily temperatures as it is defined in L191. We have rewritten the sentence on L419-420 which we found confusing.