

Reviewer 2 - major concerns

Fig. 2, right: That was the most confusing figure in this article. I think that was because I did not have enough sense about what I am looking at while I was following the article (from the beginning) and started looking at the figure. - The most confusing part is that I see “x1” and “x2” in horizontal/vertical axes, but I see “displacements” I suggest to revise the figure which makes the symbols more intuitive. - One thing I can suggest is to change the order of figure 2 and 3, along with the associated description. In specific, it looks like Figure 2 is more suitable to section 3.2 (voting), and Figure 3 is more suitable to section 3.1 (temporal network configuration). - In addition to this, I also suggest to move the vertical line for $d_{0,32}$. As far as I understand, $d_{0,32}$ was deviated to the right because it is outlier (as mentioned in P5, L5-6). But its position makes me confusing that the end of the line $d_{0,64}$ ends at $d_{0,32}$ in axis x1.

In the new version, this sub figure is changed to one figure. Its axes are now called velocity, and the measurements are called displacements. The labeling, is removed and changed into colours, and a legend is added for clarity. The figure has moved to section 3.2 (voting). In addition to the labeling, also a toy example is included, so the positioning of the lines make sense.

Figure 12: I think this figure does not sufficiently provide the information for the validation. First, I am not sure about how the Figure 12(a) and (b) would support to see how well the algorithm have worked. In specific, the distribution of the displacement or “qualitative similarity” between GoLIVE and Vote just supports the vote result “makes sense”, but they cannot support how the algorithm has improved the result. Maybe the plot of displacement difference between (GoLIVE - RapidEye) and (Vote - RapidEye) might make more sense for this purpose. You can ignore this suggestion if those plots are actually the displacement difference mentioned above (but I cannot find any reason to assume they are the difference plot). Also I would suggest the authors to provide statistics about the difference. Second, I was expecting qualitative correlation between the data plotted in Figure 12(c) and (d), provided that the RapidEye velocity data is working as a reference. I think providing correlation coefficient between the data (i.e. RapidEye vs GoLIVE and RapidEye vs voting) might help supporting the validation result.

We are aiming with this study to extract a pattern, hence the fact that the voting makes sense is the take home message. Anyways, the median of the difference is now included into the text (0.45 mtr/day for the voting and 0.27 mtr/day for the good GoLIVE pair).

Reviewer 2 - questions & suggestions

Figure 6: Does GoLIVE data provide any error information of the measured velocity? If so, I suggest estimating the error as well and provide that. Figure 6(b): Based on Figure 5(a), Figure 5(b), and Figure 6(a), it looks like the upglacier of Hubbard glacier (L) is over-smoothed, maybe because of stationary regions surrounding that. Any thoughts about this?

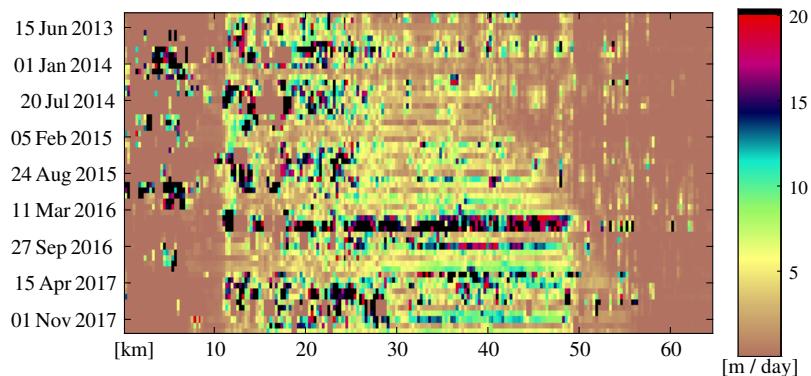
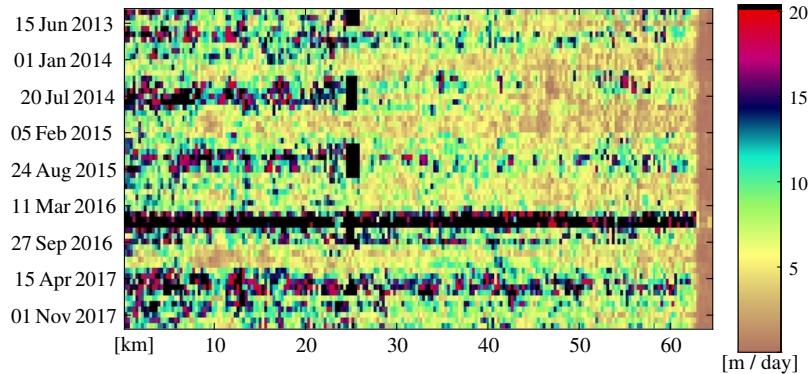
GoLIVE doesn't give error estimates for individual displacements. Some metrics are given that can be proportional or related to quality; the correlation score, peak width (precision), ratio between first and second peak height (reliability). Error propagation is possible in our framework, however then one should assume natural distributed noise, which is not the case (long tails in data).

*Figure 9(a): 1. Is the speed profile come from the raw GoLive data or filtered/smoothed result?
From the smoothed dataset, now also included in the caption of the figure.*

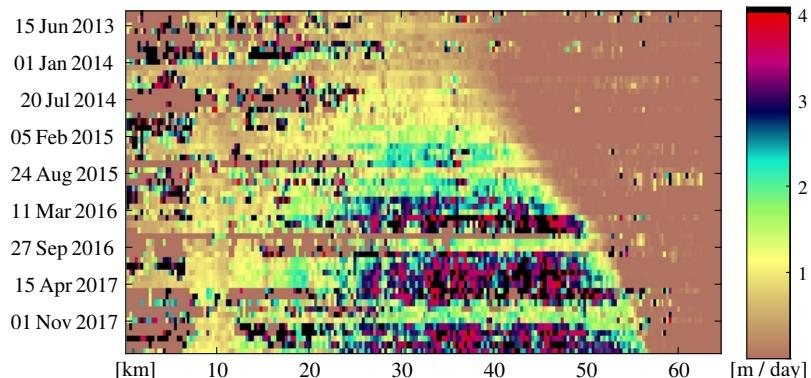
Figure 9(a): 2. In either case, I suggest showing the time-series profile plot for both before and after the postprocessing, so that we can tell how effective the suggested algorithm was useful to investigate the glacier.

It is unclear which step the reviewer means with results before post-processing. GoLIVE data has different intervals, but if all data is used for the least-squares estimation the flowline looks like:

This is a mess, the outliers take over the estimate. It is possible, to only use the displacement with a correlation score higher than 0.6. It will result in a bit better estimates, but still very noisy:



When the least-squares consensus estimate is used, this gives:



The smoothed version is in the manuscript.

Figure 9(a): 3. I dont have much knowledge about Klutlan glacier, but it looks like the 20-50km sector of the glacier has suddenly slowed down in sometime in August-September 2016, and again suddenly accelerated after then. Is the slow-down in summer usual in glaciers in Alaska? Or is that implicates that Klutlan glacier is surge-type glacier?
There seems to be a slow-down over the full trunk of Klutlan Glacier. However, as can also be seen in the appendix, the amount of data over this time interval is limited. Nevertheless, glaciers in this region seem to follow such winter-speed up behavior [Abe and Furuya, 2015].

Reviewer 2 - minor glitches

p.3 l.6: "Therefor: maybe a typo?"

changed.

fig.2: “If my understanding is correct, ‘three image pairs’ are actually ‘pairs from three images’?”

yes, which is different from a triplet.

fig.12(d): “Suggest replacing ‘GoLIVE’ with ‘voting’: It causes confusion with subpanel (c).”

figure has changed.

References

- T. Abe and M. Furuya. Winter speed-up of quiescent surge-type glaciers in Yukon, Canada. *The Cryosphere*, 9(3): 1183–1190, 2015. doi: 10.5194/tc-9-1183-2015.