The Cryosphere

Discussions

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comment

Interactive comment on "Extracting recent short-term glacier velocity evolution over Southern Alaska from a large collection of Landsat data" *by* Bas Altena et al.

Anonymous Referee #3

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This paper proposes a unique method in order to extract time-series glacier surface velocity data. The authors present voting system using a fuzzy voting scheme and apply the method to a set of GoLIVE glacier velocity product. They also validate their results using RapidEye-derived velocity field.

I think this automatic scheme enables us to extract full information from existing glacier velocity products. The algorithms are well written, but some points need to be revised. Here are my comments. I hope these will help to improve your manuscript.

Major comments

1: Abstract should be rewritten in order of method and application. I also think it

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Discussion paper

is better the abstract is a bit more summarized for readers to easily understand the article.

2: First paragraph in the Introduction is too simple. At least, the relation to monitor glacier velocity (content of the following paragraph) should be written.

3: Figure 2 is confusing, especially the right panel of Figure 2. I also think it is better to change the order of Figure 2 and 3.

4: You compare the results from different network, method and smoothing in Figure 5, 6, 7. You also explain the differences in some specific areas (J, K, L and so on). Please add some enlarged figures and explain what differs. I think this is important part to assess your method. Moreover, the result in Figure 7b is too smoothed. How did you consider about this?

5: The Validation section should be moved before the Glaciological observation in order to validate your result.

6: I don't understand the comparison in Figure 12a and 12b. Why did you show these Figures? Moreover, what does the cluster at 2 m/day in X axis comes from?

7: How do you access errors of velocity field in winter in terms of both snow on stable ground and GoLIVE product ?

8: The last paragraph of the Discussion is too simple. If you mention glacier dynamics deriving from your result, you should write in detail as citing some references.

Minor comments

P3L3 and elsewhere: what does "noisy" mean? Please make it clearer.

P3L7: therefore

P3L27: Randolph

P4L3-4: Please cite some references.

P11L12: Logan

P11L17: ignition → "initiation" is common to use.

P12L4-5 steady velocity → I don't think the propagation speed steady.

P12L5: the glaciers widens but the surge does continue → I don't understand what you want to tell here. Please describe in detail.

P13L6: glacier depth → ice thickness

P13L3: not unique → What does "unique" mean here?

Figure 1: Please add an explanation about "relative revisit in days"

Figure 10: What is "the observed period"?

Figure 11: Did the second figure come from raw GoLive product?

Figure 12: "GoLIVE" → "voting"

Interactive comment on The Cryosphere Discuss., https://doi.org/10.5194/tc-2018-66, 2018.