Data Paper

Tsutaki, S., Sugiyama, S. & Sakakibara, D. Surface elevations on Qaanaaq and Bowdoin Glaciers in northwestern Greenland as measured by a kinematic GPS survey from 2012-2016. Polar Data Journal, 2017, 1, 1–16, http://doi.org/10.20575/00000001.

(Received 6/14/2017; Accepted 9/19/2017)

1st submission

Editor Start Date: 6/14/2017

Editor Stop Date: 8/2/2017

Reviewer #1 (6/15/2017–6/25/2017)

Reviewer #2 (6/15/2017–7/31/2017)

Editor Comments to the Author:

Reviewer #1 :

<MAJOR COMMENTS>

1) I wonder the data accuracy is common for the surveys in 2012-2013 and 2014-2016. As the methods of kinematic GPS survey (stop-and-go / continuous) and the carrying styles of rover antenna are different, any explanation would be desirable for the two methods in technical validation.

2) As the coordinates of the two GPS reference stations are very important especially when comparing glacier topography in future, is it better to introduce explicitly the coordinates not only in the data file but also in the paper?

3) Then, considering utilization in future re-survey, more detailed information for the GPS reference stations (especial Bowdoin) might be desirable. For examples, some photos of close range and distant views might help future investigators to know the exact location of the reference stations.

<MINOR COMMENTS>

4) The survey date of 31 July 2015 on Qaanaaq Glacier is described in "3.1. GPS Survey", but not in Table 1.

5) When occupying two lines in Table 1, I feel that top arranging is better than bottom arranging.

Reviewer #2 :

Overall Comments: This paper presents a surface elevation data set covering Qaanaaq and Bowdoin Glaciers in northwestern Greenland obtained by kinematic GPS measurements. This high-resolution data is clearly valuable to investigate glacier surface elevation changes, and worth to be published as a data paper. It describes the study site, the

methods of GPS measurements, the data processing, and structure of the data. As the data paper, the paper basically contains the necessary information.

The reviewer would like to suggest, however, some revision to avoid the lengthiness and make it straightforward in conveying the necessary information for the data users. Below, the reviewer is mainly commenting on the contents and structure of the paper to improve the lucidity, but added some suggestions on English expression. As a non-native, the reviewer would like the authors to understand that these comments might not be strictly precise.

Major Comments

The reviewer suggests to begin with the concise explanation of this data for readers' convenience (i.e. similar contents as the Abstract). Readers, assuming that they are potential data users, needs to know as quickly as possible, what kind of data is this paper describing: what variable, which area, which period, what resolution, etc. This is the aim of 1st chapter "Summary and background".

The first sentence should be, for example, "This dataset is ... a surface elevation data set with 1-m resolution, covering ... Glaciers in northwestern Greenland ... using kinematic GPS measurements". Secondly, the significance of the observation in Greenland is quickly mentioned (the contents currently written in the first paragraph), and the description of the methodology, namely, kinematic GPS (the contents in the 2nd and 3rd paragraph) may follow.

From the current description, it is also not clear what extent is covered by this dataset, if it's only the part of glaciers, whole glacier and vicinities, or certain area such as X km by Y km. Such information is needed in the early part of summary, as well as in the Abstract, though it is clear in the data itself.

In "Methods", it was not written how the survey route was determined. There should be some reason in choosing the route, how long/how many survey is needed to accomplish the observation purpose. For rather minor point, is it the GPS coordinate which is use to make (almost) same survey route in the campaigns? If there is some techniques, it is useful to describe it.

Related to the above-mentioned survey route, the purpose of the campaign and the resulting requirement (resolution, covered area, etc.) to the observation can be more specifically written in either in "Summary" or "Methods" chapter. It would be helpful to understand the whole picture of observations.

It was described that there are two methods of measurements in the field: stop-and-go and continuous. Additional explanation of merits/demerits of these methods, reason why changed to continuous one, effects on the data processing, should be useful.

Minor Comments

p.3 L.4

"The mass loss in Greenland affects recent sea level rise"

Context is vague. More straight to the reason why mentioning on sea level rise here. For example, "The mass loss in

Greenland attracts attention as it affects recent sea level rise"

p.3 L.9

"marine-terminating outlet glaciers and GICs in Greenland"

Aren't "marine-terminating outlet glaciers" a part of "GICs" ? It sounds like a overlapping expression.

p.3 L.13

"Moreover, accurate coordinates for ground control points (GCPs) are... "

It is not clear why it is a demerit that we need the GCPs. It is very troublesome, or needed extra fieldwork, ...etc.

p.3 L.15

"GCPs are also necessary for differencing DEMs ..."

Just unclear what "differencing" means. For my vocabulary, "combine" or "integrate" would fit? Apologize if it's due to the reviewer's misunderstanding.

p.3 L.25

"both" may not be necessary.

p.3 L.26

"as" may not be necessary.

p.4 L.7

"The aim of this paper is to provide surface elevation data... "

It would be useful to mention Figs 3 and 4 here to show how the data looks. As the reviewer understads, this dataset covers only the colored part of these figures.

p.5 L.16-19

The observational period is described using "over" and "from". The reviewer unfortunately doesn't know if it's common in scientific English to write the period as "from XX-YY", but personally it doesn't look familiar. Isn't it either "over XX-YY" or "from XX to (until) YY" ?

p.6 L.7-

for 3.2 Data Processing, it would be useful if the flow of the processing is shown at the beginning. Just by summarizing by text would be useful, as the processing contains multiple steps (raw data to RINEX format, post-processing and generation of the 1-m mesh grid).

p.8 L.1-

As "Technical Validation" is a general title, it is better to mention at the beginning that the authors are going to discuss the accuracy of the kinematic GPS measurements.

p.8 L.7

Is it common to use "~" for meaning of "as large as" or "approximately" ?

Simply a question as the reviewer is not familiar to such usage.

p.8 L.13 and L.15

equations are better to be indented. (should be a matter of editing)

2nd submission

Editor Start Date: 8/27/2017

Editor Stop Date: 9/19/2017

Editor Comments to the Author:

Thank you for re-submitting the paper. I confirmed that it was properly answered to the reviewer's comments.

We have an additional request. Now you write “software’s URL” directly in the text, please leave this URL out.

You have to describe software’s information like a cited paper (including URL and access date). Please refer the following website (6.4 Cite any software that you view as having contributed to your research).

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Editorial Office’s note

Calculate checksum date: 18/10/2017

Algorithm: SHA256

Hash: 6AB51AD7BE336591C72985CE4512AFFB59265227EA87F2900B5BC3AB218D8483

Original Data

Tsutaki, S., Sugiyama, S. & Sakakibara, D. Surface elevations on Qaanaaq and Bowdoin Glaciers in northwestern Greenland as measured by a kinematic GPS survey from 2012-2016. 1.00, Japan, Arctic Data archive System (ADS), 2017. https://doi.org/10.17592/001.2017060801.

Postscript by editorial office,

The above hash was updated as below:

Calculate checksum date: 10/27/2020

Algorithm: SHA256

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