

Reply on RC3

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Author comment on "Baseline data for monitoring geomorphological effects of glacier lake outburst flood: a very-high-resolution image and GIS datasets of the distal part of the Zackenberg River, northeast Greenland" by Aleksandra M. Tomczyk and Marek W. Ewertowski, Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-48-AC3>, 2021

Dear Reviewer,

Thank you very much for your opinion and comments. Please, find our answers below:

- **Interest of a broader audience is fairly limited in my opinion; presented data are indeed interesting but potential usage as well as utilisation in other than very specialised and geographically narrowly-focused case studies are nebulous to me**

Our dataset presents very-high resolution data (better than 0.1 m GSD) illustrating landscape characteristics immediately before, during, and after the flood. To our knowledge, there were no similar datasets available related to large flood events in the Arctic. Such data can be utilised in process-based studies to expand general knowledge about flood-related processes, including modelling sediment entrainment and validation of the models, especially in combination with hydrological data available through Greenland Ecosystem Monitoring Programme. Location of the presented dataset is its particular strength as the close proximity of Zackenberg Research Station infrastructure and regular occurrence of GLOF events make it an excellent natural "laboratory" for investigation and modelling studies, which can be then transferred to other regions enabling assessments of geomorphological and hydrological changes. Our datasets can also be used for modelling ecosystems and habitats under warming climate conditions.

- **Assessment and quantification of landscape changes (perhaps the most interesting utilisation) have already been analysed and published by the authors (Tomczyk and Ewertowski, 2020; Tomczyk et al., 2020), further reducing potential use of the dataset**

We already published quantification of immediate (2-day) changes related to the flood, which is clearly indicated in the data description manuscript, and references to these studies are provided. However, we believe that other applications are equally or more interesting (especially modelling process-based studies, geo-hazards assessments, and ecological studies); therefore, we make our datasets publicly available to facilitate their re-

use and implementation in future works. In addition, we provided unprocessed images, so they can be used as a baseline for monitoring exercises and be co-aligned with data collected during future surveys to establish unique, long-term monitoring of landscape changes in detailed spatial scale. As mentioned before, the proximity of Zackenberg Research Station, Greenland Ecosystem Monitoring Programme and relatively regular GLOF events in Zackenberg River are greatly beneficial to achieve this aim.

- **Methodological approach is technically sound but not novel nor innovative – there is an array of studies focusing on application of UAVs for the production of very high resolution DEMs across the globe (tens of studies adopting this approach published every year, according to the WOS)**

Yes, we used the methodology which becomes "industry" standard in geographical studies, and as stated in Sections 2 and 3, we followed guidelines presented in several papers (Chandler et al., 2018; James et al., 2019; James et al., 2020) to ensure quality and reproducibility of our data. However, our dataset is unique because it captured detailed topography of the river system immediately before, during, and after the flood. To our knowledge, no similar dataset was available for large flood events in the Arctic.

- **Moreover, the ESSD editors in their definitions of goals, practices and recommendations (<https://essd.copernicus.org/articles/10/2275/2018/>) state that: 'Authors should know that, to ensure that ESSD products enable substantial advances in future research, editors must apply dual criteria in all cases; does the data as submitted demonstrate sufficient quality and will the data product interest a sufficient number of users? Clearly, a small data set collected over a short time at a single location generally does not qualify ... ' To sum up, I'm not convinced that presented data – though interesting – can be of use for others than a limited number of researchers working in this particular area and - unlike the other two reviewers - I don't find this dataset suitable for ESSD (this should be decided by the editors). I'm also concerned about the previous exploitation of these data in another two publications of the authors.**

As we mentioned in previous responses, there are several applications of our data themselves, including process-based modelling studies, geo-hazards assessments, ecological studies. Moreover, thanks to the availability of both processed data and unprocessed images, our datasets can be easily extended and combined with future surveys, enabling long-term monitoring. Polar regions are especially vulnerable to climate warming and establishing long-term landscape monitoring is critical to understand processes in such a rapidly evolving environment. Proposed monitoring is facilitated by logistic support of Zackenberg Station. Giving the unique geographical location (i.e., regularly flooded Arctic River, but at the same time relatively easy access), extensive Greenland Ecosystem Monitoring programme, and numerous researchers visiting Zackenberg every year, we expect that our dataset will be re-used frequently in the future and will generate interest of the sufficient number of users.