Reply to reviewer #2

We are very thankful for the anonymous reviewer's constructive review of our manuscript readability and presentation. Please find here our preliminary answers to their main comments. The resulting improvements and the response to the specific/minor comments will be detailed in our final response letter and a fully revised manuscript if the editor considers that our manuscript is appropriate for Earth System Science Data.

The document is color coded as follows:
Black: reviewer general comment
Green: answers to reviewer

In this study the authors provide mass changes for a large number of world glaciers from 1976 to 2023 by combining data sets based on in situ and space-based measurements. This new product, to be distributed by Copernicus services, will be of invaluable value for climate applications, including sea level rise and land hydrology. It will be definitely of high interest for the scientific community.
While I greatly appreciate the efforts made by the authors in combining different datasets, in performing appropriate calibration and in providing product uncertainties, I find that the manuscript requires major improvements in terms of presentation. The paper is very difficult to read. First of all, it lacks a number of general information about the data used to be understandable to non-experts. Some sections are quite technical and poorly explained. A large number of variables are not defined, and some important information is just provided in tables without explanation in the main text.
I recommend to the authors to consider my comments below and provide in a revised version a text clear enough to be appreciated by both experts and non-experts. As it stands, it is not the case.

We will provide a revised manuscript where important variables are clearly defined and explained in the main text (already in the abstract and introduction), technical sections are better explained and provide a text clear enough to be appreciated by both experts and non-experts.

General comments:

- The abstract and introduction are too vague and lack useful information. It is unclear in both the abstract and the introduction which data sets are considered and combined. How have they been obtained? The data section refers to the data sources given by their acronyms, but no information is provided on the methods to obtain the data. What is the proportion of in situ data and remote sensing data? Are the latter only based on ASTER DEMs as described in Hugonnet et al. (2021)? What is the spatio-temporal coverage of each data set? It is insufficient to say (as written in the abstract and introduction) that geodetic and glaciological data are used. It is unclear whether in addition to the Hugonnet et al's data, other remote sensing data are considered.

We agree the text was not fully clear in showing this specific information already in the abstract and introduction sections. Most of this is communicated later in the input datasets section and Fig. 1 in the data and methods section. We will make sure the general information about the data used is also available in the abstract and introduction and sufficiently clear to be understandable by non-experts, more specifically:

(i) The input data sets used with their proper references, where users can find all the information on the methods to obtain the data.

(ii) The proportion of in situ and remote sensing data used, their spatio-temporal coverage and a summary of their technical details (sensor sources) and references.

- While the paper mentions the percentage of glaciers considered by Hugonnet et al (96%) and the total number of glaciers is never mentioned, the percentage of glaciers considered from in situ measurements.

This information is available from Fig. 1 but as the reviewer correctly expresses, not yet in the abstract, introduction or clearly expressed in the manuscript text. We will make sure this information is already available in the introductory sections.

I suggest to rewrite the abstract and introduction to clarify these issues and provide the reader the missing information. The figures are in general too busy. The figure captions need to be extended and provide the definition of the parameters appearing in the figure.

The abstract and introduction will be re-written accordingly. We will make sure all useful information about the dataset is well explained from the beginning and the proper references are available when needed. We will re-think the figures so that they provide useful and intuitive information properly defined in the captions.

Line-by-line comments

As pointed out before, at this stage we will provide answers to the general and major comments by reviewers. The resulting improvements will then be further described in a complete and detailed response to this review, with individual answers to the following specific line by line comments and a fully revised manuscript. Most of these specific comments can only be properly answered after the dataset has been reprocessed, figures updated, and posterior analysis completed. This is why they are not listed in the present initial response.