

Interactive comment on “Worldwide version-controlled database of glacier thickness observations” by Ethan Welty et al.

Ethan Welty et al.

ethan.welty@gmail.com

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We thank the reviewers for their thoughtful and detailed reviews. We have revised the manuscript accordingly. Below, we quickly summarize the reviewers' general comments (indicated by >) and our responses to them. In the detailed attachment, all of the general and specific comments are responded to in turn. Reviewer suggestions are tagged as either accepted ([Accept]) or rejected ([Reject]), in which case a reason is always given. Locations in the original manuscript are referenced in the format [Page #, Line #].

> Add field photographs of the measurement methods.

We added a new figure with photos illustrating the four main methods for measuring

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glacier thickness: Ground-based and aerial ground-penetrating radar, hot water drilling, and seismic reflection.

> Uncertainties should be standardized across the database.

Since the uncertainties are published or submitted to us by many different data providers, and span the history of glacier thickness measurement, we are not in a position to standardize them further. Nevertheless, we believe documenting the lack and heterogeneity of published uncertainties is an important first step towards a common understanding and reporting of observational uncertainties.

> Impacts of poor regional coverage and plans for improved future coverage?

We are an (unfunded) initiative to collect existing measurements, and thus limited to the data that people publish or submit to us. To add to the discussion of these topics, we added a sentence on the impact of uneven regional coverage to Section 3.1.1 (spatial coverage), and the recommendations of an INTAROS report for improving GlaThiDa data coverage to Section 3.1.3 (future growth).

> Clarify the occasional use of a monotype font.

We added a sentence, following the first use of this font, explaining that it will be used throughout for code samples and software, file, table, and field names.

> Discuss importance of glacier area within 1 km of a thickness measurement.

We added and edited several sentences to clarify that it is meant as a useful measure of global data coverage (the choice of 1 km is arbitrary), and that measurements must be located on a glacier for that glacier's area to be counted (since otherwise, the measurements do nothing to improve interpolations for that glacier).

> Regular expressions come in many flavors and should not be applied to numeric fields.

We revised Section 2.2.2 (metadata) to clarify that all regular expressions conform to a

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specific syntax (XML Schema), as now required by the metadata format that we follow, and accordingly updated the regular expressions in the metadata file. We also explain that regular expressions are applied to numeric fields only to enforce decimal place limits on their raw (string) values in the data files.

> Why include table TT?

We added a sentence to Section 2.2.1 (data) explaining that this table exists for rare situations when the original point measurements are not available and only elevation band spatial means are available.

> Remove figures 8 and 11.

We removed these figures and moved information from their captions to the text.

> The section titles in Section 2 and 3 are strange.

We updated the titles of sections 2.2.1 - 2.2.4 and 3.1.3 based on reviewer suggestions.

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2020-87/essd-2020-87-AC1-supplement.pdf>

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-87>, 2020.