Comment on essd-2020-375

Roland Pail (Referee)

Referee comment on "The first pan-Alpine surface-gravity database, a modern compilation that crosses frontiers" by Pavol Zahorec et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2020-375-RC1, 2021

General remarks: The first compilation of the pan-Alpine surface-gravity database is a great work, performed by gravity experts in all contributing countries. Even though there are not really new methodologies involved -- in my view the greatest innovation is the consistent use of ellipsoidal heights for CBA computation -- the challenge of homogenization of extremely heterogeneous data sets is huge. The methods that have been gerenally applied are very well described and justified. The authors also reflect critically their choices of methodology and weight them against possible alternatives. All figures included are informative and provide added value. The presentation could habe been more condensed, but not without loss of significant information. In this way, the manuscript is an excellent documentation of the datasets, and very useful as a user guide for potential users.

I very much acknowledge the extended discussion on uncertainties of input data and products in chapter 6. Of course it is a pity that at least a kind of "uncertainty map" is not available together with the product. Although not a straightforward error propagation can be done, there from the analysis of the individual input data sets, as it was done ich chapter 2, some kind of uncertaintly information could have been projected to the final grid as an indicator for the users. However, I see this as one of the potential future aspects, which should not prevent the fast publication of this work.

Technical remarks: From a technical point of view, I do not see much room for improvement. The processing steps are described clearly and could be easily reproduced. Choices of processing strategies are well justified. The paper is written concisely and in very good English language.

In conclusion, I recommend publication in the present form.

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