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Earth System Science Data Discussions

Interactive comment on "A consistent dataset of Antarctic ice sheet topography, cavity geometry, and global bathymetry" *by* R. Timmermann et al.

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Interactive Comment

Author comment on "A consistent dataset of Antarctic ice sheet topography, cavity geometry, and global bathymetry" by R. Timmermann et al.

R. Timmermann et al.

22 October 2010

First of all, we would like to thank both reviewers for their careful reading of the manuscript and their helpful and constructive comments. Your input and encouragement are really appreciated and helped a lot to improve the manuscript.

In the following, we quote the reviewers' comments in *italic* typesetting, followed by our replies.

Anonymous Referee #2

General comments

This manuscript brings together several important data sets of ocean bathymetery collected around Antarctica to build a combined self-consistent Antarctic ocean database. This paper is a companion paper to a recently published paper by LeBrocq

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et al. who reported on a new Antarctica data set for bed topography and ice thickness. The data processing is adequately described and data sources are well cited. My only general comment is that there is no uncertainty reporting? Since this data set is primarily of use to the modelling community, it would be an excellent addition to provide a companion data set of gridded uncertainty values. This would allow modellers to test the strength of their solutions. While this could take a bit of work to compile, it shouldn't be too difficult to add to the existing manuscript.

We totally agree that a gridded uncertainty map would be extremely useful, but at this stage this is a nearly impossible task. Not only because of the heterogenity of the data set, but also because of the size of the data gaps, and due to the fact that some entries in the topography maps simply arise from consistency arguments. In the revised version (which will be submitted after the publication of this comment), we will add a discussion of errors and uncertainties (including an as-good-as-possible quantification) though.

General comments

Finally, At times I find the language a bit too casual but perhaps this is ok for this journal? In particular using words like flavour and saying that new data is more than welcome. I think these points could be made in a more formal way. But that is justs style.

The word "flavour" was used intentionally to avoid confusion with "version"; different versions ususally contain different information; our two flavours are just the full data set and a subset. When talking to users of different versions, it is important to know which version you are talking about; for our 'flavours' it does not matter.

The "more than welcome" also shows up in a rephrasing suggestion from Referee #1,

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so it can't be that bad :). If the editors feel we should be a bit more formal, I will be happy to adjust.

Other technical issues

General comments

Page 233: line 4: data sets of what? line 5: fields of what?

We added "topography" in the first sentence and replaced "fields" by "surveys and maps" in the second.

Page 236: line 4: what is GEBCO? How are these data acquired? It might be good to have a brief description of this data set.

We added an explanation to"GEBCO" and rephrased the sentences as far as necessary.

line 8: surface height of what? presumably the ocean floor?

Terrain height. There is only one surface in S-2004, which mostly represents the bedrock topography but becomes undefined (with value zero) at ice shelves.

Page 237: line 8: do you mean "...keep the best in both datasets"?

Thanks for pointing to this language trap. We rephrased to "use the best parts from each data set".

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line 19 ...and can be seen in the..."

Done.

Page 239: line 10: define PIG

Done.

Page 240: line 10: perhaps a better word than interfered is interacted? or simply "eroded the ocean bottom"

Eroded is excellent. Done.

Page 241: line 9: should Entrance be capitalized?

I think so, yes.

Page 242: sometimes ice shelf is capitalized here and sometimes it's not.

In names it is, otherwise not. I found I was not doing it consistently though. Done now.

Perhaps Fig. 5 should come after Fig. 6 since the discussion flows that way in the text.

We do discuss figures 5 and 6 in the right order; it is just that we need a quick reference to one aspect of Figure 6 before; that's why the reference to Fig. 6 appears first. Numbering reflects the course of the main discussion.

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Fig. 6. Labelling PIG and George VI in just one of the panels would improve this figure.

Will do.

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