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Article Review of :

“Small icebergs space-time distribution around Greenland and Antarctica” by Marine Laval

Summarize the main results of the article in a few sentences:

The volumes of icebergs in Greenland and Antarctica were calculated using altimetry data. The free-board distribution of the icebergs shows bimodal distributions, while joint free-board and backscattering analysis show clusters. Finally, a geographic distribution of ice loss from the icecaps is shown, indicating where are the highest losses of ice.

Answer the following questions about the structure of the paper:

Overall content:

1. Is the overall purpose of the study and /or central question clear?

Yes. The purpose is to use altimetry data to study the surface and free-board of icebergs around Greenland and Antarctica

2. Does the interpretation of the findings answer the overall question of the paper?

Yes. It gives the distribution of icebergs and finds where the icecaps lose more mass.

3. Is every paragraph and sentence in the paper relevant to the overall question?

Yes.

4. Are there portions of the text that could be omitted?

No, I didn't find any

5. Is the overall organization of the paper clear and effective?

Yes. The parts are clearly labeled and the text follows them.

Individual sections:

1. Does the title adequately represent the content of the paper?

Yes. The word "small" is very relative though, but it is explained in the abstract

2. Does the abstract clearly and concisely summarize the paper and state the main results? Does it contain all needed information (context, need, task, object, findings and conclusion)?

The abstract doesn't talk about the need of the study, but the rest is there. I think there is a typo, "inferior to km²" should tell "inferior to 10 km²", if we compare the abstract to the text.

3. Does the introduction provide enough context to the readers? Does it state the need for the work? Does it state clearly what has been done to address it?

Yes, the introduction has a nice context about the melting of ice in the icecaps. The problem to measure icebergs from satellites, and the new ways to do it with Cryosat-2, which opens new ways to study ice melting.

4. Does this paper put the progress it reports in the context of existing published work? Is there adequate referencing and introductory discussion?

Yes, there is a lot of referencing to published works.

5. Are the material and methods used in the study clearly explained? Can you point out what is special, unexpected, or different in the approach compared to existing published work? Does it contain too many technical details?

Yes, everything is clearly explained. I don't understand the sentence " It draws on emerged volume ", but I see what she is talking about.
There is no comparison to previous studies. It doesn't contain too many technical details.

6. Is the results sections(s) clearly and concisely written? Are there logical and smooth transitions between sections, subsections and between paragraphs?

In the geographical distribution, there are a lot of glacier names that I don't know and make it unclear to me. It would have been nice to put those names on figures 4 and 5.

The rest of the results are very clear, the paragraphs flow smoothly.
She talks about the surface and volume PDF without showing them, I would have liked a figure.

7. Does the conclusion clearly state the most important outcome of the work? Does it address the questions stated in the Introduction? Does the

conclusion just summarize the results or does it interpret the findings and explain what they mean?

Yes. The conclusion interprets the results, but sometimes doesn't explain everything. For example : "In AN free-board distribution is not bimodal, but Gaussian, reflect flatter icebergs." Why ? It may be out of the scope of this study but a reference could be useful.

8. Are the interpretations and conclusions adequately supported by the evidence presented? That is, are the assumptions valid, is the methodology sound, is the evidence adequate, and do the conclusions logically follow?

Yes. Except the unreferenced conclusions as stated in the previous point.

9. Are all parts of the text, references, graphics and tables necessary for the new results and main points to be understood?

Yes. But it would have been nice to show the surface and volume distribution of icebergs, which are described but not shown in the result section.

10. Are the graphics and tables clear and their captions self-explanatory?

I would like a but more explanation for the geographic distribution (figure 4 and 5). The others are clear to me.

- **Sentences and Wording**

1. Can you find grammatical mistakes?

“over last decade is multiply by 6” → over last decade has been multiplied by 6

Half of the mass loss in AN (1990-2010) come from iceberg calving → Half of the mass loss in AN (1990-2010) comes from iceberg calving

They can measured until 10 000 km² → They can measure up to 10 000 km²

Sea ice concentration used, is store by Cersat since 1992. → The sea ice concentration used is stored by Cersat since 1992.

The second mode include icebergs over this threshold. → The second mode includes icebergs over this threshold

Each mode receive → Each mode receives

the distribution also show two clusters → the distribution also shows two clusters

and the second of back scattering lower in sea ice. → and the second of lower back scattering in sea ice.

the typical description of icebergs describe by Mouginot et al. → the typical description of icebergs described by Mouginot et al.

which allow icebergs detection → which allows icebergs detection

This distribution agree with → This distribution agrees with

2. Can you point to sentences that loose you (too long/complex) and do you have suggestions for improvement?

The results describe locations that are not pinpointed on the figures. For example :
“We observe from the total volume computed, a loss in southeastern part, of 18 km³ at Kangerlussuaq glacier, 12 and 10 km³ around Helheim glacier, and inside northwestern sector (12 and 8 km³).”

I don't know (maybe I should know) where those glaciers are, and they are not shown on figures 4 and 5.

The phrasing is also confusing, maybe something a bit more organized such as :
From the total computed volume, we observe a loss in : the southeast (18 km³ at Kangerlussuaq glacier, plus 12 and 10 km³ around Helheim glacier), and the northwest (12 and 8 km³).

It is clearer to me, but I guess there are better ways to do it.

3. Are generally the action in verbs, characters in subjects and subjects near verbs? Can you find counter-examples? Can you point out misused nominalizations?

Yes, I didn't find problems in that regard.

4. Is the writing cohesive? Does it flow well? Is the part of the sentence that links to the previous sentence at the beginning or the end?

Yes, the writing is cohesive. The part that links to the previous sentence is in general at the beginning.

5. Are the paragraphs coherent? Do the first and last sentences of paragraphs match? Can you find counter-examples?

Yes, the paragraphs are coherent. Each one clearly talk about one subject. I can't find counter-examples.

6. Is there an abusive use of passive voice?

No, the passive voice isn't used too much.

7. Can you find a lot of useless words/phrases?

No, I don't find any.

8. Can you find complex words that could be replaced by simpler ones?

No, I didn't find any.

9. Can you find too complex subjects?

No, the subjects of the sentences are clear, and the sentences are in general short.

10. Can you find inadequately used adverbs/ repetition/ excessive hedging?

No.

11. Is the use of tenses (past/present/future) adequate?

There are sometimes problems with tenses, for example :

“Antarctica (AN) and Greenland (GR) polar caps mass balance is negative, since the 1970s, and the mass deficit over last decade **is multiply** by 6 compared to 1970-1980 years”

Should be “has been multiplied”.

But most of the times, the use is adequate.

- **Other comments?**

There are some typos :

power low \rightarrow power law

In AN to 2009 from 2017 \rightarrow In AN from 2009 to 2017