

Responses to Reviewer 2 for: “Subglacial lakes and hydrology across the Ellsworth Subglacial Highlands, West Antarctica” (MC No: tc-2020-68).

We appreciate the comments from the referee. We have now made an exhaustive checking on the writing to improve the text and thus providing a further clarity and writing quality. Below we respond (non-highlighted text) to the comments of reviewer 2 (*italic* and highlighted in grey).

Anonymous referee #2

The revised article addresses the major challenges with the lake volume estimate. The methods section shows improvement in clarity. The revision provides a more nuanced discussion of the potential for dynamic hydrology. Some minor revisions are recommended for further improving clarity and writing quality.

Our responses to the specific comments are detailed below.

Specific comments:

*Line 51: “many hypotheses remain untested”
Which hypotheses? A more specific statement would be helpful for improving clarity.*

We have provided some examples in the text.

*Line 188: “BedMap2” “Bedmap2”
There are other lines in the text that also need to be corrected to Bedmap2.*

We have now changed the word “BedMap2” for “Bedmap2” throughout the text.

*Line 198: “since Bedmap2...”
Informal language.*

We have now changed this word.

Line 242: “subglacial range” “subglacial mountain range”?

We have clarified this as suggested.

Line 286: “Figure9c” “Figure 9c”

We have now added the space between Figure and the number.

Line 304-305: Is this sentence intended to be a single paragraph? Or should it be appended to the paragraph above?

We have now appended the sentence to the paragraph above.

Line 406: “Likely?” or possible

We have changed “likely” for “possible”.

Line 414: “displace . . . water along this routing” “displace . . . water along this flowpath”?

We have now changed “routing” for “flowpath”.

Line 412: “high hydraulic areas” and “low hydraulic areas” “areas with high hydraulic potential”?

We have now changed this as suggested. Thanks.

*Line 419-420: “.. it is possible that under different ice sheet configurations both subglacial lakes were connected hydrologically.”
Is it also possible that the lack of connection is from uncertainty in topography or assumptions in the water routing model?*

Yes - it could also be related to uncertainty in topography or assumptions in the water routing model. We have now clarified this in the text. Thanks.

Line 472: “Bedmachine” should be “BedMachine”

We have now changed the word “Bedmachine” for “BedMachine” throughout the text.

*Line 475: “Although new and/or more detailed subglacial water or drainage systems could be identified in future RES campaigns, the main drainage pattern would not be substantially different to that which we have identified under the modern ice sheet configuration”
The paragraph after this sentence seems to say that more RES could contribute to significant improvements in hydrological understanding, which seems contradictory to this statement. Line 437 also argues for more surveying.*

We think more RES campaigns may improve our understanding of the subglacial hydrology (e.g. identification of new subglacial lakes) but will not change the main hydrological outlets we have identified in this work. We have now clarified this in the text.

Figure 7 caption: “ice sheet boundaries” “catchment boundaries”?

We have now changed for “catchment boundaries”.