

Replies to Reviewer #2

Thank you for your comments and suggests. They have helped to improve the manuscript.

In this paper the authors summarize arctic pond temperature and chemistry data to highlight their sensitivity to warming. There are some nice data presented, and the analysis is robust. The paper could be improved with the addition of a conceptual figure near the end that synthesizes the data. Such a figure would make the paper more citable as it would provide a hypothesis for future work about how these systems respond to climate warming. Superficially, Sometimes the English was a bit clunky and a good proof-read would fix this.

Thank you. We have considered a conceptual figure at the end of the paper. We will have our paper edited to improve the grammar.

My specific comments are:

Line 43: There is some off paragraph construction at this point in the paper.

Yes, we have corrected in the text.

Line 46: The authors juggle both Polar Bear Pass and Nanuit Itillinga at the beginning of the paper. I understand linking the two to avoid confusion with earlier scientific papers, but that only requires one instance. Perhaps pick one and go with that throughout. I suggest the Inuit name.

We have decided to stay with Polar Bear Pass and PBP as the short-form, as this has been used in previous papers of this study site.

Table 1: I don't understand why "water table" is used. I assume this means "pond depth". I follow maybe where the authors are going with this, but maybe since "pond depth" is more appropriate in this situation.

We decided to use the general term – water level, and we have corrected this in the text.

Line 112: This sentence "Less frequent" is an example of the clunky writing.

Thank you, yes, we clarified the text.

Figure 3: Maybe lower the x-axis labels to improve clarity.

Yes, thank you, we have done this in the diagram.

Line 176: "due to proximity" instead of "owing to nearness"

Corrected in the text.

Line 180: "but it was different than West Medium Pond"

Corrected in the text.

Figure 4: This figure would be more informative and better match the text if the panels were by year, each showing all three ponds.

Thank you, yes, we have corrected this in the diagram.

Line 204: Could you re-do the frequency analysis with a common period available each year to address this problem?

Thank you, yes we have done this.

Figure 9: Some simple statistics would help to objectively show these distributions are similar or different and this would help move the paper from a description of the data to an analysis of the data.

Thank you, we have completed some additional analysis and added details to the text.

Line 344: Are not water levels dropping below ground and ponds drying out the same thing?

Not entirely. Evaporation can draw down water levels in ponds.

Line 353: Conversely, as rainfall increases, maybe there will be more runoff during summer and late summer. A few sentences and references about this would balance the discussion. Some references to lean on might be:

Beel, C. R., et al. "Emerging dominance of summer rainfall driving High Arctic terrestrial-aquatic connectivity." *Nature Communications* 12.1 (2021): 1448.

Bintanja, R., & Andry, O. (2017). Towards a rain-dominated Arctic. *Nature Climate Change*, 7(4), 263-267.

Thank you, we already refer to this in the paragraph prior to the conclusions.

Line 369: Similarly, the discussion in this paragraph needs more attention than it gets. This is where the conceptual figure could come in. One that shows what warming and wetting (with a change in ppt phase) might do to these ponds.

Thank you. Yes, we added a schematic to the discussion.

Line 383: Maybe rephrase to "Increasingly warm and dry conditions may drain"

Thank you. We revised the text.