Response to Editor:

Liu et al.

Dear Editor T.J. Fudge,

Thank you very much for your positive feedback and the helpful technical suggestions regarding our manuscript. Below are our point-by-point responses to the comments. The response is shown in red.

Abstract - a "the" before "Subglacial Lake Vostok region"

10 L66 (track changes version) - "major" not "marjor"

Thank you for pointing this out. We have fixed this.

L75-76 - This sense should be reworded since "capturing" "capabilities" does make much sense. Can "capabilities" be

15 replaced with "processes" or "relationships"?

"Recently, deep neural networks (DNNs) have emerged as powerful tools for synthesizing high-dimensional geoscience data,leveraging because of their formidable ability to capture complex nonlinear mapping capabilities"

We agree. We have reworded the sentence using "relationships".

20 *The relevant sentences have been revised appropriately to adapt to this:*

"Recently, deep neural networks (DNNs) have emerged as powerful tools for synthesizing high-dimensional geoscience data, because of their formidable ability to capture complex nonlinear mapping relationships."

25 L76 - It's not clear what "Their" is referring to. I think you should restate to "The effectiveness of DNNs"

Figure S4.2 - please reduce the precision of the error variances to the nearest whole unit (i.e. 2668 not 2668.22)

Done. We have made all the corresponding modifications exactly as suggested.

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With the next file upload request, please re-label supplement`s figures sequentially, without reference to section numbers. See more: https://www.the-cryosphere.net/submission.html#assets > Supplements. For an example: Figure S1.1 > Figure S1, Figure S1.2. > Figure S2 etc.

35   We have followed the submission guidelines for The Cryosphere. All figures in the Supplement have been re-labeled sequentially.

        We hope that these corrections meet the requirements for publication. We are available for any further adjustments if necessary.
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