

Dear Editor,

We appreciate your valuable comments on this manuscript, which are really important to us. As you pointed out, this manuscript currently has many shortcomings that need to be improved, and we have done our best to complete this work in this revision. The details are as follows:

Note: The black text is wordings in the original manuscript, **the red text is the editor's opinions**; the blue text is our reply, **and the bolded ones are wordings in the new manuscript**.

1. **Line 15:** pollin... **polling**

Reply: This is a spelling errors, thank you for the tip and we have corrected it.

2. **Line 120:** the hole... **which hole? Not clear what is being meant here.**

Reply: Thank you for your suggestion. The meaning of this is more difficult to understand. We corrected the sentence to “Dilated/atrous convolution allows us to explicitly control the resolution of features computed by deep convolutional neural networks and adjust filter’s field-of-view in order to capture multi-scale information.”

3. **Line 193:** approximate... **what is approximate about it?**

Reply: Thank you for your suggestion. Our expression is not quite accurate and 'approximate' has been removed.

4. **Line 451:** datasets including the GGI and TPG2017 used in this study are freely available.... **Please indicate where the are available**

Reply: Thank you for your suggestion. The download website of data sets has put on the revised manuscript.

5. **Line 454:** datasets of glacier can be provided upon request from the corresponding reader... **It would be good practice to add a sample data set to the github page.**

Reply: Thank you for your suggestion. We have added the datasets of glacier to the github page and the code for the full deep learning workflow are available from github.

6. **i) clearly indicate where all data sets can be downloaded...**

Reply: Thank you for your suggestion. The download website of data sets has put on the revised manuscript.

7. **ii) include a sample dataset of glaciers in the github page + an example code that allows readers to effectively use your code.**

Reply: Thank you for your suggestion. We have added the datasets of glacier to the github page and the code for the full deep learning workflow are available from github.