

## Response to the Editor's comments

5 November 2018

1. Page 3, line 20: I suggest adding degree sign "°" after 61 and 147.

We have inserted degree signs to these coordinates.

2. Page 4, lines 7-10: I am not sure what the hyphens before the numbers mean, for example, "four-30 cm diameter ..."

The hyphens have been removed from these areas of the text.

3. Page 6, line 2: I suggest adding a reference here.

We have added a reference that provides information on the Euler central difference method.

4. Page 6, line 21: "snowpack": one word

The change has been made.

5. Page 7, line 11: the units of PAR the photosynthetically active radiation you provide seem rather strange to me as a physical scientist.

There is not an official SI unit for photosynthetic photon flux density and  $\mu\text{mol m}^{-2} \text{s}^{-1}$  is the most extensively used in photobiology and the unit recommended by the International Commission on Illumination (CIE, Terminology for photosynthetically active radiation for plants. CIE Collect Photobiol Photochem, 106, 42–46, 1993).

6. Page 9, line 2: I suggest using SI units for the activation energy (kJ instead of cal).

The energy of activation is now presented as kJ.

7. Page 13, line 13: I suggest replacing rho by correlation coefficient.

This suggested change has been made.

8. Page 21, line 20. I think it is nice practice to thank the reviewers.

Agreed. We now do this in the acknowledgements section.

9. Figure 1: I do not understand why it reads "ice water content" in the caption. It seems to me only ice temperatures are shown? Moreover, the proper units are (°C). Please add degree sign for surface and ice temperature. Finally, for date format, "dd mmm", is preferred as it is unambiguous.

The meltwater volume is the red line in panel B and the text describes how this was estimated (pg. 6, lines 16-19). Degree signs have been added to panels B and C; the date format has also been changed as suggested.