Interactive comment on **"Improved landscape partitioning and estimates of deep storage of soil organic carbon in the Zackenberg area (NE Greenland) using a geomorphological landform approach"** *by* **Juri Palmtag et al.**

J. Boike (Editor)

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Dear authors,

many thanks for your replies and your revised version. In my editorial letter I had asked you address the initial comments provided by guest editor Scott Lamoreux.

I attach the comments below again.

Please provide a third point to point reply to these comments, and potentially a revised

paper.

Many thanks, Julia

Comments

In the discussion, you really don't discuss the TN. The TN appears to be an afterthought in the analysis, but I suspect many readers would be greatly interested by this data and spatial variations.

I would also suggest presenting some of your data as a figure showing SOC and TN trends with depth. You could provide this for representative sites. This would be a simple but effective figure.

Specific comments:

-Refer to TN consistently through the text when referring to SOC as appropriate.

-p 2 line 34 and elsewhere. Use of Arctic as a proper noun (capitalized). An argument for correct usage of "Arctic" is made by Kingsley (2005, Arctic). I suggest you apply this throughout, and consider "High Arctic" in the same manner.

-p3 line 24 give temperature of initial oven drying.

-p3 line 30 a fifth order polynomial is quite a complex fitting, you should consider showing this relationship as a figure or providing the polynomial equation.

-p4 line 4 Define DBD and other terms with first usage.

-p4 line 30 Give dates of aerial imagery

-p5 line 13 Equation reference in text should be (3)

-p5 line 22 remove "software", spell out Microsoft

-p6 line 30 suggest "substantially" rather than significantly as there is no supporting determination

-p6 line 34 you indicate active layer but have not provided depths for this. I suggest mentioning typical or range of active layer depth in the Study Area section. I can infer from this statement active layer is 77 cm?

-p7 line 3 change with to "by"

-p7 line 15 add "to" after according

-p9 line 1 I suggest removing "additional sampling sites". The major contribution here is the refinement of the SOC estimates.

-p9 lines 24-6 This statement seems to indicate that geomorphology is more important than land cover in determining SOC stocks. I think you might wish to elaborate on this statement to avoid misinterpretation. I would argue that you have shown that geomorphology and land cover are important.

-p11 line 5 I think you need "Intergovernmental" at the beginning of this reference.

-p11 line 26 I would indicate this as the USDA for authorship.

-Figure 1: As I look at this and consider your results, I wonder if you could comment on the SOC and the relative age of the various geomorphic units. Some are clearly early Holocene while others have developed during the Holocene, and it would be helpful to link SOC to this, even if briefly (and with limited or no dating). Moraines, as an example, are older, while fluvial and alluvial features are more recent. This connects to your results related to deeper SOC as well, especially on slopes.

-Figure 1: the text on the water would be more visible as white font.

-Figure 2: I suggest that this figure would be improved by making all four pie charts the same size. The land classification is too large for the information it provides.