

Interactive comment on “Carbon and nitrogen pools in thermokarst-affected permafrost landscapes in Arctic Siberia” by Matthias Fuchs et al.

Anonymous Referee #3

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Fuchs et al present analyses of soil carbon and nitrogen stocks across a range of representative landforms for two study areas in the Lena River Delta in northern Siberia. These areas are underlain by ice rich Pleistocene age yedoma permafrost, which is poorly represented in pan-Arctic inventories. The study quantifies variability within and between landforms, and uses high resolution multispectral and DEM data to create a landscape classification used for up-scaling soil carbon and nitrogen stocks. The methods of sampling and analyses are conventional, and executed well. The results are in line with other studies in that higher carbon and nitrogen stocks are found in yedoma soils. These results help improve understanding of landscape variability in permafrost soil properties. The nitrogen stocks are particularly useful, as these data are not often

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analyzed or reported.

I do wonder if the data are open access, and if so, the authors should post a link to the repository or include a data citation with doi. This is becoming increasingly common, and this is a good thing. These data are valuable, especially given the remote location and importance of the data. The summaries in the supplement are a good start, but tabular data in a slightly more raw form would be good.

The manuscript will be suitable for publication pending a few relatively minor revisions.

Minor Comments: P3 L5: See also Webb et al 2017 – this is a recent citation and may be relevant here and in the discussion.

P3 L13: Perhaps cite Abbott et al 2016 here – I’m not sure that NPP increases will offset permafrost SOC emissions, even with increased N availability.

P3 L23: I don’t think DTLB has been defined yet.

P9 L28-29: This statement is unclear – do you mean to say that a single core is affecting the mean? Please clarify.

P32-33: In figures 3 & 4 it would be good to have an outline around the key for the striped bars.

Abbott, B. W. et al. (2016), Biomass offsets little or none of permafrost carbon release from soils, streams, and wildfire: an expert assessment, *Environ. Res. Lett.*, 11(3), 1–13, doi:10.1088/1748-9326/11/3/034014.

Webb, E. E. et al. (2017), Variability in above- and belowground carbon stocks in a Siberian larch watershed, *Biogeosciences*, 14(18), 4279–4294, doi:10.5194/bg-14-4279-2017.