

Interactive comment on “A new dataset of soil Carbon and Nitrogen stocks and profiles from an instrumented Greenlandic fen designed to evaluate land-surface models” by Xavier Morel et al.

Anonymous Referee #2

Received and published: 25 February 2020

The manuscript by Morel et al. describes a valuable dataset that can be used to parameterize and validate land surface models when they are tested on the small scale of a single site. As the authors note, not many of these datasets exist from the same area as where fluxes are measured, which makes this dataset very valuable.

While the manuscript is scientifically sound, it appears to be written too quickly. Some sentences are unclear, and there are many grammatical errors and typos present in the text. I advise the authors to have their text checked by someone with a

C1

thorough understanding of the English language. Otherwise, I only have some small remarks which need to be dealt with.

Remarks on the content:

- Page 2, line 1: 3% of the global terrestrial surface?
- Page 2, line 6-7: It seems that some words are missing from this sentence. What do you mean?
- Page 2, line 13-14: This statement appears counterintuitive, that peatlands will remain a sink for carbon but turn into a positive climate feedback. Is this due to increases in methane emissions? If so, please specify. This is of course also dependent on the time scale chosen for the global warming potential of methane.
- Page 2, line 14-15: I'm not sure whether I follow this sentence. Because the size of natural carbon fluxes is large, this means that a large feedback will be triggered by temperature increases? The paper by Schuur et al. is about permafrost carbon, which is quite different from the Fen studied here and it's not a global study. A warming may have quite different impacts on ecosystems in other parts of the globe. I suggest that this sentence be clarified or removed.
- Page 2, line 24: 'These regions'. Which?
- Page 5, line 20: I appreciate the honesty on keeping the samples under sub-optimal conditions, which is often the case when working at remote locations. But was there an attempt made to store the samples in an oxygen-free or oxygen-limited environment to halt decomposition? If not, it would be good to speculate on how this may have affected the samples.
- Page 6, line 17: please indicate the location of the Center for Permafrost
- Page 8, line 15-16: was this outlier included in your calculations? How does it affect the numbers if it is excluded?
- Page 10, line 13: without reading Hossain et al., which correlation is discussed and what does it mean?

C2

And here are the most important grammatical mistakes I spotted, but there are many smaller ones that also need to be corrected. I urge the authors to do a thorough language check.

- Page 3, line 20: change 'to several' to 'in several'
- Page 3, line 28: change 'cold winter temperature' to 'cold winter temperatures'
- Page 3, line 31: Change 'Datations' to 'Dating'. (I assume this is the word you're looking for)
- Page 4, line 3: Instead of 'isolated' it's better to use 'sporadic' if the measurements are not done regularly
- Page 4, line 8: remove 'the' in front of 'saturated'
- Page 4, line 9: 'Fen frontiers'. What do you mean? The border of the fen?
- Page 5, line 2: 'Extinction' is incorrect, since the fen is still there. I assume you mean 'end'?
- Page 5, line 14: insert 'in' before 'diameter'
- Page 6, line 4: Don't you mean this: 'The almost liquid texture of the water-saturated samples made it difficult to measure the sample volume'
- Page 6, line 9: 'significative' should be 'significant'
- Page 6, line 10: 'mixed-appearance' should be 'mixed-appearance'
- Page 6, line 13: change 'determine' to 'determined'
- Page 7, line 29: change 'as it should be' to 'as expected'
- Page 7, line 30: change 'do show' to 'to show'
- Page 8, line 23: change 'coherently' to 'concurrent'
- Page 8, line 25: remove the 's' at the end of 'increases' and 'decreases'
- Page 9, line 19: add an 's' to 'ratio'
- Page 10, line 5: remove the 's' at the end of 'measurements'
- Page 10, line 7: what does 'aleas' mean? I can't find it in an English dictionary
- Page 11, line 11: insert 'to' before 'further'
- Page 11, line 11: 'devlopments' should be 'developments'

C3

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2019-225>, 2020.

C4