Biogeosciences

Discussions

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Interactive comment on "Microtopography is a fundamental organizing structure in black ash wetlands" *by* Jacob S. Diamond et al.

Anonymous Referee #2

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Diamond and colleagues present a study investigating the role of microtopography and its influence on vegetation community dynamics across black ash wetlands in northern Minnesota.

The authors find that microtopography is an important component of the landscape at the plot scale, with hummock microsites having greater species diversity in comparison to their hollow counterparts. They also found a strong influence on hydrological conditions on both microtopography and vegetation communities present.

This work presents an interesting question and is within the scope of Biogeosciences. It is well written and the conclusions are sound, however care should be taken in how the story is presented. I don't think it's quite as black and white as the authors seem to state regarding microtopography being primary control on vegetation communities.'

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Discussion paper

I believe it will be a useful addition to the literature after some major revisions. The manuscript is rather long and could do with being streamlined, especially in the methods and results section. In particular I found it difficult to follow section 2.3 (Data analysis). Although the methods used are sound and appropriate, it was very difficult to follow to see what was done where. There was also a little bit of repetition throughout this section where the authors would state why they are going to use a test multiple times.

One of my major concerns throughout this manuscript was the frequent absence of citations in the reference list, that are referred throughout the paper. A thorough check of this is needed. Conversely, there are citations in the reference list that are not included in the main body of the text. Also, it is not clear to me whether Diamond et al. In Review which is referenced many times throughout this work has been submitted to the same journal? The authors make reference to a complimentary paper (Paper I) in line 70 but I am unsure if this is the same paper. There is no guarantee that paper will be published before this one, therefore I think it is important that the authors remove reference to this paper in review and expand where necessary in the main body of the text. It can not be expected that readers just assume a paper will be published in due course and be OK with lacking details within this one.

I would encourage the authors make the data and code available via open access.

Detailed corrections: Title: Organizing structure of what? The title does not link well with the main results of the text. I believe more reference to the influence on vegetation communities might be clearer here.

Line 10-11: Local deviation in soil soil elevation sounds awkward – do you mean deviation above the water table?

Line 30: This is the main organizing structure – or is it the water table position is – and that just influences everything else?

Line 35: Strack reference and Sullivan reference are missing from reference list

Line 43-44: All these references are missing. This is happening throughout the paper – please check and amend.

Line 48: / missing between hummock and hollow

Line 70: What paper is Paper I? Is it in review in same journal? I don't think it's clear to refer to this paper in this way, unless they were submitted together?

Section 2.1: You need to give more background information. I am still unclear whether these wetlands are peatlands or mineral wetlands? This has not been defined anywhere. It would be really useful to give the depth of organic matter, the dominant vegetation communities present, meteorological conditions etc.

Line 95: You can't expect the reader to go and read an unpublished paper. You need to expand the methods here.

Line 104: Space needed between create and 1cm

Line 110: How big are these plots? Are they the same plots as the 300m2 circular plots used in the elevation data collection?

Line 117-118: What was used if you did not know the species? It would be useful to include a sentence such as "Vascular plant identification were made according to X and non-vascular plant identification according to Y".

What nomenclature was used?

What was the breakdown for percent foliar cover – 1, 3, 5 and then to the nearest 5%?

Line 139: Does air-drying allow for a consistent drying method? Why not use an oven?

Line 149: Hydrologic metrics? Do you just mean water table depth?

2.3. Data analysis: This whole section is really quite confusing and very wordy – I think it would be useful to streamline this without losing the integrity of the work.

Lines 218, 224, 253, 269 (and any I missed): This is not enough information for the results of a statistical test. It's also unclear what test has been used. The correct way to present this data would be, for example; (ANOVA, F=0.12, p < 0.0001). Please correct throughout.

4.0 Discussion: It's still unclear to me what type of wetlands these are? This needs to be made explicitly clear.

Line 385: This is where it would be useful to make it clear what type of wetlands these are. The term northern bog wetlands is awkward – bogs are peatlands, therefore wetlands.

Line 434: Is it microtopography or is it water table as the primary control? I understand that this is a useful study and I don't dispute the findings, but I wonder if stating that microtopgraphy is the primary control is not exactly what is shown – rather water table depth and vegetation community dictate microtopography?

Figures: Ten figure seems excessive – and they are hard to follow. Could a few be sent to the supplementary information without losing the story?

Figure 1: An inset figure of where Minnesota is in context of the United States would be very useful These sites are quite far north.

Figure 2: The Y axes of these plots are not the same, so sharing an axis title is rather confusing. They are on a different scale. Define what D, L and T are again in the figure caption.

Figure 3: The ellipses used in this figure are very hard to tell apart – please use another colour or line type.

Figure 4: This could be moved to the supplementary information

Figure 6: Again, define D, L, T in figure caption

Figure 7: This could be moved to the supplementary information.

Figure 8: You have no legend as to what the colours mean in this figure.

Figure 9: This could be moved to supplementary information

Figure 10: This could be moved to supplementary information

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