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Biogeosciences Discussions

Interactive comment on "Stable carbon isotopes as indicators for micro-geomorphic changes in palsa peats" *by* C. Alewell et al.

Anonymous Referee #1

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I think that this is a nice little paper. I especially like Figure 1 and the accompanying literature survey. I think that this paper's summary clarifies a lot of this kind of material in the literature and I was glad to see it.

My only real complaint about the paper was that they considered so many possibilities to explain the data, so many different scenarios, I was unclear at first which one they thought was the best explanation. I think it needs to be more clear which of the possibilities they think happened to explain the shift in isotopes in the hummocks. Maybe a little diagram would be nice.

Minor comments. 1. page 528, line 11 "braking" ??

2. Please lay out the whole scenario better in the abstract.

3. page 529. line 13. the latter should be reflected in stable carbon isotop patterns . . . (OF WHAT?)

4. Line 24 page 529. the aim of this study was to scrutinize sable carbon isotope depth profiles OF PEAT

5. Page 534, define the D13C you use here.

6. Page 535, line 8 to 11. “Thus the turning point may represent t a situation where aerobic decomposition with corresponding shift in d13C is replaced by often anoxic situation with selective preservation of lignin or phenolic compounds from Sphagnum.

This sentence is describing the data from the surface, is it not? So the temporal phenomenon described is going BACKWARDS in time? Correct? But that is NOT how this is described. Confusing!

7. page 538. line 8. But the production of light methane, does that not also result in the production of 13C enriched CO2, not enriched organic material.

8. Please offset or delineate your final conclusion about what is happening better to remove it from all the scenarios.

Interactive comment on Biogeosciences Discuss., 8, 527, 2011.