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Discussions

Interactive comment on "Carbon dynamics in boreal peat-lands of the Yenisey region, Western Siberia" *by* E. D. Schulze et al.

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Received and published: 20 October 2015 General comments: This paper applies and straightforward approach to reconstruct the peatland carbon dynamics of the Yenisey region. I like this approach to separate the TOC in POC and DOC for dating; this seems to be a crucial step for evaluation a potential error/bias in the basal ages of peatlands.

Thanks for your comment.

The main issue I have with this paper is that the methods section is not informative enough. The applied methods are not explained in detail (except the dating),

Our intention was, to be as short as possible to restrict the overall length of the paper. There is no problem to add information.

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there is no explanation for the used linear regressions, no uncertainty definition etc. We will add details on the statistical analysis

Please add your reasons, why you choose the proxies, parameters, what the parameters are used for and which assumptions are connected with the parameters an proxies. E.g. you measured ash content, but you do not refer to this parameter in the discussion.

It is true, that we do not discuss the ash content. We thought, that a peat paper should not be published without the ash information, even though nothing exciting happened in that region over all these years. We will add discussion.

Language: Peatland vs peat-land vs peat land. Please be consistent. Sometimes very long sentences, intricate sentence structures and word order.

Thanks. We will try to improve this. It truly reflects the situation, that 3-non-english mother tongs contributed to the text.

Figures: 1: The legends and numbers of Fig 1 are too small. The colors are hard to differentiate. Please be consistent with the Russian transcriptions like Enisey vs Yenisey

Thanks for this comment. We try to improve the design of Fig 1.

3 and 4: Pleas add n=XX to the regression descriptions. Pleas define abbreviations in the caption to make them readable without needing the text.

Thanks, this will be revised.

8: please add a scale to this image. Like the diameter of the big lake

Thanks. This is indeed a very good suggestion. We had thought that the trees give a scale.

Comments on the sections: Abstract: The abstract should consist all the sections of the paper, please add an introductory sentence

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Thanks for this comment. We will revise the abstract.

Introduction: To state the hypothesis or research questions at the end of the introduction is excellent. Please discuss it in the discussion section and finally answer it in the conclusion section explicitly.

Thanks, we had thought that we had done so, but we will follow your suggestion more explicitly

Study area: Very detailed, much longer than the methods section

I think that this detail is needed, because most readers will not be familiar with the region.

Methods section: This section needs major revision. Please add details on the applied methods. Some unanswered questions are: How did you measure TOC. Did you measure POC and DOC amounts separately?

We will add information on TOC, DOC and POC methodology

Why did you do not choose standard cylinders for bulk density sampling.

This is indeed not possible in a 6 m deep peat profile. We will comment on this

Add details on the used devices, e.g. what kind of microscopes, lenses.

This information will be added

What kind of statistics did you use statistical programs/software (R, Matlab:::). What means the in the manuscript, standard deviation (data normally distributed?), interquartile range, confidence intervals?

Thanks for the comment. This information will be added

Results section: No comments Discussion section No comments Conclusion: Please repeat/relate to your research hypotheses (introduction) an answer this scientific problem

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Thanks, As stated above, we will revise the conclusion

We are specifically grateful for the detailed comments. I am sorry to admit that I did oversee some mistakes.

Detailed comments: Page 11280, line 18: Please change Schurr to Schuur here and the following pages including the reference section

will be corrected

Page 11281, line 1: peat land, peatland or peat-land? Please check here and the entire manuscript.

Indeed, this needs to be changed.

Page 11281, line 2: un-frozen or unfrozen? Please check here and the entire manuscript.

This will be changed

Page 11281, line 7: 40 to 50% compared to 40% on page 11282, line 20. Did I misunderstand the percentages or why these numbers are different? Please add references here.

Thanks, this will be edited

Page 11283, line 10: Please be consistent for 20 thousand or 20 000

Thanks, this comment and the following comments will be taken care of

Page 11283, line 26: main or mean? Page 11285, line 22: Please define releves shortly Page 11286, line 1: Please add details on the used corer. Page 11287, line 21: please change the webpage address with details on the version you used

I used the web page as indicated, which was available at that time. I will try to find a new source.

Page 11288, line 9: Please delete "and not from gyttia" Page 11288, line 13: Please change to ":::River. The oldest:::" or add a comma here Page 11290, line 21: Please cite Schuur with the number you are using for your com- parison. Moreover, please refer to the NCSCD, published by Hugelius et al 2014 (e.g. Figure 3, Biogeosciences, doi:10.5194/bg-11-6573-2014) and Hugelius et al 2013 (ESSD, doi:10.5194/essd-5-393-2013), who calculated the 0-3m kg/m2for this region already. Moreover, the Schuur et al. 2015 synthesis paper is based on this numbers of the updated NCSCD papers

Thanks. I was not aware of this paper.

Page 11293, line 9: Please change "Figure 7 suggests" to e.g. "In figure 7 we suggest :::". Same for line 22 Page 11293, line 17: please change nil to zero Page 11294, line 23: Please change aapa to Aapa

Page 11296, line 14: "as long as rainfall exceeds evaporation". It is easy to say every-thing will stay the same if the conditions stay the same. Please discuss the predictions (e.g. models, trend is the measurements) for your study region here.

This is indeed a challenging comment. I am not sure about the certainty of the predic-tions. We had long discussions about the present hydrological balance of the region, because of the uncertainty of snow melt-flooding. I will contact Martin Heimann, who runs the Zotto tower, about his predictions.

Page 11296, line 16: Please add Hugelius et al. 2014 here as well (as stated above) and cite the number you refer to with "3 to 5 times as much"

Thanks. This and the following comments will be changed

Page 11296, line 21: pleas change line to zone Page 11296, line 23: please state what you mean by "extremely long". What does it mean in years? Page 11297, line 1: "could potentially" is very vague. Please describe a likelihood or estimation or describe why it is not possible to be more concrete.

Again, I will try to give a more precise likelihood. I am aware that such concrete esti-

mates are badly needed.

Thank you for this paper and best regards! Please also note the supplement to this comment: http://www.biogeosciences-discuss.net/12/C6776/2015/bgd-12-C6776-2015- supplement.pdf

Interactive comment on Biogeosciences Discuss., 12, 11279, 2015.

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