Biogeosciences Discuss., 12, C6776–C6779, 2015
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Interactive comment on "Carbon dynamics in boreal peat-lands of the Yenisey region, Western Siberia" *by* E. D. Schulze et al.

Anonymous Referee #5

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.

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), there is no explanation for the used linear regressions, no uncertainty definition etc. 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.

Language: Peatland vs peat-land vs peat land. Please be consistent. Sometimes very

long sentences, intricate sentence structures and word order.

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

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.

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

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

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.

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

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? Why did you do not choose standard cylinders for bulk density sampling. Add details on the used devices, e.g. what kind of microscopes, lenses. What kind of statistics did you use statistical programs/software (R, Matlab. . .). What means the $\pm$ in the manuscript, standard deviation (data normally distributed?), interquartile range, confidence intervals?

Results section: No comments

Discussion section No comments

Conclusion: Please repeat/relate to your research hypotheses (introduction) an answer this scientific problem

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

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

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

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.

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

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

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 comparison. 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/m^2 for this region already. Moreover, the Schuur et al. 2015 synthesis paper is based on this numbers of the updated NCSCD papers

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 everything 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.

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"

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.

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

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