Biogeosciences Discuss., 10, C2554–C2559, 2013
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Interactive comment on "River flooding as a driver of polygon dynamics: modern vegetation data and a millennial peat record from the Anabar River lowlands (Arctic Siberia)" *by* R. Zibulski et al.

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Reply to reviewers' comments concerning the manuscript: "River flooding as a driver of polygon dynamics: modern vegetation data and a millennial peat record from the Anabar River lowlands (Arctic Siberia)" by R. Zibulski et al.

Anonymous Referee #1 Received and published 29th March 2013

We thank reviewer #1 for the valuable comments which have contributed to the improvement of the article.

Reviewer comment: Page 4071, lines 23-24: "widely spaced dwarf shrub tundra (Be-

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tula exilis, Salix pulchra), dwarf shrub tundra (Cetraria cucullata together with Alectoria ochroleuca, Coelocaulon divergens)". The dominants of dwarf shrub tundra must be shrub high-vascular species. In the second case, it is mosses. Please, paraphrase this sentence.

Our response: We accept the reviewer's comment. This was a direct translation from the Yakutia agriculture map written in Russian, but the comment is valid in a geobotanical sense. We have therefore corrected the paragraph as follows: The area belongs to the "Anabar-Lena subarctic" geobotanical sub-province (Isaev et al., 2010), described on the agriculture map of Yakutia (Matveev, I.A. (ed.), 1989) as having a "widely spaced dwarf shrub tundra (Betula exilis, Salix pulchra), dwarf shrub tundra (Betula exilis, Salix pulchra together with Cetraria cucullata, Alectoria ochroleuca, Coelocaulon divergens) and tundra bog" vegetation type.

Reviewer comment: Page 4072, line 10: "according to the Braun-Blanquet ïňĆoristic approach".

Our response: We have added the following:

[...] according to the Braun-Blanquet ïňĆoristic approach (Braun-Blanquet, 1964) [...]

Reviewer comment: Page 4079, lines 3-4: "Most abundant were Meesia triquetra and Scorpidium scorpioides, while subdominant were Drepanocladus spp., Hamatocaulis vernicosus and Calliergon sp." It is not true. Scorpidium scorpioides is most abundant in upper part of the core; Meesia triquetra is abundant in the middle part, but not exceed 40%, while e.g. Drepanocladus cossinii and Hamatocaulis vernicosus amount to 50-60% in some subunits.

Our response: We have changed the paragraph as follows: Most abundant in the upper part of the core was Scorpidium scorpioides, while Meesia triquetra, Drepanocladus spp., and Hamatocaulis vernicosus were dominant in the lower part of the core.

Reviewer comment: Page 4086, line 5: "Klemm et al., 2013". I am not sure that it is

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correctly to cite submitted, but not accepted manuscript. I was not be able to verify you statements, for example.

Our response: Due to the type setting process of the journal, the phrase has been changed from “Klemm et al., submitted” to “Klemm et al., 2013”. We knew that the article by Klemm et al. was more advanced than our paper and only required two minor revisions so that it was likely to be accepted before a decision was reached concerning this paper.

Reviewer comment: I did not ïňĄnd the reference to Fig. 11 in the text.

Our response: We agree with the reviewer. It appears that the references were accidentally deleted during internal corrections to Section 5.5 (Polygon development as a function of external control and internal adjustment mechanisms). The following references have now been added to Section 5.5 of the paper: We assume that the polygon’s development was affected by slow lateral water inflow through the polygon during the accumulation of the sediments of Unit 1 (Fig. 11). In contrast, during the accumulation of Unit 2 the polygon was repeatedly flooded and the water velocity was high enough to transport medium-grained, and even coarse-grained, sand. However, the flooding would only have been seasonal as the vegetation (represented by the moss and diatom record) does not indicate a permanently high water level during the major growing season (Fig. 11). A long-term flood probably did occur during the deposition of the sediments at 20.5 cm core length in Core C, which are characterized by a high planktonic diatom component.

Reviewer comment: Figs 4,6,7,8,10,A2,A3: You use subdivision of Units and Subunits in the text, however, in the ïňĄgures you use “Unit 1.1, Unit 2.2” etc. It should rewritten as “Subunit 1.1, Subunit 2.2” etc.

Our response: We agree with ref #1 and have corrected the unit titles in the relevant figures.

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Reviewer comment: Fig. 7: Please, check column “herbs, shrubs, trees”. Betula sect. Nanae and Alnus fruticosa are not trees, they are shrubs. I do not understand why there are such high percentages of trees and such low percentages of herbaceous pollen.

Our response: We are sorry that the colours used for herbs and trees in the legend had accidentally become confused. In addition, the overview displaying the percentages of herbs, shrubs and trees is a summary covering the whole spectrum of analysed pollen grains. We have made the following addition to the figure caption:

The percentages of herbs, shrubs, and trees shown in this diagram are calculated from the total pollen grain spectrum.

Reviewer comment: Fig. 10: The title should be “Summary plot of important indicator records from Core C”. “Taiga” and “tundra” are not “vegetation form”. It is vegetation type or biom. I think it is not correct to use “taiga” in this case. Alnus fruticosa is not a marker of taiga. You can use some climatic deïňĄnitions - more humid and warm versus arid and cold.

Our response: We have accepted the suggestion for the title of the figure, which has now been changed to Figure 10: Summary plot of important indicator records from Core C. Our preference is to retain the reference to the biome and we have changed the terms “taiga” and “tundra” to “boreal forest” and “arctic tundra”. h

Please also note the supplement to this comment:
http://www.biogeosciences-discuss.net/10/C2554/2013/bgd-10-C2554-2013-supplement.pdf

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Interactive comment on Biogeosciences Discuss., 10, 4067, 2013.

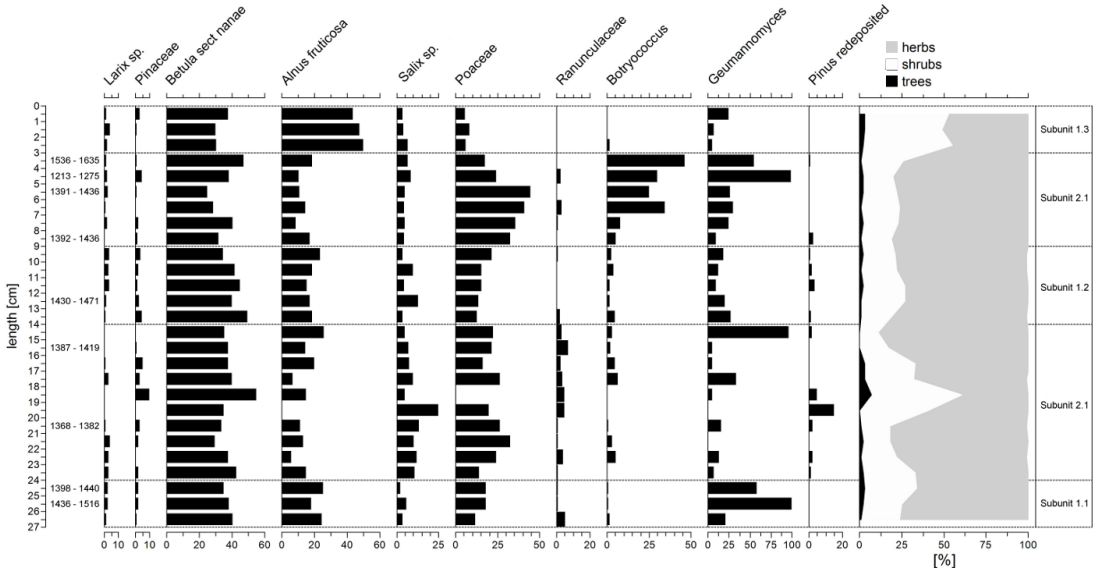

Fig. 1. f7

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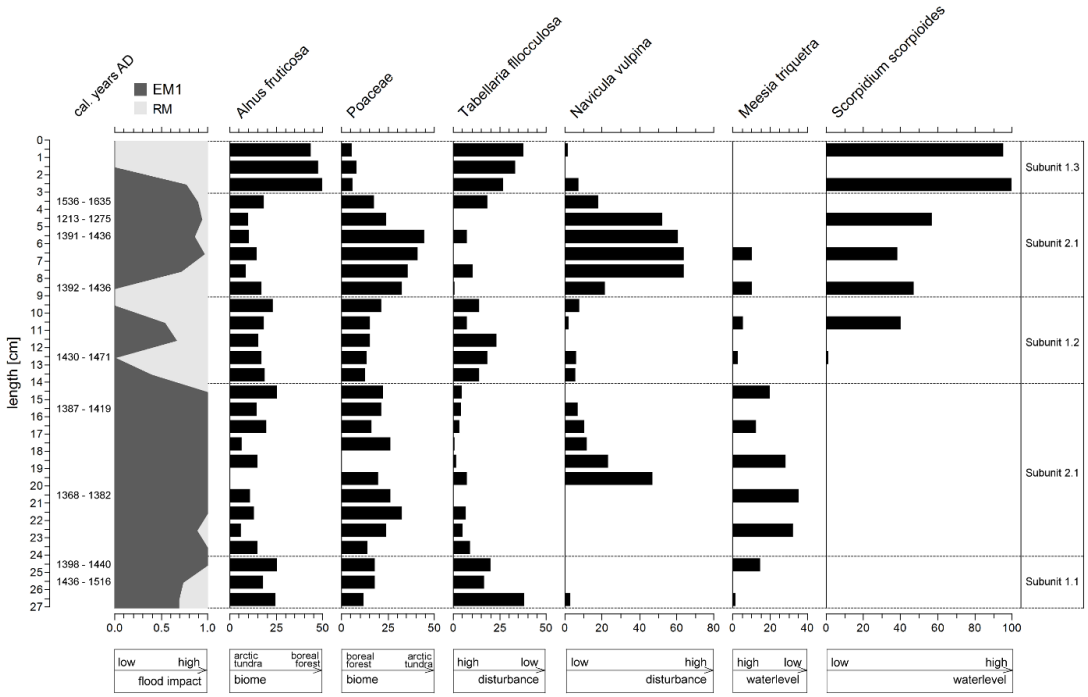

Fig. 2. f10

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