

Interactive comment on “Late Glacial to Holocene environments in the present-day coldest region of the Northern Hemisphere inferred from a pollen record of Lake Billyakh, Verkhoyansk Mts, NE Siberia” by S. Müller et al.

Anonymous Referee #1

Received and published: 8 January 2009

General comments

The manuscript presents a new and well worked out pollen-diagram from Siberia covering approximately the last 15,000 years. Based on it the authors describe the vegetation history of the area and discuss the changes in climate and land use that could have brought about the reconstructed change in vegetation. This type of work is usually published in other Journals such as Review of Palaeobotany and Palynology, but it may be of interest to the slightly different readership of Climate of the Past. However, a publication in this journal would benefit from a stronger integration of already published

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



data from the region. Differences between the here reconstructed vegetation history and that from other sites in Siberia are discussed but not illustrated, so that the interested reader would need to find these pollen diagrams in the literature in order to fully appreciate the text. A graphic comparing the trends of selected species from different sites would have been helpful in this respect. Title and conclusion emphasise the fact that the site is from the coldest region in Eurasia, but I found little or no use being made of this fact in the discussion. I find that the authors could have gone further in their analysis and interpretation of the data. I did much appreciate the publication of the raw data in the appendix which allows full access to all results and offers this dataset directly to further meta-analysis or regional synthesis by other scientists. However, the choice of a space, tab, or coma delimited text file would have been better than using the excel format which will be difficult to read in a decade.

Specific comments

Page: 1240, Line: 11-14: It would be nice to get some more information on why this area is important and compare the density of available sites to that of other regions.

Page: 1242, Line: 9-11 and elsewhere: Usually cores are described from bottom to the top - also the numbering of zones should be carried out in this way and I do not see the benefit of doing it the other way around. The explanation given for the reversed numbering of the pollen zones on Page 1243 is not really convincing me as a statistical method is used for the decision of the zone boundary which may differ between cores from the same lake.

Page: 1242, Line: 21: Adding a single tablet of Lycopodium spores to 1.5 g sediment will result in low precision in the estimation of pollen concentration. Moreover, using weight instead of volume hampers the calculation of pollen accumulation rates. Concentrations given later in the text and appendix are expressed per volume but it is not stated how the sample weight was converted to sample volume. Furthermore, the count of exotic Lycopodium spores is not provided in the appendix and thus further use

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

of that data hampered.

Page: 1243, Line: 9-10: How was it possible to see that the contribution of re-deposited pollen was unimportant?

Page: 1244, Line: 15 and following: No information is given on the material that was used for dating (e.g. macrofossils or bulk sediment) and where the samples were dated - also the lab numbers in the table seem to be project internal numbers rather than the code assigned by the radiocarbon dating lab.

Page: 1244, Line: 22: I would argue that the date with the depth of 304 cm is an outlier. When this date would be removed a much better fit would certainly be obtained. It may also be useful to try polynomials with more than 3 terms.

Page: 1247, Line: 5: I find the headings confusing as the Younger Dryas and the Allerød are part of the Late Glacial. Moreover, based on the age control it is questionable if the period assigned to the Allerød really corresponds to this time period. It may be better to find other headings and argue in the text that this period may correspond to the Allerød or Bølling/Allerød warming.

Page: 1248, Line: 21 and following: This sounds interesting but I am not sure I understand the argument. What does it have to do with the data from Lake Billyakh?

Page: 1249, Line: 5-10: A substantial warming at the Late Glacial/Holocene boundary is what we would expect to find and not worth emphasizing unless it is meant to say that in some of the records temperatures rose quickly to values higher than today?

Page: 1250, Line: 5-11: There is only one sample with a considerable amount of *Abies* pollen while no *Abies* pollen was found in most other samples. This looks a bit suspicious and I wonder if the authors have an explanation for this pattern. I would be careful basing an interpretation on one sample only.

Technical corrections

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Although, the authors acknowledge A. Beck for checking the spelling and grammar, I still stumbled over some inadequacies and cumbersome sentence structure.

Page: 139, Line: 24-27: Sentence would benefit from restructuring.

Page: 1240, Line: 3: delete "s" from vegetations

Page: 1241, Line: 13: Confusion of word or number order.

Page: 1242, Line: 3: It would be good to add a reference to the coring system.

Page: 1244, Line: 8: A threshold value may prove to be useful but I am not sure if it can be verified.

Page: 1244, Line: 25: The bottom of the core was not dated but the date was obtained through extrapolation and an age can thus only be suggested.

Page: 1245, Line: 14: As mentioned before it should be stated how concentration by mass was converted to concentration by volume and the results should be rounded to at least the nearest 100, as otherwise an accuracy is suggested which is not present.

Page: 1247, Line: 12-13: "pollen taxa" rather than "taxa pollen" and "percentages" may be deleted

Page: 1248, Line: 10: It may be better to say that temperatures were high enough to sustain the survival of boreal trees. They did not go "extinct", at least not globally.

Page: 1248, Line: 12: The biome scores are produced from pollen data and thus have to show the same as the original data otherwise something may be wrong.

Page: 1248, Line: 19: Probably "interglacial" is meant rather than "interstadial".

Interactive comment on Clim. Past Discuss., 4, 1237, 2008.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

