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Climate of the Past Discussions

Interactive comment on "Vegetation history of Central Chukotka deduced from permafrost paleoenvironmental records of the El'gygytgyn Impact Crater" *by* A. A. Andreev et al.

Anonymous Referee #1

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General Comments:

Andreev et al.'s paper on pollen and testate amoeba records from terrestrial sections adjacent to Lake El'gygytgyn (Lake E) provide a vegetation and environmental reconstruction that complements existing records from the lake itself. As the authors note, long-distance transport of pollen grains from far outside the watershed is a difficulty with pollen analysis, particularly in areas that have relatively low local pollen production, such as the tundra. Their terrestrial records were able to discern short-lived vegetation and climatic events, such as the Younger Dryas, which only sometimes is recorded in lake records. This is partly because of the problems of long-distance pollen overwhelm-

ing the local signal in lake records, but also because terrestrial deposits can have a fast sedimentation rate, so that short-lived events are more easily recognized. Finally, the presence of larch macrofossils during the early Holocene is a coup for the researchers as this is clear-cut evidence of a substantial tree-line shift during the Holocene Thermal Maximum.

My main substantive criticism of the paper is much of the discussion focuses on comparisons with Matrosova, 2009, an analysis of core LZ-1024 from the center of the Lake E basin. This reference is not easily obtained outside of Russia, (at least not through the internet), so the reader cannot judge how the records compare to each other. I noticed this particularly with the undated core 5011-3, where Andreev et al. assert that PZ-1 could date to MIS 7, based on similarities with zone E-14 in core LZ-1024. It would be good to know how PZ-1 compares with core PG-1351 which was published in the western literature (Lozhkin et al., 2007) and is easily accessed. This is not to say that PZ-1 shouldn't be linked with MIS 7, only that the reader has no basis to judge the validity of the comparison with LZ-1024.

A second comment is the authors are not always consistent on what does constitute long-distance transport, and what does not. I noticed this mainly with the larch pollen signal. Larch grains, because they are fragile and non-descript, are wildly undercounted in pollen records. So the question isâĂŤhow much of the larch is local, and how much is long-distance? I would have thought that larch, because of the preservation issues, would have been mainly local. However, Andreev et al. consider larch both local (PZ-1 of core 5011-3) and long-distant (PZ-V of core P1 [see bottom of p 1416]). This is not to say that larch couldn't be both local and long-distant, but an explanation of this would be nice.

This is a nice paper; I recommend publishing with minor revisions (see the attached pdf for awkward syntax and occasional typos).

Lozhkin, A. V., Anderson, P. M., Matrosova, T. V., and Minyuk, P. S.: The pollen record

from El'gygytgyn Lake: implications for vegetation and climate histories of Northern Chukotka since the late middle Pleistocene, J. Paleolim., 37, 135–153, 2007.

Matrosova, T. V.: Vegetation and climate change in Northern Chukotka during the last 350 ka(basing on lacustrine pollen records from El'gygytgyn Lake, Vestnik FEB RAS, 2, 23–30, 2009 (in Russian).

Please also note the supplement to this comment:
http://www.clim-past-discuss.net/8/C537/2012/cpd-8-C537-2012-supplement.pdf

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Interactive comment on Clim. Past Discuss., 8, 1409, 2012.