**Climate
of the Past
Discussions**

Interactive comment on "Vegetation responses to interglacial warming in the Arctic, examples from Lake El'gygytgyn, northeast Siberia" *by* A. V. Lozhkin and P. M. Anderson

Anonymous Referee #2

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The paper discusses reconstructions and comparative analysis of the state of vegetation at the intervals corresponding to interglacial maximums correlatable with marine isotope stages MIS 1 (Holocene), MIS 5 and MIS 11 (late and middle Pleistocene), and MIS 31 (Eopleistocene).

It should be emphasized that the investigation is highly correct, as it is based on the composition of interglacial plant communities recovered from a single locality, that is from bottom sediments of the unique Elgygytgyn Lake. In that case, the reconstructed environmental characteristics refer exactly to the changes in climates and landscapes that occurred precisely at that region over the most part of the Quaternary. The ma-

terials obtained are of specially importance as comparable long-term data on the succession of interglacials are not known from Chukchi Peninsula, nor from the entire Northern Eurasia, neither they have been obtained from anywhere in the circumpolar area of Arctic and Subarctic.

The data obtained by the authors and their co-workers allowed tracing a regular changes in interglacial vegetation – from the thermal optimum of Holocene (mosaic pattern of forest and tundra plant communities) that had much in common with the present-day biomes of the region, to coniferous-deciduous forest biomes at the MIS 11 interglacial and further to dark-coniferous forests, possibly with some nemoral flora at the MIS 31 epoch.

An indubitable merit of the authors' interpretation of the data consists in their extreme caution in choosing analogues of paleo-communities in modern biomes. Having an advantage of a detailed knowledge of the subject, the authors draw a comparison between the paleo-reconstructions and plant communities presently existing in various regions of Siberia and the Far East of Russia. Thereby the paleo-analogues are not uniquely determined; rather the reader is invited to discussion about preference of a particular biome. Along with regional diversity of biomes, the authors note, quite correctly, the general climatic trend common to various regions, that is, a decrease in heat supply from earlier interglacials towards later ones. Their conclusions on the subject agree to earlier publications on Northern Eurasia by V.P.Grichuk and some other specialists.

In the concluding part of the article the authors correctly note the influence of the reduced albedo (due to increase of forested land area) on the interglacial climate. That conclusion agrees with quantitative estimates of the albedo reduction in Northeastern Asia at the MIS 5 interglacial by 5–10% published in 2009 in the atlas-monograph "Paleoclimates and paleoenvironments of extra-tropical area of the Northern Hemisphere" (GEOS Publishers, Moscow).

Finally, the reviewer would like to make a few comments that may be considered as recommendations and not necessarily accepted by the authors:

– Considering the quantitative reconstructions of temperature and precipitation obtained using method of analogues, it would be desirable to include into section 2 ("Methods. . .", p. 248) a short description of the method.

– It would be advisable to give explanation in the Introduction on the reasons for including into consideration the MIS 31 interglacial while omitting the warm intervals between MIS 11 and MIS 31.

– There seems to be an error in Section 4.4 (page 255, line 5 from below) – MIS 3 instead of MIS 31.

On the whole, I would like to emphasize the high level and scientific value of the investigation performed by the authors.

The paper is ready for publication and would be of interest for a wide audience.