

Dear Erin McClymont,

Re: Manuscript ID: cp-2022-67 and Title: Deglacial records of terrigenous organic matter accumulation off the Yukon and Amur rivers based on lignin phenols and long-chain *n*-alkanes. by Mengli Cao et al., Clim. Past Discuss., <https://doi.org/10.5194/cp-2022-67-RC1>, 2022

Thanks very much for your kind work and consideration on publication of our paper. On behalf of my co-authors, we would like to express our great appreciation to you and reviewers. According to your comments, we have revised the manuscript extensively. Our responses are given in a point-by-point manner below.

Comments to the author:

Thank you for addressing the reviewer and editor comments, and submitting the tracked changes document. I am happy to recommend publication of the manuscript subject to you making some final clarifications / checks:

1. Paragraph starting line 88 has no citations of published literature: can you insert some here to back up your statements?

Response: Yes, I can. Some references have been included in this paragraph.

2. Paragraph starting line 112 has only citations for the original proxy proposals, but published examples of where these proxies have been applied could be used to strengthen the statements made.

Response: Thanks for your kind suggestion, which is highly appreciated. Two published examples have been included in this paragraph, one is for the TEX₈₆ temperature proxy (Meyer et al., 2016), the other is about the lignin phenols and the BIT index (Seki et al., 2014).

3. Line 127: remove "drainages"

Response: Changed (line 140, revised manuscript).

4. Line 524: this doesn't make sense. Was the permafrost lost after the LGM, or has it been recently lost ("today")?

Response: We agree with this comment and we will change it as follows: “The Amur Basin was completely covered with permafrost during the LGM (Vandenberghe et al., 2014) and almost all of the permafrost was lost until today as a result of permafrost mobilization during the last deglaciation.” (line 535–537, revised manuscript)

5. Line 573: check that "resuscitation" is the correct term here.

Response: It has been changed to “development” in the revised manuscript (line 585, revised manuscript).

Reference:

- Meyer, V. D., Max, L., Hefter, J., Tiedemann, R., and Mollenhauer, G.: Glacial-to-Holocene evolution of sea surface temperature and surface circulation in the subarctic northwest Pacific and the Western Bering Sea, *Paleoceanography*, 31, 916–927, <https://doi.org/10.1002/2015PA002877>, 2016.
- Seki, O., Mikami, Y., Nagao, S., Bendle, J.A., Nakatsuka, T., Kim, V. I., Shesterkin, V. P., Makinov, A. N., Fukushima, M., Mossen, H. M., and Schouten, S.: Lignin phenols and BIT index distribution in the Amur River and the Sea of Okhotsk: Implications for the source and transport of particulate terrestrial OC to the Ocean, *Prog. Oceanogr.*, 126, 146-154, <http://dx.doi.org/10.1016/j.pocean.2014.05.003>, 2014.