

Clim. Past Discuss., editor comment EC1
<https://doi.org/10.5194/cp-2022-92-EC1>, 2023
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Comment on cp-2022-92

Pierre Francus (Editor)

Editor comment on "Climate transition over the past two centuries revealed by lake Ebinur in Xinjiang, northwest China" by Xiaotong Wei et al., Clim. Past Discuss.,
<https://doi.org/10.5194/cp-2022-92-EC1>, 2023

Dear authors,

I read your paper and the comments of Reviewer 1.

I find reviewer 1 comments very pertinent, and they should be addressed in a reply in the open discussion.

I would like to raise some additional issues that you also should consider in another reply in the discussion.

The location of the cores, close to the shore and at a water depth of only 0.8 m, makes them sensitive to wave action and remobilization of sediment, especially in a region where wind is so strong. Moreover, since the lake is a closed system, it is sensitive to water level fluctuations that could completely change the sedimentary context and processes at the location of the cores. Actually, you mention in the paper that the lake experienced lake level fluctuation. Therefore, I'm not convinced that the sedimentation has been continuous, and is without a hiatus, or major perturbations. The fact that there is no 137 Cs peak is another clue that the sedimentary archive is not pristine.

In this context, retrieving complete cores (not sliced in the field) and looking at facies at the microscopic scale is mandatory to be able to decipher sedimentary processes and demonstrate the continuity of this archive.

I also agree that the age model is weak, and not accurate enough to be able to claim that you can make a reconstruction with a 2-year resolution.

I agree with Reviewer 1 that interpretations of colour reflectance, carbon content are speculative. For instance, I doubt it is possibly derived transport condition from C-content (in reference to "In the early period (1816-1876 AD), the high C values indicate strong transport dynamics; the high proportion of ultrafine component indicates strong pedogenesis, combined with high organic carbon content and high a* values, it is inferred that the water vapor content is relatively higher.")

Reflectance values are also influenced by changes in oxygen content below the water/sediment interface (i.e., the redox front), and this is making your reflectance interpretation even weaker.

Interpretation of grain-size data also remains speculative: "ultrafine components" can also be observed in permafrost lakes and peat as sources for higher TOC. The colour

reflectance can neither tell us something about transport nor about water vapour even in combination with GSD and C.

I'm still waiting for a second review of your paper, but I encourage you to already tell in a reply if you will be able to address reviewer 1 and my comments, and if yes, how ?

Thank you in advance and best regards,

Pierre Francus,
Handling editor