

Clim. Past Discuss., referee comment RC2
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Comment on cp-2021-121

Anonymous Referee #2

Referee comment on "Water level change of Lake Machang in eastern China over 1814–1902□CE" by Jie Fei, Clim. Past Discuss.,
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Comments for the paper „Water level change of Lake Machang in eastern China during the the past 200 years.“ The paper studies the now dried-up reservoir Lake Machang, which was located near the Grand Canal in China. It analyzes how the changes of the water level relate to precipitation changes and climate change in the area between 1814 and 1902.

General remarks:

The title of the paper is misleading as not the last 200 years play a significant role in this paper but rather the focus is on the period 1814 to 1902, for which records exist, after that the lake dried up and was reclaimed. This focus should be reflected in the paper’s title.

In the introduction “1814 to 1912” is mentioned as the study period but the period of 1902 to 1912 is not very much discussed. Is this a typo, did you mean 1902 here? If not, I would suggest to elaborate on the last decade of the study period.

It is difficult to establish the role of climate change on this lake as the water availability was heavily influenced by human actions. These human actions manipulating the water supply of the lake and the Grand Canal play a significant part in this story, could you perhaps detail the “human actions” more precisely, how was water supply controlled exactly? Can you give examples?

As this special issue analyzes archives of society, a more critical approach towards the historical sources used for this paper would be desirable, i.e. assessing how reliable the sources are, which time period were they produced in and by whom, what makes them reliable?

I think it would help the paper if a more precise research question was formulated in the introduction.

The paper would benefit from language editing, particularly regarding articles and prepositions.

I feel it is not necessary to add "AD" to every year mentioned as it becomes clear that this paper focuses on the 19th and 20th centuries in the Common Era.

Some specific remarks:

Lines 45-47 and/or lines 69-70: For the international audience that *Climate of the Past* aims at and that is probably not familiar with the history of the Grand Canal, I suggest introducing the Grand Canal with slightly more background information. Something along the lines: When was it created, where did it begin and end, how long was it?

Line 60: Thank you for including the Chinese original in the footnotes and for explaining the meaning of the lake's name here. This was very helpful.

Lines 62-66: This historical background into the creation of the lake is interesting. The translated quotations from the poem should be put in quotation marks. I do not understand how you conclude that the poem must have been written during Li Gang's time as mayor, couldn't he have written it before or after?

Lines 77-82: Can you tell us more about the role, tasks, and responsibilities of the Grand Canal administration? Were they responsible for the observations and the regulations of the water supply?

Lines 83-85: Are there gaps in the data between 1814 to 1902 that make up 24.4% or do

you refer to gaps in the data and the ten years following 1902?

Lines 87-89: You write that the observations of the water levels did not relate to the sea level but to the observation station, which has not survived. Can you elaborate here on how you deciphered the water levels in the lake from the records? By saying *yingzao chi* was a unique length unit, do you mean it was uniquely used at this location or is it unique in the sense that it specifically refers to 0.32 meters?

Lines 90-93: Are the First Historical Archives of China an archive or a critical edition? Is this a reliable historical source, if so, what makes it a reliable source?

Lines 162-166: Do we know how deep Lake Machang was before and after the deposition of silt in the lake?

Lines 213-220: Thank you for including some geomorphological backgrounds here, this was helpful.

Lines 233-236: It is unclear how we can relate from a former 30 km² lake at which the drought and flooding conditions in the region could be mitigated by human action to the world at large in the face of anthropogenic climate change. I suggest elaborating on the matter or deleting this paragraph.

Figures: The maps are very helpful to give an international audience a general idea of where the Grand Canal and Lake Machang are located.

Figure 1, top map: The location of the Bohai Sea seems irrelevant for the paper, if this is correct, please delete "5 Bohai Sea" from the map, it is confusing.

Figure 1, bottom map: I suggest editing this map to show more clearly which lake is Lake Machang, simply by adding a line or arrow from the name "Lake Machang" to the respective lake. It might also aid the reader to indicate which lake(s) is Lake Nansi. Please also add an indicator for the scale of the map (1 cm = how many kilometers).

Figure 7: This map needs to be provided in better quality and please indicate in the larger

map where the outcrop showing Lake Machang is located.