

Clim. Past Discuss., author comment AC4
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Reply on RC2

Jie Fei

Author comment on "Water level change of Lake Machang in eastern China over 1814–1902 CE" by Jie Fei, Clim. Past Discuss.,
<https://doi.org/10.5194/cp-2021-121-AC4>, 2022

Dear Colleague,

Thanks a lot for your kind and constructive comments. All of them are accepted and responded one by one, except the last issue. Please see the following for the details.

With Best Regards

Jie

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.

RE: The titled is modified as, Water level change of Lake Machang in eastern China over 1814–1902 AD

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.

RE: Sorry. It is a typo. Please see line 13 for the correction.

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?

RE: Thanks. A sentence is added in the first paragraph of 'Introduction' Section, i.e., 'The water level change of reservoirs needs to be interpreted carefully, as is affected by a combination of factors.' Please see lines 38-39.

The details of human actions were significantly strengthened. Please lines 121-129.

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?

RE: thanks for the suggestion. A paragraph illustrating this issue is added in the Materials and Results Section. Please see lines 87-91.

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

introduction.

RE: thanks. The first paragraph of the Introduction Section is rewritten, and a precise research question is added in the end of this paragraph.

Please see lines 36-47.

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

prepositions.

RE: Yes. The language of the manuscript is polished. Please note that Such modifications are not highlighted in the text.

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.

RE: "AD" is removed except the first appearance in the Abstract and Introduction sections.

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?

RE: Thanks for the suggestion. The introduction of the Gran Canal is significantly strengthened and moved to the 3rd paragraph of the Introduction Section.

The Grand Canal, running from Beijing in the north to Hangzhou in the south, is a world heritage site. Stretching 1,794 kilometers, it is one of the greatest artificial waterways constructed in historical times in the world. Constructed in sections from the 5th century BC onwards, the current waterway system was completed in the late 13th century (Ji, 2008).

Please see lines 53-57.

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.

RE: Thanks.

Lines 62-66: This historical background into the creation of the lake is interesting. The

translated quotations from the poem should be but 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?

RE: thanks for the suggestion. Translation of the poem is moved to the footnote.

Early 14th century would be more reasonable than '1324-1327'.

The sentence was modified as following,

'Therefore, the date of this poem should be early 14th century.' (lines 67-68)

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?

RE: Thanks. A footnote is added as following,

The General Administration of the Grand Canal (Hedao Zongdu Yamen) was an official department of the central government of the Qing Dynasty (1644-1912 AD). It was located in Jining City, and was responsible for the transportation and water supply of the Grand Canal, as well as the water level observation of the reservoirs along the Grand Canal.

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?

RE: actually I mean the gaps between 1814 and 1902 make up 24.4%.

In order to avoid misunderstanding, the sentence is modified as follows, 'The missing points, which account 24.4% over 1814-1902.'

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?

RE: the explanation of the details of observation was strengthened in 4th paragraph of the Material and Results Section. Please see lines 102-103.

A sentence is added illustrating the length unit, and a reference is also added in the reference list. Please see lines 91-92 and 287-288.

'Yingzao chi was an official length unit of the Qing Dynasty. It was widely adopted in hydraulic engineering and relevant affairs.'

'Wanyan Linqing, 1836. *Hegong Qiju Tushuo* (Illustrated Handbook of hydraulic engineering). Published in 2015 by the Zhejiang people's fine arts press.'

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?

RE: thanks for the suggestion. A footnote is added and it demonstrates what is the first historical archives. The footnote is as following,

The First Historical Archives of China (Zhongguo Diyi Lishi Dangan Guan) is an official department of the Chinese central government. It is one of the national archives of China and collects the archives of the Ming (1368-1644 AD) and Qing (1644-1912 AD) dynasties.

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

RE: we calculated the average water level of Lake Manchang, and two sentences are added in the end of the Materials and Results Section. Please see lines 98-100.

'Accordingly, the average water level of Lake Machang over 1814-1902 was 0.92 m. In other words, the average depth of Lake Machang was less than 1 m, therefore it was really a shallow water reservoir, and vulnerable to environmental change.'

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

was helpful.

RE: Thanks.

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.

RE: thanks. The paragraph is slightly modified and moved to the end of the Section 'Flooding of the Yellow River, silt sedimentation, and reclamation'. Instead, a new sentence is added here as following,

'Shallow lakes and reservoirs are vulnerable to climatic and environmental changes, and human activities like reclamation could accelerate the dry up of such water bodies.'

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.

RE: the Bohai Sea is removed. Instead, Sanmenxia is added as a new chronology is added in the text.

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).

RE : the figure is revised accordingly. However, we feel difficult to add an accurate scale. Anyway, the figure has grids of longitude and latitude.

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.

RE: this is actually a historical map, and the quality cannot be improved. The scale is big and it needs an entire page to show the details, so it would be better to remove it from the text, and just use the enlarged part. Is it possible to attach the entire map as a supplementary material please?