

Clim. Past Discuss., author comment AC1  
<https://doi.org/10.5194/cp-2021-121-AC1>, 2022  
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## Reply on RC1

Jie Fei

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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-AC1>, 2022

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Dear Colleague,

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

With Best Regards

Jie

**Line 36: "Historical reservoir evolution is a promising subfield of climatic change  
studies."**

**This is an eye-catching statement. But, the findings in this study show that the  
historical**

**reservoir (i.e., Lake Machang) is subject to the strong influence of human  
activities. To**

**what extent could historical reservoirs reflect climate change?**

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 including climate and human activities.' Please see lines 38-40.

**Lines 100–103: "The average monthly water level variability of Lake Machang in  
the**

**period of 1814–1902 AD was compared with that of Jining City in the period of**

**1951–2000 AD (Figure 5). We found that the monthly water level responded well with**

**precipitation but with a time-lag of 2 months.” Please show how to calculate the time-lag.**

RE: the sentence is modified as following,

We calculated the correlation (R) between the two variants, and found that the monthly water level responded well with precipitation but with a time-lag of 2 months ( $R=0.753$ ,  $N=12$ ).

**Lines 135–146: This paragraph shows that the changes in the water level in Lake Machang are site-specific in nature. So, how to link the findings in this study to climate change, which is a macro-regional phenomenon? Besides, apart from precipitation, would the changes in water level in Lake Machang be caused by other natural factors such as the changes in temperature, monsoon, or ocean/atmospheric circulation?**

RE: a paragraph is added comparing the water level with the runoff of the Yellow River.

Please see lines 157-163.

Wang et al., (1999) reconstructed the chronology of the runoff of the Yellow River at Sanmenxia, using a combination of relevant historical records. It actually indicates the runoff of the upper and middle reaches of the Yellow River Basin. The correlation between the runoff of the Yellow River at Sanmenxia and the annual mean water level change of Lake Machang over 1814-1902 was merely 0.139 ( $N=89$ ). This indicated that the water level change of Lake Machang was not significantly affected by the runoff of the Yellow River.

**Lines 233–236: Perhaps it could be more specific in stating what people could learn from**

**the history of Lake Machang.**

RE: a sentence is added in the end of the Conclusion Section stating what people could learn from the history of Lake Machang.

‘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.’

Please see lines 252-253.

**Figure 2: The three panels could be combined into one.**

RE: Yes. The panels are combined into one.

**Figures 3, 4, and 6: The annual mean water levels of Lake Machang in 1814–1902 could**

**be put into the figure for comparison.**

RE: Yes, the chronology is added in the relevant figures for comparison.