

Interactive comment on “Tree-ring reconstruction of seasonal mean minimum temperature at Mt. Yaoshan, China, since 1873 and its relevance to 20th-century warming” by Y. Liu et al.

Y. Liu et al.

liuyu@loess.llqg.ac.cn

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Reply to Zhang Qibing The authors presented a new proxy record of winter-spring mean minimum temperature for the central plains of China where long tree-ring records are rarely available. This manuscript is worth publication from this perspective. However, the following points need to be further explained or revised.

[Reply] Thank you for your valuable feedbacks.

1. P861, lines 14-16: Given that two tree-ring studies were already conducted in this region, plus the additional two studies pointed by Paul Krusic, please further explain why this study is important. For example, does this study add an important site to

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increase the spatial coverage of the tree-ring data in the central plains of China? If so, how important is this site and what additional information is obtained from this study?

[Reply] 1) The climate of CPC is very complicated. Current knowledge about climate in the past is mainly known from historical documents. So far, only two tree-ring researches were conducted in this region. The density of tree-ring sites in this area is obviously far from enough. Available two tree-ring works showed two different results, even they both dealt with temperature reconstruction: December to April mean temperature was reconstructed by Shi et al. (2009) and May to July temperature by Tian et al. (2009). Thus we need more natural climate information for deeply understanding of climate change in this region. This work will of course benefit to China tree-ring network. We added sentences to emphasize the importance of this work, see Line 80-81, 84-85, and 99-100. 2) We cited two references (Cook et al., 2013; PAGES 2k Consortium, 2013) mentioned by Paul and you.

2. P863, lines 11-14: This may mislead readers that the final RCS chronology is produced by calculating (the averages of) the departures of the raw measurement from the regional curve, rather than dividing the departures by the regional curve. Please rewrite the sentences.

[Reply] We just followed the method from Esper et al. (2003). Esper, J., Cook, E. R., Krusic, P. J., Peters, K., and Schweingruber, F. H.: Tests of the RCS method for preserving low-frequency variability in long tree-ring chronologies, *Tree-Ring Research*, 59(2), 81-98, 2003.

3. P866, line 17 ($p < 0.001$, $N=54$): Please make sure that the $N=54$ is effective sample size after considering the series autocorrelation (as you did in line 6 of page 868).

[Reply] We have checked and no mistake here.

4. P866, lines 19-21: How about remove this PDSI paragraph and the corresponding words in earlier paragraph? This is because moisture is not the focus of this manuscript and PDSI was not further analyzed. Just a suggestion.

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[Reply] Removed.

5. P867, line 2 (the transfer function): Please take into account of the temperature values when deciding the parameters’.

[Reply] We have changed the effective number after the decimal point in the transfer function. See Line 235-236.

6. P869, lines 20 (Table 3, actually is Table 4), 24 (1878-1894) and Fig. 8: The number of sample replication in the earliest part is small. I suggest that this cold period could be pointed out, but better be cautious when interpreting it.

[Reply] We have changed as what you suggested. See Line 316-317.

7. P871, lines 9-16, and Fig. 13: I am not convinced of the ENSO-Yaoshan Temperature relationship. I suggest that either remove this point or add explanations for such relationship (such as by citing previous reports about the physical relationship).

[Reply] The modern meteorological studies have confirmed that ENSO has a strong influence on the winter-spring temperature variations in central-eastern China. We have added a paragraph and some references in the revision. See Line 379-387.

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