

Interactive comment on “Temperature changes derived from phenological and natural evidences in South Central China from 1850 to 2008” by J. Zheng et al.

J. Zheng et al.

haozx@igsnr.ac.cn

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Anonymous Referee #1

Major comments:

(1) It is suggested to add the comparison between the new temperature reconstruction and the regional temperature derived from CRU (Climatic Research Unit) gridded temperature data in the south central China over the period 1850–2010. The discussion on the advantages and disadvantages between them is beneficial and would strengthen the manuscript. It would be also interesting to compare the new results with the longest observational records (Shanghai, and other longer regional temperature

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series) in China.

We agree. The comparison between the reconstruction and regional temperature from CRU has been added in figure 4. And long observation in Shanghai have been added too, please see figure 4.

(2) A spatial correlation map is needed to show the spatial representation of the newly-produced regional temperature series.

We agree, and please see figure 2.

(3) Different types of proxy records are used in the regression equation. But the authors did not state how the proxy series were pre-treated considering their discrepancies in dimensions and length.

We added in the section of “reconstruction and analysis method”. Line 185-187.

(4) The method ‘multiple regression’ has some weaknesses. For example, there is multi collinearity and transfer function’s instability with time. It is clear that the tree ring width chronologies used are highly correlated with each other. It would be nice to give some more comments on the related parts in the text.

We agree, and the weakness of the multiple regression was added in Line 298-300.

(5) The authors detected Quasi-15-year and quasi-35-year cycles in the temperature reconstruction series, but did not do any discussion. Further insight is needed.

As suggested in referee 2’s General comments 4, we deleted this part.

(6) There are spelling errors in the text and tables (Table 1 and Table 2). Please check it carefully and do correction.

We submitted the manuscript to the English language editor of native speaker, and we also checked the spelling errors.

(7) A simple section to describe how the tree-ring chronology was produced is needed.

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The authors should show which detrending method was used, and how the chronology was derived. Also, how the reconstruction uncertainties were estimated need clarification.

We added the description on the tree-ring chronology production, detrending method in line 156-163, and the method of uncertainties was add in line 189-191.

Specific comments: (1) In the Title, evidences should be corrected as evidence;

Yes, revised.

(2) Abstract: They wrote '1893 was the coldest year'. My question is that 'Is it correct within the uncertainty range'?

We added the very likely if consider the uncertainty range.

(3) Page 4079, Materials should be Material;

Yes, revised.

(4) Table 1: what are the superscripts [27], [28],[29]? It is difficult to find the reference sources.

This is a mistake and deleted now.

(5) Figure 1: the study area is irregular and strange. The Nanchang sub-region should be excluded. Figure caption: central China should be South Central China; There are no proxy records available in west north parts of the study region (see Figure 1). Do the proxy records collected by the authors have good representation for the whole study region? A spatial correlation map is needed.

About study area division, the proxy data representiveness, we added the introduction in the section of 2.1 instrumental data, line 59-66, and correlation map was plotted in figure 2.

(6) Page 4082, line 19, the reference could be wrong.

Changed.

(7) Page 4084, lines 10-25, many sentences are related to 1892 rather than 1893, but the 1893 is considered as the coldest year.

Winter of 1892 in the lunar calendar is from December of 1892 to February 1893 in solar calendar, thus the most sentences are related to the 1893 in solar calendar, which is consistent with the coldest year of 1893.

(8) Page 4085, lines 1-14 is not relevant.

Deleted.

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