

Interactive comment on “Warm-season hydroclimate variability in Central China since 1866 AD and its relations with the East Asian Summer Monsoon: evidence from tree-ring earlywood width” by Yesi Zhao et al.

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Response to short comment 1

1. Shorth comment: The authors selected the earlywood width to reconstruct the early summer drought in eastern Qinling Mountain. Their reconstruction follows standard methods and presented new datasets. The authors also have some discussion on the drought regimes in relation to EASM. I agree with publication after a revision. I have some suggestions as shown below. Author’s Response: We really appreciate your

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valuable comments and suggestions. We have carefully revised the manuscript and hope you find this revision satisfactory. Please see details below.

2. Shorth comment: line 35, p2, I feel that there are many tree-ring data in southern China is related to hydroclimate. This is not rare. Author's Response: Sorry for the inaccurate description here. We made a new summary about the hydroclimatic related tree-ring data in southern China. Please refer to line 5-11 of page 2 in the revision.

3. Shorth comment: line 21-24, p4, you mentioned the monsoon indices by Wang and then you actually used the one by Zhao. I think you just need to mention the one by Zhao. You may need to introduce why this one is better and then you select it, but not just because it is longer. You may also do not need to detail the reanalysis data that used to derive the indices. I suggest you to focus on the introduction of the key part of this index. Author's Response: Many thanks for this suggestion. We added more descriptions for the EASMI developed by Zhao. Please refer to line 23-31 of page 5 in the revision.

4. Shorth comment: line18-19, I do not understand well on why you calculate partial correlation with temperature and precipitation, because actually pdsi are calculated based on the temperature and precipitation. So they are related. Please add some explanations. Author's Response: Thank you very much for pointing out this question. Just as suggested by RC2, this analysis is unreasonable, and we removed it from our revision.

5. Shorth comment: is it common for earlywood to respond to early summer moisture but the latewood has no response? It would be interesting to add more interpretation on this part in the revision. I am curious why the latewood has no correlation at all. Author's Response: Thank you for this question. In fact, the latewood still had a significant response to early summer moisture (scPDSI) as displayed in Fig. 3-5 in the revision, but the response was not as strong and stable as those found in earlywood. We added the interpretation for the less sensitivity of LWW to early summer moisture. Please

refer to Line 7-8 of Page 9.

6. Shorth comment: I feel that figure 3 can be moved into the appendix Author's Response: Thank you very much for suggestion. Since we have lots of new figures and tables, we moved the figure 3 into the Supplement material. Please see Fig. S1.

7. Shorth comment: it is interesting you found a shift in correlations in the 1950s. This may be related to a shift between monsoon and local precipitation. You can use long instrumental precipitation to test their relationships. It is also helpful to add more discussion in relation the dipole pattern. This can be a novel point of the study Author's Response: Many thanks for suggestion. We used the GPCC precipitation (1901-2005) to make comparisos between the EASMI and reconstructed scPDSI. Discussion relevant to the dipole pattern and its driving mechanisms were also enhanced. Please refer to Section 3.4 in the revision.

8. Shorth comment: The authors identified 10 anomalously dry years and 11 anomalously wet years in the reconstruction period, and most of the anomalously dry (wet) years could be verified by corresponding descriptions in historical documents. Seems that there are some mismatches with the reconstruction, such as the flooding in 1954 and 1998 and the drought in 1958. Please add more discussion. Author's Response: Thank you for this suggestion. We added some discussion about the mismatches and causes in line 14-18 of page 10 in the revision.

Please also note the supplement to this comment:

<https://www.clim-past-discuss.net/cp-2018-141/cp-2018-141-AC2-supplement.zip>

Interactive comment on Clim. Past Discuss., <https://doi.org/10.5194/cp-2018-141>, 2018.

