Clim. Past Discuss.,
https://doi.org/10.5194/cp-2018-143-RC2, 2018

Climate of the Past Discussions

Interactive comment on "Two millennia of Main region (southern Germany) hydroclimate variability" *by* Alexander Land et al.

Anonymous Referee #2

Received and published: 12 December 2018

Dear editor and authors of the manuscript "Two millennia of Main region (southern Germany) hydroclimate variability". To the best of my knowledge, the 2000 years long chronology is a novel idea through integration all available tree-ring width samples in this work, which would be an important contribution in the denderochronology community. Another new information is to calibrate the tree-ring width chronology using the daily instrumental data. However, the robust of the reconstruction should be furtherly analyzed, and the mechanism of precipitation variability should be conducted for reader to understand the origin of variability in the high-impart journal Climate of the past. Thus, I suggest that the manuscript should be accepted for publication after a revision. Main comments: 1. There are very long chronologies in Europe where is a hotspot in dendroclimatology. It is highly encouraged to carefully review the previous

Printer-friendly version

Discussion paper

studies to place much more stress on innovation or difference of this study. The current motivation of this study is not very attractive to me. e.g. the first sentence in the abstract, the climate reconstruction covering the entire Holocene is important, but the TRW chronology in this study only covers the past two millennia. 2. The mechanism and origin of the precipitation variability (e.g. the influence of the Northern Atlantic Oscillation) should to be furtherly analyzed through comparison of the other reconstructions or model simulation. Another option is to select a more specific journal, e.g. dendrochronologia or Tree-Ring Research. The readers of Climate of the past would like to know some information about the mechanism of climate variability not only the phenomena. 3. The logic of the article is a bit problematic. The main target in this study is to reconstruct the precipitation variability over the past millennia. However, the following some evidences and discussion do not support this reconstruction. e.g. Page 10, line 9 'The TRW chronology does not track extremely low or high precipitation rates adequately.' The sections 4.3 also shows this weak relationship between the TRW chronology and the instrumental precipitation. Even the authors emphasize that the human influence may have a severe impact on forest in Page 17, lines 12-20. All prove that it is not very reasonable to reflect the extreme precipitation events over the past millennia. Another option to try to reconstruct the 'mixed' variable, e.g. the PDSI index. Specific Comments: 1. Page 1, Lines 18-19. The bootstrap method is not an innovative analysis in dendroclimatology, please see the literatures e.g. (Guiot 1991; Till and Guiot 1990). 2. Page 2, Line 3. It is difficult to predict future impact through climate reconstruction. The climate model is usually used to project the future scenario. 3. Page 6, Line 13. Why is the 100-year cubic smoothing spline used to detrend the tree growth? To my knowledge, the standard standardization method depends on the special situation of each sample. 4. Page 8. The section 2.5 should be moved to the introduction to emphasize the innovation of this paper through a review of previous reconstructions. 5. Page 8, Line 26. The reason selecting 51-year should be given. As we known, the window size would affect the results of running correlation. 6. The discussion of phase variability in the cross-wavelet transform and squared wavelet co-

herence is ignored. e.g. The MR and B11 has an obvious variability in phase in the upper right panel of Figure 5. 7. Page 18, Line 24. The seasonal resolution would lead a misunderstanding. Here, it is really an annual resolution.

References: Guiot J (1991) The bootstrapped response function. Tree-ring bulletin Till C, Guiot J (1990) Reconstruction of Precipitation in Morocco Since 1100 A.D. Based on Cedrus Atlantica Tree-Ring Widths. Quat Res 33:337-351. doi:10.1016/0033-5894(90)90060-X

Interactive comment on Clim. Past Discuss., https://doi.org/10.5194/cp-2018-143, 2018.