

Clim. Past Discuss., referee comment RC1
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Comment on cp-2021-13

Anonymous Referee #1

Referee comment on "A 406-year non-growing-season precipitation reconstruction in the southeastern Tibetan Plateau" by Maierdang Keyimu et al., Clim. Past Discuss., <https://doi.org/10.5194/cp-2021-13-RC1>, 2021

General comments

Tree rings response to local climate conditions, and the temperature and moisture in the growing season are usually the controlling factors for radial growth. In semi-arid regions on the southern Tibetan Plateau, where the climate is cold and dry, including the upper treeline, tree-ring width of coniferous species respond to growing season climate variables, e.g. early summer, warm season, or the whole year average (Zhang et al., 2015; Liu et al., CR 2012; Liu et al, 2014 QSR). Liu et al (NSR) comprehensively revealed that tree rings in SETP respond to growing season or annual precipitation and only a few tree ring chronology respond to PDSI due to the pre-monsoon moisture deficiency. As a result the physiological dynamics of tree ring/NGS correlation should be carefully and reasonably clarified. Consider the climate background and the tree growth/climate patterns, it is suggested to see the tree ring index responding to pre-monsoon climate variables.

Comparisons with previous results in the nearby area should include the difference and attributions within series other than consistence only.

There were lots of tiny mistakes in the manuscript and some figures needs improving. Acceptance could be done after the second revision.

Specific comments

- It's unnecessary to show descriptive statistics of the reconstructions in the abstract. Concentrations on the key results are mainly demanded.
- Tree rings are more and more of important in paleoclimatology. It's interesting to see that 'tree rings' are written in different way. Some are 'tree rings', and some are 'tree-rings'. Early dendrochronologists or students need standard of the terms. Would the authors like to say something on this?
- Line 37, ...'of the planet Earth'..., delete planet please.
- Figure 1, besides the study site and the sites from previous sequence's reference, we knew quite few from the figures. We couldn't see where the sites are, and what the key geographical settings are nearby.
- Line 99, 3.26e gridded? Latest version of CRU is 4.04 (2020, Nature scientific data)
- Line 96, 101-102, 27.17 N, 99.28 E → 17° N, 99.28° E; 27.0-27.5 N, 99.0-99.5 E → 27.0-27.5 °N, 99.0-99.5° E.
- The EPS was below 1475 A.D., and the sample depth was less 7 according to Figure 2. Why didn't safely choose the confident period since 1600 A.D. for reconstruction?
- Table 1, was it number of cores or trees? If it was number of cores, well, 38 cores rather than trees make the reconstruction since 1475 A.D. disputable.
- The tree grown/temperature correlation pattern looks rather weird. There wasn't positive correlation coefficient found at all. If we take the climate factors together, it was found TRW negatively correlated with temperature but positively with precipitation in current May. It is typically the pattern that the hemlock radial growth is limited by the pre-monsoon drought. The non-significant correlation coefficients with PDSI could possible attributed to temperature during the pre-monsoon season. Have the authors ever tested the correlation between TRW and pre-monsoon drought (prior December to current May)?
- Figure 6 displayed comparison between this study and previous results where the sampling site are close. Visually compared, besides the common wet/dry variations in decadal scales were identified, much difference could be easily found. Obviously, Zhang's and Li's series showed increasing trend during the 2000s, but the other three series didn't. For Zhang's series, which was a compo-site reconstruction, could the authors adopt only sites that are close to Lijiang? During 1540s-1580s, 1680s-1720s, 1840s-1920s, no common variation patterns were identified, and some were even contrarily varied. By the way, the 'year' scale of the figure was shown in the window of 80 years, and it is difficult to read. Why didn't show it in every 50-year step?
- Extreme dry/wet years were investigated, did they were consistent with other results in Fig 6? What did those extreme years imply? In terms of the spatial correlation analysis, did those extreme years spatially exist? Were there coincident with the Asian Monsoon Atlas (Cook et al, 2010)
- Line 262, was the 1920s-1930s drought called World War I drought in southeastern China? (Kang et al., 2013, QI).