

Interactive comment on “Autumn – winter minimum temperature changes in the southern Sikhote-Alin mountain range of northeast Asia since 1509 AD” by Olga N. Ukhvatkina et al.

Anonymous Referee #1

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General Comments: In this study, a *Pinus koraiensis* tree-ring chronology at the southern Sikhote-Alin mountain range of northeast Asia was used to reconstruct an autumn-winter minimum temperature spanning the period 1509-2015. Temperature reconstructions are rare in this region and this reconstruction is very valuable for the supplement of the local temperature series. However, some issues existed in this reconstruction. This biggest problem of this study is that the explained variance of the reconstruction equation is very low. The low explanation means the reliability of the reconstruction equation decreases. In addition, the year to year (high-frequency) variations of the reconstructed series was not in good agreement with the actual minimum temperature series (Fig. 5a). The correlation (0.52) may be caused by the similar trends. Thus, the

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real correlation coefficient between tree-ring index and autumn-winter minimum temperature might be lower than 0.52, which could be tested by calculating the 1st-order difference correlation coefficient between them. Please try using some methods to increase the amount of the explanation of the reconstruction equation. In addition, the greatest advantage of this reconstruction is that it spans a longer time range (more than 500 years), which can capture low-frequency climate variations (as the author said in Lines 40-48, 51). We know it is very important to extend the reconstruction series (or tree-ring chronology), but a generally acceptable threshold of the EPS is greater than 0.85. However, the EPS value from AD 1509 to 1602 is only greater than 0.7 and it contained 3 trees (or cores) (lines 119-124). Please try to find more older trees if you want to make up for this deficiency. Therefore, I cannot recommend it is accepted to publish in the current version.

Specific Comments: 1. Five main objectives of this study are too much. The objectives (1) and (2) that develop the first (more than 500-year) tree-ring-width chronology in the far eastern region are not the real objectives. Please only list the most important goals and make them less than three. 2. It's impressive that the authors say “two cores per undamaged old-growth mature tree (50 cores from 25 trees) and one sample from dead trees (20 samples) were extracted from *Pinus koraiensis* trees in the sample plots” (lines 98-99). However, the maximum sample depth of the VUS chronology shown in Figure 3 is nearly 35. It is far less than the actual sample depth. Please check this inconformity or give a reasonable explanation. 3. The reconstruction period of this study is from 1509 to 1602, which matches the $EPS > 0.7$, while the authors highlighted the EPS with the value 0.75 in figure 3. Please let them keep consistent. 4. Some figures (for example, Fig. 3, 5, 8) in the manuscript have no Y-axis title. Please add it. 5. In the manuscript, new plant name should be added with Latin name only if it appears for the first time. Please write the whole Latin name, for example the *P. koraiensis* in line 20, and the *A. nephrolepis*, *B. costata*, *P. jezoensis*, *P. koraiensis*, and *T. amurensis* (lines 79-80). 6. Two climate data sets (Chuguevka and MP7) were used to evaluate the tree growth-climate relationships, but in Figure 2 only

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the climate (monthly temperature and total precipitation) of MP7 meteorological station were shown. It is better to add the data of another weather station. 7. Why there are some big difference in the results of tree growth-climate relationships between long (Chuguevka) and short (MP7) climate data sets? Is it because the tree growth-climate relationships are unstable over time? If it is, the tree-ring data might be not suitable for the climate reconstruction. 8. There are some methodological and results sentences in discussion section, please move them into the correct places (method or result section), such as lines 268-269, lines 349-351. 9. There are some Russian in line 275, please change them to English.

Please also note the supplement to this comment:

<https://www.clim-past-discuss.net/cp-2017-98/cp-2017-98-RC1-supplement.pdf>

Interactive comment on Clim. Past Discuss., <https://doi.org/10.5194/cp-2017-98>, 2017.