

## ***Interactive comment on “1200 years of warm-season temperature variability in central Fennoscandia inferred from tree-ring density” by P. Zhang et al.***

### **Anonymous Referee #2**

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#### General comments

It's always interesting to read of new data coming from dendroclimatology's heart in the north. Data contributions are still extremely useful from such areas and this new data is an important contribution -particularly from more southerly sites. However, I do not feel the authors present the data, the methodologies used or the results to the full and best advantage. Clarity could also be improved, both in terms of language and grammar and the details of the study. I feel more insight could be gained as to the significance of the new reconstruction with broader comparisons with existing studies and the already widely describe d palaeoclimatic evolution of the region.

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Be careful with generalised, unquantified, comments “an improved” chronology? Improved by what metrics? Such qualifying comments need to be evidence based.

In general I feel the manuscript is in need of work before it is suitable for publication, specifically: - Improved and clarified aims and objectives and citing of the work in the broader context of northern fennoscandian dendroclimatology - Improved details on the physical and statistical methodologies used. - Improved and more detailed discussion of the results and their relevance to the wider climate evolution of the region over the last millennium - Improved clarity, language and grammar.

#### Specific comments

“C-scan suggests a later onset of LIA and a larger cooling trend during 1000–1900 CE than previous MXD based reconstructions” Again this is difficult to qualify as comparisons are not made with a wide range of reconstructions.

The motivation for the sampling strategy could be more clearly explained and linked to a clearer indication of what is new material and which parts of the chronology are pre existing? I am confused on the provenance of the majority of the wood. You indicate that most of the trees are of known (temperature sensitive) provenances, however also that a lot of building materials were used? This should be clarified and expounded upon.

At the end of the introduction the motivation for the study, its aims and objectives, relevant background remain murky at best. I would recommend some clear aims and objectives, linked to gaps in knowledge, which this data set can address and perhaps tied to some hypotheses which can be tested with this new data? This is particularly important in such a densely studied part of the world. Methodology. Its ok to refer to another paper for the details of a method but some methodological elements should be included to give the reader an indication of sample preparation and protocols etc. Further discussion, detail and discussion of the implications of the mean adjustment procedure are also required.

Interactive  
Comment

Grammar, language and clarity really need addressing in the methods section.

Detrending methods – the section is a little outdated. There is a huge body of literature now on differences in standardisation methods, signal preservation and the impacts of different detrending methods on variance preservation. I would recommend reading more widely on these topics and extending this discussion.

Results are broadly thoroughly discussed however I find the conclusions too brief. What are the broader climatological features of interest in the series? what does the evolution reveal in comparison to ideas about known climate transitions in the region over that time period? What climatic features might explain differences between this southern reconstruction and more northerly one?

#### Comment on comparisons

As the authors note they do present a comparison with Matskovsky and Helama, 2014 which, critically make reference to the new Toneträsk series. Comparisons are important, as the commentator points out, and various other options are available – McCarroll et al 2013 is a robust other option for comparisons (from a more northerly site) and contains useful discussions on variance differences which may be relevant

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Interactive comment on Clim. Past Discuss., 11, 489, 2015.

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