

Interactive comment on “Quantifying climatic influences on tree-ring width” by Guangqi Li et al.

Anonymous Referee #2

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In this study, the authors present a new approach to remove potential ontogenetic growth trends and demographic biases from tree-ring data. Such trends can confound the detection of trends caused by environmental change. The aim of the authors is highly relevant, the datasets used are large, figures are of high quality, and the manuscript is well written.

However, my main critique at this point is that the rationale and logic for choosing this particular model remains poorly explained. More importantly, why this new approach would account for ontogenetic growth changes and potential demographic biases is not discussed. I struggled to understand by what mechanism their new approach would account for ontogenetic trends and biases. Lastly, the authors claim in L247-248 and L305-307, that “P* has effectively reduced the effect of sampling biases as well as accounting for ontogeny”, but how can this be proven? Does this not require that these effects were known and quantified prior? The authors use empirical data, but I expect

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this can only be really tested with simulated data that includes a known ontogenetic and demographic effect.

I also have some minor comment that I hope will help to improve the manuscript.

L39. Suggest ending the abstract with a concluding sentence(s).

L53-54. This pattern may be present in light-demanding trees, recruiting in high light conditions. For shade tolerant trees, opposite patterns can be observed: initial suppressed growth, with higher growth rates later in life.

L58-74. I totally agree that it is in general difficult to separate growth trends caused by ontogeny from those caused by global change. And it is true that RCS may also remove changes caused by the latter. However, van der sleen et al. (2015) controlled for ontogenetic effects by sampling trees at a fixed diameter (so no detrending). Nonetheless, regardless of how ontogenetic changes are accounted for, tree-ring data can also be affected by various sampling biases which, in addition to ontogenetic and environmental change, can cause trends in the data. I think this should be pointed out more clearly here. For example, here one wonders if the focus of the paper will be on accounting for ontogenetic effects and/or for sampling biases? This should not be mixed.

L271. I think the figure reference is wrong here (there are no left panels in Fig. 5).

L307. Here and elsewhere in the manuscript, I think the model used is relatively complex (and requires quite a lot of parameters) and is thus not so “straightforward” as claimed.

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