

## ***Interactive comment on “Contribution of tree-ring analysis to the study of droughts in northwestern France (XIX–XXth century)” by O. Planchon et al.***

### **Anonymous Referee #1**

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Review of [Contribution of tree-ring analysis to the study of droughts in northwestern France \(XIX–XXth century\)](#) submitted by Planchon, Dubreuil, Bernard, and Blain.

In this manuscript, the authors present a collection of tree-ring chronologies from northwestern France with the aim of demonstrating the influence of seasonal drought on growth. Particular strengths of this work include the size of the tree-ring dataset compiled and the scientific aim to distinguish effects of drought occurring at different seasons or of differing durations upon tree growth. Links to circulation patterns are also rarely considered in dendrochronological analysis and thus also stand out as a strength of this manuscript. Analyses from this dataset could have contributions towards improving the interpretation of dendroclimatic reconstructions.

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Despite the valuable dataset and noteworthy aims of this study, I do not find the contribution suitable for publication in its present form due to limited analyses, missing relevant information, and barriers in both the written and graphical presentation. I will briefly outline selected topics, as examples, of where I believe this manuscript could be improved upon.

1. I found many basic relevant details to be missing. Examples related to the tree-ring data include a more detailed description of how the age trend was removed from the tree-ring data and how sample replication in the individual datasets changes over time. Information on site ecology might also be helpful. Also the maps show significantly more tree-ring sites than the 16 sites primarily analyzed. Why were not all sites used?

2. Even though this is at the heart of the analysis, it is also unclear how the chosen drought years were selected and classified. This seems to be problematic in, for example, table 1 and the illustrated drought in 1885 which should represent drought during only the summer. While the Rennes station indicates drought in the summer, the Paris station shows only very weak drought conditions during summer and in fact greater water deficit during the preceding winter and spring.

2b. If the regional variation of precipitation is so significant within this study area (also suggested by figure 5), it may not be meaningful for a single regional classification of drought types nor to compare growth variability across the current network as a response to uniform drought. More analyses of the instrumental network might be helpful in this regard.

3. Many technical issues also challenge the understanding of the results. The scale on figure 4 varies for each map, so that the maps are not directly comparable with each other (It would also be informative to have a sense of how growth changes within the four weather types are expressed.) Statistics are quoted over the 1961- 1990 period, when it was stated two sentence previously that data were used until 1980, etc.

4. While the individual sentences are generally well written, the article structure is

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quite loose with the logical organization difficult to discern. The introduction is a rather heterogeneous collection of 2-3 sentence thoughts &#8211; few of which are well connected. The introduction contains methodological details and the methods sections contain introductory material and so on.

5. Referencing of prior work throughout the manuscript could be improved upon. Key references appear to be missing both in terms of spatial analyses (e.g., Briffa et al 1988) and for studies with oak data (e.g., Kelly et al. 1989; 2002). Referencing of more recent dendroclimatic papers is also rather patchy.

6. Overall I find the scope of analyses to be rather limited. Both the climate and tree-ring data offer significant unrealized potential. For example, while most of the figures are nice descriptions of growth and climate characteristics &#8211; their connections could be explored in more detail. It also seems relevant to first understand the spatial variability of the instrumental precipitation / drought characteristics before directly interpreting variability in the tree-ring data. What criteria or techniques could be used to differentiate the drought types during the period prior to instrumental measurements / historical data? What common signals are found in the tree-ring data in years with above average moisture? What is the common tree response to other environmental parameters? Do these remain stable in time?

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Interactive comment on Clim. Past Discuss., 4, 249, 2008.

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