

## ***Interactive comment on “Temperature variability of the Iberian Range since 1602 inferred from tree-ring records” by E. Tejedor et al.***

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While the authors have addressed the remarks of Reviewer #1 in a reasonable and adequate way, I see some methodological problems, mainly with the RCS (baspois) application:

1: Did you use pith offset (or for your case of Basal-Area-RC distance to pith) estimates? I cannot find it in the text. If not, why? Omitting pith offset estimates will lower your RC and ultimately introduce a fake negative trend in the early years of your chronology. In your case of inversion a positive biased trend, which could be amplified when using Basal-Area. See Briffa & Melvin 2011 ~"A closer look on RCS..." and Klesse & Frank 2013 (attached).

2. You include old ITRDB datasets from the 1980s. Do you have the samples or pith

C1

offset estimates, or at least correct for the a- and b-sample difference of starting year? For example: a- and b-samples of the ITRDB series SPAI047 have quite large differences between their starting years (mean: 33 years). For their RCS curve that would mean, that those samples are overestimated on average already by 50mm (should be probably 0.5mm).

2b. The y axis in figure 4b is presumably off by a factor of 100 and should range from zero to 2.5mm instead of 250mm.

3. Do the trees have the same growth rates at all 11 sites? If not then a use of a single RC might introduce false trends, when sample and site replication changes. From originally 11 sites, 5 drop out in the 1980s, 4 in the 90s and you are left with only two sites. Do these sites have the same growth level as the ones that drop out before? See also Figure 6 in Klesse & Frank for an example of falsely introduced trends.

I have attached a figure showing this potential problem including the 5 Iberian Range (IR) ITRDB chronologies and 2 chronologies from Büntgen near Madrid. Although 250km to SW they grew at similar elevation and correlate with the mean chronology of the other 5 series quite good ( $r=0.52$ , 1701-1985, 30-year spline detrended). So, well in the range of your observed site to site correlations and only a little bit weaker than your weakest site to regional chronology correlation, but completely independent (one could actually argue to include them to increase the regional representation, but that's beside the point here). I applied a single RC and no pith offsets, split the IR and Büntgen series and averaged them separately with an arithmetic mean. It is obvious that the mean of Büntgen have permanently lower values over the IR series. So if the IR series drop out, the overall RCS chronology gets heavily drawn towards lower values, while the Büntgen series remain  $\pm$ constant. This effect could probably also be enlarged using the size/basal area detrending.

Can you show that this does not cause a problem in your data?

4. Figure 5a) Why do you compare your residual AC-free chronology with raw temper-

C2

ature data? That does not make sense if you want to highlight common signal in the high-frequencies. The simplest method would have been to detrend both series with a flexible spline (e.g. 30 years). That actually comes back to Remark 4 from Reviewer #1. If the TRW signal is truly representing pSep21 temperature, than it still should at least have reasonable negative correlations on the high-frequencies. A running correlation with raw temperature and BasPois does not answer Remark 4 and still contains trend-in-signal and not necessarily causal effect.

I believe the authors might have kept things too easy during the RCS application, which might have lead to erroneous conclusions. I would be really happy if my concerns don't have an impact on the conclusions, but without showing that I remain cautious.

Please also note the supplement to this comment:

<http://www.clim-past-discuss.net/cp-2016-9/cp-2016-9-SC1-supplement.pdf>

Interactive comment on Clim. Past Discuss., doi:10.5194/cp-2016-9, 2016.

C3

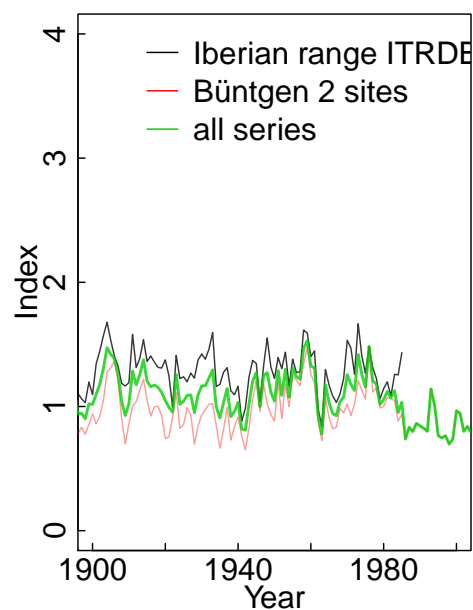


Fig. 1.

C4