

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

E. Tejedor et al.

etejedor@unizar.es

Received and published: 28 March 2016

Dear Stefan:

1. Regarding pith offset. On the one hand, we use a set of sites (VIN, CAV, NEI, URB, COV, HER) of which the samples are available, and therefore pith offsets can be estimated. On the other hand, we use a set of sites from the ITRDB (s047, s048, s049, s050, s006) from which the samples cannot be accessed. Here, for each tree, we have assumed $PO = 1$ in the oldest sample, and adjusted the shorter series accordingly. Sure this procedure introduces uncertainties, but this is true for all studies using data from the ITRDB. We believe, however, that these uncertainties do not generate a systematic bias, but are minimized using the new BasPois detrended method based on basal area instead of age.

C1

2. Perhaps already addressed in the previous paragraph. Since we do not have the ITRDB samples, pith offsets need to be estimated. Assuming an age of 1 in the oldest sample of every tree (of the ITRDB data) is indeed a compromise, and perhaps there are other possible solutions, however, we believe that for the development of a chronology representative of the regional climate of the western Iberian Range, all available samples should be included.

2b. We apologize for the mistake. The axis is now correctly labelled (Fig.4).

3. About growth rates, the variability among sites is lower than the variability within a site. Besides, we are not joining chronologies, but develop the regional chronology from all 316 individual TRW series. It is generally unavoidable to add some noise when integrating TRW series from different locations and species in a regional chronology. However, the high correlation between each site and the regional chronology suggests a general climatic signal. Similar approaches have been detailed in Briffa et al. 1998 and numerous climatic reconstructions have been developed using networks of different sites and species i.e. Wilson et al. 2003, Battipaglia et al. 2010, Büntgen et al. 2011 or, Esper et al. 2012. However, to prove that the variable end dates are without effect in the trend we develop a regional chronology with the sites ending in 1993 (using the BasPois detrended method) (Fig_1).

4. As suggested, we have detrended the climate data using a flexible spline (30 years) and correlated with ArstanRES and ArstanSTD chronologies emphasizing high frequency variance. The results show an increase in correlation with pSep21 temperature; for ArstanRES the correlation is $r=-0.39$, while for ArstanSTD the correlation increases to $r=-0.56$. These correlations indicate that the reconstruction contains some skill in the high frequency domain. Nevertheless, in order to assess long-term climate variability, we prefer using the BasPois chronology, in which the climate signal is enhanced, and both high and low frequency pSep21 variance and forcing (volcanic and solar) is retained. The changes in methodology and results have been included in the manuscript as well as the new Figure 5 (here Fig2).

C2

Please also note the supplement to this comment:
<http://www.clim-past-discuss.net/cp-2016-9/cp-2016-9-AC5-supplement.pdf>

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

C3

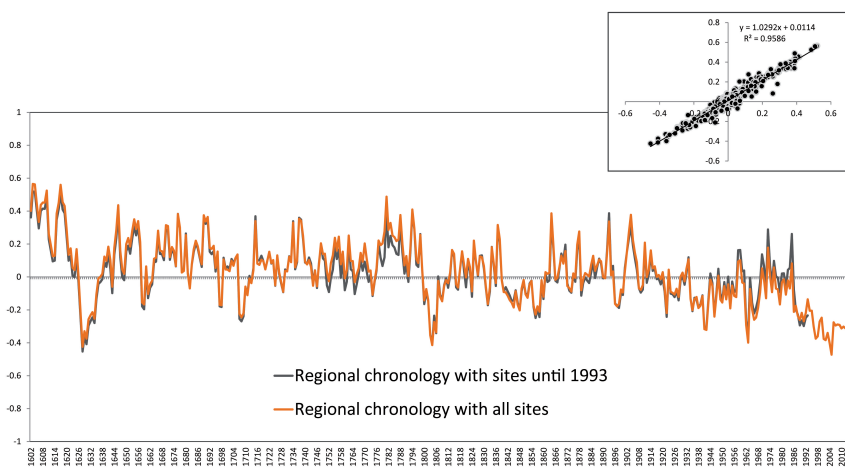


Fig. 1.

C4

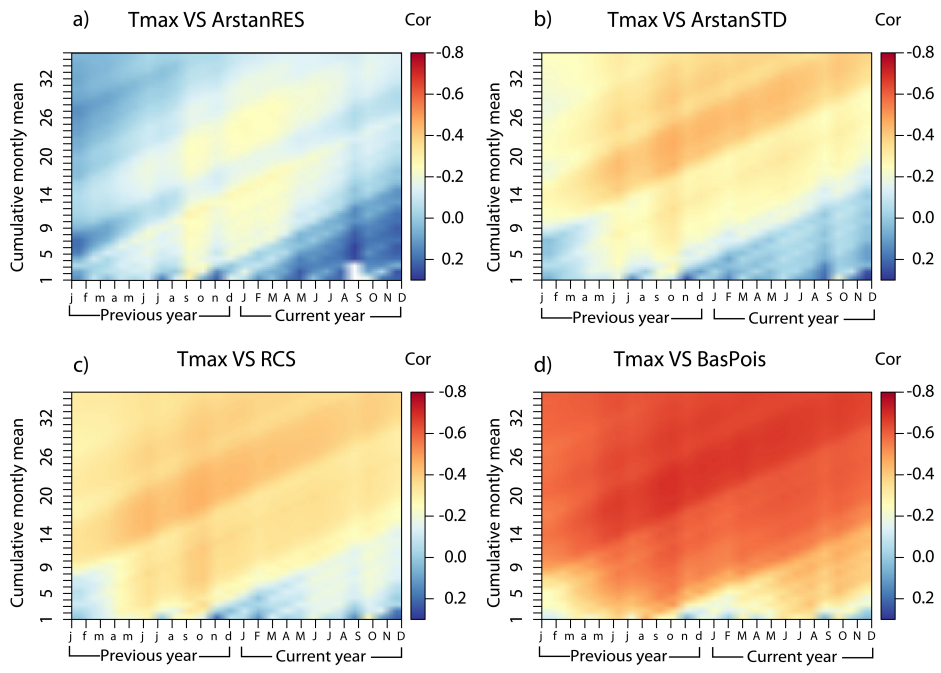


Fig. 2.