**Climate
of the Past
Discussions**

Interactive
Comment

Interactive comment on "Winter temperatures in the second half of the XVI century in the central area of the Iberian Peninsula" *by* T. Bullón

Anonymous Referee #3

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The author attempts to present a calibrated winter temperature reconstruction AD 1550-1599 for the central Iberian Peninsula, from documentary evidence, and study how temperature changes have affected some local forest and agricultural activities during the period.

I will go to my main point immediately: The manuscript in its present state does not match the standard required for being published in Climate of the Past (CP). However, given the general need by the paleoclimate society to obtain more information about climate in the past, I hope that the paper can be improved so that it becomes acceptable. The proxy data used deserves to be further analysed and made available to a wider audience.

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There are two main reasons why the manuscript is not acceptable in its current state:

(1) The method used for calibration of the documentary index data to temperatures is not clearly explained (and possibly inappropriate), and no uncertainty estimate is provided.

(2) It is almost impossible for non-Spanish readers to understand the underlying details concerning data, methods, etc., because lots of the references are given to 'grey' literature written in Spanish. Climate of the Past is an international peer-reviewed journal, with English as language. The readers should be able to obtain all necessary information (in English) from the paper.

I understand that much of the underlying information in all the references to Spanish institutional reports, etc., is too voluminous to be provided in the paper itself. However, as CP offers the possibility to add electronic supplementary material (ESM), all the necesserary background information can be summarized in English and provided as ESM.

After these general suggestions, I will go to point-by-point comments. I will not comment details in the English, as the language style anyway needs to be improved. I refer below to page and line numbers.

p699, l5. Insert a reference (concerning that land use did not undergo significant changes).

p699, l18. The paper by Bullon (2006) is in 'grey' Spanish literature. Please, provide a summary of the most important details in an ESM.

p700, l9. It would be very helpful for those who wish to go into details in understanding the underlying documentary data, if a list of all the original sources could be given in the ESM. In general, it is a problem in historical climatology that authors do not provide such lists of original sources. This bad habit is certainly related to the fact that the lists of sources are too long for being published in paper journals. But with the ESM option,

it is possible to start using a good habit, and provide all the necessary details in the ESM.

p700, l21. It would be helpful if the author could provide one explicit example from each of the categories of data (direct, indirect and mixed), perhaps in the ESM. Without such explicit information, a general paleoclimatologist can only with difficulty guess what is actually meant.

p700, l23-24. Provide an English summary in ESM on how Bullon (2006) assigned "a value according to equivalence tables ...". Without that information, it is impossible to understand how the numbers were obtained, and hence it is impossible to judge the quality of the data.

p701, l5-15. How robust is the approach to create the WCI numbers? Has it been quantified for any site, in any period of overlap with instrumental data? How about problems with different amount of information in different years? Please, provide some discussion of this, with references to English literature if possible.

p702, l2. Add information in English (in ESM) that summarizes important details from the work by Nicolas et al. (1979).

p702, l8. Are the index series (from WCI and from instrumental reference data) rect-angularly or normally distributed?

p702, l11. Summarize the essentials of the methods of Creus (2000) and Saz (2003) in ESM.

p702, l14. Which are the 'parameters' in the equation? Which equation?

p702, l16, l20. There is not sufficient information to understand Tables 1-2.

p702, l21-23 (and in general). How are the -4 to 4 index values for the modern instru-mental data and the early WIC data related? There seems to be an implicit assumption in the methodology, that a certain index value corresponds to a certain temperature,

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and that this is the same temperature in both periods. Why should it be so? Has it been demonstrated anywhere that the method leads to WIC values being directly comparable to the index values derived from instrumental data? This is the most important question as concerns calibration of WIC to temperatures. How can we be sure that the calibrated documentary data have been assigned reliable temperature values? This is a particularly important question here, as one of the main points with this investigation is to "define the general winter temperature characteristics of the area under study between 1550-1599". The state-of-the-art approach in paleoclimatology today, is to provide uncertainty estimates to calibrated proxy data. This needs to be done here too.

p703, l4-10. Explain what the Mann-Kendall test is and how the curves in Fig. 4 should be interpreted. Summarize the guidelines by Galan et al. (2003) and Rodrigo (2006), possibly in an ESM.

p703, l12. Define the boxes and whiskers in Fig. 5. How can you interpret the slope changes here? Insert a reference, and add some information. Where in Fig. 5 do you see the slope changes? How are the cumulative series calculated? Provide more information in ESM.

p703, l13. What do you mean by "differences between means to the previously identified sequential subgroup pars"? Consider giving details in ESM.

p703, l17-18 (and in general). Why do you use cumulative anomalies? Provide a reason.

p703, l19. Insert a reference to Table 3.

p703, l22-28. Define better what you mean with 'trend' here. For example, your text states that there is a negative trend during 1576-1587, but as far as I can judge by visual inspection of Fig. 3, there is rather a positive trend over this period. Are your 'trend' calculations meaningful at all? Why not just look at the time series in Fig. 3, and

describe qualitatively the character of the series. To me, the trend calculations seem to be methodological 'overkill'. I can only see one main feature in Fig. 3: The period 1566-1573 is cold compared to the rest of the series. Moreover, is it appropriate to provide three decimals in the estimated trends?

I will not make any detailed comments to sections 5-6, as the text and methodology in sections 2-4 anyway needs substantial improvement first.

One final comment: I recommend the author to put more emphasis on demonstrating the robustness of the WIC data and its calibration to temperature anomalies, and also provide associated uncertainty estimates. If you can achive this, the quality of the investigation will most likely rise more or less automatically.

Interactive comment on Clim. Past Discuss., 4, 697, 2008.

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