A review for Climate of the Past

Manuscript cp-2011-71:
"Climate variability in Andalusia (southern Spain) during the period 1701-1850 AD from documentary sources: evaluation and comparison with climate model simulations"

The manuscript presents a method to reconstruct climatic variables in periods over 1701-1850 in Southern Iberian Peninsula, based on documentary records and previous reconstructions. The comparison with simulated past climate variability is also provided. A complementary list of 23 documentary sources in Appendix A proves invaluable reading to anyone interested in climate reconstructions in the area.

The point of this review is not to argue on the ground of the work, which appears similar in either or both content and structure to other works. One issue is that it is not clear how far the Authors have gone with respect to previous contributions. It is an issue of doubt that should be clarified in writing, also in relation to the fact that considerable portions of text were visibly copied and pasted from similar papers. Moreover, it was sometimes difficult to follow the progression of methodological reasoning (which this reviewer understands it is a main issue of the paper). Text readability would be improved if only some of the narrative can be shortened and summarized into tables and/or schemes. Not least, the text also requires to be checked by a native-tongue because the English usage is frequently imprecise. Overall, the manuscript is of interest and may be published after revision. Notwithstanding this reviewer insists on clarification of text and consistent use of terminology because in its current format, content and structure the scientific message may not come across as intended. Some of this criticism is presented below.

Abstract
The abstract looks too vague and non-informative because there are no results mentioned quantitatively.

Page 2, line 16. "assesed" is "assessed".

Page 2, line 16. "two different reference periods and two pairs of percentiles as threshold values". Please be specific (Which percentiles? Which threshold values?).

Page 2, lines 24-25. "Future research challenges are outlined". This is not an explanation.

Introduction

Page 3, line 4. "*et al.*". Please be consistent in the use of italics and punctuation throughout the text.

Page 3, line 4. "estimates". "records" is probably more correct.

Page 3, line 4. "nineteenth". You can probably replace it by "19th". In general, only numbers under 10 are spelt out in letters (except where attached to a unit of quantity).

Page 3, line 7. "evidence". It is probably "evidences".

Page 3, line 11. "Last years". It is too generic. It depends on which years the Authors are talking about.

Page 3, line 13. "subjects". It is "subject".

Page 3, line 14. "Aragón". Just avoid Spanish spelling. It is "Aragon" in English.

Page 3, line 15. "Alcaforado". It is "Alcoforado".

Page 3, lines 18-19. "flood events on Spanish river basins". Please specify which period had been investigated in this study.

Page 3, lines 19-20. "droughts during the 17th century (Domínguez-Castro et al., 2010)". The Authors of cited paper also analyzed drought occurrence in Spain in the first half of the 18th century (not only during the 17th century).

Page 3, lines 22-32. "Andalusia… interest". This text portion is pretty much the same as in Rodrigo et al., 1999, Int. J. Climatol. 19, 1233-1253. A new article will not be honoured by the copy and paste activity. Here and elsewhere, the Authors are invited to eliminate from the text areas of copy-and-paste from previous articles.

Page 3, lines 37-41. "This period is… in April 1815 as main event". Please provide literature references to support this sentence.

Page 3, line 38. "Maunder Minimum". This period, which includes the coldest years of the Little Ice Age, is evoked here and then never again in the text. Some insights can be gained at looking at this peculiar climatic period, and not only at the Dalton Minimum (to which the Authors give more attention).

Page 3, line 38. "include" is "includes".

Page 4, lines 6-8. "other important objective … is the evaluation … and the comparison". It is probably "other important objectives… are…".

Data

Page 4, lines 24-26. "The advantage of using different kind of sources lies in the fact that allows for an adequate cross-comparison of news collected, assists in eliminating faults and in comparing information from different documents". The word "kind" is probably "kinds", but the whole sentence structure is poor.

Page 5, lines 6-7. "the 15% …the 17%". You may omit "the" before a percentage.

Page 5, lines 11-17. "News… considered… considered… considered… Iberian Peninsula". The sentence is too long. Please avoid duplicate (triplicate) word use in a sentence.

Page 5, line 33. "forwards" is probably "forward".

Page 6, lines 14-19. "The total number of extreme seasons seems reasonable … and autumn". The expression "seems reasonable" requires some explanation. Overall, there is a problem of lack of clarity. A little more clarification is needed on where numbers come from.

Page 6, line 16. "31 year period". It is probably "31-year period".

Page 6, line 31. "AEMET". Please provide a reference (the web page can be enough).

Page 6, line 39-page 7, line 1. "A season may be characterized as dry (cold) …if total rainfall (average temperature) is lower than the 10th or 25th percentile… (c_{75} and c_{90}, respectively)". Please specify if these thresholds were obtained by literature, self-recording methods, etc.

Page 7, line 11. "et al. ,2005". It is "et al., 2005".

Page 7, lines 12-13. "Green House Gases". It is "greenhouse gases".

Page 7, line 15. "Crowly". It is "Crowley".

Page 7, line 16. "IP". This reviewer guesses this acronym means "Iberian Peninsula", but please specify.

Page 7, line 16. "is reliable data". Just use the plural form "are".

Page 7, line 18. "Gomez". It is "Gómez".

Methodology

Page 7, line 24. "avoids possible subjectivity problems". That statement sounds too strong. You may better replace "avoids" by "reduces"

Page 7, lines 38-39. "31-years period". Use a consistent form: "31-year period".

Page 8, line 7. "The more simple". It is "The simplest".

Page 8, line 10. "amounts tends". It is "amounts tend" or "amount tends".

Page 8, line 10. "approximation to". Please replace by "approximated by".

Page 8, line 12. "approaches normal". It is "approaches the normal distribution".

Page 8, line 15. "transform". It is "transformed".

Page 8, line 21. "2". It is "two".

Page 8, line 28. "absence … imply". It is "implies".

Page 8, line 30. "31-years period". Here and elsewhere, please use a consistent term: "31 years period" or "31-year period".

Page 9, line 22. "sensible". It is probably "sensitive".

Page 9, line 30. "31-years running mean". It should be "31-year running means".

Page 9, line 35. "very good agreement". "good" is enough.

Page 10, line 6. "A measure of agreement between the original series and the reconstruction is the Root Mean Square Error (RMSE)". A major concern is that the Authors have used the RMSE as the only measure of performance. The RMSE, which shows the size of the error without regard to sign (also giving more weight to large errors), is a poor index if not accompanied by other measures. Its relative form (RMSE divided by the mean of observation) is a dimensionless index that would allow comparing different variables, regardless of units and range of values. This is the case in this study, where temperature and rainfall are both assessed. The Nash-Sutcliffe modelling efficiency (EF), in the range -∞ to 1, would also be informative to identify inefficient reconstructions (EF<0). Independence-of-errors due to the possible presence of autocorrelations among the residuals would also be tested, as precautionary remark on the danger of spurious relations (e.g. Stenseth et al., 2003, P. Roy. Soc. B-Biol. Sci. 270, 2087-2096).

Page 10, line 10. "no a clear". It may be "no clear" or "not a clear".

Reconstruction

Page 10, line 22. "31-years running means". It is "31-year".

Page 10, line 36. "there is not gaps". It is probably "there are no gaps", otherwise "there is no gap".

Page 11, line 1. "0.5°C". It is "0.5 °C".

Discussion

Page 12, line 10. "Cádiz". It is probably more correct to use English spelling: "Cadiz".

Page 12, line 13. "0.6°C". It is"0.6 °C".

Page 12, line 13. "very similar". "similar" is enough.

Page 13, line 10. "from 1870 to 1701". It is probably "from 1701 to 1870".

Page 13, lines 27-28. "There is other important data source". You may replace "other" by "another".

Page 13, line 35. "very different". "different" is enough.

Page 14, line 9. "Little Ice Age". Please comment briefly on the LIA.

Page 14, line 10. "a flood in Granada was recorded on 9 May 1804". The Authors may provide a literature source.

Page 14, lines 10-11. "seem related". It is probably "seem to be related".

Page 14, lines 19-20. "Dalton minimum". Please use a consistent term all over in the text: "Dalton Minimum" or "Dalton minimum".

Page 15, lines 6-8. "the Little Ice Age in Spain was an increase of precipitation, with the tree ring index showing increasing rainfall in the mid-19th century". You may specify that mid-19th century is the end of the LIA.

Page 15, line 7. "tree ring index". It is "tree-ring index".

Page 15, line 21. "SLP". It should be "sea-level pressure" but please specify the acronym SLP.

Conclusions

Page 15, line 28. "potentially". It is "potential".

Page 15, lines 31-33. "Among the main results it can be mentioned the reconstruction of winter temperatures, a task that rarely appears in historical climatology studies focused on the Iberian Peninsula". The Authors may conclude by relating their findings to a wider geographical context. For winter temperatures reconstruction in Central-Southern Italy, for instance, the Authors may refer to Diodato et al., 2010, Clim. Past Discuss. 6, 2625-2649 (http://www.clim-past-discuss.net/6/2625/2010/cpd-6-2625-2010-discussion.html).

Appendix A. Documentary data sources.

Page 16, line 14. "Tographies". It is "topographies".

Acknowledgments

Page 18, line 2. "Spanish Environment Ministry". It is probably "Spanish Ministry of Environment". Here, you may add the web site.

Page 18, lines 3-4. "Barriendos", "Wheeler". Please add the affiliation information to names

References

Page 18, line 7. "Alcaforado". It is "Alcoforado".

Page 18, lines 9, 14-15. "The Holocene". It is "Holocene".

Page 18, lines 16. "LLasat". It is "Llasat".

Page 18, lines 17. "A.D.". It is "AD".

Page 18, lines 18, 22, 25 and 28; page 20, lines 5, 18 and 24; page 21, lines 8 and 20. "Clim. Change". This abbreviation is not correct. Please use standard journal abbreviations.

Page 18, line 21. "herrero". It is "Herrero".

Page 18, line 21. "And". It is "and".

Page 18, line 24. "Bradzil". It is "Brádzil".

Page 18, lines 24-32. "Brádzil… 20010b". Please sort three references according to the alphabetic order: Brádzil, R., Demarée; Brádzil, R., Dobrovolný; Brádzil, R., Pfister. As a consequence rectify "2010a" and "2010b", here and in the text.

Page 18, line 30. "Kolár". It is "Kolář".

Page 18, line 33. "Briffa…". The authorship is not complete. Please add: Jones, P.D., Shiyatov, S.G., Vaganov, E.A.

Page 19, line 13. "Domínguez Castro". It is "Domínguez-Castro"

Page 19, line 15. "at Toledo Cathedral". It is "at the Toledo Cathedral".

Page 19, lines 23 and 29; page 21, line 29. "doi". Please check if the doi is part of the information required by the journal's style format.

Page 19, line 29. "Climate of the Past". Please use journal abbreviation.

Page 19, line 31. "Lettenmaier". Please insert a space to separate consecutive references.

Page 20, line 4. "rogations". It is "rogation".

Page 20, line 8. "casty". It is "Casty".

Page 20, line 22. "of Jesuit". It is "of the Jesuit".

Page 21, line 12. "Cádiz". It is "Cadiz".

Page 21, line 25. "Hastosh". It is "Hantosh".

Page 21, line 25. "Zatarii". It is "Zatari".

Page 21, line 32. "Geophysical Research Letters". Please use journal abbreviation.

Tables

Page 23, lines 3-4, Table 2. "in bold if the fit to a normal distribution is significant at the 95% confidence level KS<0.161". This is an improper statistical terminology. It would read, for instance: "in bold if the hypothesis of conforming to a normal distribution is not rejected at the 95% confidence level KS<0.161". Please specify the number (N) of values that correspond to the critical value of 0.161. It should be N~71 for two-tail KS test with big samples, according to tables of critical values (e.g. Miller, 1956, J. Am. Stat. Assoc. 51, 111–121).

Page 24, Table 3. For the t-test, just use positive values. In the Rsp column, please check for F-ratio equal to 0.56. It makes nonsense as F-ratio is usually computed by dividing larger variance with smaller one. Also in this case, please specify the number of values used in the analyses. Lines 5-6, "KS = Kolmogorov-Smirnov statistic, in black differences significant at the 95% confidence level)". The Authors probably mean "in bold", not "in black". But what do the bolded numbers mean for t-test values and confidence intervals? Moreover, please specify if intervals are given at the 95% confidence level for t-test and F-test as well.

Figure Captions

Page 26, line 2. "Main cities with data are indicated". There are no data indicated in Figure 1.

Page 26, line 8. "first panel and third panels". Just make it simple: "first and third panels".

Page 26, lines 9-10. "10-90 percentiles (red lines) and 25-75 (blue lines)". Just rearrange it: "10-90 (red lines) and 25-75 (blue lines) percentiles".

Page 26, line 13. "bar". Please replace it by "area".

Page 26, lines 17-18. "Fig.". Use a consistent term: "Figure".

Page 26, line 24. "11-years moving average". Use a consistent term: "11-year moving average".