

Interactive comment on “Tree-ring proxy based temperature reconstructions and climate model simulations: cross-comparison at the Pyrenees” by I. Dorado Liñán et al.

Anonymous Referee #1

Received and published: 29 December 2011

Overall quality:

The manuscript provides an interesting comparison and evaluation of standard data treatments applied in tree-ring based climate reconstructions. It fits within the scope of CP and presents a novel systematic comparison of standard dendrochronological techniques and their impact on the resulting reconstruction. Substantial conclusions are reached for this case study. A short additional comment/hypothesis if these conclusions are expected to be generally valid also for other locations/regions would be appreciated. Also, I am missing discussion about how valuable the reconstruction is overall if non of the methods tested brings it close to the observed trend in instrumental

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measurements of the 20th century.

The manuscript is too long and should be condensed. I suggest to focus more on the comparison of different methods and less on the model comparison with does not lead to significant new knowledge. This should also be visible in the title as the comparison of different statistical techniques appears already now to be the main part of the paper. Too long sentences, too many brackets and abbreviation make it hard to read and understand the text and require major rewriting. This is especially true for the abstract which does not provide a concise and complete summary. It is neither clearly written nor does it includes the most important messages of the paper which are reached in the conclusions.

Specific comments and technical corrections:

Title

- Better “at the Pyrenees → “for the Pyrenees”

Abstract - Too many abbreviations make it hard to read fluently. Make sure abbreviations are only explained where used first

- Line 1-2 “Northern” → northern etc.

- Line 7 In line 4 you speak of 2 standardization methods and now it is 4 standardization procedures, not clear!

- Line 12 “The three methods ...” Which?

- Line 16-17 To much detail for an abstracts is given in brackets

- Results of methodology comparison are completely missing and no conclusions are reached

Introduction

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- Line 10,13 Citations before and after the list
- Line 18 Delete “Perhaps” and add something like “for the last millennium”
- Line 28 Sentence too long → “...2004). However, ...”

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- Line 1 Delete “still”
- Line 3 “...estimate reconstructed values” → transformation from tree-ring parameter to meteorological units
- Line 6 “large scale variations” is unclear
- Line 15 “estimated from proxy data” only partly true, e.g. Earth orbit is calculated
- Line 19 “area domain” double
- Line 27-2 “not common” they appear common if you can give so many references

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- Line 9 “2007). The” These sentences do not connect
- Line 27ff sentence not clear/easy to understand

Methods

- First 2 paragraphs are not about methods
- Line 15 In the abstract you talked about the millennium!?
- Line 17,19 “Ramond...” too much botanical detail for CP
- Actual information in methods is missing (PT, RCS, cubic spline, PCA, regression, etc.)

Site chronologies

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- Line 7 Many paragraphs start with basically the same words
- Line 9-15 Not clear
- Line 21 Expression “for certain”
- Line 22 “rejected. Thus” no clear connection between variance and standardization discussion
- Line 24 Table with abbreviations for experiments would be helpful

Regional chronologies

- Line 17 EOFs belong to the “Methods” section.
- Line 20 Which maps where? Why should PC5 be shown that is not the main pattern?
- Line 28 “A regional” start new paragraph for make clear that you now talk about instrumental measurements

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- Line 7 Numbers are missing for the correlation

Pyreenes reconstructions

- Line 23ff Sentence too long. What was PYR calibrated to originally? To which month was it sensitive?

Model simulations

- Line 9-10 Too much detail
- Line 17ff Delete “For a . . . referred to”

Regional Pyrenees MXD...

- Line 20 You look at different seasons?

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May-to-September regional...

- Line 23 Never explained which frequencies are considered high or low

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- Line 8 “On the ...” complicated sentence
- Line 16-17 Is the reconstructions for other month that span a different period?

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- Line 1 Please give a reference for a solar minimum between 1950 and 1980

Cross comparison

- Line 10 Erik1 and 2? Not mentioned in the paper before

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- Line 12 In Fig. 6 the red instrumental line seems to have a positive trend and no decrease by -0.45°C
- Line 19 “2.29” → “-2.29”

Discussion

- A comparison with the original PYR series would be interesting, too. What is the improvement of this reconstruction?
- Line 27 “low frequency” → “centennial”?

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- Line 1-4 Complicated sentence
- Line 12 “technique” → “techniques”

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- Line 5 “... regression.” give reference
- Line 8 “...magnitude of negative RE ... higher for ...” confusing
- Line 16 Which trend? Less pronounced than what?

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- Line 3 “climate variable” → temperature
- Line 26-3 Descriptive and no discussion

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- Line 4-12 Reasons for model mismatches are partly known, e.g. no land-use changes. There are simulations for the last millennium with single forcings (Jungclaus et al. 2010)
- Line 16ff No example need

Conclusions

- Line 25 Delete “not perfectly”

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- Last paragraph: Not really new results, in particular because newer models with improved external forcings were not considered

References

- Number 15 StateNCAR

Table 1

- Delete in caption “ Statistics ... shown.”

Figure 1

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- Blue dots are hardly visible

Figure 4

- No explanation for grey shading
- Dots too small or zoom into study region

Figure 6

- Too small
- Legend is missing
- Why do all reconstructions miss the 20th century warming trend? Obviously it is not a problem of any of the methods tested in this study.
- Mark solar minima

Figure 7

- “instrumental record (black line)” should be “red line”

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