Clim. Past Discuss., 8, C1864–C1869, 2012
www.clim-past-discuss.net/8/C1864/2012/

Climate of the Past Discussions

Interactive comment on "Long term January–March and May–August temperature reconstructions from tree-ring records from Bosnia and Herzegovina" *by* S. Poljanšek et al.

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Received and published: 9 October 2012

General comments This is a timely, relevant, well-structured, and well-written paper that in my opinion merits publication in Climate of the Past. I have a couple of concerns regarding the methodologies used by the authors that I would like to see solved before publication. Some of these concerns have been addressed by Danny McCarroll in review#1, including the use of residual chronologies (and its effect on time stability of the climatic signal), the reconstruction of P and T from the same data set, and the selection criteria for the two groups. Related to this latest concern (see also comment below), the division of the sites in two groups as it is now, in my opinion, is rather ar-

bitrary and subjective. I believe a much more objective way to combine sites would be to run a PCA analysis on the 7 sites and look at the climate signal in PCA1, PCA2 etc. This, also, would give you independent chronologies per definition. I also find the extreme event analysis problematic. The number of events predicted by the reconstruction is very low and makes me doubt the validity of the reconstruction. Moreover, the methodology applied is not very clear and the authors do not report all results (e.g., how many 'false' extreme events did you find during the instrumental period, in other words, how many extreme events were there in your reconstruction over the instrumental period that were not recorded in the instrumental data). Finally, Fig. 7 is not a very useful illustration of the results in my opinion. One last remark is that it would have been nice to see a figure that compares this (summer) temperature reconstruction with other regional summer temperature reconstructions, including Popa and Kern 2009 and Trouet et al. 2012.

Specific comments

P4402 L14-18: these sentences are a repetition of what you mentioned earlier, so please exclude them from the abstract

P4403 L5: I am not sure what you mean by 'meridional Balkans'?

P4403 L28-29: Trouet et al. (2012, Holocene), which you refer to later in your text, published a summer temperature reconstruction back to 1768. Why does that not count?

P4404 L1-2: throughout the text, I sometimes find it confusing to differentiate what has been published previously in Poljansek et al. (2012, Tree-Ring Research) and what is novel to this manuscript. It would be useful, I believe, to clarify this more explicitly in the text.

P4405 L3: delete already

P4405 L6-7: please include a reference to Fritts 1976 here

P4405 L8 and L15: “since” has a temporal connotation, so please rephrase these sentences excluding this word

P4406 L5: BiH has been used as an acronym before, so there is no need to write it in full here.

P4406 L5-6: delete latitude longitude

P4406 L12: exposure rather than exposition

P4406 L14: it would be nice to see a map with the location of the sites relative to each other and to the mountain chain (not just a table)

P4407 L28: year-to-year variability

P4408 L1: I think this should be 0.2 instead of 2.0, right?

P4408 L8: covers the period from 1901-2009

P4408 L19: similar interannual variations in . . .

P4408 L21-23: this sentence is a repetition of what you write in L6-7

P4409 L4: why did you not include PDSI in your analysis? A CRU PDSI data set is also produced and available through the KNMI Climate Explorer site.

P4409 L16: maybe you can specify here which two periods exactly you are talking about

P4410 L7: I think it would be of interest to see Fig. 1 for temperature AND precipitation

P4410 L9: why did you not include previous year’s climate variables? Especially if you are aiming to reconstruct winter climate, it would be of interest to also see the correlations with previous years December and November months.

P4410 L12-20: this, I believe, is the most problematic part of the paper. A look at Fig. 1 shows us that e.g., Krivaja has equally strong correlations to winter climate than e.g.

Perucica, so the division of the sites in two groups, in my opinion, is rather arbitrary and subjective. I believe a much more objective way to combine sites, would be to run a PCA analysis on the 7 sites and look at the climate signal in PCA1, PCA2 etc. This, also, would give you independent chronologies per definition. If the authors decide to keep their grouping, they should include:

A table that shows inter-correlations between all chronologies

The inter-correlation between the two composite reconstructions

A sensitivity analysis: how does the composite climate signal changes if e.g. Krivaja changes groups?

P4411 L2: aggregates created rather than created aggregates

P4411 L7 vs. L14 vs. L24: why does $r>0.4$ correspond to $p<0.1$ in L7, but $p<0.05$ in L14, and $p<0.001$ in L24? Also, please use $p<0.1$ instead of 1% (and be consistent)

P4411 L16 vs. L23: id. $P<0.05$ vs. $p<0.001$

P4411 L21-24: this is repetition from what you write in L6-8

P4412 L6: again, it would be nice to see results for both Spring and Summer here, not just summer.

P4412 L28: predictor for the reconstruction

P4413 L14-19: you mix the use of predicted and reconstructed values here, this is confusing. I think it should all be ‘reconstructed’

P4413 L18-19: this is the third time you mention this correlation coefficient in your manuscript (excluding table 3), please omit here

P4413 L20-21: 6 out of 17 is not very many, your reconstruction does not seem to be very reliable this way

P4414 L11: same for this correlation coefficient, this is the third time you mention it in

the text

P4414 L15: 2 out of 17 springs is even less! This really makes me question the reliability of your reconstruction

P4415 L3-5: you make it sound as if there is a distinct difference, as if there are no chronologies that are sensitive to both summer and spring climate, this is not true. You should probably be a little more nuanced in your statement.

P4415 L11: Fig. 4 does not show the individual sites and their location. It would be good to have a map that shows this (cfr. Earlier comment)

P4415 L18: effect rather than affect

P4415 L23-24: this is a reasonable explanation, but Fig. 3 shows us that there is no correlation at all with winter precipitation. How does that fit in to this explanation? If water availability were the key, then surely there would be a correlation with winter precip? You might have to nuance this statement a bit.

P4417 L8: r=0.55 rather than 0.4

P4417 L7-25: this is an interesting discussion, but I think the 'weakening of the climate signal' in the 1970s-1990s is exaggerated and does not need so much explanation. Fig. 5 shows us that the precipitation signal remains significant throughout this whole period and the temperature signal dips above the significance level only during a couple of years in the mid-80s. My interpretation of this figure would be that the climate signal is more or less stable through time. In addition to this, I agree with Dr. McCarroll (review#1) that a lot of this instability is due to differing low-frequency signals in climate vs. tree-ring data and is a function of detrending more than of anything else. I suggest you shorten the discussion of the temporal climate instability.

P4417 L24 and following: what is the reference for the statement about the influence of AMO on Balkan climate?

P4418 L3: decadal summer precipitation

P4420 L16: these rather than this years

P4420 L19: for MJJA rather than with

P4420 L22:observed rather than observable

P4421 L29: various literature sources rather than literatures

Fig. 1: please include a legend that clarifies the strength of the correlations that various colours refer to (red=pos, blue=neg?; darker=stronger correlation?)

Fig. 7: I find this figure confusing:

It would be good to not only show the extreme years that overlap between predicted and observed, but also the ones that do not overlap, in other words, draw the threshold lines over the whole width/height of the scatterplot

Hot, T > rather than < 16.58 and 16.33

Table 3:

The way this table is organized is very confusing

I have a hard time believing that an r-value of 0.08 (JFM temperature 1956-2009) is significant at the p<0.05 level?

Interactive comment on Clim. Past Discuss., 8, 4401, 2012.