

Interactive comment on “Statistical framework for evaluation of climate model simulations by use of climate proxy data from the last millennium – Part 3: Practical considerations, relaxed assumptions, and using tree-ring data to address the amplitude of solar forcing” by A. Moberg et al.

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We thank all four referees for valuable and constructive comments. Our detailed answers to each of the referees, indicating our plans for how we will produce a revised manuscript, are provided in four separate files.

Here, we would in particular like to point out that comments made by the Anonymous Referee #2, concerning results obtained with our so-called inside averaging method,

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led us to discover that this method (presented in Appendix A of Part 1 in our series; Sundberg et al., Clim. Past, 8, 1339–1353, 2012) needed a modification.

We have now applied the modified inside averaging method to the data that are used here in Part 3, and we find that this leads to a change in how the results in Figure 6 and, in particular, Figure 8 should be interpreted. The most notable change in Figure 8 is that the calculated UT values for the regionally combined data are now always positive (instead of most often negative) with the inside averaging method. In other words, according to results with this method, the E1 multiple-forced ensemble (with the small solar forcing amplitude) is always closer than the E2 ensemble (with the large solar amplitude) to the temperature variations estimated from the tree-ring series. The UT values do not exceed the 5% significance threshold for the 5, 8 and 12 years time units, but they do exceed this threshold for three of the four regional weighting alternatives with the 3-year time unit. Thus, a correct implementation of the inside averaging method changes one outcome of our study; namely from providing “some weak support for the large-amplitude solar forcing” (see our discussion paper, p 2651, l 28) to provide more support for the small-amplitude solar forcing – albeit this support is statistically significant only at the 3-year time unit.

In light of this discovery, we plan to submit a revised manuscript for Part 3, with an extra appendix that explains how the inside averaging method should be applied, with corrected figures and an appropriately modified discussion of the new results and with efforts made to meet the various comments and suggestions made by the four anonymous referees.

Stockholm, November 2, 2014

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