Clim. Past Discuss., 11, C1620–C1622, 2015
www.clim-past-discuss.net/11/C1620/2015/

Climate of the Past Discussions
Open Access

Interactive comment on "Temperature changes derived from phenological and natural evidences in South Central China from 1850 to 2008" *by* J. Zheng et al.

Anonymous Referee #2

Received and published: 10 September 2015

The paper submitted to Climate of the Past Discussion entitled "Temperature changes derived from phenological and natural evidences in South Central China from 1850 to 2008" by Zheng and colleagues presents annual temperature anomaly multiproxy reconstructions from plant phenological and snowfall day documentary observations and tree-ring width chronologies. The authors find specific interannual and interdecadal fluctuations in South Central China unprecedented warming from the 1990 onwards. The manuscript is generally well structured and suitable in length. The need for independent regional temperature information is undisputable and very high. Moreover, precisely dated documentary evidence together with tree-ring data is promising data to fulfill the needs stated above.

My understanding of building tree-ring chronologies is rather limited. Therefore, I will not comment on this proxy record. However, I would like to raise some points that address the documentary evidence and methodological aspects of the study.

General remarks 1) Plant phenological and snow day documentary evidence can provide very useful information on seasonal temperature variability. Local time series are often impacted by peculiarities at a specific location and show unwanted impacts. The authors of this study construct regionally averaged series from single records. However, the methods are not presented nor basic information about the number of records per year, number of local time series... Recently, Ge et al (2014 with references therein on methods) and Wang et al (2014) reconstructed two regional plant phenological regional series temperate and subtropical regions in China from local observations. I strongly suggest testing the feasibility of this methodology

2) One strength of the study is the combination of three different temperature proxies. In the present form, the manuscript does not make clear what the benefit of this combination is and what this means for the model skill and the interpretation of the results. In consequence, it is very hard to understand what the impact of a single record is on the main conclusions of the study. You could also consider a sub-sampling approach to the the stability of the reconstruction.

3) The study aims at reconstructing mean annual temperatures. Due to the fact that at least two proxy types (plant phenology, tree rings) only story temperature signals of the growing season, it would be desirable to see the differences of model skills with different targets, especially growing season temperature vs annual mean.

4) I am not sure whether wavelet analysis is really needed here to highlight the changes in temperature. Maybe remove?

5) Please thoroughly check grammar and spelling when revising the manuscript.

Some detailed remarks on figures and tables. Table 1: consider exchanging signifi-

CPD
11, C1620–C1622, 2015

cance level indicators with ** and *** for p<0.01 and p<0.001. Why are there positive correlations of tree ring width with temperatures at four out of five sites? What is the process behind the single site with negative correlations? Why do use "∼" in the column duration? Are there dating uncertainties? The same applies for column Location where the altitudes seem to be estimated. Figure 2: What is the meaning of "0.1 HZ FFT smooth"? Please explain. What do you mean with "based on a 95% confidence interval"? Consider making 2 figures with a) in one figure and (b)-(d) in a second figure. The message is not very clear, yet.

Ge, Q., H. Wang, J. Zheng, T. Rutishauser, J. Dai, 2014, A 170-year spring phenology index of plants in eastern China. J. Geophys. Res. 119, 301–311, 10.1002/2013JG002565 Wang, H., J. Dai, J. Zheng, Q. Ge, 2014, Temperature sensitivity of plant phenology in temperate and subtropical regions of China from 1850 to 2009. Int. J. Climatol. Int. J. Climatol. 35: 913–922.

Interactive comment on Clim. Past Discuss., 11, 4077, 2015.

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper