

Interactive comment on “An underestimated record breaking event: why summer 1540 was very likely warmer than 2003” by O. Wetter and C. Pfister

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In principle, this is an interesting paper, with a lot of useful information on Swiss historical wine growing.

A few statements in the paper need a clarification that motivated this comment. The authors cite the paper of Keenan (2007) which is a comment on (Chuine et al., 2004). Keenan’s paper appeared in rather unusual circumstances, according to my standards. Keenan submitted his comment to Nature, who declined the publication (after regular reviewing). He eventually found Theoretical and Applied Climatology, who actually failed to contact us after the publication. Hartmut Grassl (the editor in chief of TAC)

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apologized to Chuine et al. in 2008 and admitted that he had overlooked the aggressive tone of Keenan's paper, as well as his antiscientific behavior in the "blogosphere". Chuine et al. sent a comment to TAC and Keenan was of course invited to reply, with the understanding that he would have the last word. The comment was accepted by two reviewers, but Keenan's reply was very aggressive and unscientific (and would not alter it), so that H. Grassl decided not to publish the exchange. In this comment, Chuine et al. demonstrated that Keenan was "off" and he had misrepresented their paper. Therefore, I consider that continuing to cite Keenan (2007) is promoting a fruitless controversy and this is not acceptable in Climate of the Past (or any scientific journal).

On a scientific side, the authors should cite the paper of (García de Cortázar-Atauri et al., 2010), who demonstrate the response of grape phenology to various environmental factors, for many grape species.

The authors also seem to have a superficial knowledge of the content of Chuine et al. (2004). They state that "[...] the AMJJA temperature anomaly estimated for 2003 is 2.4 C higher than measured temperatures in Paris (Keenan, 2007)." (Conclusion section). The temperature reconstruction of Chuine et al. (2004) was made for Burgundy, not Paris. Moreover, the observed temperature in Paris in 2003 was certainly underestimated, because the Montsouris trees (were the meteorological station is based) were watered during the heatwave. There is no watering or irrigation for grape in Burgundy.

The paper of Chuine et al. (2004) contains a lot of information on the methodology and phenological models used. Conversely, Wetter and Pfister do not give useful technical information on their temperature reconstruction. The manuscript does not contain the necessary methodological elements to reproduce the results. The "reconstruction" section only mentions the use of regression, but this is too vague to be useful.

When looking at the reconstructions (figure 4), I am struck by the biases in the verification periods. This problem is particularly acute for extremely warm (e.g. 1824) or cold (e.g. 1778) years.

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The axes of the graphics are hard to read. There are a few basic rules in textbooks on "how to write scientific articles" (e.g. Day and Gastel, 2006, chapter 17) for axis labels, for which MS excel default options are not suited. For instance, showing increments every 9 units (1507, 1516, 1525, etc., in figure 6) makes the figure very unreadable.

The relation between spring drought and summer heatwave is the object of many recent papers. Some of those papers point toward the necessity of a drought in southern Europe. Drought in central or northern Europe does not induce summer heatwaves (Quesada et al., 2012;Zampieri et al., 2009;Vautard et al., 2007). Do the authors have information on spring droughts around the Mediterranean basin? This would be an interesting added value to this paper.

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