

## ***Interactive comment on “Climate signatures of grape harvest dates” by M. Krieger et al.***

**Anonymous Referee #2**

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The study by Krieger and co-authors analysis climatic impacts on grape harvest date (GHD) series from the Burgundy region, France. Their work attempts to gain new insights of GHD-climate interactions that has been intensively studied in recent years (Jones, 2003; Chuine et al., 2004; Guiot et al., 2005; Masson-Delmotte et al., 2005; Meier et al., 2007; Keenan, 2007; Mann et al., 2008; Brázdil et al., 2008; Etien et al., 2008; Maurer et al., 2009; Etien et al., 2009; Garcia de Cortazar-Atauri et al., 2010; Garnier et al., 2010; Brázdil et al., 2010 ; Garcia-Herrera et al., 2010).

The present manuscript fails to provide genuinely new findings neither for the climate reconstruction community nor for phenological modellers. Here and there, promising hints are reported but get lost between a pile of non-significant correlation results.

The dominant signal of early summer temperature in GHD has been repeatedly shown in many studies as correctly stated by Reviewer #1. A systematic statistical (correla-

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tion) analysis of the GHD with a variety of climate variables would be very helpful. The authors did collect a large number of gridded data set but they only show a selection of results than seems rather arbitrary. E.g. none of the results from the comparisons with Luterbacher et al (2002), Luterbacher et al (2004) and Pauling et al (2006) before 1900 are shown.

Furthermore a very recent debate raised the most important questions in phenological research (Körner und Basler, Science 327, 1461-1462 (2010); Chuine et al. Science 329, 277-e (2010)), namely the role of light, forcing temperatures but also chilling temperatures and their impact on the phenology of different plant species in a changing climate. The present manuscript little contributes to this discussion except the statistical findings that winter temperatures impact GHD at the decadal time scale.

Finally, GHD represent a documentary proxy record of biological origin. In consequence, the authors should check each correlation not only for its significance but also for its plausibility. It would be biologically very interesting to describe the process that leads to a winter temperature impact on GHD when vines are in dormancy.

The paper would strongly benefit from the following suggestion. 1. Add significance test to every correlation reported. 2. Only map significant correlation instead of using stipple marking. 3. Include systematic presentation of running correlations between GHD and all climate variables including significance thresholds. 4. Consider omitting all analyses that include lagged years. 5. Use common "instrumental period" 1901–2000. Presently some analyses include data until 2002 or 2003 depending on the availability of the climate data set. However, be aware that 2003 shows the most extreme GH date of the last half millennium.

Specific comments: Title: Is it really true to say "of"? Should it not rather say "Climate signatures in grape harvest date series" or "Climate signatures from grape harvest dates"? 1526L20: add reference(s). 1526L24: reformulate "GHD can be possibly used for temperature reconstructions": it was done so successfully plenty of times.

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1527L21/22: Schleip et al (2008) not only performed time series analysis but also used Bayesian regression to analyse temperature impacts of single months. They found that autumn (October) and summer (June) temperatures of the previous year do leave an impact on the GHD. Consider these findings also for the discussion section. 1527L24: define "instrumental period" here. 1527L24: why italics for "climatic"? How would you separate other impacts from the GHD series? Also: viticultural practices have dramatically changed GHDs during the 20th century to meet the needs of the consumers. 1527 last paragraph: what is the hypothesis of the study? Except doing a bunch of correlation maps and running correlations and see what happens. 1528L11/12: very courageous statement and assumption. Viticultural and (world) market forces have also dramatically changed during the "instrumental period" Data section: define "instrumental period"; include NAO definition as you discuss NAO later on. Method section: include the definition of the temperature index for France that is used later. 1529L8: "certain"? which ones! Result section: use the same period for "instrumental period" for all data sets. This section is very confusing. 1530L4/5: where do you show this? Otherwise add references. 1531L6-20: move to introduction, data and method sections, respectively. Here are only results. 1532L3ff: why the split in 1948/1949? Include in method section. 1537/38: some conclusions are not supported by any results. Fig1: very confusing and unnecessary change of time scale. Maybe add an inset. Fig3b: add significance of each correlation accounting for auto-correlative effects.

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Interactive comment on Clim. Past Discuss., 6, 1525, 2010.