

To the *Nature* Editorial Staff:

Please consider our manuscript, entitled “Climate change decouples drought from early winegrape harvests in France and Switzerland”, for publication in *Nature Climate Change*. Winegrapes are the worlds’ most valuable horticultural crop, and there is significant concern regarding the viability and productivity of many winegrape regions in the face of ongoing and future anthropogenic climate change (e.g., Jones et al 2005, Webb et al 2008, White et al 2006). Most research on this topic, however, has analyzed data collected only over the last several decades or taken a “climate envelope” approach, focused on the movement of ideal climate zones for different grape varieties. There has thus been little consideration of the 1) longer term historical context of recent winegrape phenology trends and 2) possible non-stationarities in the relationship between winegrape phenology and climate.

Here, we present a new analysis of grape harvest dates (GHDs) from a long-term (1600-2007) historical record in Western Europe (Daux et al 2012). Harvest dates are closely related to the winegrape phenological event of *veraison*, the ripening and maturation of the fruit. *Veraison* is typically accelerated by warmer temperatures and drought conditions, leading to earlier harvests. In our analysis, we compare these harvest dates against instrumental climate datasets for the 20th century and proxy-based paleo-climate reconstructions back to 1600.

We show that from 1600 and 1980, high temperatures and dry conditions during spring and summer are consistent predictors of early harvests across France and Switzerland. After 1980, however, drought controls on GHD effectively disappear, even as temperature remains significant. We offer evidence that the disappearance of the drought signal post-1980 is likely due to anthropogenic warming that has 1) largely decoupled regional drought from growing season temperatures and 2) made it easier for the region to reach the high heat thresholds necessary for early harvests without drought. Further, we show for two major wine producing regions (Bordeaux and Burgundy) that wine quality is closely connected to harvest date, and that quality ratings show a similar change in their relationship with drought. Our work provides a new, more nuanced perspective on climate change and wine than is typical from many previous studies. And by closing the connections between winegrape phenology, climate, and wine quality, we provide evidence for changes in the environmental constraints on wine that are relevant for viticulture management.

Thank you for your consideration. If there are any questions, please do not hesitate to contact us.

Kind Regards,

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