



Extreme grape harvest data of Austria, Switzerland and France from A.D. 1523 to 2007 compared to corresponding instrumental/reconstructed temperature data and various documentary sources

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The detection and quantification of extreme weather conditions in the past are important for correctly assessing the significance of today's extremes especially in the context of climate change. We specified extreme years by a synopsis of phenological data, temperature reconstructions and measurements and descriptive historical sources starting in the 16th century. The spatial scale investigated is regional to interregional, covering Austria, the Switzerland and north-eastern France. Thus we defined a list of 36 extreme years (1536-2007), where two or more of several parameters (grape harvest data and/or mean temperatures) available at that time exceed the two-sigma limit with regard to a reference period of 105 years. In the investigated area there were extreme spring to early summer temperatures and/or exceptional phenological observations on all three locations in 1542, 1718, 1811, 1822, 2003, 2006 and 2007. As only grape harvest data are on hand, the term "extreme" indicates anomalous temperature conditions during spring and early summer, i.e. mean temperatures which significantly correlate to these phenological records. In addition to these data we used independent documentary sources from the municipal archives of Retz, a town in Lower Austria, for affirming or amending these results.