Geophysical Research Abstracts
Vol. 21, EGU2019-18801, 2019
EGU General Assembly 2019

Comparison between local and global climate parameters in driving earlier grape harvests for a premium Italian wine

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Grapevine harvest date is usually linked to climate parameters since it is a proxy of grape phenology. Different studies show a well correlation between earlier grape harvest dates with increasing atmosphere temperature. Premium wines can provide a good indicator of climate change because they require a narrow climate range and because some premium wines have been produced in the same way and location for centuries.
Using the harvest dates from 1820 to 2012 of premium wines, local temperature and precipitation characteristics, and global climate data (the Palmer Drought Severity Index (PDSI), the North Atlantic Oscillation (NAO), the Geopotential Height (GPH), the East Atlantic Pattern (EAP), the Precipitation Concentration Index (PCI), and Soil Moisture (SOI)), we show how and which climate data are effecting the grapevine harvest and indirectly phenology.
Implication of the changes of some climate parameters, in terms of quality and quantity of the premium wine production in Central Italy, will be discussed.