



Downscaling temperature and precipitation seasonal forecasts for vineyard applications

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Agriculture, and in particular winegrowing, is a sector highly dependent on heat, sunlight and water, and therefore very sensitive to climate variability, extremes and impacts of climate change. One mitigation strategy consists on using seasonal predictions to modify the vegetative cycle of the grapevines to adapt for the climate anomalies of the upcoming months. This is one of the objectives of the European VISCA project (Vineyards' Integrated Smart Climate Application) which seeks to make European wine industries resilient to climate change, minimizing risks through an improvement of the production management. However, current spatial resolution of seasonal prediction systems is too coarse to offer vineyard adapted information, either to be directly used by farmers or when introduced to phenological or irrigation models. One possible solution to this handicap is the application of downscaling strategies to adapt the large scale predictions to vineyard dimensions through the introduction of station-based observations. Thus, we have tested the application of perfect-prog analog downscaling of bias-adjusted seasonal predictions of temperature and precipitation from ECMWF System 4 at three different wine pilot sites. The predictions in those sites have been provided up to 7-months into the future, being updated every month and on monthly and 3-month aggregations. The verification of the results showed that statistical downscaling is a good strategy to increase the potential applicability of seasonal forecasts in the wine industry.