FORWINE – Statistical Downscaling of Seasonal forecasts for wine

Rita M. Cardoso, Pedro M. M. Soares, and Pedro M. A. Miranda
IDL / Universidade de Lisboa, IDL, Lisboa, Portugal (rmcardoso@fc.ul.pt)

The most renowned viticulture regions in the Iberian Peninsula have a long standing tradition in winemaking and are considered world-class grapevine (Vitis Vinifera L.) producing regions. Portugal is the 11th wine producer in the world, with internationally acclaimed wines, such as Port wine, and vineyards across the whole territory. Climate is widely acknowledged of one of the most important factors for grapevine development and growth (Fraga et al. 2014a and b; Jackson et al. 1993; Keller 2010). During the growing season (April-October in the Northern Hemisphere) of this perennial and deciduous crop, the climatic conditions are responsible for numerous morphologically and physiological changes. Anomalously low February-March mean temperature, anomalously high May mean temperature and anomalously high March precipitation tend to be favourable to wine production in the Douro Valley.

Seasonal forecast of precipitation and temperature tailored to fit critical thresholds, for crucial seasons, can be used to inform management practices (viz. phytosanitary measures, land operations, marketing campaigns) and develop a wine production forecast. Statistical downscaling of precipitation, maximum, minimum temperatures is used to model wine production following Santos et al. (2013) and to calculate bioclimatic indices. The skill of the ensemble forecast is evaluated through anomaly correlation, ROC area, spread-error ratio and CRPS