



## **Application of statistical downscaling technique for the production of wine grapes (*Vitis vinifera* L.) in Spain**

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Climate and soil are two of the most important limiting factors for agricultural production. Nowadays climate change has been documented in many geographical locations affecting different cropping systems. The General Circulation Models (GCM) has become important tools to simulate the more relevant aspects of the climate expected for the XXI century in the frame of climatic change. These models are able to reproduce the general features of the atmospheric dynamic but their low resolution (about 200 Km) avoids a proper simulation of lower scale meteorological effects. Downscaling techniques allow overcoming this problem by adapting the model outcomes to local scale. In this context, FIC (Fundación para la Investigación del Clima) has developed a statistical downscaling technique based on a two step analogue methods. This methodology has been broadly tested on national and international environments leading to excellent results on future climate models. In a collaboration project, this statistical downscaling technique was applied to predict future scenarios for the grape growing systems in Spain. The application of such model is very important to predict expected climate for the different growing crops, mainly for grape, where the success of different varieties are highly related to climate and soil. The model allowed the implementation of agricultural conservation practices in the crop production, detecting highly sensible areas to negative impacts produced by any modification of climate in the different regions, mainly those protected with protected designation of origin, and the definition of new production areas with optimal edaphoclimatic conditions for the different varieties.