



## **Changes of temperature and precipitation in the Mediterranean Alt Penedès and Priorat vineyard regions (NE Spain)**

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The inter-annual variability of the Mediterranean climate makes it difficult to assess tendencies, particularly in rainfall distribution patterns, and the impacts of potential climate change. Nevertheless, some recent studies point out an increase of extreme situations: extreme droughts and higher concentration of the rainfall in winter or late autumn. The present analysis tries to contribute to this knowledge and impacts in dryland areas of the Mediterranean NE Spain. The analysis was carried out in two dry vineyard regions located in NE Spain: the steep-sloped Priorat region (Tarragona province) and the Penedès region (Barcelona province), both of which have a long tradition of vine cultivation. The trends of daily rainfall and temperature were analyzed for the whole year and for each season using the data set belonging to Cabacés (X: 308280; Y: 4566622; altitude 345m) for the period 1952-2005 for precipitation and 1967-2005 for temperatures, and Vilafranca del Penedès (X: 391612; Y: 4578191; altitude 223 m) for the period 1952-2005 for both temperature and precipitation. The study reveals warming trends with higher increases in the maximum temperatures (0.0851°C/year in the Priorat and 0.053°C/year in the Penedès) than in the minimum temperatures (0.0448°C/year in the Priorat and 0.024°C/year in the Penedès), and a significant increase in the number of days with temperatures higher than 30°C. Annual rainfall showed high variability from year to year and did not change significantly with time. However, the precipitation of the main rainfall periods (spring and

autumn) shows opposite trends, decreasing precipitation in spring and increasing in autumn, with higher concentration in a reduced number of days, separated by longer dry periods. According to the vine phenological stages a significant decrease of precipitation during the bloom to veraison is observed in the two areas, stage in which the crop should not suffer stress. This may have negative effects on production in the study area, where irrigation is not available due to the lack of water resources. On the other hand, the increasing temperature trends may indicate the need to change some varieties cultivated in these study areas.