



## **Climate change and water availability for vulnerable agriculture**

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Climatic projections for the Mediterranean basin indicate that the area will suffer a decrease in water resources due to climate change. The key climatic trends identified for the Mediterranean region are continuous temperature increase, further drying with precipitation decrease and the accentuation of climate extremes, such as droughts, heat waves and/or forest fires, which are expected to have a profound effect on agriculture. Indeed, the impact of climate variability on agricultural production is important at local, regional, national, as well as global scales. Agriculture of any kind is strongly influenced by the availability of water. Climate change will modify rainfall, evaporation, runoff, and soil moisture storage patterns. Changes in total seasonal precipitation or in its pattern of variability are both important. Similarly, with higher temperatures, the water-holding capacity of the atmosphere and evaporation into the atmosphere increase, and this favors increased climate variability, with more intense precipitation and more droughts. As a result, crop yields are affected by variations in climatic factors, such as air temperature and precipitation, and the frequency and severity of the above mentioned extreme events.

The aim of this work is to briefly present the main effects of climate change and variability on water resources with respect to water availability for vulnerable agriculture, namely in the Mediterranean region. Results of undertaken studies in Greece on precipitation patterns and drought assessment using historical data records are presented. Based on precipitation frequency analysis, evidence of precipitation reductions is shown. Drought is assessed through an agricultural drought index, namely the Vegetation Health Index (VHI), in Thessaly, a drought-prone region in central Greece. The results justify the importance of water availability for vulnerable agriculture and the need for drought monitoring in the Mediterranean basin as part of an integrated climate adaptation strategy.