



Association of joint occurrence of warm and dry conditions over Greece with anticyclonic activity during summer

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Anticyclones are often associated with extreme phenomena, like prolonged droughts or heatwaves and, thus, they can significantly impact fauna and flora, water resources and public health. In this study, the association of the summer anticyclonic activity with the joint occurrence of extreme warm and dry conditions over Greece is explored. The warm and dry extreme conditions are defined by utilizing the Warm/Dry (WD) index for representative meteorological stations from sub-regions of Greece with different climatic features. The WD index is the number of days over a period (here summer) having at the same time mean air temperature > 75th percentile of daily mean temperature and precipitation < 25th percentile of daily precipitation amounts.

The anticyclonic activity is determined by the density of the anticyclonic systems over the greater Mediterranean region, which, during summer, is maximized over the Balkans and the northern African coast. The anticyclonic system density has resulted from the comprehensive climatology of Mediterranean anticyclones that was assembled with the aid of the finding and tracking scheme of the University of Melbourne (MS scheme), using the ERA-Interim mean sea-level pressure fields for 1979-2012.

The examination of inter-annual and spatial variations of the WD index in association with shifts of the anticyclonic maxima shows that the different sub-regions of Greece are not affected evenly, stressing the role of the complex topography of the region and the variations in the subtropical jet position.