

Trend and variability in effective precipitation over the Iberian peninsula

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Drought is one of the natural hazards that occurs quite frequently in the Iberian peninsula, causing economic losses in agriculture. This aspect has given rise to debates about shared water rights in the last few years. Decreasing precipitation and increasing temperature are the factors that most contribute to the occurrence of the drought episodes. The combination of precipitation and temperature allow us to estimate the effective precipitation, which is also an indicator of drought episodes. In this study we document the trend in accumulated precipitation and in the effective precipitation from Gaussen and Köppen formulations for the period from 1949 to 2005 based on observed data over the Iberian Peninsula. The results reveal a decreasing trend for the accumulated precipitation and for the derived indices in winter, spring and summer. The most significant trend is found toward the Cantabrian coast and the south-eastern part of the peninsula. Increasing precipitation is found toward the western part in Autumn; however, the indices representing the effective precipitation show a decreasing trend. This behaviour is due to higher temperatures and their associated evaporation. To investigate the sources of the effective precipitation trend we have analyzed the relationships with the teleconnection indices that affect climate variability over the Iberian peninsula.