



Links between circulation types and precipitation in NE Spain: comparison of E-OBS and RCM-simulated data

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We evaluate relationships between large-scale atmospheric circulation (represented by circulation indices and circulation types derived from gridded mean sea level pressure) and daily precipitation amounts in the Ebro river basin in NE Spain. The region is prone to both droughts and heavy precipitation, which are associated with major impacts on agriculture, ecosystems and society. The study is carried out over the 40-year control period (1961-2000) for three seasons: the early vegetation period (AMJ), with focus on droughts, autumn (SON), with focus on extreme daily precipitation, and winter season (DJF) which is relevant in terms of water resources. We study links of circulation characteristics to (i) mean daily precipitation, (ii) probability of wet and dry days, and (iii) probability of extreme daily precipitation (i.e. precipitation exceeding threshold defined by a high quantile of precipitation distribution in a given season). The links obtained from observed gridded data (the E-OBS database) are compared with those in an ensemble of regional climate model (RCM) simulations driven by re-analysis in order to identify main biases and drawbacks of the RCMs.