

Assessing past and future water demands under climate change and anthropogenic pressures on two Mediterranean basins

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Abstract The Ebro (Spain) and the Hérault (France) are contrasting catchments representative of the Mediterranean context. Simultaneous increases of population, irrigated areas and industrial development observed in the recent past associated with future climate change indicators shows the necessity of considering the capacity of these catchments to satisfy water demand. This evaluation requires knowledge of the spatiotemporal dynamics of water demands and their main drivers. This paper thus presents a conceptual modelling framework to estimate water demand and its evolution. The Ebro basin is dominated by agricultural water demand, which has been increasing, mostly due to the expansion of irrigated areas. In the Hérault basin, domestic demand has greatly increased since the 1970s. Future water demand was assessed by the 2050 horizon under climatic and socio-economic scenarios. Results show that water demand should keep increasing notably for irrigation requirements. This work was a first step to analyse the capacity of each hydro-system to satisfy current and future water demands.

Key words water demand; climate change impacts; anthropogenic pressure; River Ebro; River Hérault