Low-flow analysis in Mediterranean basins

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In this work we examine the low flow characteristics of Mediterranean basins during the dry season. For convenience, we consider a six-month period, from mid-April to mid-October, which is generally characterized by limited precipitation and increased water demands. Our emphasis is given to the baseflow component, represented through a linear reservoir approach, key component of which is the recession rate. Classic indices, such as flow quantiles, are calculated along a simple exponential recession model. Our analysis aims to explain the significant variability of the recession rate across hydrological years and across river basins with different characteristics, in terms of extent, elevation, physiographical properties and runoff production. Results show that the recession rate is strongly correlated to characteristic hydrological signatures, and it is also a function of the basin area. The study applies to 25 Mediterranean basins across France, Spain, Cyprus, Italy and Greece, including some small catchments with intermittent flow regime.