

The Mediterranean coastal region is prone to high-intensity rainfall events that are frequently associated with devastating flash floods. This paper discusses the role of a karst aquifer system in the flash floods of a Mediterranean river, the Lez river. Most of the Lez river watershed is located on karst terrains where interactions between surface water and groundwater take place. During extreme rainfall events, the presence of fractures and well-developed karst features in carbonate terrains enhances the infiltration processes and involves the concentration of the recharge into highly organized and permeable flow paths. The groundwater, therefore, quickly moves towards the natural outlets of the karst system. The influence of the Lez karst aquifer system on the associated river floods dynamics is analysed while considering the spatially distributed rainfall, as well as the time series of the groundwater level within the aquifer and of the Lez river discharge measured at various gauging stations. Special attention is given to the relative importance of the surface and underground processes involved in flash flood genesis. It is shown that the karst groundwater contributes to flash floods under certain conditions, while high-rate pumping within the karst aquifer, which generates significant drawdown, may mitigate flash floods under other conditions.