Hydrological processes controlling flow generation in a Mediterranean urbanized catchment

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Abstract In the southern Mediterranean many rivers are characterized by an alternation of long dry periods interrupted by short floods. In this context, understanding the catchment’s hydrological behaviour, especially during flood generation is essential to quantifying pollutant fluxes. This situation is observed in all the Maghreb countries, of which the famous city of Fez is a perfect illustration. The hydrological behaviour of Oued Fez was assessed through a coupled approach based on field observations and modelling. The analysis of rainfall–runoff events showed that flood generation is mostly caused by urban runoff over the large impervious zones of the city of Fez. A mathematical model based on the unit hydrograph method was used to synthesize the hydrological behaviour of Oued Fez. The model’s two parameters were estimated by trial and error. The results indicated that a single set of parameters can accurately reproduce most of the observed flood events.

Key words rainfall–runoff; intermittent rivers; Nash cascade; Oued Fez; Morocco