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Analysis of a flood event on a karst river by means of a distributed hydrological model

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Fluviokarstic catchments are difficult to model especially during a flood event because of their hydrological complexity. The hydrological characterization is even more challenging for ungauged rivers. In the last five winters (2004-2008) several exceptional meteorological events producing flash floods have been registered in Central-East Sardinia on ungauged or poorly gauged catchments. We present here an approach to estimate the peak discharge taking into account the karst component. Peak discharge has been estimated based on a distributed hydrological model and on empirical methods that consider geomorphic and sedimentological observations. The comparison between the results derived from these independent methods allows to obtain the best possible estimate of peak discharge. Differences between modelled and measured peak flows can be attributed to water losses and/or gains along the river channel due to interactions with the underground karst drainage network. An application on a catchment in Central-East Sardinia is discussed.