



The impacts of climate change on point groundwater discharge in a fluviokarst landscape

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Hydrologic changes in fluviokarst landscapes may induce drastic modifications in the partitioning between surface and subsurface flows. Variations of precipitation, stream discharges or water levels which have main importance on the transition between fluvial and karst drainage features will reflect the impact of climate change. In largely anthropised catchments, increasing runoff, surface drainage and point recharge may severely impact the water resource quality. The Val d'Orléans hydrological system in the middle course of the River Loire is a particular small karst and alluvial aquifer where diffuse infiltration and two very different kinds of channelised surface flows contribute to the recharge of the aquifer. One come from the River Loire itself at many sinkholes and limestone outcrops in the riverbanks and the riverbed of the stream whose the upper catchment stands several hundred kilometres south-east (Massif Central). The second corresponds to the local surface runoff and flow and contributes both by diffuse and point recharges. Variation of the relative contribution of the two different surface flows is spectacularly illustrated by the functioning of the reversing flow spring of the river Loiret (so-called Le Bouillon resurgence). Reconstructing the occurrence of the backflooding events at the resurgence from the 1960's to present days is a mean to link hydrologic change, meteorological variation and possible climate change impacting the area from the watershed of the upper Loire River to its middle course.