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Runoff source control strategies and uncontrolled changes in an urban catchment. Case-study of "Village Parisien" district, Champigny-sur-Marne, Ile de France

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In the « Village Parisien » district, in Champigny-sur-Marne, several sewer overflows have been observed. The district (23 ha) is mainly occupied by detached private housing. On 30% of the houses, the county administration installed cisterns for roofs rainwater harvesting. This paper describes a hydrological analysis of the district before and after cisterns' installation. We calibrated the SWMM 5 model using a genetic algorithm, in order to show the evolutions occurred on the district's hydrology on a 3-years period. The results show that uncontrolled anthropogenic changes in imperviousness and flowpaths have effects of the same magnitude that the cisterns' installation.