



Pluvial flooding and efficiency of urban drainage

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ABSTRACT

Flooding events in urban areas occur quite frequently as a consequence of rain events of lower intensity than the design one. Inlets are in these cases the critical nodes, and efficient drainage is only ensured when care is taken on their appropriate design, positioning and maintenance. This contribution is focused on the analysis of a drainage system by employing an hydraulic model for the simulation of rainfall excess propagation over surface urban drainage structures, i.e. streets and pathways. The model is implemented in this paper in order to test the drainage efficiency of a selected study area in the town of Genoa. At this aim, in October-December 2008, a survey was carried out in order to investigate the operational conditions of the inlets throughout the study area. The analysis has been carried out by using as input three inlet efficiency scenarios characterised by the observed conditions, fully operating and fully blocked inlets. The simulations are performed by using a real event and synthetic hyetographs derived for three different return periods, namely 2, 5 and 10 years. The simulations confirm that micro-topography effects have the potential to produce local flooding with significant water depth in zones of flow concentration.

KEYWORDS

Drainage system, Inlet efficiency, Modelling, Urban Flooding (3-6)