



Adaptation measures to control exceedance flow in urban catchments

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ABSTRACT

Climate change and the ever increasing rate of urbanization are amongst the main causes of the growing impacts of floods on humans, animals and plants. The reduction of green areas in cities and the uneven distribution of precipitation have resulted in an increase in the number of flood events which exceed the capacities of drainage systems. Once the capacity of the designed system is exceeded, an uncontrolled overland flow occurs putting at risk whatever lies in its path.

To reduce this uncontrolled flow a comprehensive plan for the management of rainwater in urban areas is required. In order to achieve this objective it is necessary 1 to promote infiltration of rainwater as close to the source as possible, and 2 to control the surface runoff. This is known as source and pathway control. Although in recent years detention structures and infiltration techniques have been regarded as promising measures of sustainable drainage systems, very little is known about measures to deal with the exceeding flow. In the present work, new possibilities for managing the rainwater in public areas will be investigated with particular focus on systems for the conveyance and temporary storage of the exceeding water for example in multifunctional spaces.

A theoretical concept to define and to model this new approach will be developed to assess the potential of exceeding flow conveyance and storage systems as part of an urban rainwater management plan. This approach and study results of this work will be presented for the Wandse catchment in Hamburg for land use and climate change scenarios for 2050 in the scope of KLIMZUG-NORD project.

KEYWORDS

Adaptation measures, exceedance flow, surface conveyance systems