



## **Physical modelling of urban drainage on an area with high construction density on a 1:100 scale**

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One consequence of the current tendency for population agglomeration in large urban centres is the construction of more high-rise buildings, which both allows a better use of the space available and reduces the construction cost per unit of area. The influence of high-rise buildings on the response of urban drainage systems to the combined action of wind and rain is not well known, so it is important to improve our knowledge in this specific domain. The study illustrated on this Poster is based on physical modelling in the laboratory of the rainfall-runoff in areas with a high density of high-rise buildings in downtown areas.

Laboratory tests were carried out to simulate the response of a drainage system for different scenarios: static rain, with and without buildings; moving rain along the highest grade line (flow line) and in the opposite direction, with and without buildings. A 1:100 scale physical model was built, representing an urban area, 200 m square, with a high density of high rise buildings (rectangular three dimensional elements representing medium to large buildings of approximately 20 storeys). A rain simulator (full-cone nozzle) was installed on a structure that is electrically driven along a rail to simulate the rain cell movement.

The Poster presents the tests performed and the results obtained, i.e. the drainage system response to the referred scenarios (hydrographs for the different rain events, with and without storm movement).

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