Impact of sewer condition on urban flooding: a comparison between simulated and measured system behaviour

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ABSTRACT

In-sewer defects are directly responsible for affecting sewer performance. Usually, sewer performance is assessed assuming in-sewer defects are not present. Therefore, serviceability is likely to be overestimated. In this research hydraulic models, reported incidents, monitoring data and visual inspections are applied to compare simulated and measured hydraulic performance of a sewer system in The Netherlands. The analysis of simulated and measured behaviour focuses on two locations with observation type 'root intrusion'. In general, the results show that monitoring data provide key information on the behaviour of a sewer system which suffers from defects such as root intrusions. This information is very useful for determining the necessary sewer management. The results also shows that root intrusions substantially enlarge the difference between the water levels upstream and downstream of the defects in reality compared to model results. Furthermore, above the soffit level of the pipe in the manhole upstream of the defect, the water level starts rising much faster in reality compared to model simulations. Further research will focus on a more detailed comparison of monitoring and model results. Both during different storm events and at different monitoring locations in the catchment area in order to further enlarge knowledge on system behaviour.

KEYWORDS

In-sewer defects, modelling, monitoring, urban flooding