P4.4 The use of X-band polarimetric radar to assess the impact of different temporal and spatial resolution on a drainage system in Rotterdam urban area.

Bruni, Guendalina; Reinoso Rondinel, Ricardo; Russchenberg, Herman; ten Veldhuis, Marie-Claire

TU Delft, the Netherlands
g.bruni@tudelft.nl

Heavy rain precipitation can cause catastrophic flooding events over urbanized areas. Accurate information about rainfall is needed to be able to mitigate consequent damages. Due to the high percentage of imperviousness and low rate of vegetation interception, the reaction of urban drainage catchments to a storm event is short. Therefore, to describe fast runoff processes and short response times, urban hydrological modelling requires high resolution rainfall data. In this work, a X-band horizontal scanner polarimetric weather radar (IDRA) is used to obtain accurate rainfall rate estimates of severe thunderstorms at high temporal and spatial resolutions. Moreover, the impact of deep convection; i.e., high rainfall rates, over urban areas, will be addressed to analyse the hydrological response time of urban drainage systems. A small-scale convective storm case from January 03rd 2012 was observed by IDRA from the Dutch national meteorological observatory CESAR. Rainfall rate estimates obtained from IDRA at elevation scan of 0.500 will be used to analyse urban hydrological responses under rainfall rate temporal resolutions of 1 min and 5 min, and spatial resolutions of 30 m and 100 m. The analysis will be performed in one of the sewer districts of Rotterdam urban area.