



Wageningen Urban Rainfall Experiment 2014 (WURex14): Experimental setup and preliminary results

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Microwave links from cellular communication networks have been shown to be able to provide valuable information concerning the space-time variability of rainfall. In particular over urban areas, where network densities are generally high, they have the potential to complement existing dedicated infrastructure to measure rainfall (gauges, radars). In addition, microwave links provide a great opportunity for ground-based rainfall measurement for those land surface areas of the world where gauges and radars are generally lacking. Such information is not only crucial for water management and agriculture, but also for instance for ground validation of space-borne rainfall estimates such as those provided by the GPM (Global Precipitation Measurement) mission.

WURex14 is dedicated to address several errors and uncertainties associated with such quantitative precipitation estimates in detail. The core of the experiment is provided by three co-located microwave links installed between two major buildings on the Wageningen University campus, approximately 2 km apart: a 38 GHz commercial microwave link, provided by T-Mobile NL, and 26 GHz and 38 GHz (dual-polarization) research microwave links from RAL. Transmitting and receiving antennas have been attached to masts installed on the roofs of the two buildings, about 30 m above the ground. This setup has been complemented with a Scintec infrared Large-Aperture Scintillometer, installed over the same path, as well as 5 Parsivel optical disdrometers and an automated rain gauge positioned at several locations along the path. Temporal sampling of the received signals was performed at a rate of 20 Hz. The setup is being monitored by time-lapse cameras to assess the state of the antennas as well as the atmosphere. Finally, data is available from the KNMI weather radars and an automated weather station situated just outside Wageningen.

The experiment has been active between August 2014 and December 2015. We give a global overview of the preliminary results.