KEYNOTE LECTURE

Rainfall sensing: the next generation

Marie-claire ten Veldhuis[1]

1 Delft University of Technology, Delft, the Netherlands

Summary

Rainfall is a highly variable process in space and time, resulting in rainfall intensities showing strong variability at all scales. This makes observing rainfall at appropriate resolutions of crucial importance to properly represent relevant rainfall characteristics. This is true in particular in cities because of their strong sensitivity to small-scale rainfall extremes.

Crowdsourcing has been pointed out as a promising solution for modern rainfall observation, with the potential of providing high-density measurements, albeit with large errors compared to conventional sensors. Could such high-density measurements be a viable alternative to outcompete advanced technological systems such as polarimetric C-band and X-band radars, with their notorious difficulties of obtaining reliable rainfall retrievals and challenging requirements with respect to investment costs and operational expertise? Can methods be designed to avoid or deal with the uncertainties inherent in citizen observations?

In this keynote I will address the opportunities of citizen observations for urban hydrometeorology. The central question I will address is: "What can we learn from potentially ubiquitous, but intrinsically noisy data generated from citizen observations ?" Showing recent findings derived from analyses of citizen observation data, I will discuss the value of these observations for understanding rainfall variability and for applications in the context of urban hydrological predictions and early warning systems. A value that depends not only on scale and data quality but also on perspective: that of the scientist, the practitioner and the observing citizens of today and tomorrow.