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Eawag Seminar Invitation

How Urban (Eco)Systems Respond to Rainfall: Learning from Field Observations in a Complex, Man-made Environment

Speaker **Prof. Marie-Claire ten Veldhuis,** TU Delft, Netherlands

When **December 1, 11.00 – 12.00 a.m.**

Where **Forum Chriesbach, room C20, Eawag Dübendorf**

Abstract Global warming and continuing urbanisation increase flood hazards in many cities throughout the world. Changing rainfall patterns and heat waves progressively affect urban populations and ecosystems. While predicting climatic hazards is more important than ever, hydrometeorological models routinely fail to predict urban flow response to rainfall. They rely on assumptions and parameters that have been poorly tested in the field due to lack of available data sources. In this seminar I will address the importance of observational resources for urban hydrometeorology and hydrological science in a broader sense. The central question I will address is: ”What can we learn from high resolution field observations about the critical parameters and space- and time-scales of hydrology that enable us to develop better models at system scale?” Striking examples will be shown of how field datasets refute common model assumptions. I will demonstrate that a finer grid of hydrological data is needed to advance in hydrological science and to make more reliable forecasts. Showing recent findings derived from crowdsourced data, I will discuss the value of novel observation methods including low-cost sensing, crowdsourcing and citizen science, for urban hydrology. Beyond the urban context, I will make connections to two other hydrological observation challenges: 1) rainfall observations for crop modelling in East-Africa which reveals the discrepancies between information sources at different scales and 2) studies of water flows in lichen symbiosis which reveals how complex architecture at microscopic scale can control water fluxes and relocation to support photosynthesis. I’m looking forward to discuss with the audience how to bridge the gap between the scale of field observations and the underlying smaller scale physical processes that are critical for model predictions.