

RESEARCH ON URBAN HYDROLOGY AND URBAN STORM DRAINAGE DURING THE PAST 50 YEARS – EXEMPLIFIED BY THE ACTIVITIES AT THE DEPARTMENT OF WATER RESOURCES ENGINEERING (WRE) AT THE LUND UNIVERSITY

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Abstract

The institution was inaugurated in 1966 and a couple of years later, projects started on the urban influence on the hydrological processes. One of them was a small catchment immediately west of Lund, Värpinge and the other one was the catchments that were supposed to be influenced by the building of the Malmö airport Sturup that was on its way to be built. Measurements of Precipitation, Evaporation, Groundwater levels, Soil moisture and Runoff were carried out. The Värpinge catchment was supposed to be developed by a new township – but that did not happen. The reason for not building was that the area has the most fertile farmland in the whole country. So – instead monitoring started in an already developed area in Lund, Klostergården, some few km away from Värpinge. The hypothesis was that the two areas should have been similar hydrologically before urbanisation. The results of the projects have been published by many researchers, but apart from a number of PhD-dissertations mostly in the departments own report series.

In the mid 1970-ties more detailed studies started on the urban runoff from impermeable surfaces. Totally nine small catchments all with 100 % impermeable surfaces (asphalt) were studied. The flow was measured at the point of entering the stormwater sewer. Rainfall and runoff were measured with a one minute resolution. These studies were the main input for an international workshop at the Institute of hydrology in Wallingford, Uk. The outcome of the workshop was used for building the Uk simulation model for urban runoff.

Another project focusing on rainfall intensities was started at the same time. Ten rainfall gauges were installed at different locations in Lund – all measuring with a one minute resolution. The results showed that a single measuring point does not get a good average of intensities variations for an area, especially not during heavy rainstorms. Example on and consequences of these variations were shown and discussed at an engineering conference in Toronto 1980.

In the late 1970-ties a major study was undertaken on the water balance of the town Lund. Based on data and experiences from the above projects a number of new measuring stations were set up. The river Höje å runs through the outskirts of Lund and receives the water from stormwater sewers as well as the outlet from the sewage treatment plant. Practically all these outlets were monitored. Luckily there were already flows measuring stations in the river, upstream and downstream from the cities influence. Flow proportional water samples were gathered for all outlets. Most of the combined sewer overflows were recorded and also the water quality. The results have been published in many places and also as dissertations.

Now 30 years after the above projects many similar projects are running or being started. Hopefully todays researchers have the chance to read above the old project and don't have to start from scratch. Much of the problem is that the old studies are not digitalised and thus may not be found on the internet. Also the "grey" literature – conference proceedings and institutional reports may only be reached via libraries. Hopefully the new generation may be guided by earlier experiences and thus not make the same mistakes that has already been made. So – why not avoid old mistakes when there are so many to make that are new.