



UFZ-Seminar

Research Unit



Water Resources and Environment



11 June 2019, 10 a.m.

Room E 01, Theodor-Lieser-Straße 4, Halle/Saale

Mario Schirmer

EAWAG and University of Neuchâtel, Switzerland

will give a talk on:

Impact of urbanization on groundwater recharge: the case study of Dübendorf, Switzerland

Groundwater, as the world's most important reserve of available fresh water, is known to be affected by urbanization. Managing this resource in a sustainable way is critical for water resource management. Groundwater recharge rates in urban areas remain however still poorly understood and under-researched and knowledge about these rates and their expected changes under increasing urbanization is therefore of primary importance. This study aims to give insight into urban groundwater recharge by performing water budget calculations for four different time periods for an urban study site in northern Switzerland. In order to take into account uncertainty in parameter values a Monte Carlo (MC) approach was carried out. Our study highlights a strong positive correlation between groundwater recharge rates and the extent of the urban area. In detail, at the study site urban areas expanded from 6% in 1880 to 44% in 2009, leading to an increase in the mean groundwater recharge rate. Based on our water budget calculations, the transformation of natural landscapes into impervious areas leads to an increase in groundwater recharge rates due to the reduction of evapotranspiration that more than compensates for the increase in runoff. Furthermore, water main leakages contribute to an increase in recharge rates.