Geophysical Research Abstracts, Vol. 8, 10739, 2006
SRef-ID: 1607-7962/gra/EGU06-A-10739

Urban water – Indication of substances and balancing

G. Strauch (1), M. Möder (2), R. Wennrich (2), K. Osenbrück (3), H.R. Gläser (1), T. Schladitz (1), C. Müller (1), K. Schirmer (4), F. Reinstorf (1) and M. Schirmer (1)

(1) UFZ Centre for Environmental Research Leipzig-Halle, Dept. of Hydrogeology, (3) Dept. of Isotope Hydrology, Theodor-Lieser-Str. 4, 06120 Halle, Germany, (2) UFZ Centre for Environmental Research Leipzig-Halle, Dept. of Analytics , (4) Dept of Cell Toxicology, Permoserstraβe 15, 04318 Le ipzig, Germany (gerhard.strauch@ufz.de / Fax: +49 341 2352126 / Phone: +49 341 2353982)

Surface and groundwater in urban catchments are in focus due to the increasing human activities like industrial production, transportation and housing. Urban water systems are affected by diffusive and direct contribution of anthropogenic activities. The contamination of urban water could have a long-time impact on the urban ecosystem and on the human health. Those processes influence the quality of urban groundwater and surface water and the abstraction of ground- and surface water for water supply purposes. For an integrated urban water management the knowledge, the amounts of anthropogenic pollutants as well as their distribution along the urban areas are essential to implement those data in future management strategies.

Our study on urban water in large cities like Leipzig and Halle/Saale focuses on low concentrated but high eco-toxic compounds as pharmaceuticals, fragrances, plasticizers which most have disrupt endocrine functions, trace elements carried in by surface and sub-surface waste water and seeping processes, as well as isotope variations of dissolved components. This concept requires a new methodology for assessing human activities on the urban water system and processes among urban watersheds. Insofar, we used different approaches in relation to the hydrogeological and hydrodynamic situation of the cities of Leipzig and Halle.

For the Halle urban area, a conceptual flow model was assumed based on the interaction of surface water of the river Saale and groundwater. In Leipzig in a first approach, we used a concept of various used city structures and their influence on the urban water system.

At both sites, we could demonstrates the use of indicators consisting of hydrological parameters, compound specific pattern of complex organic substances and trace elements, isotopic signatures of water and dissolved substances for balancing urban substance fluxes and assessing urban effects on surface water.