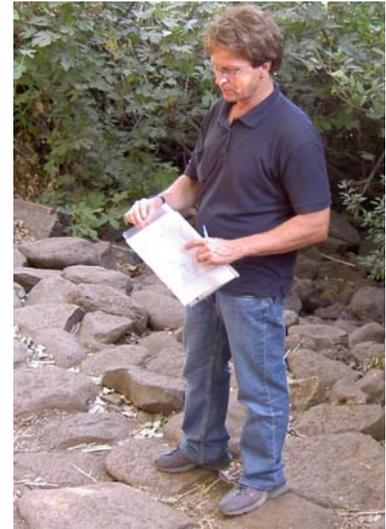


KOLLOQUIUM

Zentrum für Wasserforschung und Institut für Hydrologie



**04. Februar 2010, 16 – 18 Uhr ct.
Hörsaal Fahnenbergplatz (Rektoratsgebäude)**



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System hydrology models for managing the salinity of Lake Kinneret, Israel

The salinity of Lake Kinneret (LK), Israel, fluctuating between 190 to 280 mgCl L⁻¹, is significantly higher than the salinity of the Jordan River (~30 mgCl L⁻¹) and other surface streams that flow to the lake. By pumping ~330 million cubic meters annually of the lake water through the National Water Carrier (NWC) to the coastal area of Israel, the lake water is used for drinking, irrigation and reuse in the populated areas above the coastal aquifer. Its extensive usage as agricultural irrigation, both as original LK water and reused water, poses a threat to the future sustainability of the groundwater and agriculture soils near the coastal areas.

We investigated the hydrology of LK, for the explicit purpose of establishing operational tools that can be used for managerial decisions regarding maintaining and reducing LK salinity. By application of the system modeling approach to three different hydrological problems we ascertained the nature of each system and the major physical laws that govern its operation. The three studies were focused on: 1. Identification of the karst hydrological system of the saline springs that recharge the lake; 2. Detection of three unknown components, namely, evaporation, saline springs discharge and salinity, of the monthly water-solute-heat balances of the lake, and 3. Long-term predictions of LK salinity, in response to operational changes. Each system will be presented from the description of the problem, through the conceptual model approach, to the results and the attributed conclusions. Finally we will discuss the usage of each system separately, and the integration of knowledge from the three studies together for practical managerial decisions.

Keywords

System hydrology, direct and inverse problems, karst hydrology, mass balances, lake salinity