Geophysical Research Abstracts
Vol. 14, EGU2012-9326-1, 2012
EGU General Assembly 2012

Runoff and recharge processes under a strong semi-arid climatic gradient

F. Ries (1), J. Lange (1), M. Sauter (2), and S. Schmidt (2)

(1) Institute of Hydrology, University of Freiburg, Fahnenbergplatz, 79098 Freiburg, Germany (fabian.ries@hydrology.uni-freiburg.de), (2) Department of Applied Geology, GZG, University of Göttingen, Goldschmidtstr. 3, 37077 Göttingen, Germany

Hydrological processes in semi-arid environments are highly dynamic. In the eastern slopes of the West Bank these dynamics are even intensified due to the predominant karst morphology, the strong climatic gradient (150-700 mm mean annual precipitation) and the small-scale variability of land use, topography and soil cover. The region is characterized by a scarcity in water resources and a high population growth. Therefore detailed information about the temporal and spatial distribution, amount and variability of available water resources is required. Providing this information by the use of hydrological models is challenging, because available data are extremely limited.
From 2007 on, the research area of Wadi Auja, northeast of Jerusalem, has been instrumented with a dense monitoring network. Rainfall distribution and climatic parameters as well as the hydrological reaction of the system along the strong semi-arid climatic gradient are measured on the plot (soil moisture), hillslope (runoff generation) and catchment scale (spring discharge, groundwater level, flood runoff). First data from soil moisture plots situated along the climatic gradient are presented. They allow insights into physical properties of the soil layer and its impact on runoff and recharge processes under different climatic conditions. From continuous soil moisture profiles, soil water balances are calculated for singe events and entire seasons.
These data will be used to parameterize the distributed hydrological model TRAIN-ZIN, which has been successfully applied in several studies in the Jordan River Basin.