Geophysical Research Abstracts, Vol. 8, 01816, 2006
SRef-ID: 1607-7962/gra/EGU06-A-01816


# Combining an experimental and a modelling approach to estimate the aquifer recharge.

**E. Romano** (1,2), M.Giudici (1)

(1) University of Milano, Dept. of Earth Sciences, Geophysics, via Cicognara 7, 20129 Milano, Italy, (2) Presently at: National Research Council, Water Research Institute, via Reno 1, 00198 Roma, Italy (email: romano@irsa.cnr.it / Phone: +39 068841451)

The aim of this study was the estimate of aquifer recharge by means of a finite-difference model, which solves the non-linear 1-D Richards equation in transient conditions: the water flow rate through the ground surface, which is the upper boundary condition for the model, was evaluated from standard meteorological data, taking into account the limitation to the evaporation/infiltration given by the soil retention features. A field campaign was carried out for 16 months in the suburban area of the Lambro Park to evaluate the local recharge due to the rainfall infiltration through the unsaturated zone. Meteorological data (atmospheric pressure, rainfall, humidity, wind velocity and air temperature) were collected to evaluate potential evaporation using a based-temperature equation (Hamon method); the real evaporation was assessed as a fraction of the potential one, on the basis of the actual soil water content. Simultaneously, the soil water content and the capillary pressure head at different depths (down to 76 cm) were measured with TDR probes and tensiometers, respectively. Characteristic retention curves were estimated in laboratory using Richards apparatus and compared with data collected in situ. The model allowed us to well reproduce soil moisture experimental data both during dry periods and wet periods, taking into account as input only standard meteorological data and the retention features of the soil.