Geophysical Research Abstracts, Vol. 7, 05307, 2005
SRef-ID: 1607-7962/gra/EGU05-A-05307

HYDROGEOSITE: a new large lab-scale facility for the engineering and environmental geophysics.

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A new controlled site “Hydrogeosite” has been designed and constructed at new hydrogeophysical laboratory of CNR-IMAA in Marsico Nuovo (Basilicata region, Southern Italy). The “Hydrogeosite” has been supported by Italian Ministry of Scientific Research and it consists of a pool (12x7x3m) completely covered with a steel shed. Using a regular grid of 64 close holes, it is possible to take samples and/or to install sensors without disturbing the surface of soil. The pool can be filled with selected geological material with a gravel filter on the bottom to permit a controlled discharge of water. Moreover, a wide spectra of sensors and instruments will be installed: water content sensors; piezometric probes; grid of electrodes (in surface and holes) for geoelectrical measurements (DC, IP and SP); GPR antennae; pumping and irrigation stations. The Hydrogeosite will serve several research activities and it represents an intermediate stage between laboratory experiments and field survey. Therefore, it has the advantage to obtain controlled results, like in a laboratory experiment, but at scales comparable to the field ones. The Hydrogeosite will be used to study water infiltration processes, to simulate the space and time dynamics of subsurface contamination phenomena, to improve and to find new relationship between geophysical and hydrogeological parameters, to test and to calibrate new geophysical techniques and instrumentation.