



## **Epfl Lysimeters Measurements Campaign Summer 2010:Set-Up and First Results**

F. Ciocca (1), M. Parlange (1), I. Lunati (2), N. Van De Giesen (3), and H. Huwald (1)

(1) EPFL ENAC IIE EFLUM , Lausanne, Switzerland,(francesco.ciocca@epfl.ch), (2) UNIL DEP. GEOPHYSICS, Lausanne, Switzerland, (3) TUDELFTDelft Research Initiative Environment, Delft, Netherlands

The goal of this experience is to evaluate the main contribution to heat and moisture fluxes into two different kinds of bare soils, one artificially realized and one real. The main hope is to definitely give an answer to the still open question of the effective role played by water vapor in the diffusion processes of heat and moisture, theoretically less efficient than liquid water of several order of magnitude but still considered the main responsible of unexpected high heat fluxes measured in many previous experiments.

A refutation or a confirmation of the existence of the so discussed enhancement factor, or of a meaningful contribution by air advection, is also waited.

To do this the six weighable lysimeters installed at the EPF Lausanne have been set up with a very accurate weighing system and used. Three of them filled up in the same way with natural sand silty soil coming from the site of Conthey (Sion - CH), filtered and put inside the tanks in homogeneous layer using a big sieve, without trying to preserve the original structure. For the remaining three an artificial porous mix, with textural properties as close as possible to those of the real soil, has been realized. Then a comparison between the real soil containing organic matter and the artificial sterile medium will be possible.

A thick series of FDR and tensiometers has been installed in the upper part of each lysimeter and a new technique to measure volumetric water content using warmed optical fiber has been installed in two of them (one natural and one artificial).

Incoming (general) and outgoing (for every lysimeter) short and longwave radiation have been measured, for consideration about energy balance.

A comparison of the results obtained using a simple numerical model will also be realized.