



## **Soil water dynamics inside and outside of lysimeters**

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Lysimeters are the one and only instrument to directly measure water fluxes through the upper and lower boundary of soil profiles. This allows to close the water balance including soil water storage, deep seepage and evapotranspiration. However, lysimeters force the water flow to the vertical direction while in reality lateral water movement is deemed to play an important role in soil water dynamics especially along hillslopes.

We present an approach where we monitor soil water dynamics in lysimeters and in the field at the same location of a gentle hillslope. A cylindrical soil monolith is taken leaving the surrounding soil undisturbed. The monolith is used as a weighable lysimeter while the pit in the field is equipped with the same sensors (moisture, water potential, temperature) as the lysimeter. Based on this set up, we can evaluate in how far water flow inside the lysimeter corresponds to the situation in the field.

The results demonstrate that lateral flow becomes important when the water content is close to saturation. This is true at the soil surface in case of surface runoff but also at the depth of a compacted plow pan where interflow is initiated. Under unsaturated conditions, the limitation of lysimeters to 1D flow seems to be an acceptable approximation even in slopy areas.