



Using field and model data of a spatio-temporal solute leaching experiment to compare the suction plates of two variable-suction multi-compartment samplers

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Solute monitoring in the field is often limited to observations of resident concentrations, while flux concentrations govern the movement of solutes in soils. We developed a new multi-compartment sampler, capable of measuring fluxes at a high spatial resolution with minimal disturbance of the local pressure head field. The sampler contained 100 separate cells of 31 by 31 mm. The suction plate of the prototype consisted of high porous ceramic material. In order to be able to measure also reactive solutes, two new variable-suction multi-compartment samplers with different suction plates have been build. One instrument was constructed with a membrane plate on top and the other with porous metal plates on top.

We placed these two instruments at 30 cm depth in an agricultural field, leaving the soil above undisturbed. Water fluxes were measured every 5 minutes for each cell. We monitored leaching of a chloride pulse under natural rainfall by frequently extracting the collected leachate while leaving the samplers buried in situ. The field experiment has also been modelled with Hydrus-2D.

We will describe the instruments and present preliminary experimental and modelling results, including time series of the percolation fluxes. The differences between the suction plates will be analyzed.