



## **Isothermal and non-isothermal infiltration and deuterium transport: a case study on undisturbed soil column from headwater catchment**

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Isothermal and non-isothermal infiltration experiments with tracer breakthrough were carried out in the laboratory on intact column of sandy loam soil taken from Roklan site (Sumava Mountains, Czech Republic). In the case of isothermal experiment, the temperature of infiltrating water was almost equal to the initial temperature of the sample. For the non-isothermal case the infiltration was performed using water approximately 10 °C colder than was the initial temperature of soil sample. The experiments were otherwise conducted under the same initial and boundary conditions. Pressure heads and temperatures in two depths (8.8 and 15.3 cm) inside the soil were monitored as well as the temperature of water entering and leaving the sample. Water drained freely through the perforated plate at the bottom of the sample by gravity and outflow was measured using tipping bucket flowmeter. Permeability of the sample calculated for steady state stages of the experiment showed that significant difference between water flow rates recorded during two experiment could not be justified only by temperature induced changes of water viscosity and density. Results of deuterium breakthrough were nearly identical for isothermal and non-isothermal conditions.