



## **Soil physical properties obtained in the laboratory and in the field: influence of measurement technique and spatial heterogeneity**

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Soil physical properties needed for environmental modelling are usually obtained from soil cores taken in the field and investigated in the laboratory. The information obtained from these cores is then used for parameterizing soil water and solute transport models which are relevant on a larger, plot to field scale. Measuring these properties in the laboratory is labor intensive and the outcome may be influenced by the method chosen. Soil water retention curves for example require different methods to span a wide range of hydraulic head – water content relations. Measuring hydraulic conductivities in the laboratory requires different methods at saturation and in the unsaturated range. When assembling the measurements obtained with different methods for the same respective soil cores the results do not necessarily fit together.

We will present results from the SoilSpace project where we are performing classical soil physical measurements in the laboratory, and compare the outcome to results obtained in the field with borehole electrical resistivity tomography (ERT), time domain reflectometry (TDR) probes and tensiometers. For the examples of soil water retention and hydraulic conductivity the influence of the respective measurement method will be shown, and for samples taken from a meter size intensively investigated soil volume the relation to previously performed in-situ measurements will be shown.