



Conductivity near saturation – solving a puzzle



Problem context

Most soils in the Netherlands are mapped in soil maps: an aggregation of soils distributed in the different areas. Within soil hydro-physics research, these soils are parameterized such that calculations of the movement of water in the soil, and dissolved compounds, can be done. This is a very important step, because it is crucial information for model research for societal issues that need to be solved at Local, Regional, National, European, and Global scales. For example this information is needed to determine drought stress for agricultural crops, CO₂-emissions in peat soils, soil salinity occurrence in the coastal areas, soil compaction, rapid loss of nutrients in cracking clay soils, etc. The parameterization however hampers a good description of the water conductivity in the near saturated zone. The K050 measuring setup is developed to cover this data lack. The setup is however not tested yet, and possibly needs adjustments.

Research Objective/Question

The setup needs to be completed and tested on different soil types. Based on the findings the setup needs to be adjusted to improve its design.

What is expected from the student (type of research)

Set up a systematic experiment with different artificial, and natural soils.
Compare to the saturated conductivity, and assess the importance of the information using a simulation model.
Analyze and discuss the results in the context of the above research objective.

Host institute: Wageningen Environmental Research

Country: Netherlands

Starting date: can be discussed

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