We performed laboratory measurements on samples of unconsolidated sediments with the method of spectral induced polarisation (SIP) and with hydrological experiments. We determined integrating parameters, e. g. the normalized chargeability $m_n$, from the SIP spectra by application of the Debye decomposition (Nordsiek and Weller, 2008). The normalized chargeability, that is the ratio of the total chargeability to the DC resistivity, is a measure of the strength of the polarisation effect. In this study $m_n$ is the key parameter for the development of two empirical power laws to estimate parameters of the common hydrological model by Mualem (1976) and van Genuchten (1980).

For the Multi-Step Outflow (MSO) experiments, the samples were drained stepwise and the outflowing volume of water was recorded as function of the suction applied to the sample. The MSO experiments could be applied successfully only to the sandy samples. For the fine-textured material, a method based on evaporation was used (Peters and Durner, 2008).

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References

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