Geophysical Research Abstracts, Vol. 9, 06939, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-06939


# Data provision strategy for soil hydraulic system parameters at field scale

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Problems arising from the adverse impacts of man's activities on the groundwater resources are becoming increasingly frequent. Modelling solutions give the means to reach informed decisions for sustainable management of water resources and the associated pollution issues integrating knowledge and understanding of both water quantity and quality with the latest developments in information technology. As these integrated modelling systems should be flexible, extendable and able to be tailored to the characteristics of the study area, they rely on many input data. Even though most modellers take fully benefit of the growing availability of DTM and GIS systems, these techniques do not provide information on subsurface soil conditions. Hence, data provision of the soil hydraulic parameters characteristic for the vadose zone flow processes is becoming a hotspot in the field of operational hydroinformatics.

The overall objective of SHySP is the development of a realistic data provision strategy for soil hydraulic system parameters such as required for distributed hydrological modelling systems. Issues as over-parameterisation, parameter availability and parameter representativeness are addressed. A soil texture index (STI) that relates both the water retention and hydraulic conductivity curves can be derived on the basis of first principles. This soil index which is merely texture dependent, determines the shape of the water retention curve and that of conductivity curve. In addition, two structure dependent soil indices (SSI1 & SSI2) are defined which together with the soil texture index (STI) fully describe vadose zone soil water transfer. A special inverse technique can be applied to calculate the two structure indices from a flow experiment. It allows for instantaneous and direct determination of the Brooks and Corey and/or van

Genuchten soil characteristic parameters.

Application to field scale experiments with measured evaporation fluxes allow for the determination of the soil water transfer system parameters at field scale.