Geophysical Research Abstracts,
Vol. 10, EGU2008-A-04220, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-04220
EGU General Assembly 2008

Measurement of local soil water flux in layered soils using vertical TDR probes

M. F. Dyck (1) and R. G. Kachanoski (1)

(1) Department of Renewable Resources, University of AB, Canada (miles.dyck@ualberta.ca)

All soils by definition have soil layers/horizons. Characteristic properties of soil horizons have been shown to influence water and solute flux. It is usually assumed that soil horizons can be represented by independent layers and that transport through the profile can be predicted by convolution of transport through each layer. However, some studies suggest that the vertical correlation length scales of transport may not be interrupted at horizon interfaces, or the nature of the horizon interface influences significantly the nature of the transport in the subsequent layer. The influence is also likely dependent on the horizontal scale of interest/observation. Understanding and accurately modeling flow and transport across soil horizons requires adequate information about very local scale transport properties and thus measurements with sufficiently high spatial and temporal resolution which is a challenge in field studies. This paper presents a method of measuring the vertical and horizontal continuity of local soil water flux and solute transport within and across soil layers using vertically installed TDR probes. Field and laboratory column experiments are presented to illustrate the veracity of the method. Implications of the measurements as they relate to understanding spatially scale dependent water and solute transport are discussed.