



Exploiting drainage regimes in lysimeters for identifying climate triggers of preferential flow

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A drainage regime is defined as a prolonged period of nearly constant outflow from a lysimeter. In addition there are rapid transitions between consecutive regimes. Solute transport out of the same lysimeters is shown to follow similar regimes. The causes and occurrence of these flow and transport regimes in lysimeters is briefly explored. We focused on exploiting these regimes for identifying the occurrence of above regime transport i.e. the preferential transport of reactive and non-reactive solutes (specifically bromide, and two herbicides ETD and MBT). Different boundary conditions were identified as promoting rapid non-reactive and reactive rapid transport. The results of these studies suggest that acknowledgement of regimes in the unsaturated zone will assist prediction of short and long term changes in chemical loading to groundwater.