Use of Near-Surface TDR Measurements to Predict Subsurface Solute Transport. (S01-gaur170326-Poster)

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Abstract:

We determine near-surface chemical transport properties and evaluate whether the shallow measurements can be used to predict solute transport in the soil profile. A field TDR (time domain reflectometry) setup was used to measure near-surface chemical properties. The setup included multiple drippers as point sources of solutes and TDR probes to measure the bulk electrical conductivity. A salt solution was applied as a step input tracer. The measured chemical transport properties were immobile water content, mass transfer rate coefficient, and dispersion coefficient. Solute movement within the soil profile was measured via a cylinder infiltrometer setup. The observed salt distributions within the soil profile from the cylinder infiltrometers were found to be in the range of salt distribution predicted by the near-surface chemical transport properties. The results suggest that near-surface chemical transport properties can be utilized to describe solute transport within the deeper soil profile.

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