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Modeling root water uptake with root mediated soil water content redistribution

M. Dohnal (1), J. Votrubova (1), T. Vogel (1), and M. Tesar (2)

(1) Czech Technical University in Prague, Faculty of Civil Engineering, Prague, Czech Republic, (2) Institute of Hydrodynamics AS CR, Prague, Czech Republic

The main objective of this study was to develop and test a simple root water uptake parameterization applicable in numerical models of soil water movement.
The suggested approach was implemented in a one-dimensional dual-continuum model of soil water flow based on Richards' equation. The model was used to simulate soil water movement at an experimental forest site. The performance of the model was evaluated using observed soil water pressure and soil water content data. Several episodes, during which the root mediated soil water content redistribution effects played an important role, were detected. Differences between the model responses and observations, as well as differences between the traditional and newly developed root water uptake modeling approaches, were analyzed.
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