



Modeling root water uptake in soils: opportunities and challenges

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Root water uptake modeling concepts have evolved over time. On one hand, mesoscopic models have been developed, which explicitly represent the fluxes at the soil root interfaces. On the other hand macroscopic approaches were proposed, which embedded root water uptake into a sink term in the macroscopic mass balance equation. Today, new techniques for imaging root architecture, water fluxes and soil properties open new possibilities to the understanding of water depletion in planted soils. Amongst others, architectural hydraulic root and soil models can be used to bridge the scale gap between single root and plant scales. In this talk, several new promising experimental approaches will be presented together with new models and upscaling procedures, possibly paving the way for the future models of root water uptake. Furthermore, open challenges will also be presented.