# Numerical modeling of soil water flow under different vegetation cover types in urban environments of the Colorado Front Range

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**Abstract.** A variety of factors govern field-scale soil water movement, including soil hydraulic properties, meteorological conditions (e.g., precipitation, temperature, wind speed), and vegetation type. Soils, vegetation, and microclimate are highly heterogeneous in urban environments, complicating assessments of soil water flow. Simulations using physically-based numerical models provide one means of evaluating the relative importance of different factors governing soil water flow and drainage. The HYDRUS-1D program, which numerically solves the Richards equation for variably-saturated water flow, allows users to manipulate boundary conditions (e.g. precipitation, potential ET), soil hydraulic properties, and through incorporation of a sink term, water uptake by plant roots, providing a powerful tool for examining controls on soil water flow. Using HYDRUS, simulated irrigation treatments, and meteorological data from regional weather stations, I present results from water flow simulations using a range of input parameters representative of vegetation and soils in Front Range urban areas. I present results and discussion in light of ongoing water balance studies examining the role of urban vegetation on hydrological processes.