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Planner Oriented Watershed modelling system for Environmental Responses (POWER) applied to the Maheshwaram watershed, south India.

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In this paper we present an application of an innovative hydrological modelling software, the Planner Oriented Watershed modelling system for Environmental Responses (POWER). POWER is a platform which simulates integrated flow systems of streams and overland flow, soil water and solute movement in the unsaturated (i.e., soils) and saturated zones (i.e., aquifers) combined with plant root uptake. The model is applied to simulate water flow in the soil zone of the Maheshwaram watershed, a subtropical region of south India. Preliminarily, local experimental values of soils hydraulic properties are upscaled to the watershed spatial extent scale. The modelling is conducted over a three years period, estimating the water flux spatial distribution according to topography, hydrological criteria, landuse and soil information. The results of this deterministic approach are validated through confrontation of the simulated soil water stocks with those measured by a neutron-probe in five sites of the watershed.