



## **Are soil physical variability, complexity and uncertainty in hydrology models related?**

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Landscapes are complex, and soil physical parameters are immensely variable. Saturated conductivity in clay soils alone can vary easily a thousand-fold over a meter distance and billion-fold in a watershed. Despite this, watershed outflow and water table height can be predicted using few generalized watershed parameters with rainfall as input without considering the complexity and variability in detail. It is, therefore, critical to investigate the consequences of this juxtaposition at a time in which the landscape can be measured in increasing detail and computer resources are expanding for running models with increasing complexity.

In this presentation, we focus on surface hydrological processes and discuss whether Darcy's law and its input parameters are helpful in modeling the discharge and perched water tables in the Catskill Mountains and Ethiopian highlands. For these humid sloping watersheds, we put forward that 1) complexities are self-organizing, so that hydrological processes are principally moisture and rainfall dependent; and 2) laboratory measurements of soil physical parameters are not beneficial in decreasing the uncertainty of the output of hydrological models.