



## **Using the BCube Brokering System to add topographic features for field scale processes into basin scale hydrological models**

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Watershed planners and managers need reliable tools that can capture the spatial and temporal complexity of agricultural landscapes, and water quality models are increasingly relied upon to represent agricultural watersheds. While a significant amount of modeling work has attempted to characterize field scale processes in watershed scale models, these models still typically require significant calibration and are thus difficult to apply meaningfully in areas without copious data with which to calibrate. This is partially because these models were never really intended as field scale tools, while we are trying to use them to define different hydrologic pathways, area weighted potential energy (slopes and saturated conductivities), and the resulting lag time of chemistry in different transport states. The movement of water within the landscape as surface (or near-surface) storm runoff and interflow is driven by gravity, topography, contributing area and soil and landuse characteristics, which play roles in concentrating water flows. Soil surveys have played a key role in the development of pedology and spatially derived pedon soil maps have become valuable datasets for natural resource management. Unfortunately, the soil surveys, commonly available at ~1:20,000 scale, are not designed to provide the high-resolution models of the soil continuum required in field scale environmental modeling applications and site specific crop and water quality management. The goal of this project is to test repeatable brokering based initialization methods to incorporate topographic attributes, and resulting spatially explicit soil morphology, that are missing from standard basin scale model initializations.