Automation of the Nine-Unit Landsurface Model using a Neuro-fuzzy Network. (S05-falk184834-Poster)

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Abstract:

Some soil landscapes are complex and prove difficult to spatially render without copious sampling, which may not be feasible due to constraints of time and money. To address this problem, a benched hillslope in southwestern Wisconsin was classified as to membership in the Nine-Unit Landsurface Model. Soil sampling was minimal, with sites mainly restricted to a few transects. A Digital Terrain Model was developed from a GPS survey. TAPES-G was used to determine terrain attributes, which were classified as to land surface unit using a fuzzy neural network. The fuzzy classification was displayed using ARCVIEW, as were soil attributes known to vary with bench location; percent organic matter, A-horizon thickness, fine to medium silt and clay fractions and profile thickness. Attribute coverages were unable to rectify the benches, considerably more sampling would be needed for a realistic representation; whereas, the fuzzy classification depicted benches and other hillslope features. Information about a specific site can be inferred from the landsurface unit definition. For complex soil landscapes, this approach offers an alternative to costly and time consuming sampling.

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