SoLIM: New Technology for the 21st Century Soil Survey. (S05-kunickis090652-Poster)

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Abstract:

The conventional soil survey method faces challenges: the limitation of polygon-based model, the tedious manual mapping process, and the lack of formal documentation of soil mappers' knowledge. A GIS knowledge-based fuzzy soil inference scheme (SoLIM, Soil-Land Inference Model) was developed to overcome these challenges and to improve the quality and efficiency of soil survey. The scheme is based on the soil factor equation and the soil-landscape model. Under the SoLIM scheme the soil landscape is considered as a continuum and represented by a fuzzy logic-based model which overcomes the limitation of the polygon-based model used in conventional soil mapping. The relationships between soils and their formative conditions are explicitly extracted and documented through a set of artificial intelligence techniques, which overcomes the documentation problem. Soil information products derived through the SoLIM approach are of high quality in terms of spatial detail and degree of attribute accuracy. The degree of success of the SoLIM approach depends on the availability and quality of environmental data and the quality of knowledge on soil-environmental relationships over the study area.

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