Southern Regional Cooperative
Soil Survey Conference:
Innovative Technologies for the New Soil Survey
July 14-17, 2008 | Gainesville, FL
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Land Resource Region (LRR) 1:7,500,000

Major Land Resource Area (MLRA) 1:3,500,000

Land Resource Unit (LRU) 1:1,000,000

STATSGO 1:250,000

SSURGO 1:24,000

Soil Series

Pedon

Modified after Soil Geography (NRCS) http://soils.usda.gov/survey/geography/
Soil Mapping
Spatial Scale
Santa Fe River Watershed (3,585 km²) ~8 counties in NE FL

SSURGO (Soil Data Mart) 1:24,000 Field mapping (n: 143) - Wade Hurt

Soil Order accuracy: 60.3%

Accuracy Soil Order & drainage class: 45.1%

Soil Series accuracy: 20.4%
Soil Property Accuracy
Santa Fe River Watershed (3,585 km²) ~8 counties in NE FL

SSURGO (Soil Data Mart) 1:24,000
Field sampling (n: 141) – Lab Data

Soil organic carbon (SOC) accuracy (1 m profile):
Root Mean Square Error = 27.8 kg m⁻²

Absolute SOC stored within watershed (1m profile) [SSURGO]:
53,350,771 Mg C

+/- 73,556,748 Mg C error
Tremendous needs for high-resolution and high-quality soil data

Soil Carbon Sequestration

Soil and Water Quality
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Soil-landscape relationships

Remote sensing

Geospatial analysis
GIS
GPS

Field mapping

Soil sensing

Models
GIS - multi-scale data integration
- Complex geospatial methods

Environmental datasets:
- Field data
- Remote sensing

Soil-landscape models:
- Functional (stochastic; deterministic)
- Mechanistic (simulation)

Soil datasets:
- Field and analytical data
- Soil sensing

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Soil Mapping
Spatial Variability
Soil map unit delineations
Describe spatial variability of soil properties to produce accurate and high resolution soil maps.
Key questions:
How large to make a map unit or soil pixel?
Which soil attributes should be mapped in a unit/pixel?
What is the accuracy and precision of soil data?