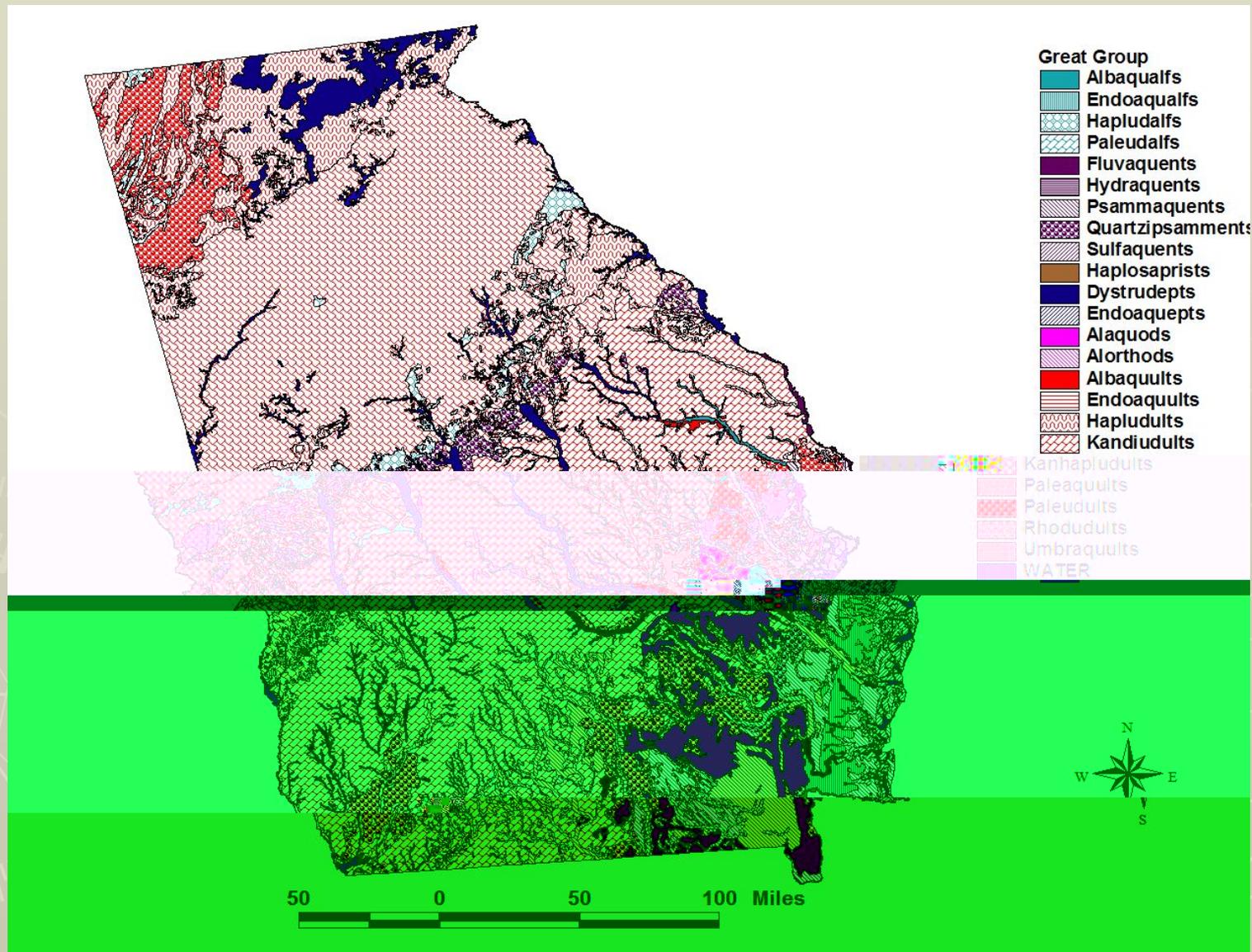
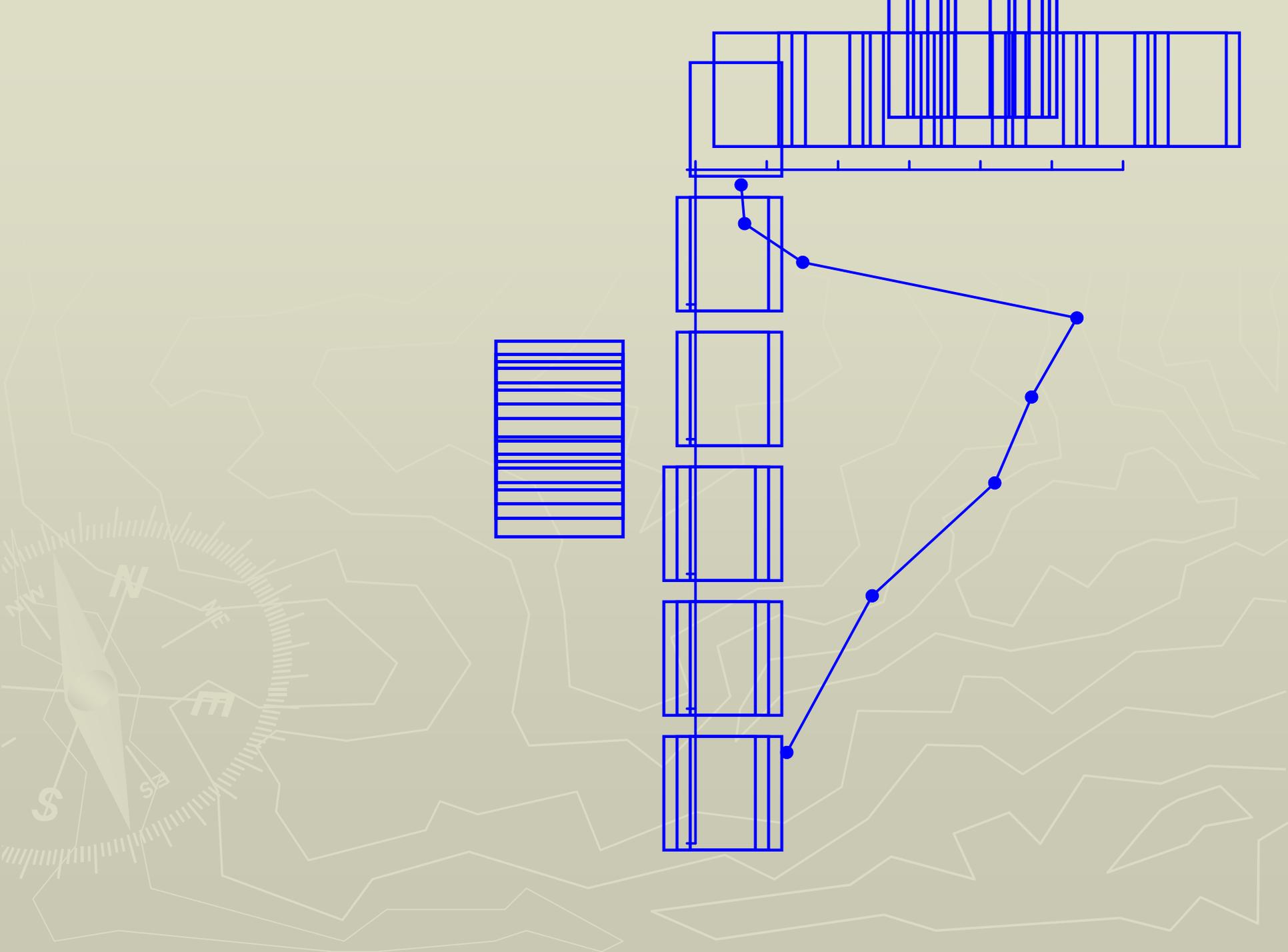


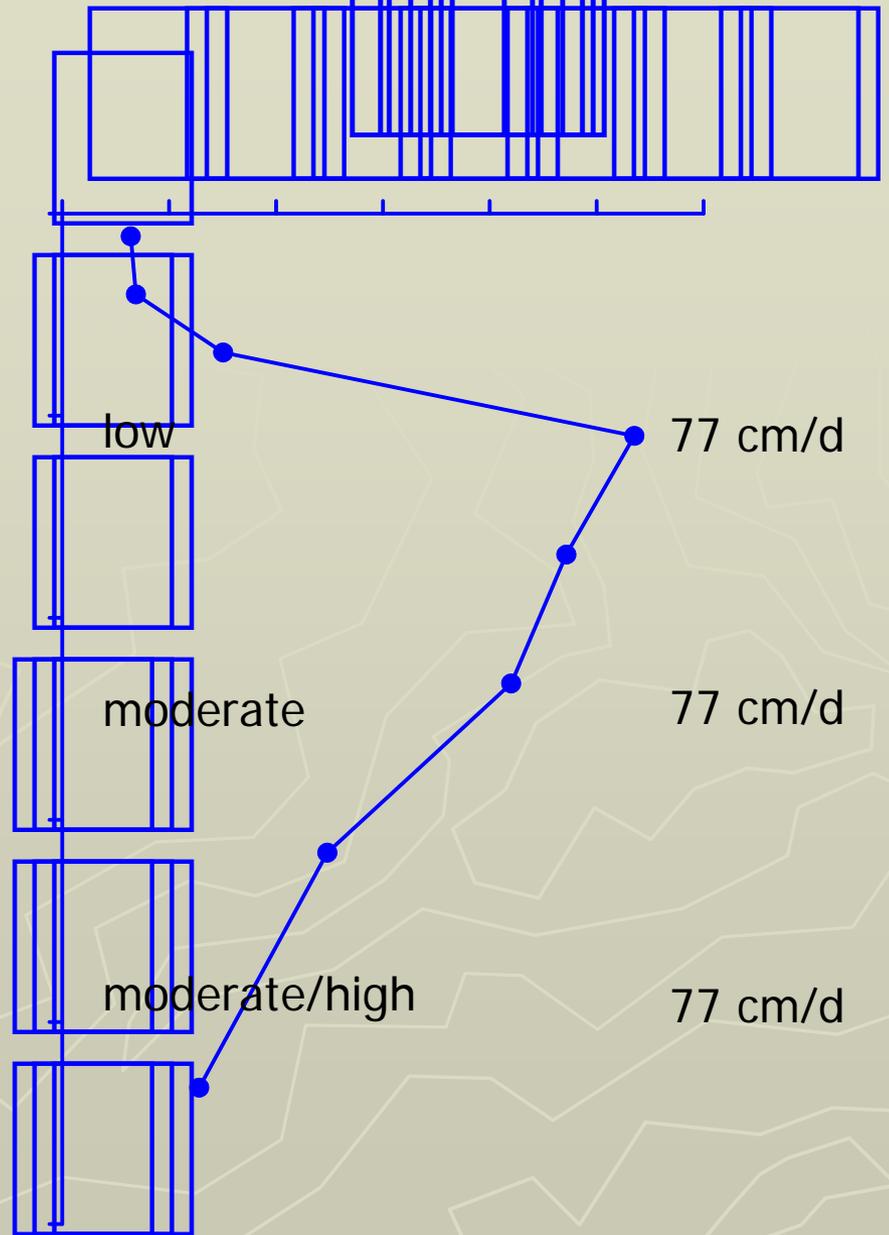
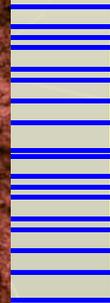
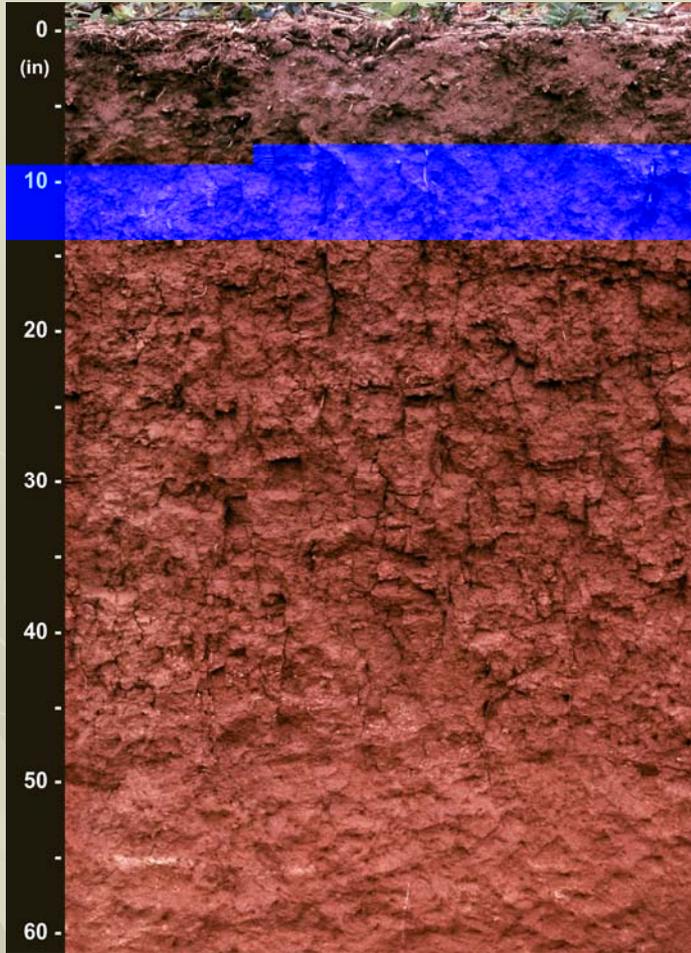
J. Bishop, M. Abreu, and L.T. West
Department of Crop and Soil Sciences
University of Georgia

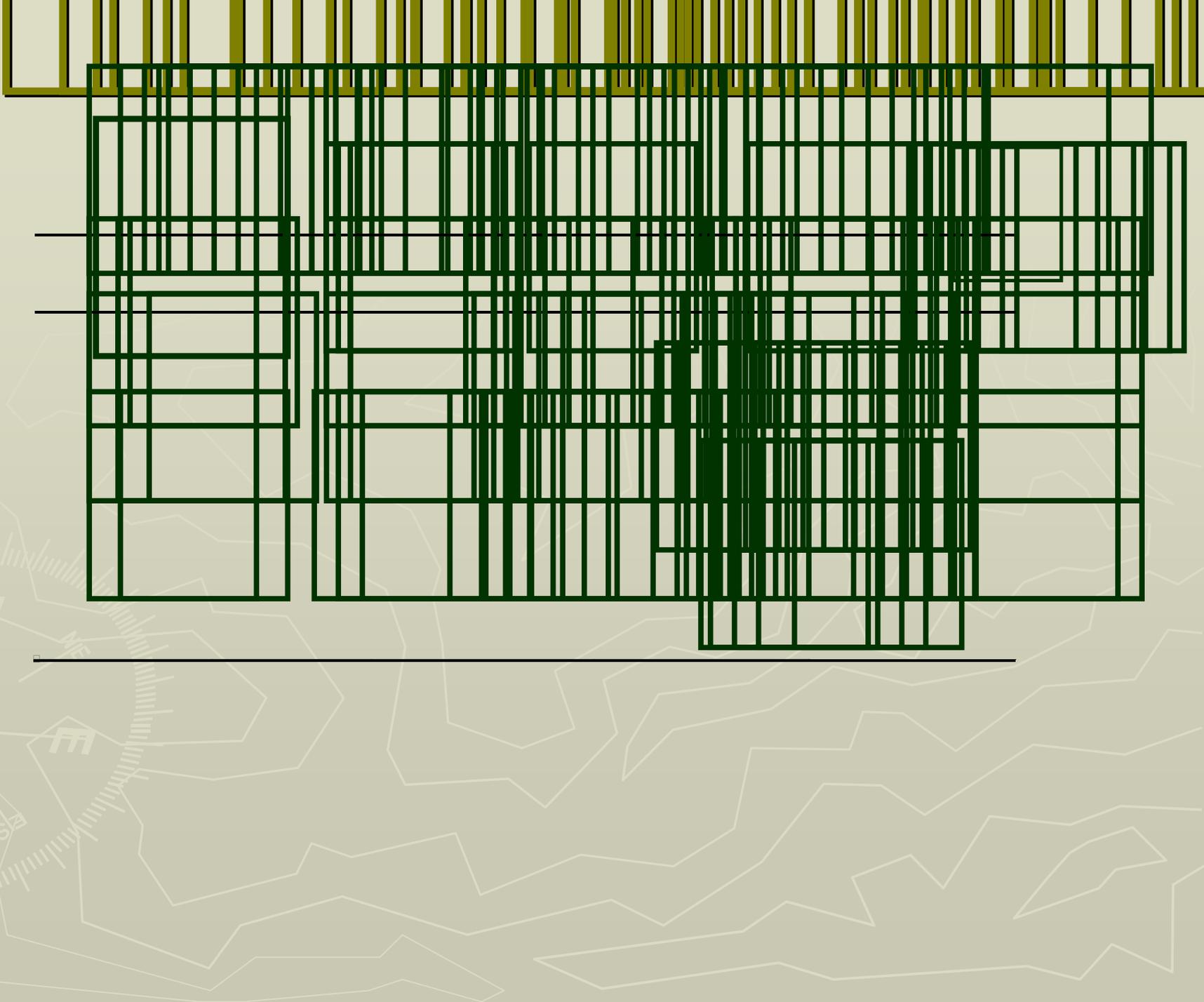
GA Great Groups

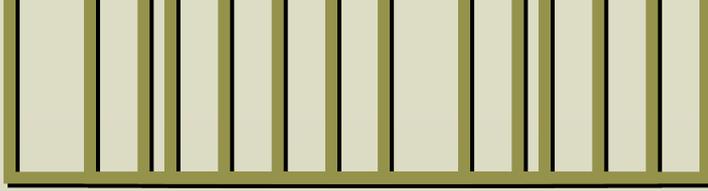




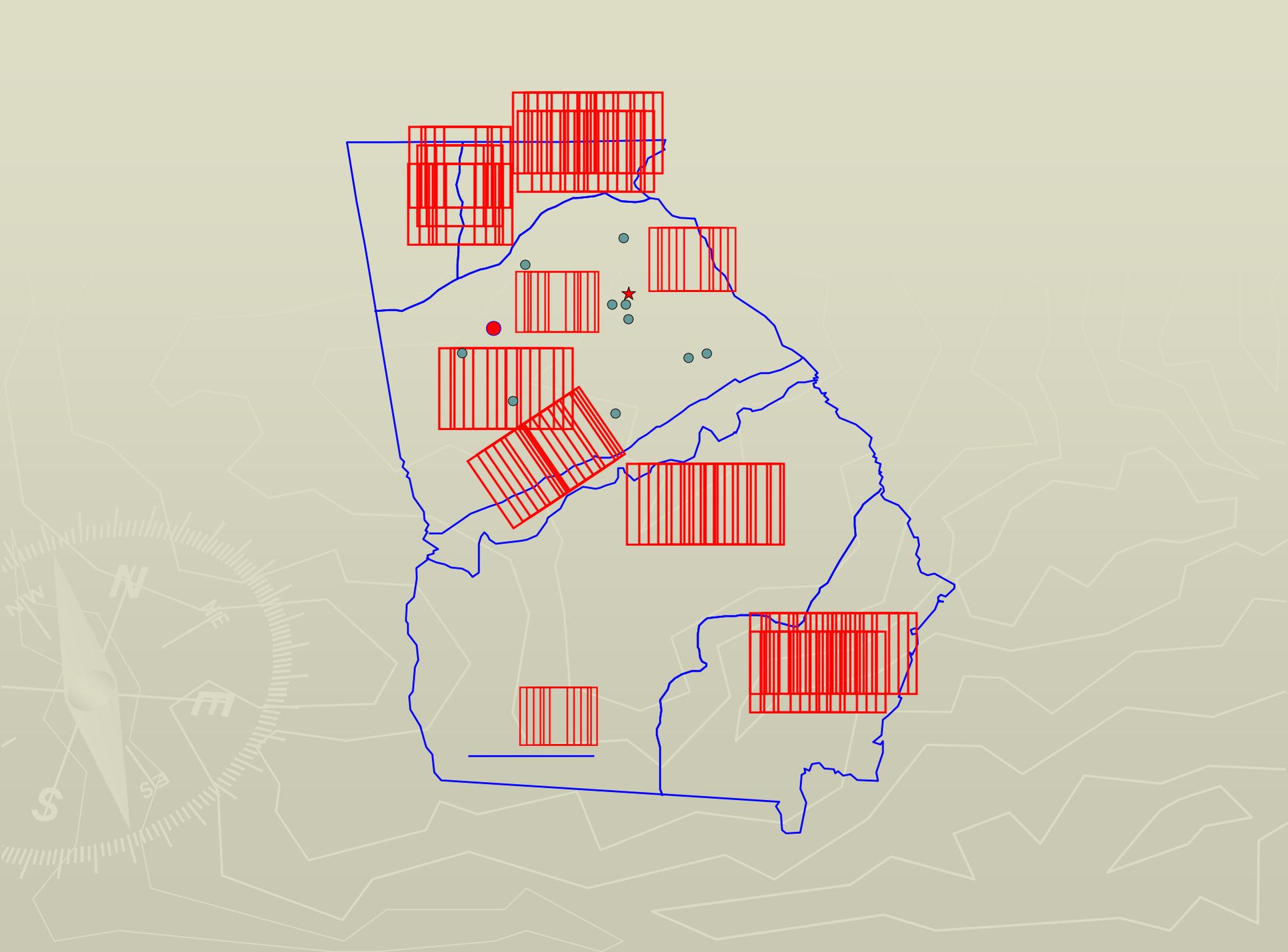
K_s Estimates



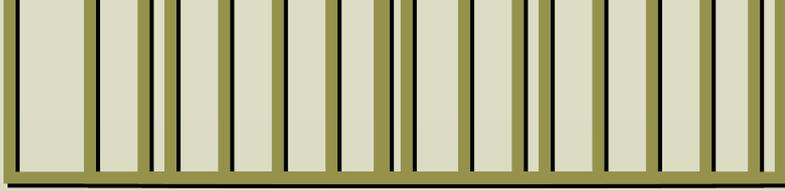




- ▶ K_s measured in field with constant head permeameter
 - 10 hillslopes
 - 3 transects per hillslope
 - ▶ Summit or upper backslope to footslope
 - 7 equally spaced measurement sites per transect
 - ▶ 21 locations/hillslope
 - 3 depths - upper Bt, mid to lower Bt, and lower Bt, BC, or C (140 cm)
- ▶ Soil described from bucket auger
 - NRCS soil scientists





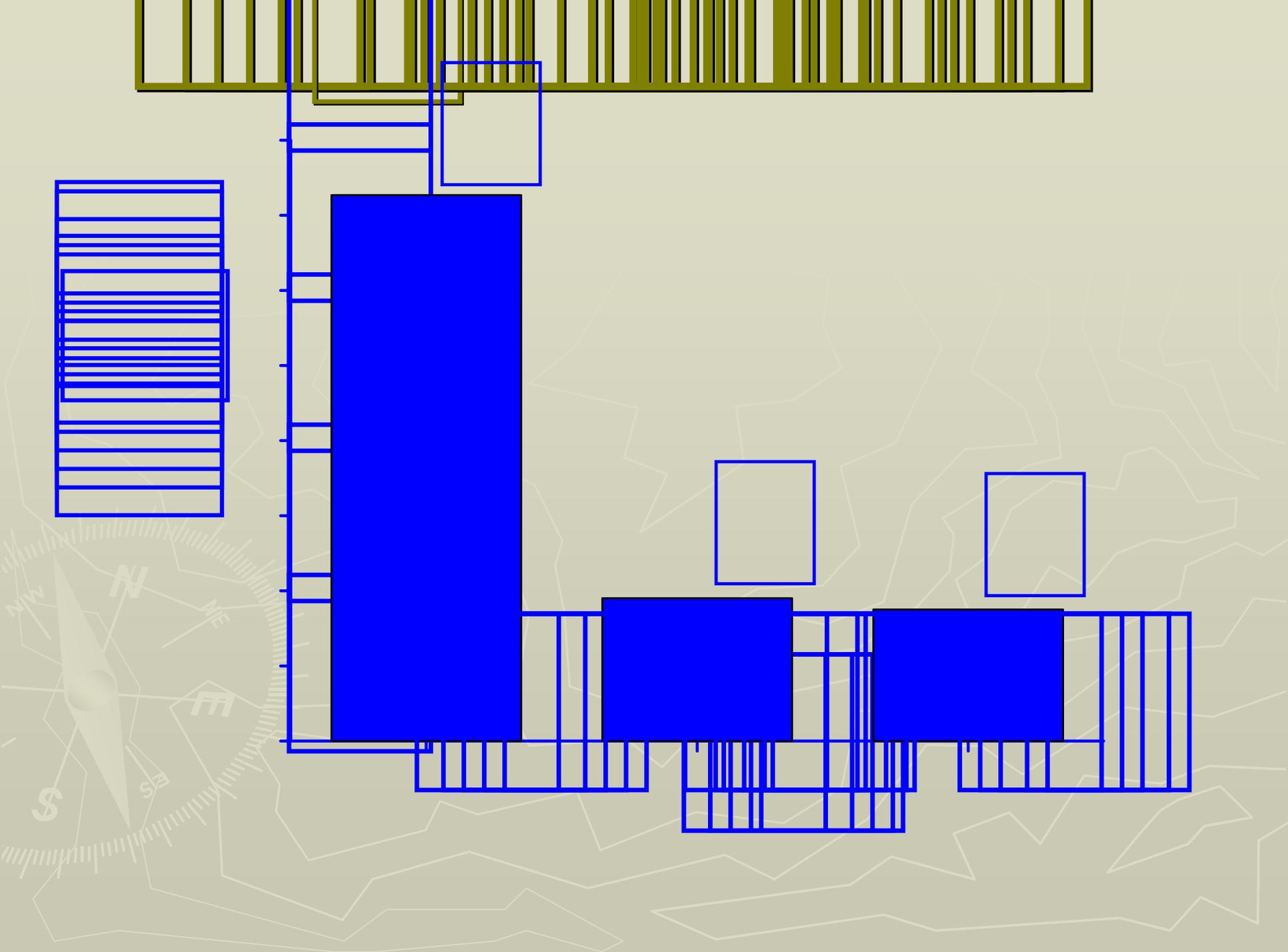


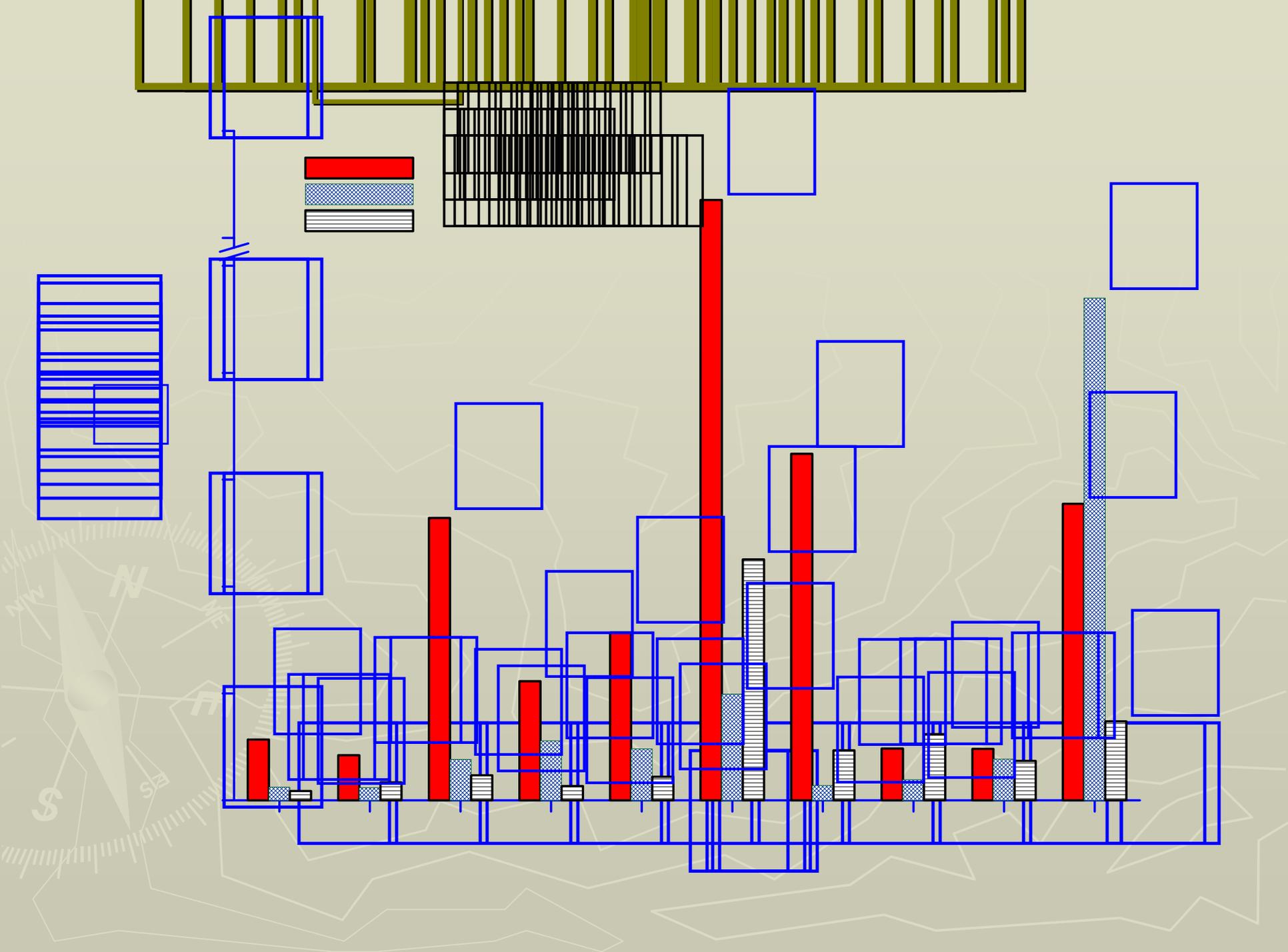
- ▶ 3 pedons described and sampled from pit
 - Range in K_s and landscape position
- ▶ Laboratory characterization
 - PSD, bulk density, CEC, porosity



Results

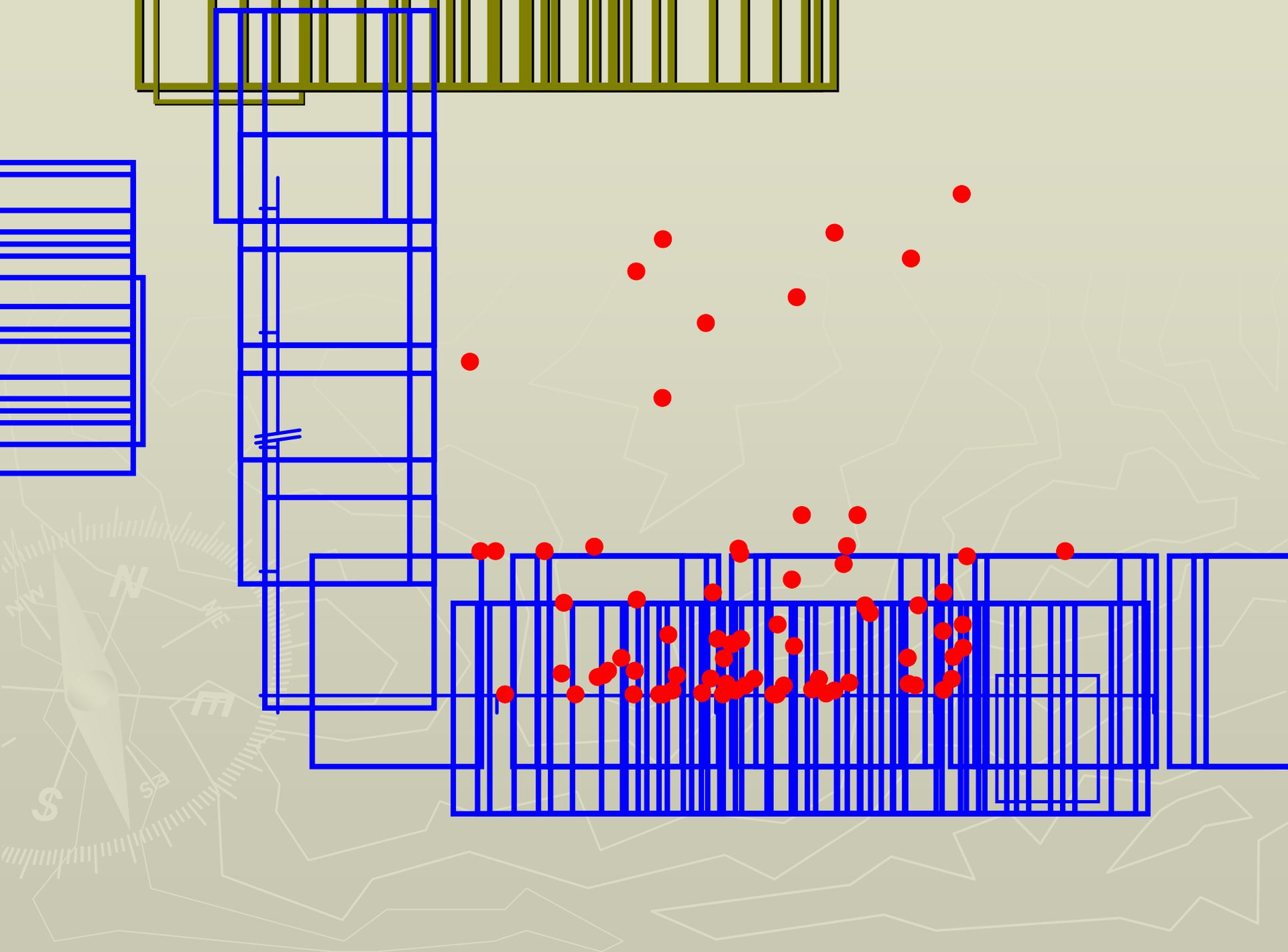


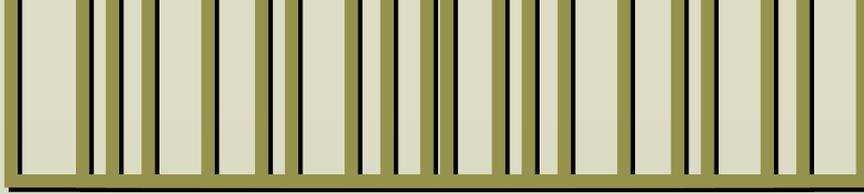




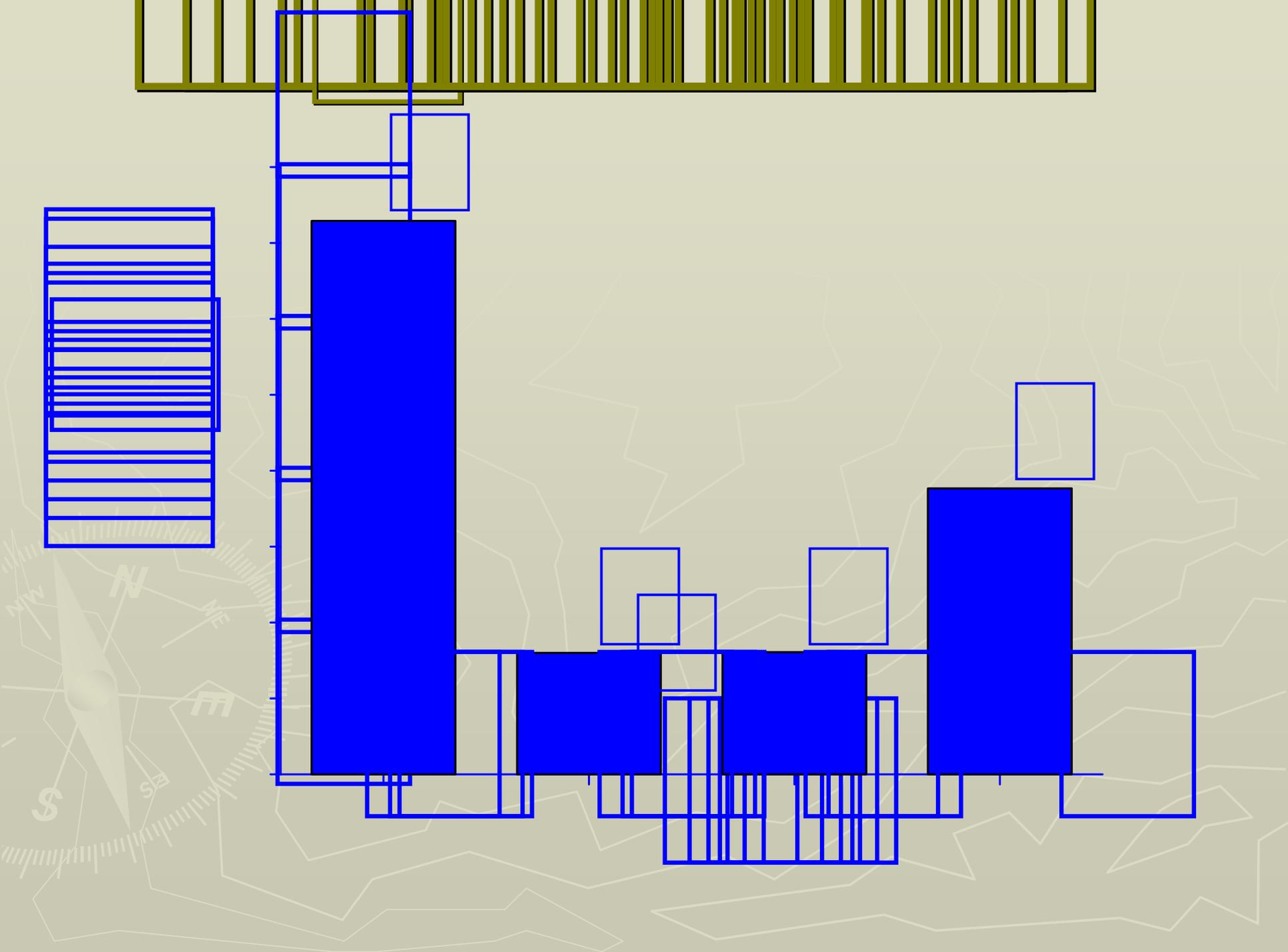
Why?

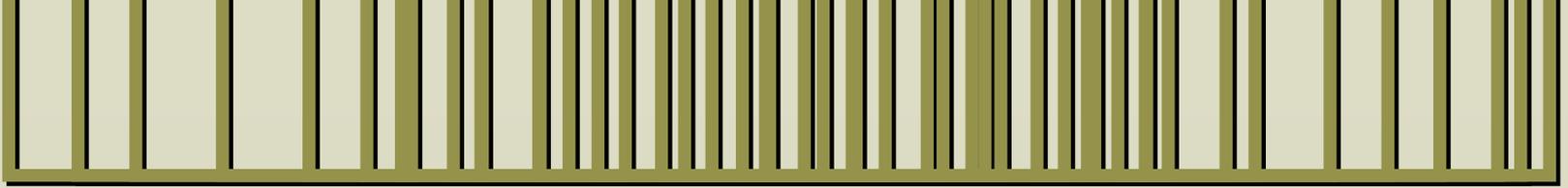




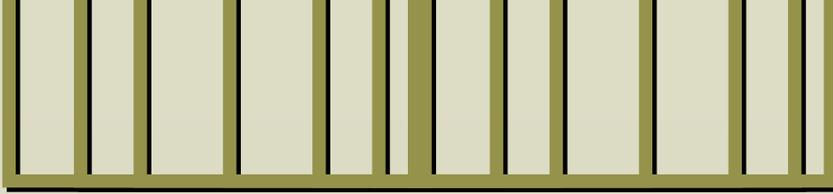


- ▶ Bt1 horizons – moderate (strong) subangular blocky
 - Tendency for low K_s if firm consistence
- ▶ Bt2 and Bt3 horizons – moderate subangular blocky
 - Very weak platy?
- ▶ BC horizons – weak subangular blocky structure (mostly)
- ▶ Horizons with highest K_s
 - Bt horizons in more deeply weathered soils
 - ▶ 10R hue
 - Sandy loam C horizons





- ▶ Upper depth (Bt1 horizon) had highest K_s at 7 of 10 sites
 - 2 sites had uniformly low K_s in all horizons
- ▶ Mid and lower depths generally had similar K_s
- ▶ No difference in K_s with hillslope position



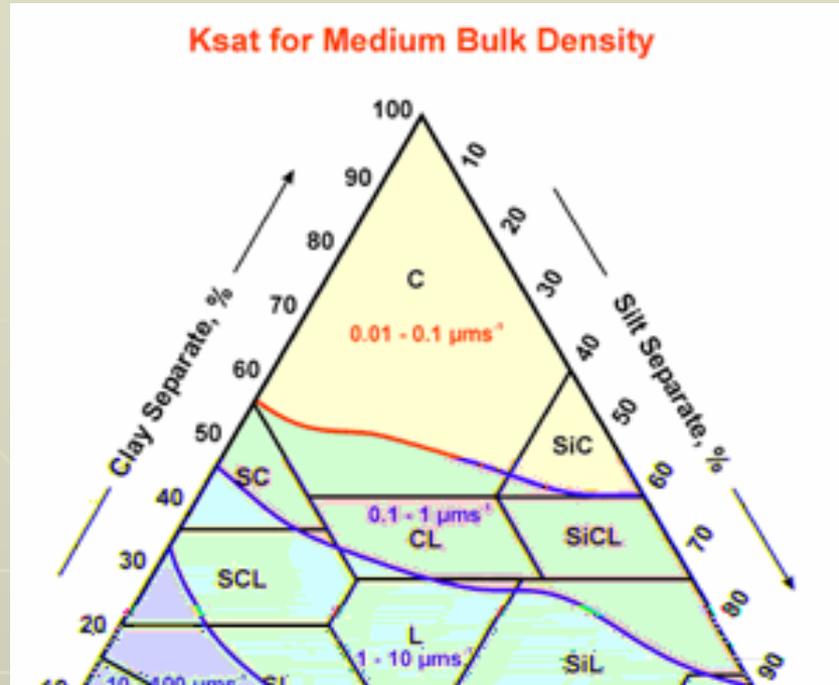
- ▶ Bt1 horizon K_s subjacent horizons
- ▶ No difference in K_s with hillslope position
- ▶ Clay and bulk density ineffective in explaining K_s variation
- ▶ Structure and/or consistence influencing K_s but not reliable predictors
- ▶ Bioturbation of upper Bt?
 - Relatively old landscapes
 - Observed in similar soils

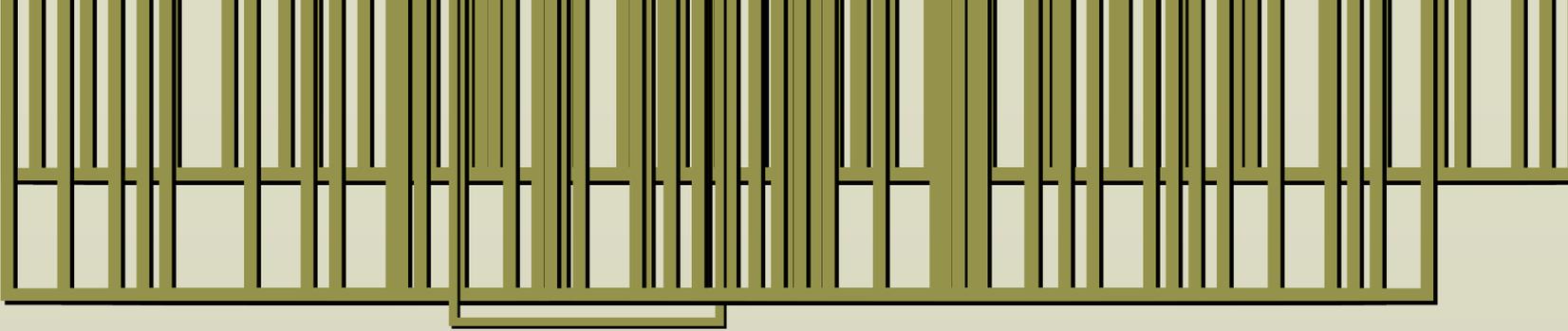
Comparison with K_s Estimates for Piedmont Soils

Horizon	K_s	
	Tabular Data	Measured
	cm/d	cm/d
Bt1	77	7.2
Bt2, Bt3	77	1.7
BC	77	1.6

Tabular data from WSS

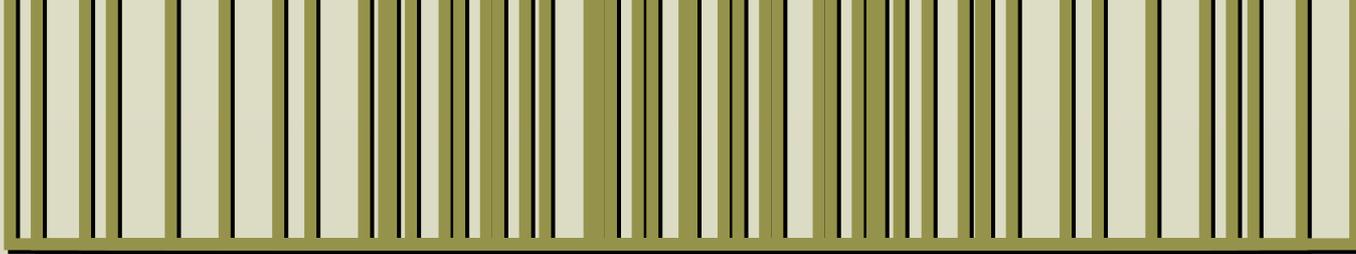
NSH Guide for Estimating K_s





- ▶ Probably not
- ▶ Local estimates can be incorporated into the database
- ▶ With limited data, is this a viable option?





- ▶ 144 MLRA Soil Survey Offices
 - Intelligent, energetic, and interested staff
- ▶ Field evaluation of K_s for 1 pedon per month (12 days/year)
 - 1,600+ evaluations per year
 - 8,000 evaluations after 5 years
 - ▶ 5 reps per series/map unit = reliable data for 1,500+ series
- ▶ Data to populate database
- ▶ Data to test/develop pedotransfer functions
- ▶ Good use of time?