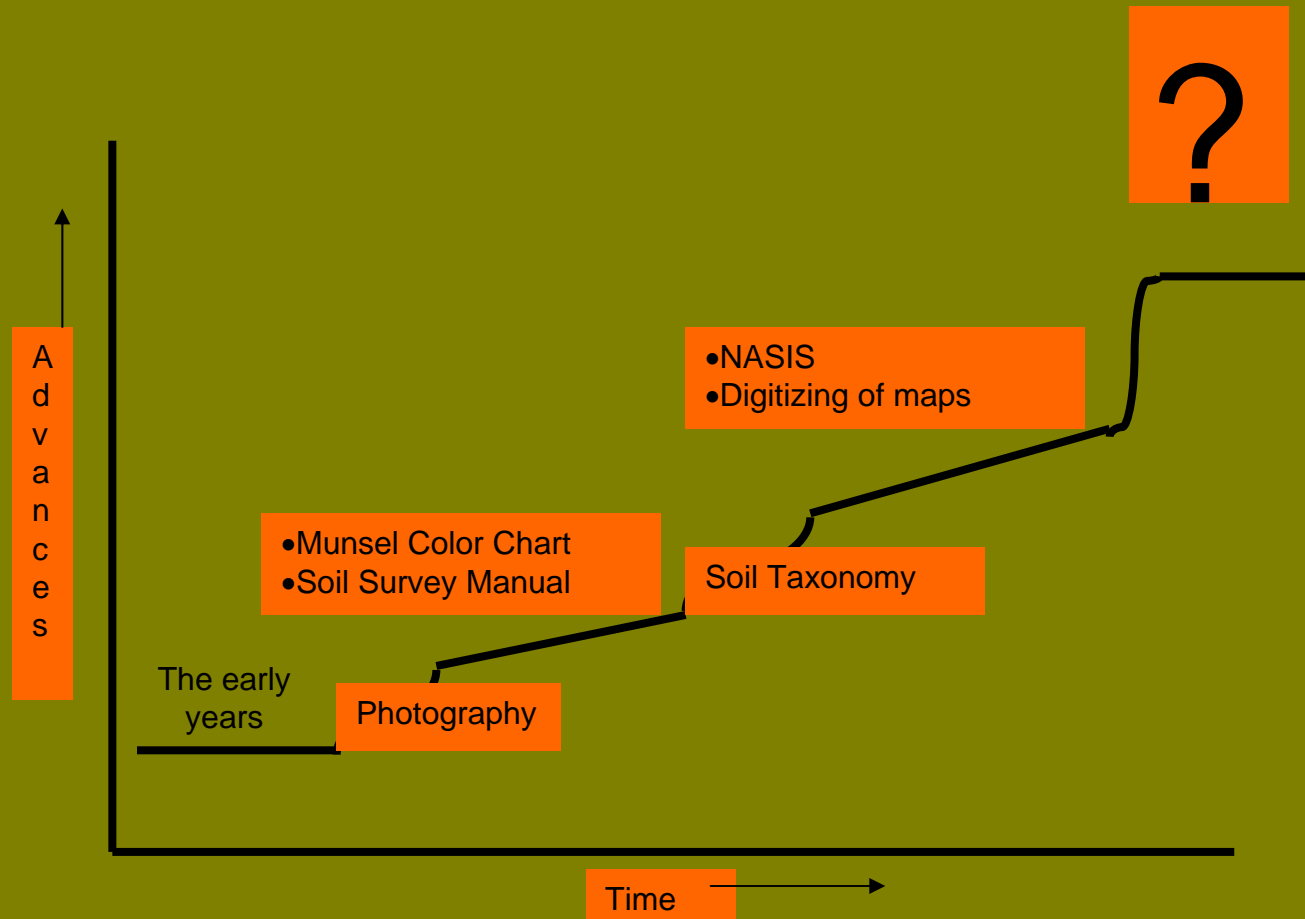




SOIL SURVEY

The Next Level

Advances over Time





Soil Survey Paradigm

- Morphological, Soil Landscape Based
- Subjective – tempered by guidelines and procedures
- Landscape model used to describe variability
- Lack a systematic way of quantifying random variability



Soil Series

- Lowest Category in Soil Taxonomy
 - Mutual Exclusivity?
- Defined by Numerous Properties
- Subjective – based on collective views of soil scientists
- Non-random selection of pedons



Characterization

- Representative Pedon – selection undocumented
- What are the core properties that define a soil series?
- Are they independent, if not is the interaction important to know?



Laboratory Characterization

- Pedon based
- Depth function
- No measure of within or between pedon variability



Map units

- Defined by the soil landscape model
- Excellent protocols for describing variability in composition
- All databases (SIR, NASIS) based on estimated properties
- Soil Data Map Unit
- Dealing with variability in space and time

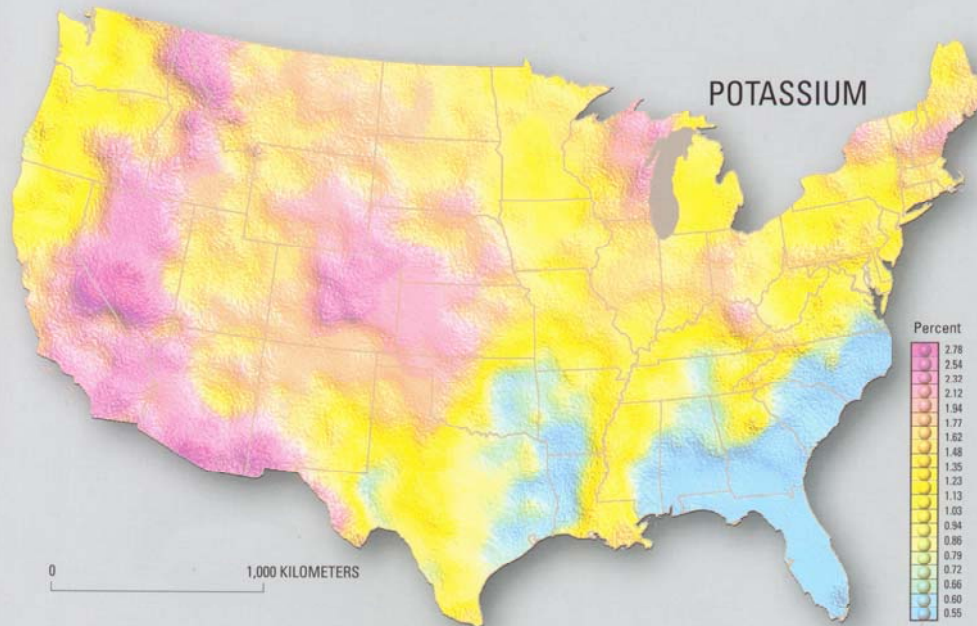


Pedon Database

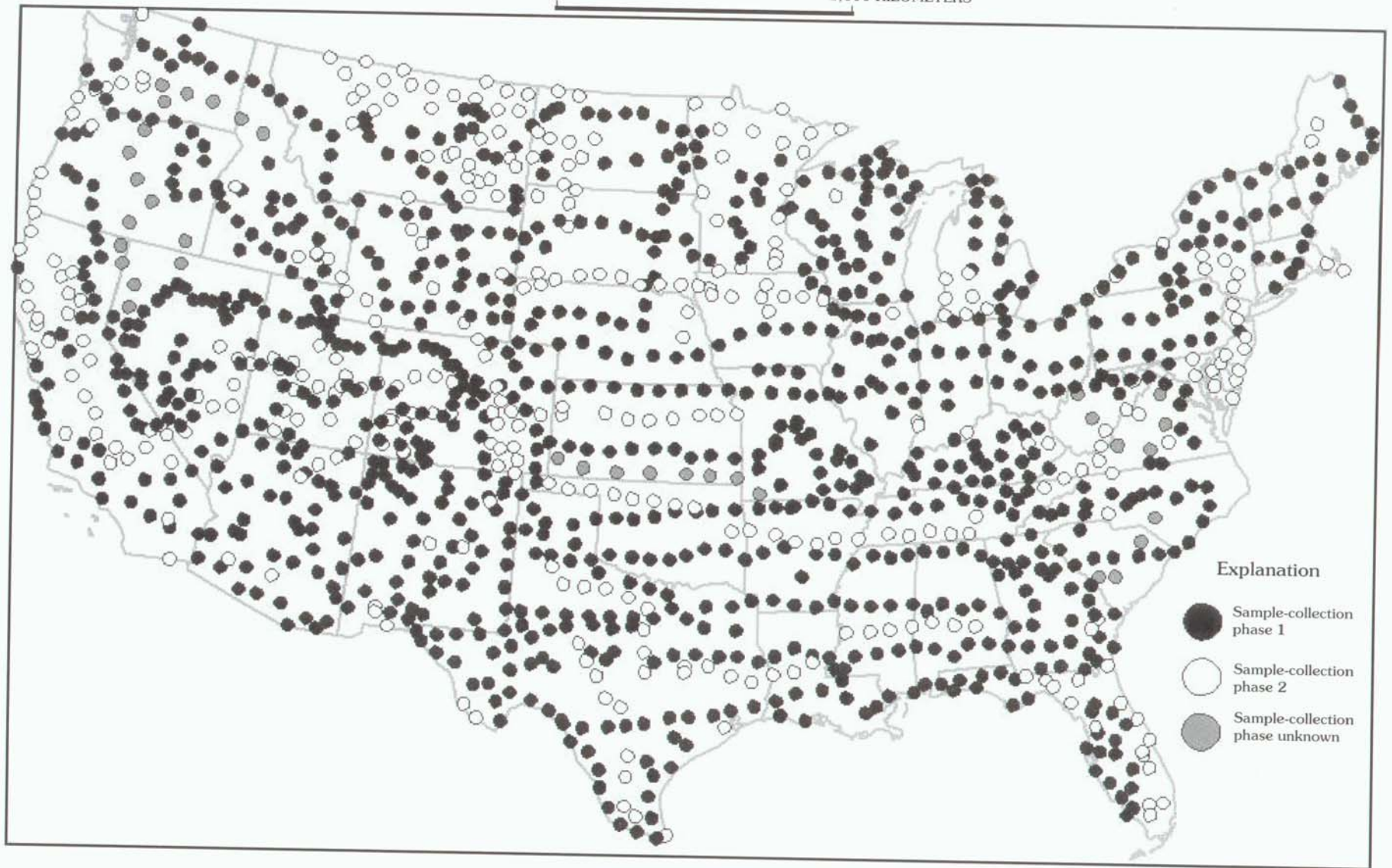
- Point data – no way to expand to different scales
- Time and space variability void
- The Bulk Density example?

Geochemical Landscapes of the Conterminous United States— New Map Presentations for 22 Elements

U.S. Geological Survey Professional Paper 1648



1,000 KILOMETERS



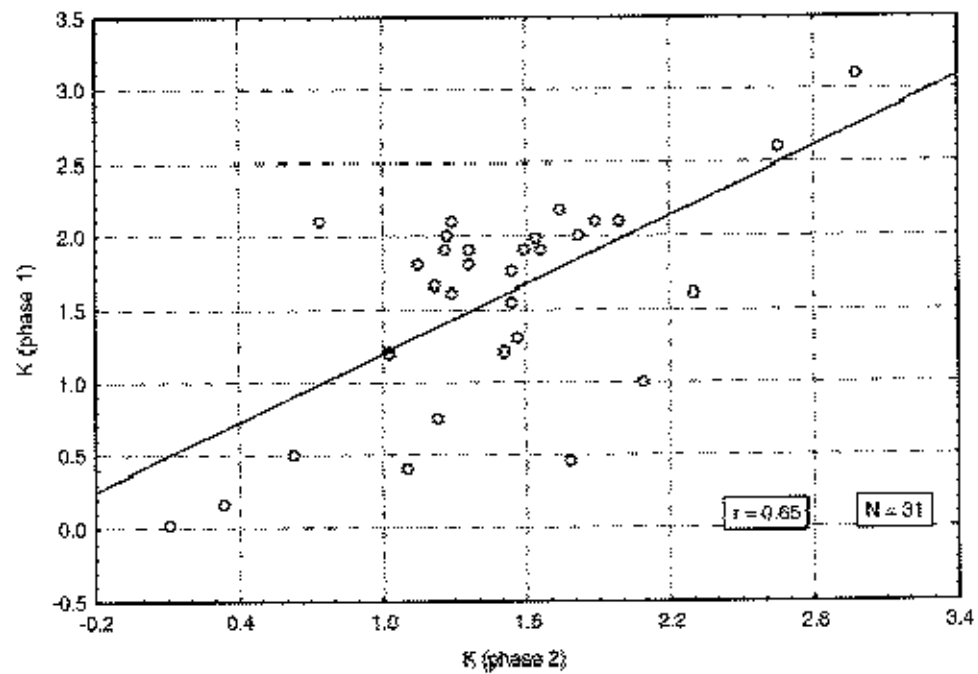


Figure 26. Plot of K in regolith from sample-collection phase 1 versus sample-collection phase 2. Only pairs separated by less than 25 km were included.



Statistics- Needs

- Parametric vs non parametric
- Random sampling

NEXT STEPS

Items to address

1. Ability to do national and regional assessments of soil properties
2. Use of new technology (SOLIM) to capture more of the systematic variability
3. Understand/characterize random variability and develop ways to express it to users
4. Understand relationships between taxonomic limits and natural variability



TIME FRAME

Initial Concepts for 2006
World Congress

Advances in Technology

