The background of the slide features a faded, sepia-toned map with a compass rose in the upper left corner. The compass rose shows cardinal and intercardinal directions (N, NE, E, SE, S, SW, W, NW). The map includes labels for 'CAPE SERRA' and 'MOUNTAIN'.

Integrating Spatial Educational Experiences (Isee) into Crop, Soil, and Environmental Science Curricula

D. G. Schulze, S. Mitzman, P. R. Owens, L. Unruh Snyder, G. E. Van Scoyoc, J. G. Graveel, G. C. Steinhardt

Agronomy Department

C. C. Miller, M. Stowell Bracke

Purdue University Libraries

R. J. Glotzbach, L. Kocur, B. Benes

Department of Computer Graphics Technology

Purdue University, West Lafayette, IN

T. Neely, M. Wiggington, R. Nielson, and others

Natural Resources Conservation Service, Indianapolis, IN

Background

- Many concepts in our soil, crop, and environmental sciences courses are intrinsically spatial
 - soils vary spatially across landscapes
 - crops, cropping systems change with soils
 - environmental issues impact watersheds

Background

- Our students need geospatial skills
 - need to think spatially
 - understand the spatial aspects of problems encountered
- Currently using mobile GIS to teach soil science in the field



Integrating Spatial Educational Experiences (Isee) into Crop, Soil, and Environmental Science Curricula

- **USDA – Higher Education Challenge Grant**
- **Goals - develop our students' ability:**
 - to use geospatial information to understand how and why soils and landscapes vary spatially at various scales
 - to understand how the spatial distribution of soils and landscapes impacts the distributions of crops, cropping systems, land use, and environmental and natural resource issues across Indiana

Integrating Spatial Educational Experiences (Isee) into Crop, Soil, and Environmental Science Curricula

- Tasks

- *Develop the Integrating Spatial Educational Experiences (Isee) Web Application*

- *Integrate Spatial Educational Experiences into our Curricula*

Primary Data Sets for Indiana

- Indiana 2005 Digital Elevation Model
 - Indiana Spatial Data Portal
 - 1.5 x 1.5 m, resampled to 5 x 5 m
 - hillshade & elevation map
- SSURGO Soils Dataset
 - NRCS Soil Data Mart
 - detailed, 2nd order soil survey
 - soil parent material, loess thickness, drainage class
- Other maps
 - roads, towns, aerial photography, etc.



Soil Maps

- Dominant Soil Parent Material
 - based on soil series description
 - generally deepest material, or most unique material in profile
- Loess Depth
 - thickness of wind-blown silt
- Soil Drainage Class
 - presence of a seasonal high water table
- Additional thematic maps

Software

- Google Earth API
 - Application Programming Interface
 - Web browser plugin
 - Fast, easy to navigate
 - Use Google imagery, roads, political boundaries, etc.
 - Use our own soils and interpretative layers



CAPE SABLE

<http://isee.purdue.edu>

Assessing Impact of Isee on Student Learning

- Two sections of Introductory Soils (n=51)
- Most have majors within School of Agriculture
- Mainly Freshmen and Sophomores
- Average age: 20 years old
- Gender: 57% Male; 43% Female
- Residents of Indiana: 86%
- 16% of participants have participated in high school soil judging (average 2-3 years in Indiana)

Concept Maps

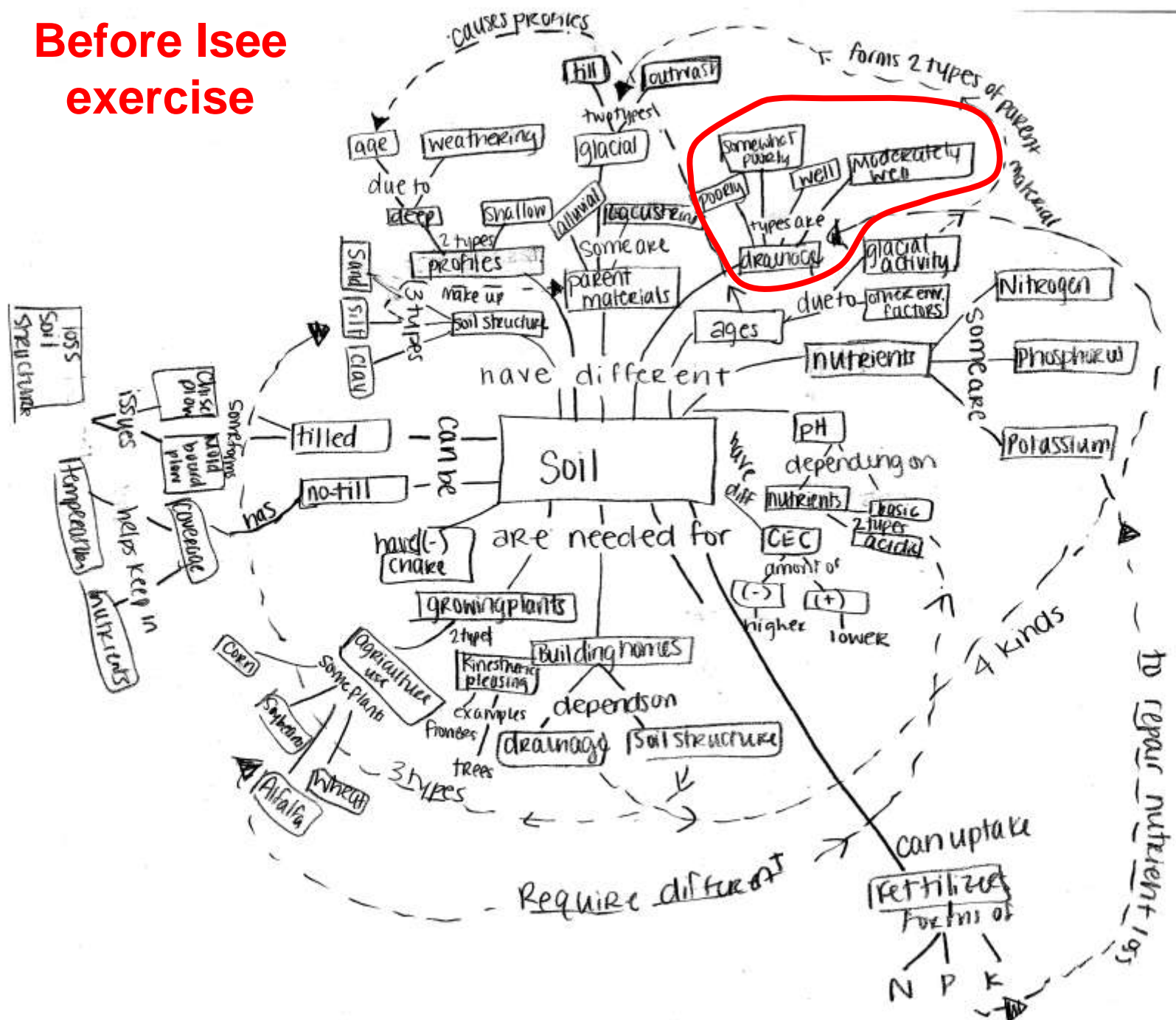
Training
Session for
Constructing
Concept Maps

Construct
Pre-Concept
Map

Implement
Isee Activity

Construct
Post-Concept
Map

Before I see exercise



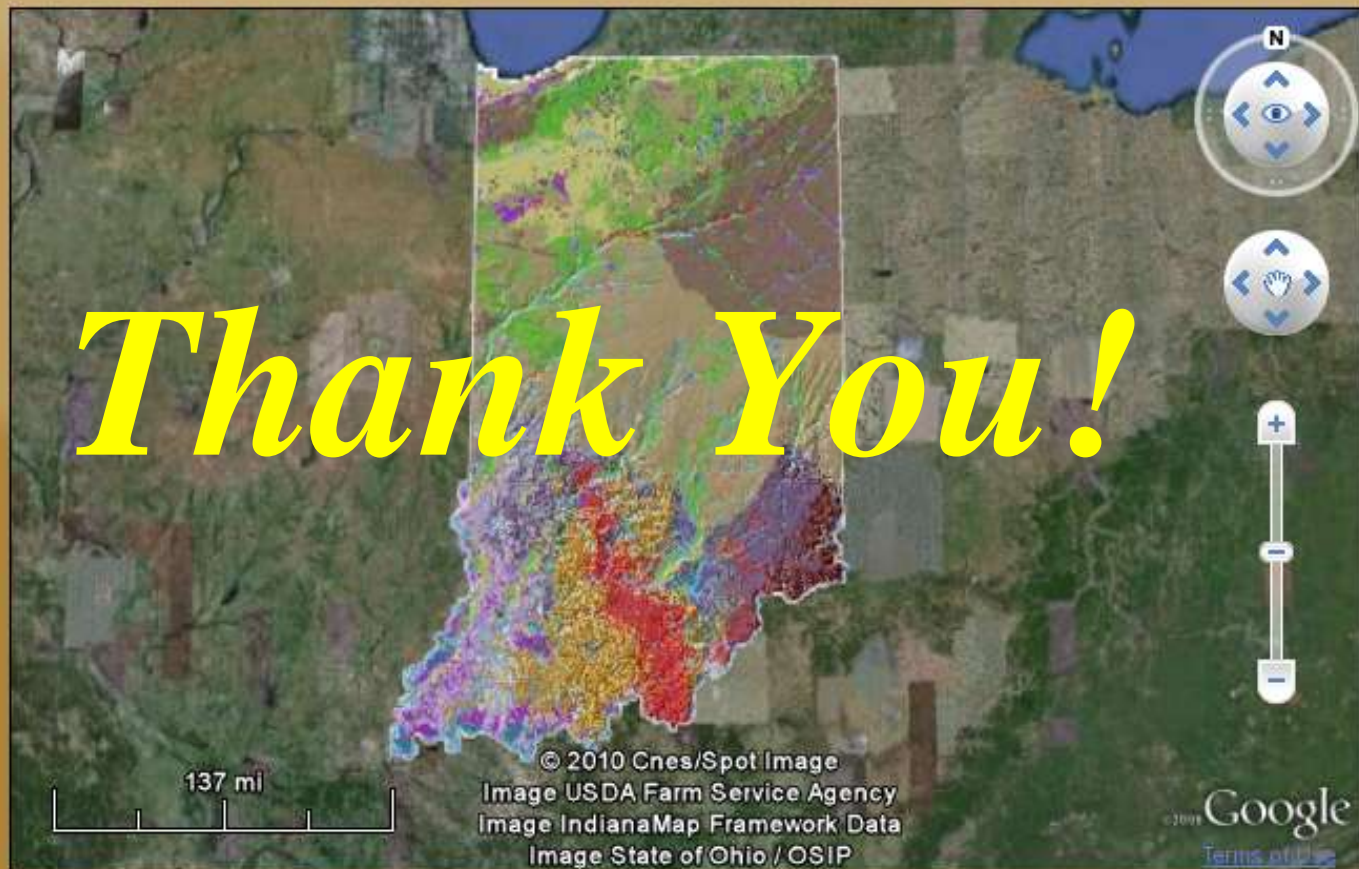
Map Size



Overlays

Maps

- Hide All Maps
- Elevation & Topography
- Soil Properties
 - Dominant Soil Parent Material
- Natural Soil Drainage Class
- Soil Orders
- Climate
- Land Cover
- Geology
- Historic Maps



Thank You!

Generate Link

* Some items are currently under development and will be available in the future.