

Remote Sensing Seminar



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August 24, 2005

AGRY 598G

PURDUE
UNIVERSITY

Expectations of our Students

Students are expected to:

Attend the seminars through the semester.

Present a 5-minute presentation of their research or a remote sensing topic at the end of the semester.

Purposes of our Seminars

Provide a forum for students to:

- 1) Interact with professionals working with remote sensing, GPS, and GIS
- 2) Hear and see the latest information about spatial technologies
- 3) Provide opportunities to explore future career paths

Today's Topic - "Good and Not as Good Examples"

Items to consider for a Seminar Presentation:

- Colors that you can use: Depends on the background
- Size of "font"
- Graphics that will support your efforts
- Tables of data
- Customizing your slide presentations
- The medium through which your Seminar is traveling
- How to Keep your Audience's Interest

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Size of Font

Size

16 - Depends on presentation - keep verbage to a minimum as you don't have much space on a slide

28 - Depends on presentation - keep verbage to a minimum

32 - Depends on presentation

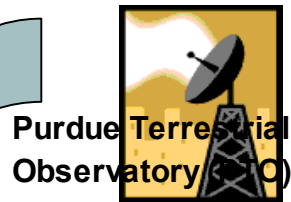
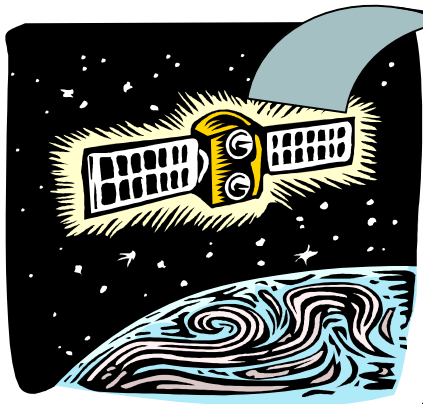
36 - Depends on presentation

40 - Depends on presentation

44 - Depends on presentation

48 - Depends on presentation

Purdue Terrestrial Observatory (PTO)



Participating Departments

Agronomy
Ag. & Biological Engineering
Agriculture
Agricultural Economics
Atmospheric Science
Chemistry
Civil Engineering
Computer Science
Earth & Atmospheric Sciences
Electrical & Computer Eng.
Center for the Environment
Forestry & Natural Resources
ITaP
Management
Nuclear Engineering

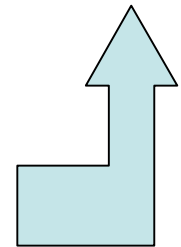


Real-Time Remote Sensing Data

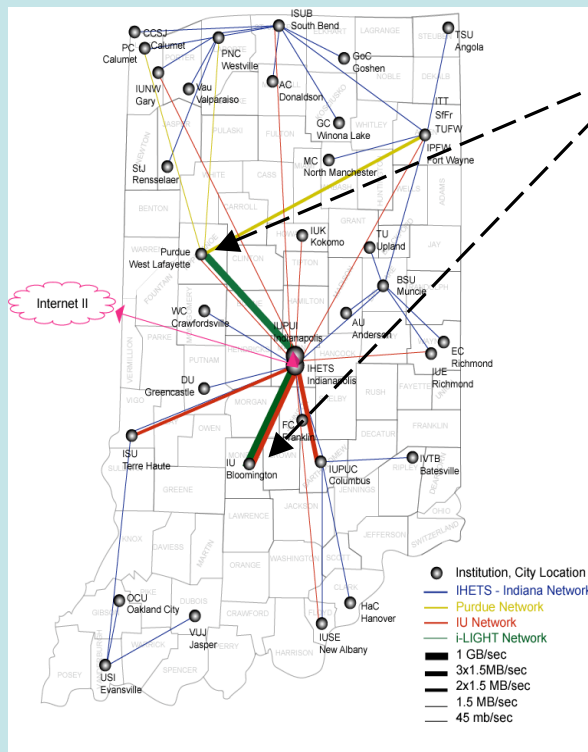


Sample Applications:

Precision Farming
Homeland Security
Disaster Intervention
Forestry & Ecology
Urban Planning
Epidemiology
Oceanography
Industrial Development
Geology & Mineralogy

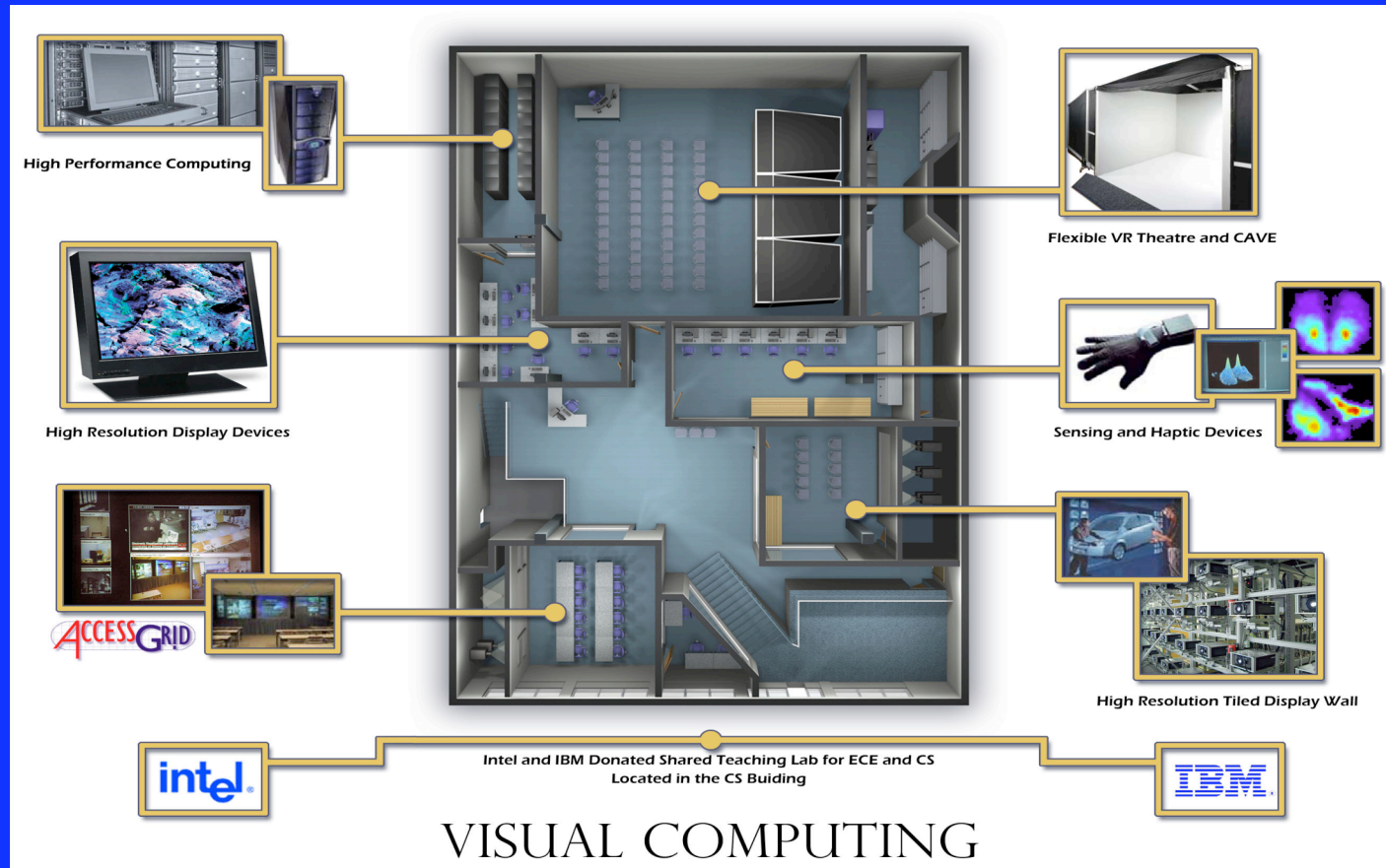


Computational Research Infrastructure



- I-Light
 - State investment by Indiana to purchase optical fiber infrastructure
 - 1-2 Gigabit/sec
 - Application pending to enhance national grid connectivity to 10 Gigabits
 - Enhanced research capabilities including test bed environment and distributed terascale computing

Envision Center



- Staff expertise in perceptualization tools and technologies
- Partnerships with researchers to create new tools, technologies and to support applications
- Interdisciplinary (14+ departments)

Table Error! No text of specified style in document.-1. Basic statistics of yield estimation methods for each study site.

Method	Mean	Median	Min.	Max.	SD	Pixels < 0†
<u>Mg ha⁻¹</u>						
<u>DPAC P, N = 44412</u>						
	4	4	0	1	2	
	
O	5	6	0	3	1	
K	9	3	1	7	9	
			-	1		
D	4	4	1	1	2	
E	.	.	.	.	.
C	6	6	0	3	0	4
R	8	7	0	3	3	2
			-	1		
S	4	4	0	3	2	
K	.	.	.	.	.	1
L	6	7	8	3	2	3
M	5	1	8	5	4	2
<u>Woodman, N = 23365</u>						
	9	9	0	1	1	
	
O	5	8	0	5	4	
K	9	9	7	6	8	
		1		1		
D	9	0	0	2	1	
E	.	.	.	.	.
C	6	0	4	7	3	
R	1	1	3	8	1	0
			-	1		
S	9	9	0	3	1	
K	.	.	.	.	.
L	5	9	9	0	4	
M	9	3	6	2	6	8
<u>DPAC E, N = 16863</u>						
	8	8	0	1	2	
	
O	3	2	2	3	0	
K	2	2	0	6	6	

Yield Estimation Statistics

<u>Method</u>	<u>r²</u>	<u>RMSE</u>
Ordinary Kriging	0.714***	1.152
DECR ^a	0.808***	0.952
SKLM ^b	0.823***	0.943

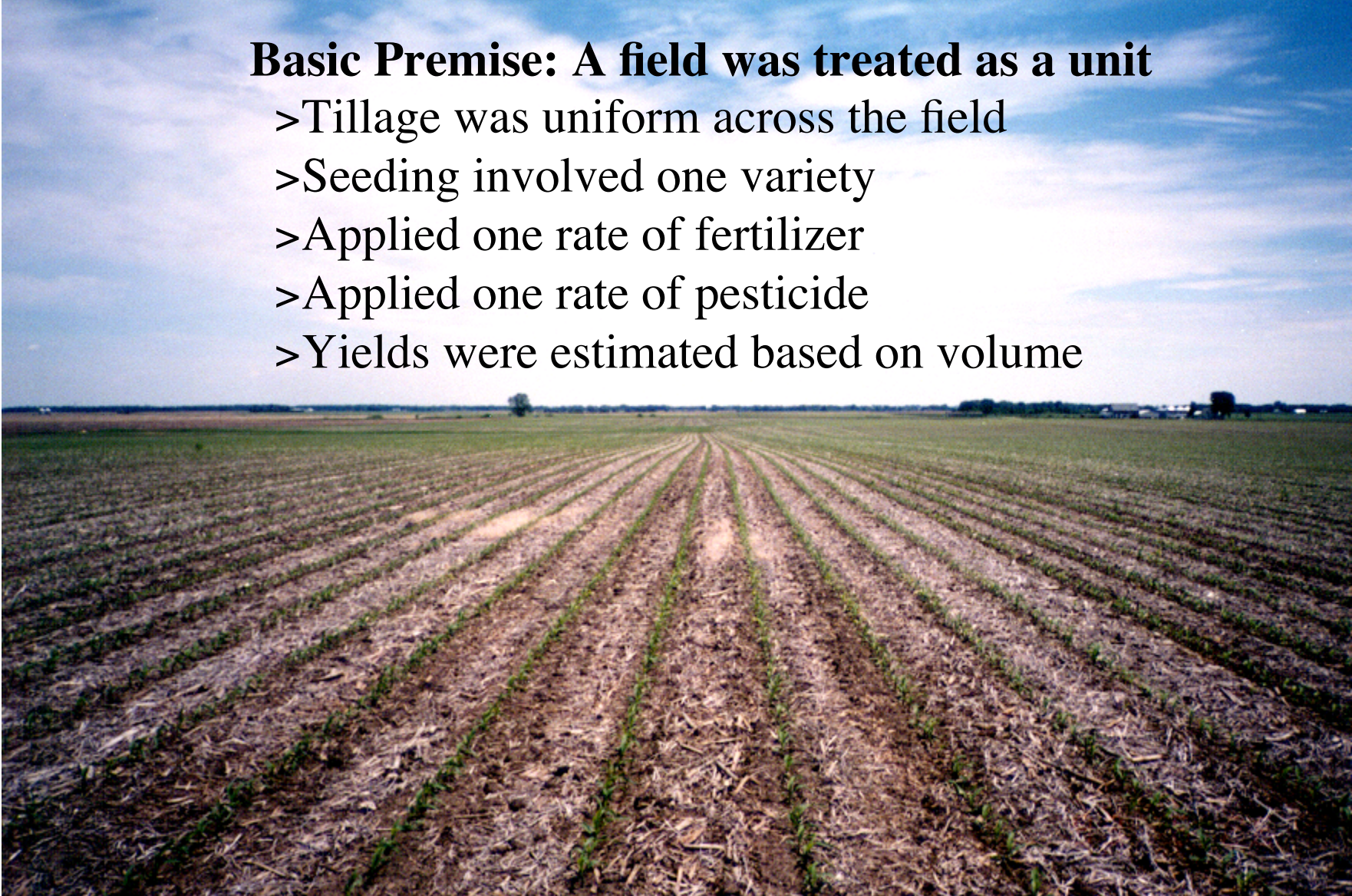
a: Discretization, Extraction, Classification and Regression

b: Simple Kriging with varying Local Means

Farming - 10 years ago

Basic Premise: A field was treated as a unit

- >Tillage was uniform across the field
- >Seeding involved one variety
- >Applied one rate of fertilizer
- >Applied one rate of pesticide
- >Yields were estimated based on volume



Farming Today

Basic Premise: Specific variations within the field are a potential unit

- Variable tillage by soil type, relief, etc
- Adjust seed variety and rates on the go
- Adjust fertilizer rate according to soil tests
- Apply variable rate of pesticides
- Scouting accomplished by walking the fields – known variations
- Remote Sensing images through the season – scouting, nutrients, drainage, yield, etc.
- Yield maps showing variation by location

Farming Tomorrow

Basic Premise: If you can measure it, it's a potential management unit

Sensors to measure soil and plant characteristics to vary inputs

Crop specialty – bred for specific new characteristics

Timed release of fertilizer, chemicals, and other inputs

Variable harvest techniques

Improved software for automating management decisions

Outline of Student Seminars

Background

Hypothesis and Objectives

Research Approach and Analysis

Results (or Preliminary Results)

Conclusions (or Expected Conclusions)

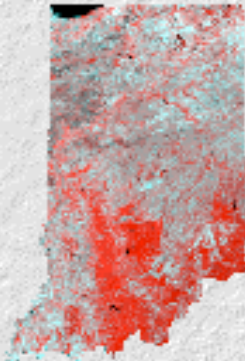
Laboratory for Applications of Remote Sensing

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[West Lafayette, IN 47907](#)
765-494-6305

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Message from the Director	 Some Flood Images	Personnel	
Mission & History		Graduate Program	
Technical Reports		Earth Observation Masters Program	
Kristof Award	Projects	IndianaView	Other Sites

2005 Joint Remote Sensing Seminar

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www.lars.purdue.edu/seminar

***Remote
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**Are there any
Questions or
Suggestions?**