Geographic Information Systems (GIS) Data Collection and Storage

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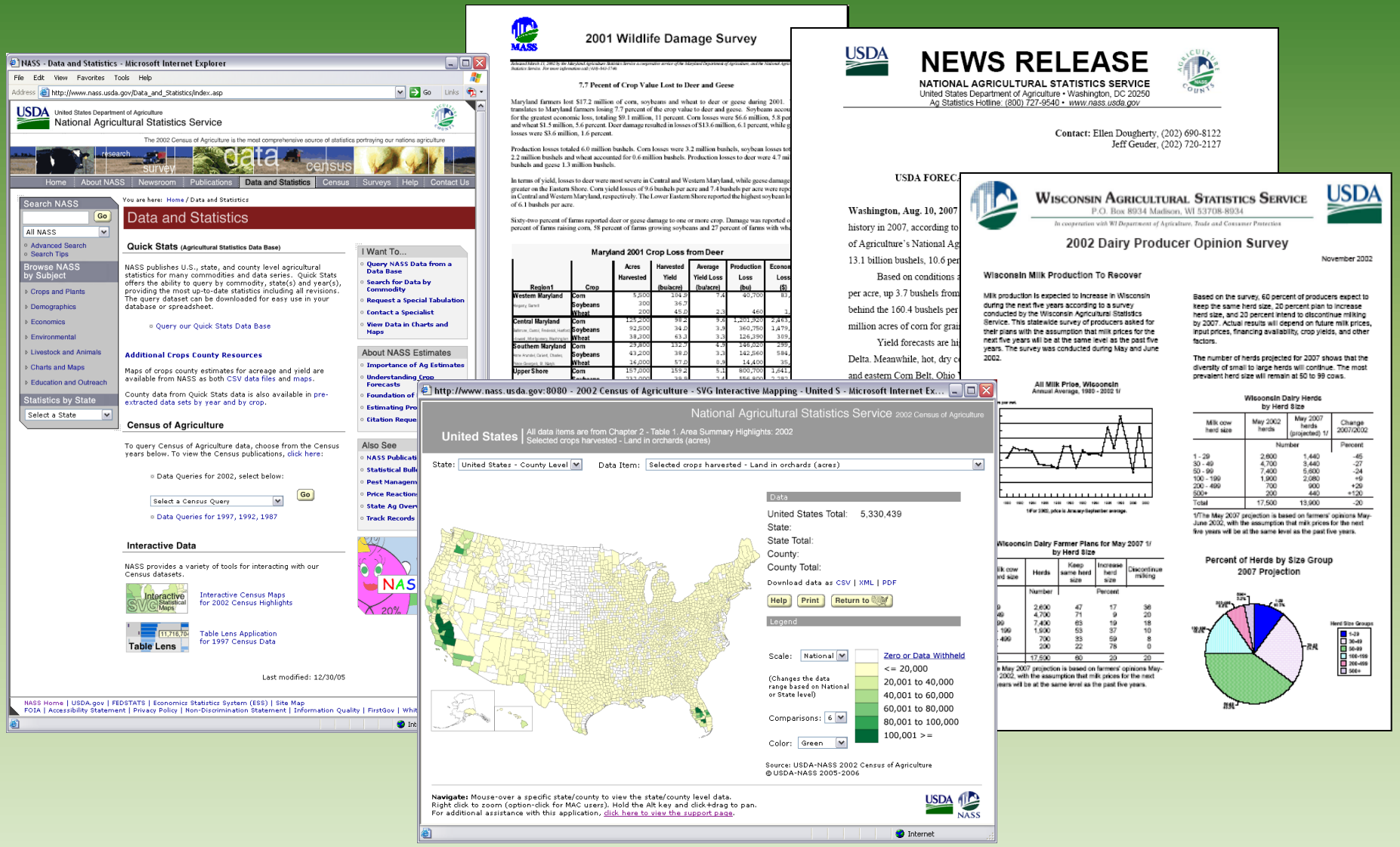
WSS Seminar
12/16/09

NASS Overview

Provider of timely, accurate, and useful statistics in service to U.S. agriculture

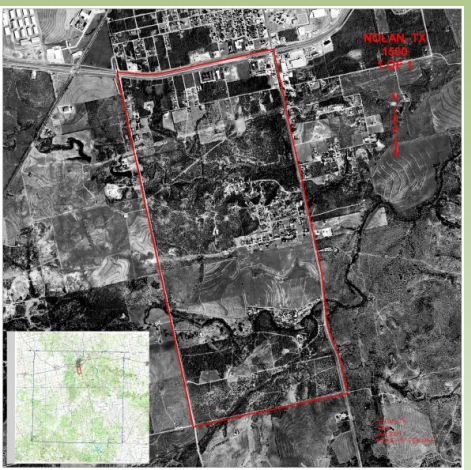


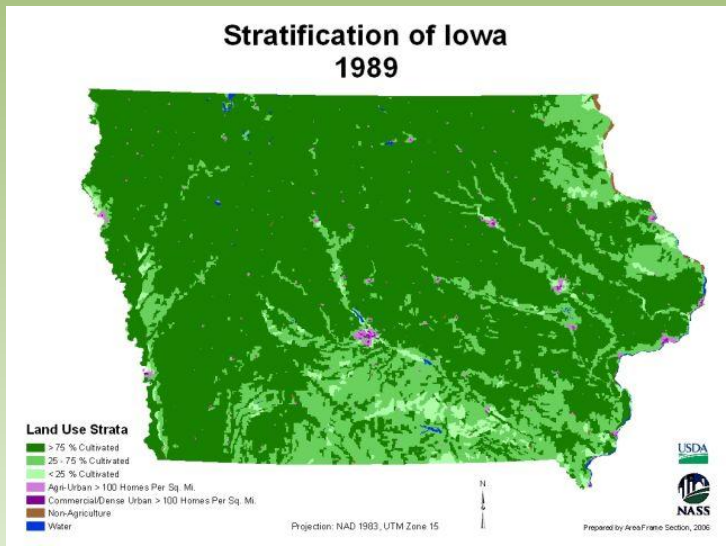
NASS Uses of GIS

- Sampling Frames
- Integrate GIS & Remote Sensing
  - Area Estimation
- Geostatistical Analysis & Mapping
- Address Geocoding/Logistics
- Disaster Monitoring

Area Sampling Frame

- GIS provides
  - Higher quality digital survey data
  - Reduce burden on data suppliers
  - Better estimates for data users
  - Centralized geodatabase & optimized workflow
  - Potential to integrate additional layers
    - Soils & climate





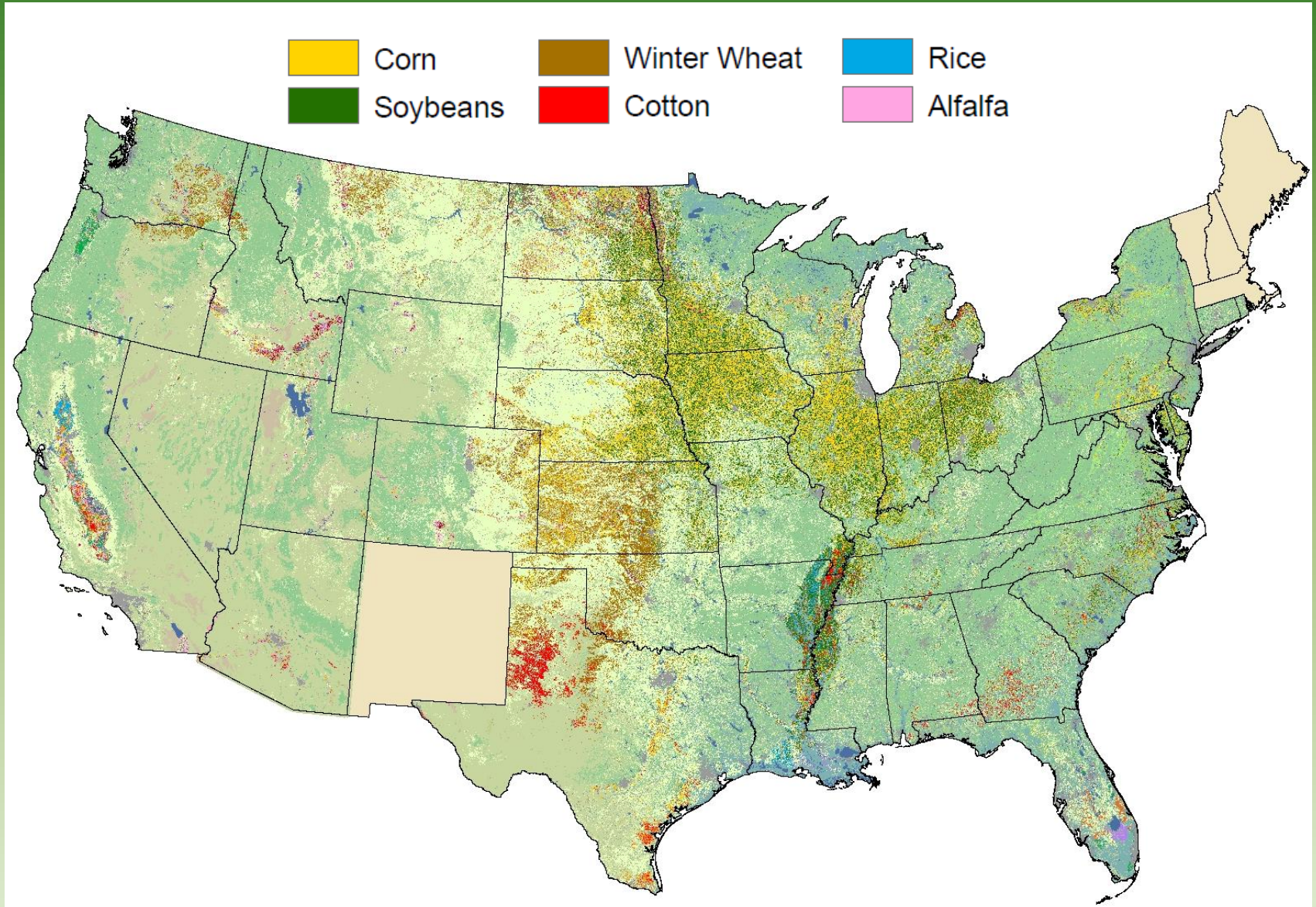
Area Sampling Frame

- June Area Survey
- Agriculture Coverage Evaluation Survey (ACES)
- State Equine and Turf Surveys
- Additional sampling frames
  - Grain stocks
  - Farm Service Agency/Common Land Unit

Integrate GIS & Remote Sensing

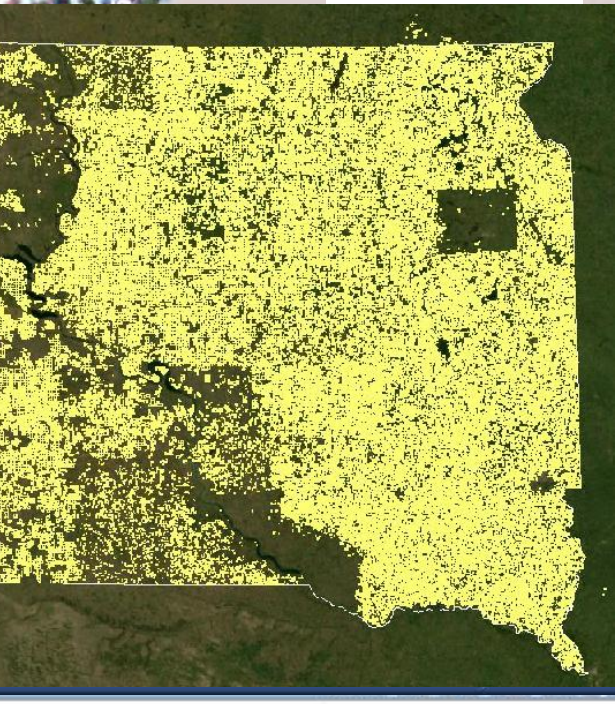
- Cropland Data Layer (National)
  - "Census by Satellite"
  - *Annually* cover major program crops
  - Crops accurately geo-located
- Deliver in-season remote sensing acreage estimates to ASB
  - June, July, August, September, and October Official Reports
  - Update planted area
  - Reduced respondent burden
- Provide timely, accurate, useful estimates
  - Measurable error
  - Unbiased/independent estimator
  - State, District, County

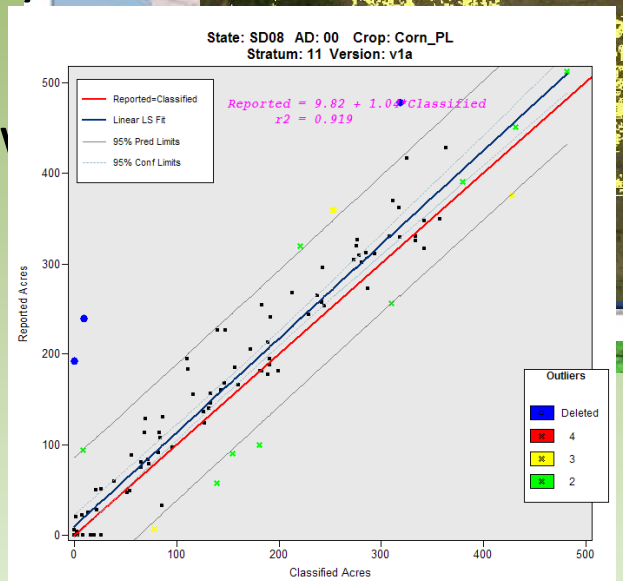
What is the Cropland Data Layer (CDL)?



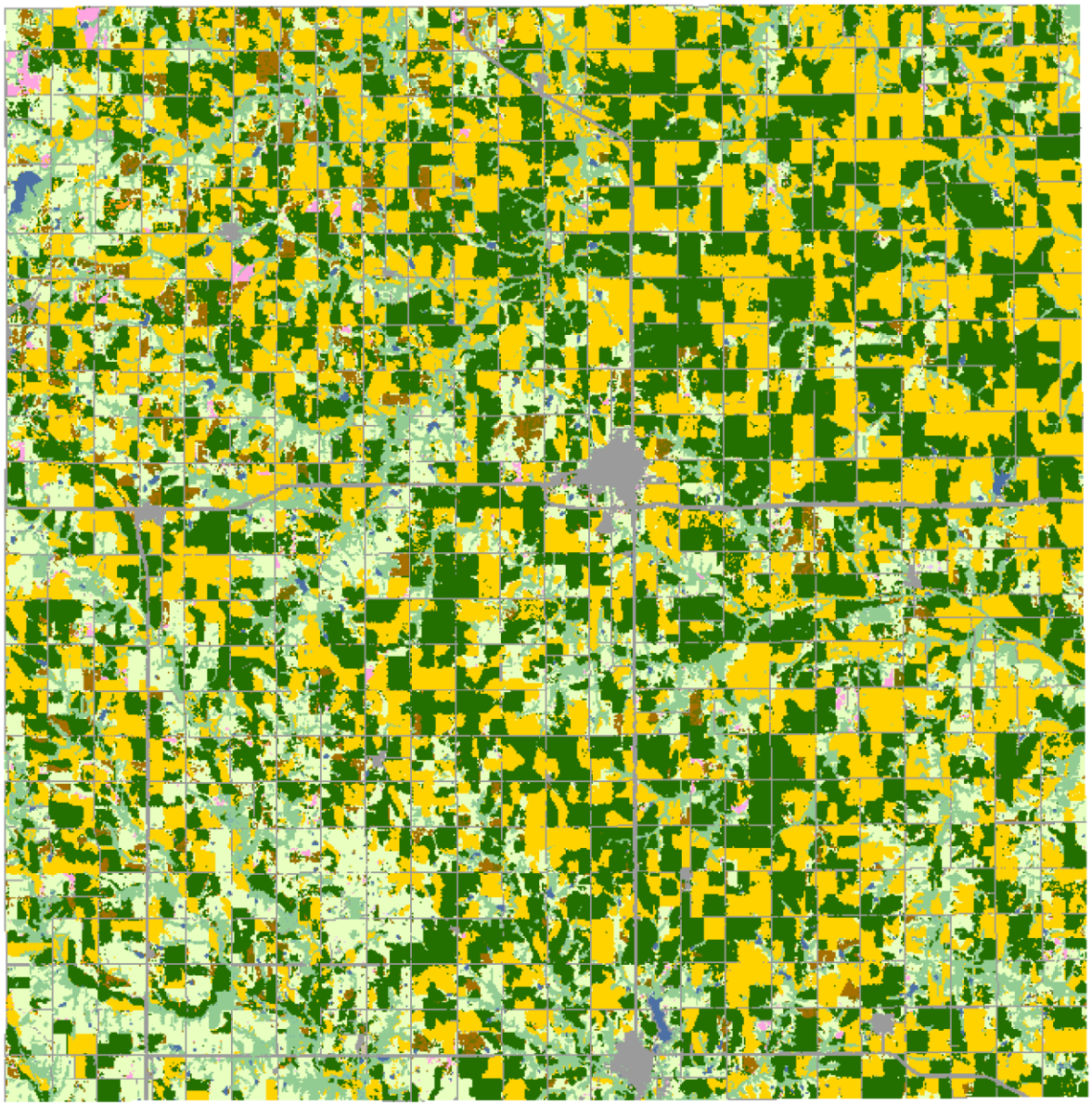
CDL Program

- Inputs
  - Resourcesat-1 AWiFS imagery
  - Farm Service Agency – Common Land Unit
  - NASS June Ag Survey
  - Ancillary data
    - NLCD & derivative produ
- Outputs
  - Acreage Estimates
  - Cropland Data Layer
- Process
  - Commercial softv





Brown County, Kansas
2008 Cropland Data Layer



Land Cover Categories

(Ordered by Decreasing Acreage)

Agricultural

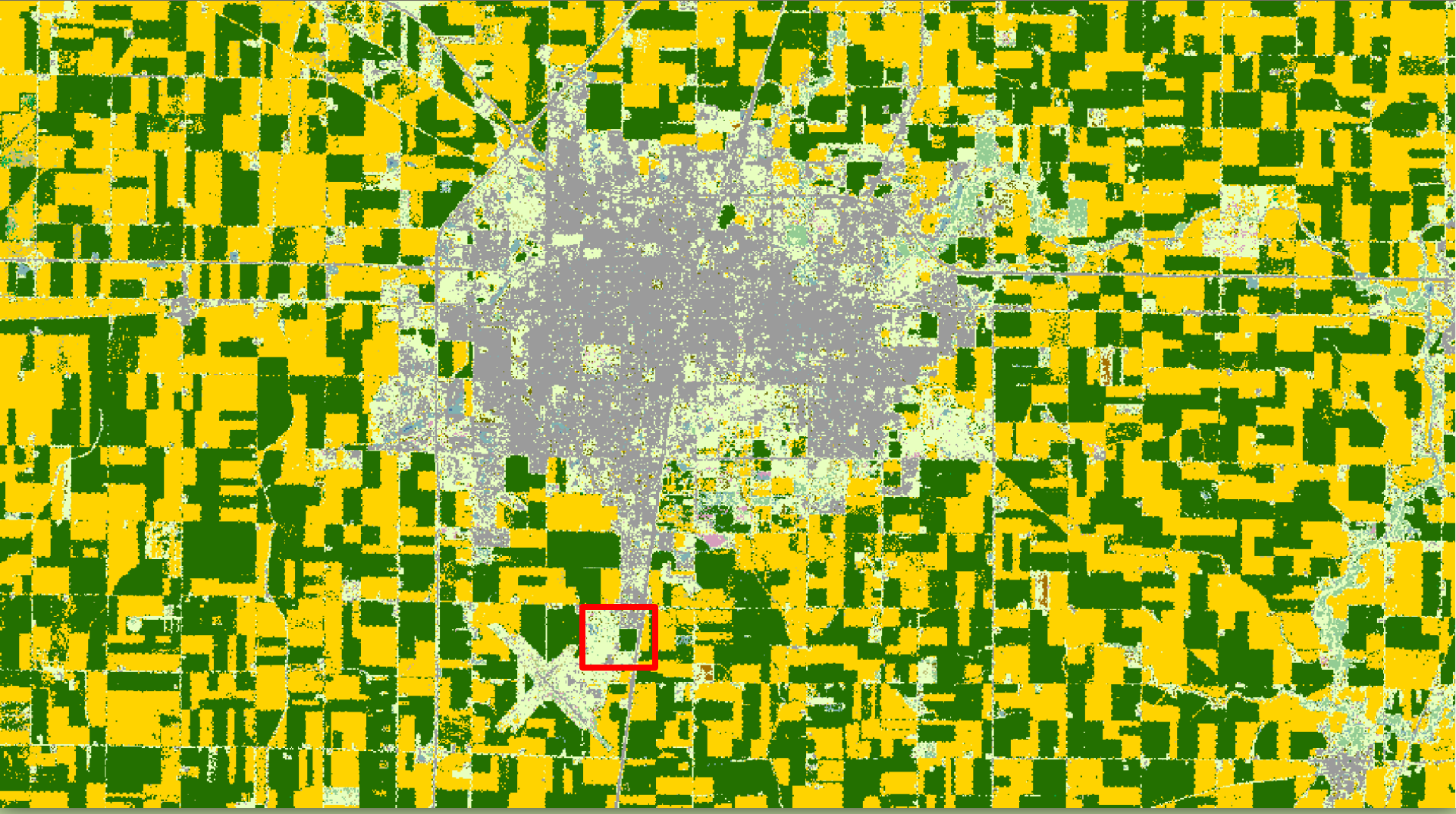
- Soybeans
- Corn/Sweet Corn
- Winter Wheat
- Alfalfa
- Win. Wht./Soyb. Dbl. Cropped
- Sorghum
- Clover/Wildflowers
- Other Crops/Grass Seed/Sod
- Other Small Grains
- Sunflowers
- Oats
- Cotton
- Barley
- Seed/Sod Grass
- Other Tree Nuts

Non-Agricultural

- Grass/Pasture/Non-Ag
- Woodland
- Urban/Developed
- Water
- Wetlands
- Barren
- Fallow/Idle Cropland
- Shrubland

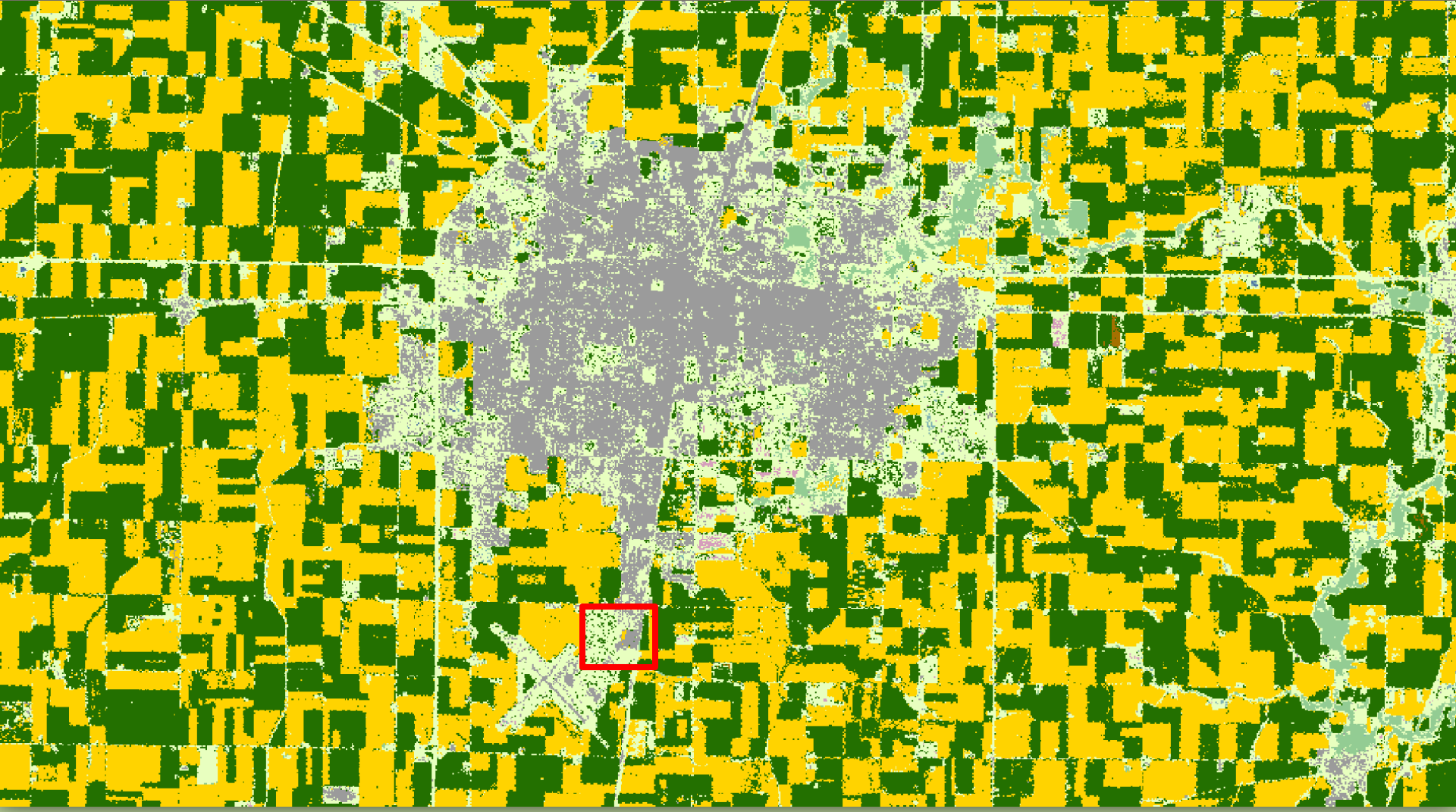
Geostatistical Analysis & Mapping

- Mapping/data mining of NASS statistical data
  - County Estimates
  - Agricultural Census
  - Cropland Data Layer
  - Ad-hoc requests
- Trajectory analysis
  - Crop rotation, change detection, predictive forecasting



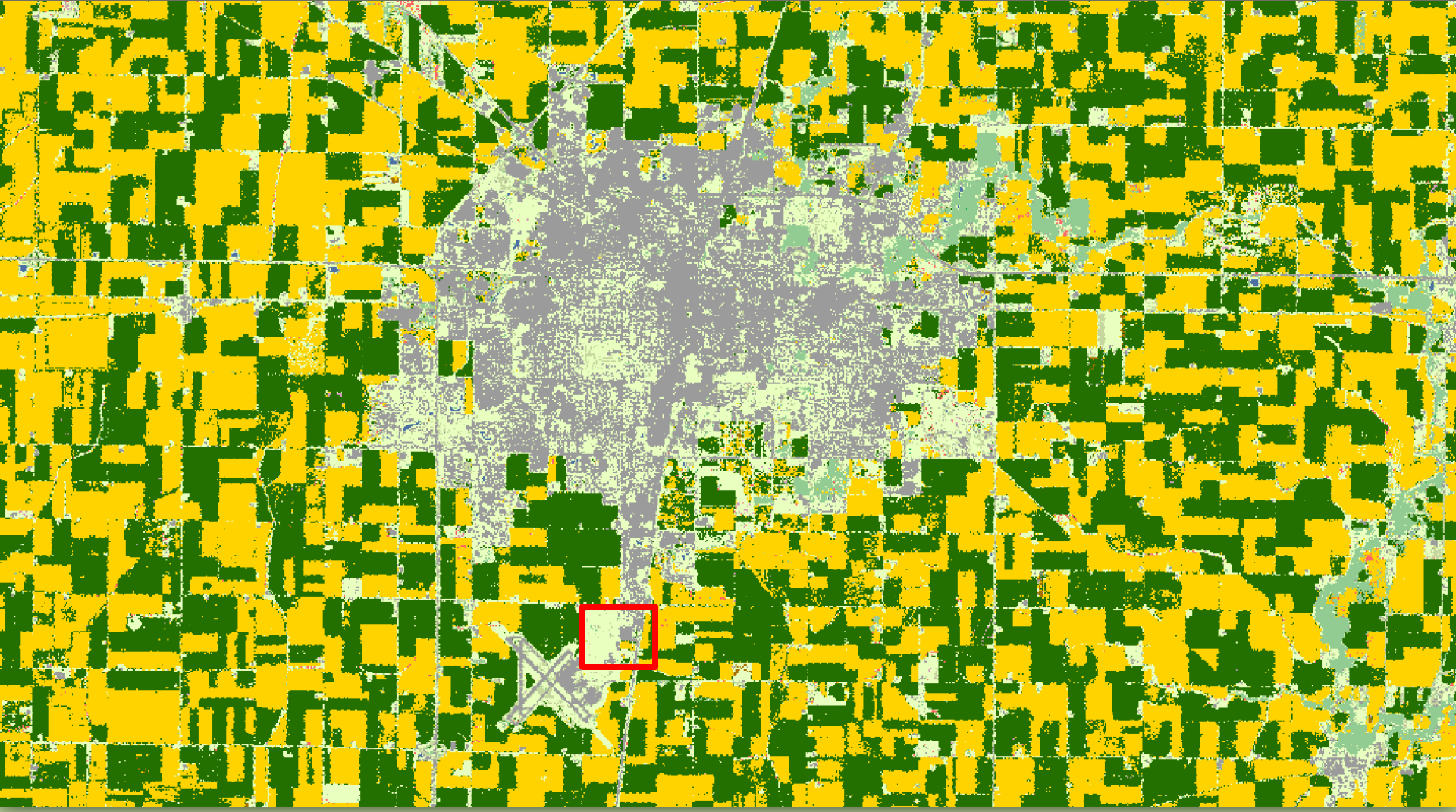
1999 CDL
First year in production

Land Cover Change
Location: Champaign-Urbana, Illinois



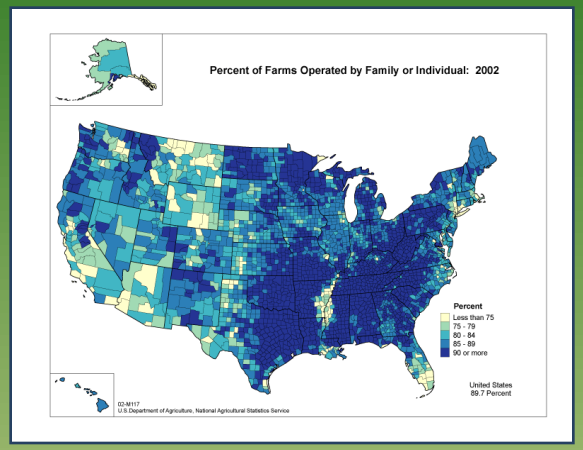
2000 CDL

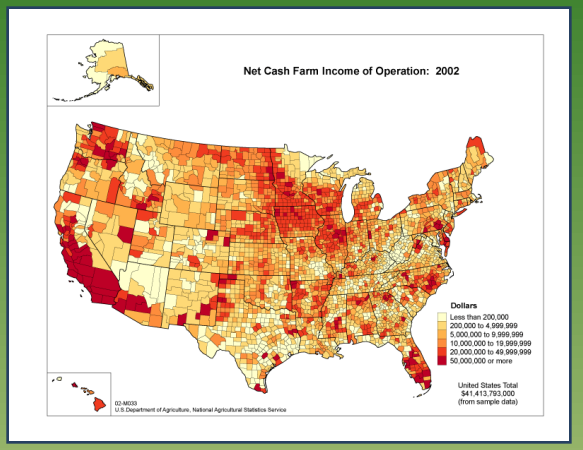
Walmart built a new store near the airport



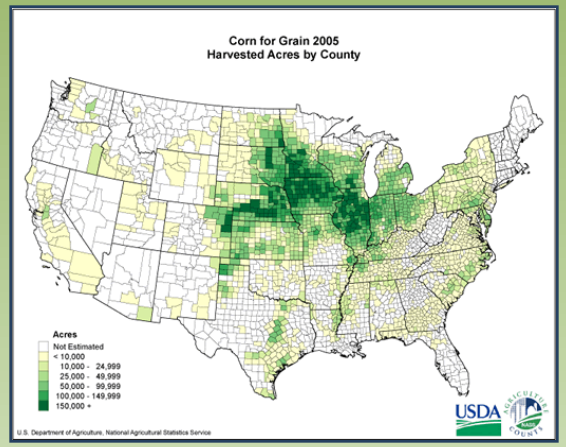
2001 CDL
Walmart is done with construction
and farming returns to a small patch of land next to the store

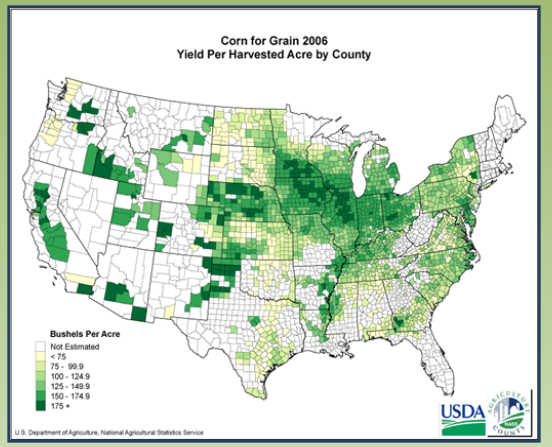
GIS Mapping Applications

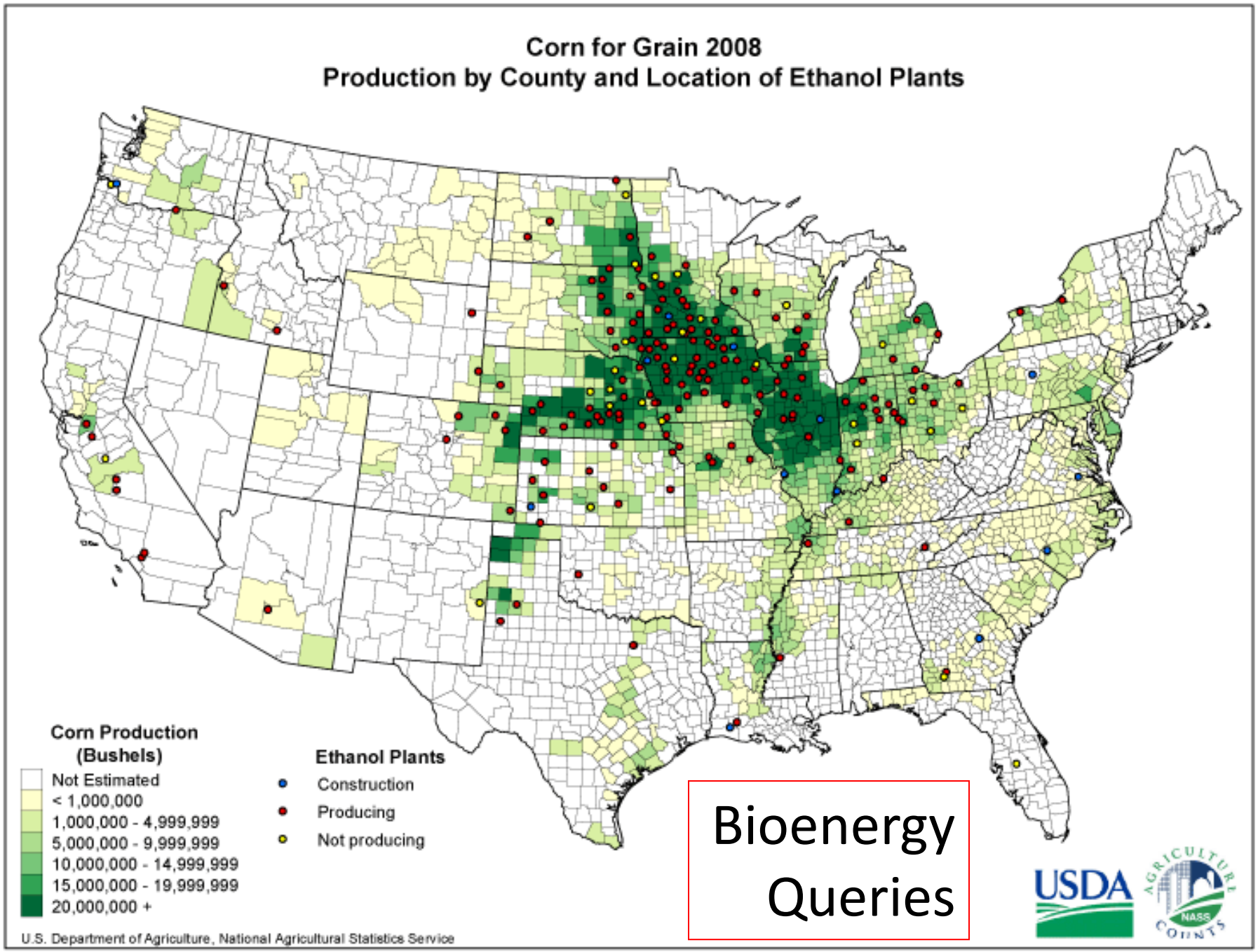


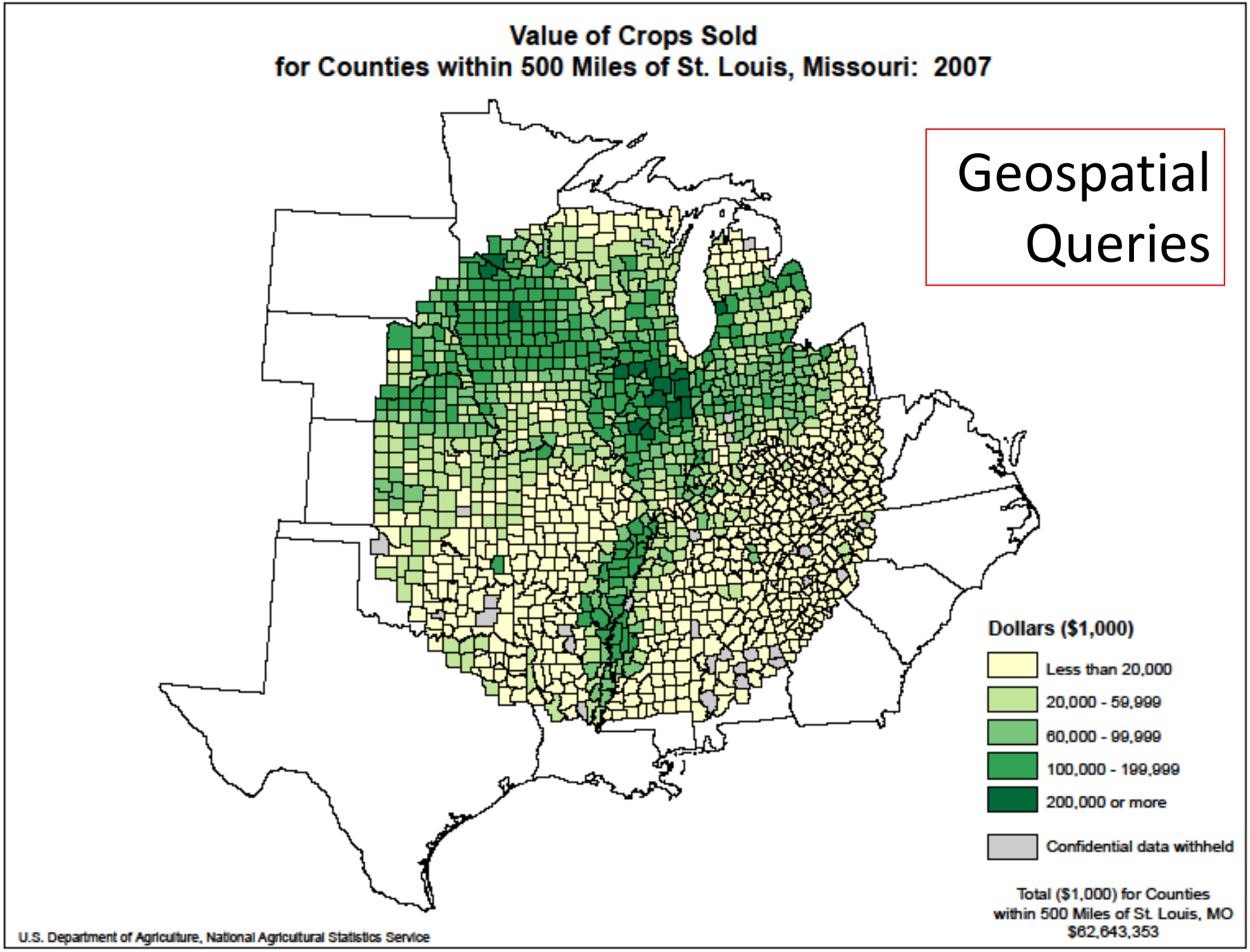


County Estimates
Agricultural Census





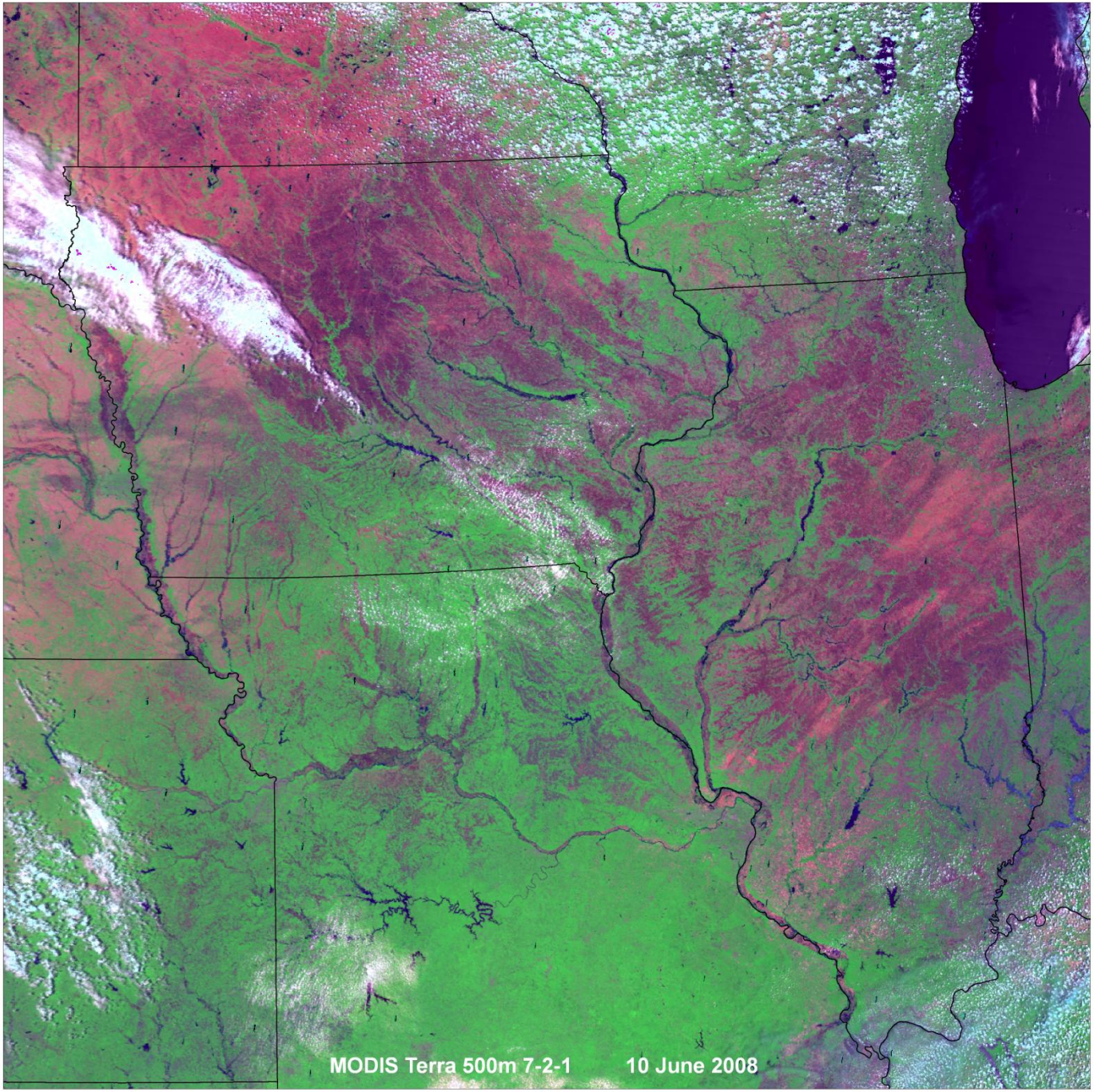

Corn for Grain 2008
Production by County and Location of Ethanol Plants
Corn Production (Bushels)
Not Estimated
< 1,000,000
1,000,000 - 4,999,999
5,000,000 - 9,999,999
10,000,000 - 14,999,999
15,000,000 - 19,999,999
20,000,000 +
Ethanol Plants
Construction
Producing
Not producing
U.S. Department of Agriculture, National Agricultural Statistics Service
Bioenergy Queries
USDA
AGRICULTURAL COUNTS
NASS


Value of Crops Sold
for Counties within 500 Miles of St. Louis, Missouri: 2007
Geospatial Queries
Dollars ($1,000)
Less than 20,000
20,000 - 59,999
60,000 - 99,999
100,000 - 199,999
200,000 or more
Confidential data withheld
Total ($1,000) for Counties within 500 Miles of St. Louis, MO
$62,643,353
U.S. Department of Agriculture, National Agricultural Statistics Service

Address Geocoding/Logistics

- Geocoding List Frame records using TeleAtlas geospatial data
  - More cost efficient surveys and estimators
  - Aid in sample design and allocation
  - Data editing and imputation
- Route optimization for area survey enumeration
  - Visit 11,000 segment sample sites within two weeks

Disaster Monitoring



MODIS Terra 500m 6/10/08

Disaster Monitoring

Summary

GIS Uses

- Sampling Frames
- Integrate GIS & Remote Sensing
- Geostatistical Analysis & Mapping
- Address Geocoding/ Logistics
- Disaster Monitoring

Agency Support

- Technological leadership
- Cooperative partnerships


Thank You!