Pilot Using Remote Sensing to ID Conservation Practices in the Chesapeake Bay Watershed

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Background

- The USDA Natural Resources Conservation Service (NRCS) proposes to facilitate the collection of conservation practices in Pennsylvania using remotely sensed data.

- Key elements
  - Imagery (focus on no cost sources)
  - Skilled Photo Interpreters
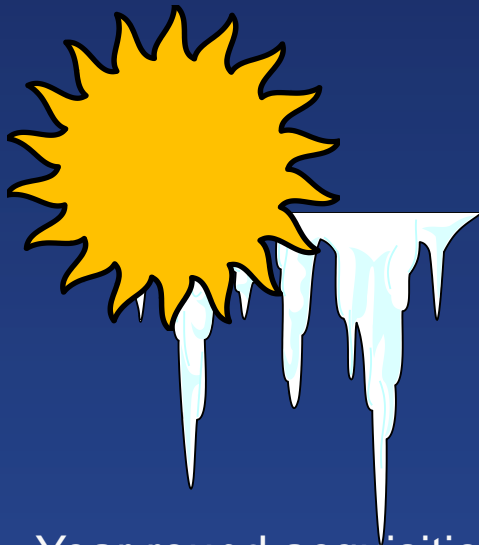 - Facilitated Data Collection (GeoObserver)

Favorable vantage point
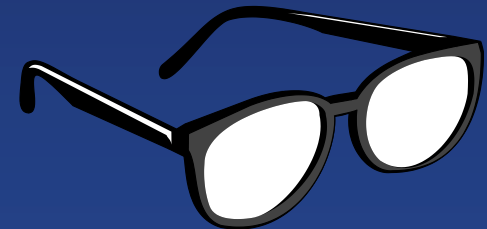& rich info source

Historical record

Economical

Advantages of Remote Sensing

Year round acquisition &
up-to-date information

Detect features not
visible to human eye

Imagery - Aerial

NAIP Sample
1.0 meter

USDA-NRCS-NGCE

- PA flown in 2013 with 1-meter resolution 4-band NAIP

Imagery - Satellite

WorldView-2 Sample
0.5 meter, pansharpened

USDA-NRCS-NGCE

- DigitalGlobe announced an annual refresh of the US at 0.5 meter resolution.
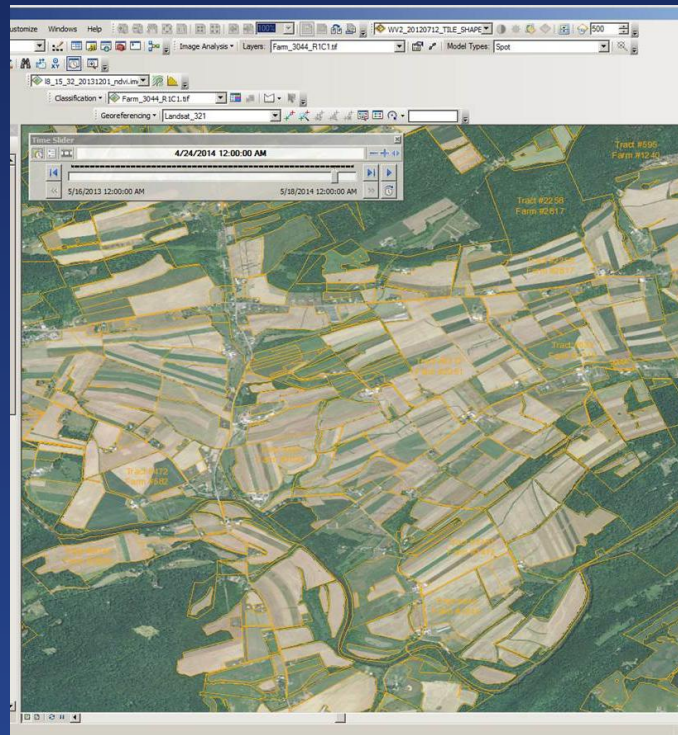
What can be interpreted?

- Alley Cropping
- Bedding
- Contour Buffer Strips
- Contour Farming
- Contour Orchards
- Cross-Wind Trap Strips
- Diversion
- Field Border
- Filter Strip
- Grassed Waterway
- Hedgerow Planting
- Herbaceous Wind Barriers
- Hillside Ditch
- Irrigation Tail water Recovery System

- Lined Waterway or Outlet
- Riparian Forest Buffer
- Strip-cropping (Contour, Cross Wind and Field)
- Surface Drainage
- Field Ditch
- Terrace
- Tree/shrub Establishment
- Vegetative Barrier
- Water and Sediment Control Basin
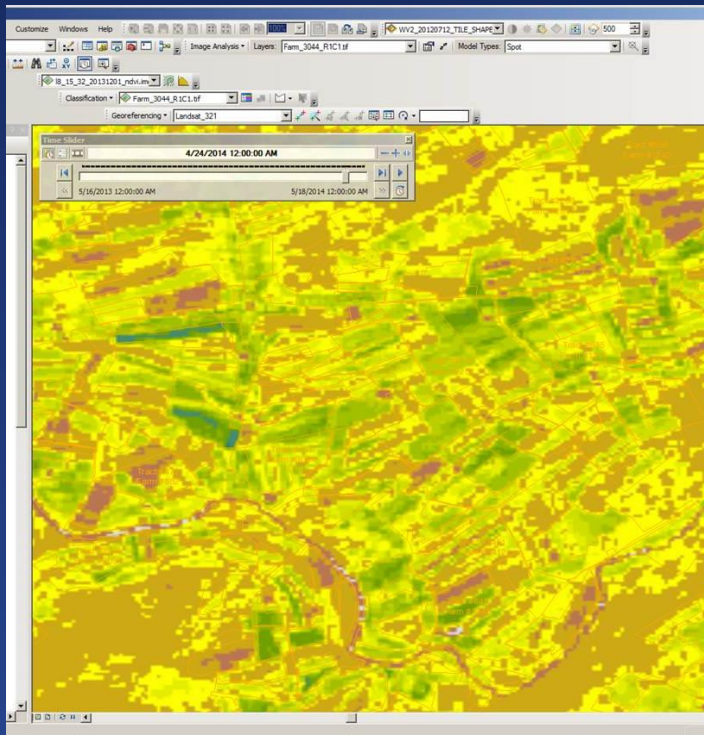- ❑ Cover Crop

What can't be interpreted?

- Practices without a photographic expression.
  - Management decisions
  - Smaller than resolution of sensor

Cover Crop – Landsat 8
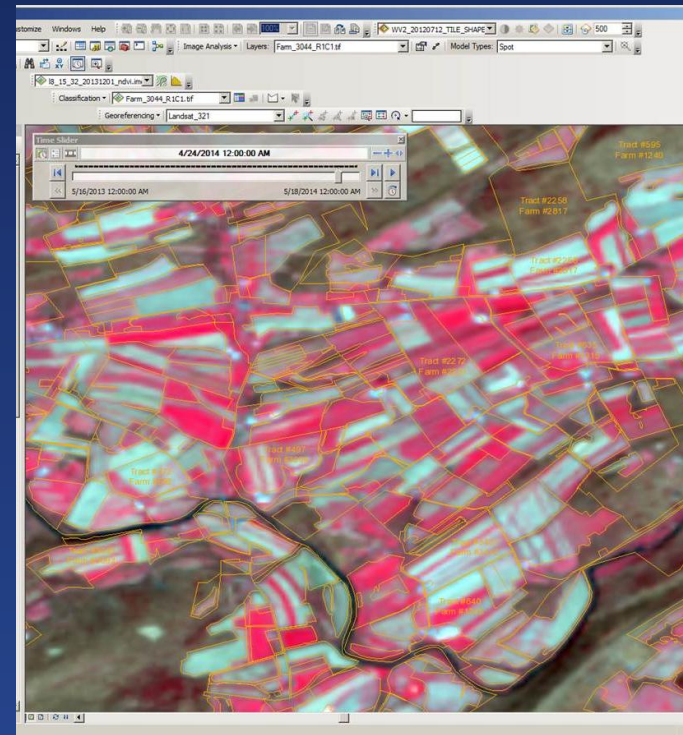
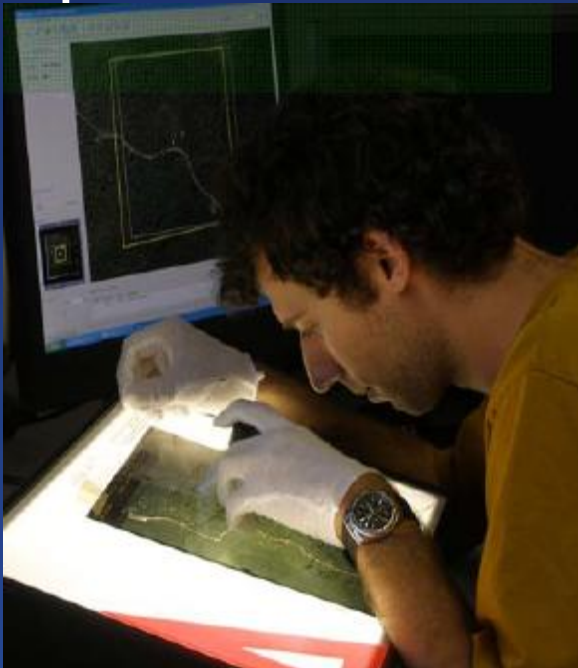Perry County, PA – ESRI Landsat 8 Service

Normalized Difference Vegetation Index (NDVI)

- (NIR – Red)/(NRI + Red)

- Green is growing vegetation.

- Yellow and orange are bare or sparse vegetation.

Photo Interpreters

- Quality of the data is directly related to the experience of the PI.

- Training
  – NRCS has an online course developed by Michigan State Univ.
  – PI's have to be certified to collect data.

Data Collection - GeoObserver

- Web tool developed by NRCS

- Tools to markup imagery

- Standard workflow

- Ability to generate reports
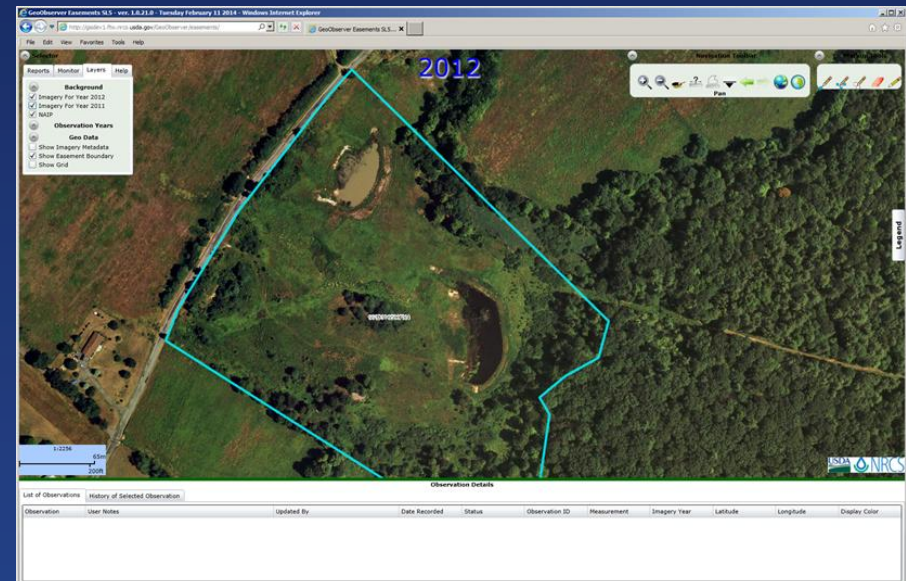
Summary

- Pieces in place
  - No cost aerial imagery
  - No cost satellite imagery
  - PI training
  - GeoObserver

- Needs
  - Is existing imagery adequate?
  - Skilled PI's
  - Repurposing of GeoObserver
    - Business requirements
    - Funding