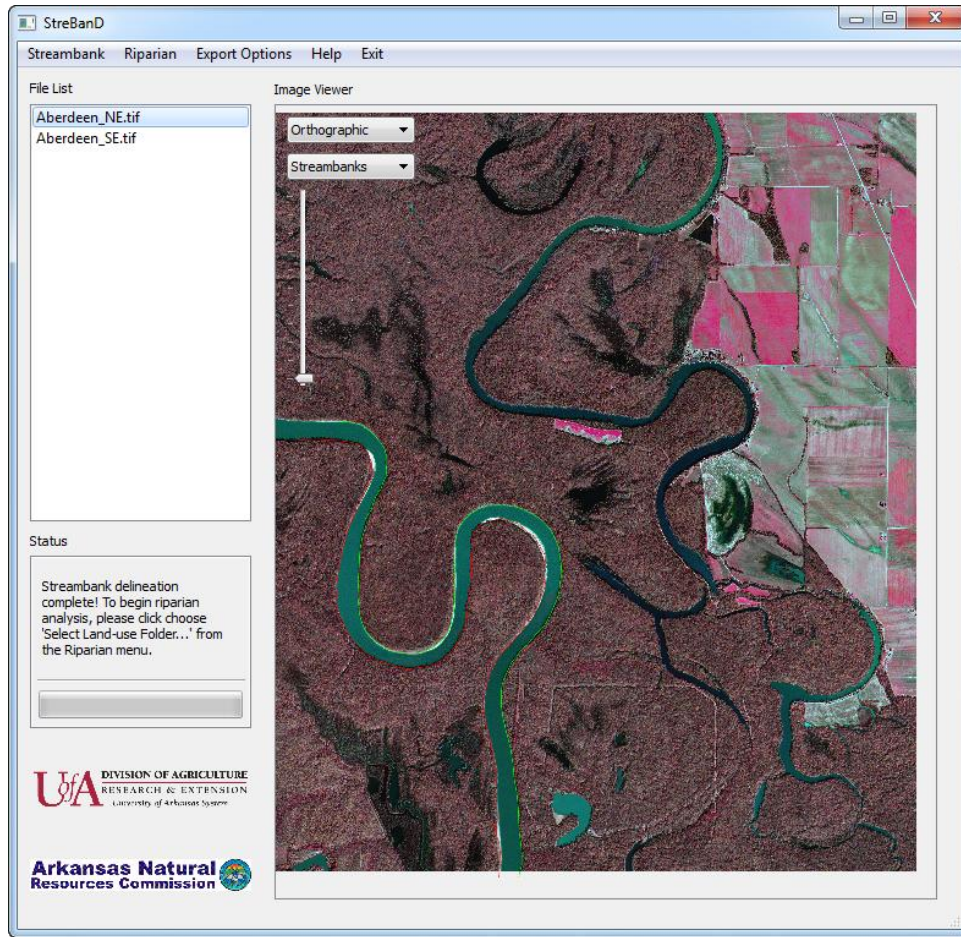


StreBanD DSS: A Riparian Buffer Decision Support System for Planners



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Acknowledgment

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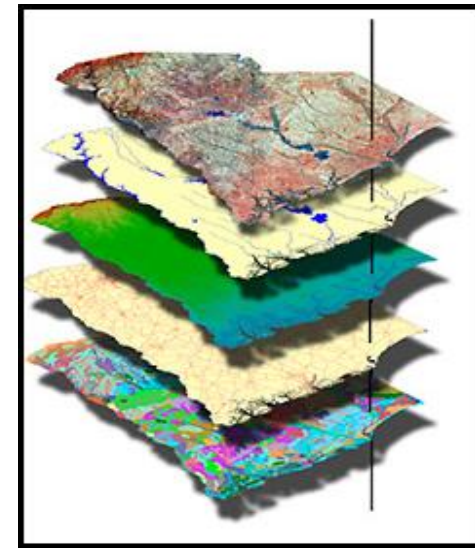
BACKGROUND

- Develop automated geospatial tool:
 - Delineate streambanks
 - Perform inventory of riparian forest buffer (RPBs)
 - Operate with publically available data
 - Assist scientists and planners



WHY GIS APPROACH?

- Speed – suitable for large scale RPB
- Repeatability – consistent results for multiple areas
- Accuracy – statistically measurable results
- Dissemination – GIS maps and data files
- Cost – free public data, less time *in situ*, and flexible framework for updates

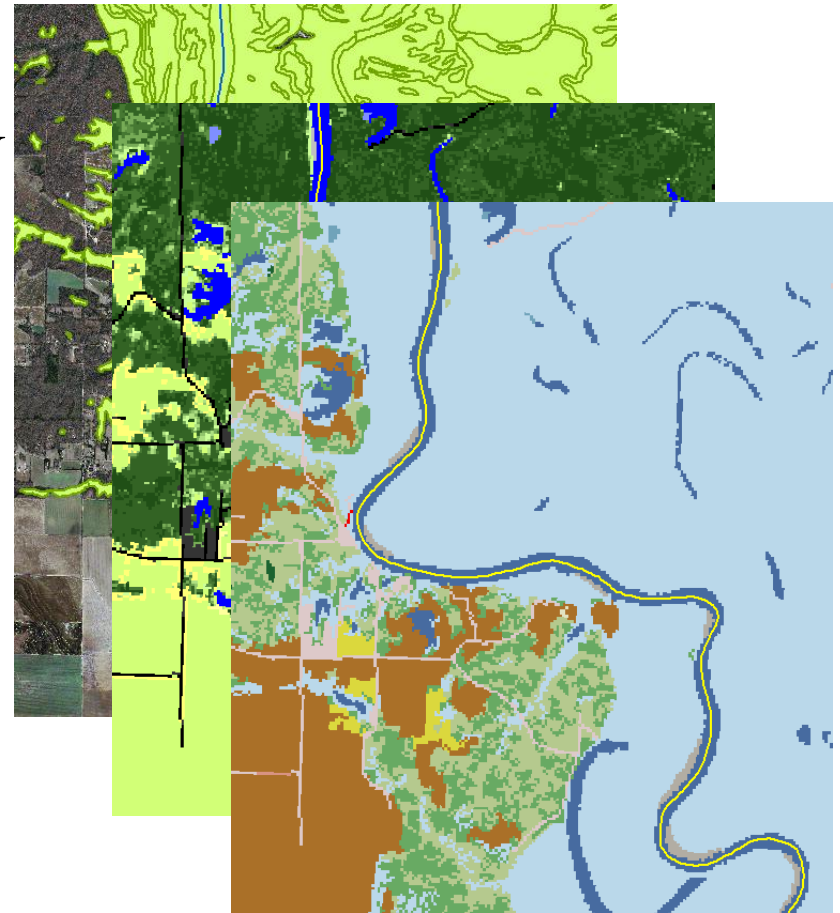


(Photo: National Academic Press)



CURRENT PRODUCTS

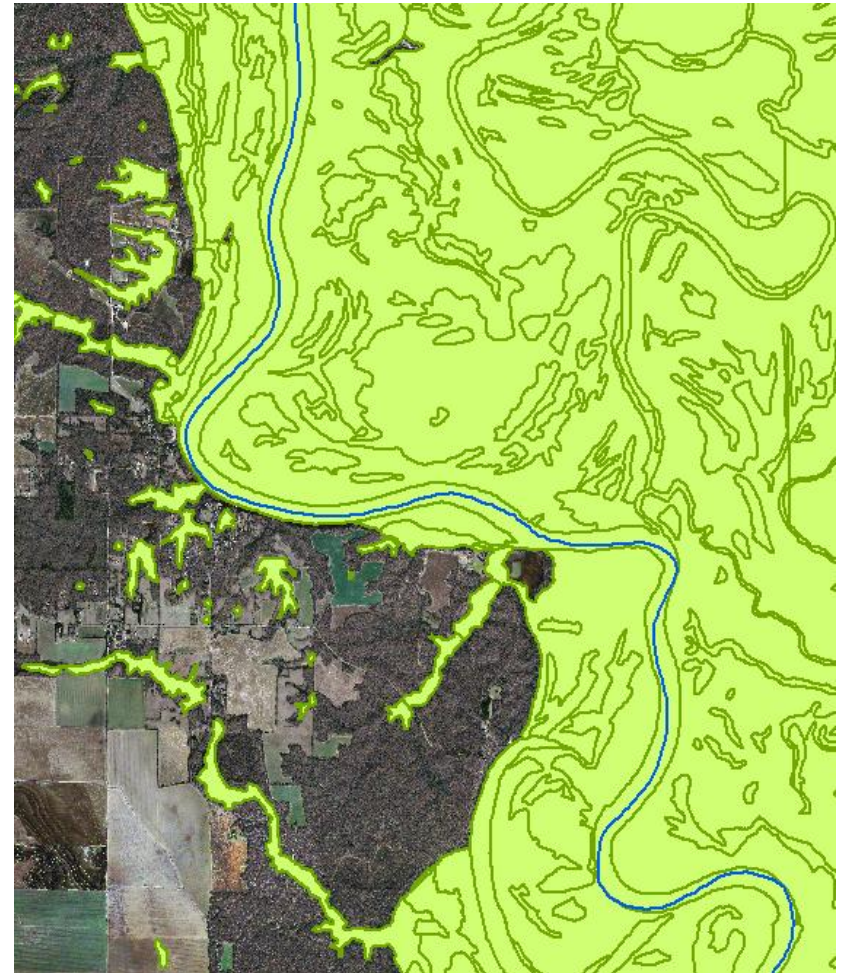
- Current products
 - National Wetlands Inventory
 - LANDFIRE Vegetation
 - National Land Cover Database (NLCD)
- Static data
- Limited interaction
- Coarse resolutions



CURRENT PRODUCTS...CONTD.

National Wetlands Inventory (NWI) Program

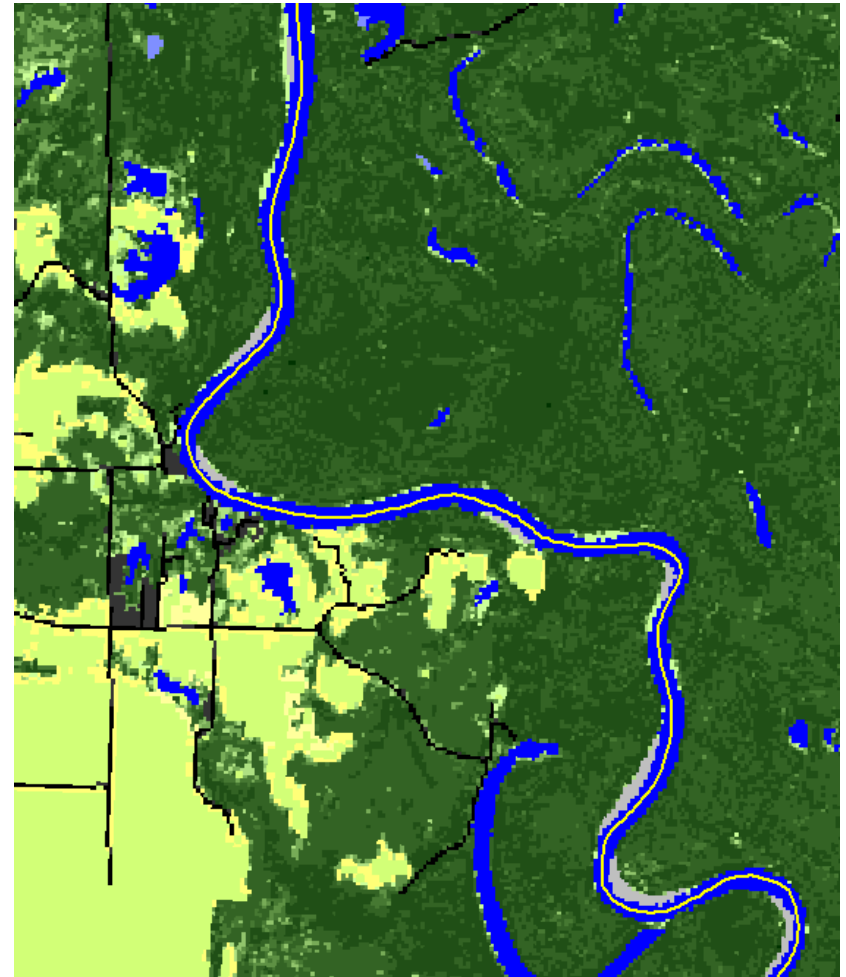
- High altitude imagery and a GIS interface to detect, delineate, and produce maps of wetlands
- Inventory incomplete for Arkansas
- Static data which may differ from federal, state, or local policy



CURRENT PRODUCTS...CONTD.

LANDFIRE Vegetation Product

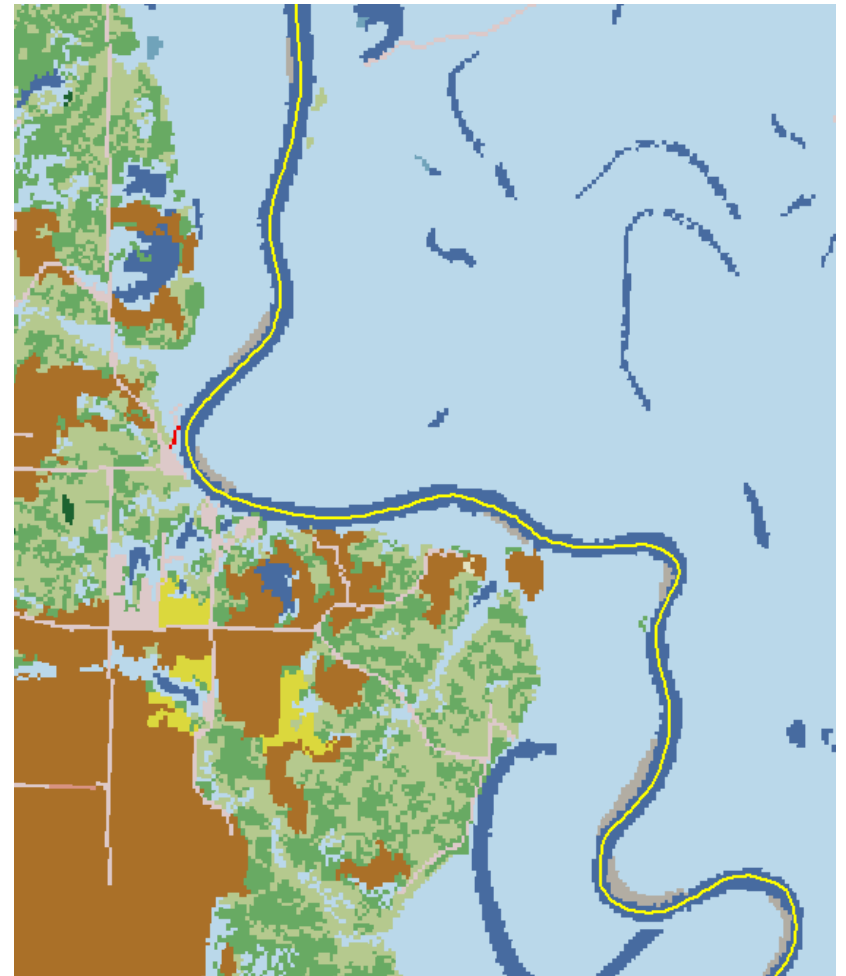
- Predictive models used to classify inventory
- Available statewide
- Uses field referenced data, satellite imagery, and biophysical layers
- Pre-defined inputs and delivered at coarse resolution (30m)



CURRENT PRODUCTS...CONTD.

National Land Cover Database 2006

- Land cover classification- 30m
- 16 classes- including woody wetlands and emergent herbaceous wetlands
- Available statewide, delays between releases and not practical for large-scale



MAJOR FEATURES

- Publically available data

Dataset	Source
Stream centerline	National Hydrography Dataset (NHD)
Orthographic imagery	AR State Land Information Board (ASLIB)
Landuse	Center for Advanced Spatial Technologies (CAST)
Soil (in future version)	Natural Resources Conservation Services (NRCS)
Slope (in future version)	AR State Land Information Board (ASLIB)

- Connection to GeoStor for assisting with data collection (Future)
- Process new data instantly



MAJOR COMPONENTS (2)

- Accessibility
 - Developed with open-source software
 - User friendly graphic user interface (GUI)
 - Flexible with data from different sources
- Find streambank related information
 - Automatically find streambank locations

(Pai, N. and D. Saraswat. 2013. A geospatial tool for delineating streambanks. *Environmental Modelling & Software* 40(2):151-159.)

- Evaluate riparian buffer zone criteria



ACT 391

- Specifications for Zone 1 and 2 are provided in NRCS practice code 391

Zone 1 must have a minimum buffer width of 15 feet and comprise of forest cover.

Zone 2 should be located upslope from Zone 1 and have a minimum buffer width of 20 feet. Similar to Zone 1, it should primarily consist of forest cover.

Zone 1 and 2 should have a combined minimum buffer width of 35 feet.

Depending on the adjacent land use (e.g. cropland, pasture, etc.) an additional filter strip should be implemented upslope from Zone 2.



ACT 393

- Specification for Zone 3 is provided in NRCS practice code 393

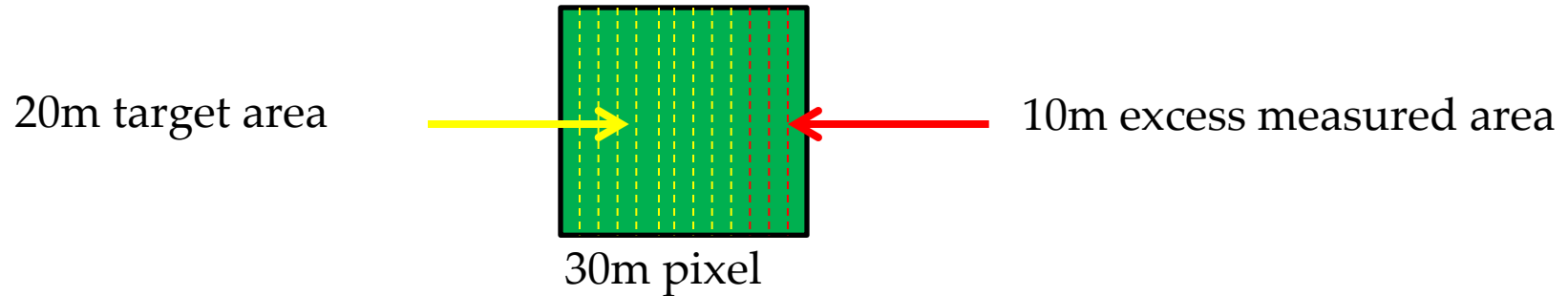
Filter strip (termed as Zone 3) should have a minimum buffer width of 30 feet, and include mostly herbaceous vegetation (NRCS, 2004).

Zones 1, 2, and 3 must have a minimum width of 65 feet.



IMPACT OF DATA QUALITY

- Accuracy limited by pixel size



- Challenge to detect narrow channels
- Loss of information with coarse data



FUTURE GOALS

- Introduce StreBanD to cloud computing
 - High, consistent performance for all users
 - Streamline updates
 - Share results
 - Build a community
- Expand analysis
 - Slope
 - Soils
 - Topographic information



DEMO

- DEMO

