

Using systemwide assessments of habitat condition in the Atchafalaya Basin to identify and evaluate management improvements

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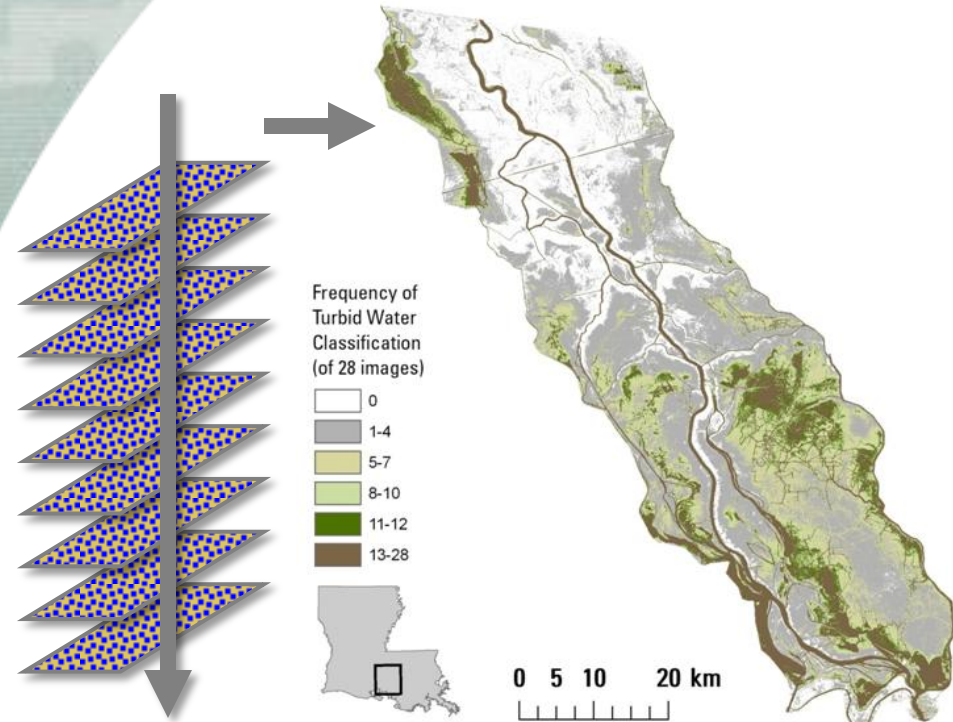
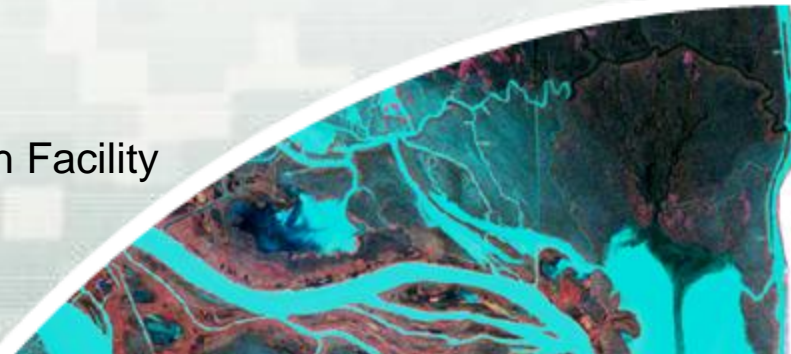
US Fish and Wildlife Service

Baton Rouge Conservation Field Office

Baton Rouge, LA

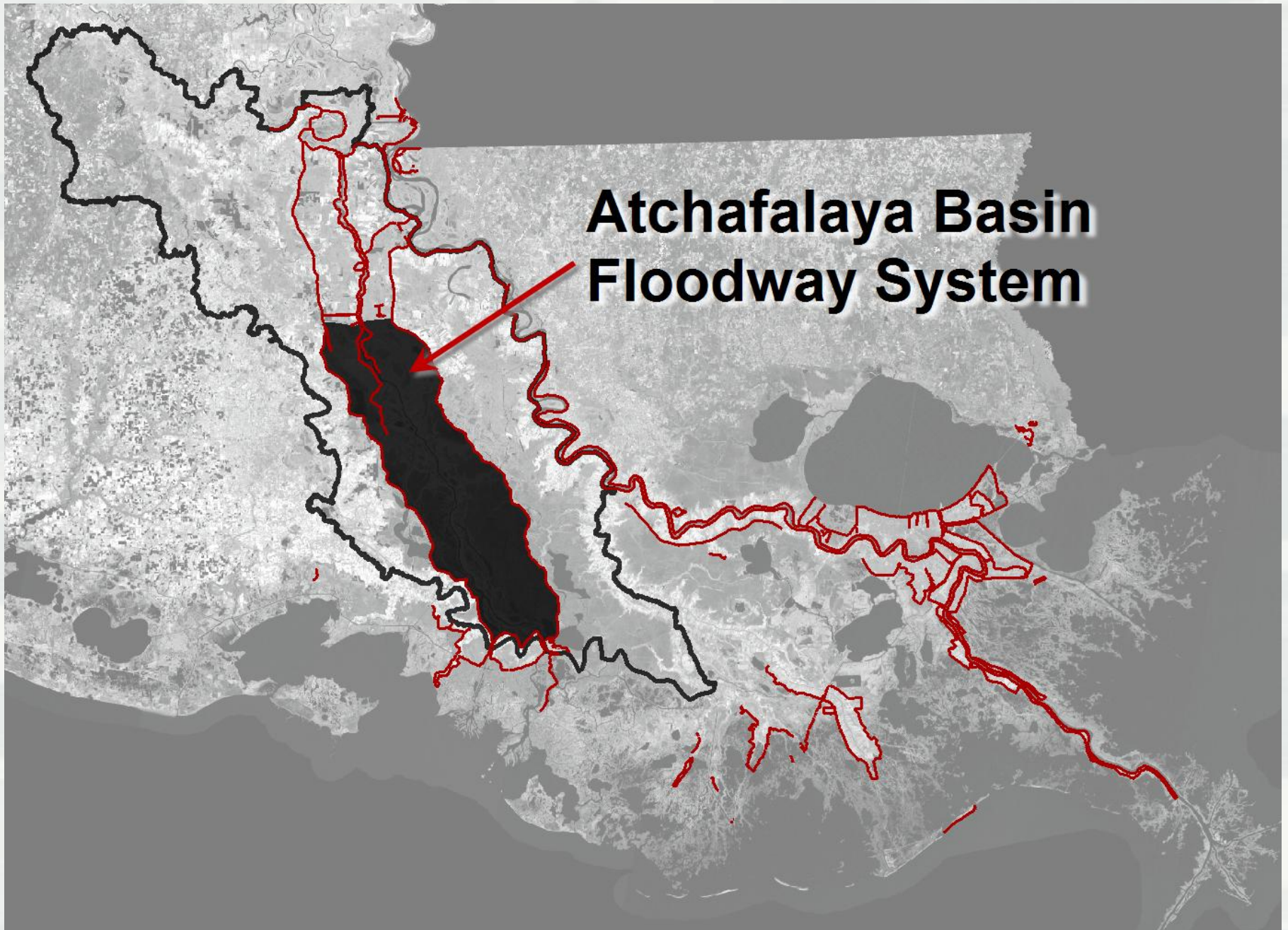


US Army Corps of Engineers
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Atchafalaya Basin Floodway System



Atchafalaya Basin Floodway System (ABFS)



- Flood Control
- Navigation
- Commercial Fishing
 - Finfish and Shellfish
- Recreation
 - Fishing, Hunting, General
- Oil and Gas
- Timber
- Invaluable Habitat
- Regional Impact
 - Nutrients, sediments, carbon sequestration, nitrogen fixation

LDNR Atchafalaya Basin Program



- ABP charged with soliciting, evaluating, designing and executing water quality and access improvement projects in the Basin.

Natural Resources Inventory and Assessment System

- Develop system-wide comprehensive data layers that will be the primary sources of geospatial information for making science-based management decisions in the Basin.
- Make these data layers available to scientists, managers and the public in a useful context and format.



Defines Quantity
and Quality
of Habitat for:

- Fish
- Shellfish
- Mammals
- Vegetation



Controls
Resource
Phenology

Affects Measurements
of other Variables -
e.g. Elevation, Soils

Defines Flooding
Impact

Drives Geomorphology -
Defining Past, Current and Future Configuration

Tracking water extent and quality in the Atchafalaya Basin



Turbid water from the mainstem river usually carries more: **sediment**, **oxygen**, and **nutrients** than black water from the swamp.

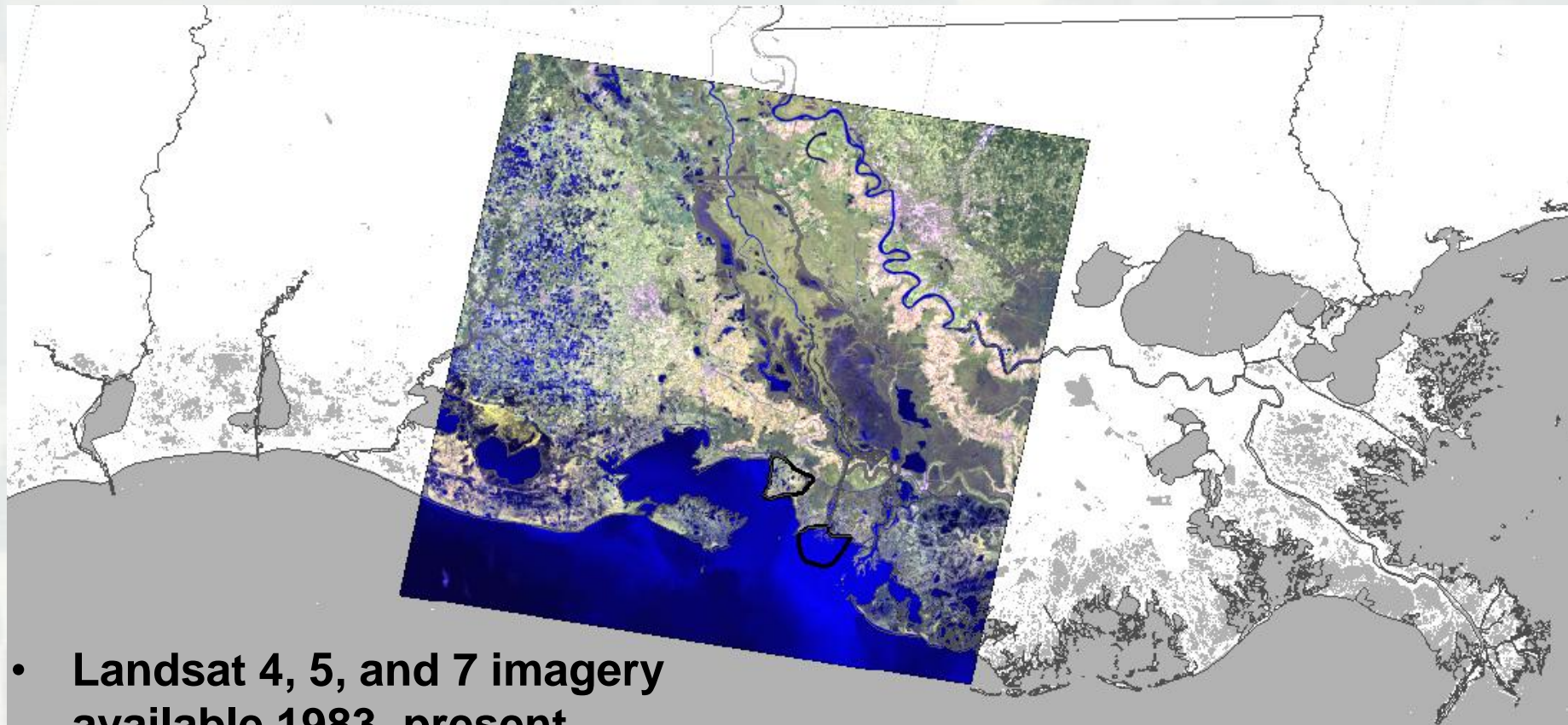


turbid water
from the river

black water
from the swamp



Using Landsat to capture *system wide* conditions:



- Landsat 4, 5, and 7 imagery available 1983–present
- 16 day repeat cycle
- 6 spectral bands in visible and infrared
- 30 m pixel resolution
- Large scene capture area (184x185 km)
- Entire system may be available in one scene

Systemwide condition assessments using Landsat

- 1983-present
- Cloud-Free
- Leaf-Off (Dec-Mar)
- Many river levels
- Base imagery
- Classify each image for:
 - Land
 - Open Turbid
 - Flooded Turbid
 - Open Non-turbid
 - Flood Non-turbid
 - Aquatic Vegetation
- Multi-temporal Analysis

Open
Non-turbid

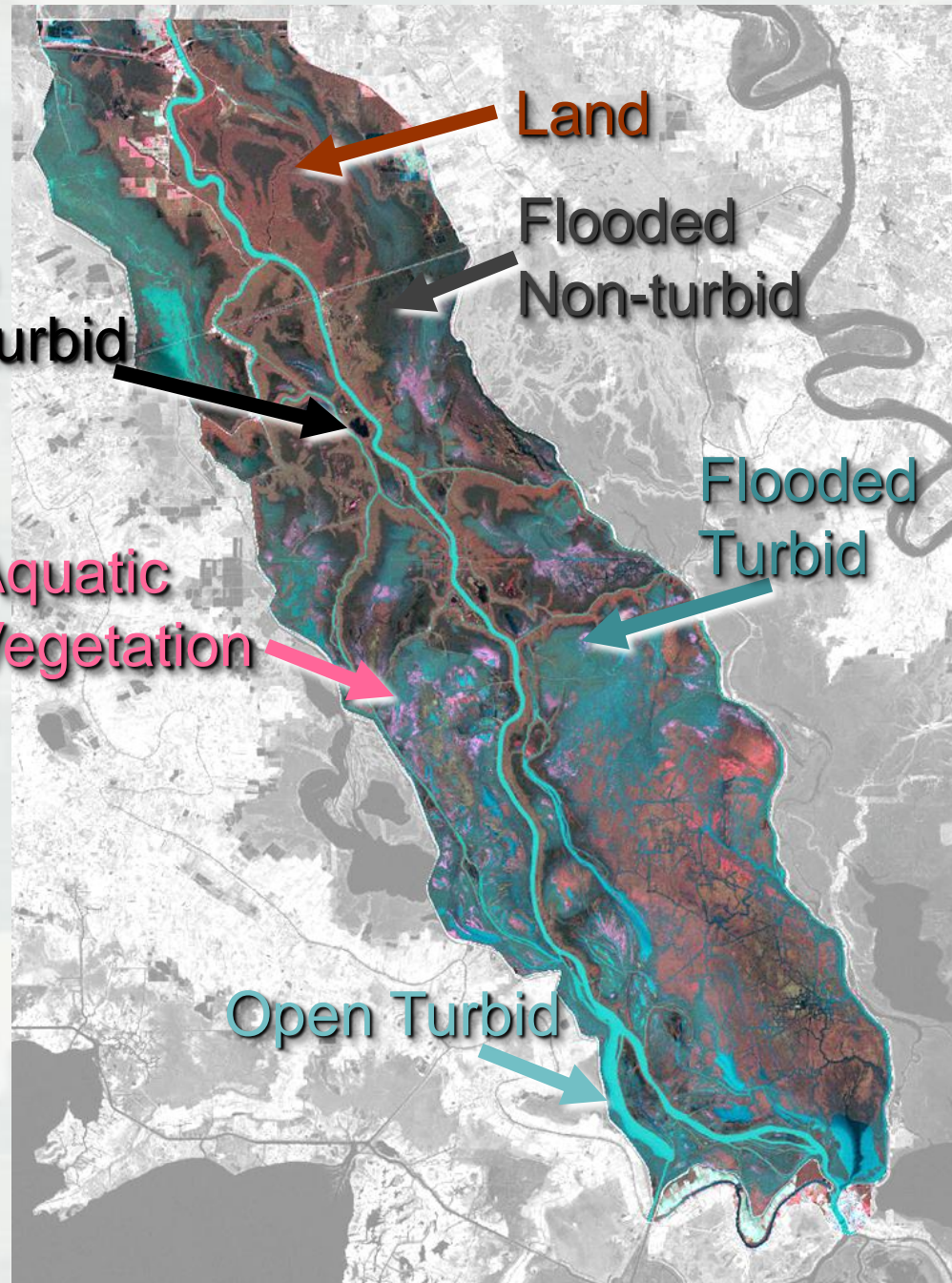
Land

Flooded
Non-turbid

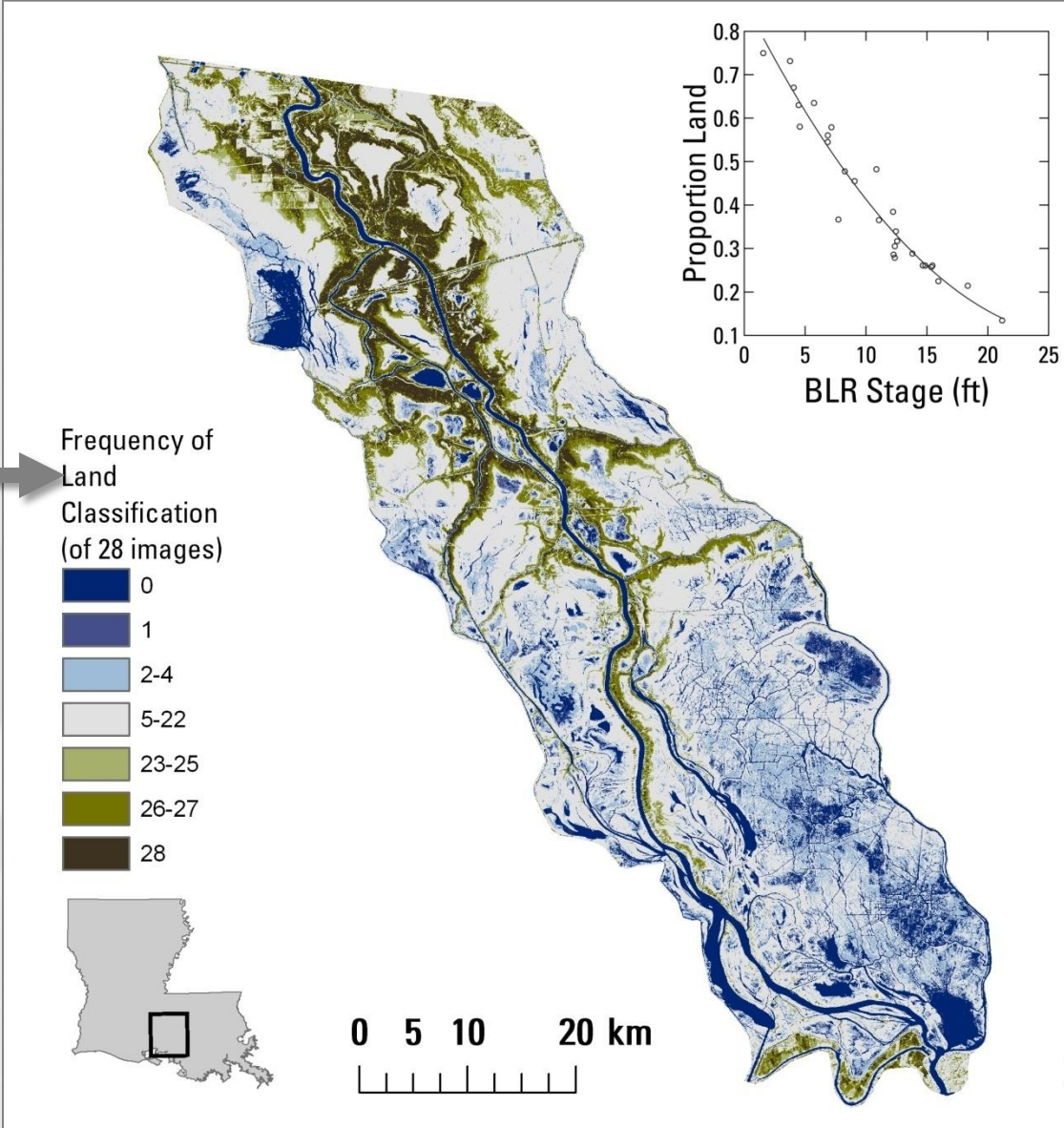
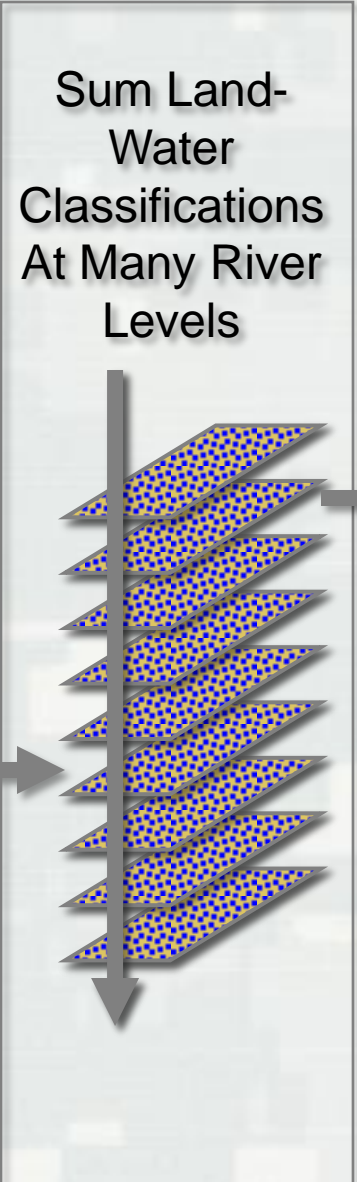
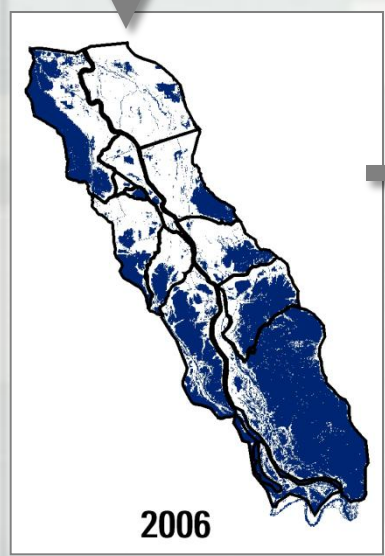
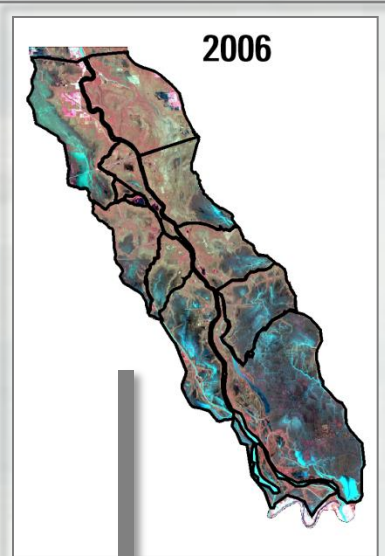
Flooded
Turbid

Aquatic
Vegetation

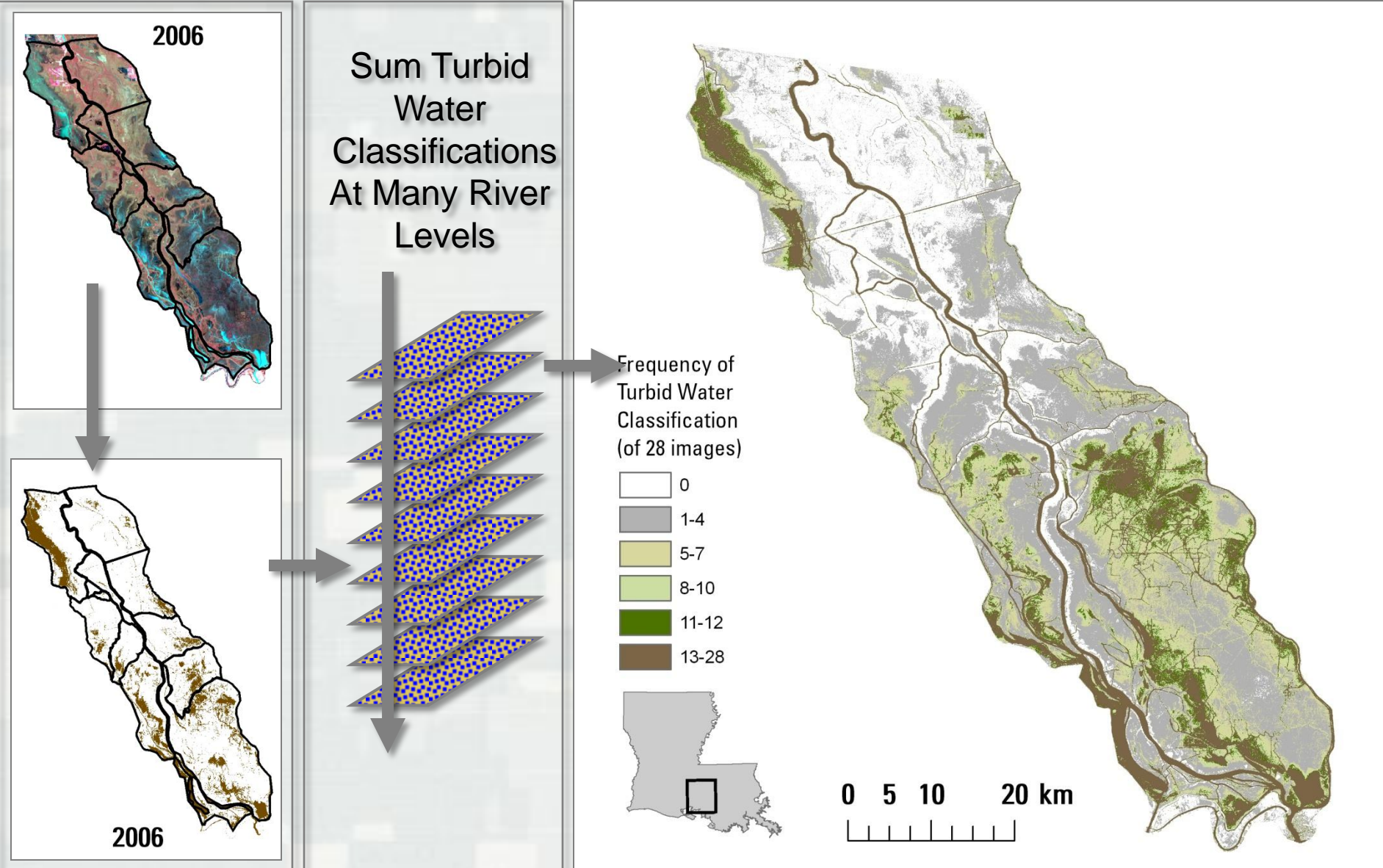
Open Turbid



Spatial Distribution and Frequency of Water in the AFBS



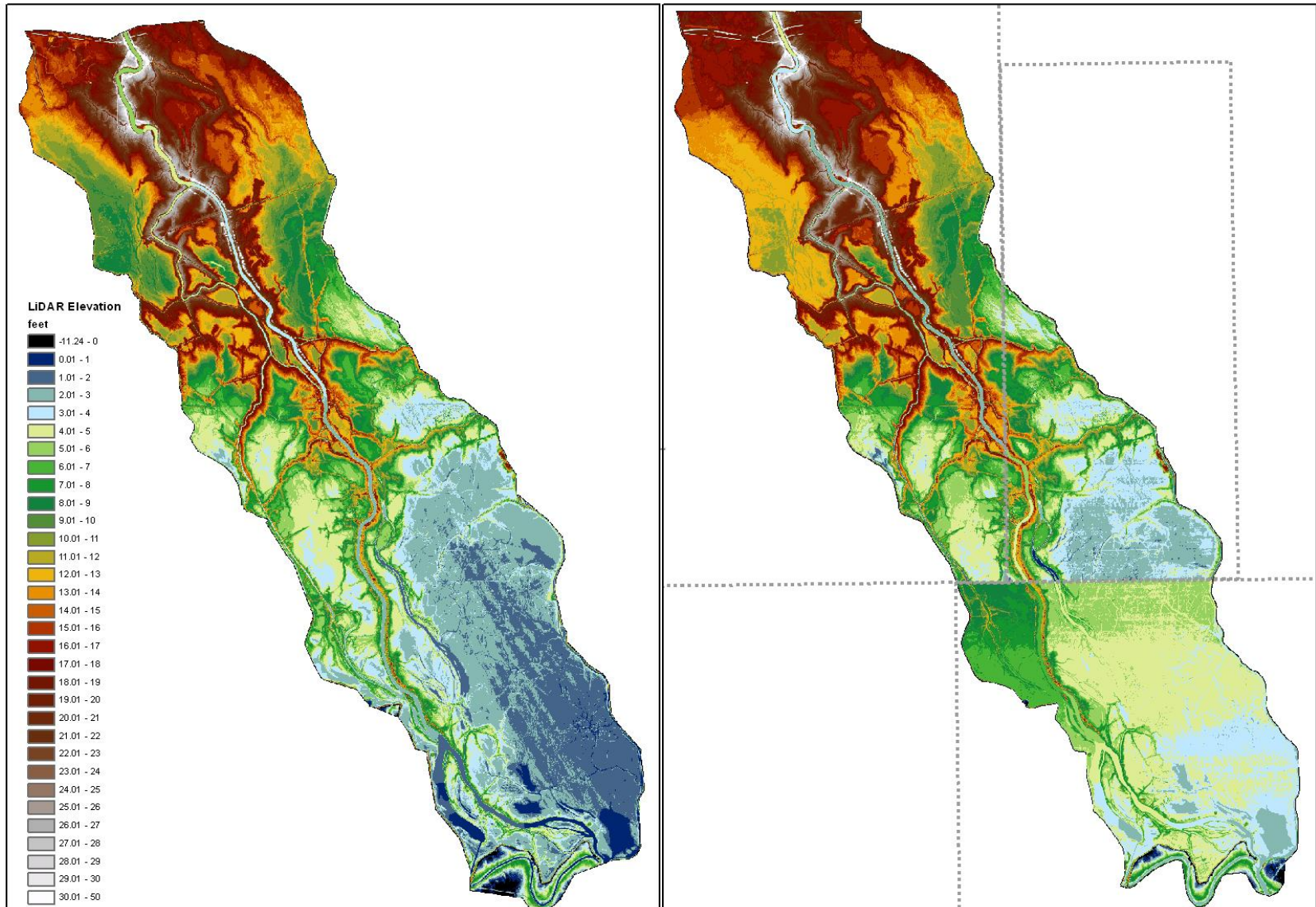
Spatial Distribution and Frequency of Turbid Water in the AFBS



Use inundation patterns to understand elevation and elevation uncertainty

2010

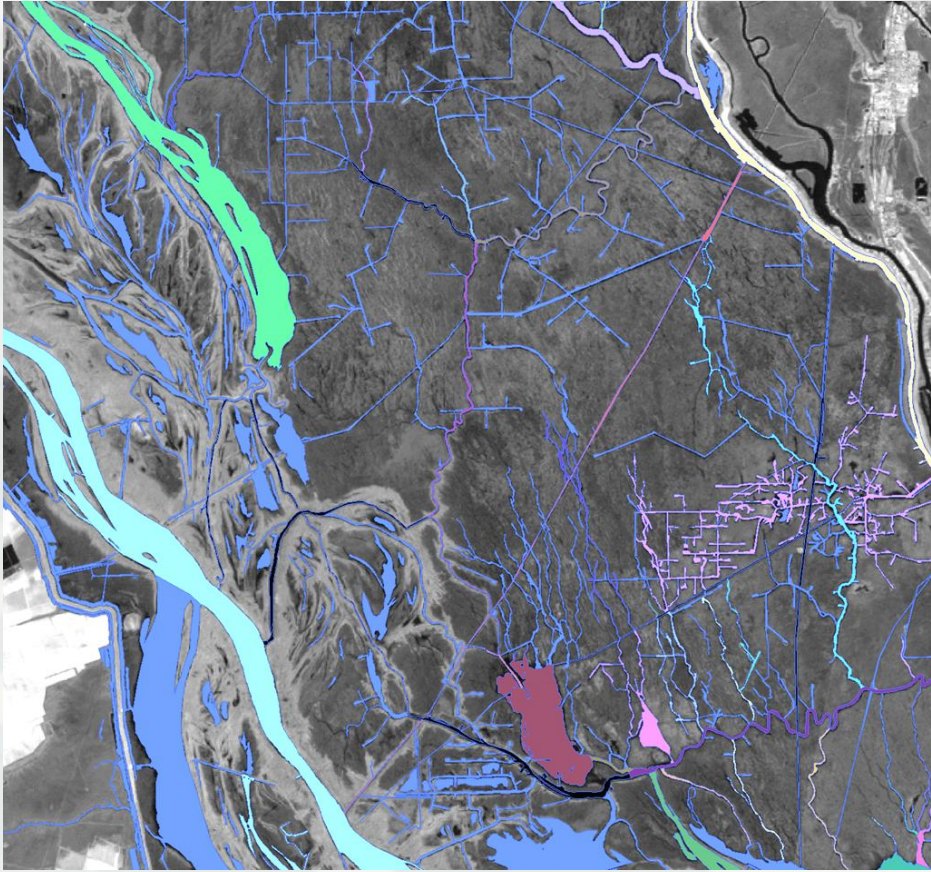
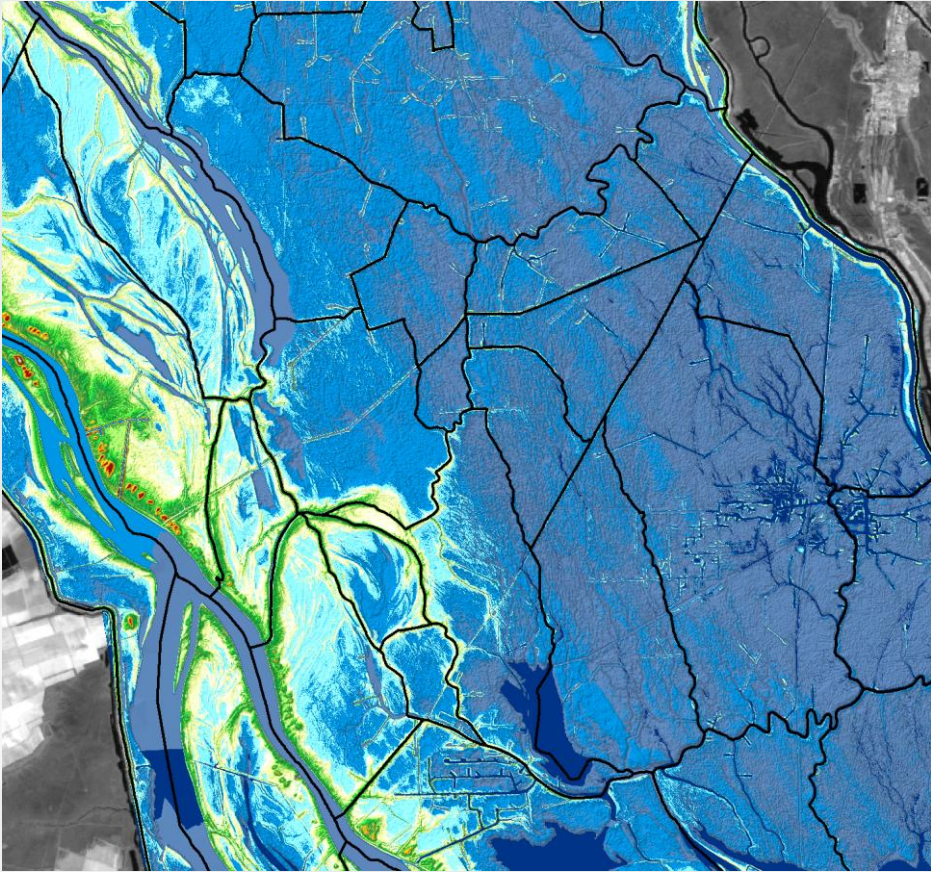
2000/2002/2003



Defining “assessment units”

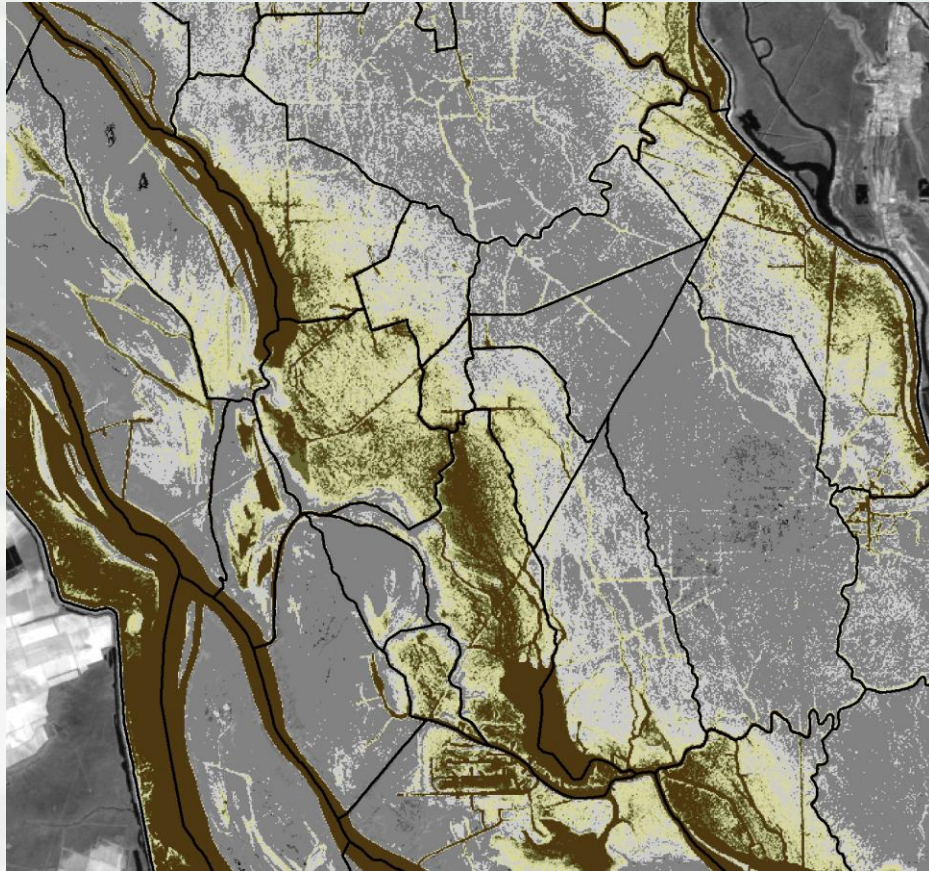
Elevation

Open Water

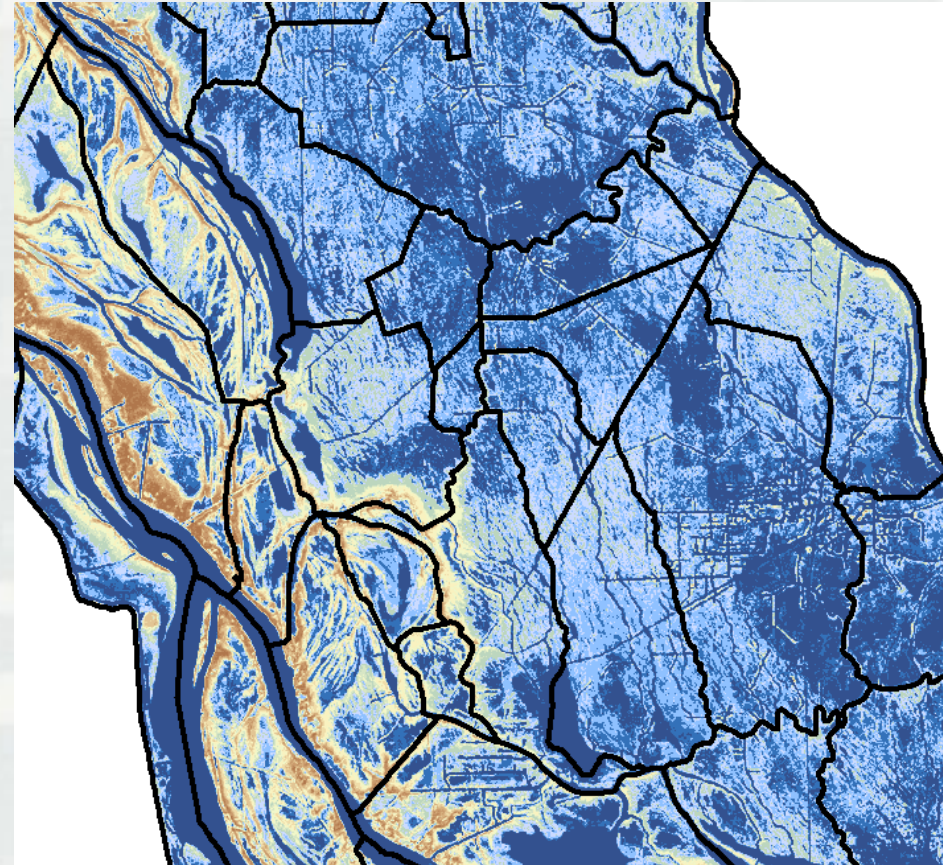


Defining “assessment units”

Turbid Water Frequency

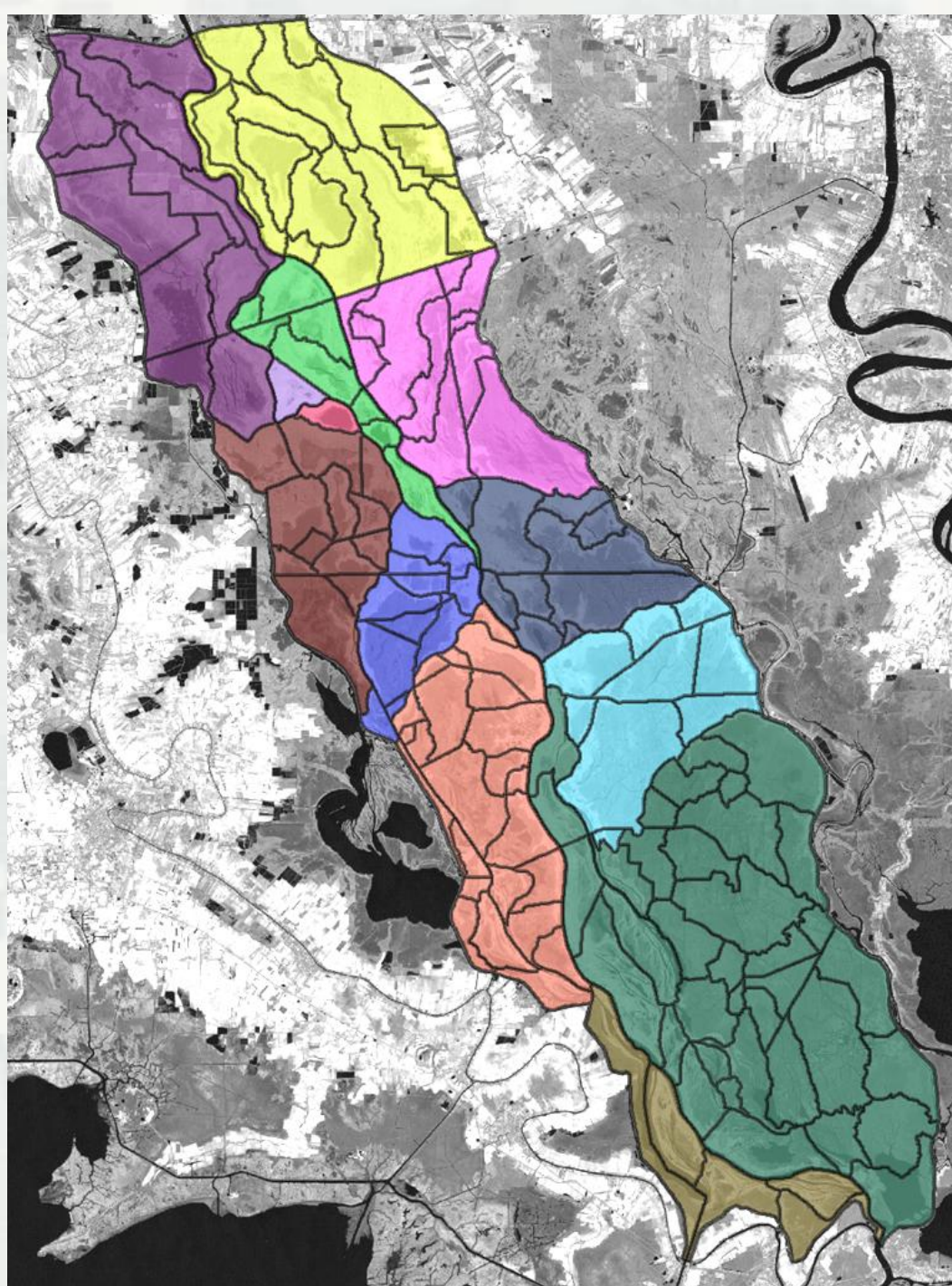


Inundation Frequency



Resource Assessment Units

- Smaller units that may be more practical in identifying ***problem areas, potential management solutions,*** and ***expected outcomes.***
- Boundaries defined based on: elevation/isolation, waterways, inundation patterns, turbidity patterns.
- Each AU will be assigned habitat characteristics.
- Average Area : 6 km²

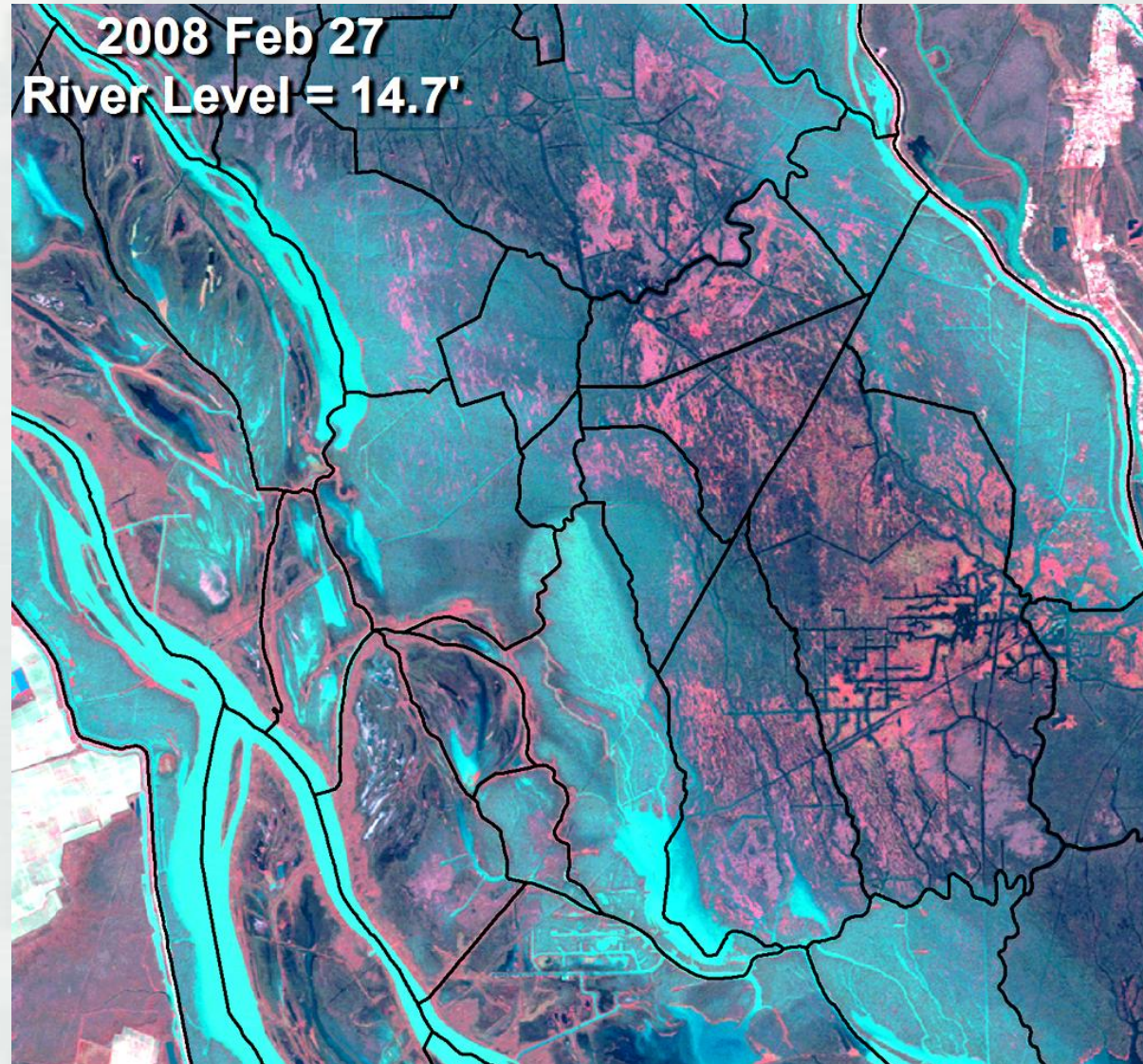


Designing Resource Assessment Units

A good framework for discussion and problem solving.

Reduces non-specific references to phenomena “in the basin”

Discrete areas with defined inputs, outflows, access and habitats.

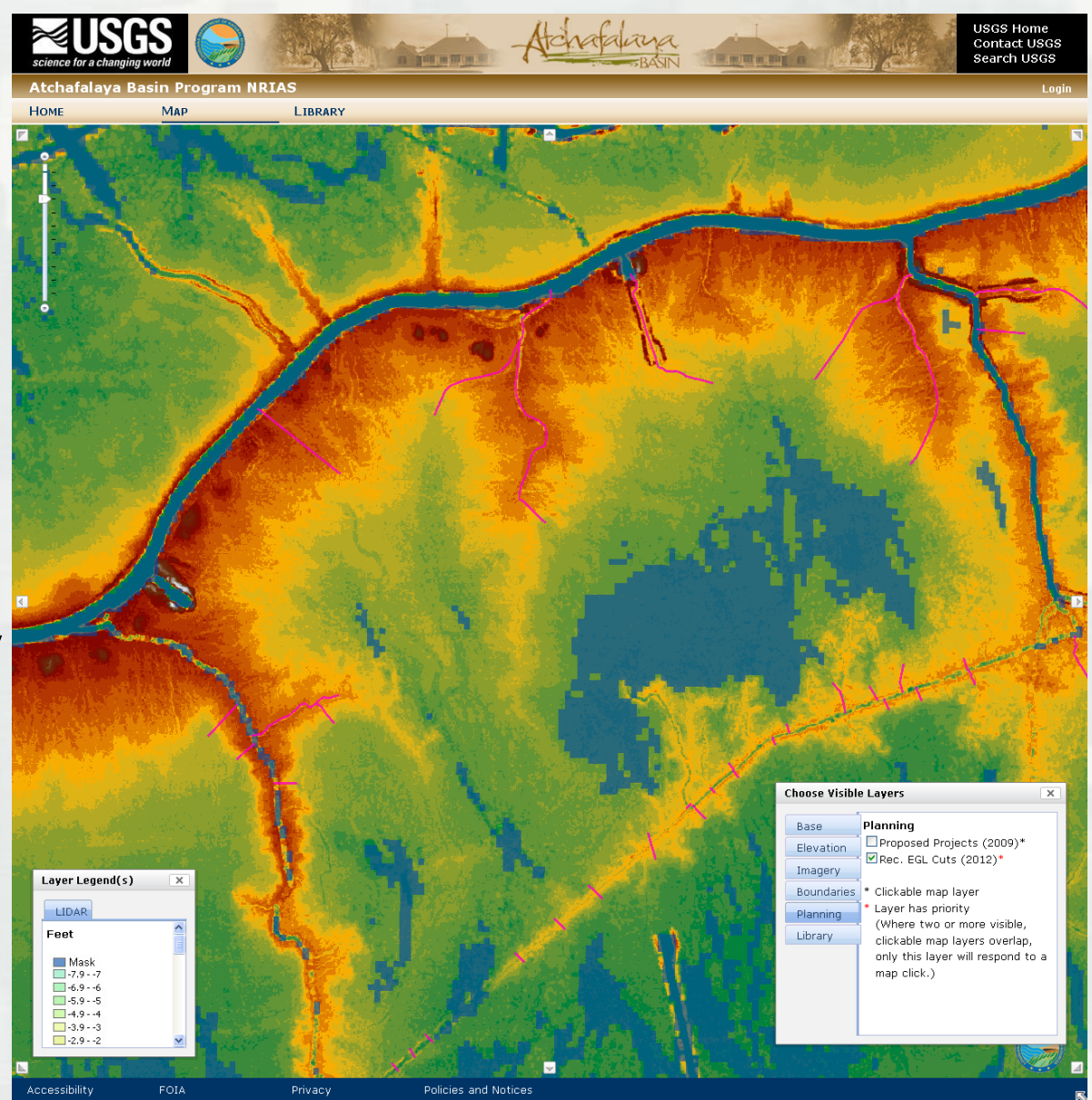


Using the NRIAS to plan improvement projects:

- 1) Solicit public input
- 2) Identify AU

Evaluate:

- 1) Water quality
- 2) Accretion patterns
- 3) Elevation accuracy
- 4) Historical Setting
- 5) Identify possible solutions
- 6) Recon
- 7) Vet solution set to public sponsor, CPRA, legislature
- 8) Web presentation



NRIAS (Natural Resources Inventory and Assessment System)

<http://abp.cr.usgs.gov>



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Atchafalaya Basin Program NRIAS

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Natural Resource Inventory & Assessment System

Welcome to the Louisiana Department of Natural Resources, Atchafalaya Basin Program's Natural Resource Inventory & Assessment System (NRIAS).

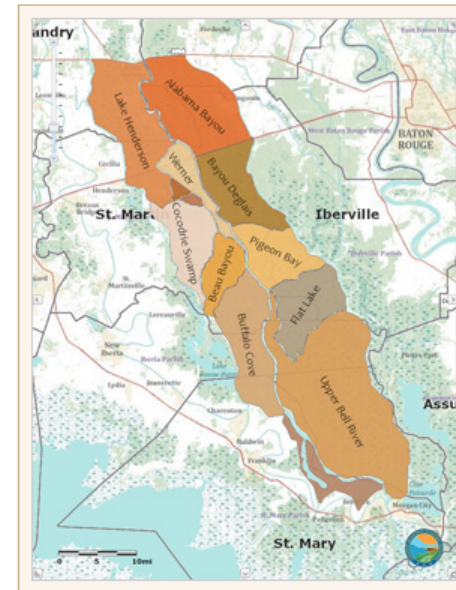
NRIAS was approved and funded through LDNR, ABP Fiscal Year 2010 Annual Plan process, by CPRA and with a cooperative agreement with the USGS for web services.

The NRIAS is intended to provide a means for anyone to access information on current efforts to enhance the Atchafalaya Basin, our nation's largest river swamp.

Home to some of Louisiana's signature wildlife – alligators, roseate spoonbills, water moccasins and crawfish, to name a few – and spectacular views of the intersection of plant life, animal life, water and weather, the Atchafalaya Basin has long called to fishermen, photographers, hunters and those who simply enjoy the sights, sounds and smells of nature.

As the river's flow has marked the generations, people have made different aspects of what is now the Atchafalaya Basin spillway part of their heritage, from the Native Americans who made their homes there to the loggers and fisherman who used the natural riches of the basin to make their livelihoods.

Partners: LDNR, CPRA, USGS, LDWF, USACE, LSU, USFWS, LDEQ



NRIAS Map

The NRIAS Map is a tool for understanding the current efforts of the Atchafalaya Basin Program. Click on the image above to view the map.

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U.S. Department of the Interior | U.S. Geological Survey

URL: <http://abp.cr.usgs.gov/>

Page Contact Information: [Craig Conzelmann](#), 337-266-8842

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NRIAS (Natural Resources Inventory and Assessment System)

<http://abp.cr.usgs.gov>

The screenshot displays the NRIAS web application interface. At the top left is the USGS logo with the tagline "science for a changing world". To its right is the Atchafalaya Basin logo. On the far right of the top bar are links for "USGS Home", "Contact USGS", and "Search USGS". Below this is a navigation menu with "HOME", "MAP", "LIBRARY", "PARTNERS", and "FAQS". A "Login" link is located on the right side of the menu. The main area is a map of the Atchafalaya Basin, showing the river and surrounding land. An "Advanced Analysis" window is open on the right side of the map, showing a "Predicted Inundation" layer. The window has a "General" tab and a "Predicted Inundation" section with a slider set to "Inundation Level: 10.6 ft". The map includes various geographical features like "Catahoula", "Isle Labbe", "Bankers", "Coteau Holmes", "Walet", "Loreauville", "Vida", "Coteau Holmes", "Walet", "Loreauville", "Vida", "Coteau Holmes", "Walet", "Loreauville", "Vida". A scale bar at the bottom left indicates 0, 1, and 2 miles. At the bottom of the page are links for "Accessibility", "FOIA", "Privacy", and "Policies and Notices".

Concluding Remarks...

- Picture is worth a thousand words...
- Focus is on practical, continuous measures of water extent and quality
- Change to place based conversations
- Establish an historical sequence
- Establish “typical conditions/patterns”
- Make the information widely available and engage user community in decision-making



Atchafalaya
BASIN



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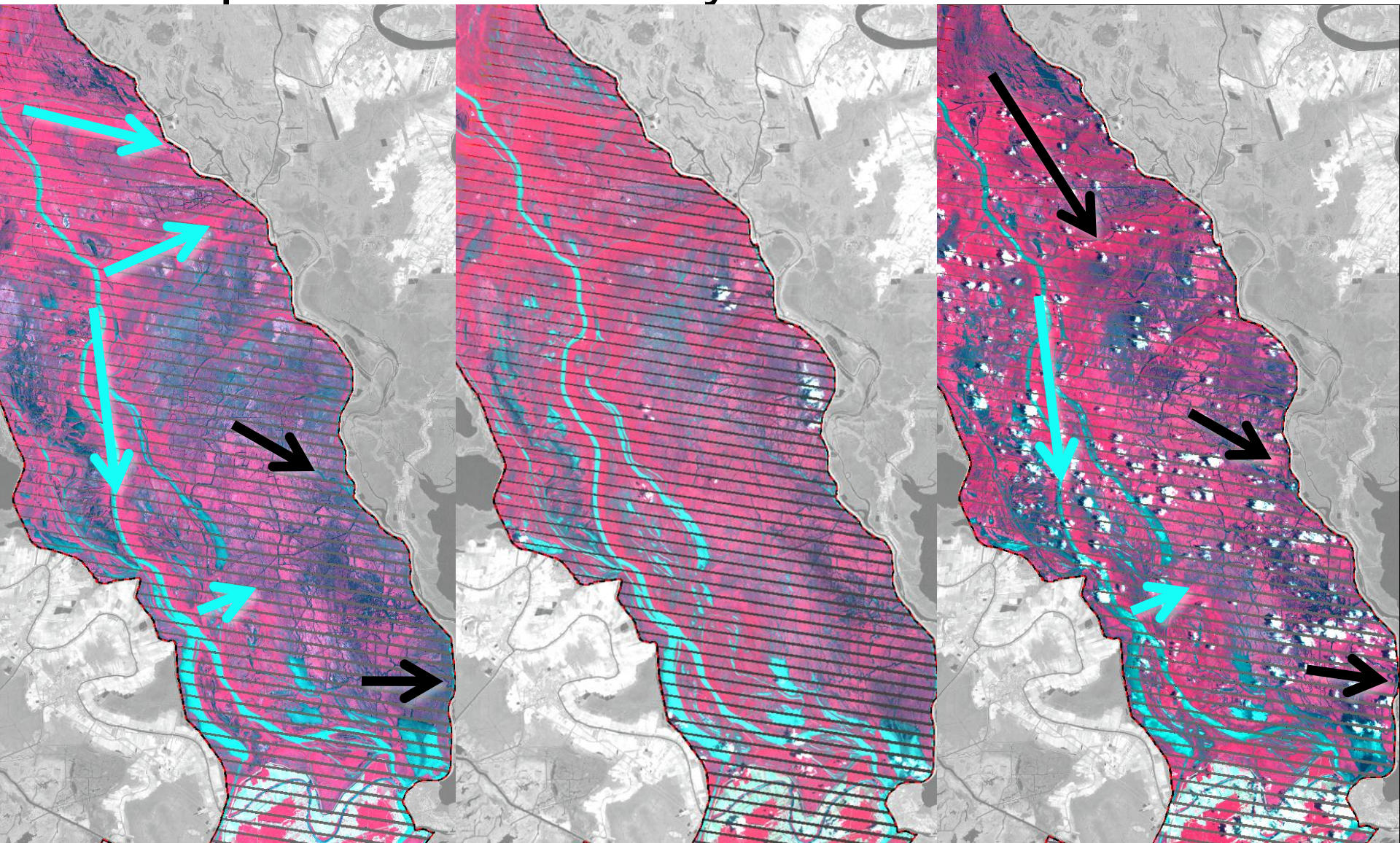


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16 Apr 2011

18 May 2011

03 Jun 2011



Pre-Flood

13.5' ↓

Just after opening

20.8' ↑

Just after peak

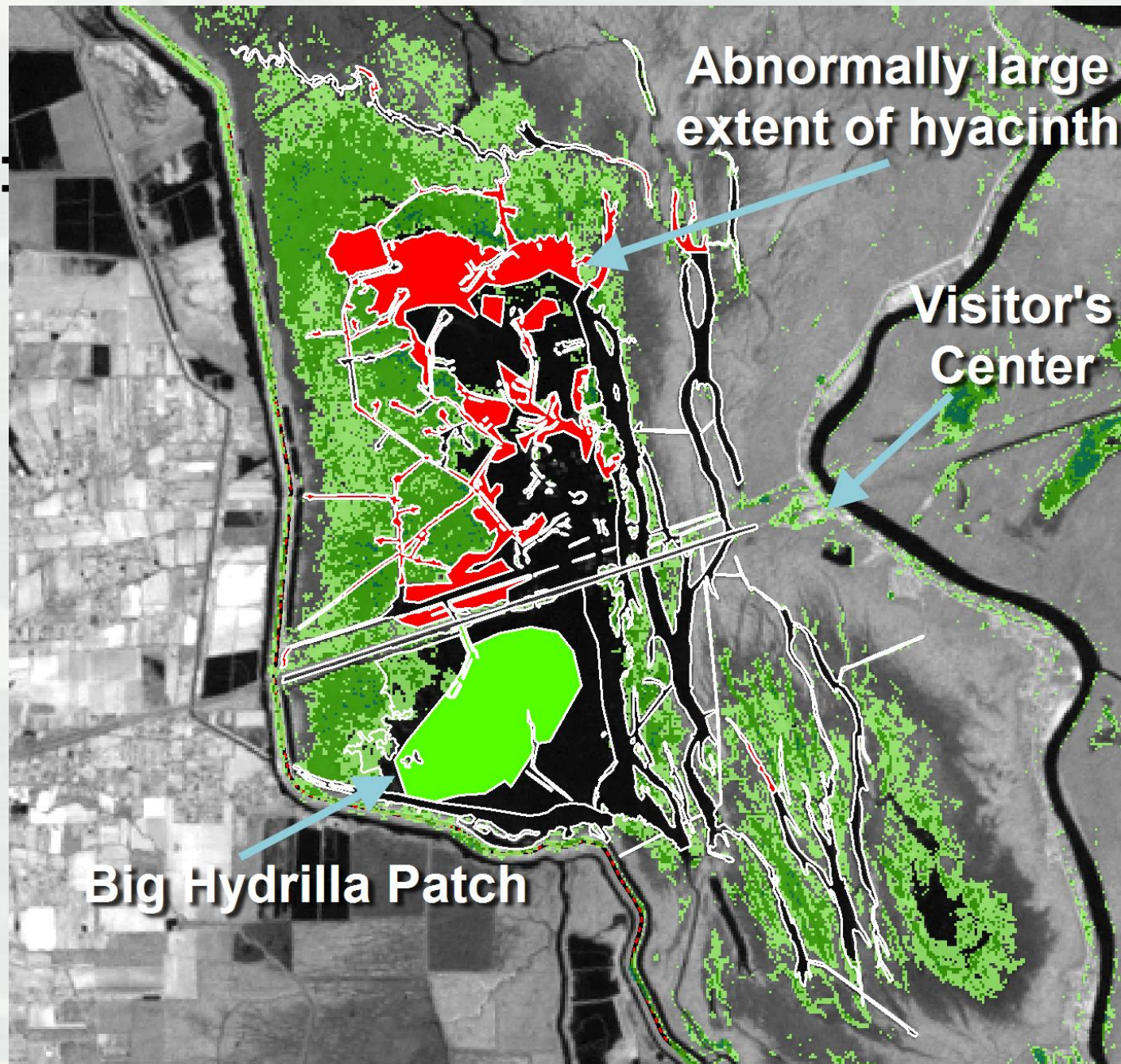
21.5' ↓

Aquatic Vegetation Management:

19 Jun 2011

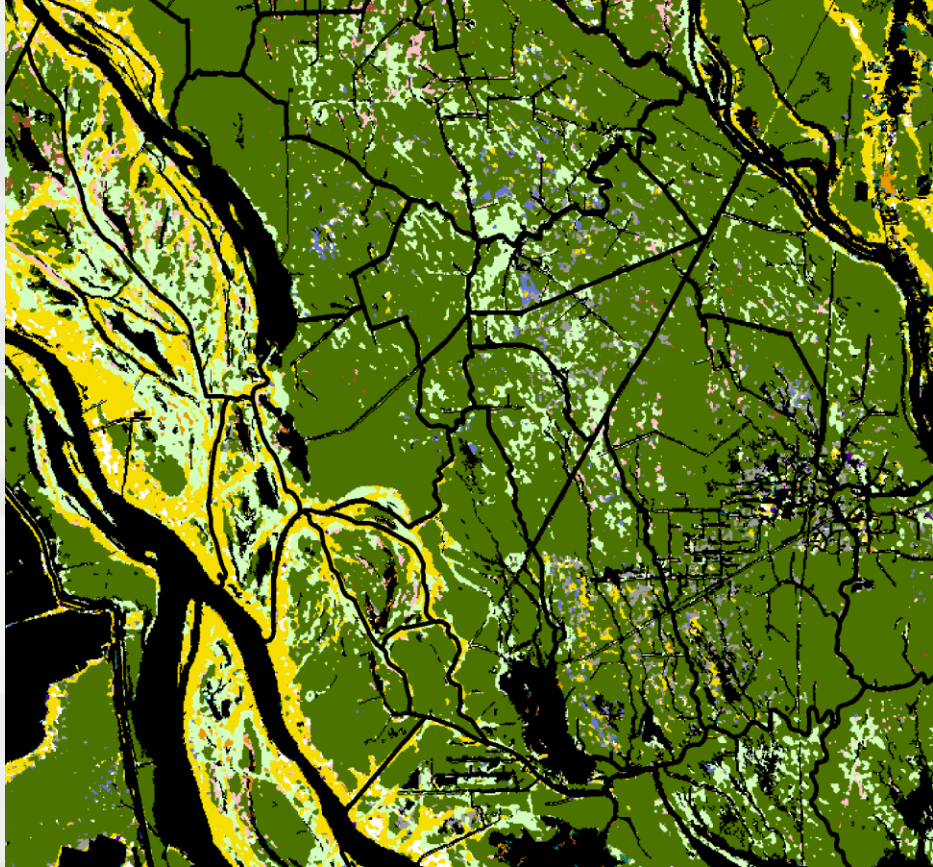
Hyacinth:
1170 ac

Hydrilla:
690 ac

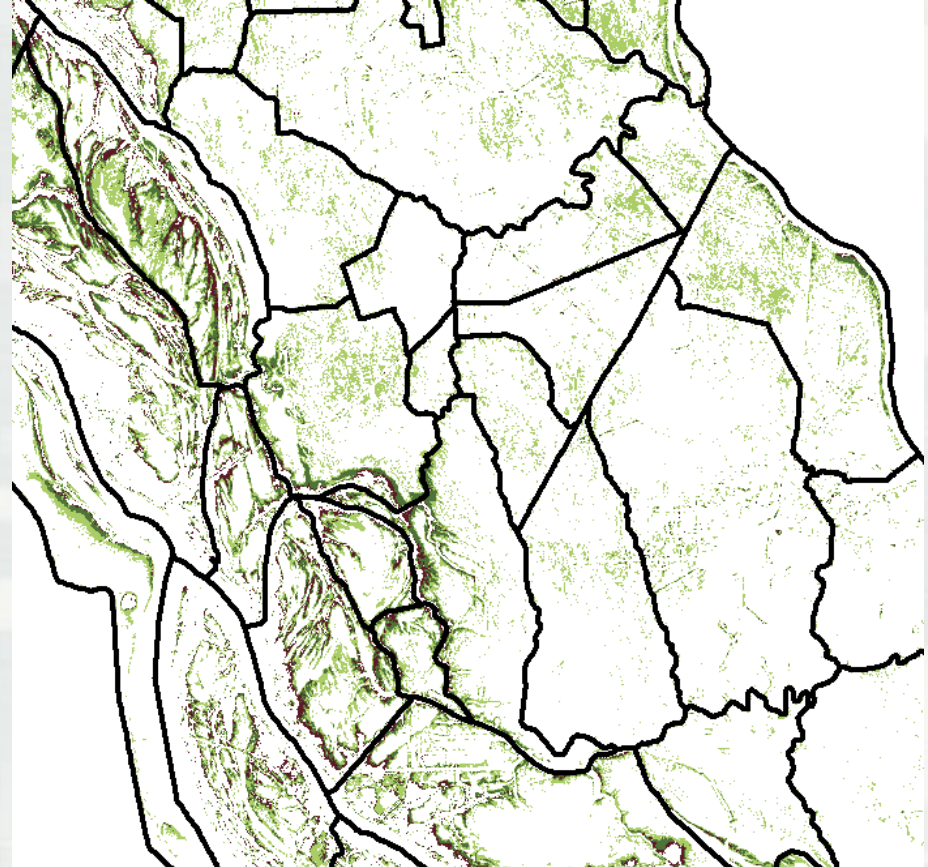


Application: Defining Locations for Potential Cypress Regeneration

Cypress Distribution



Consecutive Dry Days During Growing Season



Louisiana DNR NRIAS

(Natural Resources Inventory and Assessment System)

- 1) Base imagery – satellite and aerial through time and at many river levels
- 2) Interpreted imagery – water extent and water quality at many river levels
- 3) Frequency maps – water extent and quality
- 4) Predicted extent of inundation maps
- 5) Elevation and elevation uncertainty maps
- 6) Resources Assessment Units
- 7) Historical record and progression of land change
- 8) Historical record of gage data



Application: Evaluate the effectiveness of management projects

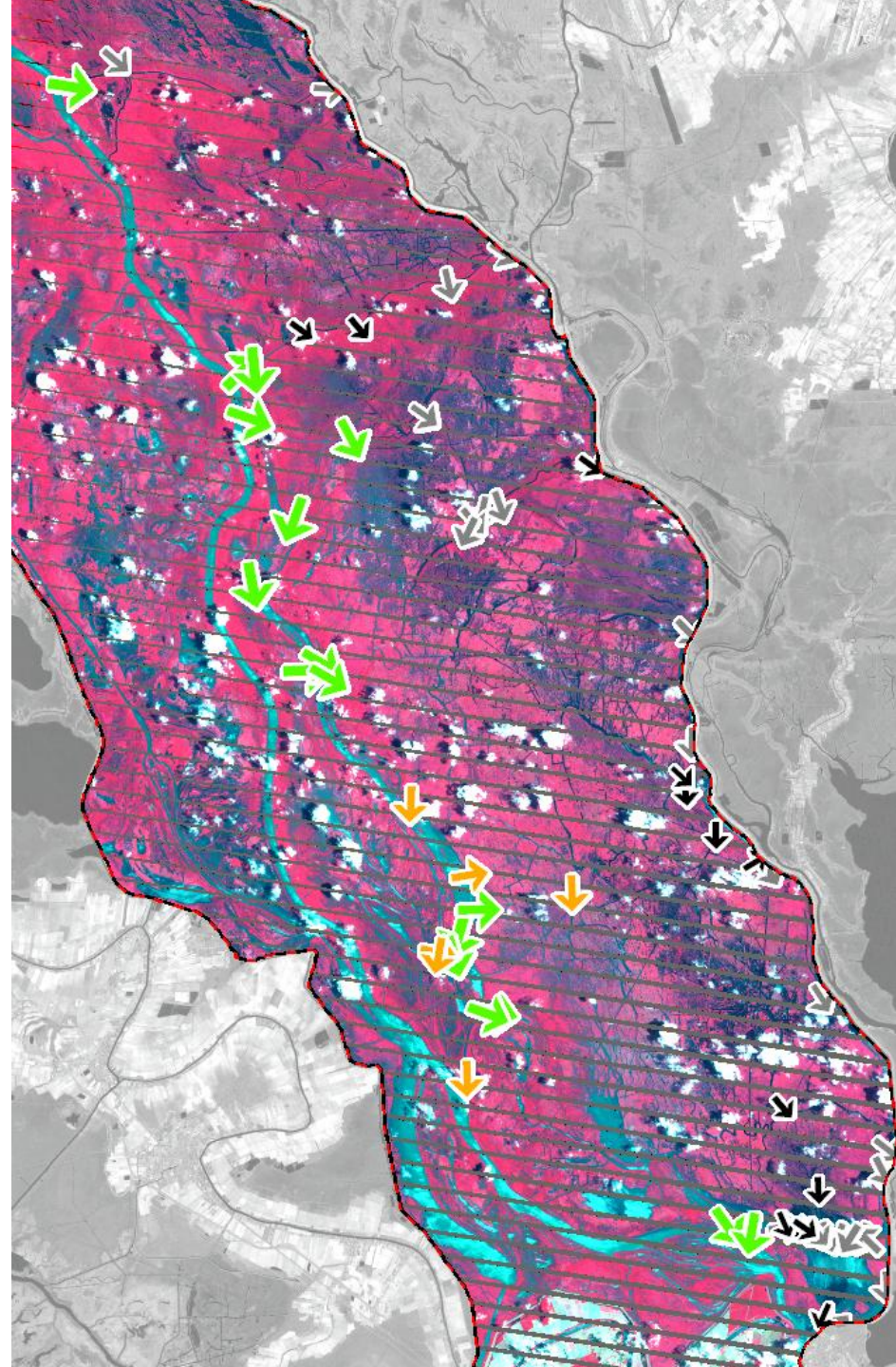
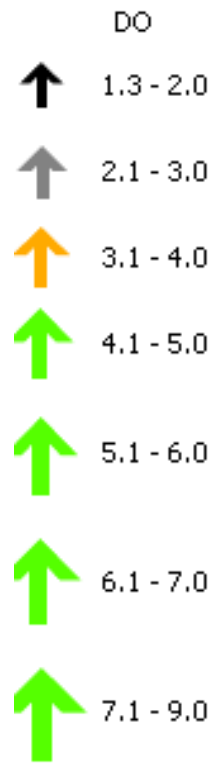


03 Jun 2011

Butte

LaRose

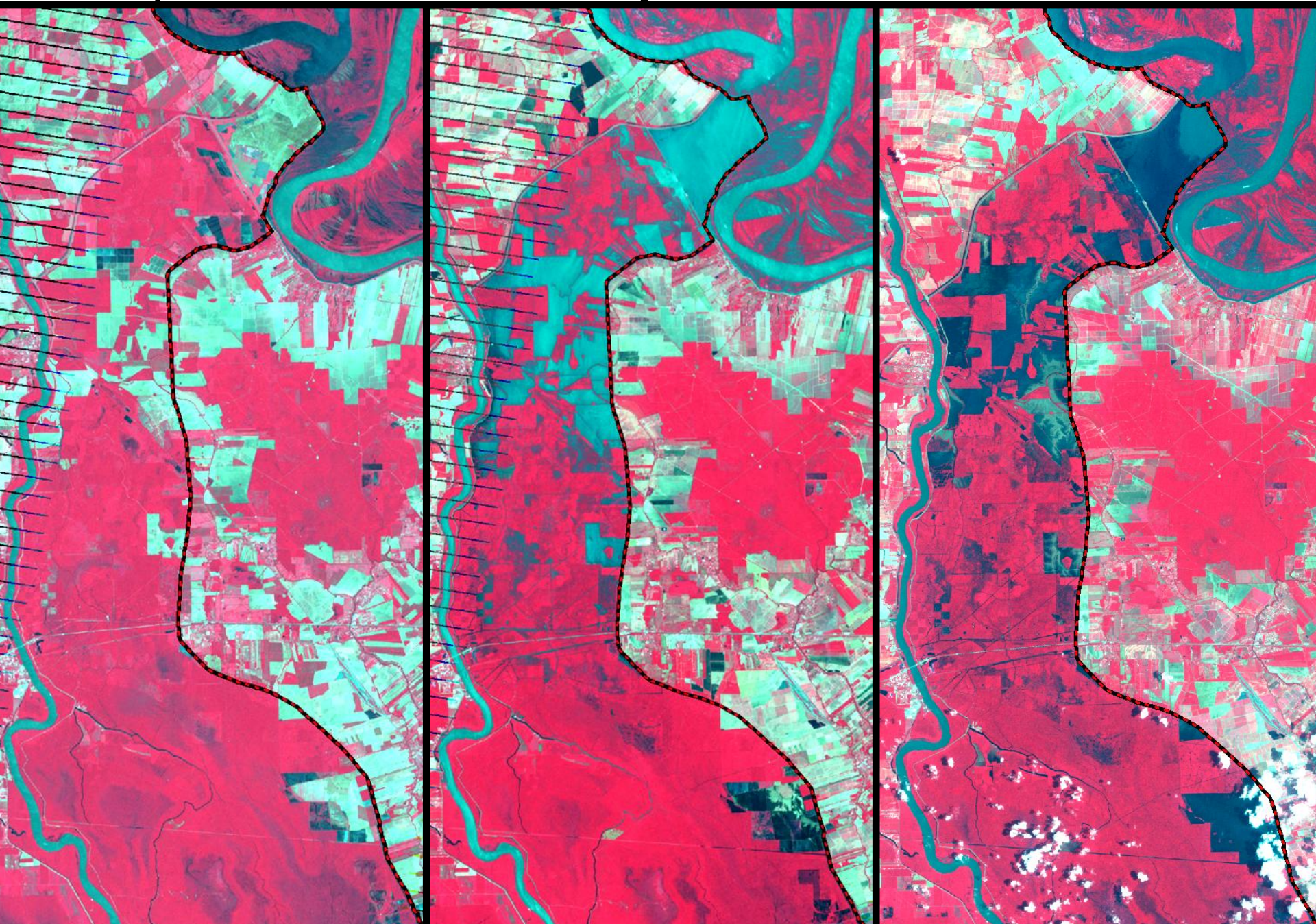
21.5' ↓



16 Apr 2011

18 May 2011

11 Jun 2011



Use inundation patterns to understand elevation and elevation uncertainty

