NATIONAL COMMISSION ON THE BP DEEPWATER HORIZON OIL SPILL AND OFFSHORE DRILLING

Staff Presentation to the Commission

Restoration Approaches and Options

December 3, 2010

Oil Slick as Seen From Space
May 24, 2010

*Photo Courtesy NASA

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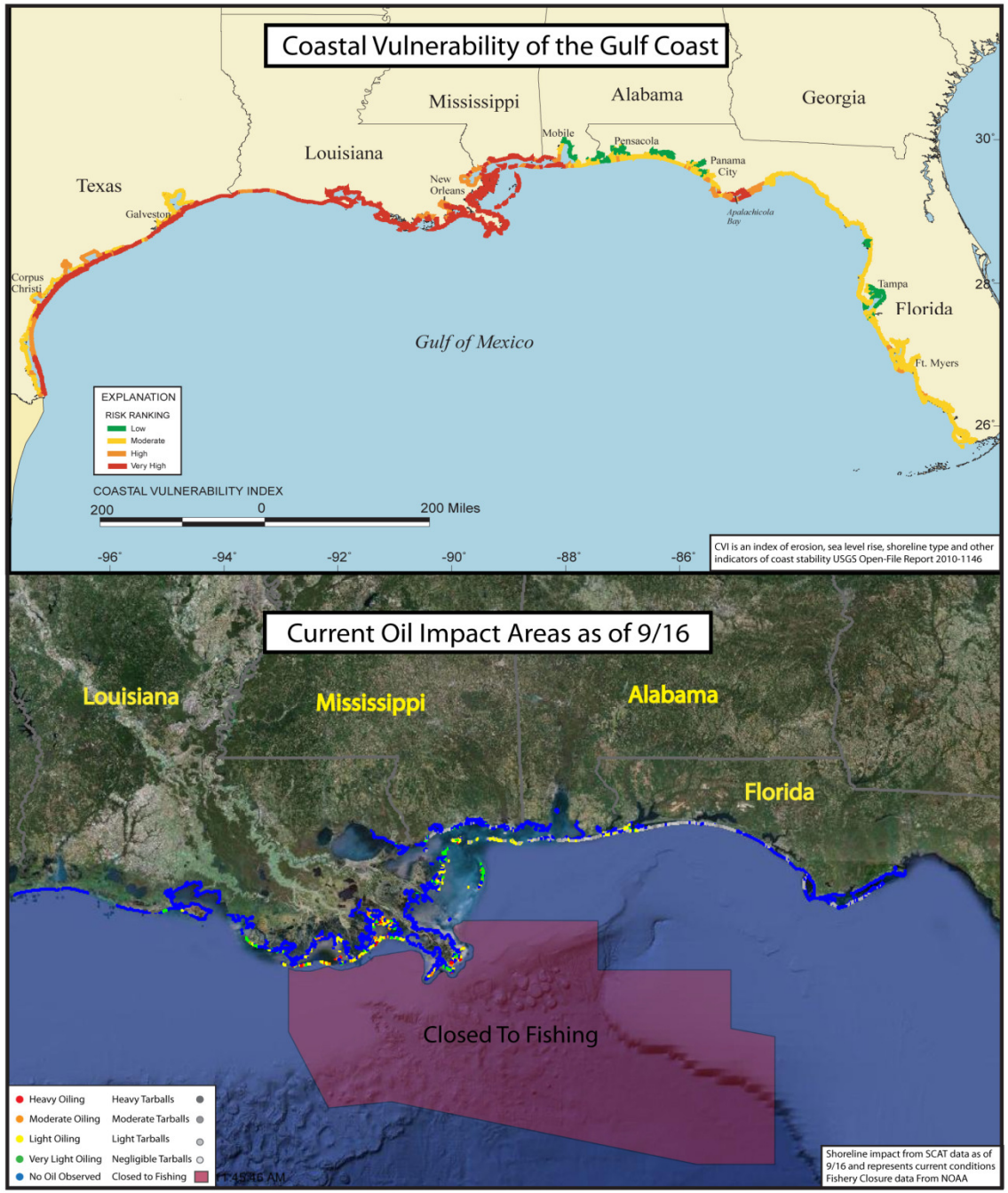
Presentation Overview

I. Gulf Coast Restoration

- A. Coast overview
- B. Mississippi River and Delta
  - 1. History
  - 2. Solutions
- C. Staff-Proposed Recommendations

II. Marine Restoration

- A. Crowded Seas
- B. Dead Zone
- C. Marine Policy Emerges
- D. Staff-Proposed Recommendations



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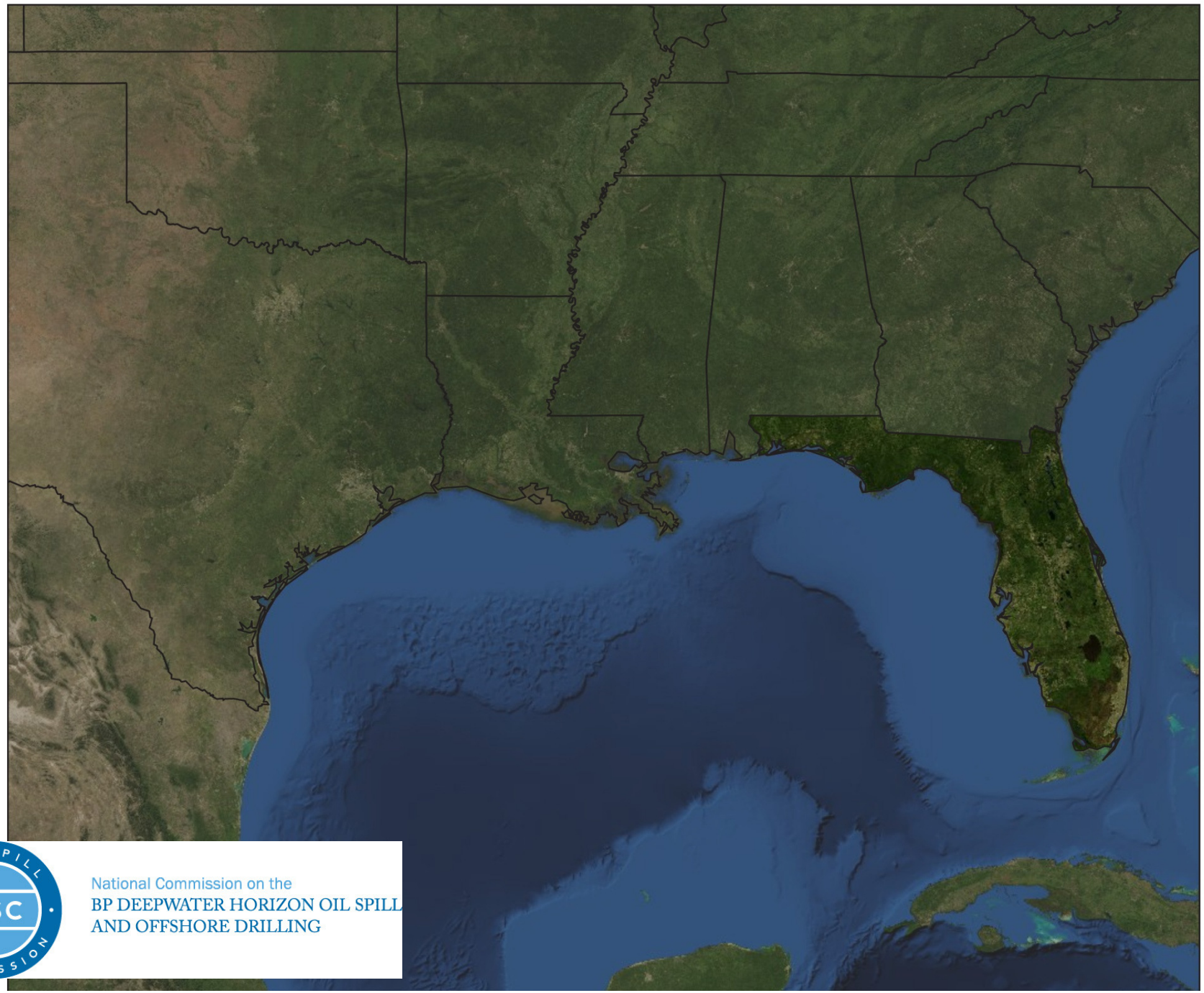
RESILIENCE AND STABILITY OF ECOLOGICAL SYSTEMS*

C. S. Holling
Institute of Resource Ecology, University of British Columbia, Vancouver, Canada

INTRODUCTION

Individuals die, populations disappear, and species become extinct. That is one view of the world. But another view of the world concentrates not so much on presence or absence as upon the numbers of organisms and the degree of constancy of their numbers. These are two very different ways of viewing the behavior of systems and the usefulness of the view depends very much on the properties of the system concerned. If we are examining a particular device designed by the engineer to perform specific tasks under a rather narrow range of predictable external conditions, we are likely to be more concerned with consistent nonvariable performance in which slight departures from the performance goal are immediately counteracted. A quantitative view of the behavior of the system is, therefore, essential. With attention focused upon achieving constancy, the critical events seem to be the amplitude and frequency of oscillations. But if we are dealing with a system profoundly affected by changes external to it, and continually confronted by the unexpected, the constancy of its behavior becomes less important than the persistence of the relationships. Attention shifts, therefore, to the qualitative and to questions of existence or not.

C.S. Holling. "Resilience and stability of ecological systems." *Annual Review of Ecology and Systematics* (1973): 1-23



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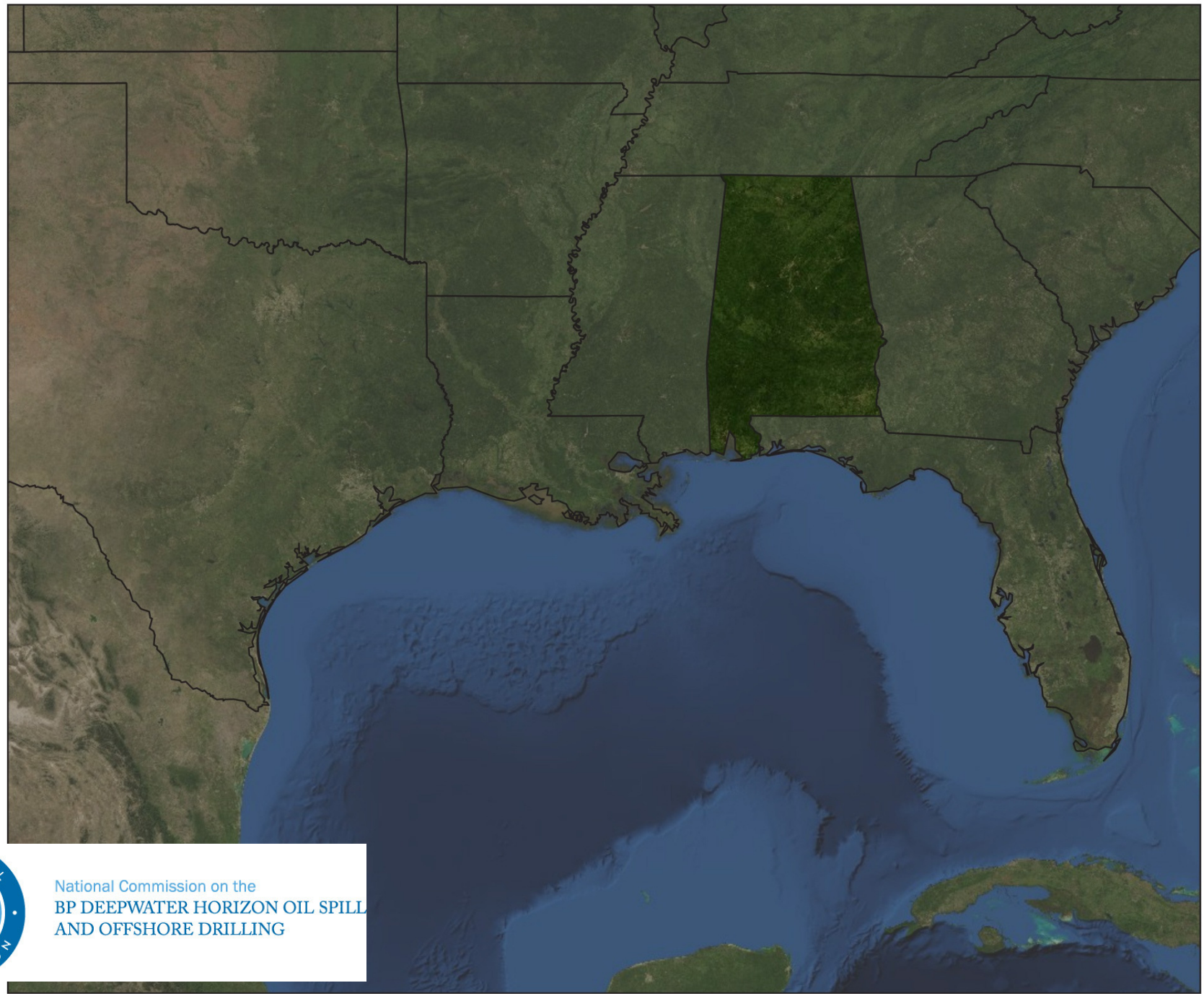

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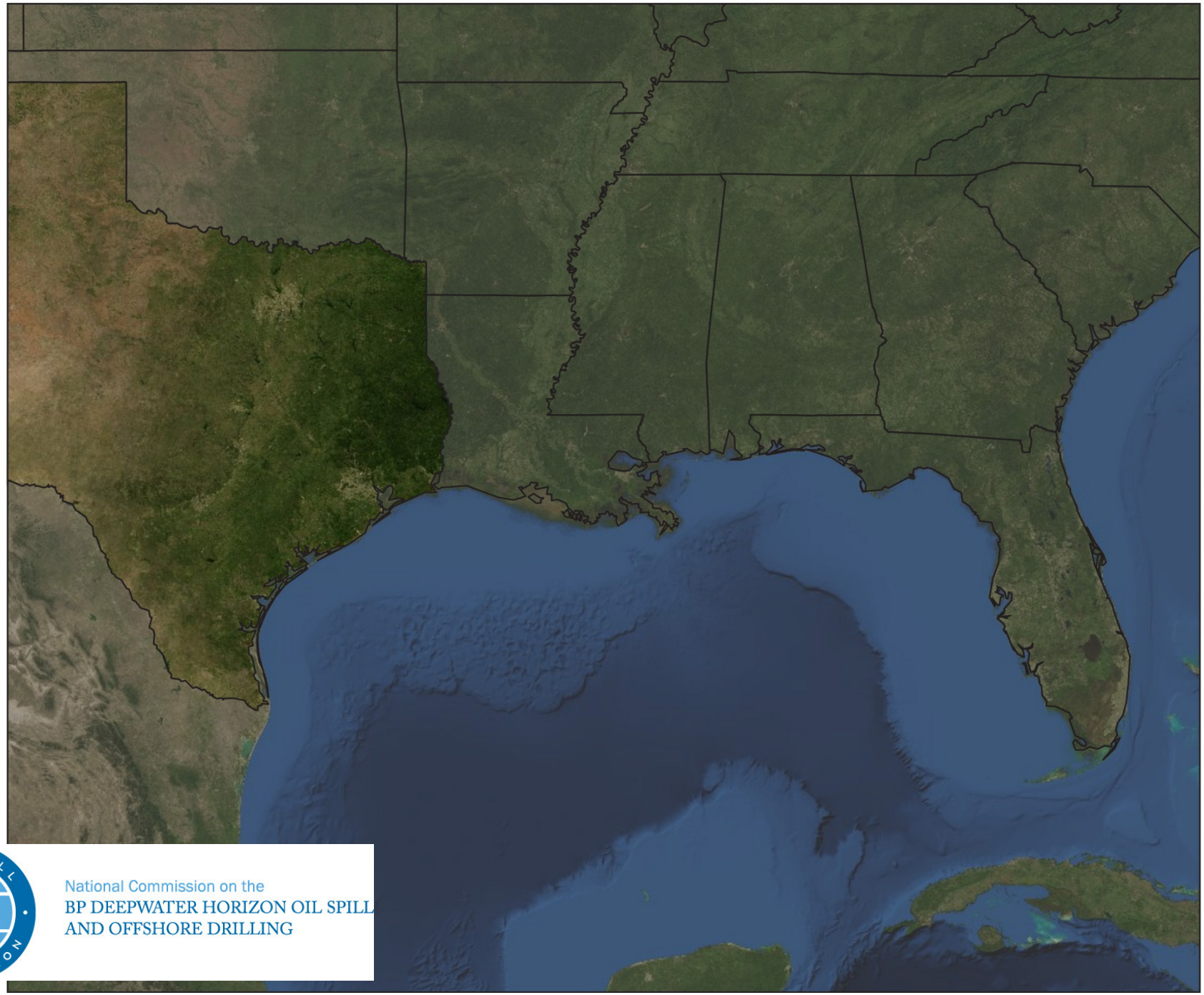

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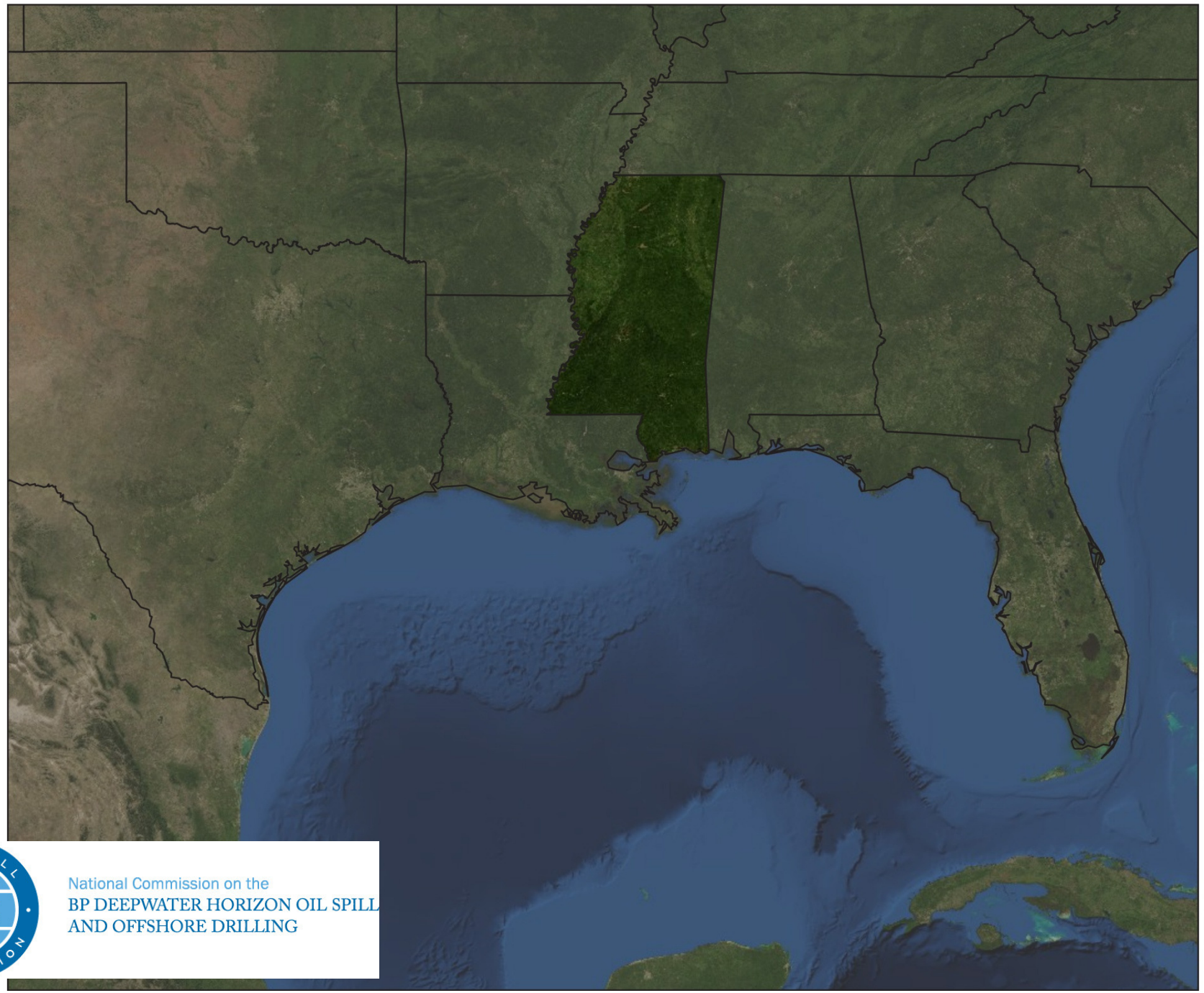

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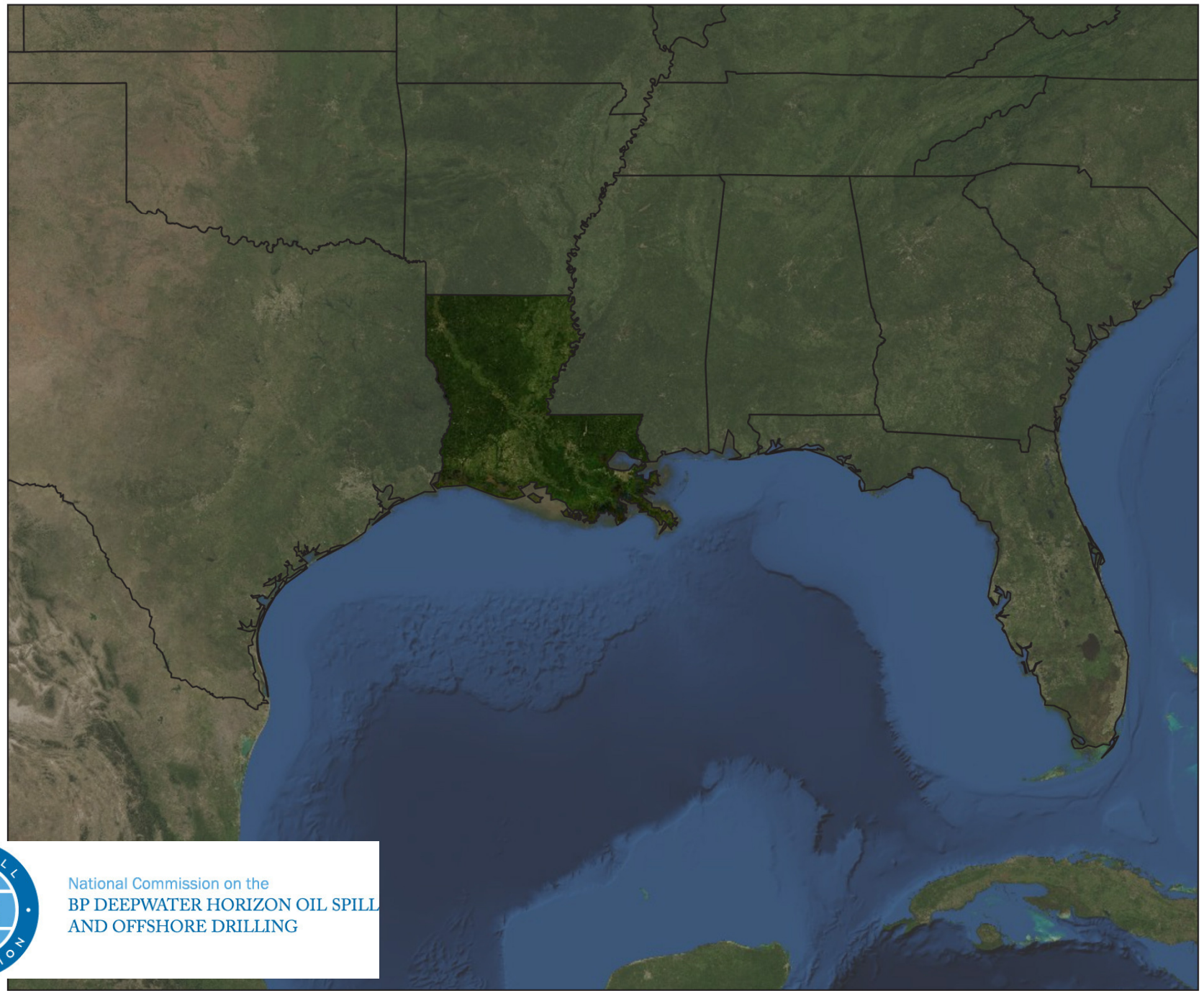

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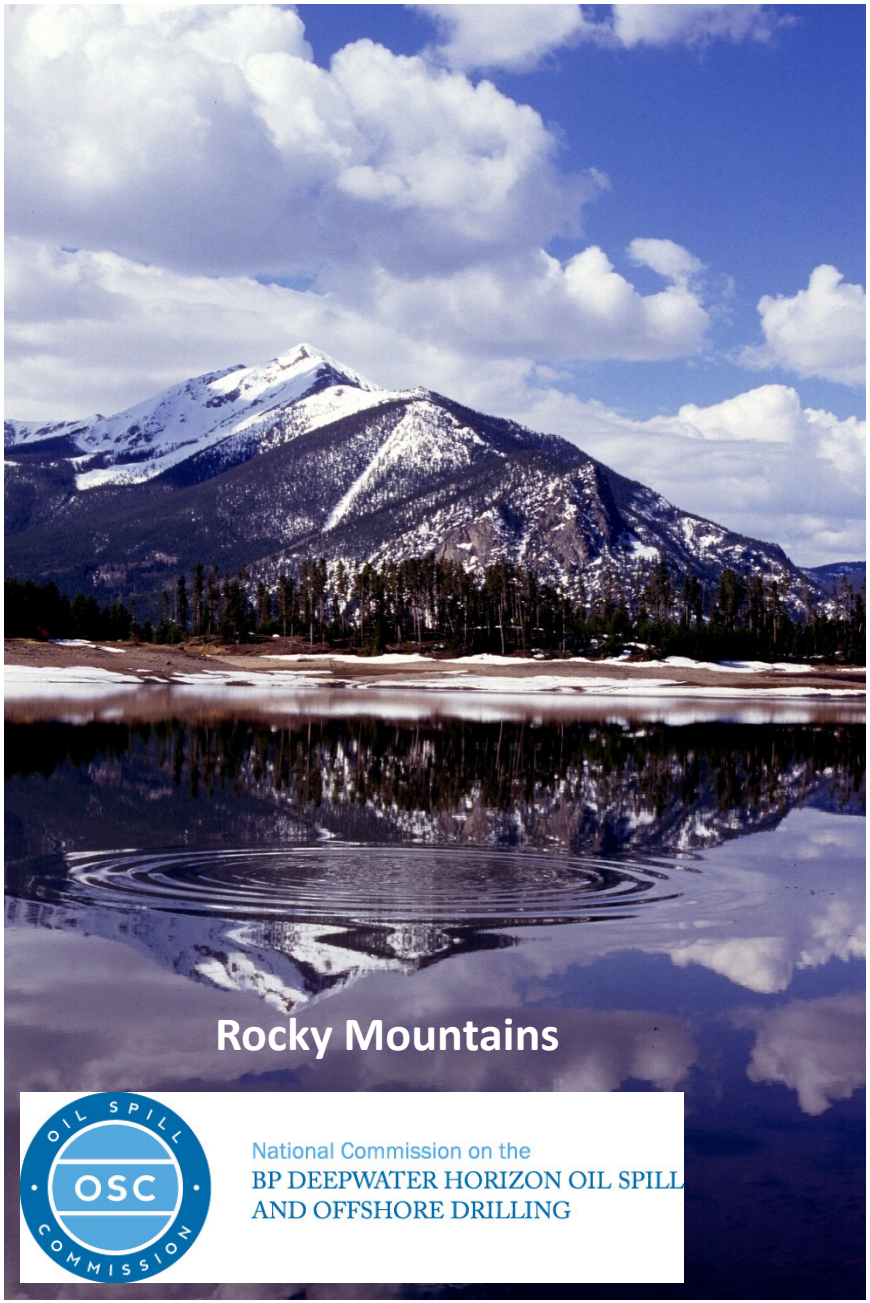
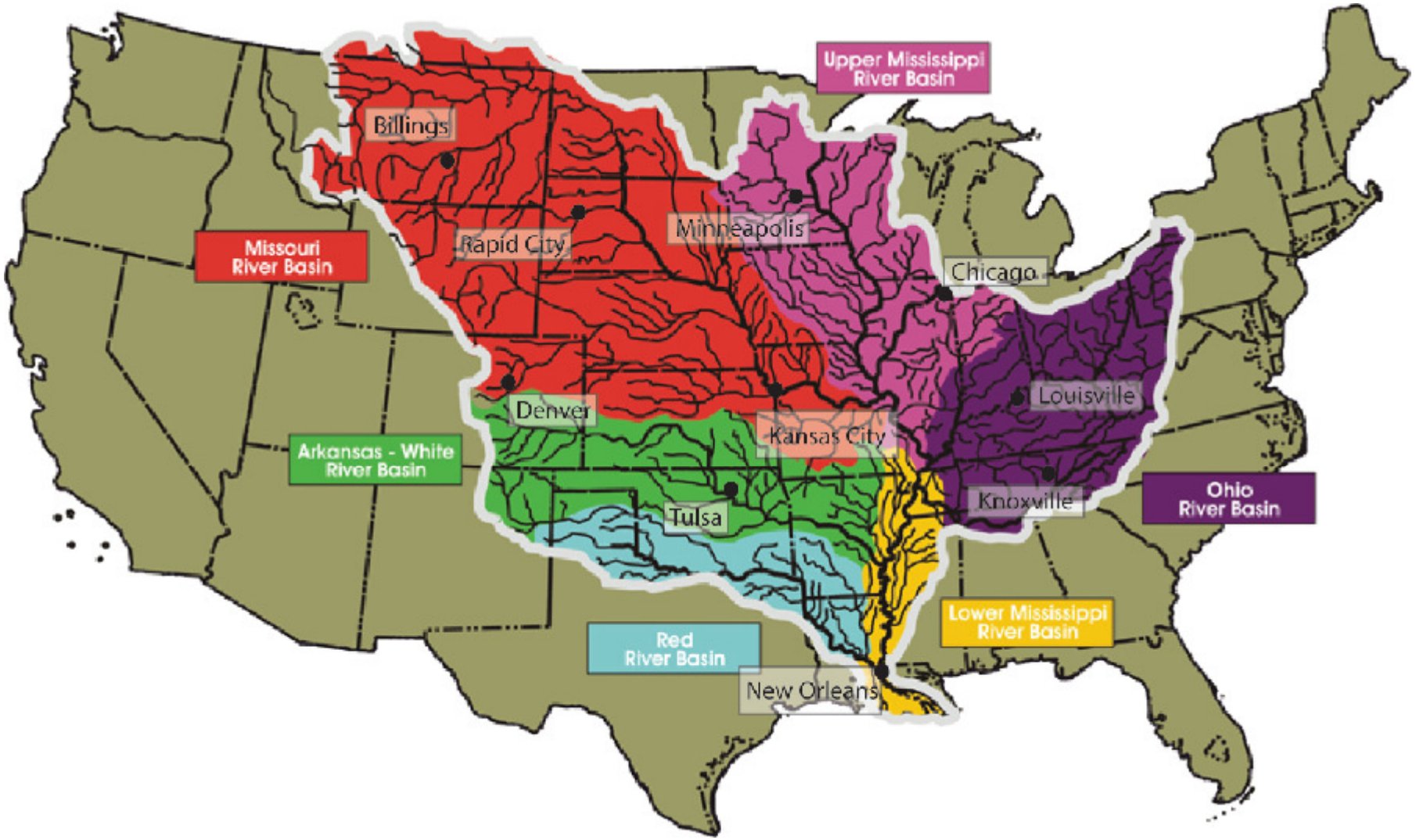
Boundaries of the Basin



Mississippi River Basin



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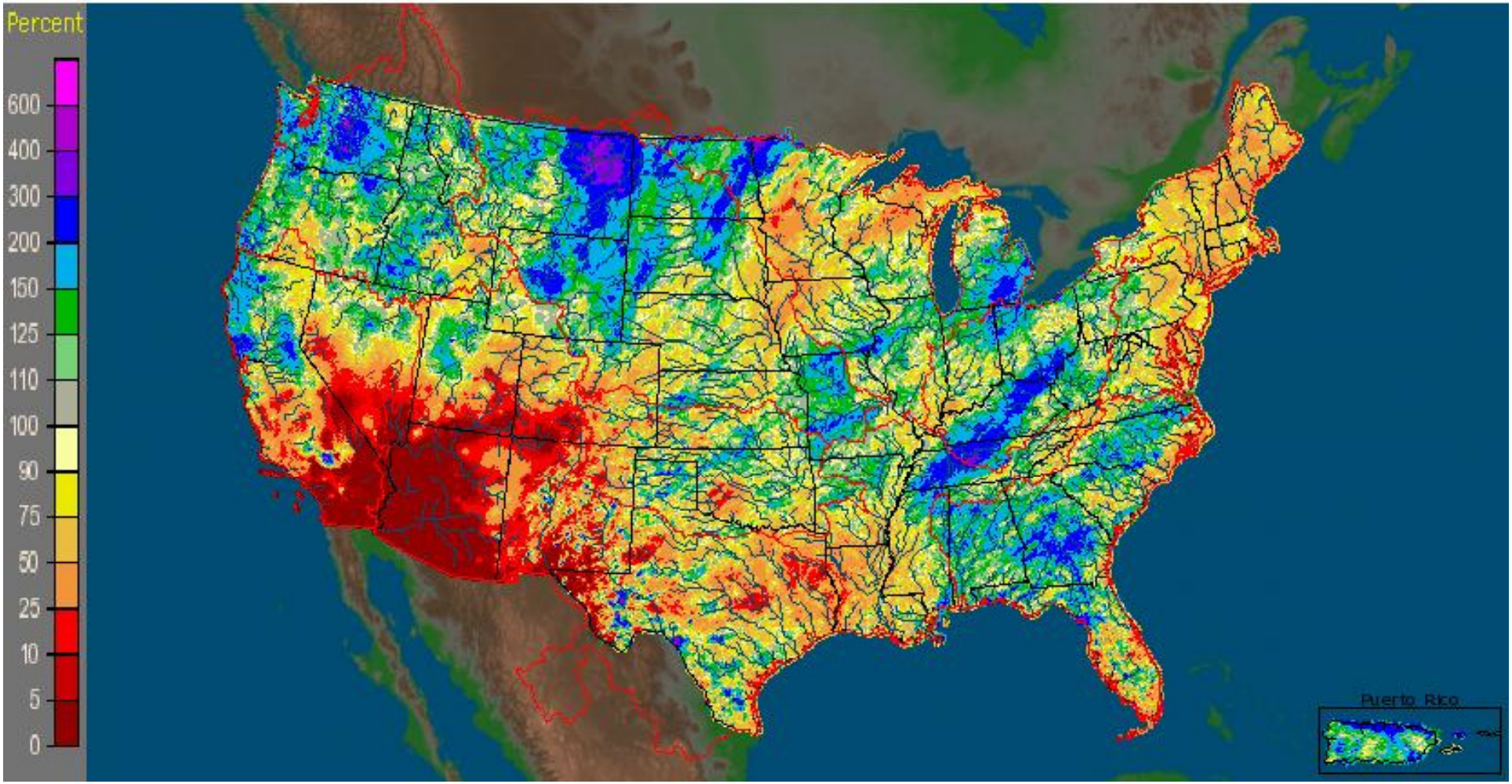
Map Source: Mississippi River Commission

CONUS + Puerto Rico: May, 2010 Monthly Percent of Normal Precipitation
Valid at 6/1/2010 1200 UTC- Created 6/3/10 21:34 UTC



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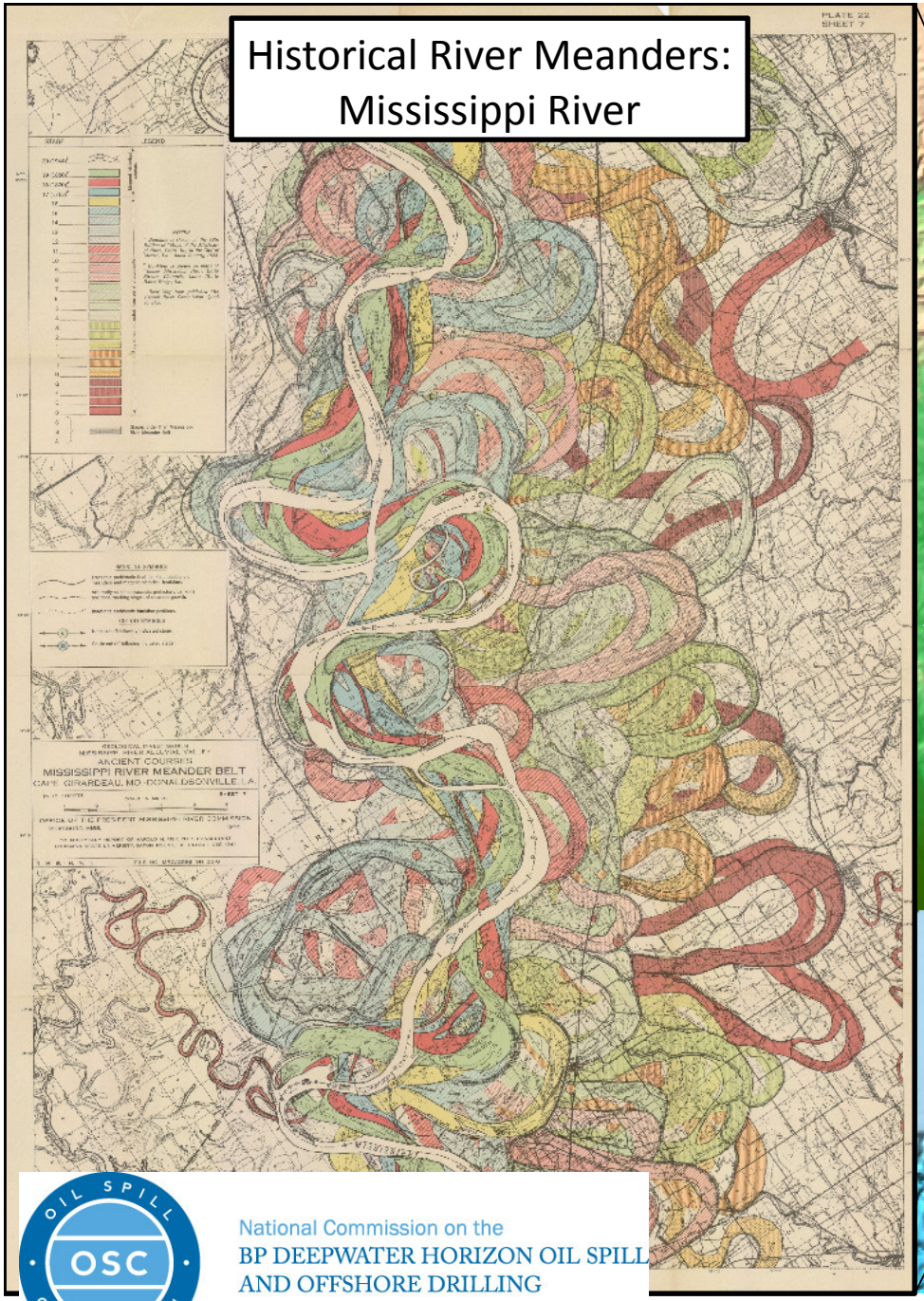
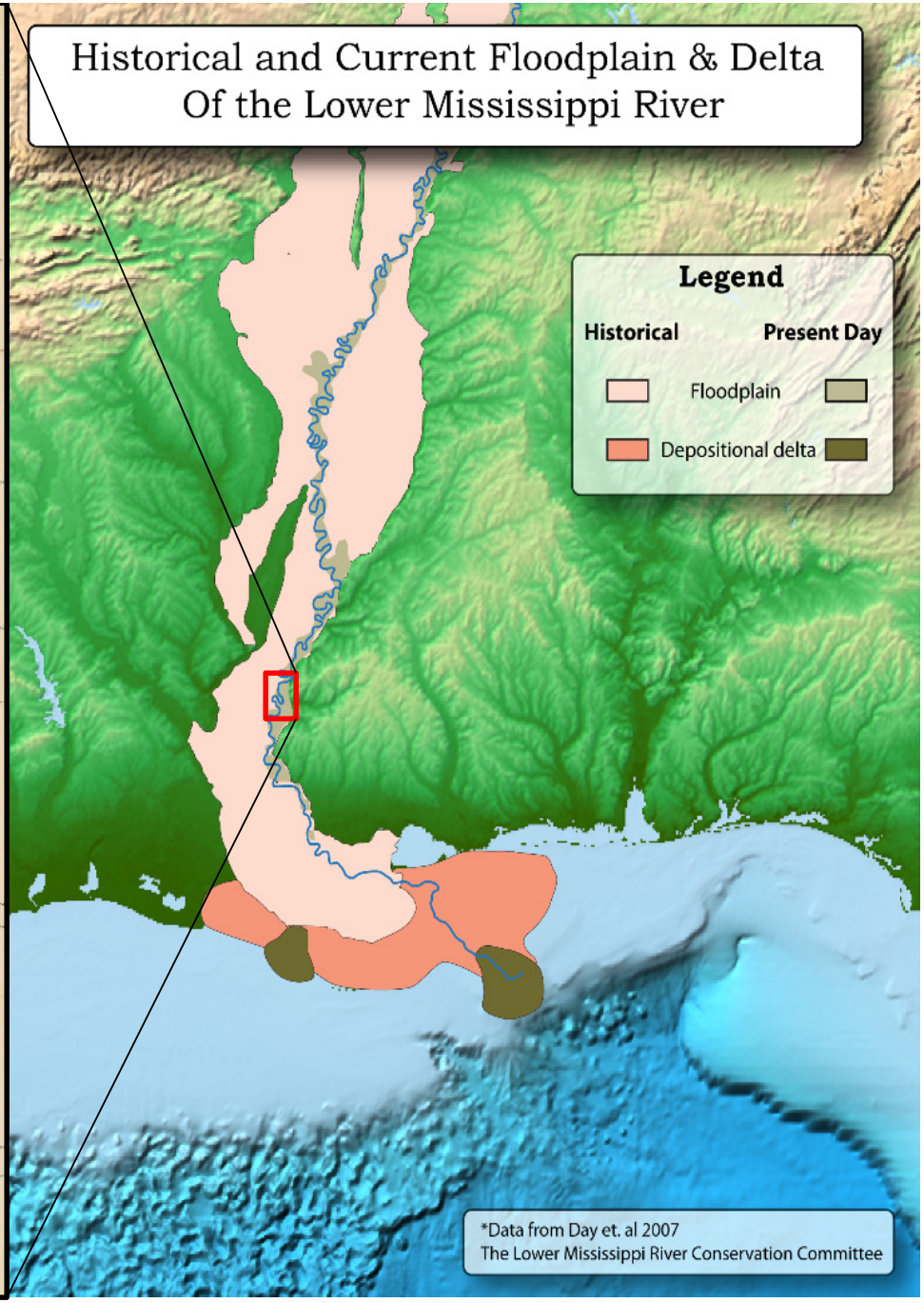
Source: National Weather Service,
Advanced Hydrologic Prediction Service





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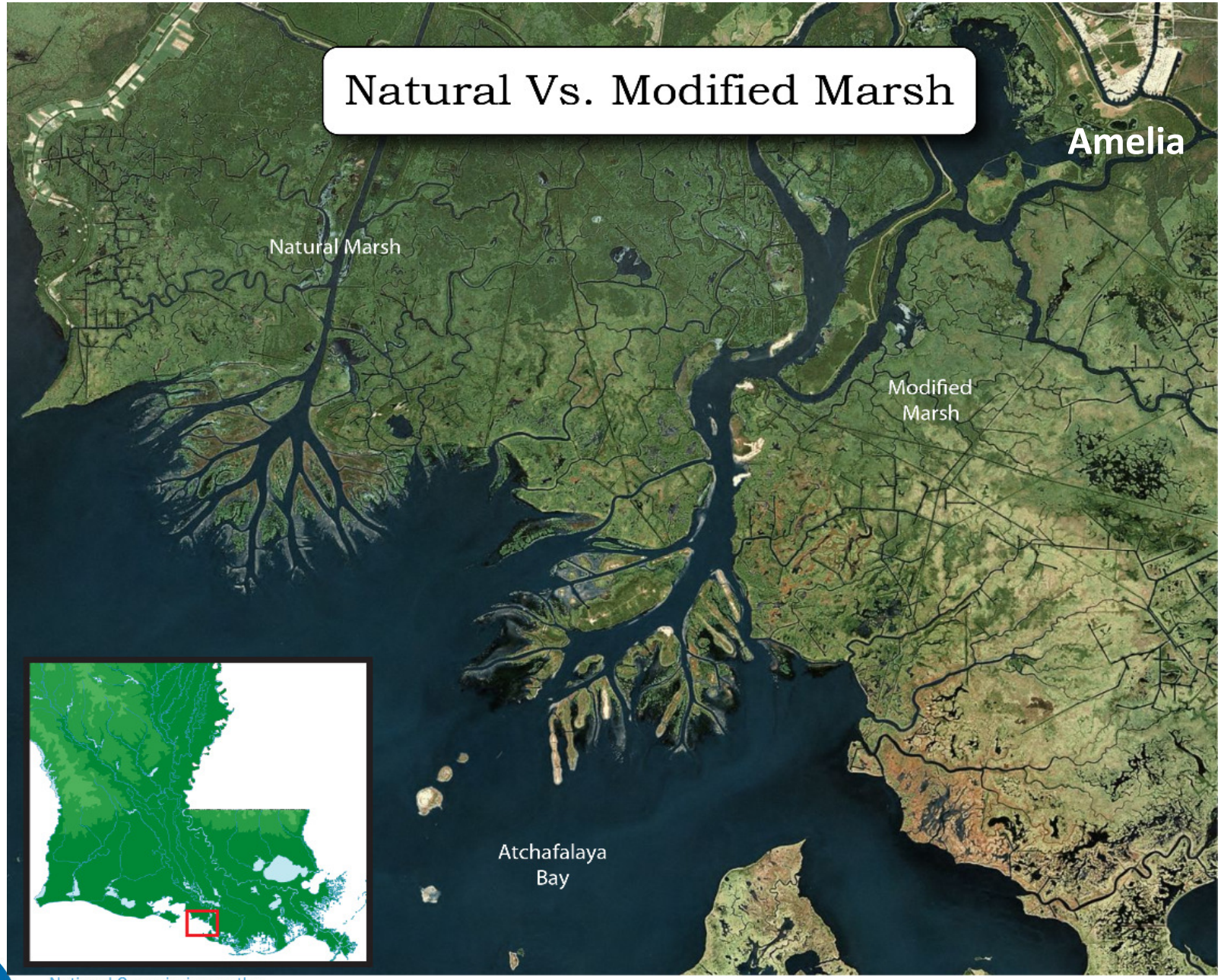
Data Courtesy US Army Corp of Engineers

Natural Vs. Modified Marsh



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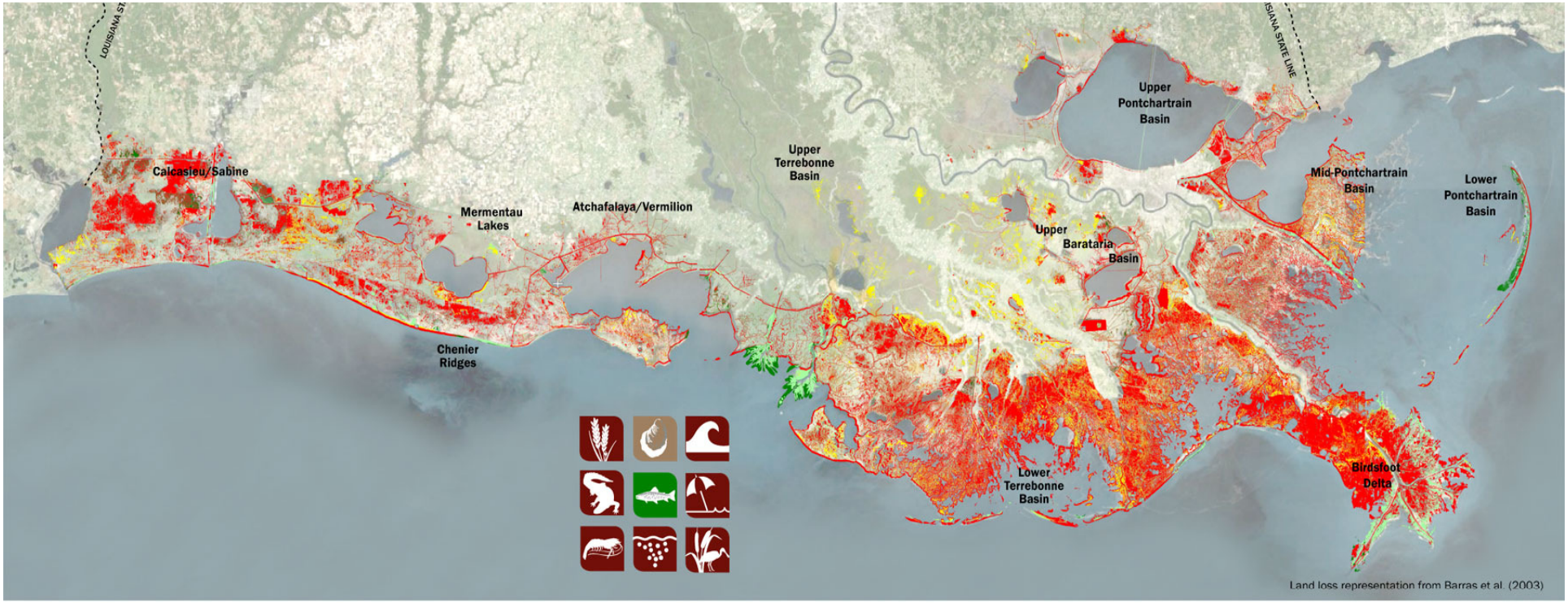

Legend

- **Agricultural/aquacultural production** (includes rice, sugar cane, cattle raising, and farmed crawfish)
- **Freshwater-dependent services** (includes freshwater supply, wild caught crawfish, alligator, largemouth bass, waterfowl, and river otter)
- **Brown shrimp harvest**
- **Oyster harvest**
- **Saltwater commercial/ recreational fisheries harvest** (includes black drum and spotted sea trout)
- **Carbon/nutrient uptake** (includes carbon sequestration, nutrient uptake potential)
- **Surge/wave attenuation**
- **Shoreline recreation** (accessible by car or boat)
- **Ecotourism** (includes neotropical migrants and roseate spoonbill)

Levels of Ecosystem Services

- Increasing
- Not Applicable
- Existing
- Decreasing

Coastal Land Change 1932-2050

- Land Loss 1932 - 2000
- Potential Land Loss 2000 - 2050
- Land Gain 1932 - 2000
- Predicted Land Gain 2000 - 2050

Based on Coastal Louisiana has lost an average of 34 square miles of land, primarily marsh, per year for the last 50 years. From 1932 to 2000 coastal Louisiana has lost 1,900 square miles of land, roughly an area the size of the state of Delaware. If nothing is done to stop this land loss, Louisiana is expected to lose another 700 square miles of land, or about equal to the size of the great Washington D.C.-Baltimore are, in the next 50 years. Further, Louisiana accounted for an estimated 90 percent of the coastal marsh loss in the lower 48 states during the 1990s.

Source: Barras et al., 2003

Approximate Scale

10 miles
0 20 miles
N

Future Land Change (2050)

conceptual draft
Not for distribution
July 2010

OFFICE OF Coastal Protection and Restoration

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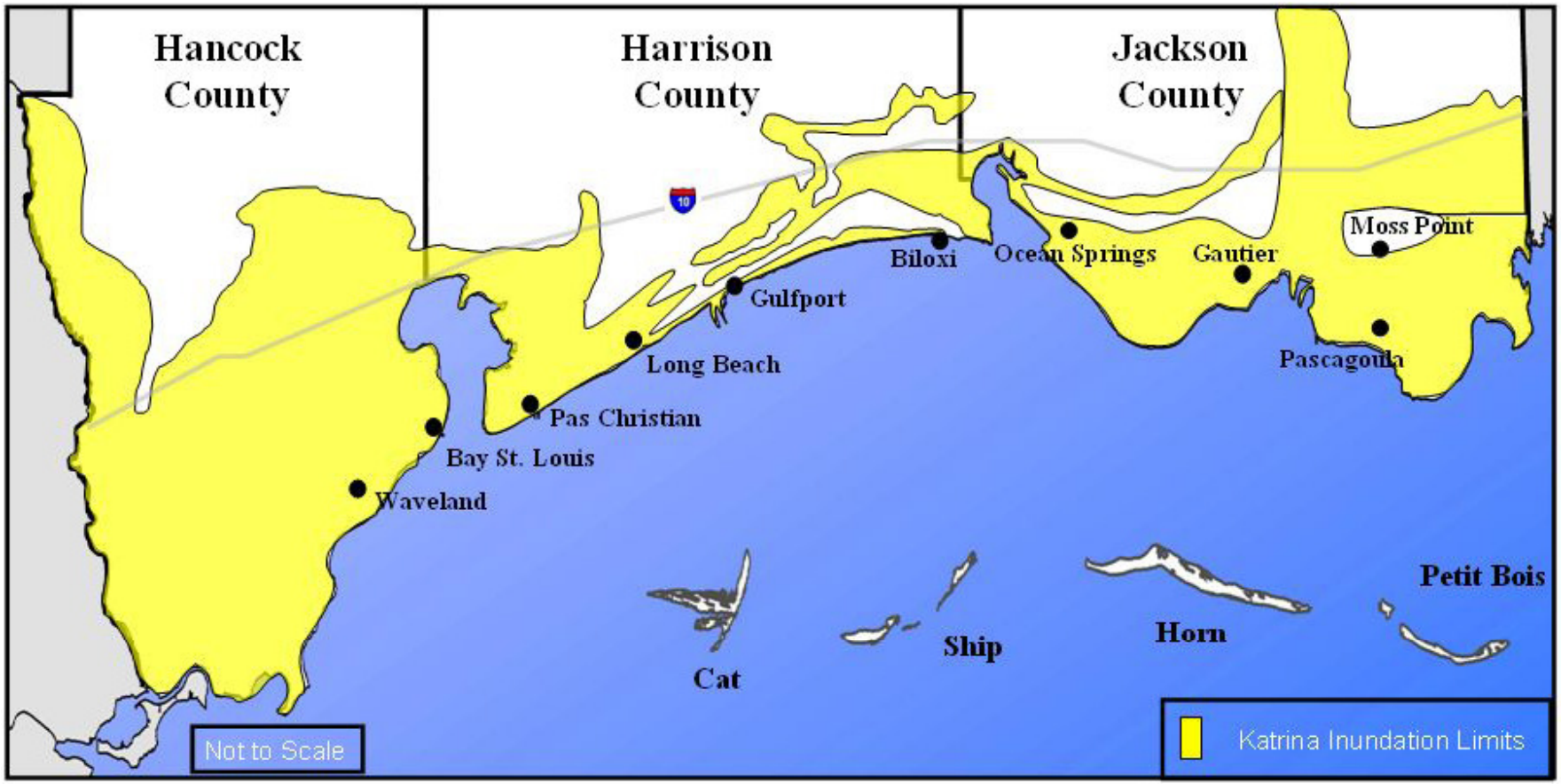
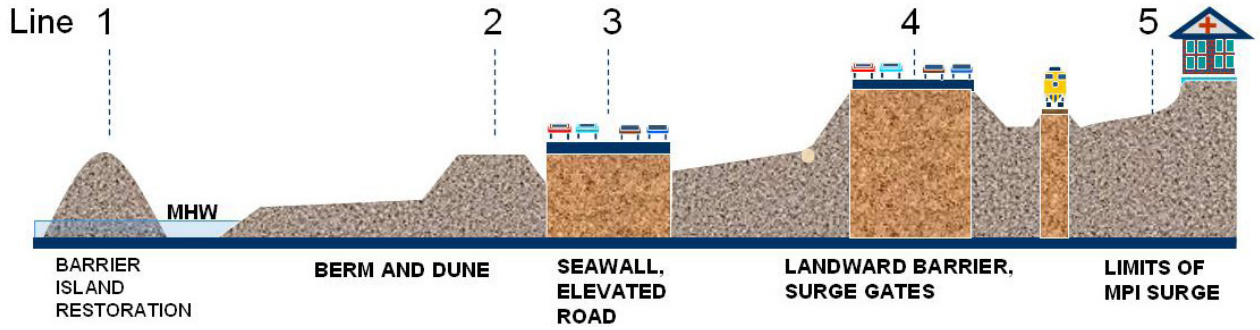
Source: Louisiana Office of Coastal Protection and Restoration





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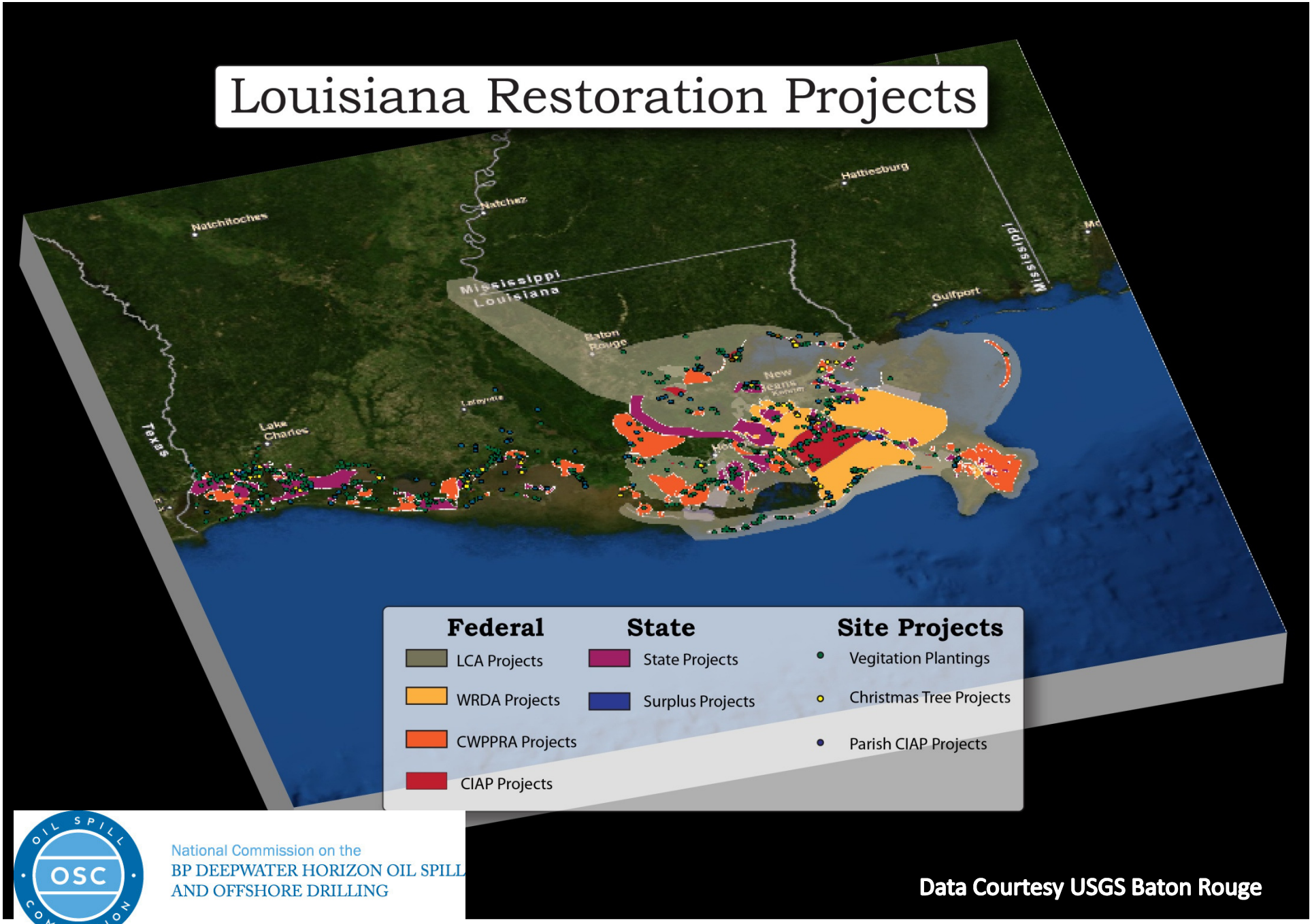
Mississippi Coastal Impacts Program Study Area and "Multiple Lines of Defense" protection strategy

Source: U.S. Army Corps of Engineers

Louisiana Restoration Projects



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Data Courtesy USGS Baton Rouge


Proposed Recommendation from Staff

• Dedicated, sustained funding is necessary to accomplish nationally significant , long-term Gulf ecosystem restoration. Congress should direct 80 percent of civil and criminal Clean Water Act penalties to this work, which would support implementation of a region-wide comprehensive plan (described in next slide).

• Global settlement of litigation should include Supplemental Environmental Projects, criminal restitution and community service projects that direct payments to the Gulf.

• Should Clean Water Act penalties not be redirected toward Gulf ecosystem restoration, Congress should seek other mechanisms outside the appropriations process.

Proposed Options for Discussion from Staff

• Congress should establish a joint state-federal Gulf Coast Ecosystem Restoration Council. The Council should implement a comprehensive plan for the region that is compatible with existing state plans. The comprehensive plan should set short- and long-term restoration goals with binding criteria for selecting projects eligible for funding.

• Key criteria should include spill impacts; degree of restoration need; and opportunities to build ecosystem resilience.

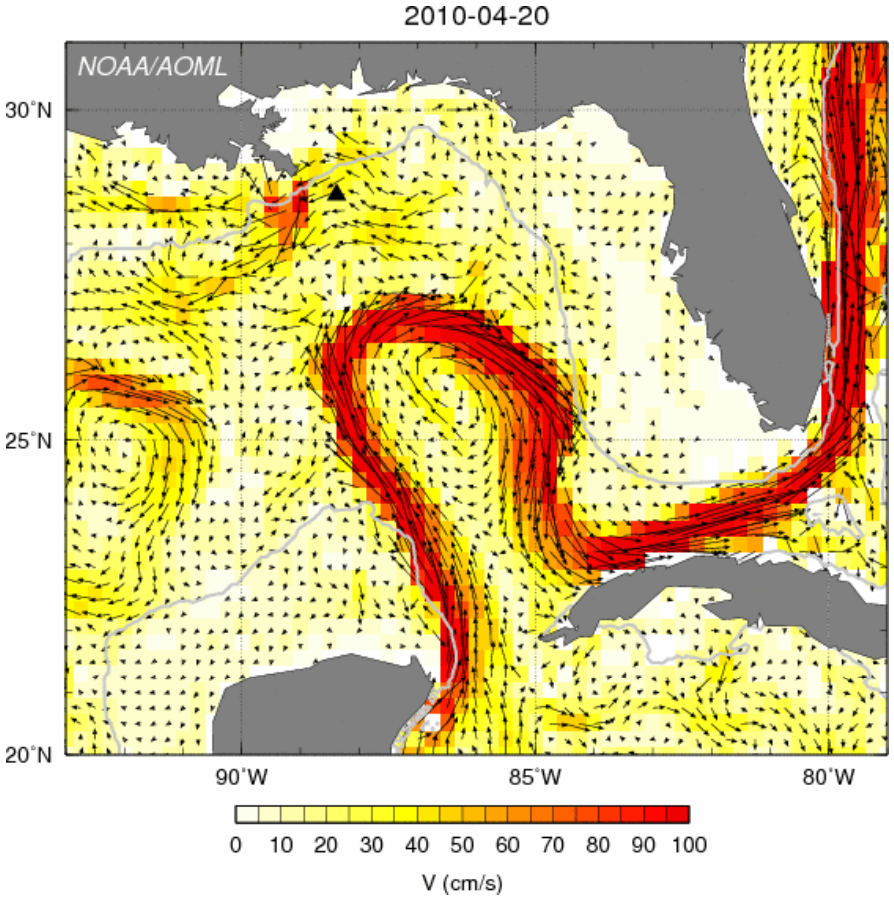
OR

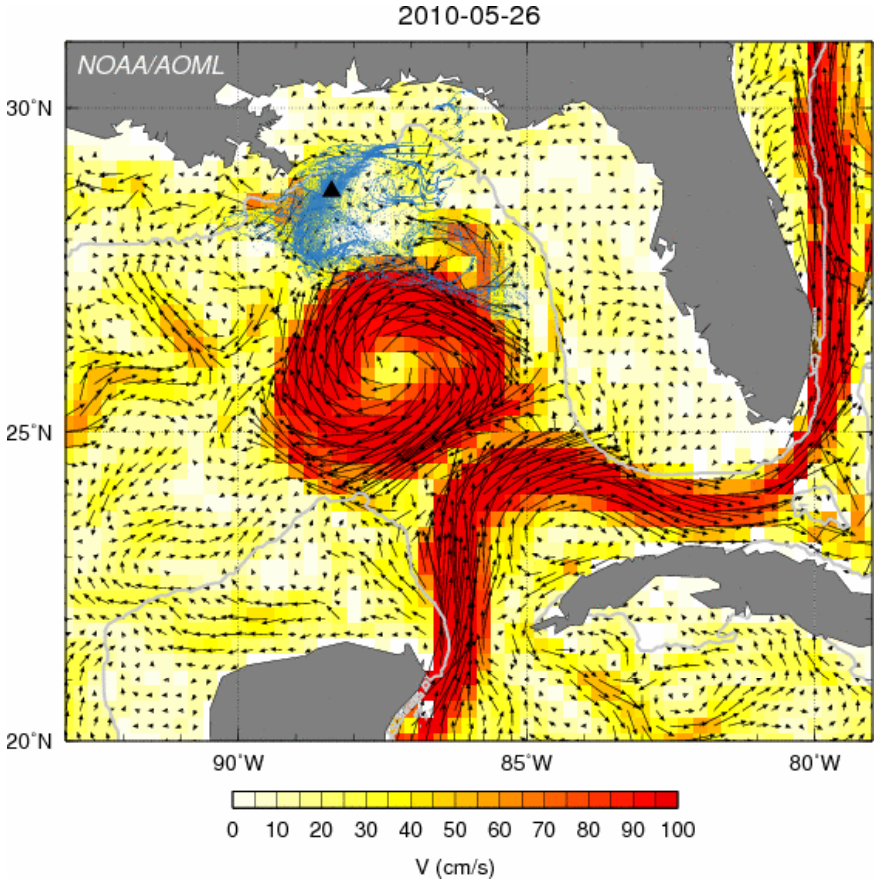
• Congress should establish a joint state-federal Gulf Coast Ecosystem Restoration Council that is responsible for allocating funding based on at least three criteria: national significance; the extent to which federal policy directly contributed to the environmental problem; and compatibility with state comprehensive plans.

• These criteria should form the basis of a comprehensive regional plan, which should set short- and long-term restoration goals.


Proposed Recommendation from Staff

- Gulf Coast Ecosystem Restoration Council priorities and decisions should be informed by meaningful input from a Citizens Advisory Council that represents the diverse stakeholder interests in the Gulf.
- The federal government should establish and fund a Gulf Restoration Science Program that dedicates resources to research Gulf ecology.
- A project-focused Review Panel should evaluate individual projects for scientific validity and consistency with the comprehensive plan.





Gulf of Mexico Loop Current

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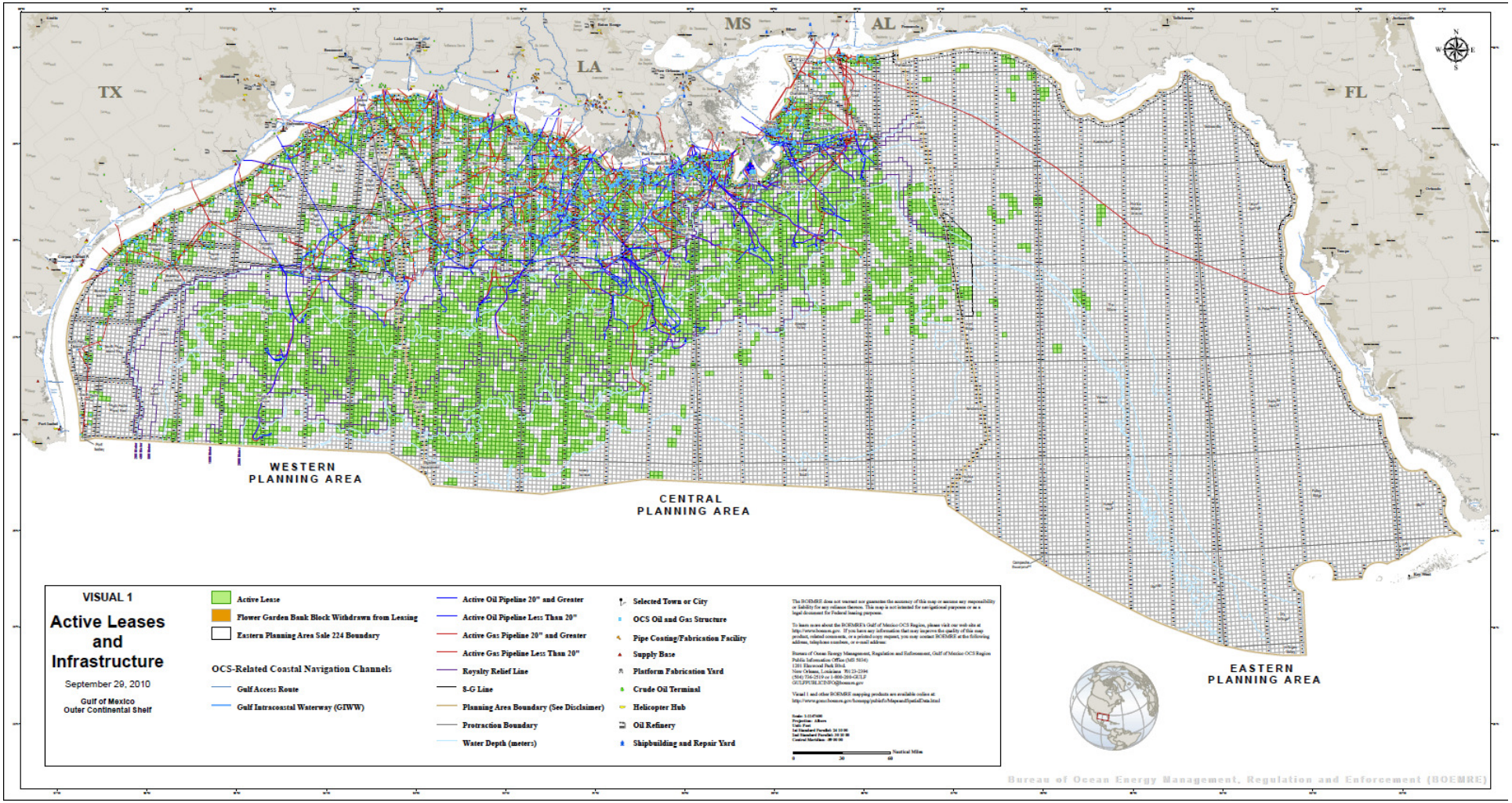
NOAA



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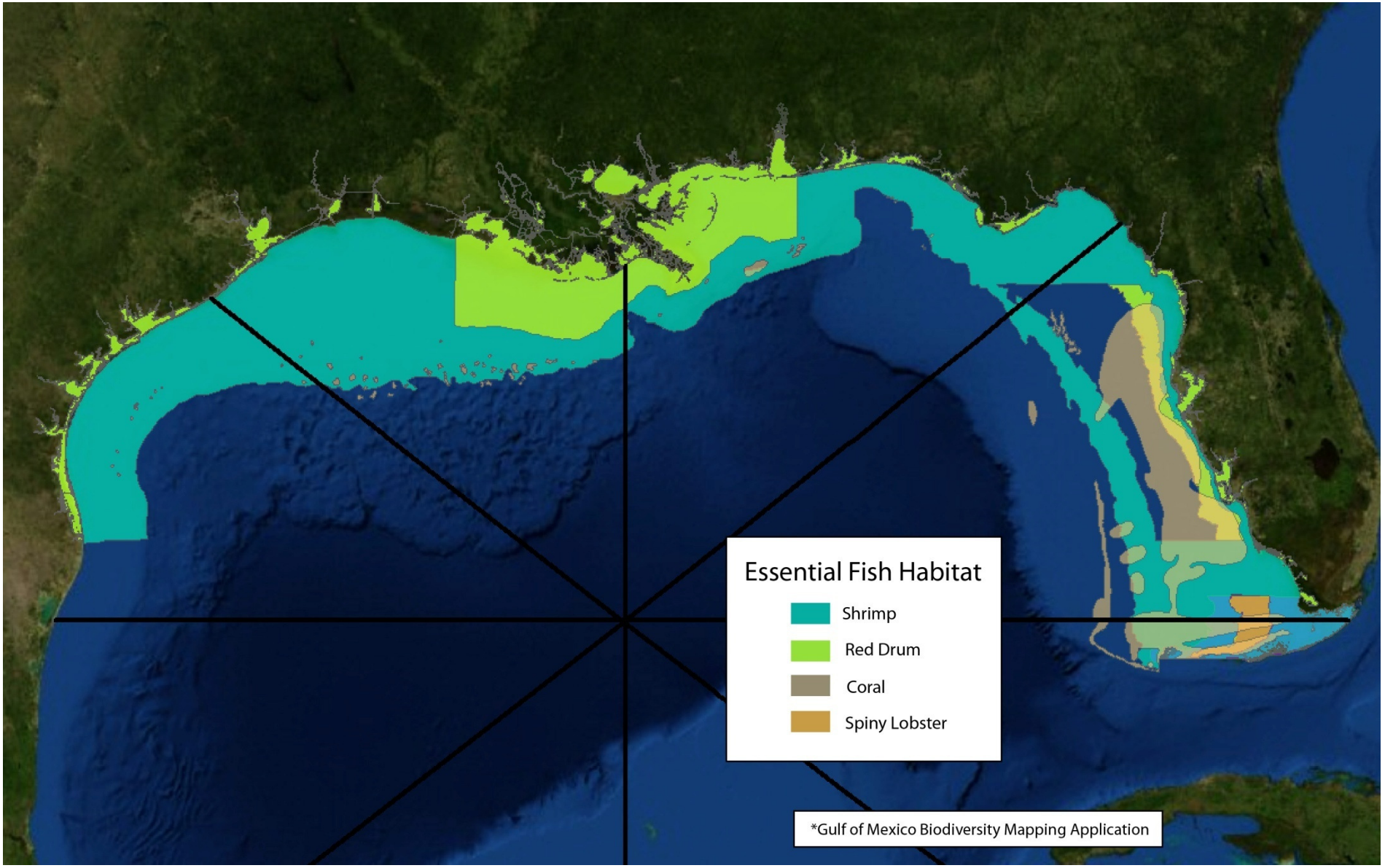
Source: Bureau of Ocean Energy Management, Regulation, and Enforcement



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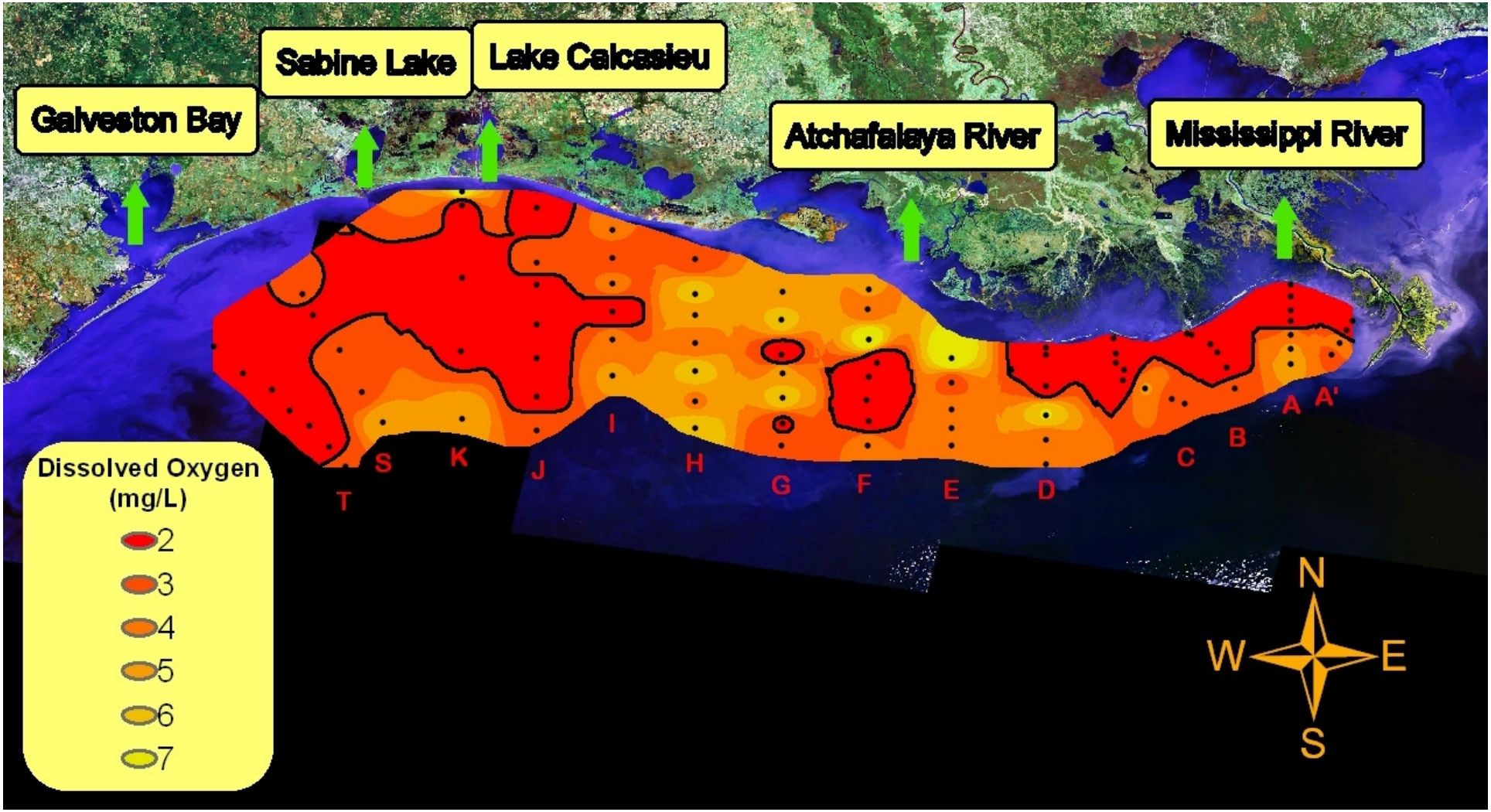

Gulf of Mexico "dead zone," 2010

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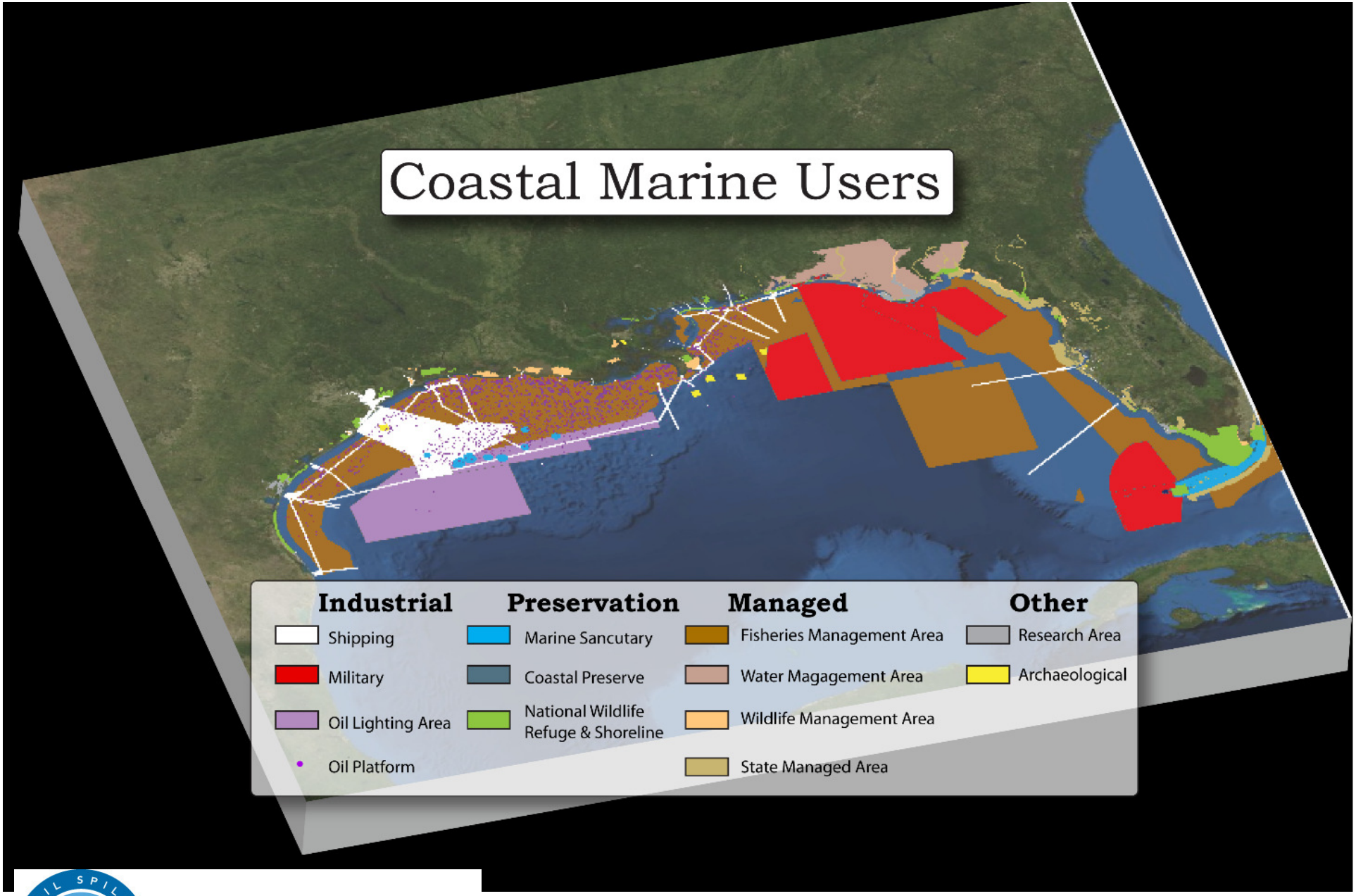
Source: NOAA



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Proposed Recommendation from Staff

Long-term monitoring of potential harm to Gulf seafloor habitats, the water column, and valued species—bluefin tuna, shrimp, and many others—is critical to successful restoration.

- Coastal and Marine Spatial Planning can optimize marine resources use and lessen conflict among users. It now has the backing of a Presidential Executive Order. Congress should fully appropriate FY 2011 White House request to fund regional planning bodies.
- Marine Protected Areas should be considered as possible "mitigation banks" to help offset harm to the marine environment; should be aggressively vetted in public. Also:
  - National Marine Sanctuaries pass through a rigorous public process and provide protection across a number of metrics. Current budget restrictions should be reconsidered to allow proposals for new sanctuaries.

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Proposed Recommendation from Staff

Marine scientists have emerged from the Deepwater Horizon incident with more precise questions to investigate and a better sense of Gulf monitoring needs. To that end:

• Responsible federal agencies should direct industry and the scientific community to expand the Gulf of Mexico Integrated Ocean Observing System by installing and maintaining an in situ network of instruments deployed on selected production platforms.

NASA “Earthrise”

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Google Earth

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