

Prioritizing research in support of coastal and ocean resource management in Florida.

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Florida is an ocean state...

- 2,276 miles of tidal shoreline
- 4000 square miles of estuaries
- Coastal economy contributes \$562 billion to state GSP
- Numerous state, local and Federal agencies, universities
- Two regional Alliances, Fishery management councils, etc.



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Florida Oceans and Coastal Council

- Created by the Legislature in 2005
- Oceans and Coastal Resources Act
- Co-chaired by DEP and FWC
- DEP, FWC and DOACs *ex-officio* members
- 15 Appointed Members
 - State and federal agencies & programs
 - Public and private academic institutions
 - NGO research and advocacy groups
 - Florida business and corporate sectors



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Florida Oceans and Coastal Council

- The Council's charge:
 - Coordinate marine and coastal research
 - Identify research gaps
 - Create Annual Research Plan
 - Recommend new strategies for marine and coastal management
 - Provide tools to track research and monitoring activities
 - Conduct a comprehensive resource assessment

Annual Science Research Plan 2010-2011



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Research Prioritization Process

- Prioritized resource management needs solicited from state and local government agencies with coastal and oceans resource management responsibilities.
- Additional solicitation of management needs from from the public and NGO's.
- Management needs parsed into 13 Research Categories
- Research Categories further refined into 37 Research Focus Areas with specific Research Components within each (160 total; top 50 were prioritized)
- Integrated Data Management needs prioritized separately

Priority Research Categories Identified

Habitat Mapping and Characterization	Public Health Issues
Ecosystem Monitoring and Assessment	Living Marine Resources
Modeling Systems	Habitat Restoration
Water Quality	Non-native Invasive Species
Watershed and Freshwater Flow	Aquaculture
Effects of Climate Change	Harmful Algal Blooms (HABs)
Measuring Coastal Economies and Assessing Human Impacts on Resources	



Sample: Expanded Research Components

Research Category : Habitat Mapping and Characterization

Research Focus Area 2: Mapping Marine Habitats

RC 2.1: Produce present-day high-resolution bathymetric maps, identifying physical geologic setting (sediment/rock) and submarine aquatic vegetation with the goal of mapping the habitats of the entire State's waters by 2015. [Priority 5 of 50]

...

RC 2.3: Perform bathymetric and benthic-habitat mapping of important Florida tidal rivers and estuaries by 2010. These are to be used to determine essential environmental conditions needed for living marine resources and to provide data for modeling the environmental impacts of management decisions regarding water use. This effort should mesh with the longer-term mapping effort of RC 2.1 [Priority 21 of 50]

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Sample: Expanded Research Components

Research Category : Ecosystem Monitoring and Assessment

Research Focus Area 3: Integrated Observation and Prediction System for Florida's Coastal Marine Ecosystems.

...

RC 3.2: Design and establish real-time interdisciplinary observing systems for Florida waters and contiguous waters important to and affecting the Florida coastline. Initiate installations in coordination with the regional associations that have been established in the southeastern U.S., Gulf of Mexico, and State of Florida and with the Florida Coastal Monitoring Framework. [Elevated as first priority before other RCs]

...

RC 3.6: Establish and enhance hydrological, chemical, and biological monitoring and assessment, including stationary and mobile systems such as shipboard surveys with accompanying modeling of the systems being monitored, to support agency programs to preserve and manage Florida's natural resources. [Priority 19 of 50]

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Sample: Expanded Research Components

Research Category: Watershed and Freshwater Flow

Research Focus Area 11: Filling Information Gaps

...

RC 11.3: Develop an integrated statewide water budget, considering watersheds outside of Florida as necessary, which accounts for inputs, storages, transfers, and losses of atmospheric, surface, and ground waters to identify the extent of inflow change to the state's coastal waters. *[Priority 4 of 50]*

...

Research Focus Area 14: The land-sea connection

RC 14.1: Determine the relationship of the timing, quantity, and distribution of major river outflows and submarine groundwater discharges to the distribution and abundance patterns of coastal marine organisms. *[Priority 24 of 50]*

...

RC 14.3: Using a historical approach, estimate the effect of the loss of coastal mangrove and seagrass habitat on the species and economies that depend upon them. *[Priority 9 of 50]*

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Sample: Expanded Research Components

Research Category: Living Marine Resources

Research Focus Area 27: Connectivity: linking the distribution and abundance of living marine resources to ocean currents

RC 27.1: Conduct studies linking key fish spawning areas to larval distribution and adult population-distributions on the Florida shelf, for example Riley's Hump in the Tortugas Ecological Reserve. *[Priority 29 of 50]*

...

Research Focus Area 29: Spatial management

RC 29.1: Conduct needs assessment for coastal and oceans user groups to determine aspects to consider in defining marine zones. Incorporate users in discussions of marine zoning.

RC 29.2: Using resource assessment and mapping, conduct a pilot project to zone a significant area of Florida's coastal ocean.

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Sample: Expanded Research Components

Research Category: Understanding Effects From Climate Change

Research Focus Area 9: Effects of Ambient Temperature Trends on marine ecosystems and biological processes

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RC 9.5 Evaluate the long-term stability of coastal wetlands (marshes, mangroves, seagrasses) in relation to sea-level rise and episodic disturbances (i.e., hurricanes). [Priority 18 of 50]

...

Research Focus Area 10: Impacts of Sea-Level Rise on Coastal and Marine Environments

RC 10.1: Assess effects on Florida's publicly-owned natural areas resulting from efforts by local governments to mitigate sea-level rise.

RC 10.2: Assess effects of sea-level rise on marine habitat loss or change and on ecosystem change. Determine what actions may be necessary to minimize harm to coastal marine ecosystems.

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Format of Annual Plan has Evolved

- Full suite of 160+ Research Components not re-submitted every year.
- 2008, 2009 and 2010 Plans organize Research Priorities into categories:
 - Water Quality
 - Climate Change
 - Oceans and Coastal Systems
 - Tools and Technologies
 - Ocean Governance (*added in latest plan*)

Research Priority: Ocean Governance

- **Marine spatial assessment and mapping:**

Promote development and coordination of GIS based systems that overlay spatial information relevant to ocean management. Data and information gathering must continue and the maps must be updated.

- **Public outreach:**

Build a constituency for comprehensive ocean governance using geographic information system products through website development, public meetings, and demonstrations at public forums.

- **Marine spatial planning:**

GIS based data will form the framework for the development of an ocean management plan, but planning and implementation will require cooperation between the state and federal governments in authorizing legislation and funding. Comprehensive planning is unprecedented in Florida. Planning needs to be an adaptive process as performance must be monitored and evaluated against the goals that are established at the outset.

Council Products

- *The Effects of Climate Change on Florida's Ocean and Coastal Resources, 2009*
- *Florida Oceans and Coastal Economies Report, 2008*
- *Florida Coastal Ocean Observing System Strategic Implementation Plan, 2008*
- *Current Status and Opportunities for Marine Stock Enhancement and Aquaculture in Florida, 2007*
- *Investing in Florida's Coastal and Oceans Future, 2004*

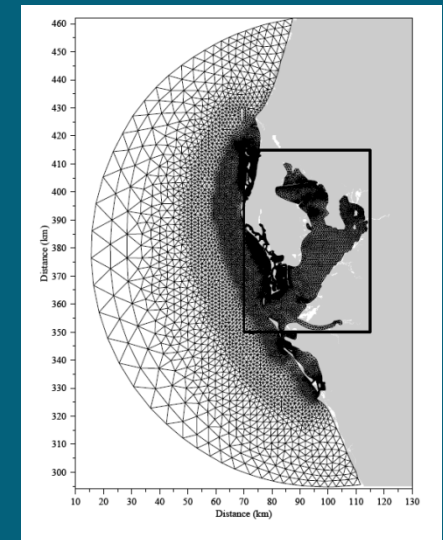
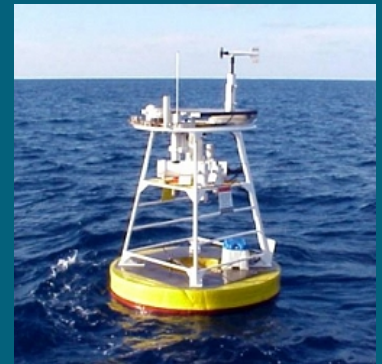


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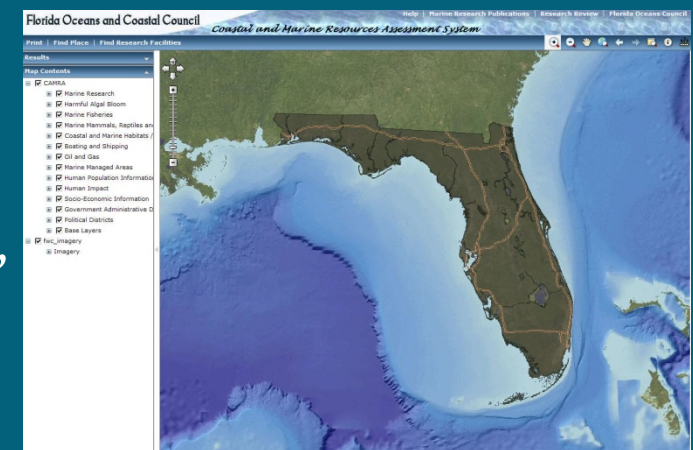
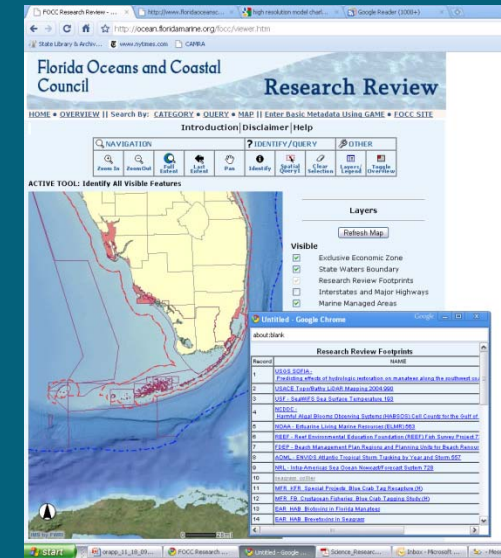
Council Initiatives

- *Funding high priority Ocean Observing Projects*
 - *New nutrient sensors, new moorings in NW Florida and on the East Central shelf*
- *Development of new oceanographic models*
 - *Florida-wide ocean-atmosphere model*
 - *High resolution estuarine and shelf model for NW Florida*
- *Ocean Tracking Network Workshop*
- *Joint state/federal workshop to prioritize mapping needs*



Council Initiatives

- Web-based Research Review application tracks existing ocean and coastal research
- Web-based Resource Assessment application prototype developed
 - *Coastal and Marine Assessment (CAMRA)*
 - *Interactive mapping application will be accessible on the Council's website.*
- Integrated Data Management Planning
 - *Development of functional requirements and metadata elements, 2008*



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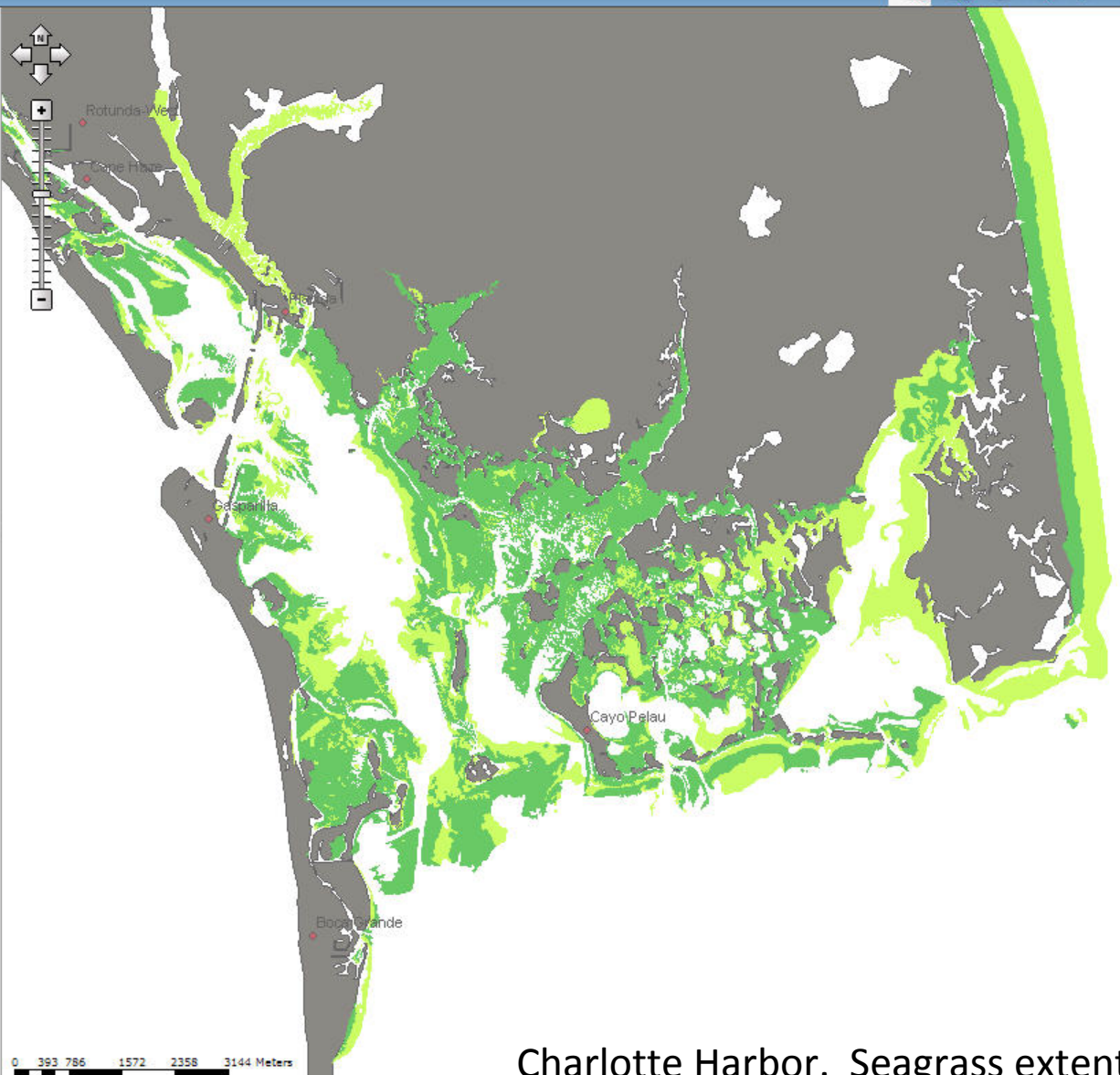
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Results

Map Contents

- CAMRA
 - Marine Research
 - Harmful Algal Bloom
 - Marine Fisheries
 - Marine Mammals, Reptiles and Birds
 - Coastal and Marine Habitats / Cover
 - Boating and Shipping
 - Oil and Gas
 - Marine Managed Areas
 - Human Population Information
 - Human Impact
 - Beach Renourishment
 - Seagrass Scarring
 - Seagrass Scars - Charlotte Harbor
 - LIGHT
 - MEDIUM
 - SEVERE
 - Seagrass Scars - 1991 to 1999
 - LIGHT
 - MODERATE
 - SEVERE
 - Seagrass - Florida 1987 to 2000
 - Shipwrecks and Obstructions
 - Socio-Economic Information
 - Government Administrative Districts
 - Political Districts
 - Base Layers
 - Florida Beach Names
 - Inlets and Passes
 - Populated Places
 - Undersea Features
 - Major Rivers
 - Roads - Interstates
 - State Waters Boundary
 - Bathymetry (USGS -10m interval)
 - Shorelines
 - FL Multi-scale
 - FL_100K



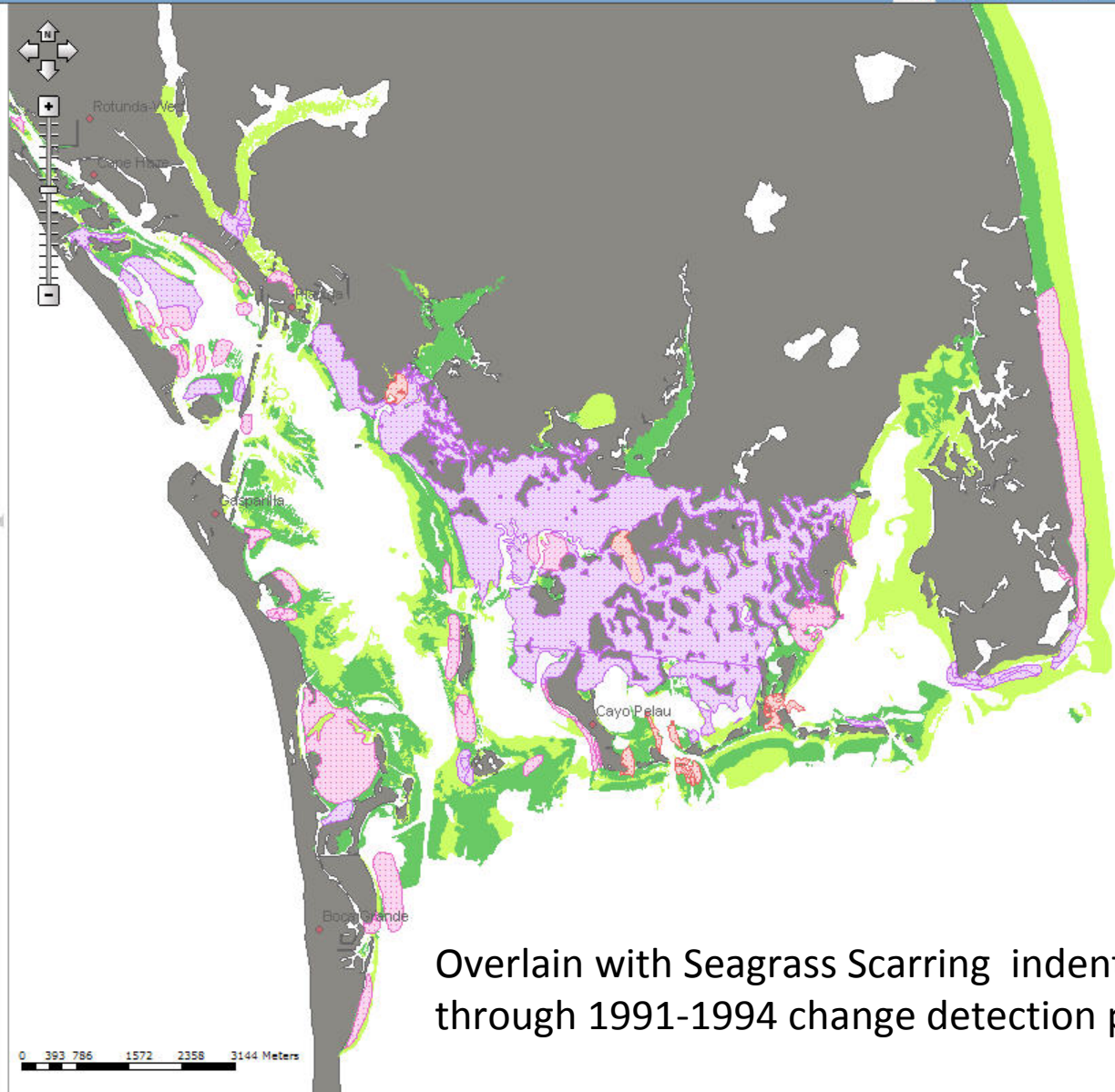
Charlotte Harbor. Seagrass extent



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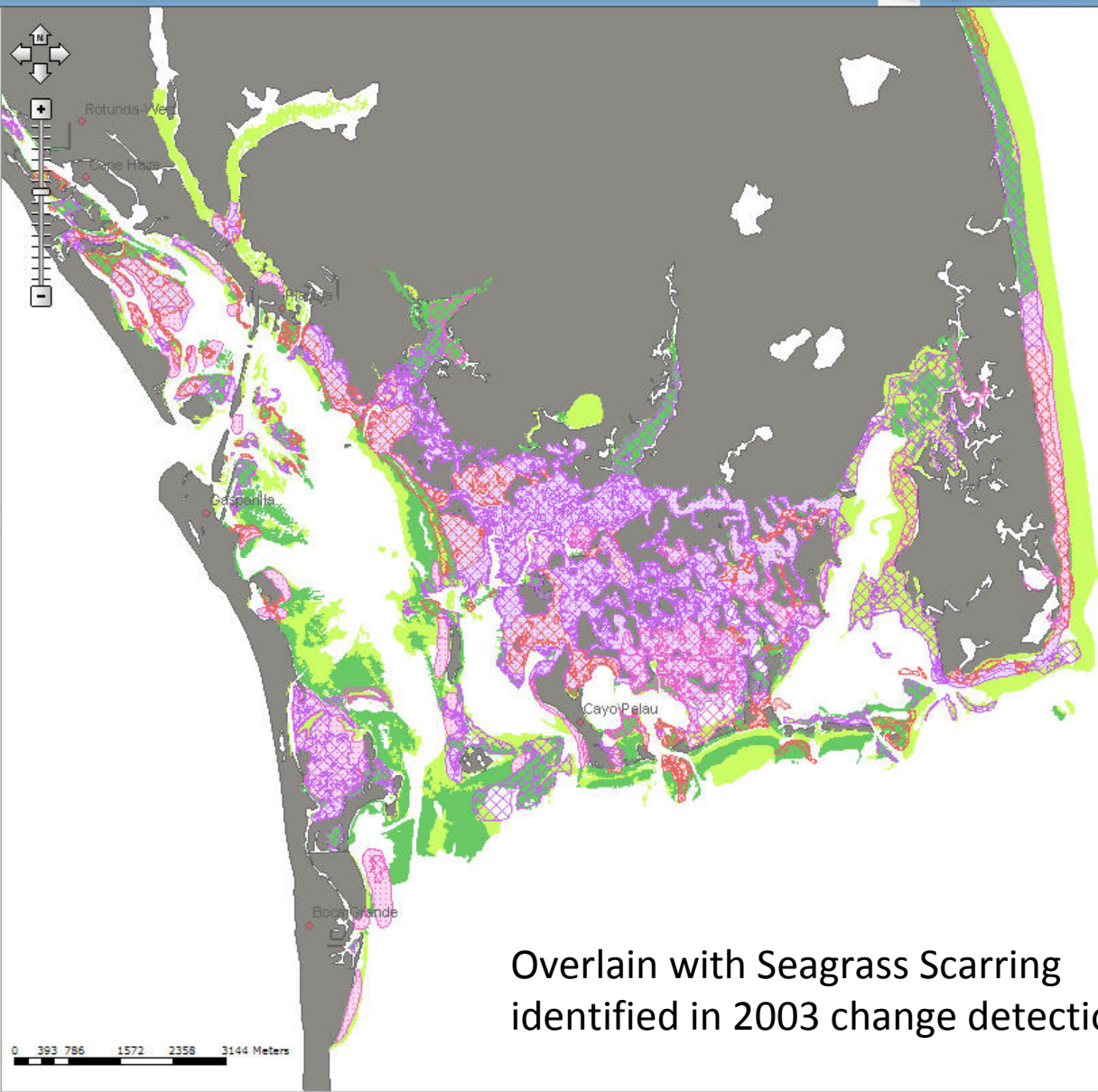
Overlain with Seagrass Scarring indentified through 1991-1994 change detection project



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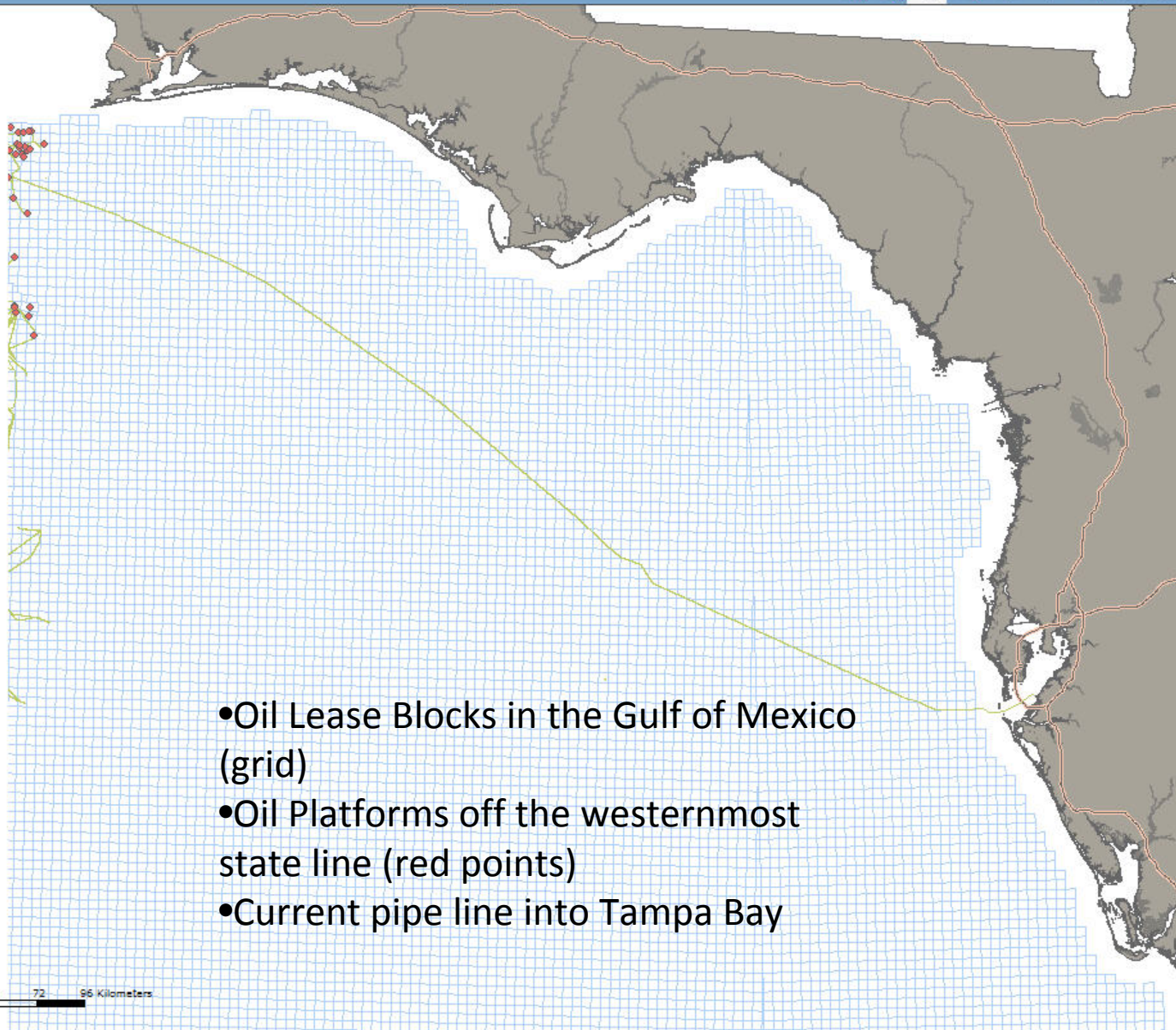
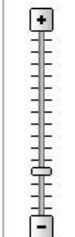
Overlain with Seagrass Scarring identified in 2003 change detection



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- CAMRA
 - Marine Research
 - Harmful Algal Bloom
 - Marine Fisheries
 - Marine Mammals, Reptiles and
 - Coastal and Marine Habitats /
 - Boating and Shipping
 - Oil and Gas
 - Oil Platforms Gulf of M
 - Pipelines Gulf of Mexic
 - Oil Lease (Active) Gulf
 - Oil Lease Blocks Gulf o
- Marine Managed Areas
- Human Population Information
- Human Impact
- Socio-Economic Information
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 - Populated Places
 - Undersea Features
 - Major Rivers
 - Roads - Interstates
 - State Waters Boundary
 - Bathymetry (USGS -10
 - Shorelines
- fwc_imagery
 - Imagery



- Oil Lease Blocks in the Gulf of Mexico (grid)
- Oil Platforms off the westernmost state line (red points)
- Current pipe line into Tampa Bay

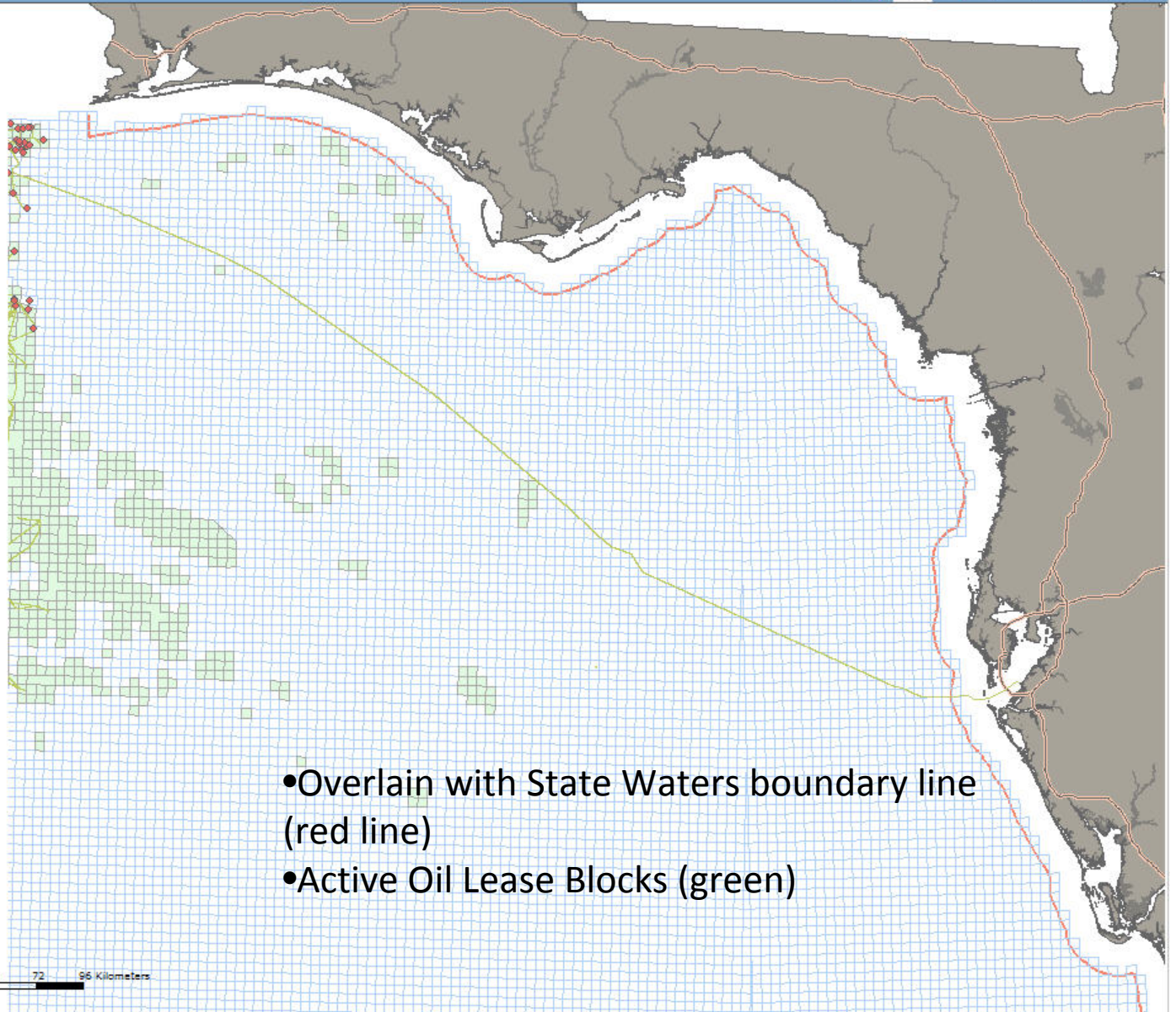
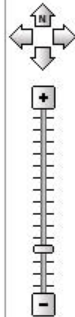
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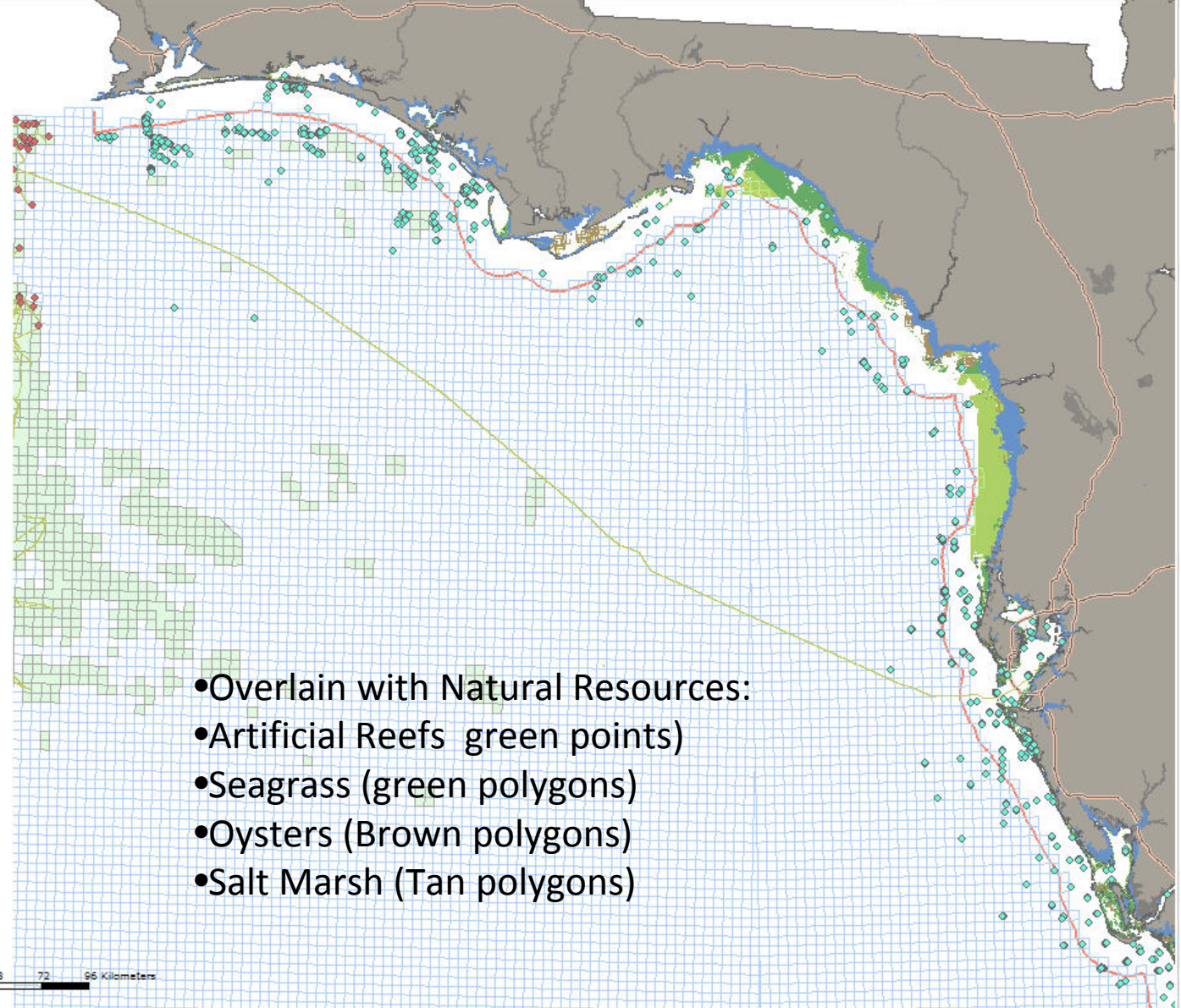
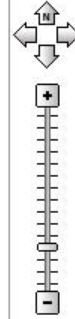


- Overlain with State Waters boundary line (red line)
- Active Oil Lease Blocks (green)

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 - Harmful Algal Bloom
 - Marine Fisheries
 - Marine Mammals, Reptiles & Birds
 - Coastal and Marine Habitats
 - Artificial Reefs
 - Artificial Reefs - Co
 - Environmental Sensitive Areas
 - Salt Marsh
 - Mangroves
 - Corals and Hardbottom
 - Oysters
 - Oysters
 - Seagrass
 - Seagrass - Jo
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 - Discontin
 - Tidal Flats
 - Sediments -Gulf of M
 - Boating and Shipping
 - Oil and Gas
 - Oil Platforms Gulf of M
 - Pipelines Gulf of Mex
 - Oil Lease (Active) Gu
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 - Marine Managed Areas
 - Human Population Informat
 - Human Impact
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- Overlain with Natural Resources:
- Artificial Reefs (green points)
- Seagrass (green polygons)
- Oysters (Brown polygons)
- Salt Marsh (Tan polygons)

Reality Check

- Original impetus for forming council is no longer applicable
- Council funding support no longer present
- Coordination without legal or executive drivers is a long slow process
- Need for statewide ocean planning not universally acknowledged
- Management authority for coastal and ocean issues is diffused among many entities
- Regional Alliances have (and will) created some momentum
- Much of the groundwork is already laid





Questions?