

# USACE Regional Sediment Management

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Building/Working with Nature Works  
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®

US Army Corps of Engineers  
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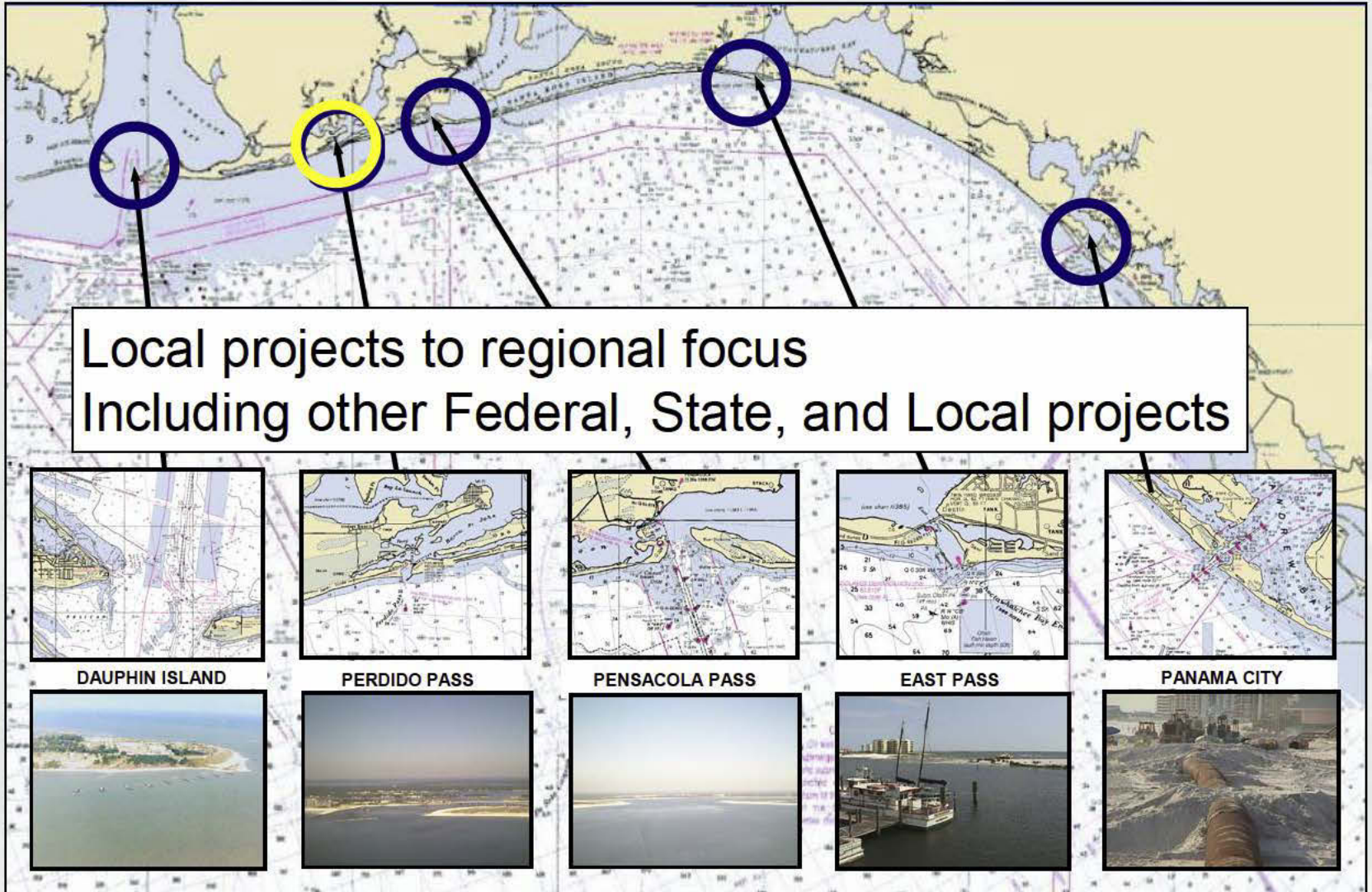
# Outline

- **Regional Sediment Management**
  - What it is in the Corps
  - Why it is important
- **Case Studies**
- **Summary**





# Why RSM?



# Why RSM?

.....Each year the Corps moves  
**250-300** Million cu yd of sediment



...At a cost of more than  
**\$700 Million** per year





# Regional Sediment Management

- Coastal Engineering Research Board Initiative (1996 -1998)
- RSM Demonstration (1999)
- Mobile District (1999-2002)
- Additional Districts (2002 – present)

Charge from CERB:

*“RSM Demo Projects WILL...”*

- **Contain Specific Problem to Solve**
- **Generate Initial Outcomes Quickly**
- **Involve Multiple Agencies**
- **Develop Stakeholder Support**



# Regional Sediment Management is...

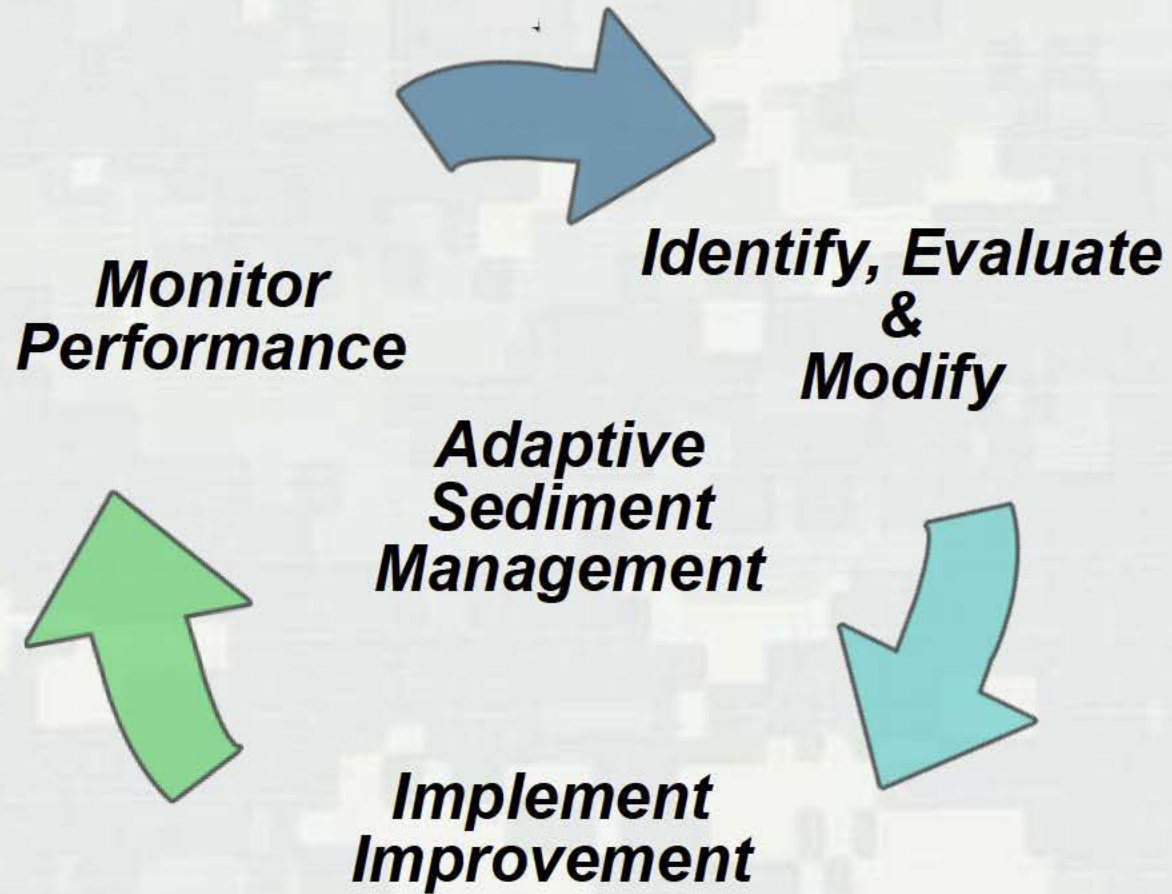


A systems approach for efficient and effective management of sediments in our Coastal, Estuarine, Riverine, and Watershed environments

- Manage local projects and sediments within the regional context
- Consider sediments as a regional resource
- Support sustainable solutions for navigation and dredging, flood and storm damage reduction, and ecosystem restoration
- Communicate and collaborate – USACE, Stakeholders, and Partners



# Regional Sediment Management Approach





# RSM Strategies



Reduce Offshore  
Placement



Nearshore/Beach  
Placement



Bypass  
Optimize Placement



Reduce Sediments  
at the Source



Utilize Upland Material



Ecosystem Habitat



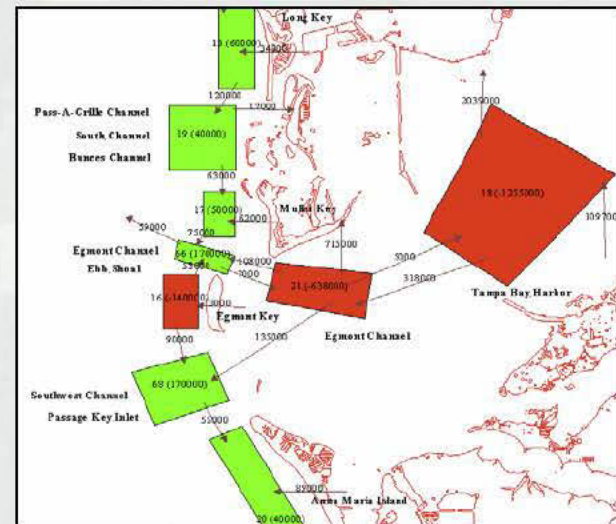


# Why RSM is Important to Civil Works:

- Regional vs project approaches
- Practice 'Adaptive Management'
- Improve channel availability
- Reduce dredging requirements
- Storm damage reduction
- Address sand resource issues
- Environmental stewardship
- Reduce costs while increasing benefits
- Improve partnerships and collaboration



# Regional Sediment Budgets

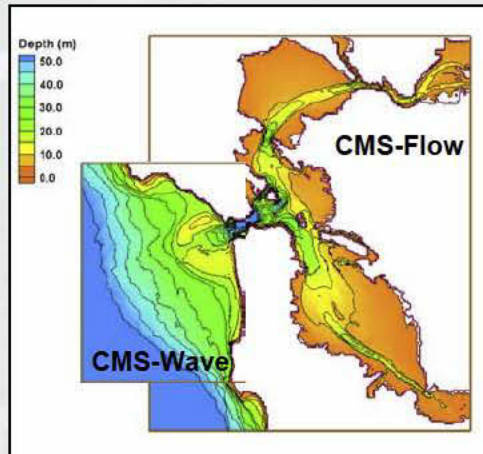
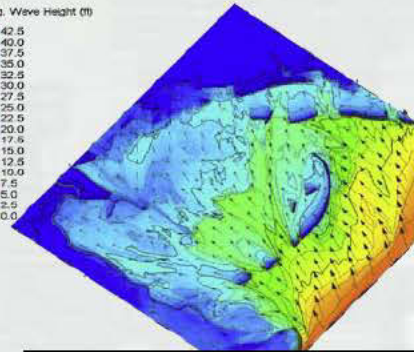
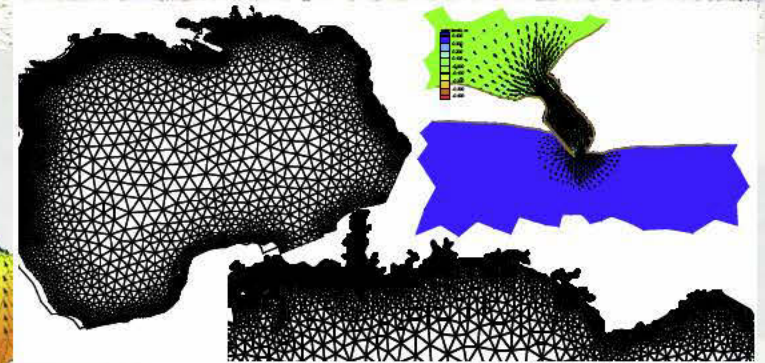
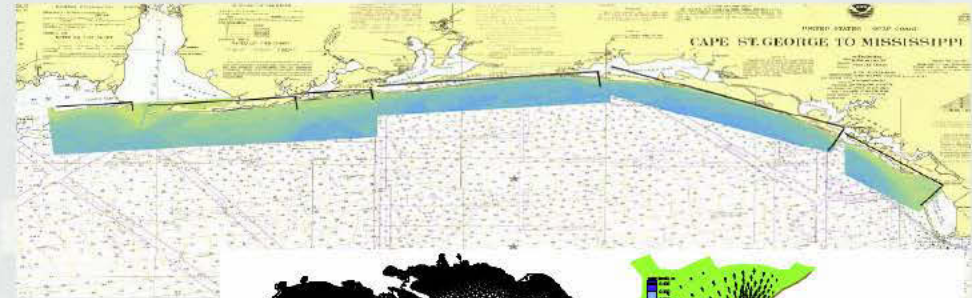




# Models: Waves, Circulation, Water levels, Sediment Transport, Shoreline Change

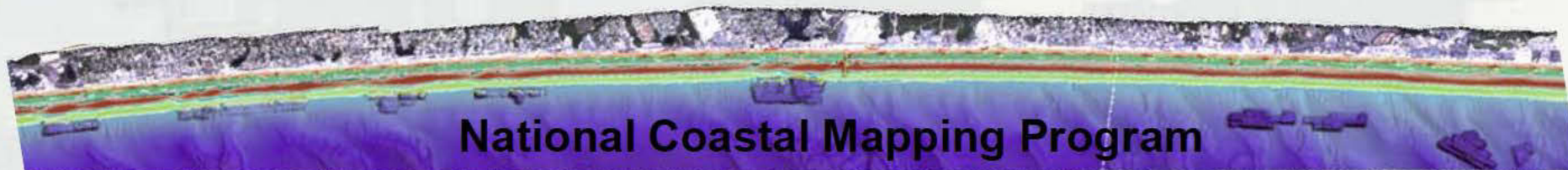
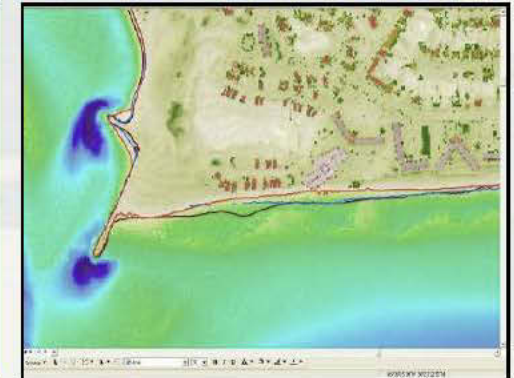
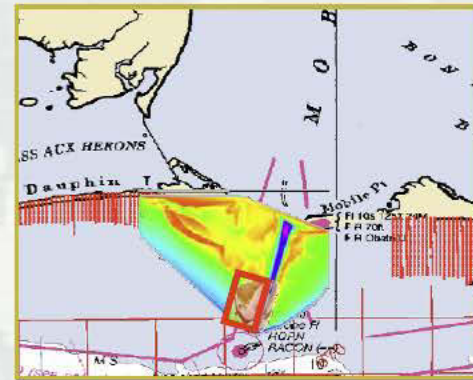
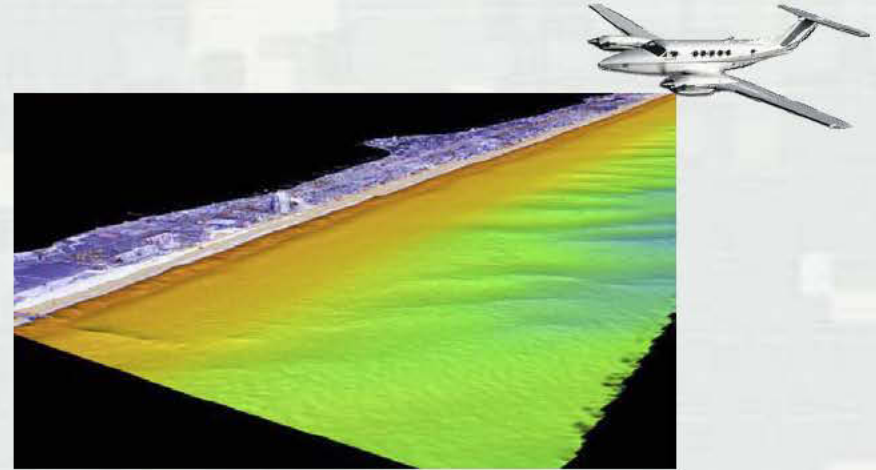
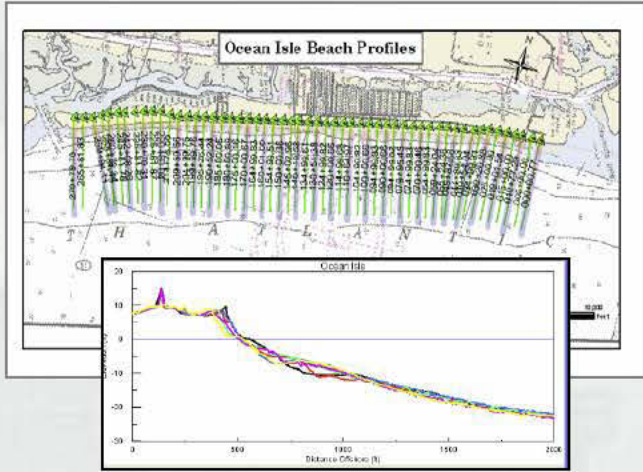
## Complex to Adaptive Management

- Regional processes and trends
- Sediment sources & sinks
- Multiple interacting projects
- Connect beaches & inlets
- Navigation channel maintenance
- Evaluate local/regional Strategies





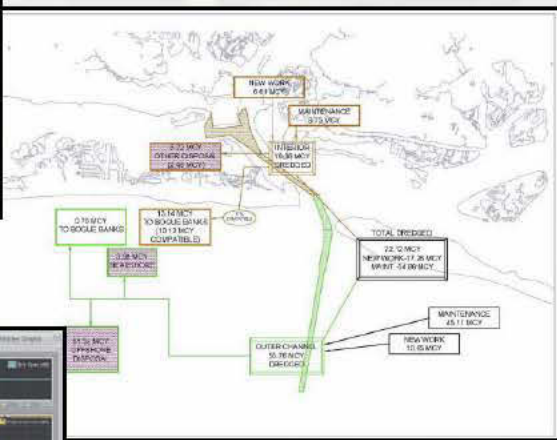
# Mapping Data - Bathymetry/Topography/Shoreline/Imagery Regional/Long-Term/Pre-Post-Storm



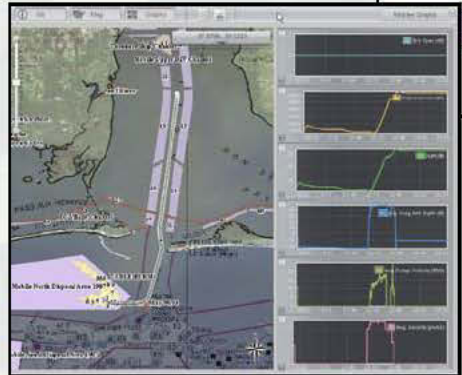
National Coastal Mapping Program



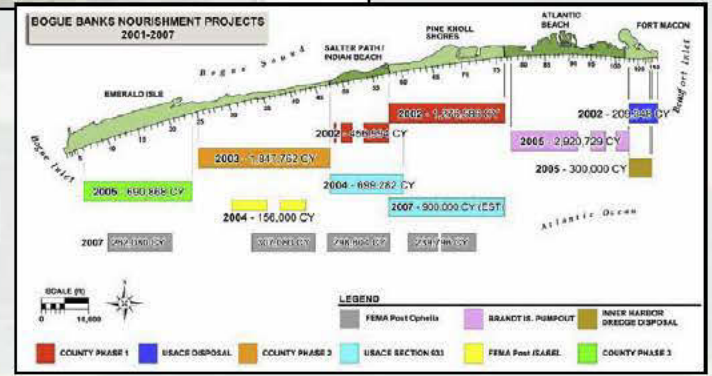
# Dredging information:



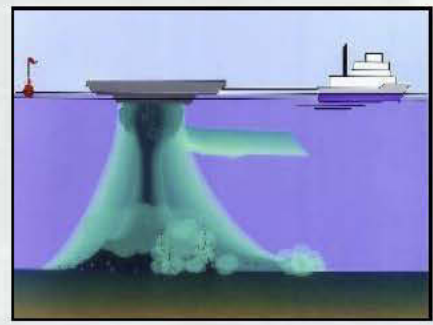
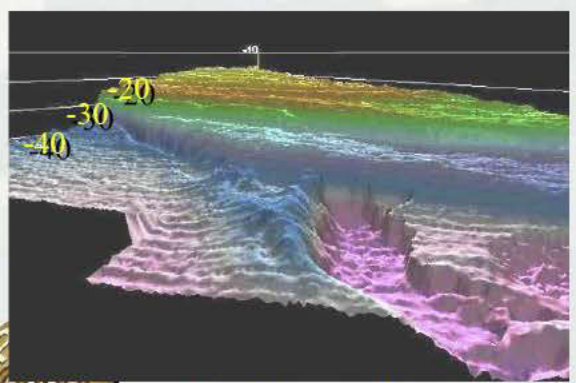
## Beach Nourishment



## Navigation Channels Borrow Areas



## FATE Models



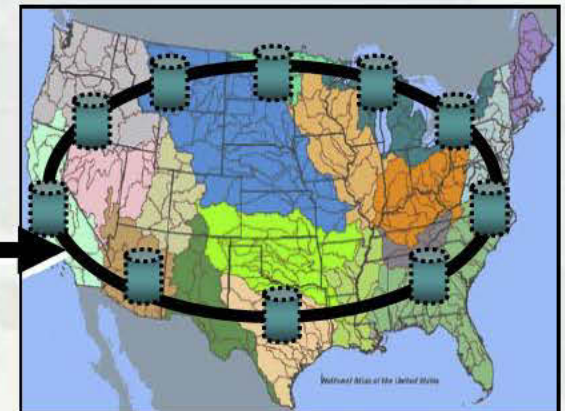
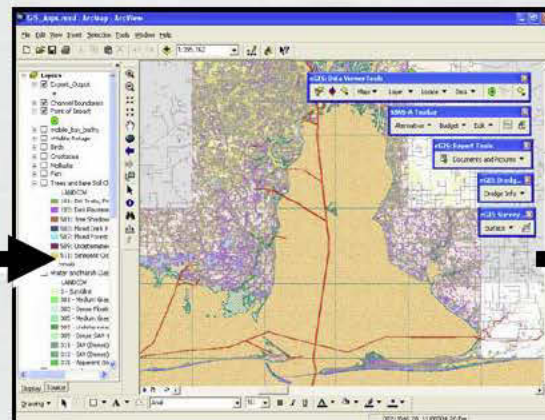
## Sediment Characteristics



## Shoaling Patterns/Dispersion

# eGIS/eCoastal: Data Management & GIS

- Data management, visualization, & analysis
- Regional sediment budgets
- Facilitate sharing data & tools
- Protect our investments
- Retain Institutional knowledge





# RSM Across the USACE

## Collaboration Fed/State/Local

All Districts

## RSM PgMP, PMP, District Guidance

NAE, NAN, NAP, NAO, NAB, SAW, SAJ, SAM, MVN, SWG, SPL, NAP, NWP, NWS, NWO, POH

## RSM Strategies/Alternatives

NAE, NAN, NAP, NAO, NAB, SAW, SAC, SAJ, SAM, MVN, SWG, SPL, SPN, NWP, LRB, POH, NWO

## Sediment Budgets/Regional Modeling

NAE, NAN, NAP, NAO, NAB, SAW, SAC, SAJ, SAM, MVN, SWG, SPL, SPN, NWP, LRB, POH, NWO

## Model/Tool Develop/tech transfer

NAE, NAN, SAW, SAJ, SAM, MVN, SPN, POH, NWP

## Monitoring/Data collection

NAE, NAN, NAO, SAW, SAJ, SAM, SWG, NWP

## Data Management/eGIS

All Coastal, expanding inland



## CDF Mining/Capacity

SAM, POH

## River Sand for Coast

SAJ, SAM

## Sand Bypassing-Reduce Offshore Nearshore placement

NAN, NAP, SAJ, SAM, NWP, SPL

## Habitat Restoration

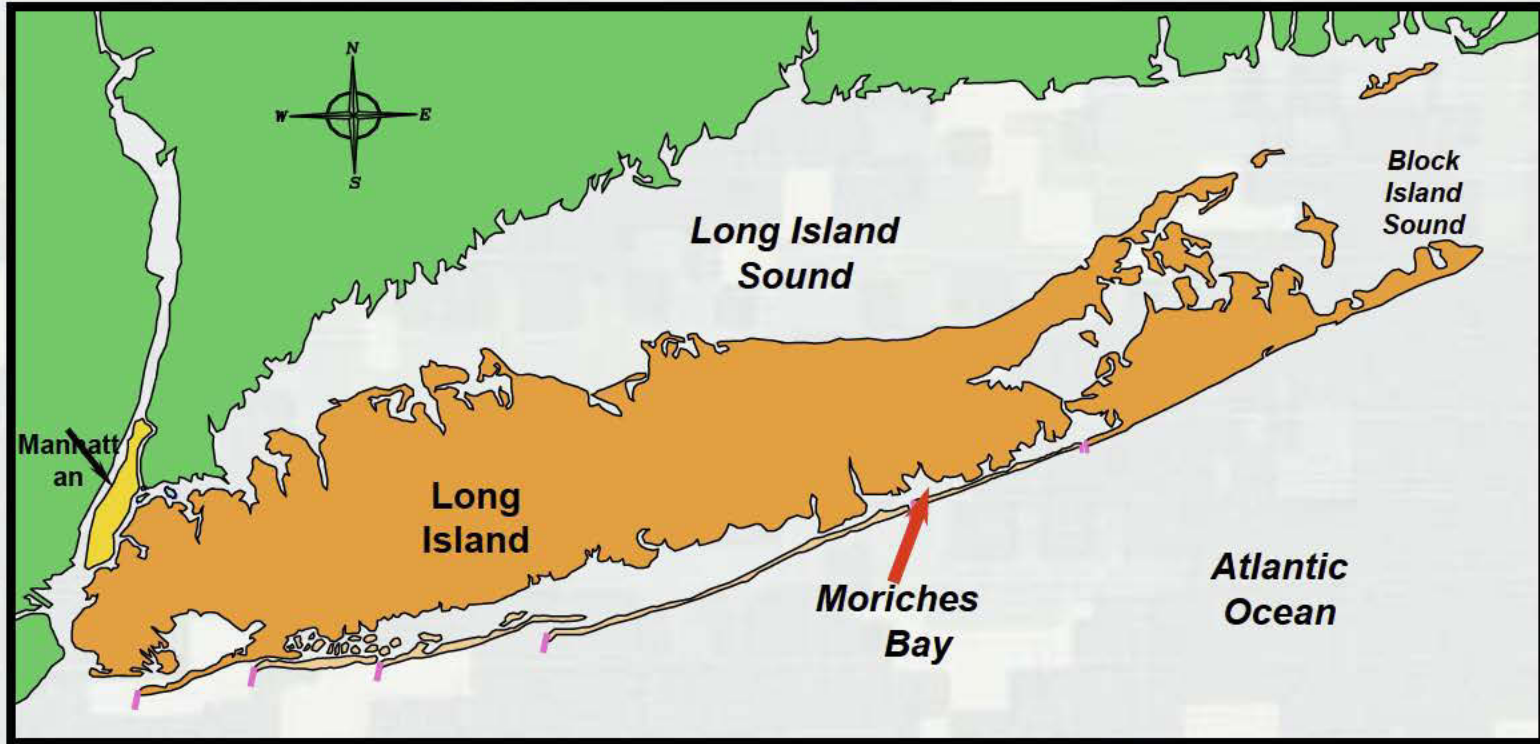
NAN, NAP, SAJ, SAM

## Watershed

- NAP - Darby Cobbs, Delaware Estuary
- SAM - Mobile Bay Watershed
- SPL - Santa Ana River
- NWS - Howard Hansen Dam
- NWO - Upper MO River
- NWK - MO River at Kansas City

# Long Island ICWW, Moriches Bay

Alternate Disposal Area, Endangered Shorebird Habitat





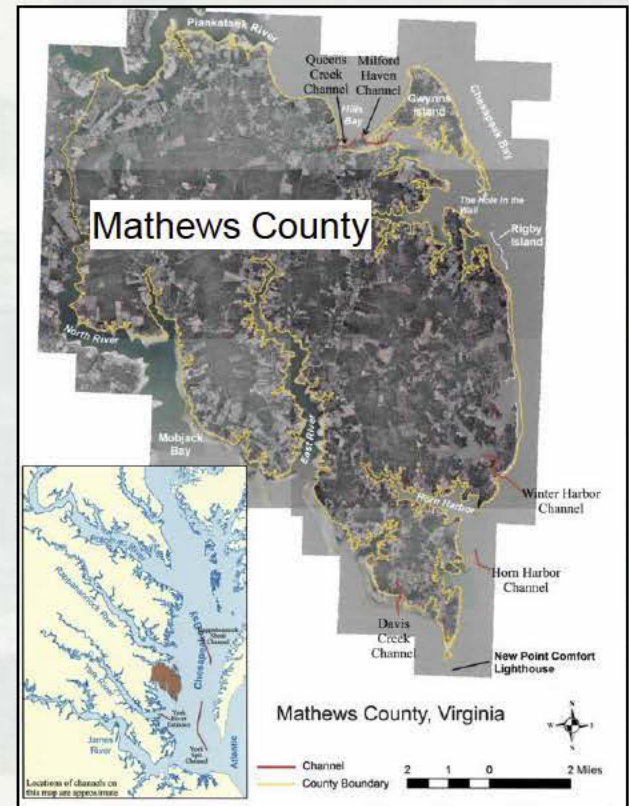
# NAO Mathews County, VA RSM

## RSM Region:

- Western Shore Chesapeake Bay (200-mi shoreline)
- Highly eroding shorelines
- Disposal sites reaching capacity

## Goals:

- Manage 6 federal navigation channels under single RSM plan
- Identify uses disposal site material
- Identify new disposal sites
- Extend maintenance cycles
- Reduce long-term O&M dredging costs per project
- Reduce shoreline erosion
- Collaborate w/stakeholders on regional approaches
- Achieve regional, cross-mission benefits

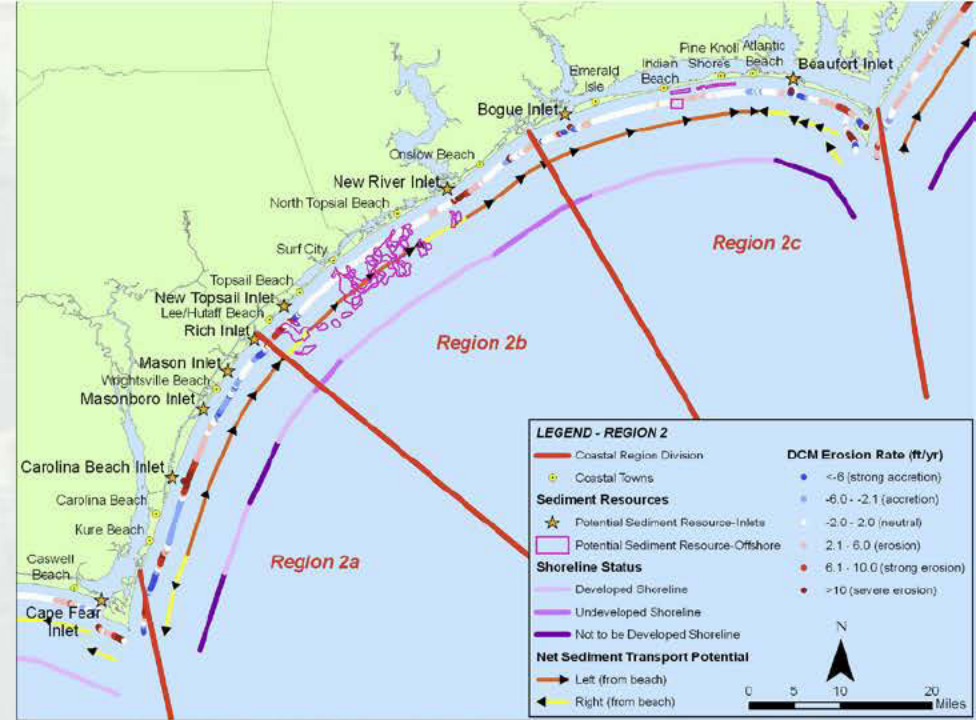


Find solution or abandon maintenance of Federal Projects



# SAW North Carolina RSM

- 328-mi shoreline
- 2 Deep-Draft Harbors
- 10 Shallow Draft Channels
- 1 Jettied Inlet
- 2 By-Passing Operations
- 3 Capes
- 19 Inlets
- 4 Constructed Storm Damage Reduction Projects
- Developed/Non-Developed



## Goals

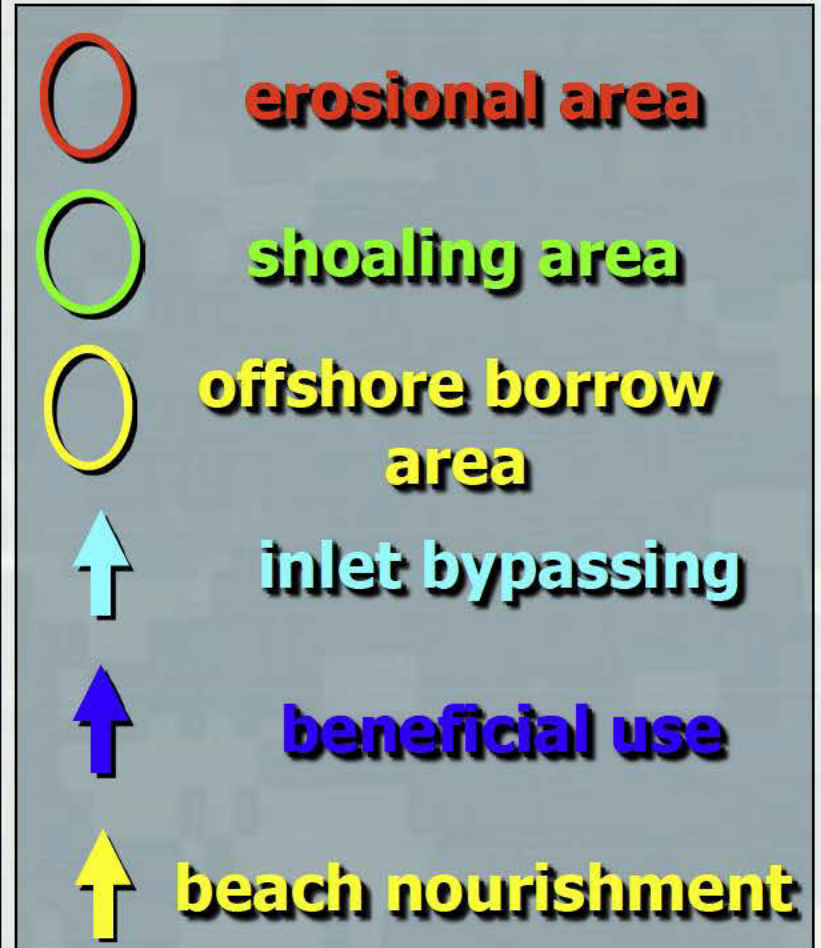
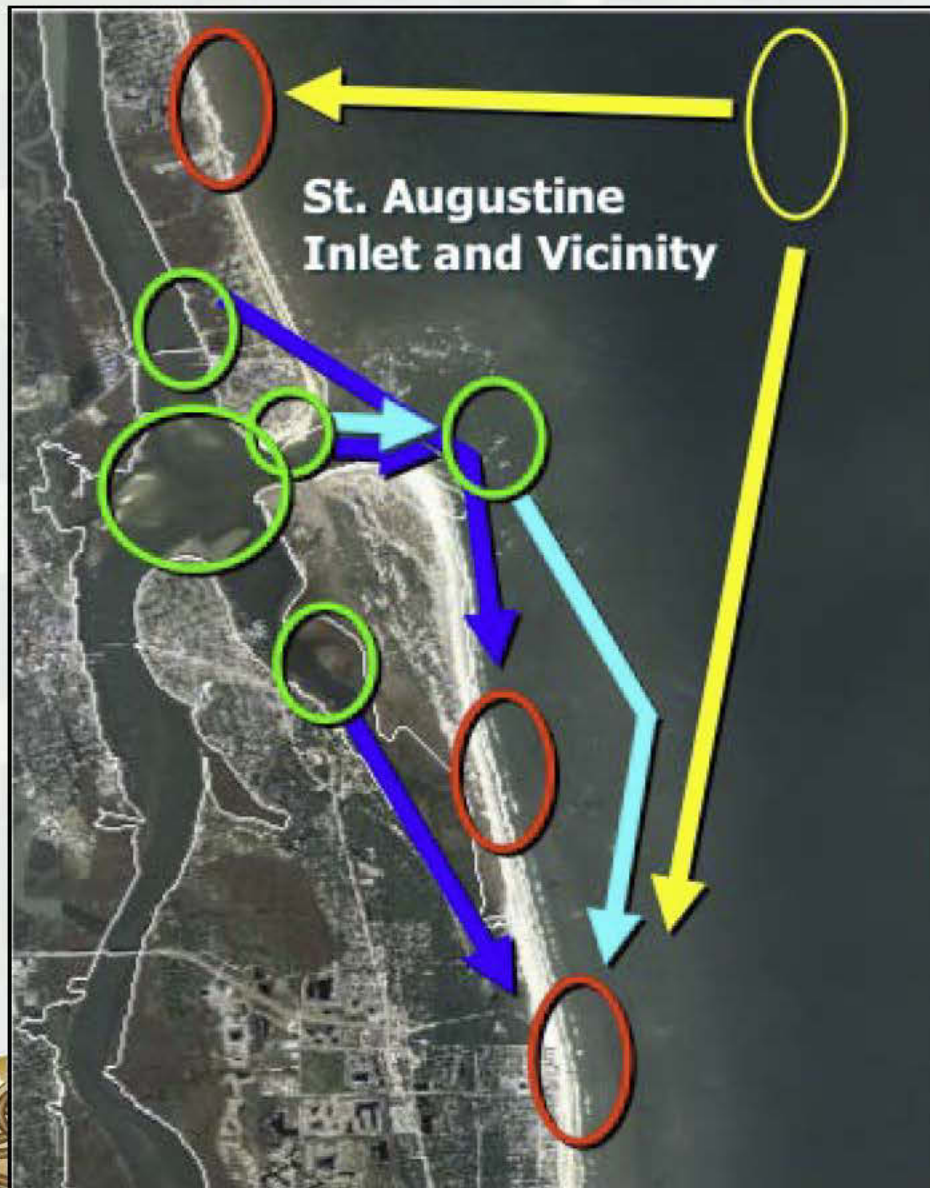
- Collaborate: NC Beach and Inlet Management Plan
- eCoastal - Accessible/Standardized Georeferenced Data
- NC Sediment Budgets - Understanding of regional system
- Mgmt sediment resources at federal projects and beaches
- Informed Dredging decisions
- Impacts dredging/disposal on adjacent projects
- Improve sand bypassing Wilmington Harbor, Masonboro Inlet
- Assist Morehead City DMMP





# St. Augustine Inlet, FL and Vicinity

Combining multiple projects (CG, O&M), sand bypassing, shoreline erosion



# Perdido Pass, AL

Shoreline Erosion, Littoral System Resource, Sand Bypassing, Nearshore Placement, Reduce Rehandling



-  Shoaling Area
-  Placement Area





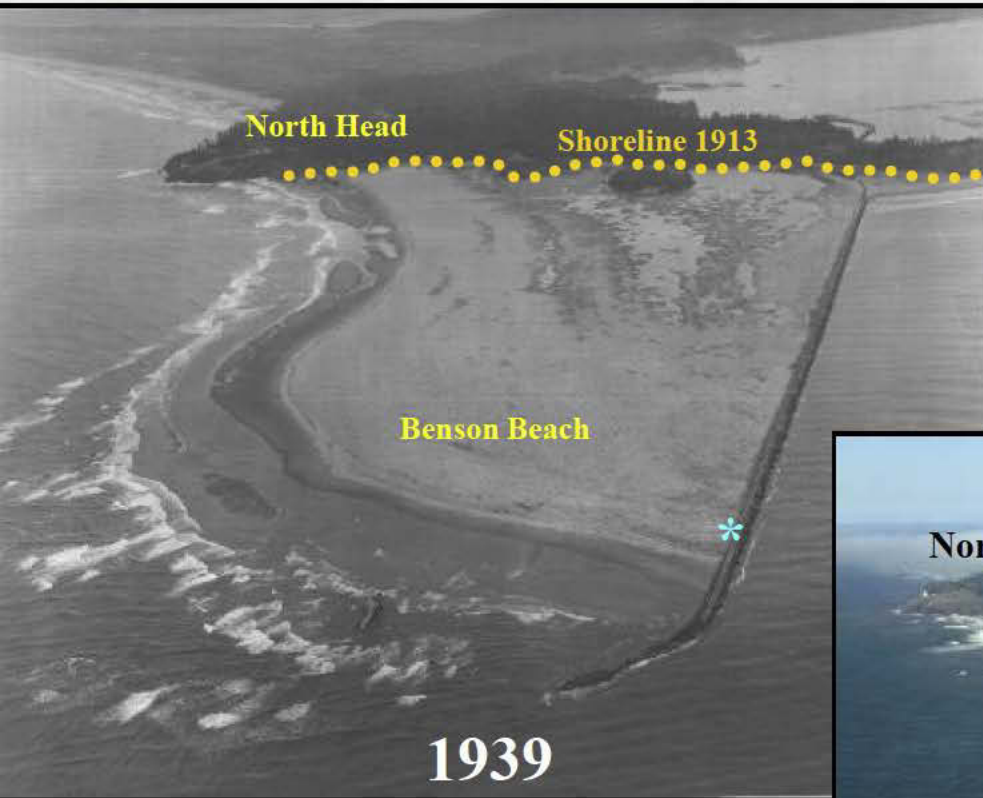
# SPD-California and RSM



**Beach Quality Materials Dredged from 13 Coastal Harbors  
are placed on Downdrift Shorelines**



# Mouth of Columbia River, Benson Beach





# RSM Summary

- Manage local projects in Regional Context
- Understand local/regional processes, sediment sources and sinks
- Seek solutions which maximize use/minimize costs
- Leverage and supplement resources
- Take Action: “Adaptive Management”



