

# Dredging and Regional Sediment Management In the USA

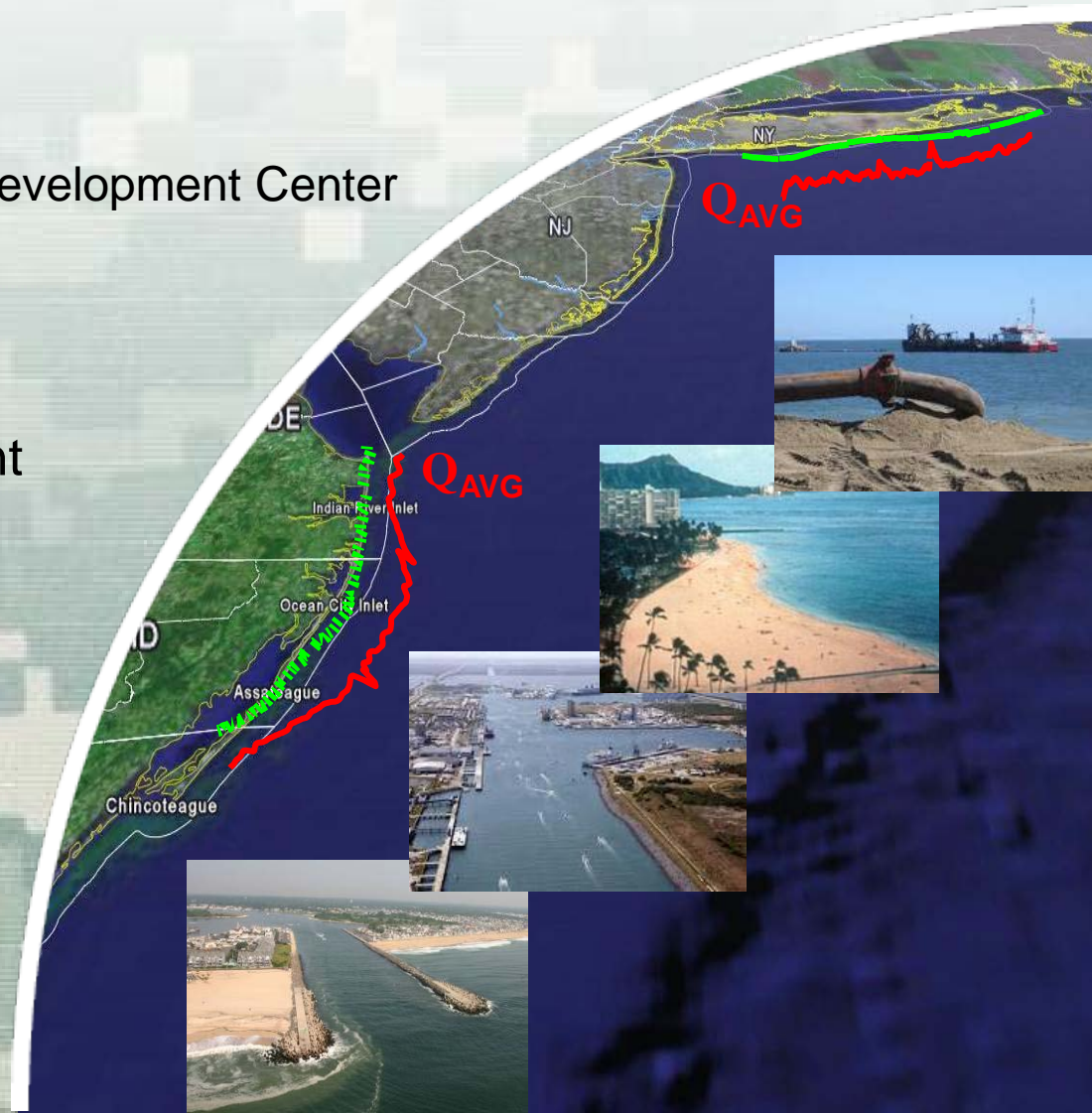
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7<sup>th</sup> International SedNet Event  
6-9 April 2011



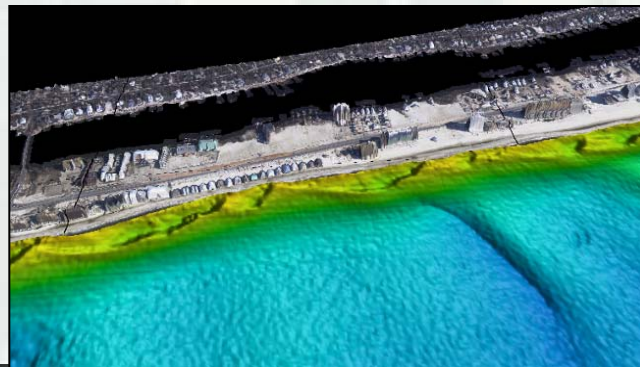
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# Contents

- USACE Navigation Program
- Regional Sediment Management (RSM)
- Tools for RSM
- Case Studies
- Summary



# USACE Navigation Assets

## COASTAL NAVIGATION

1067 Navigation Projects  
19 lock chambers  
13,000 miles of channels  
929 navigation structures  
844 bridges

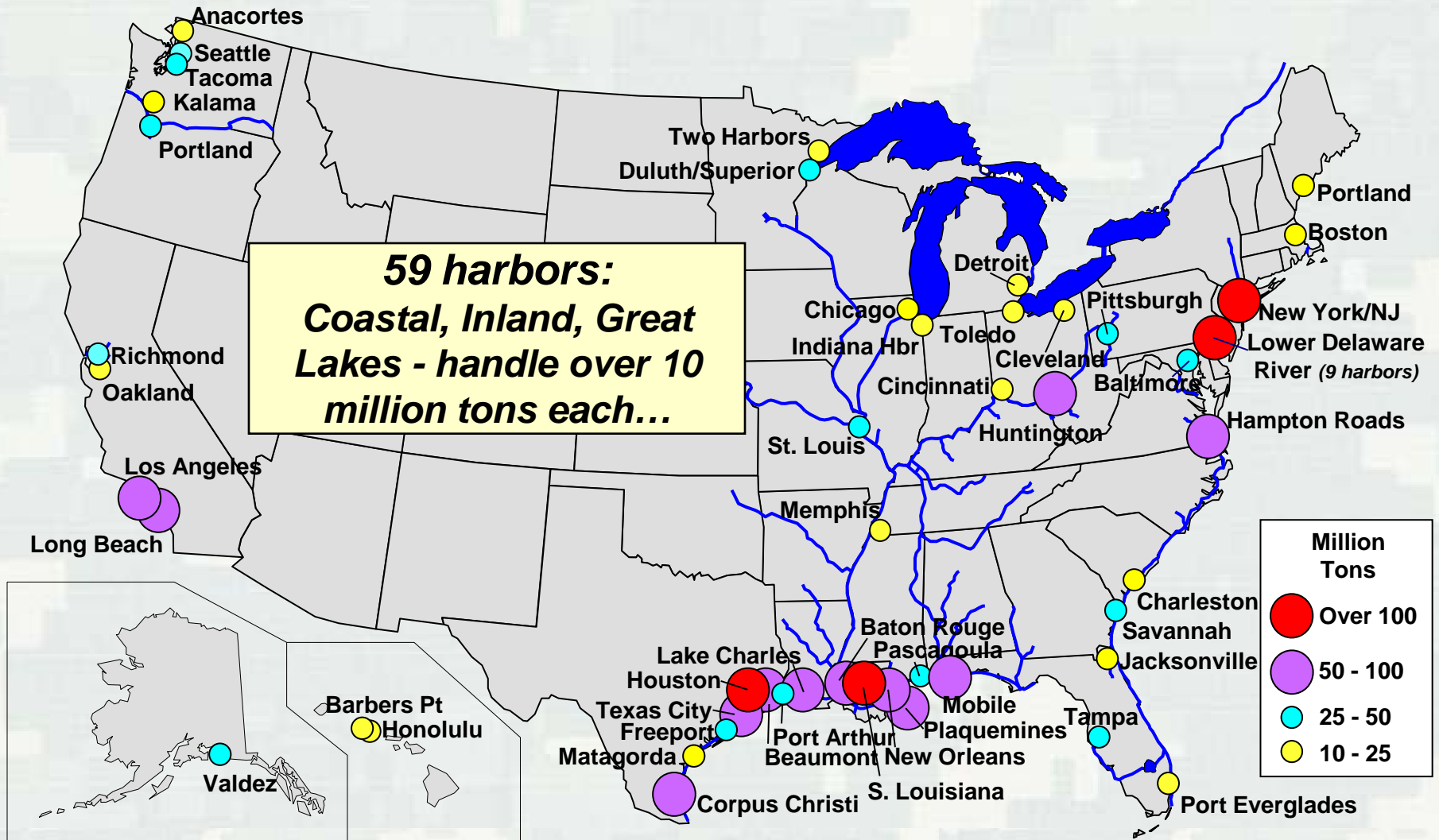


## INLAND NAVIGATION

27 Inland River Systems  
207 lock chambers @ 171 lock sites  
12,000 miles of inland river channels

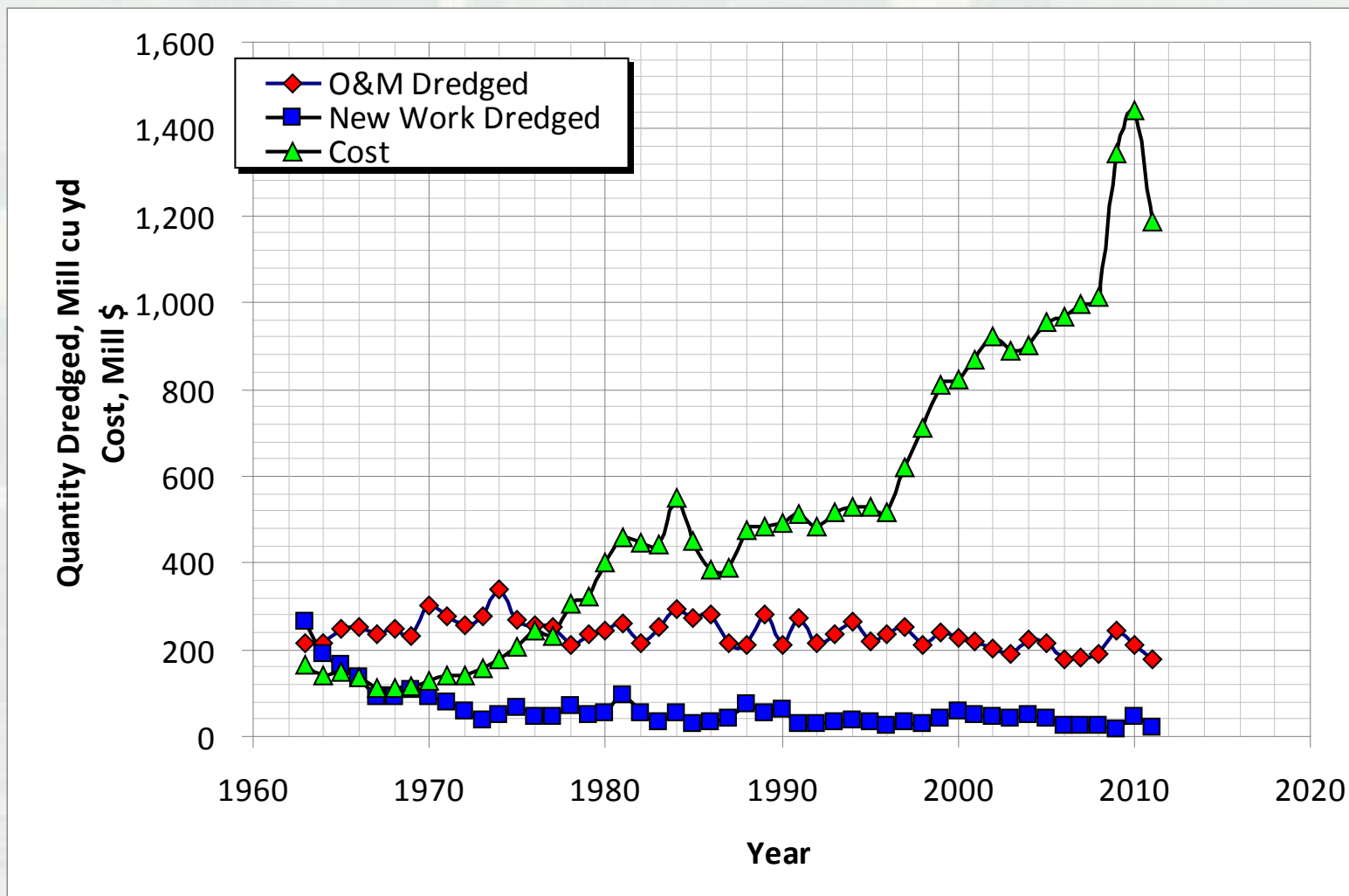


# US Ports: Vital to Trade and US Economy



# US Navigation Channels

## O&M (Maintenance) and New Work Volumes and Cost



# Regional Sediment Management



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



# RSM Strategies



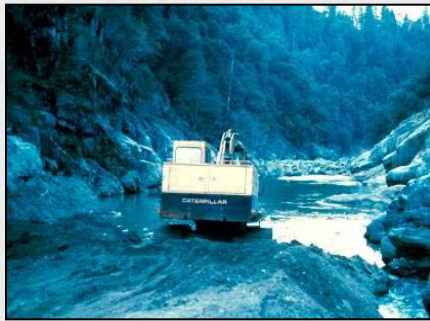
Reduce Offshore Placement



Nearshore/Beach Placement



Bypass Optimize Placement



Reduce Sediments at the Source



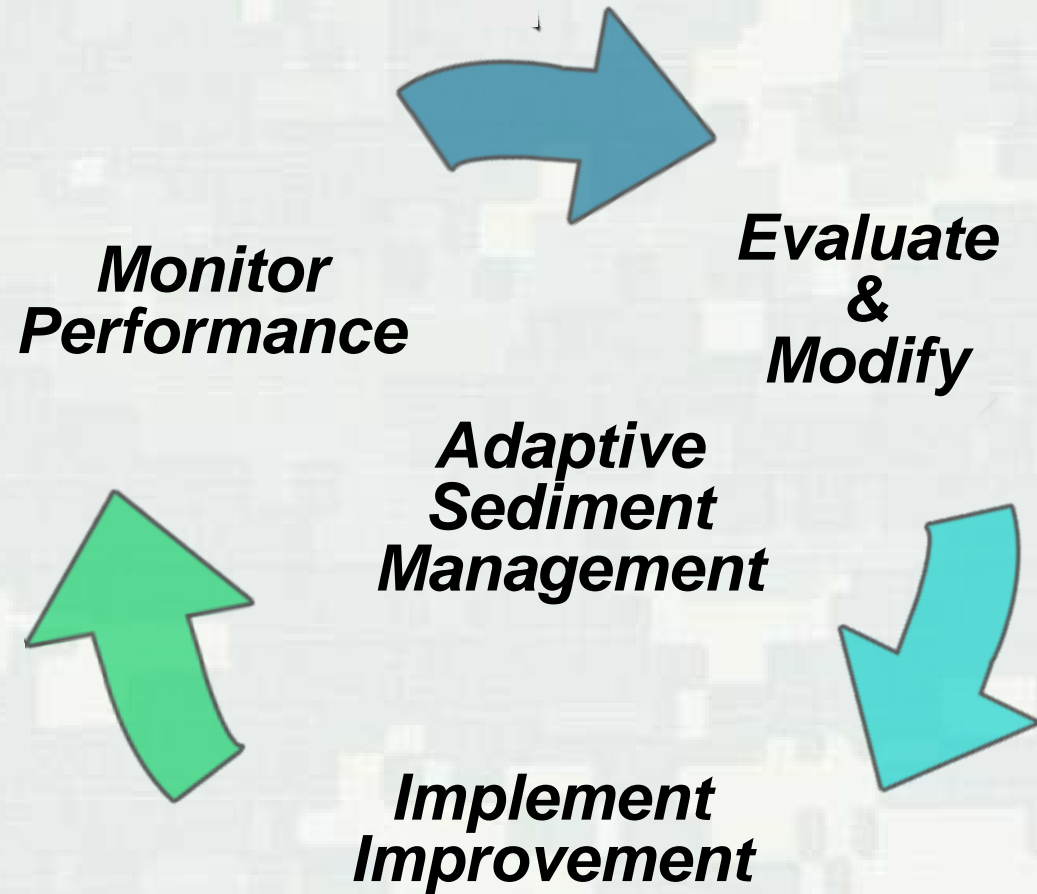
Utilize Upland Material Reduce Upland Placement



Ecosystem Restoration



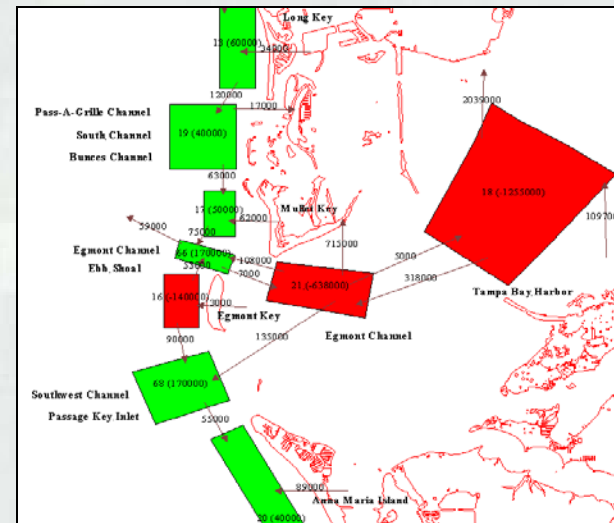
# Regional Sediment Management Approach





# Regional Sediment Budgets

## Sediment Budget Analysis System (SBAS)

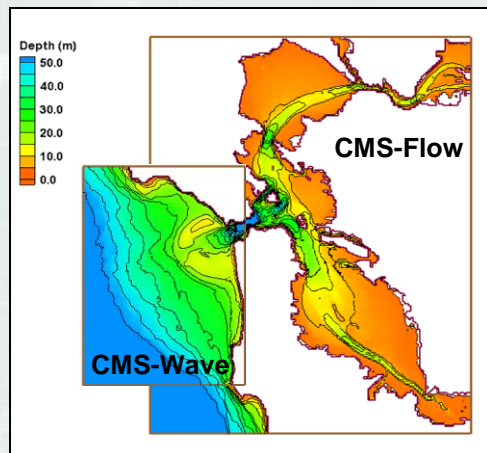
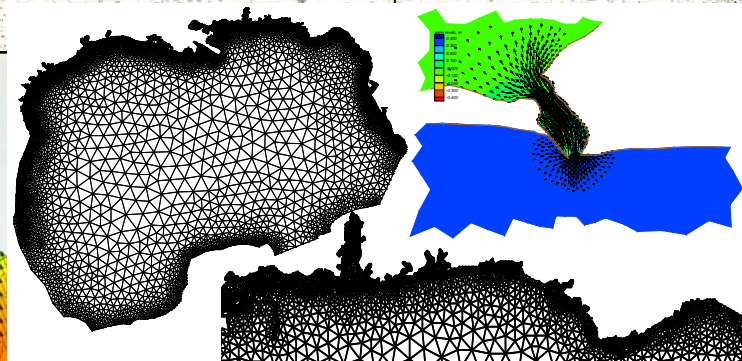
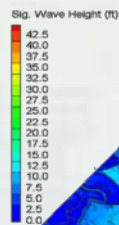
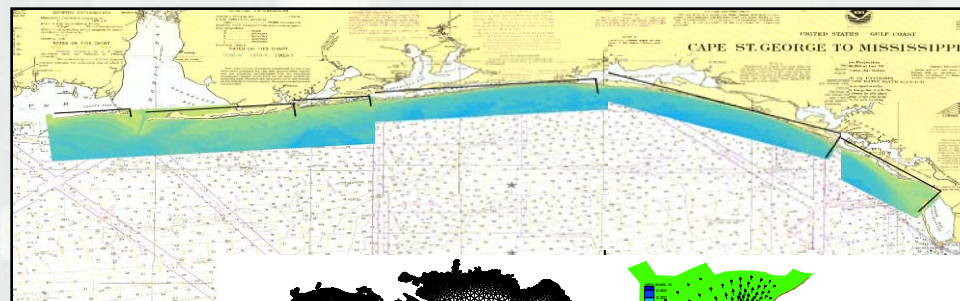


# Numerical Models

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

### Complex to Decision Support

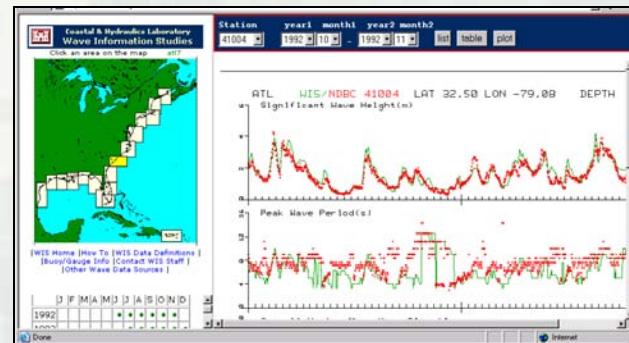
- Regional processes and trends
- Sediment sources & sinks
- Multiple interacting projects
- Connect beaches & inlets
- Navigation channel maintenance
- Evaluate local/regional Strategies



# National Waves, Currents, Water-Levels



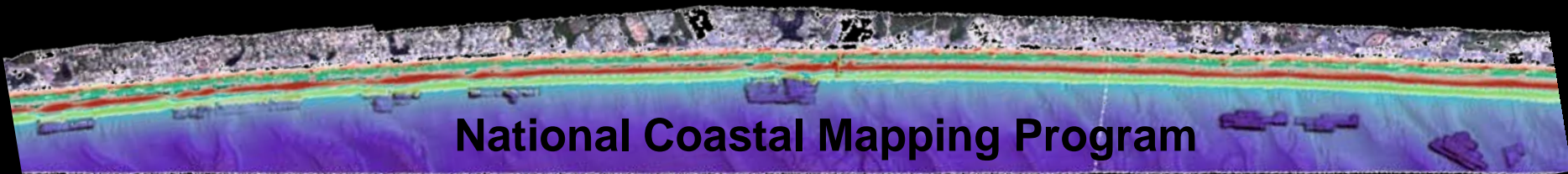
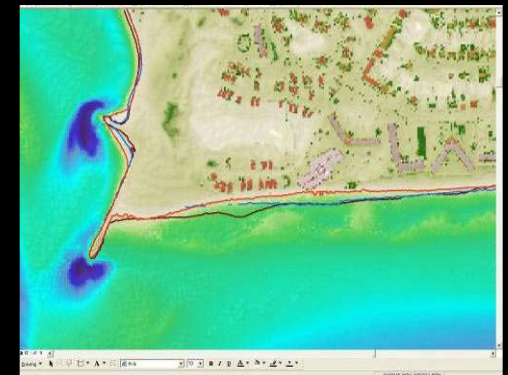
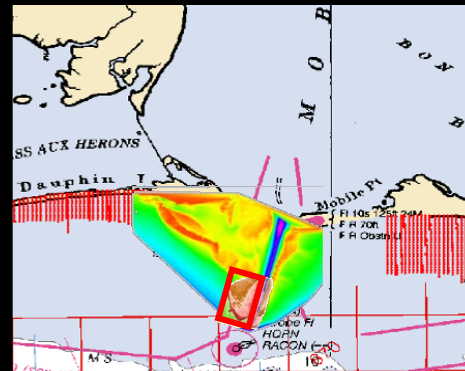
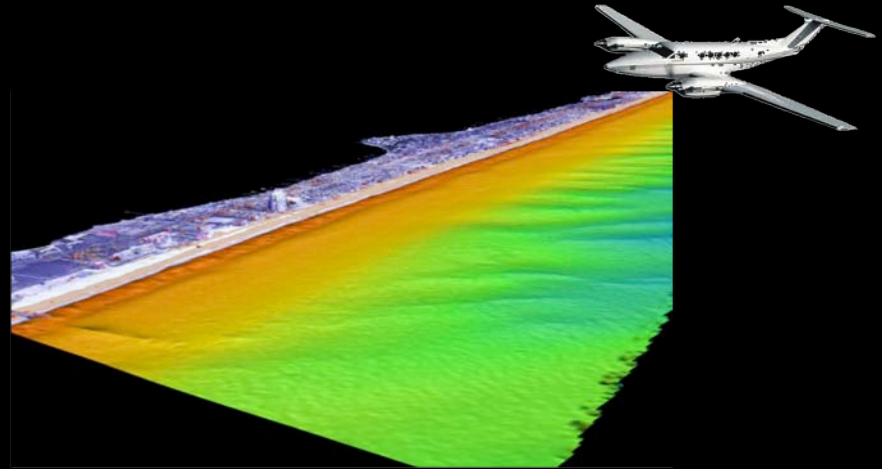
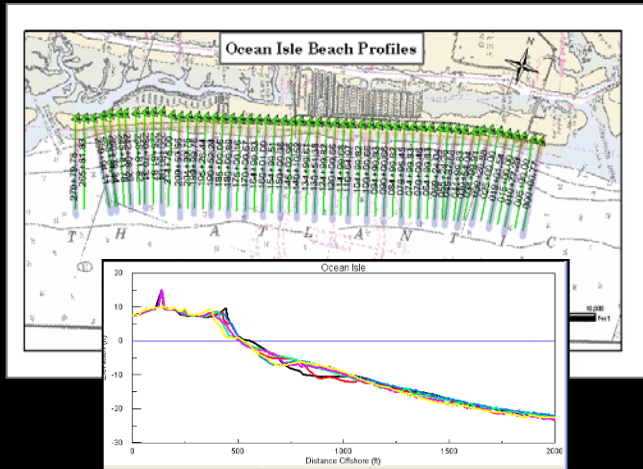
Coastal Field Data Collection Program



Wave Information Study

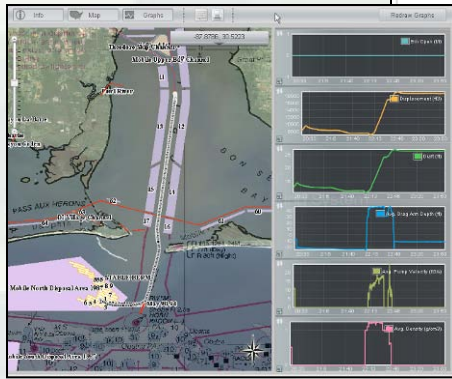
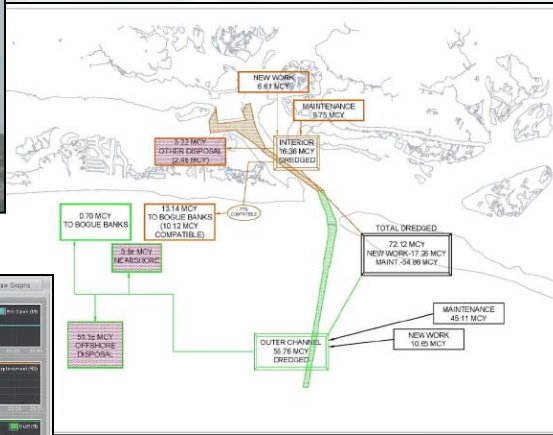


# Mapping Data - Bathymetry/Topography/Shoreline/Imagery Regional/Long-Term/Pre-Post-Storm



**National Coastal Mapping Program**

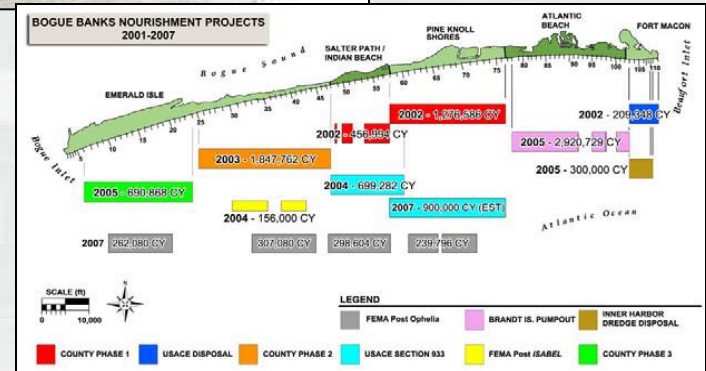
# Dredging Information



## Dredging: Navigation Channels Borrow Areas



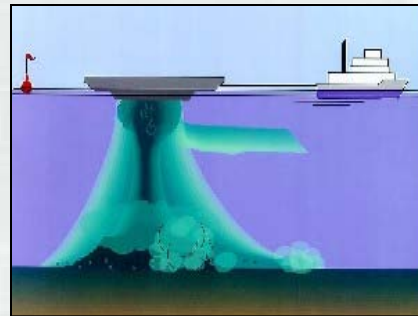
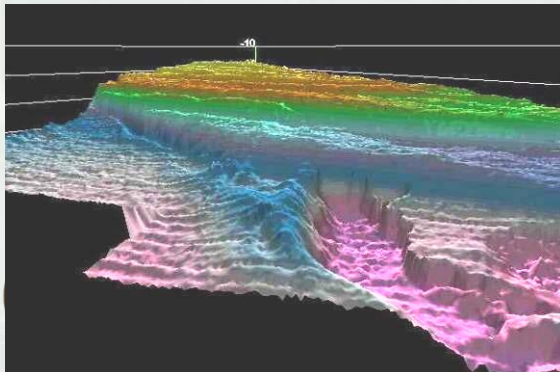
## Beach Nourishment



## Placement Areas

## FATE Models

## Shoaling Patterns/Dispersion

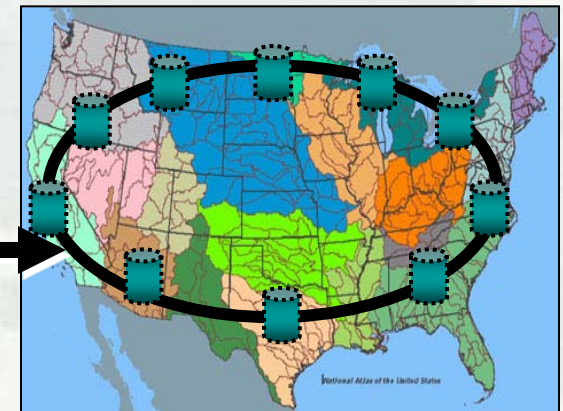
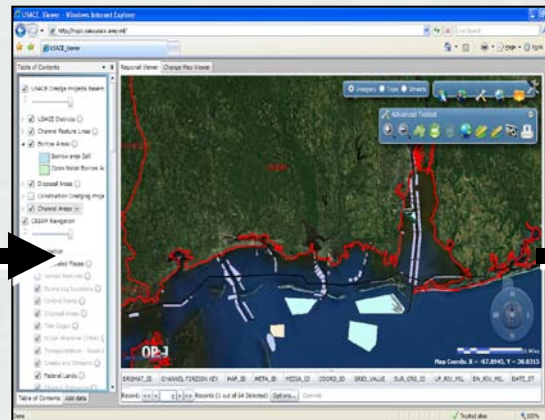


## Sediment Characteristics



# Data Management & GIS

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



# California and RSM



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



# Perdido Pass, AL

Shoreline Erosion, Environmental Habitat,  
Sand Bypassing, Nearshore Placement, Reduce Rehandling



- Shoaling Area
- Placement Area

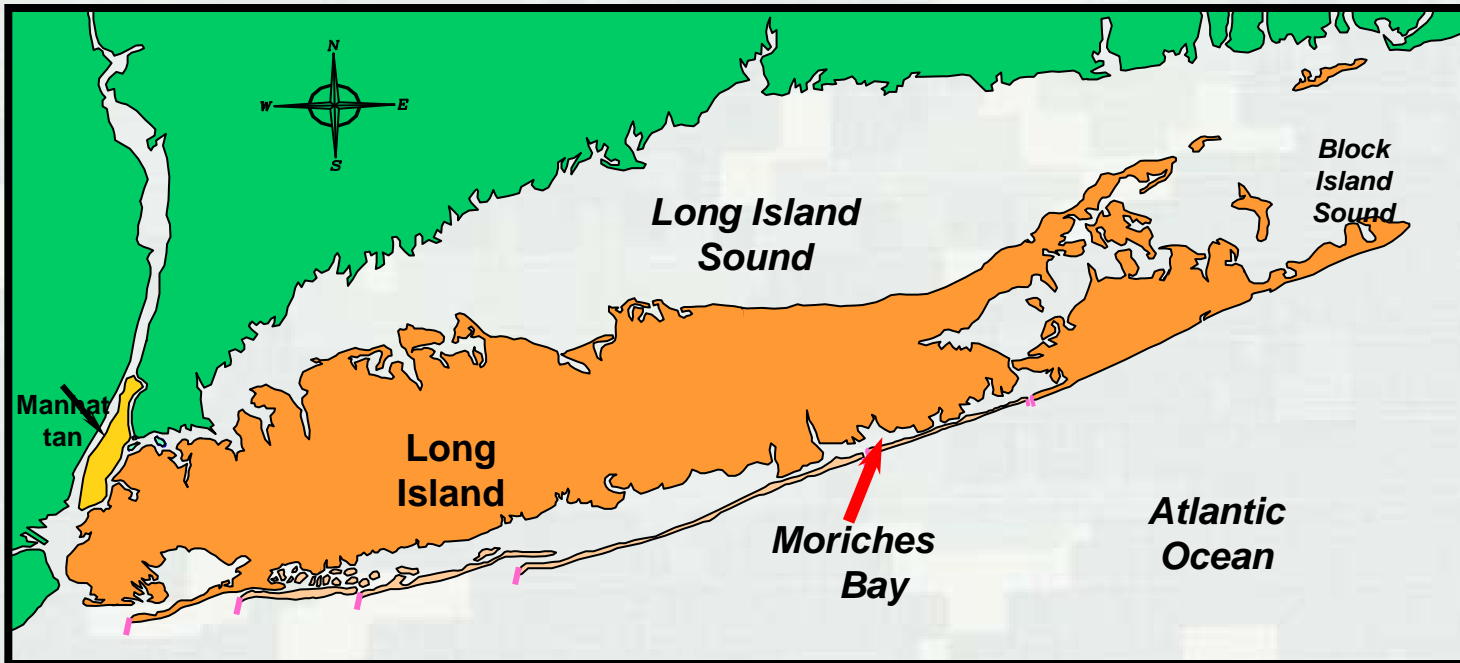




# Long Island, NY

(Navigation, Shore Protection, and Beach Recreation)

Endangered Shorebird Habitat



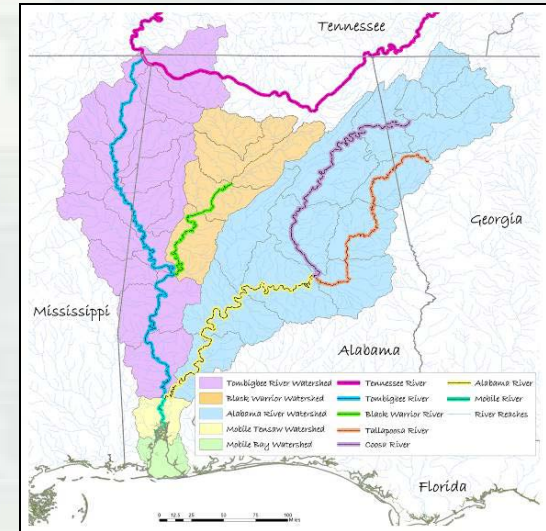
East Inlet Island



# Mobile Bay Watershed

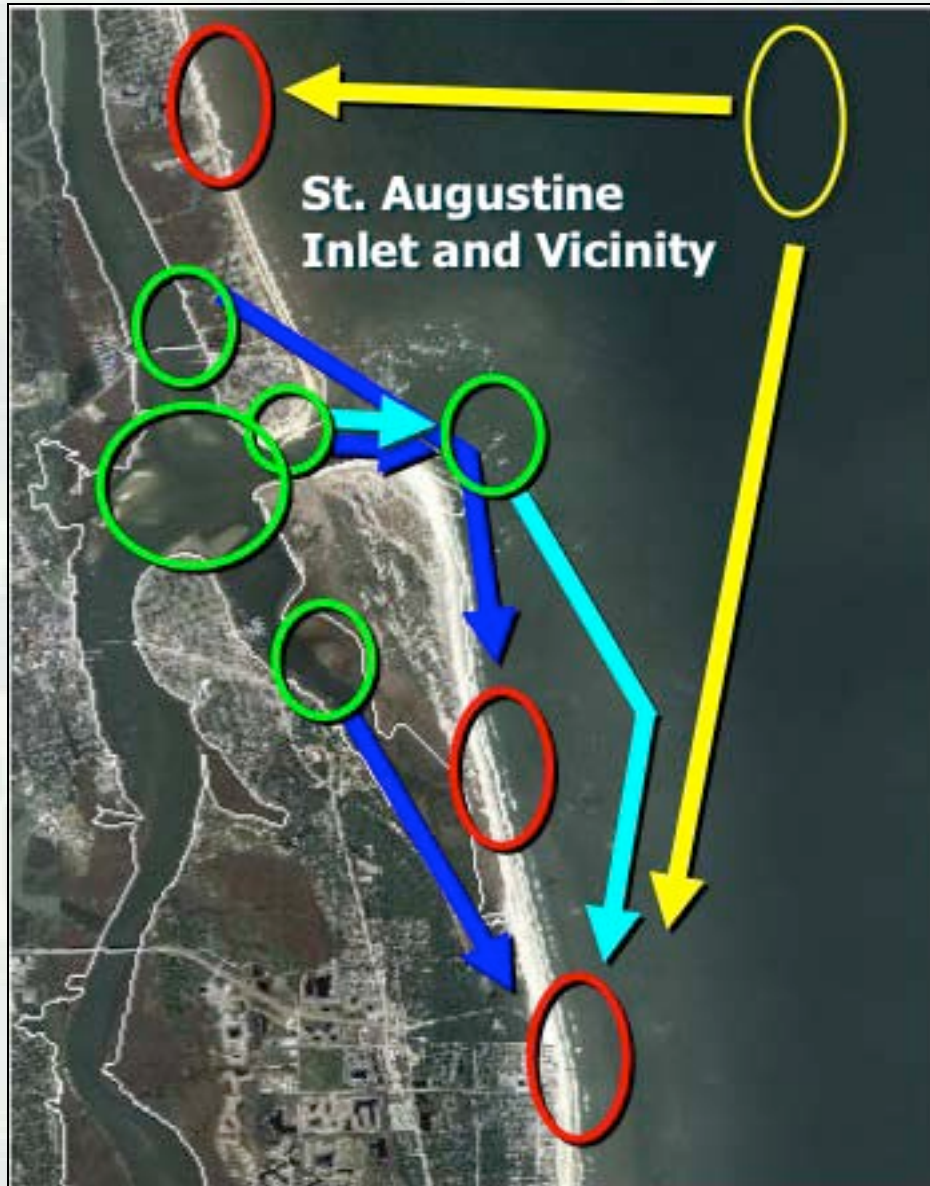


- Alabama, Mississippi, Georgia, and Tennessee
- Major uses with national implications:
  - Tennessee-Tombigbee Waterway
  - Alabama Coosa-Tallapoosa Waterway
  - Port of Alabama
  - Commercial fisheries, industry, tourism and recreation, abundant development
- Connectivity inland and coastal watersheds
- Partners: EPA, NASA, USACE, NRCS, NOAA, Mississippi State University, and others
- Integrate tools and data; sediment budget, leverage funding
- Coordinating dredging and disposal activities for in 2012



# St. Augustine Inlet, FL and Vicinity

Combining multiple projects



\$5-7M mob/demob savings

Reduced dredging/environmental impact

Combined permit

Emergency sand sources

# Regional Sediment Management Summary

- Manage local projects in Regional Context
- Understand local/regional processes, sediment sources & sinks
- Seek solutions which maximize use and minimize costs
  - Navigation & Dredging, Flood & Storm Damage Reduction, Ecosystem Restoration
- Collaboration/communication with stakeholders and partners
  - Identify Opportunities, Decision Making, Coordinate and Implement Actions
- Share data, tools, technology, and lessons learned

