

# Regional Sediment Management Program

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11<sup>th</sup> Annual Coastal Zone Management  
Southern & Caribbean Regional Meeting

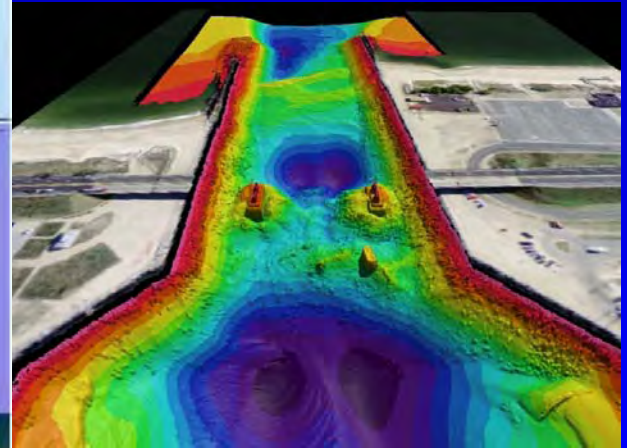
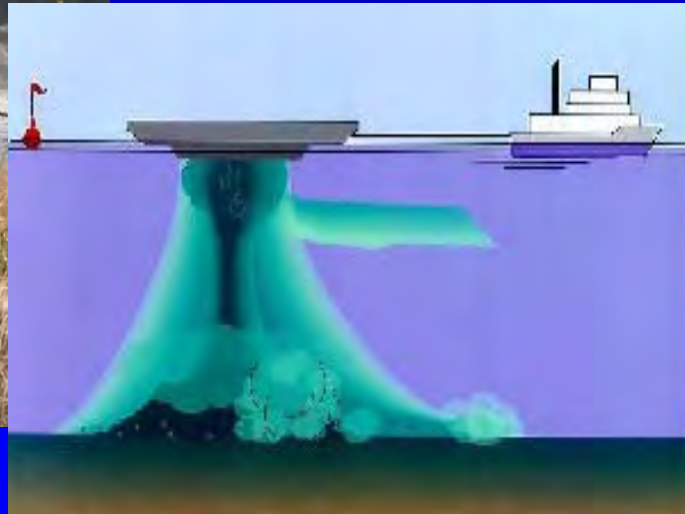


US Army Corps  
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# Regional Sediment Management

**A systems-based approach for collaboratively addressing sediment-related issues within a regional context**



**Regional Sediment Management (RSM) recognizes that the physical system and embedded ecosystems respond beyond the space and time scales of individual projects, and that a life-cycle planning and engineering approach to sediment management activities will produce significant cost savings and project benefits.**



**Traditional project management practices that focused solely on local sediment management actions have often produced adverse impacts because they may not have considered regional sediment transport dynamics.**



**Dredging for navigation channel maintenance may remove sediment from the littoral system if dumped offshore or placed in upland disposal sites.**



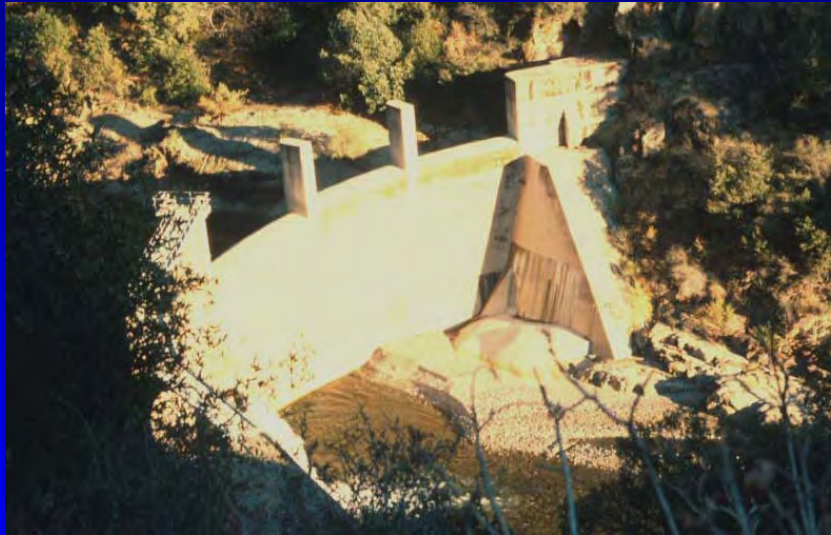
# Structures that divert or trap sediment can result in down drift erosion.



**Erosion protection structures may increase reflected wave energy and accelerate loss of sediment from the system.**

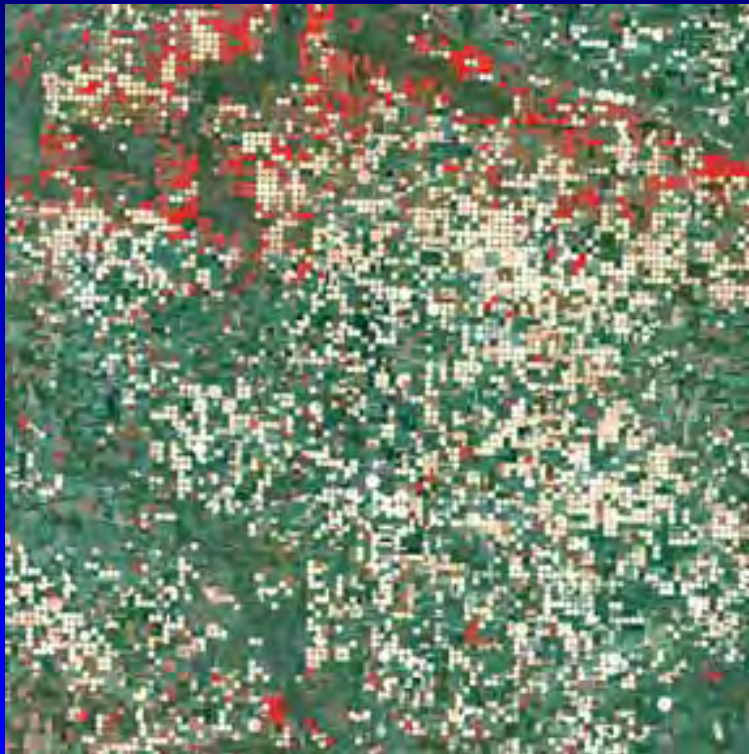


**Upstream dams and in-stream sand and gravel mining can significantly reduce the volume of sediment delivered to downstream systems.**





# Changing land use patterns can increase or decrease sediment loads in a region.



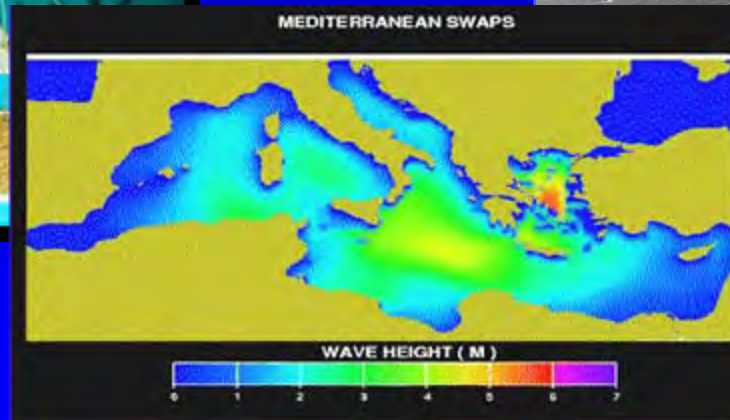
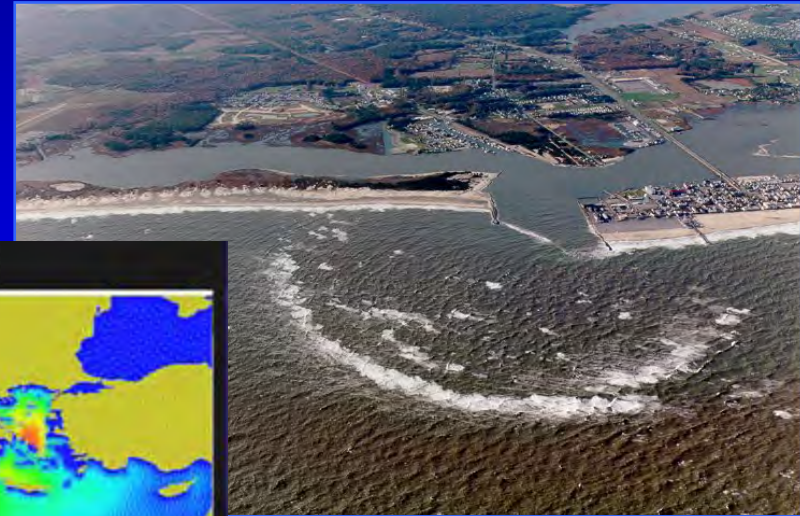
**Multiple, single-purpose sediment management actions undertaken in a region may dramatically alter the regional sediment transport dynamics.**



**However, RSM strategies which recognize that sediment is a resource and employ a systems-based approach can be implemented to effectively manage sediment for multiple objectives and long-term system sustainability**



**RSM promotes management of littoral, estuarine, and riverine sediment within the boundaries of a physical system where sediment exchange occurs naturally. Therefore, the successful implementation of RSM strategies requires knowledge of the regional sediment transport dynamics.**



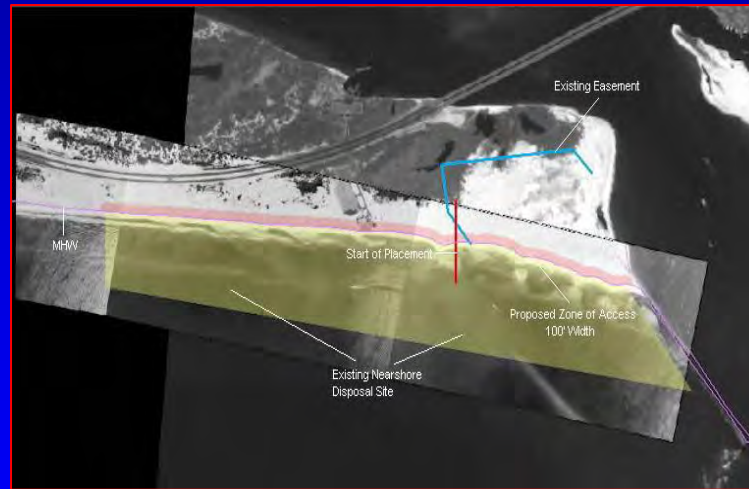
# RSM Implementation – Mobile District

## Objectives:

- Improve Economic Performance by Linking Projects
- Develop New Engineering Techniques to Optimize/Conserve Sediment
- Evaluate Bureaucratic/Institutional constraints to RSM Implementation
- Manage Sediment Consistent with Natural Processes



**Panama City Harbor/Gator Lake**



**East Pass/Norriego Point**



**Pensacola/Fort McRee**



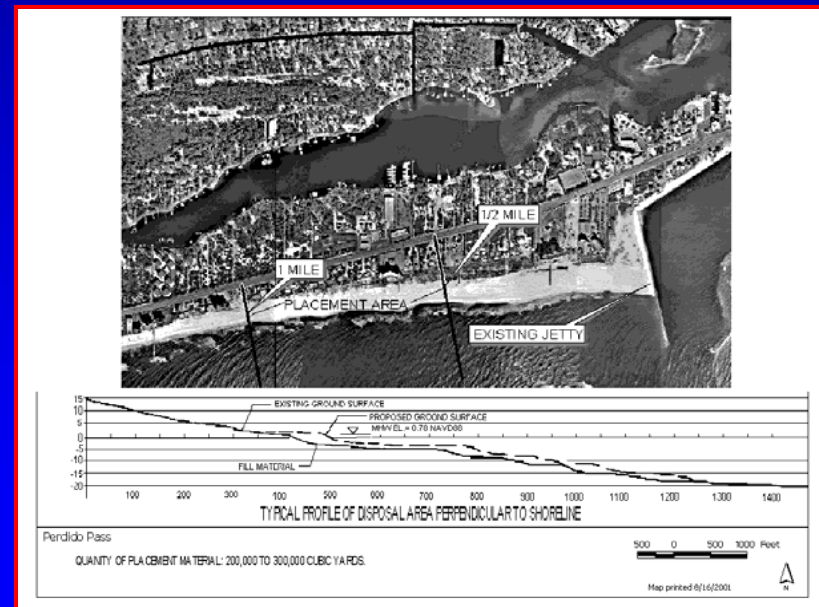
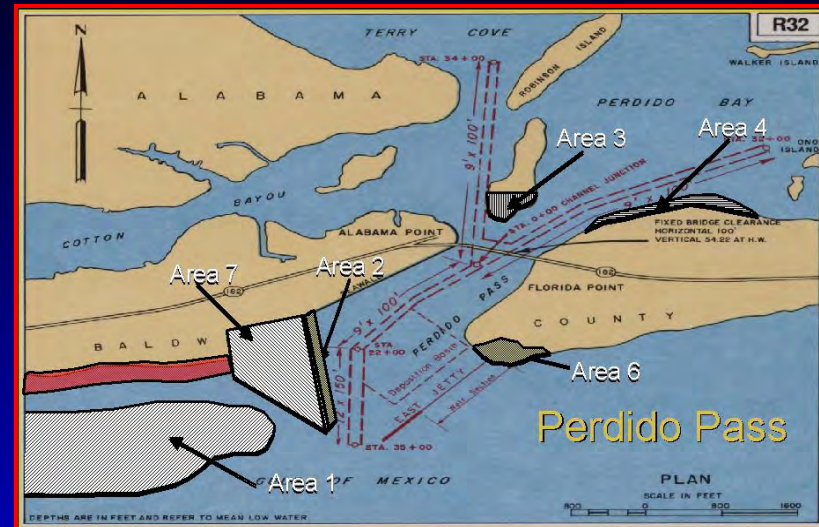
# RSM Mobile District – Perdido Pass

## Action

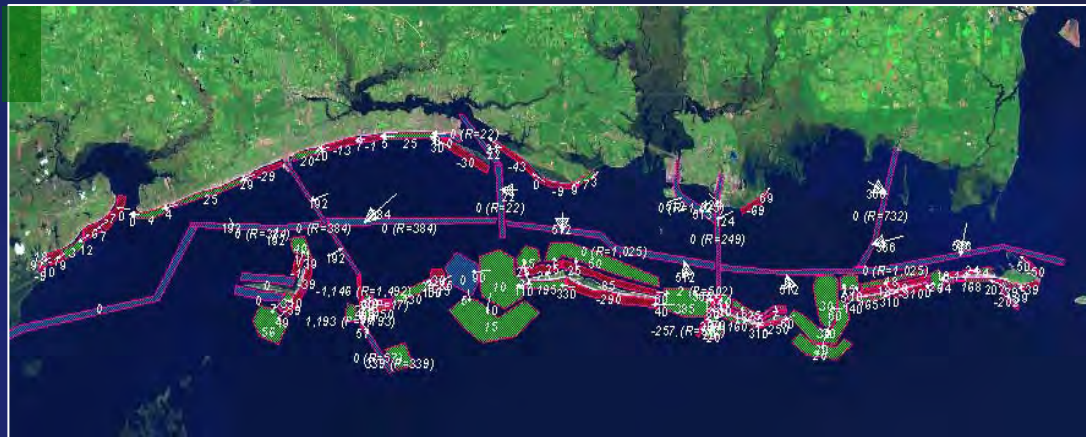
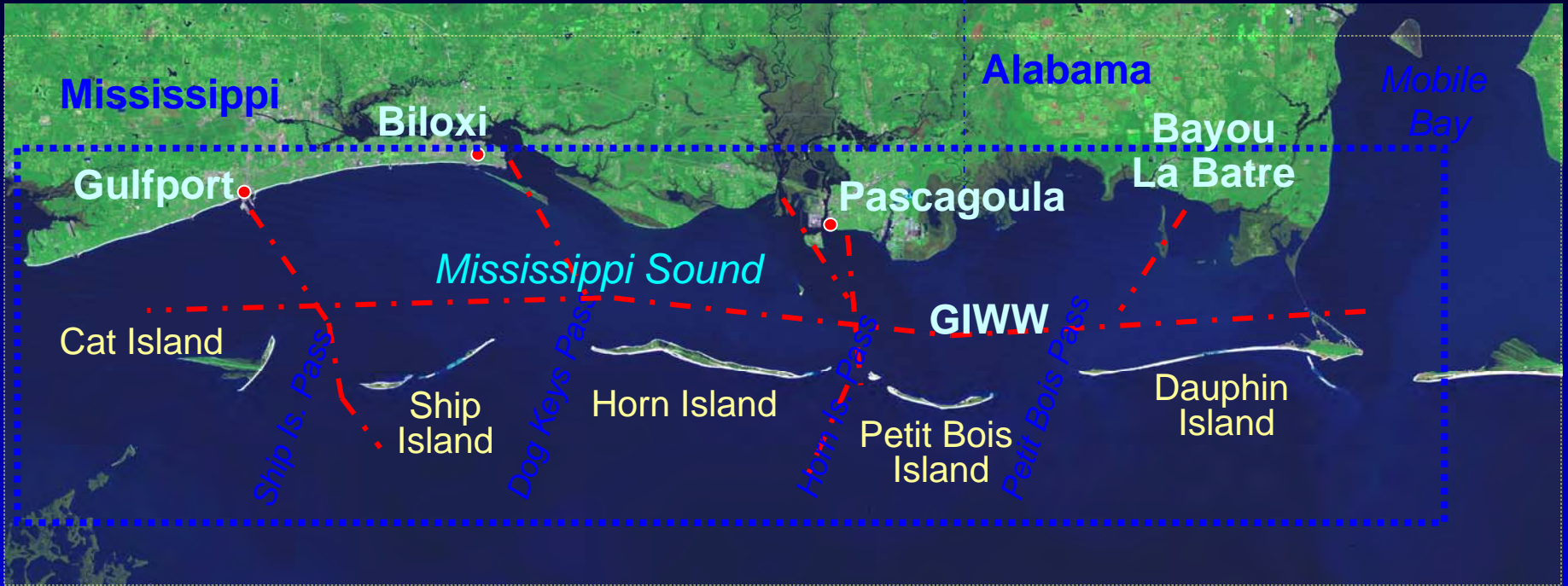
- Modify current disposal practices – place material further downdrift
- Promote more effective sand bypassing

## Benefits

- Nourishment of downdrift beaches
- Reduce dredge material rehandling (reduce dredging costs)
- Provides storm damage protection



# MsCIP Present-Day Sediment Budget



# RSM Implementation – Philadelphia District

## Innovative Creation of Piping Plover Habitat at Cape May National Wildlife Refuge, NJ





# RSM Implementation – New York District

**Sediment Needs Assessment: GIS-based inventory of dredge and placement activities and future sediment needs**



**Integration of NED and NER Benefits: Strategy for integrating and balancing NED and NER benefits for SDR projects**





**US Army Corps of Engineers**

Enterprise Data Management  
For North Atlantic Division



**RSM**  
Regional Sediment Management

**RELEVANT  
READY  
RESPONSIVE  
RELIABLE**

*Proudly serving the Armed Forces and the Nation now and in the future.*

- Featured Links**
- RSM Benefits
  - Data Management Plans

[<< Back to Project List](#)
[Open Map](#)

**Project Details**

**Sea Bright - Manasquan: Long Branch**

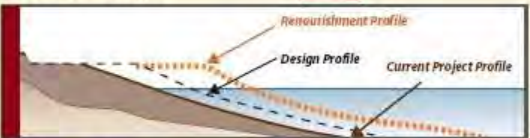
Details			
<b>USACE District</b>	CENAN	<b>Congressional District(s)</b>	6
<b>Type</b>	Shore Protection	<b>Project Length</b>	3 miles
<b>Category</b>	Beach Fill	<b>State</b>	NJ

[+ View Project Coordinates](#)

**Condition & Report**

**Status**

**Project Reliability**  
(Beach Condition)\*: Red



**Condition Notes:**

[+ View Color Legend](#)

Damage Risk Assessments					
Structures (homes, navig. Structures, etc.)	Environment/ Habitat	Infrastructure	Critical Facilities	Evacuation Routes	Recreation
+++	++	+++	++	++	+++

**Notes:** Renourishment of constructed segments has been delayed beyond the six year renourishment cycle; The cumulative construction cost for the Sea Bright to Manasquan project has been pro-rated by reach.

[+ View Risk Assessment Legend](#)

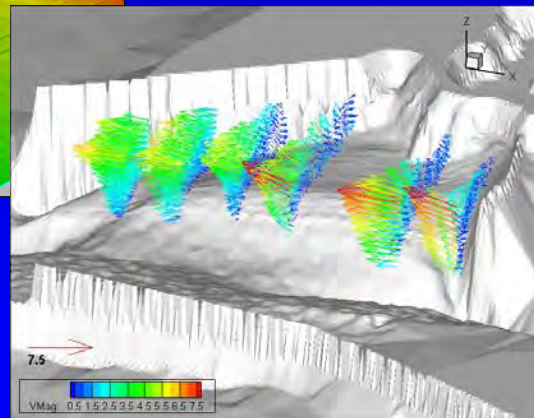
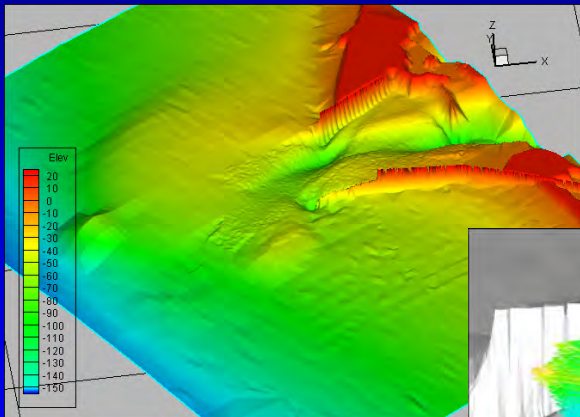
Project Details			
<b>Reconnaissance</b>	<b>Feasibility</b>	<b>Chief's Report</b>	<b>Authorized for Construction</b>
	Jan-1989		1986/1988/1992
<b>Initial Construction:</b>		<b>Initial Construction:</b>	

The project information can also be viewed in a mapping environment.

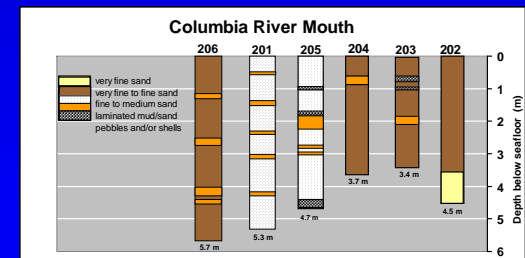
Click to view the location map and project status in Google Earth.

# RSM Implementation – Portland District

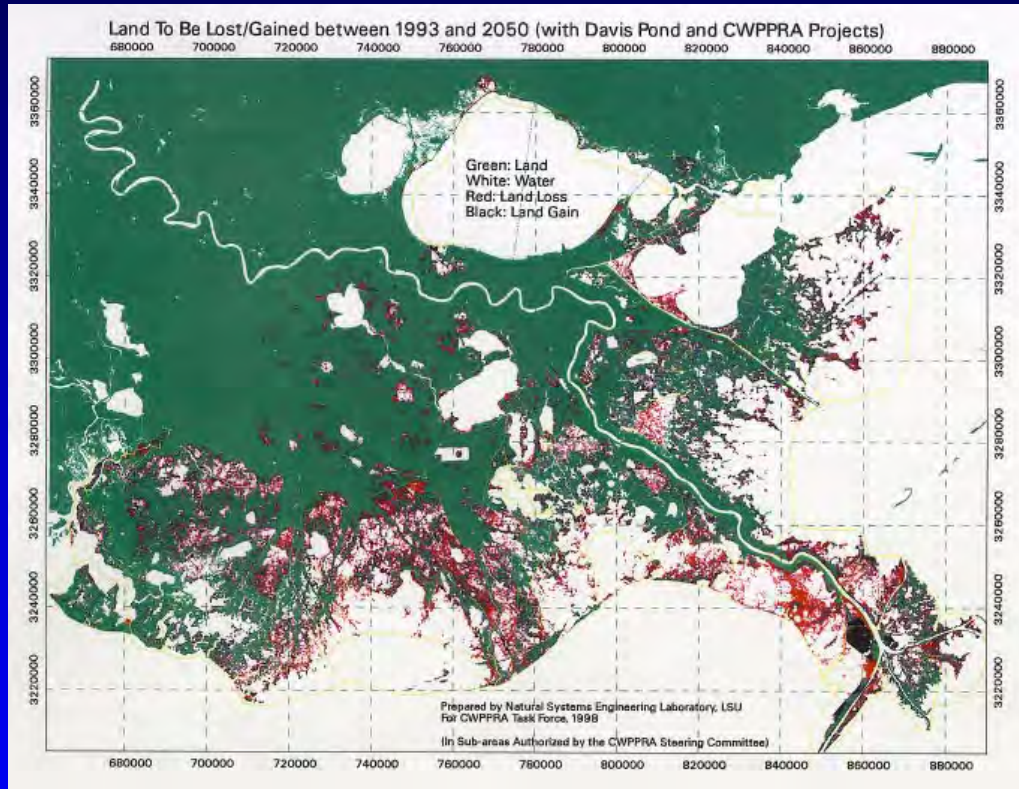
## Clatsop Spit, South Jetty, OR



## SW Washington Littoral Drift Restoration – Benson Beach



# RSM Implementation – New Orleans District



Develop a Regional Sediment Budget for the Lower Mississippi River and Coastal Louisiana



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# RSM Multi-Objective Life Cycle Optimization for Channel Maintenance

## Objective:

- Evaluate multiple objective alternatives
- Determine optimal management strategies
- Determine response of formulated alternatives
- Achieve levels of performance over future lifecycles

## Approach:

Build on available RSM tools, numerical models, methodologies



# Multi-Objective Lifecycle Optimization

## Optimization Variables

Dredging Volume
Sedimentation
Hydraulic/Mechanical Dredging
Disposal Capacity
Pumping/Barge/Truck Distance
Sediment Management Measures
Environmental Benefits
Cost
Disposal Site Limitations
Environmental Windows
Other...

Multi-Objective  
Lifecycle  
Analysis

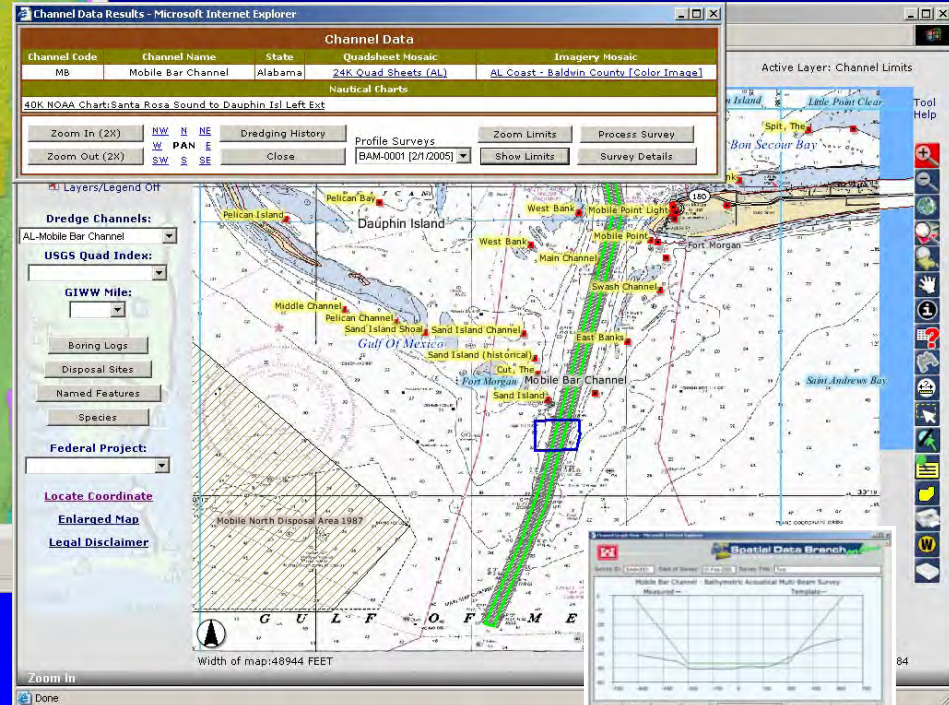
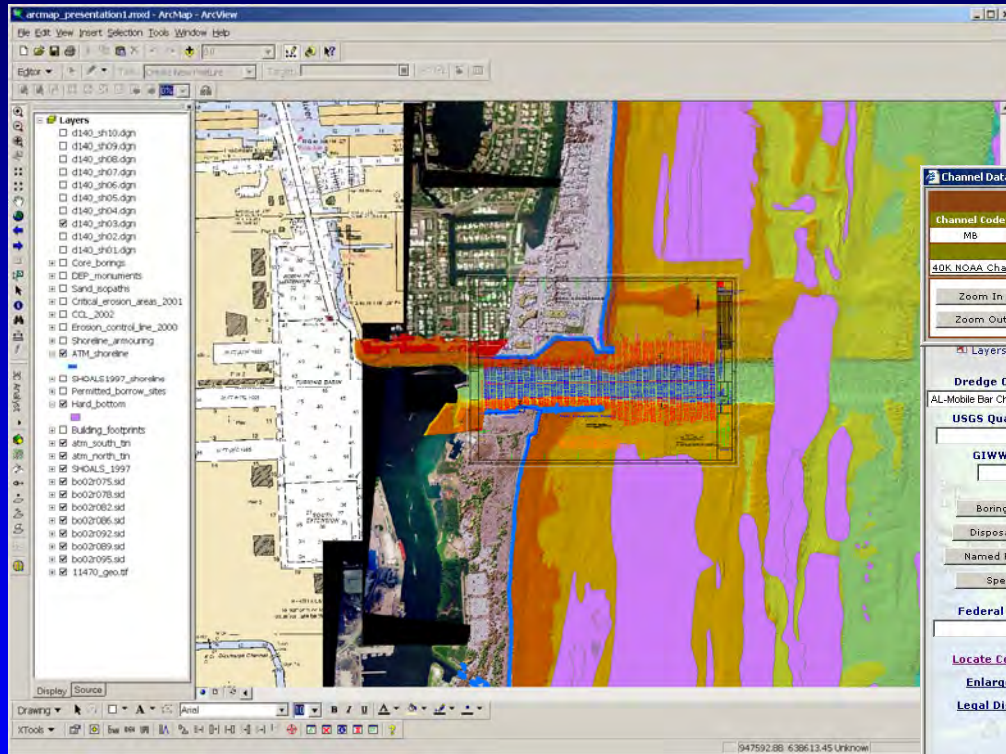


Regional  
Sediment  
Management  
Strategy



# RSM Tools & Technology: eCoastal GIS

Integrates coastal data, mapping and modeling output in GIS platform with specialized coastal analysis tools



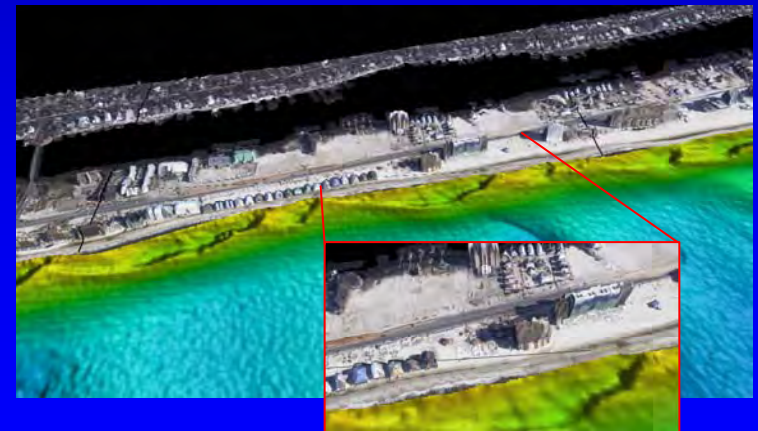
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# RSM Tools & Technology: Coastal Mapping

## CHARTS

1. Topo-bathy elevations
2. Ortho RGB imagery
3. 1-m grid for GIS
4. Bottom reflectance
5. Hyperspectral cube



Joint Airborne Lidar  
Bathymetry Technical  
Center of Expertise

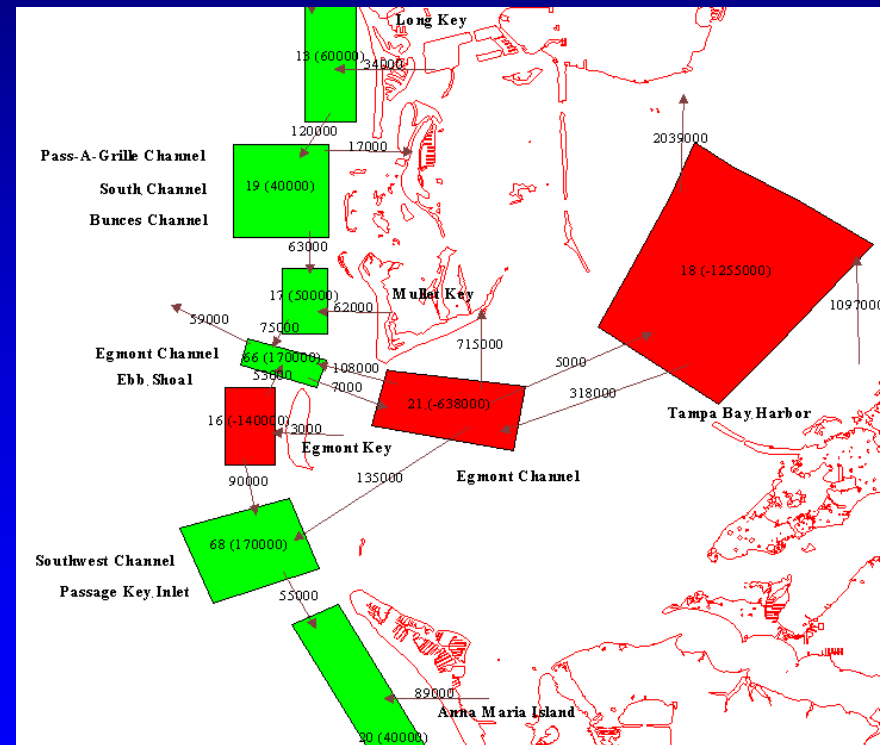
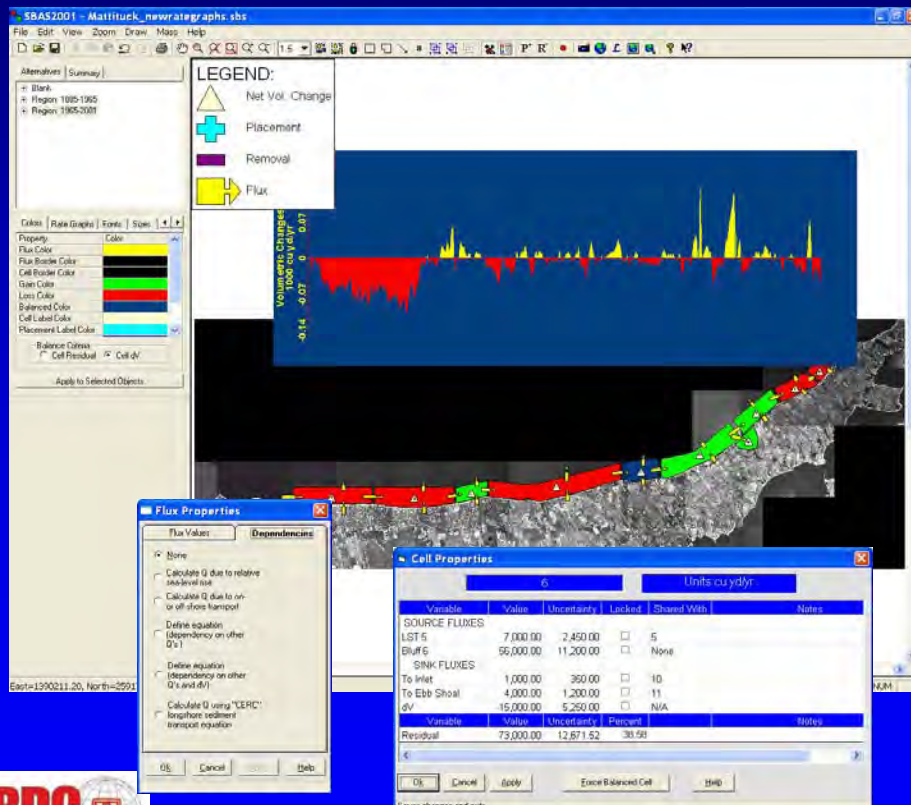


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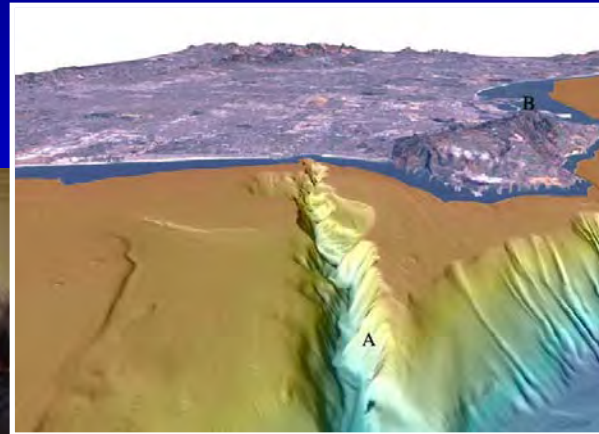
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# RSM Tools & Technology: Sediment Budget Analysis System (SBAS)



# Successful implementation of Regional Sediment Management engages stakeholders, fosters the participation of the science community and supports sustainable ecosystem management.



# www.wes.army.mil/rsm

The screenshot shows the homepage of the Regional Sediment Management website. At the top left is an illustration of a castle. The main title "Regional Sediment Management" is centered, with a circular RSM logo on the right. A navigation bar contains "USACE", "Research Partners", and "Regulatory Info.". A left sidebar lists menu items: Home, Demonstrations, RSM R&D, Publications, Software, Databases, Guidance, Related Research, and Calendar/News. The main content area features a paragraph about managing sediment, a bulleted list of RSM characteristics, and a photo of a beach. It also lists technical staff: Jack E. Davis, Jeffrey P. Waters, James E. Walker, and Charles B. Chesnut. A "Comments" section shows a webdate of Nov 02 and an update of Dec 06. A bottom navigation bar includes "About RSM", "Contracts", "Related Sites", and "Education". The footer contains the ERDC logo and the slogan "RSM... for balanced, sustainable solutions".

## Regional Sediment Management

Home

Demonstrations

RSM R&D

Publications

Software

Databases

Guidance

Related Research

Calendar/News

USACE | Research Partners | Regulatory Info.

Managing sediment to benefit a region potentially saves money, allows use of natural processes to solve engineering problems, and improves the environment. As a management method, RSM

- Includes the entire environment, from the watershed to the sea
- Accounts for the effect of human activities on sediment erosion as well as its transport in streams, lakes, bays, and oceans
- Protects and enhances the nation's natural resources while balancing national security and economic needs

The Corps of Engineers holds in trust and manages lands and waterways across the U.S. Using regional sediment management concepts will significantly improve the Corps' mission accomplishment. The Corps' engineers and scientists develop new technologies through research to make management decisions more accurate and efficient. Simultaneously, they evaluate RSM concepts through projects that highlight and improve sediment management activities.

**Jack E. Davis, Ph.D.**  
Technical Director

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Program Manager, RSM Demonstration Program

**USACE**  
**James E. Walker**  
Business Area Leader

**Charles B. Chesnut**  
Technical Monitor

**Comments**  
Webdate Nov 02  
Updated Dec 06

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*RSM... for balanced, sustainable solutions*



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