

RSM Program Update and Future Direction

Linda S. Lillycrop
Program Manager
USACE Regional Sediment Manager

US Army Engineer Research and Development
Coastal and Hydraulics Laboratory

Regional Sediment Management
And
Engineering With Nature
Workshop

28-30 August 2012



US Army Corps of Engineers
BUILDING STRONG

Outline

- RSM Overview
- Status and Progress
- Future Directions



Regional Sediment Management

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



RSM = Sustainable Solutions for.....

Navigation/ Dredging



Flood Risk Management



Environmental Restoration



RSM Operating Principles

- Recognize sediment as a regional resource
- Balanced, economically viable, environmentally sustainable solutions
- Improve economic performance by linking multiple projects
- Optimize operational efficiencies & natural exchange of sediments
- Consider local & regional impacts (physical, environmental, social)
- Apply/develop technology & tools to optimize system
- Share information & data, reduce data duplication
- Coordinate/Communicate/Collaborate with stakeholders & partners



RSM Practices



Reduce Offshore Disposal



Place Nearshore



Reduce CDF Placement
Utilize to improve system



Bypass/Optimize Placement



Reduce Sedimentation



Ecosystem Restoration
w/partners

- **Keep sediment in the littoral system**
- **Follow natural sediment processes**
- **Reduce sedimentation**



Key to RSM Success.....

USACE District Team

Planning, Engineering, Operations

Stakeholder and Partners

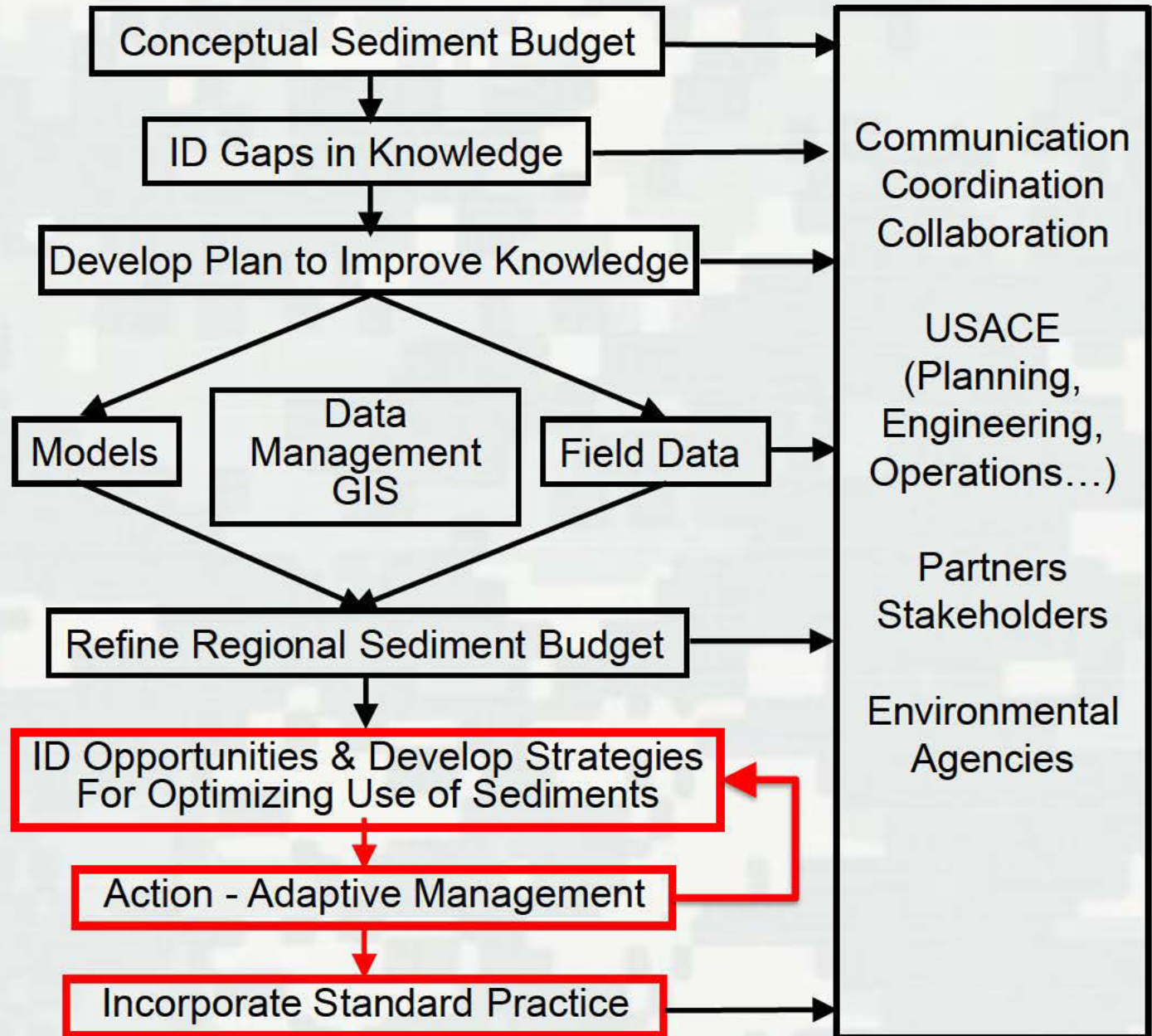
Working Together To:

- Identify Opportunities and Solutions
- Make Decisions
- Overcome Obstacles
- Take Action
- Leverage Resources to Make It Happen



RSM Progression

Regional
Understanding



Adaptive
Management

RSM Plans

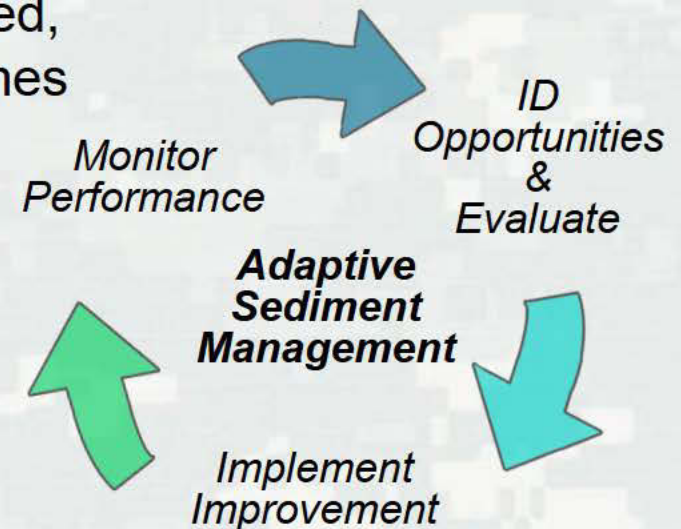
- 3-5 (or greater) year studies
- Expensive \$\$\$\$
- Lack coordination (authorities, cost share, permits, overcome hurdles)
- Do not result in construction -
Not moving sediment, no sand on the beach,....



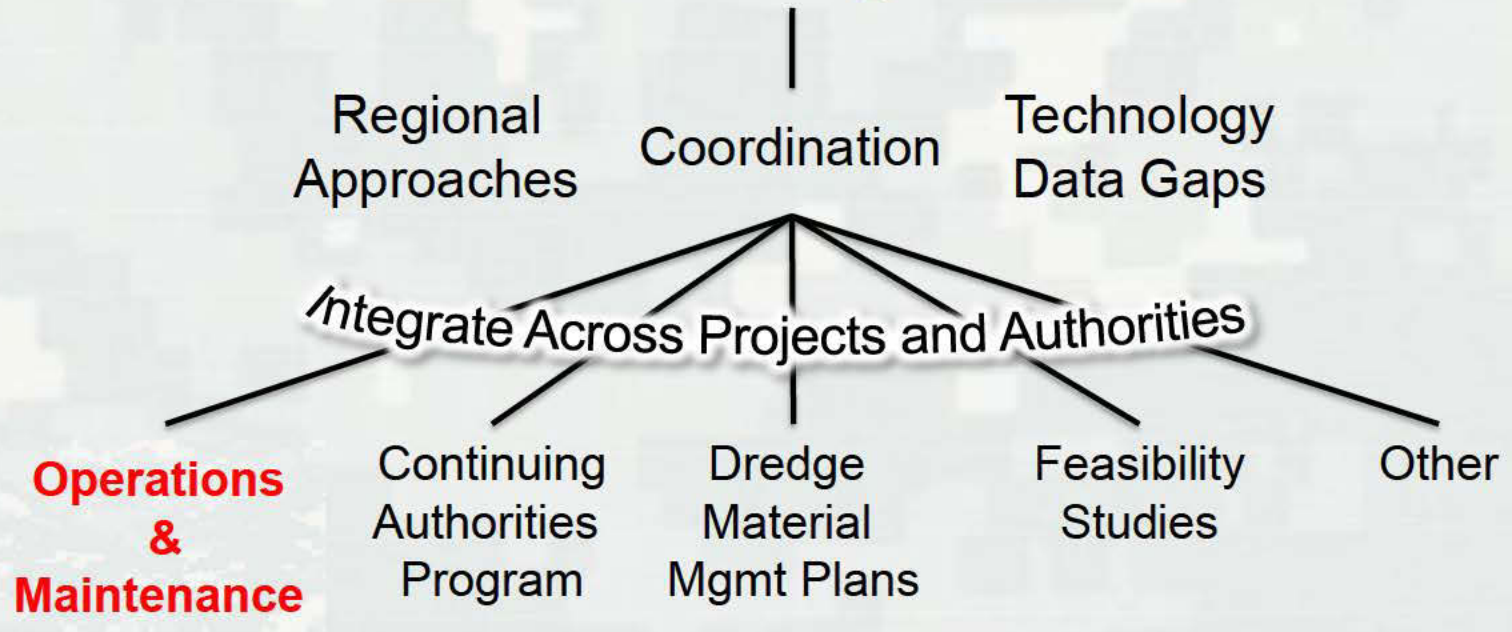
RSM Evaluations*

Practical actions that can be planned, evaluated, coordinated, and constructed in short timeframes (1-3 years).

*Win-Win for everyone



RSM Program



Construction



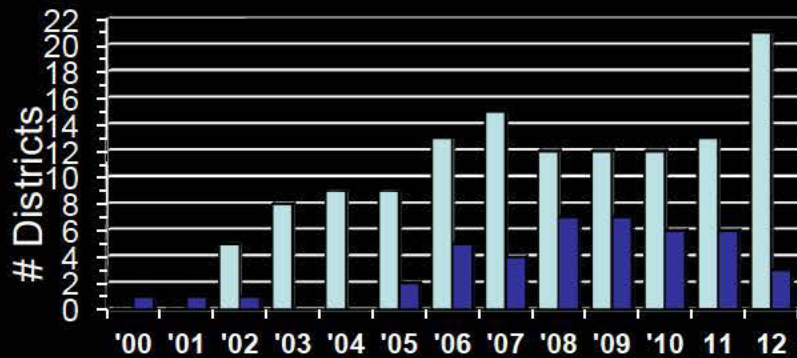
RSM Progress/Status



Historical RSM Participation

District Participation

■ Base ■ Congressional Adds



RSM FY12 Participation



**MCNP
CFDC
NCDB**

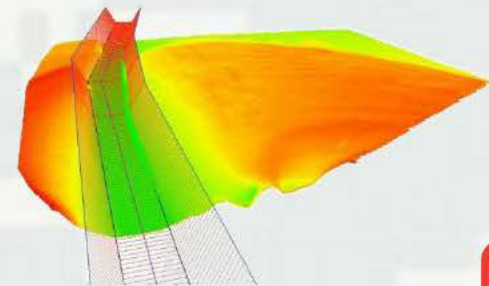
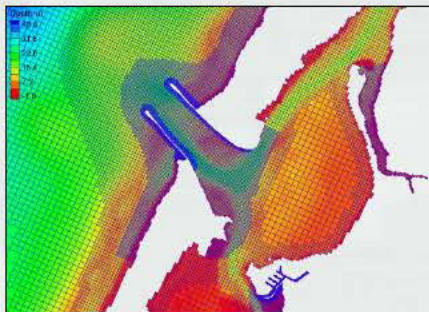


RSM FY12: 21 Districts, 2 MSCs, ERDC, IWR



FY12 (FY11/FY13) Program Goals

- Re-engage/Benefit O&M in addition to FRM, ER
 - Focus on adaptive management
 - Take Action – move sediments
 - Leveraging and supplementing
 - Build Corps capability & sustainable RSM programs
 - Execute what is planned within funding timeline
 - Lessons Learned local and national perspectives
(Document and share knowledge gained)
- ✧ FY13 - Engineering With Nature



FY12 (FY11/FY13) Proposal Criteria

- Takes action to move sediment in a manner that optimizes use.
- Reduces lifecycle costs
Navigation, Flood Risk Management, Environmental Restoration
- Innovative solutions:
 - links multiple projects
 - Leverages across business lines, programs, projects
 - develops new capabilities or techniques.
- Utilizes existing/enhances Corps tools, builds Corps technical expertise.
- National significance & product transferability
- Technical Transfer:
 - Communicate lessons learned
 - publish results
 - demonstrates benefits
 - RSM IPR/Workshop participation
- Past Performance



FY12 RSM Efforts

LRC Lower Lake Michigan Sediment Budget
LRB Sediment Budgets Lake Erie/Ontario
MVN Coastal LA Sediment Budget
POH Sediment Budgets, RSM Strategies
SAJ Nassau Co Sediment Budget
SAC Charleston Harbor Sediment Budget
SWG Upper TX Coast Sediment Budget

SWG Matagorda sedimentation, TX Region
LRC Calumet DD Harbor sedimentation
LRE St Joe DD Harbor - mixed material feeder berm
NAB Assateague Bypassing
SAC Charleston DD Harbor - sediment suitability
SPN Ocean Beach/SF Bay sediment transport Model
MVR Sangamon/Illinois River confluence sedimentation
SAW Navigation Corridor Morehead City Harbor

SAJ St Johns & Duval Counties RSM approaches
SAJ Tampa & Sarasota Bay
SAM Mobile Bay In-Bay Disposal Strategies
NAE Saco Bay Comprehensive Mgmt
NAO Shallow Draft Dredges Pilot
NWO Missouri River Flood Recovery RSM approaches
NWP ADH Identify BU placement

NWP Monitoring new MCR BU sites

SPL CA Sediment Management
NAN RSM Opportunities
POH Sediment Budgets, RSM Strategies

NWK Integrate BSTEM w/HEC-RAS
NAP Link Navigation Projects
SAC Folly Beach Data Mgmt

R&D/Tech Transfer

Nearshore Placement Guidance
3D Lidar Data & Tools
Landscape Metrics
CMS Model & Applications
GenCade Model Enhancements
ADH Model Applications
Integrate BSTEM w/HEC-RAS - NWK
RSM Tools & CE-Dredge
Sediment Budget Analysis System
Navigation and Coastal Databank



Shallow Draft Dredges





Nearshore Berm Guidance

Humboldt Shallow Humboldt Deep

Santa Barbara, CA Silver Stra



Assateague Island, MD

Long Island, NY
Long Branch, NJ

Atlantic City, NJ
Assateague Island, MD

Dam Neck, NC

New River, NC



Pensacola, FL

Sand Island, AL

Brazos, TX

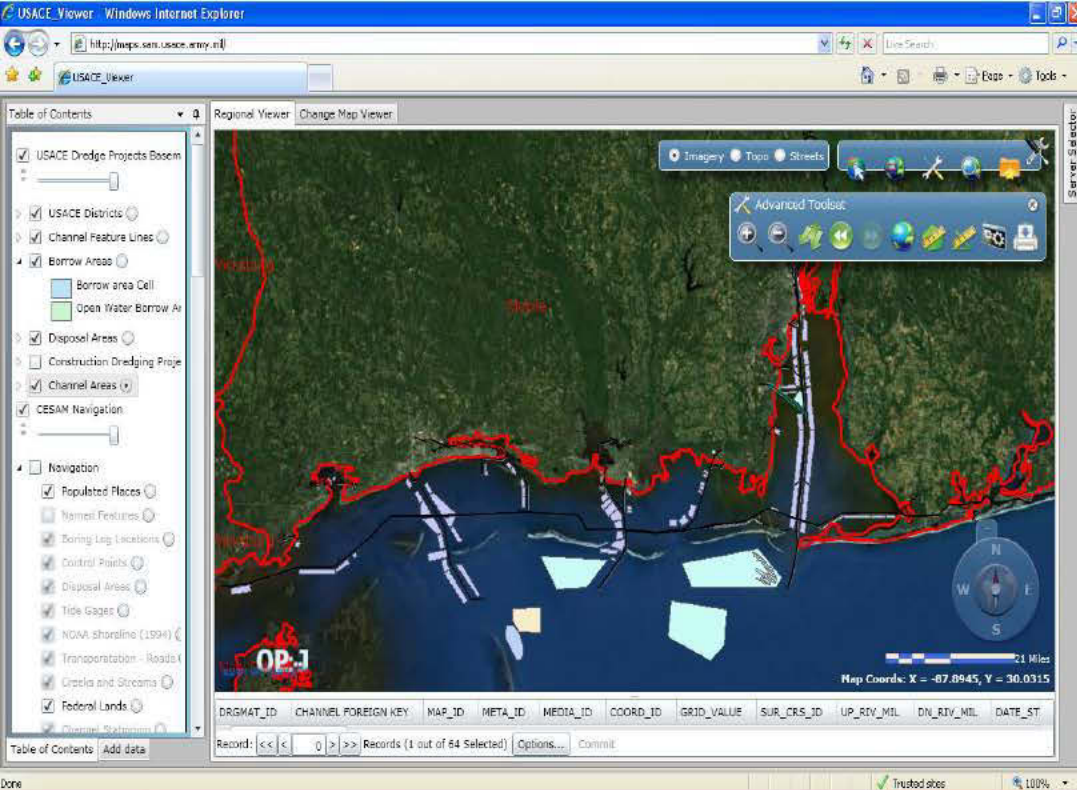
Egmont

Ft. Myers

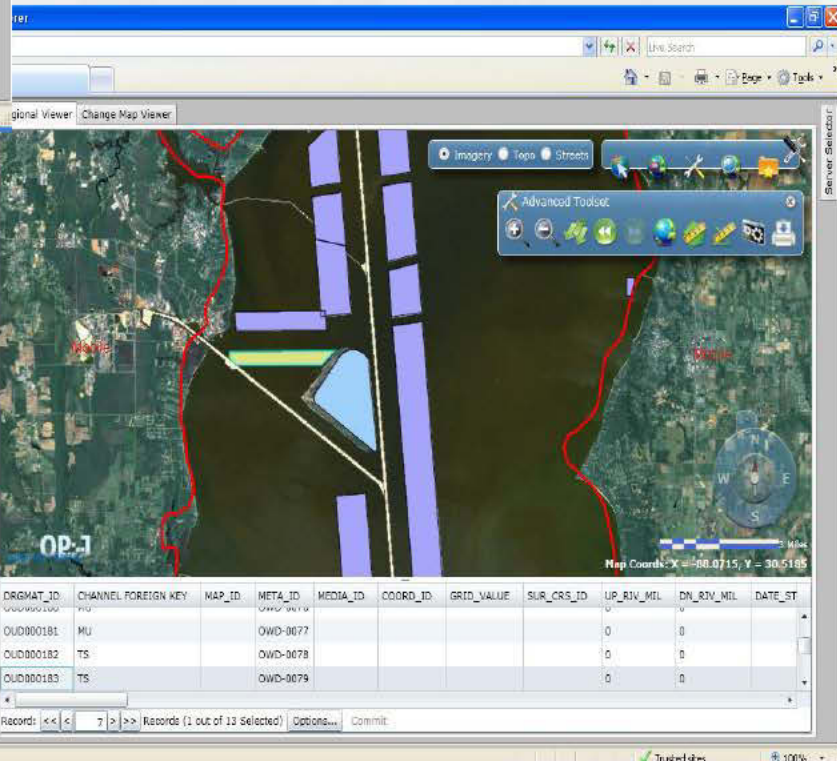
Fort Myers Beach

- Ft. Myers: Monitored since May 2010
- Egmont: Scheduled Mar 2012
- Pensacola: Constructed Dec 2011
- Assateague Island: Fall 2012





CE-Dredge and RSM Tools



- Data management, visualization & analysis
- Improve decision making
- Facilitate sharing data & tools

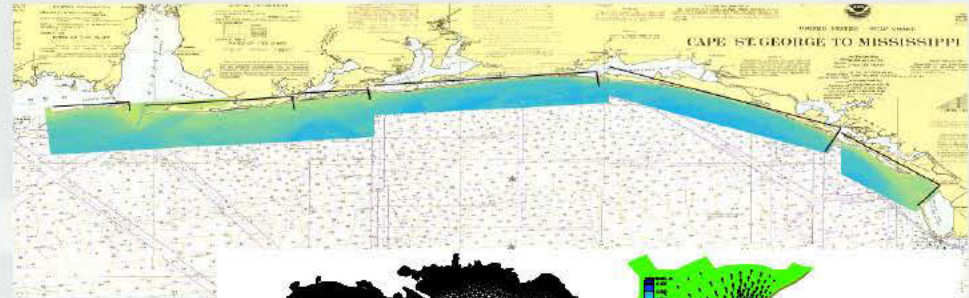


Model Enhancements

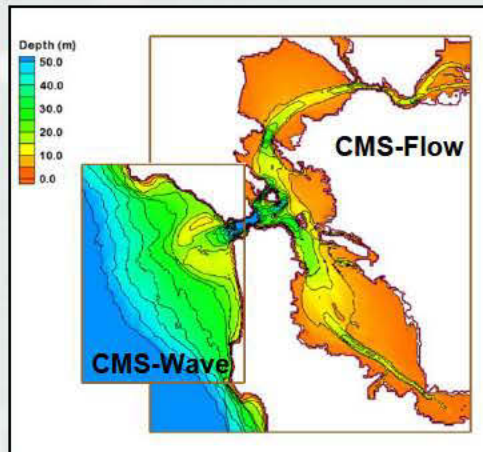
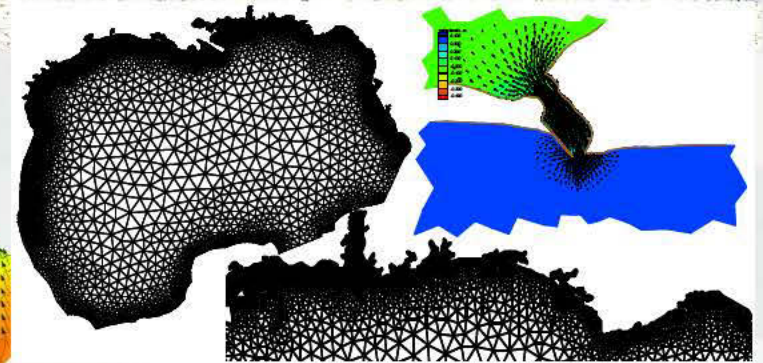
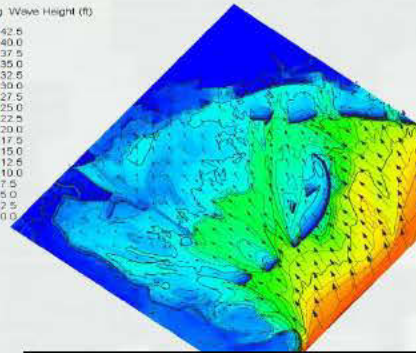
Waves, Circulation, Water levels, Sediment Transport, Shoreline Change

Complex to Adaptive Management

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



Sig. Wave Height (ft)



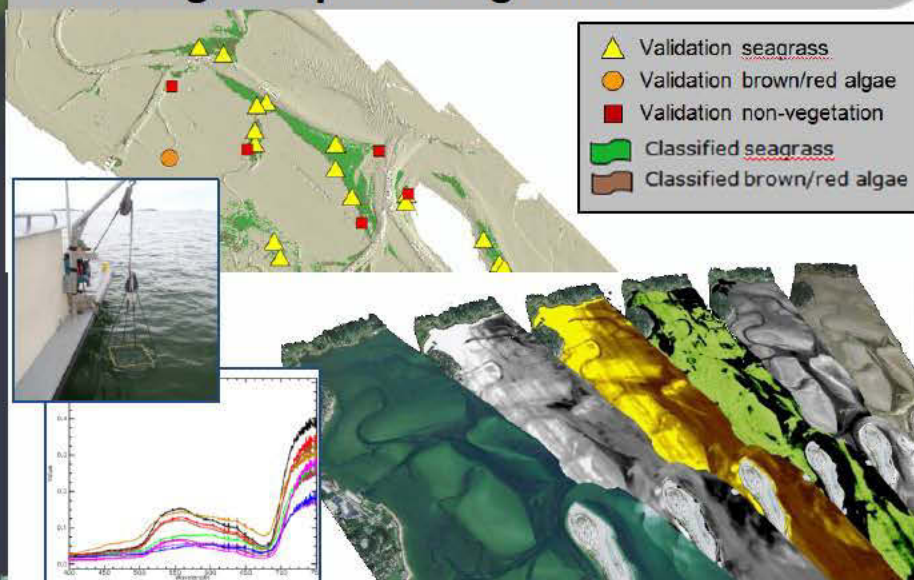
National Coastal Mapping Program

Products

- ASCII XYZ
- Aerial photos
- Zero contour
- Aerial photo mosaics
- 1-meter bathy/topo DEM
- LAS format topo
- 1-meter bathy/topo bare earth DEM
- Hyperspectral image mosaics
- Laser reflectance images
- Basic landcover classification
- Volume change

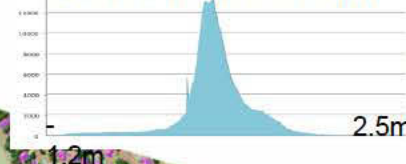
1
2
3
4
5

Submerged Aquatic Vegetation



Coastal Land Cover

Marsh Elevation Distribution



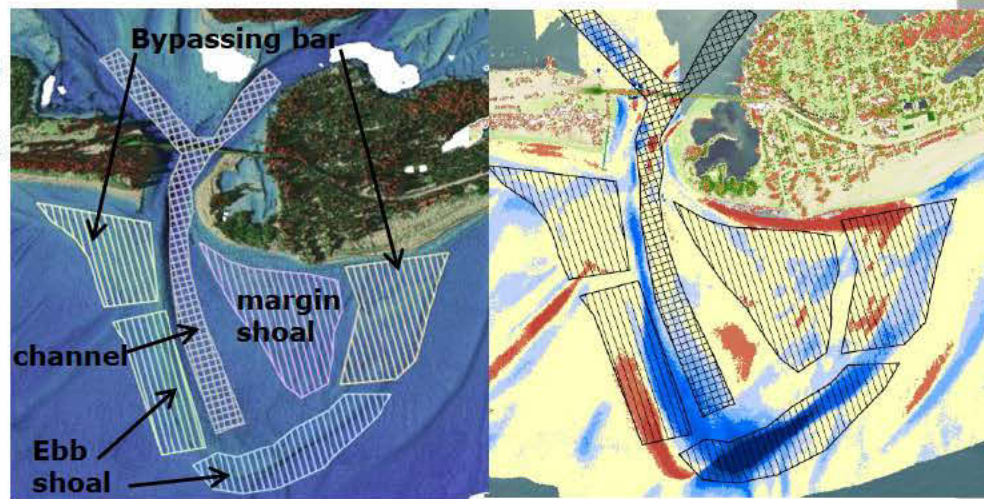
Landcover type

bare/open	0.04
buildings/structures	0.07
grass/lawn	0.034
marsh	0.04
road/impervious	0.012
sand/beach	0.04
shrub	0.05
trees/forested	0.12
water	0.02

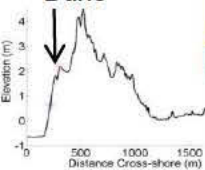
Manning n Value

0.04
0.07
0.034
0.04
0.012
0.04
0.05
0.12
0.02

Sediment Budgets



Dune



Updated RSM.USACE.ARM.Y.MIL

Regional Sediment Management (RSM) Program

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.

What's New?

- COE District Survey
- FY13 Request for Proposals
- Navigation Research, Development and Technology Strategic Needs and Priorities Document, v1.0
- District Project Templates:
 - Fact Sheets
 - Quarterly Reports
- SBAS for ArcGIS 10
 - Addin (zip)
 - User's Guide (pdf)

Updated March 2012

RSM Technical Notes, Reports, Manuals, Conference Papers



Bi-Monthly RSM Conference Calls Webinars



RSM Future Direction Long-Term



Engineering with Nature

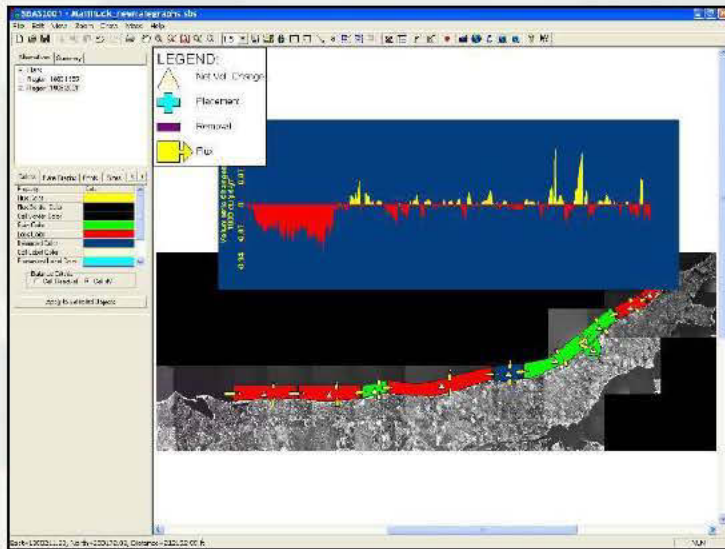


- Working with Nature (PIANC)
- Regional Sediment Management
- Beneficial Uses of Dredged Material

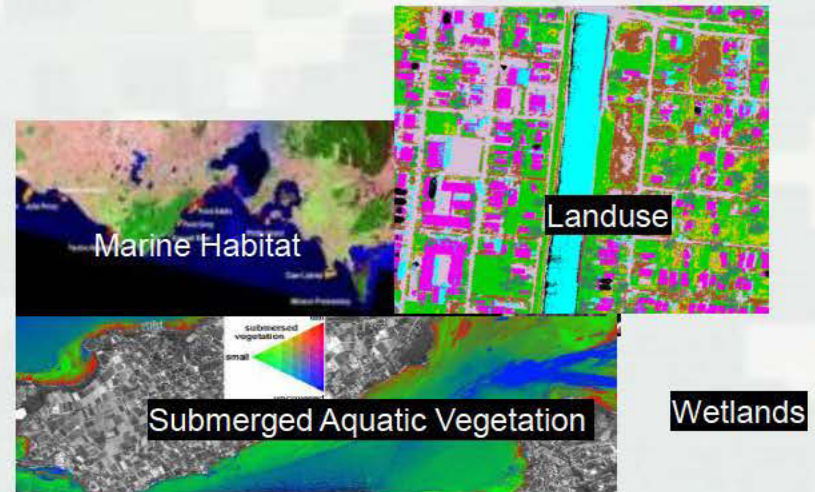


RSM Long-Term Goal

Link with Engineering With Nature



**Sediment/Engineering
Processes**



**Environmental
Processes**



Linking RSM with EWN



MCNP
CFDC
NCDB



Thank you

rsm.usace.army.mil

Linda.S.Lillycrop@usace.army.mil



®

US Army Corps of Engineers
BUILDING STRONG®