USACE Regional Sediment Management Program (RSM)

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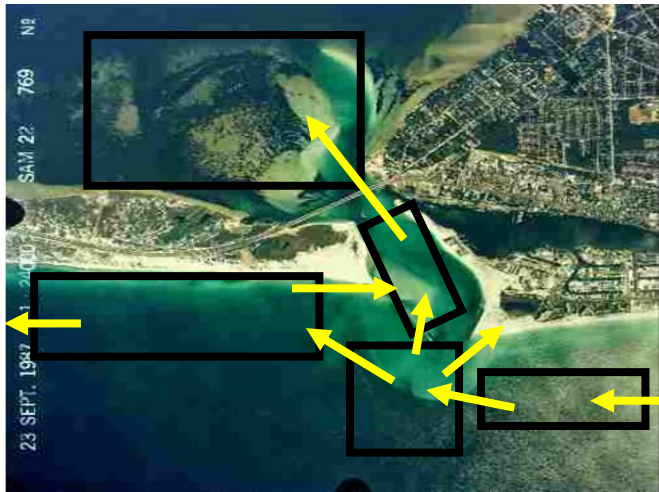
USACE IOOS Program Liaison

USACE-AOOS Workshop
Coordinating Coastal and Ocean Monitoring

10 August 2010



US Army Corps of Engineers
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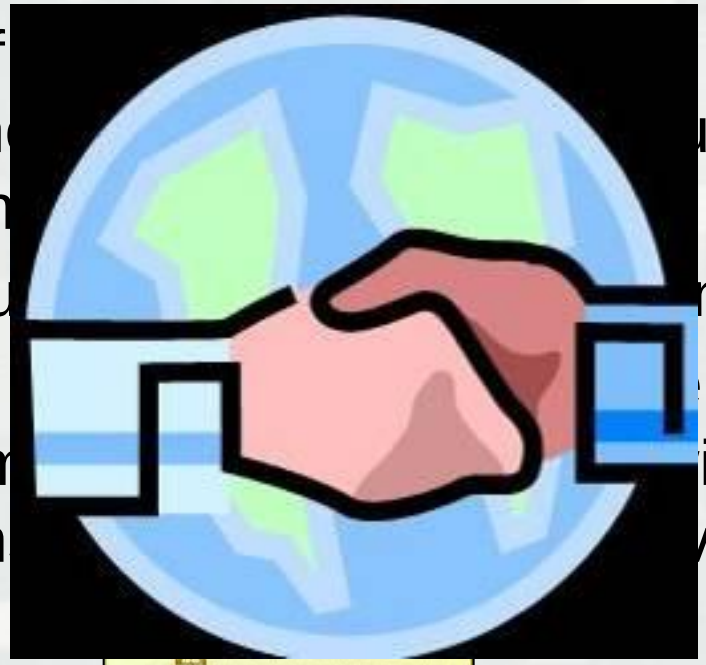
Regional Sediment Management is…

… A systems-based approach for collaboratively addressing sediment-related issues within a regional context (coastal and watershed)

RSM Operating Principles

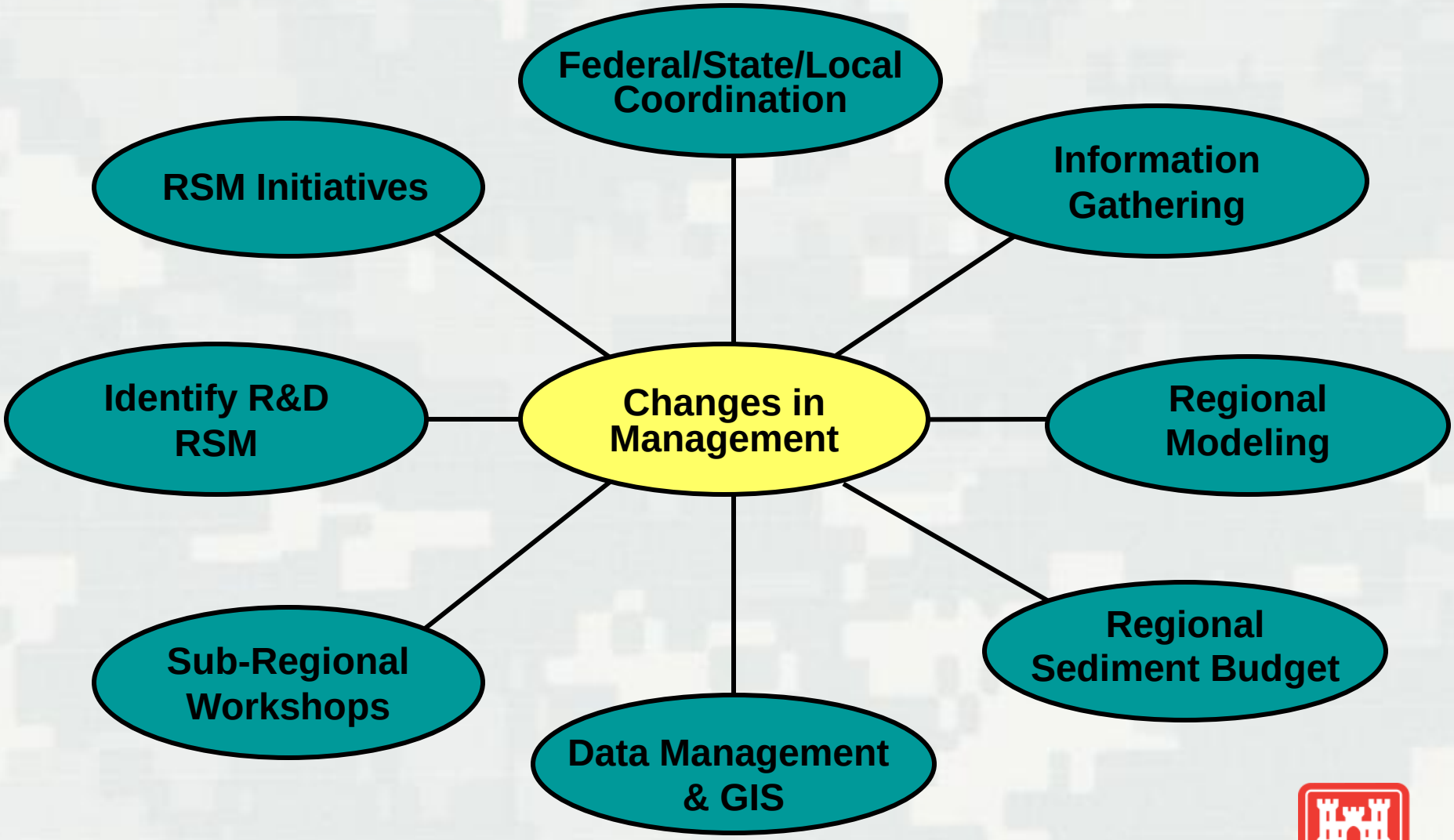
- Recognize sediment as a resource
- Evaluate use of
- Balanced, econ ustainable solns
- Consider region
- Monitor to evalu ntal, social impacts
- Apply technical rstand system
- Coordinate/Com ith stakeholders, partners, spon verage resources



Federal, State, Local, Academia, Others…..

RSM Across the USACE

Activities

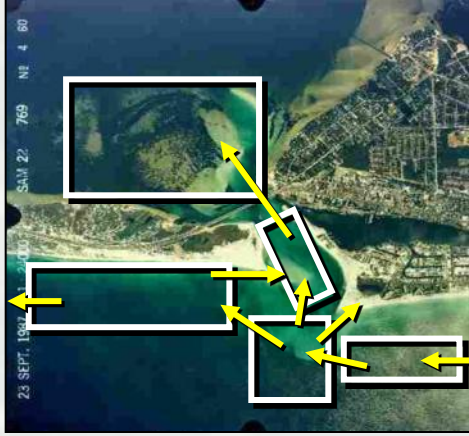

Federal/State/Local Coordination
RSM Initiatives
Information Gathering
Identify R&D RSM
Changes in Management
Regional Modeling
Sub-Regional Workshops
Regional Sediment Budget
Data Management & GIS

Process

Preliminary Sediment Budget

ID Gaps in Knowledge

Develop Plan to Improve Knowledge



Tools

Models

GIS

Field Data

Refine Regional Sediment Budget

Engineering Solutions

Engineering Solutions

Sediment Budget Requirements

Data

- Mapping
- Hydrodynamic/Meteorological
- Volumes/Sediment Characteristics

Models

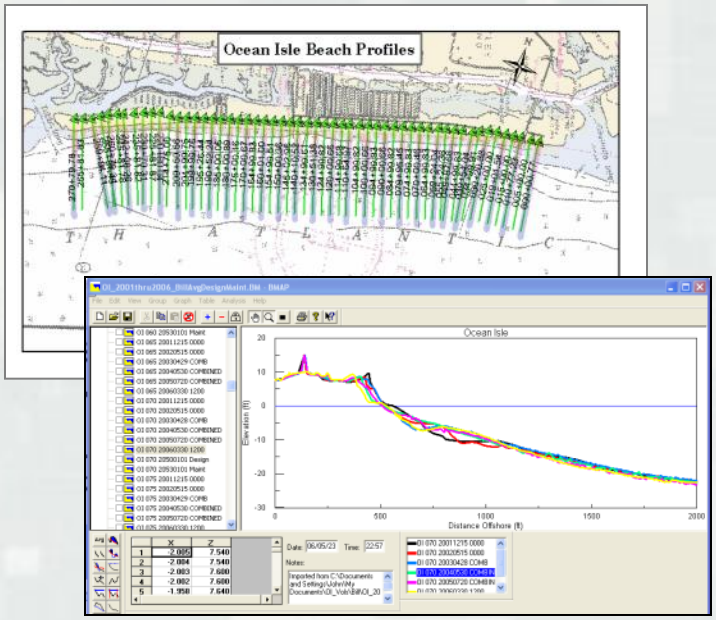
- Waves (offshore/nearshore)
- Water-Levels
- Currents/Circulation Patterns
- Shoreline Change
- Sediment Transport

Tools

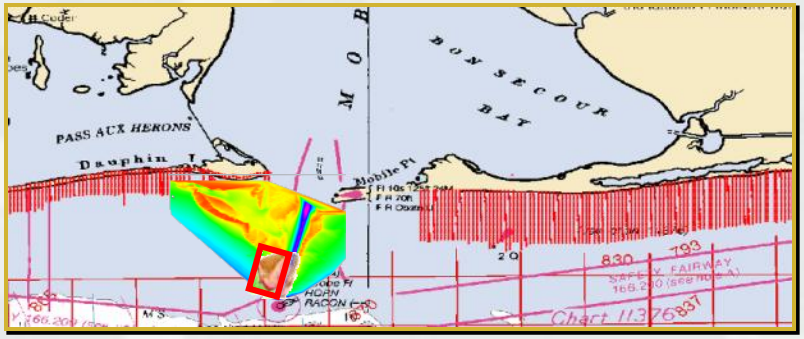
- Data Management
- GIS

Mapping Data - Bathymetry/Topography/Shoreline/Imagery

Regional/Long-Term/Post-Storm

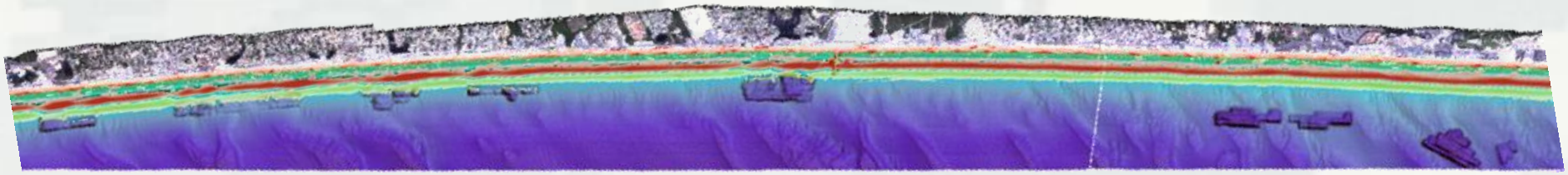


Beach Profiles



Multibeam

Lidar



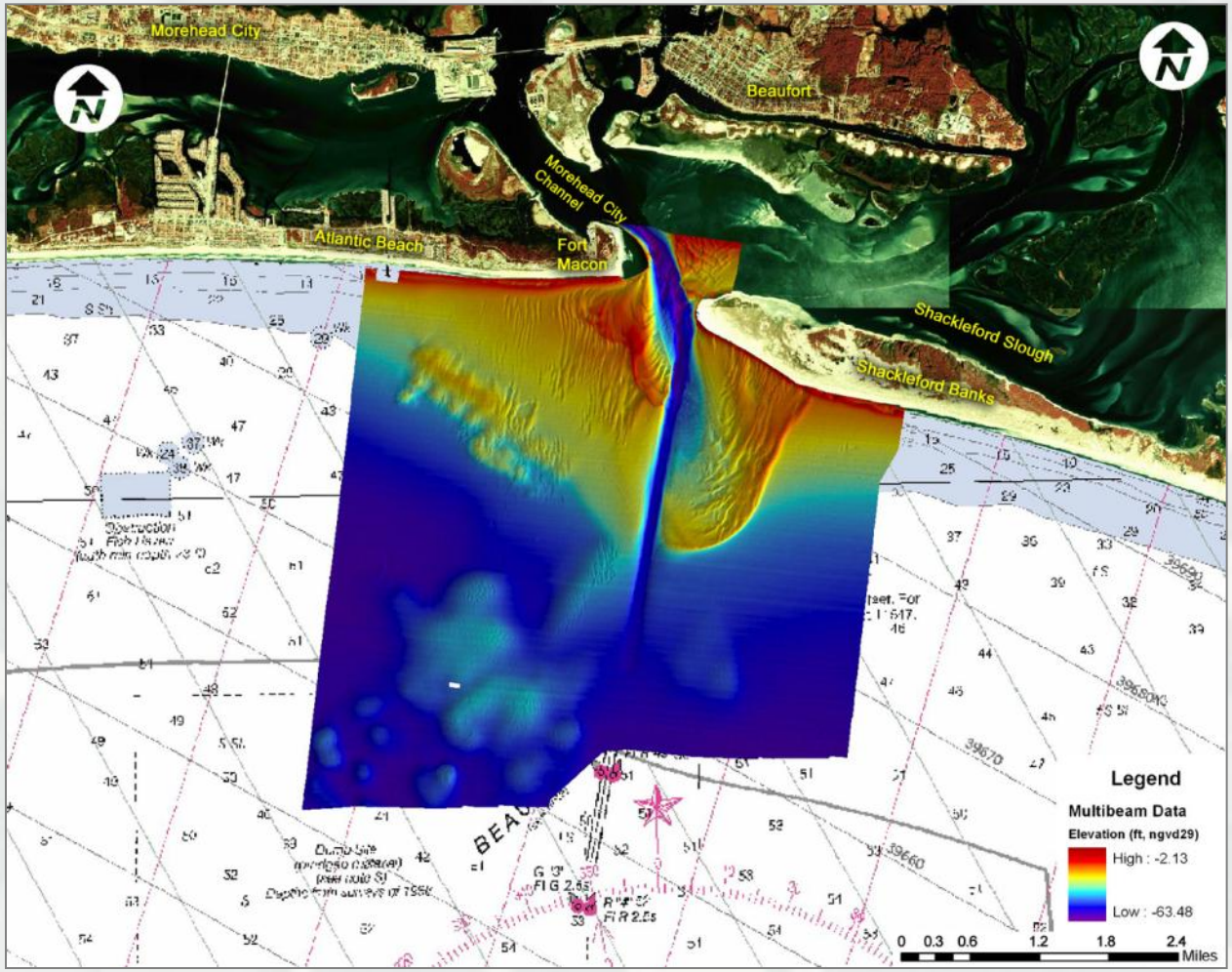
Mapping Data - Bathymetry/Topography/Shoreline/Imagery

Regional/Long-Term/Post-Storm

Aerial Photography

Mapping Data - Inlet Morphology

- Volumetric Analyses



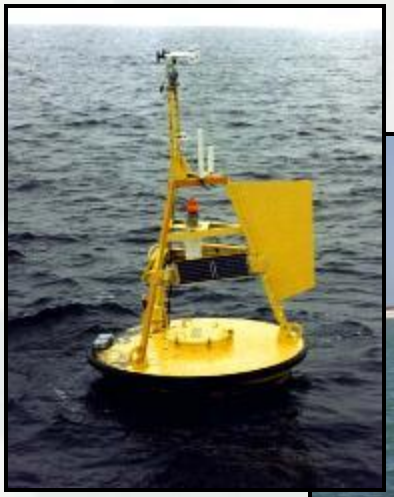
Mapping Data - Inlet Morphology

- Shoreline and Channel Changes

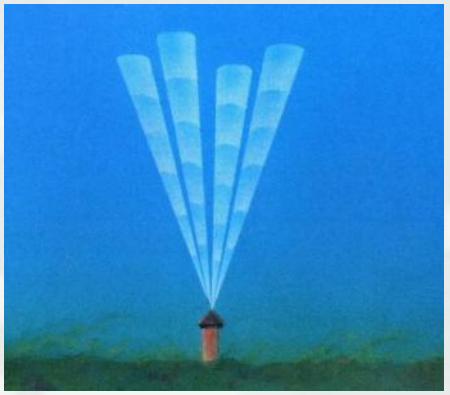
Hydrodynamic/Meteorological Data
(Offshore and Nearshore)

Waves (offshore/nearshore)
Water-Levels
Currents/Circulation Patterns
Winds, Barometric Pressure

NDBC-CMAN, Airports



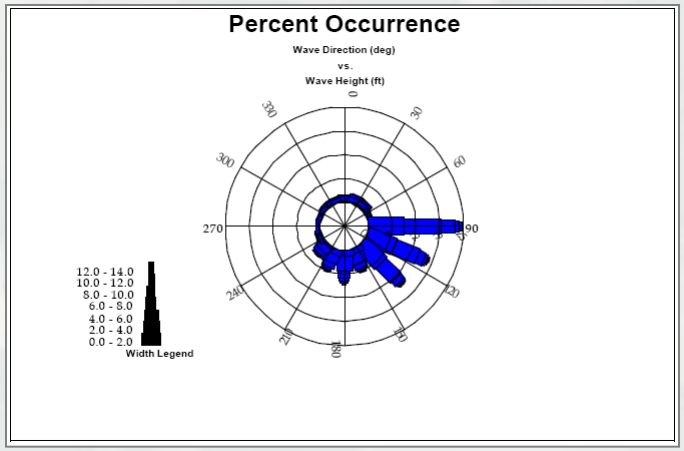
NDBC
CDIP
ERDC/CHL

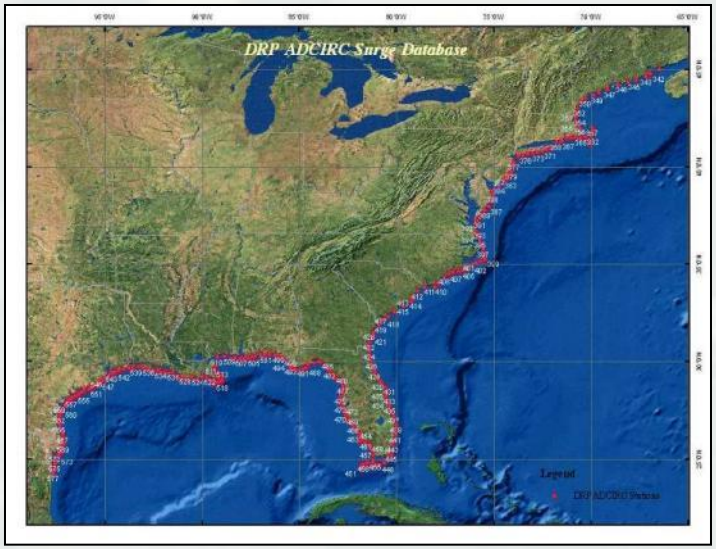


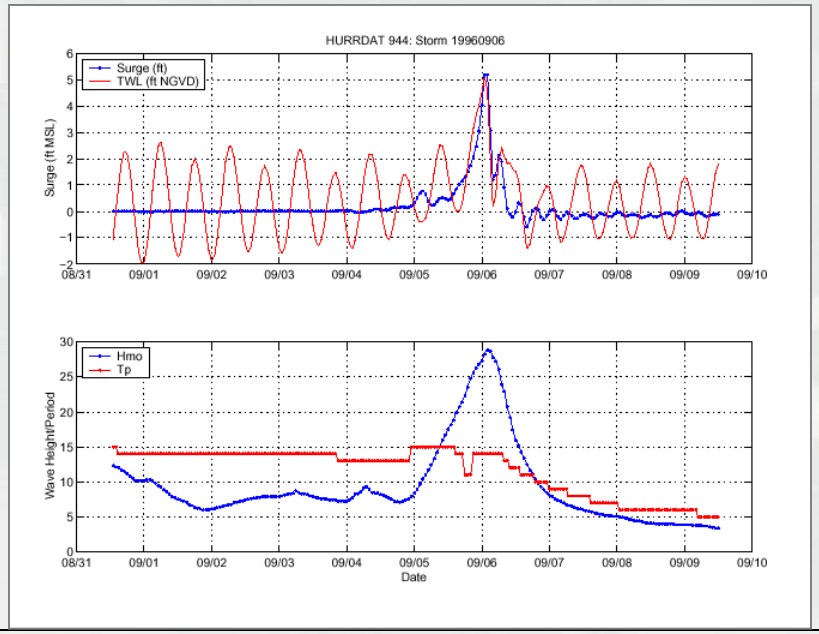
ADCP
Bottom Mounted
Vessel Transects

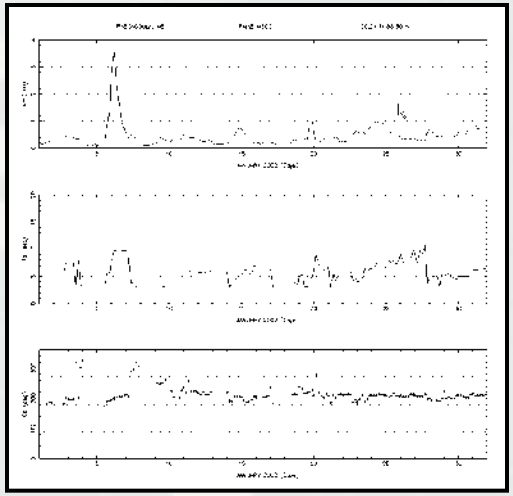
Hydrodynamic/Meteorological Data
(Offshore and Nearshore)

Wave Information Study (WIS)









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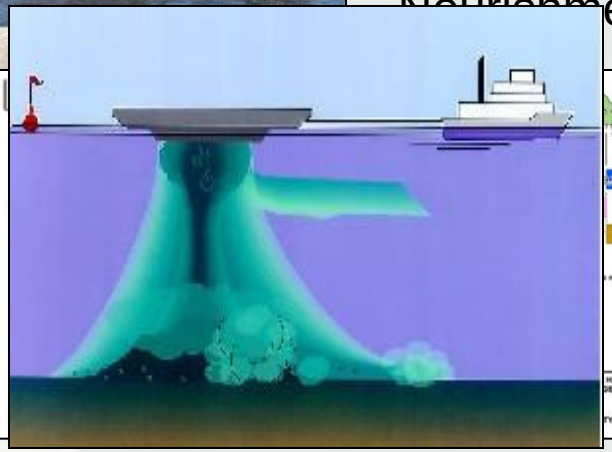
Volumes/Sediment Characteristics

- Historical Dredging Data
- Surveys
- Sediment Sampling

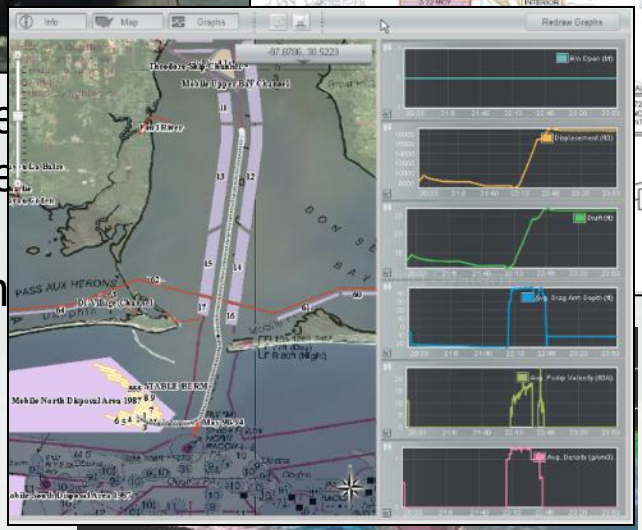
Silent Inspector
Dredge Monitoring

FATE Models
STFATE (Short Term)
MDFATE (Multiple Disposal)
LTFATE (Long Term)

Beach Nourishment



- Where
- Where
- When
- Volum



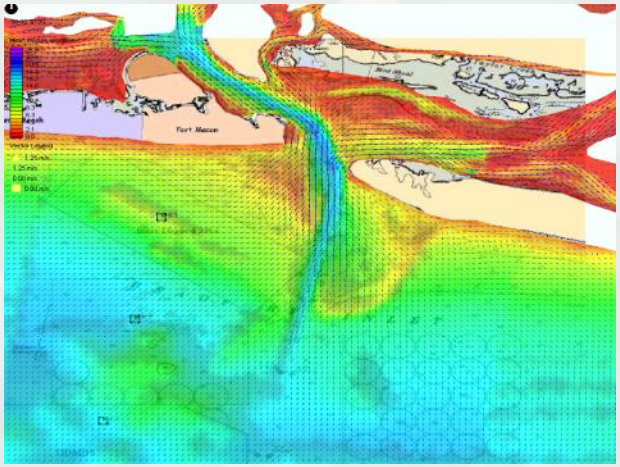
Shoaling Patterns/Dispersion

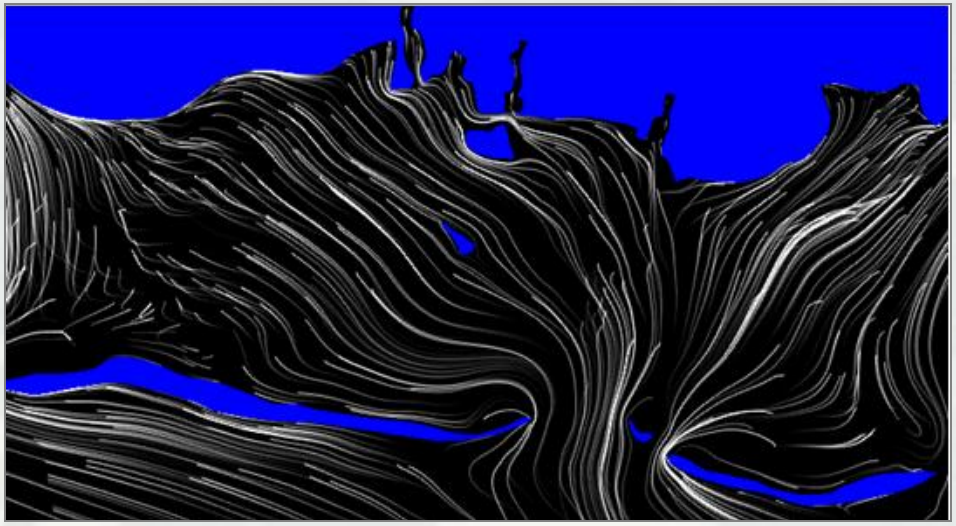
Sediment Characteristics

Coastal Processes Models

- Currents/Circulation

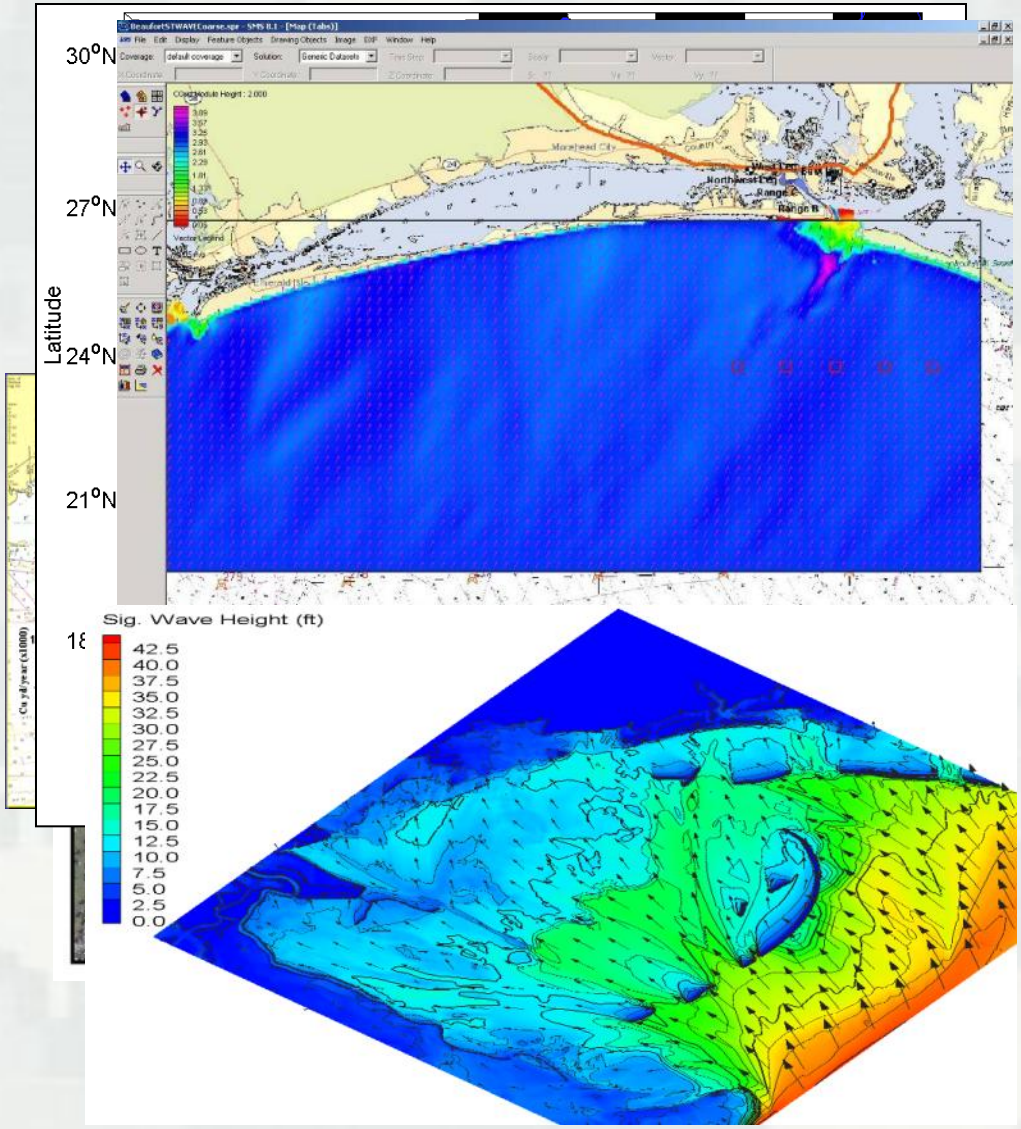
  Water Levels





Coastal Processes Models

- Waves Basin Scale
- WaveTransformation
- Longshore Transport
- Inlet Transport Patterns



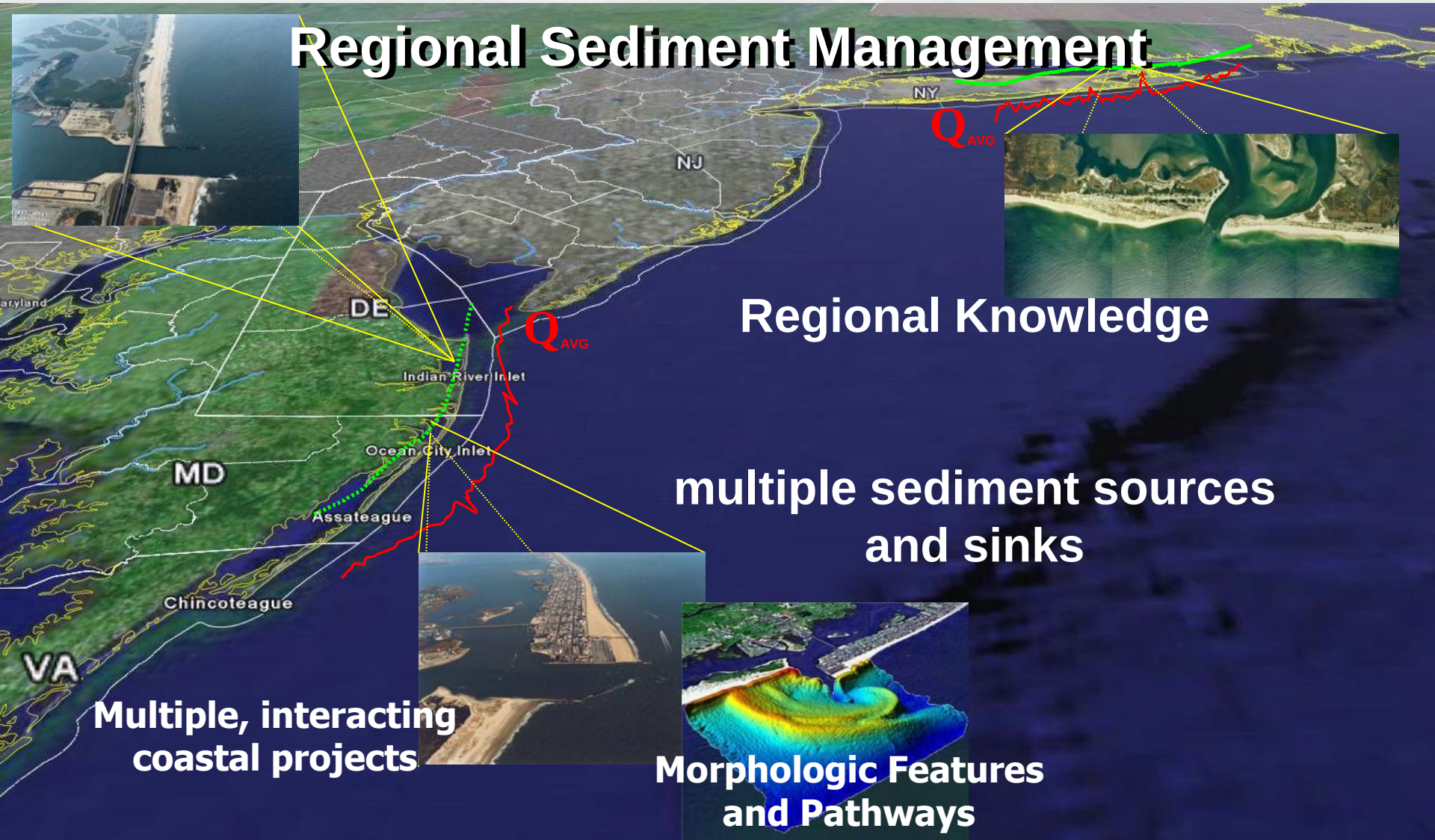
Coastal Process Models
(Sediment Budgets)

Model	Waves OS	Wave Trans	Currents	Water Levels	Sediment Transport	Shoreline Change	Cross-shore Change	Patterns Pathways
WISWAVE	x							
WAM	x							
WAVEWATCH	X							
STWAVE		x						
CGWAVE		x						
SWAN		x						
Boussinesq		x						
GENESIS					x	x		
CASCADE					x	x	x	x
SBEACH							x	
ADCIRC			x	x				x
CMS-2D			x	x	x			x
Mike21		x	x	x	x	x		x
Delft3D		x	x	x	x	x		x
MORPHOS		x	x	x	x	x		
Particle Tracking								x

Data Management and GIS

GIS/NCDB/Data Framework

Thank You


Regional Sediment Management
NY
NJ
DE
MD
VA
Indian River Inlet
Ocean City Inlet
Assateague
Chincoteague
Regional Knowledge
multiple sediment sources
and sinks
Multiple, interacting
coastal projects
Morphologic Features
and Pathways