

**Regional Sediment Management
Program
of the
USACE, Mobile District**

Linda S. Lillycrop

**Engineering Division
USACE, Mobile District**



Mobile District



USACE Regional Sediment Management

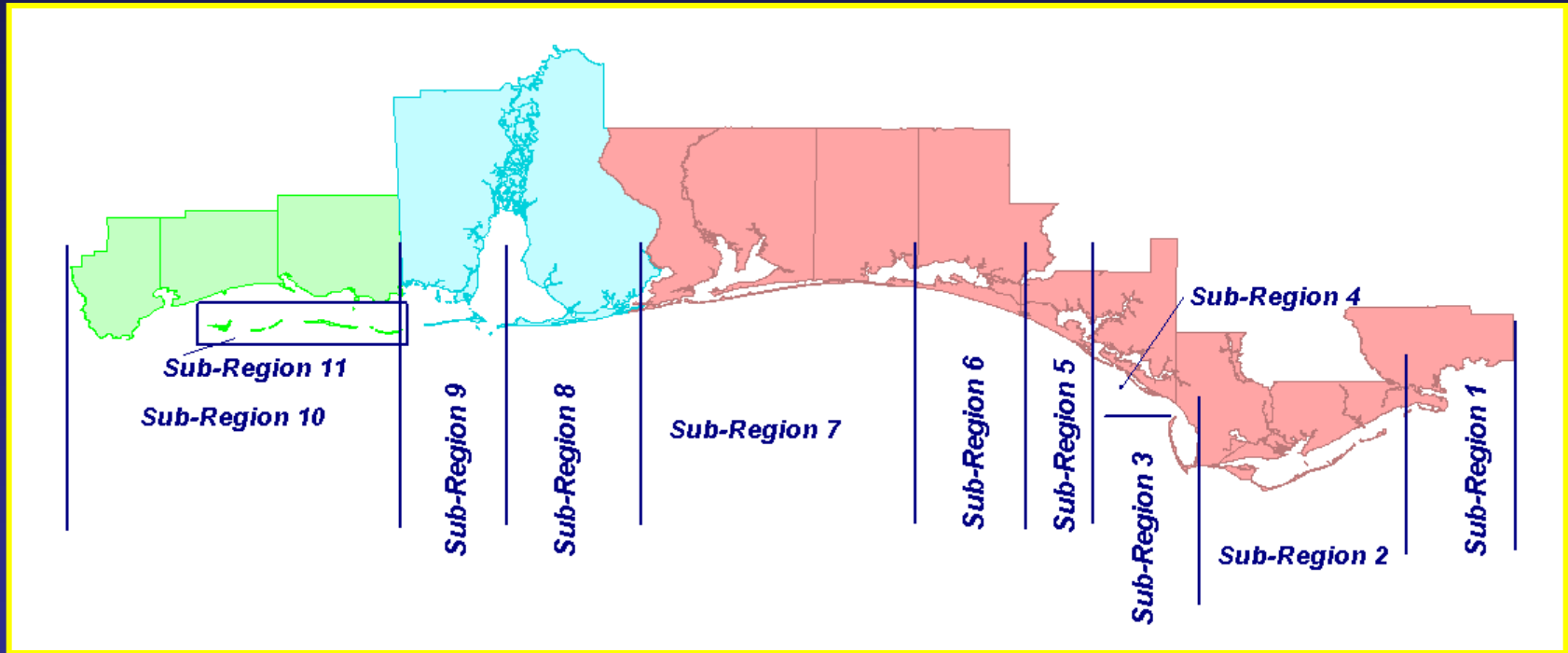
- **Coastal Engineering Research Board Initiative (1996 – 1998)**
- **Mobile District Demonstration, 1999-2002**
- **National Regional Sediment Management, 2000**
- **10 District Demonstrations, 2001 – 2003**
- **Regional Sediment Management R&D, 2002**



Mobile District



Regional Sediment Management Domain



375-miles of Shoreline
21 Federal Projects
8 State Parks
7 Military Installations

Gulf Islands National Seashore
Harrison County Beach Fill
Panama City Beach Fill
Local Projects



Mobile District



Regional Sediment Management

Goal:

**Maximize beneficial use of sediments;
Minimize environmental impacts;
Optimize Expenditures**

Objectives:

- **Implement RSM Practices**
- **Improve economic performance by linking projects**
- **Develop new engineering techniques to optimize/conservse sediment**
- **ID/overcome bureaucratic obstacles**
- **Manage in concert with environment**



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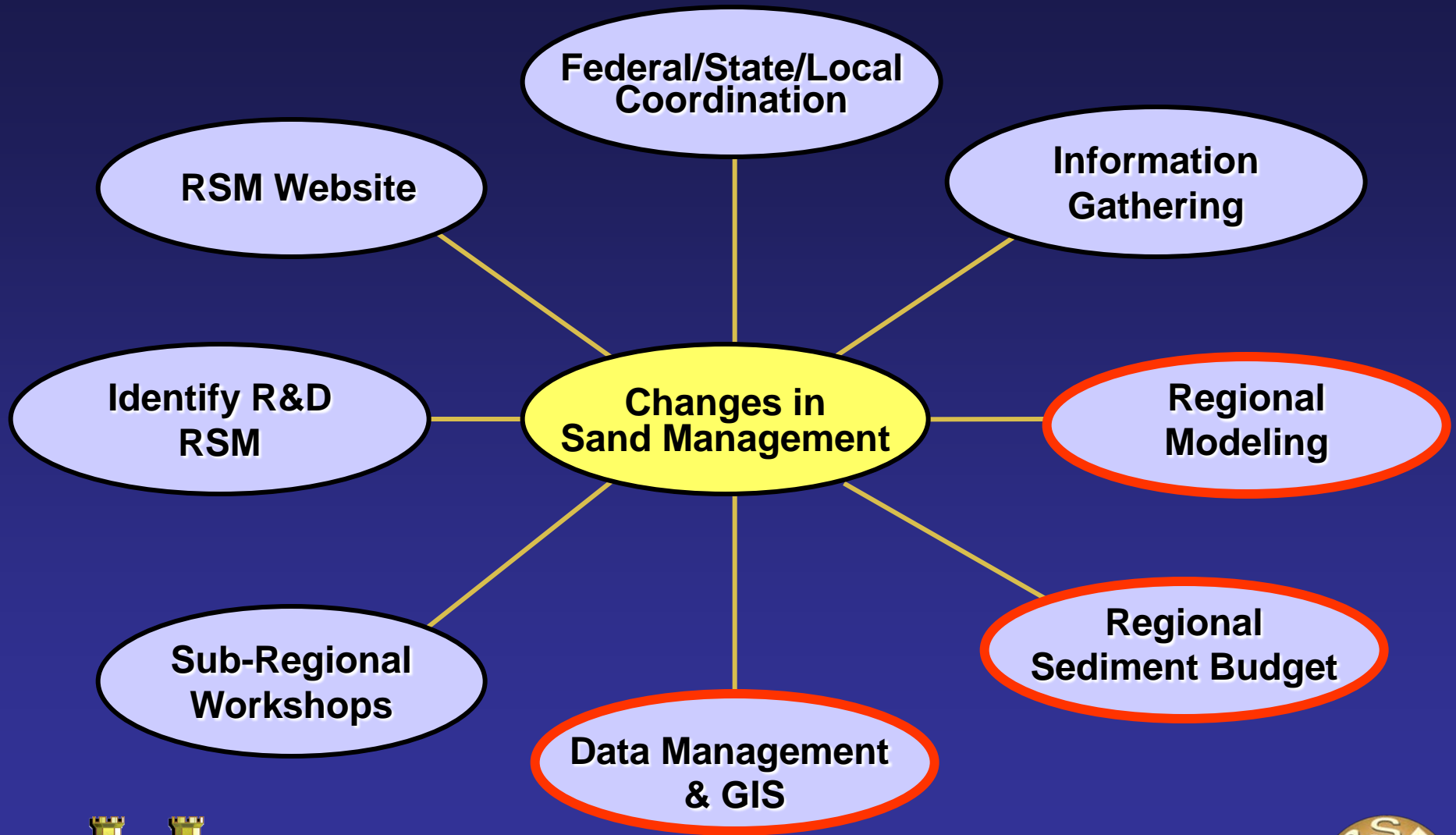


Partners

- **FLDEP**
- **USACE – ERDC/SAD**
- **NOAA/NDBC**
- **AL Geological Survey**
- **FL Geological Survey**
- **US Geological Survey**
- **US Air Force**
- **US Navy**
- **NAVO**
- **NOAA/NDBC**
- **University of Florida**
- **University of S Alabama**
- **FEMA**
- **AEMA**
- **Minerals Mgmt Service**
- **SARPC**
- **AL DECA**
- **AL DEM**
- **AL Coastal Erosion Task Force**
- **Gulf Islands Nat'l Seashore**



Activities



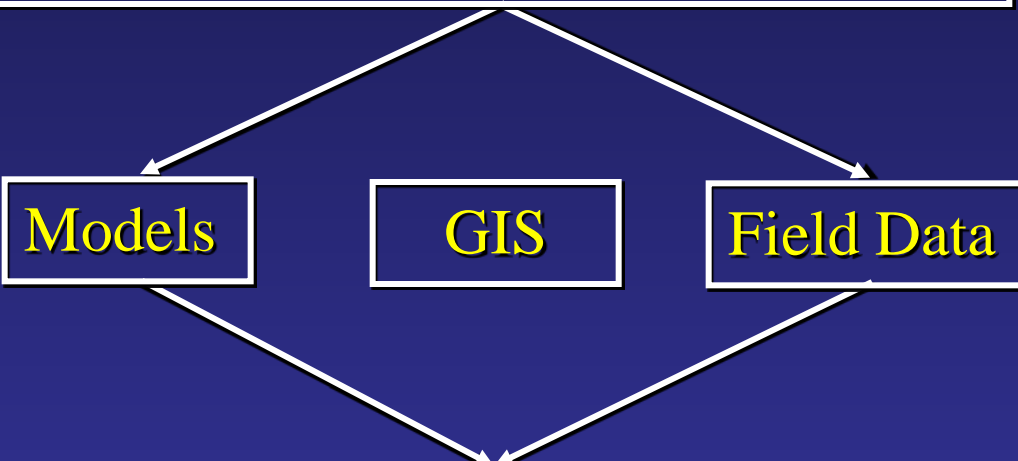
Preliminary Sediment Budget



ID Gaps in Knowledge



Develop Plan to Improve Knowledge



Models

GIS

Field Data

Develop Regional Sediment Budget



RSM Initiatives

Improved Sediment Management

Process

Tools

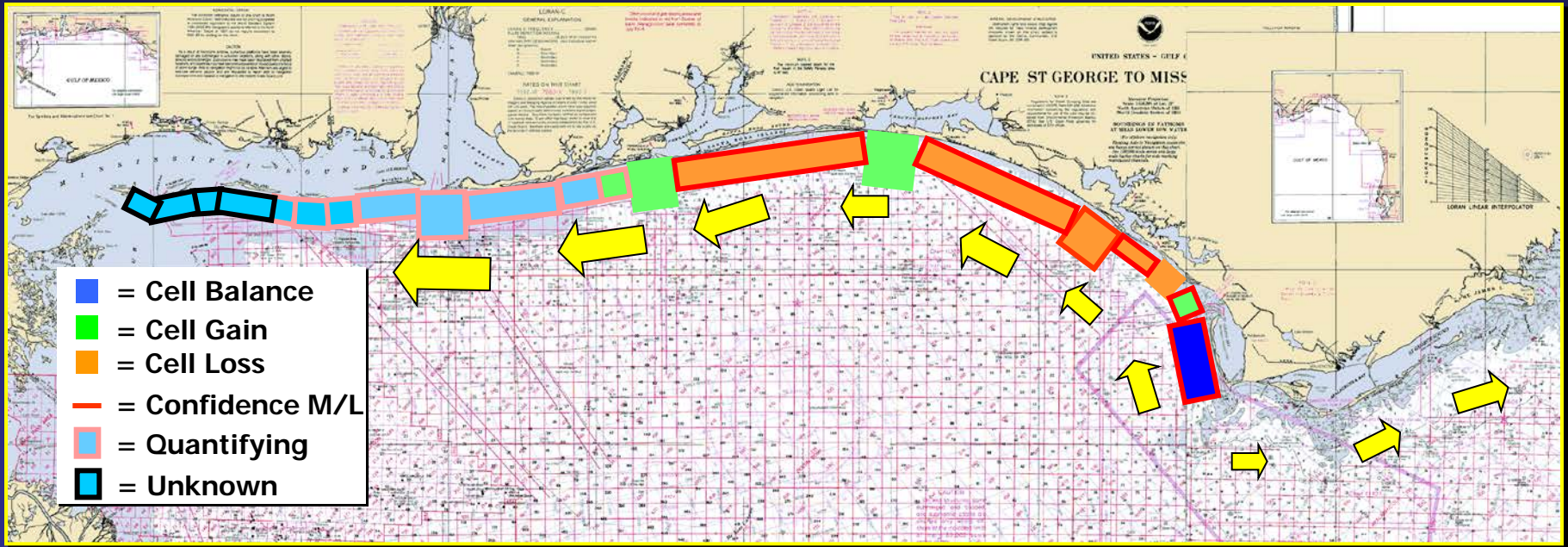
Engineering
Solutions



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Preliminary Regional Sediment Budget



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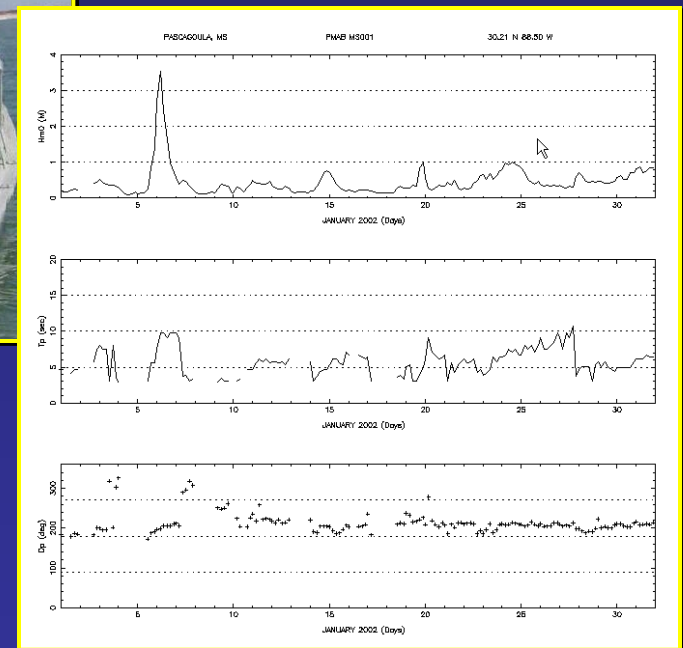
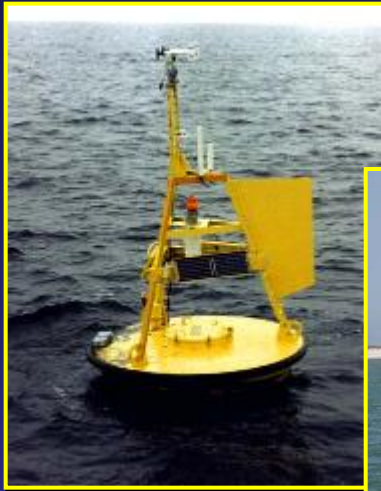


Modeling Approach

- **ADCIRC** - Water-Levels and Circulation
- **WIS** - Wave Hindcast
- **STWAVE** - Wave Transformation
- **GENESIS** - Shoreline Change/Transport
- **SMS** - Surface Modeling System



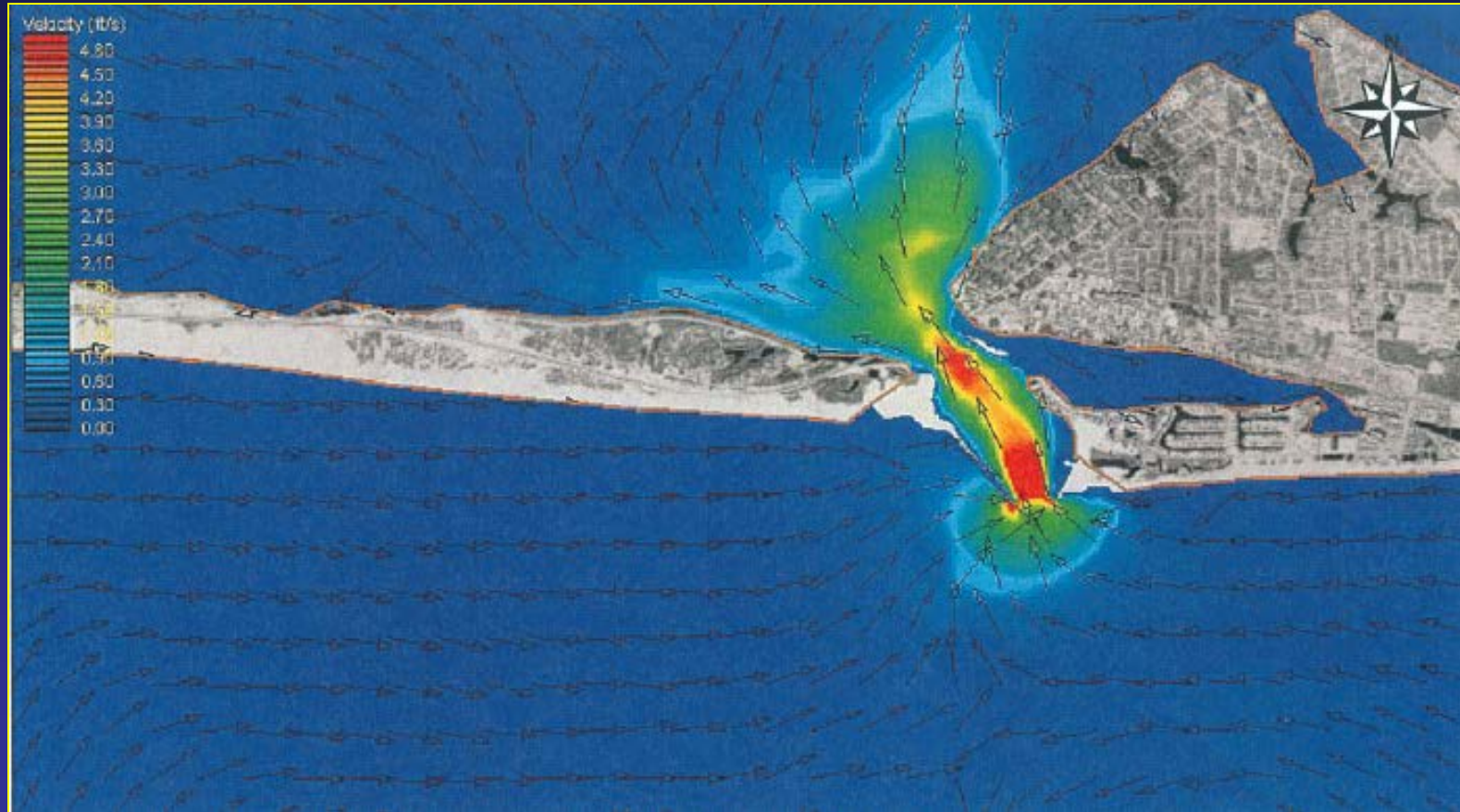
Field Data Collection: Waves, Water-Levels, Currents



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ADCIRC – Water-Levels, Circulation



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Field Data Collection: Alabama

**pl uncharted submarine pipelines
or cables may exist within the
chart. Not all submarine pipelines
are cables. Marine cables are required to be
marked on those that were originally buried
but have become exposed. Mariners should
be cautious when operating vessels in
water where pipelines and cables may exist,
especially in shallow water. Lighted buoys
may be marked by lighted buoys.**

EXAMPLE: 7980-W
RATES ON THIS CHART
7980-W 7980-X 7980-Y
Loran-C correction tables published by the National Imagery and Mapping Agency or others should not be used with this chart. The lines of position shown have been adjusted based on theoretically determined overland signal propagation delays. They have not been verified by comparison with survey data. Every effort has been made to meet the 1/4 nautical mile accuracy criteria established by the U.S. Coast Guard. Mariners are cautioned not to rely solely on the lattices in inshore waters.

Chart 11376
SOUNDINGS
1000 990 980 970 960 950 940 930 920 910 900 890 880 870 860 850 840 830 820 810 800 790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620 610 600 590 580 570 560 550 540 530 520 510 500 490 480 470 460 450 440 430 420 410 400 390 380 370 360 350 340 330 320 310 300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
SAFEWAY FAIRWAY
166.200 (see note 4)
MURPHY MO 502-2
UNION MO 881-2
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Scale 1:246,413
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File Edit View Theme Analysis Surface Graphics Tools Window Help SBAS Menu BSM Menu
RSM - Sub-Region 05
Xrate_all_dd.shp
Regboxes.shp
Subregions.shp
Critical_areas_dc
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Rsm_dd_sad.shp
Rsm_dd_key.shp
Rsm_dd_gufoos
Rsm_dd_tsbmp
Rsm_dd_distrib
Rsm_dd_congr
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Flpeppoints_dd.s
Flpepprofs_dd.shp
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11401.tif
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11389.tif
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11376.tif
11373.tif
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11363.tif
1115a_dd.tif
1114a_dd.tif

Start G:\Model ArcView GIS 3.2 10:42 AM



Field Data Collection

Aerial Photography



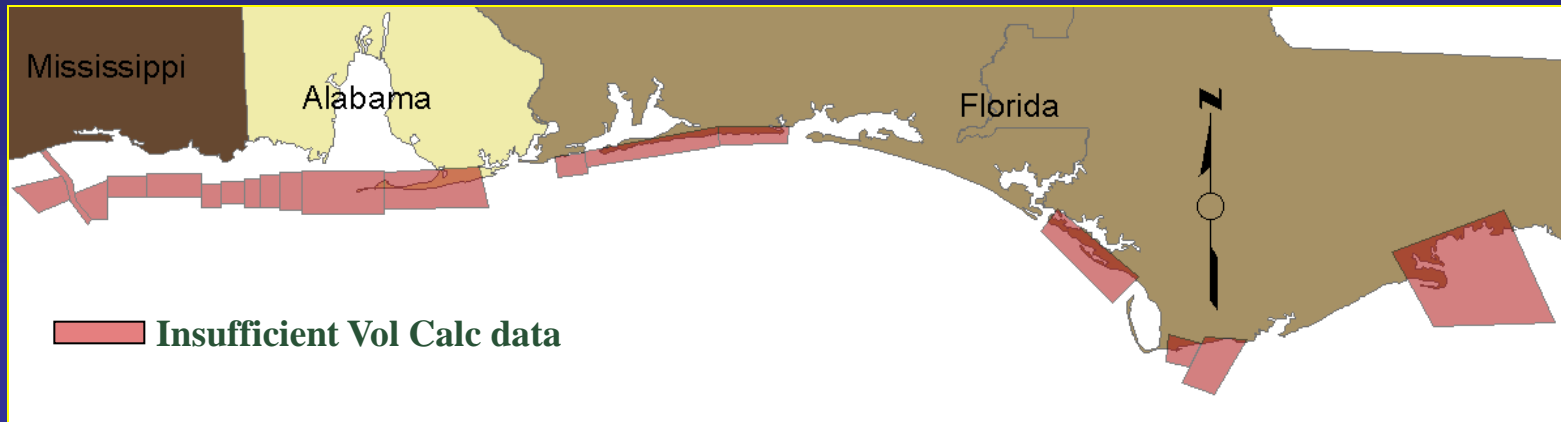
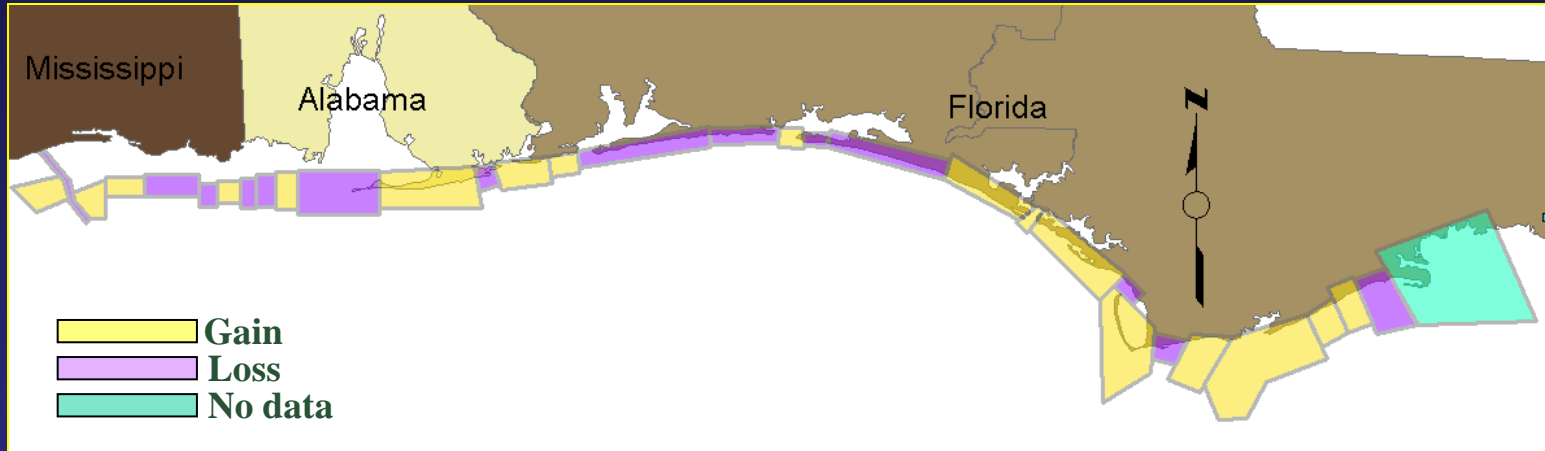
Spectral Imagery



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Regional Context / Sediment Budget



Why use a GIS?

- Develop a sediment budget for the region
- Facilitate the sharing of data
- Institutional knowledge



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Regional Sediment Management GIS

Dredging Management

- Dredging History
- Laboratory Reports
- Placement Design

Data Management

Sediment Budget Analysis

Environmental

Impact Evaluation

Dredging Channels

Boring Logs

- Navigation Channel
 - Arlington
 - Bayou La Bat
 - Bayou Coden
 - Bon Secour R
 - Bayou La Bat
 - Chickasaw Ci
 - DI Ferry Char
 - DI Fort Gaine
 - Pass Drury
 - Dog River
 - DI Village Ch.
 - Fowl River
 - Garrows Ben
 - Mobile Bar Ch
 - Mobile Lower
 - Mobile River I
 - Mobile Upper
 - Snake Bayou
 - Theodore Shi
- Navigation Channel
 - Arlington
 - Bayou La Bat
 - Bayou Coden
 - Bon Secour R
 - Bayou La Bat
 - Chickasaw Ci
 - DI Ferry Char
 - DI Fort Gaine
 - Pass Drury
 - Dog River
 - DI Village Ch.
 - Fowl River
 - Garrows Ben
 - Mobile Bar Ch

Historical

Select Channel

CoastalZone

ID	Desc
MB	Mob
ML	Mob
MR	Mob
	Qu
	Set S

Dredging Report - Historical Record - Mobile District Coastal GIS

Project Key: MB001

Printed: 13-May-2002

Project Data:

Project	Start Station Location	Disposal Area
Mobile Bar Channel	1865+00	Gulf Open Water
Dredge Name	End Station Location	Contractor
Padre Island	1915+00	NATCO

Contract Data:

Advertising Num	Contract End Date	Net Cost Per CYD
DACW01-96-B-0106	20-Aug-1997	
Contract Num	Contract Begin Date	Gross Cost Per CYD
DACW01-97-C-0003	01-Jul-1997	\$1.45
Drawing File Num	Contractor Earnings Mob Demob	Unit Price
	\$7,600.00	
Disposal Area File Num	Contractor Earnings DA Activities	% Non-Pay Yardage
Contract Period Days	Contractor Earnings Dredging	
300	\$1,345,713.11	
Contract Type	Total Contractor Earnings	
Rental	\$1,353,313.11	

Dredging Statistics:

Diesel Horsepower	Pipeline Size In	Gross Hourly Digging CYDS	Avg Daily Digging Hours
		466.43	19
Cubic Yards Gross	Net CYDS Per FT	Total Operating Time Hours	Total Dredge Advance Ft
546,383		2,496	



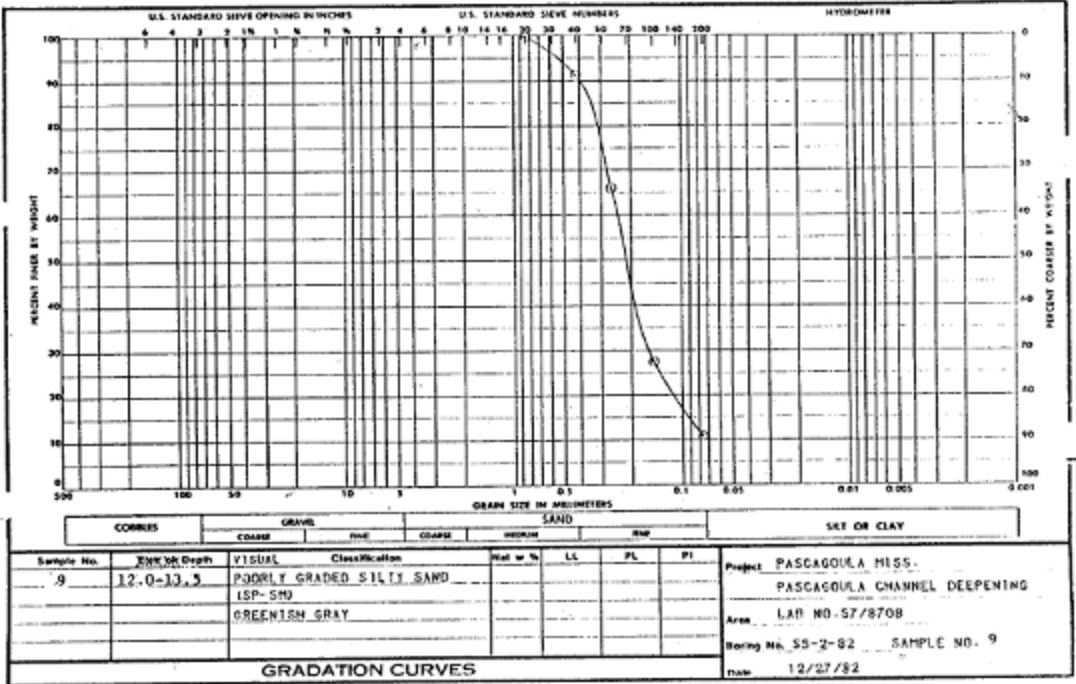
USACE: Mobile District Coastal GIS

- Boring Logs
- GIS Projects
- Baseline
- DMMP
- RSM
- Coastal Point
- Institutions
- Transportation
- Recreation
- Highway Exit
- Railroads
- Retail Center
- Parks
- Major Lakes
- Municipalities
- RSM Zone
- Coastal Counties
- Alabama
- Florida
- Mississippi

BORING LOG	SOUTH ATLANTIC DIVISION	MOBILE DISTRICT	CORPS OF ENGINEERS	SHEET 1 OF 2 SHEETS
PROJECT AND LOCATION PASCAGOULA CHANNEL DEEPENING				
COORDINATES N 147.031 E 001.768		SIZE & TYPE OF BIT SPLITSPOON, 300 LB. HAMMER		
DRILLING AGENCY MOBILE DISTRICT		TYPE OF DRILL E-314 SEA HORSE RAZOR		
HOLE NO. SS-2-82				
NAME OF DRILLER, INSPECTOR J. DETLOFF; B. BRYANT				
DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				
THICKNESS OF OVERBURDEN		TOTAL NO. OF CORE		
DEPTH DRILLED INTO ROCK		GROUND WATER FIRST		
TOTAL DEPTH OF HOLE 31.5' STATIC GROUND WATER				
DEPTH IN FT.	W/C %	SYM	CLASSIFICATION (DESCRIPTION)	
1.5			BROWN & GREEN SILTY CLAYEY S	
3.0			BROWN & GREEN SILTY SAND (SM)	
4.5			TAN PR. GRD. SILT (SP-SM)	
6.0			GREENISH GRAY	
7.5			W/ TR. OF SHELL	
9.0			TAN PR. GRD. SAND W/ TR. OF SHELL	
10.5			GREENISH GRAY (SM) W/ TR. OF SHELL	
12.0			GREENISH GRAY SILTY SAND (SP-SM)	
13.5			GREENISH GRAY SILTY SAND (SP-SM)	
15.0	29		GREENISH GRAY HIGH LL (SC-H)	
16.5	35		GREENISH GRAY SILTY SAND & WISOME SAND & SILT	
18.0			CONT	
FORM 927 DEC 82		REMARKS PREVIOUS EDITIONS OF		

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 3353
Req. No. 10-83-FAM



A3-6

Regional Sediment Management GIS

Data Management

Dredge Management

Sediment Budget Analysis

Environmental

- Create

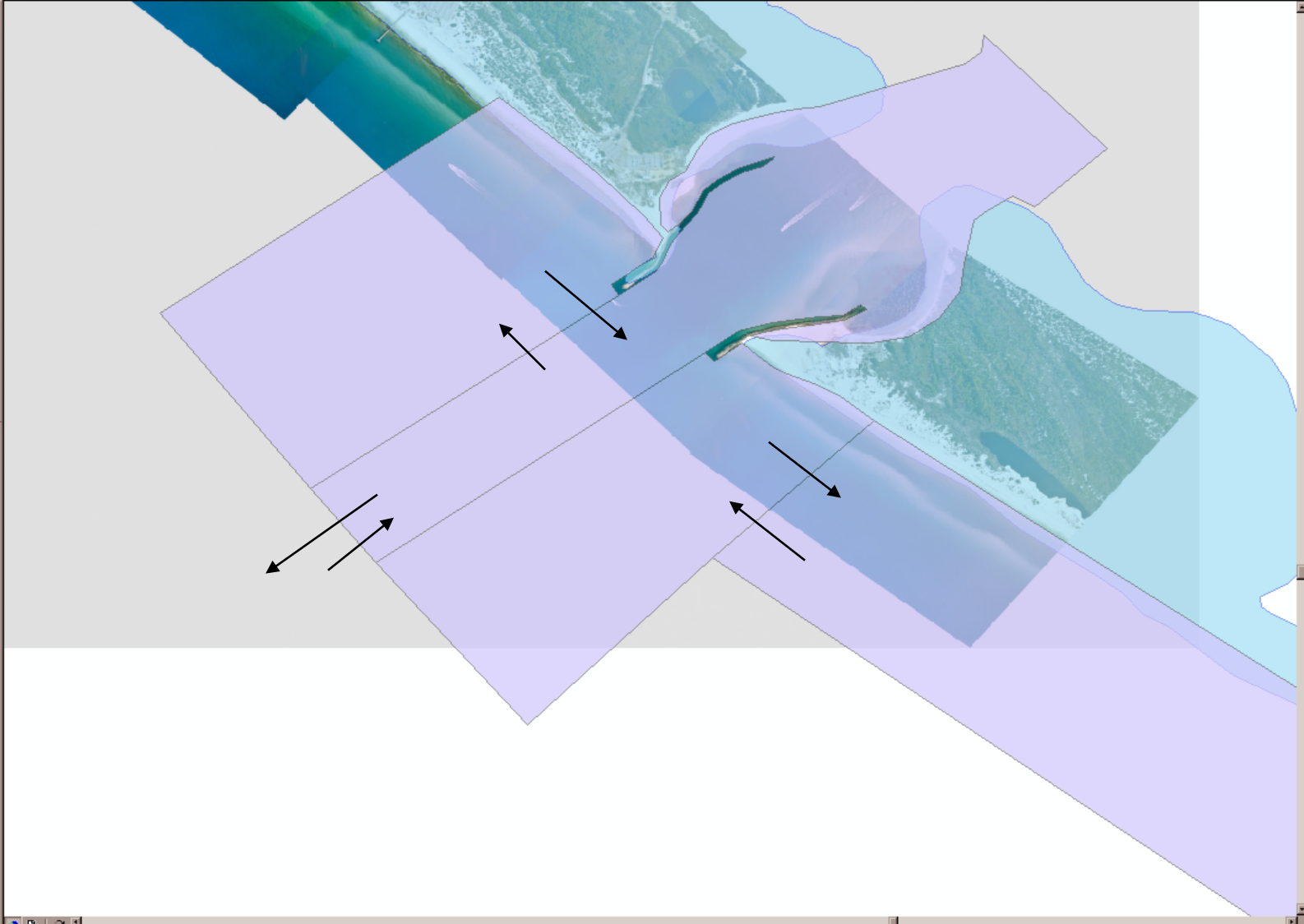
Impact Evaluation

- Compute

- Visualize

Layers

- xrate_all_dd
 - NETALL
 - 101265.60 - 37032.23
 - 37032.23 - 2582.52
 - 2582.53 - 37157.13
 - 37157.14 - 84532.74
 - 84532.75 - 181804.6
- regboxes
 - <all other values>
 - LEGEND
 - Cell Balance
 - Cell Gain
 - Cell Loss
- baycounty_dd
- eastpass_dd
- panamacty_dd
- perdidopass_dd
- rsm_dd_gulfcc
 - <all other values>
 - STATE_NAME
 - Alabama
 - Florida
 - Mississippi
- pc_mosaic_dd.sid
 - RGB Composite
 - Red: Band_1
 - Green: Band_2
 - Blue: Band_3





RSM - Sub-Region 05

- Panamacity_dd.shp
- Grid - Panama City Survey - June 2000
 - 52.8 - 32.1 Ft
 - 32.1 - 11.4 Ft
 - 11.4 - -9.3 Ft
 - 9.3 - -29.9 Ft
 - 29.9 - -50.6 Ft
 - 50.6 - -71.3 Ft
 - No Data
- Grid - SHOALS Survey - 2001
 - 156 - 118.5 Ft
 - 118.5 - 80.9 Ft
 - 80.9 - 43.4 Ft
 - 43.4 - 5.9 Ft
 - 5.9 - -31.7 Ft
 - 31.7 - -69.2 Ft
 - No Data
- Image - Panama City

RSM Tools

Grid Profiler

Place z-values text

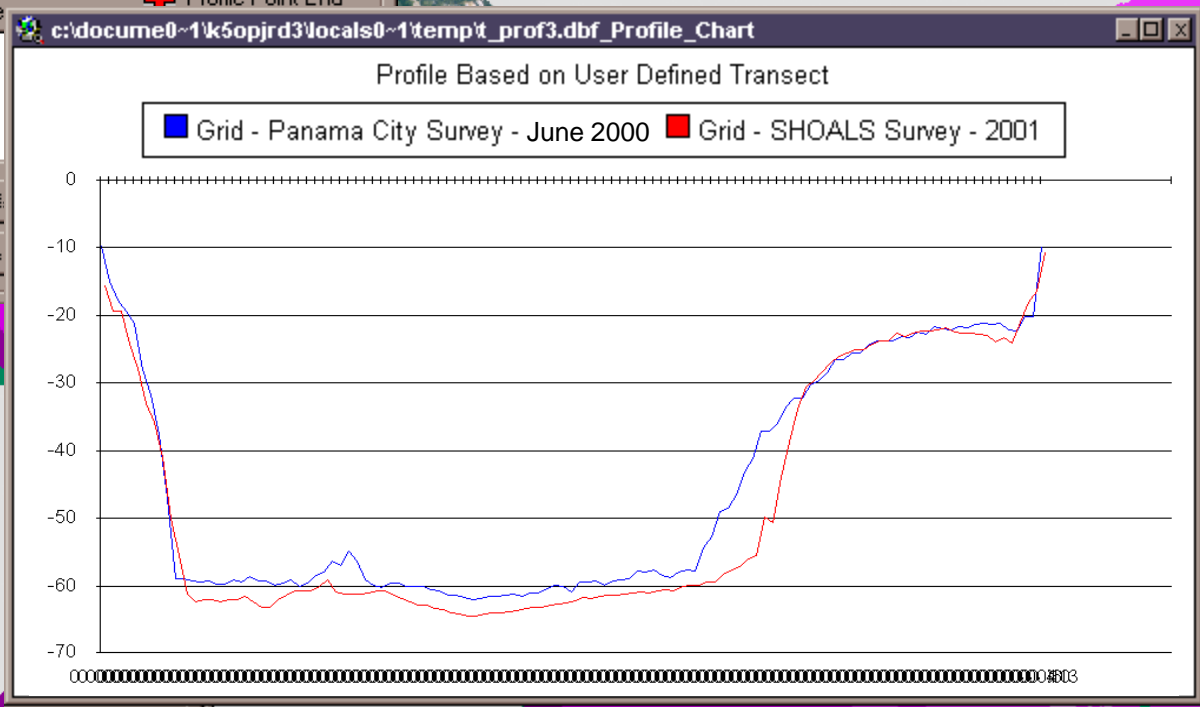
Profile Point Start

Profile Point End

Charted Profile

Play Profile

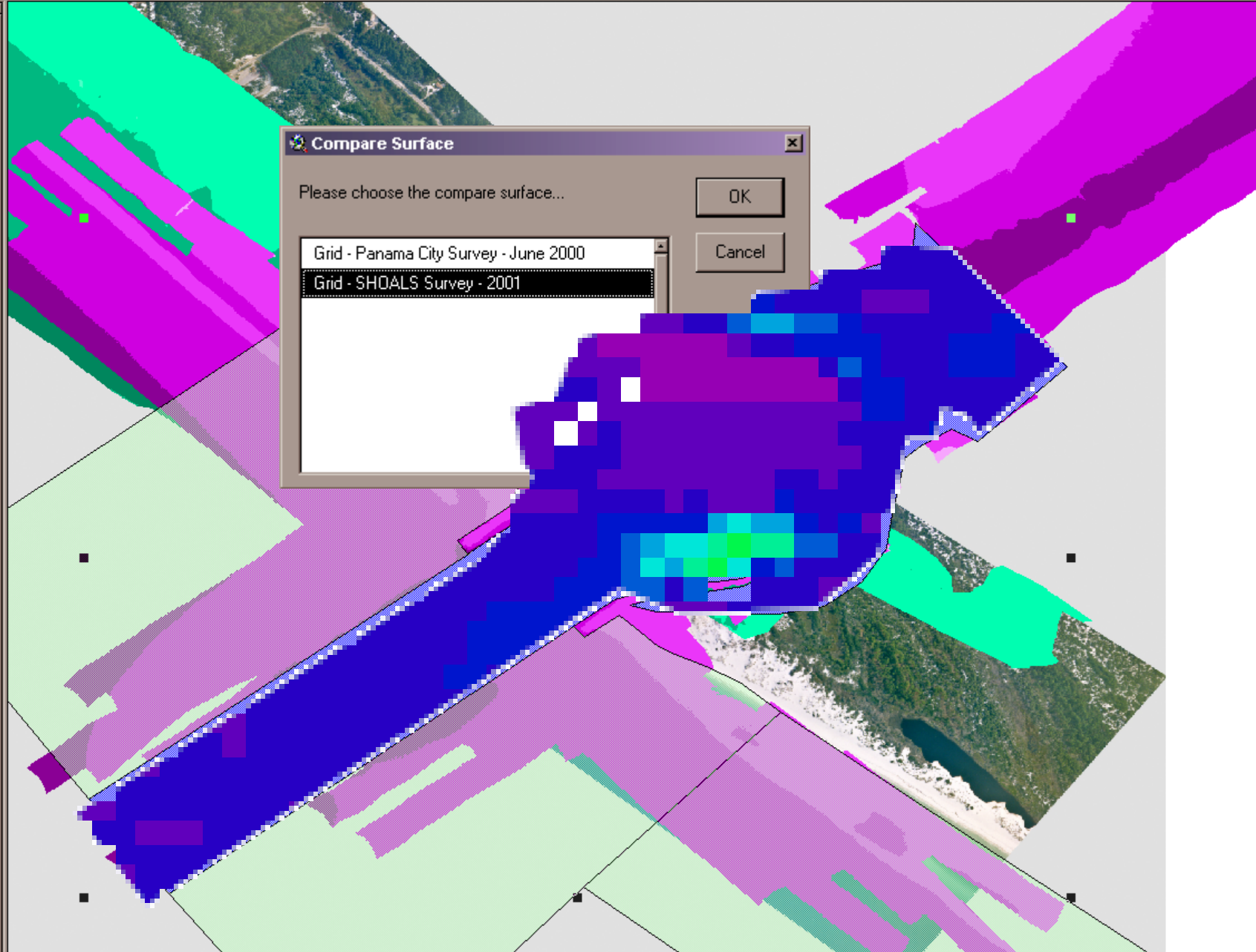
Place Profile



Grid Surface #2



- ✓ Panamacity_dd.shp
 - Light Green
- ✓ Grid - Panama City S
 - 52.8 - 32.1 Ft
 - 32.1 - 11.4 Ft
 - 11.4 - -9.3 Ft
 - 9.3 - -29.9 Ft
 - 29.9 - -50.6 Ft
 - 50.6 - -71.3 Ft
 - No Data
- ✓ Grid - SHOALS Surv
 - 156 - 118.5 Ft
 - 118.5 - 80.9 Ft
 - 80.9 - 43.4 Ft
 - 43.4 - 5.9 Ft
 - 5.9 - -31.7 Ft
 - 31.7 - -69.2 Ft
 - No Data
- ✓ Image - Panama City
- ✓ Grid4_Volume Chan
 - 2.543 - -0.761
 - 0.761 - 1.021
 - 1.021 - 2.803
 - 2.803 - 4.585
 - 4.585 - 6.368
 - 6.368 - 8.148
 - 8.148 - 9.93
 - 9.93 - 11.712
 - 11.712 - 13.49
 - No Data



Compare Surface

Please choose the compare surface...

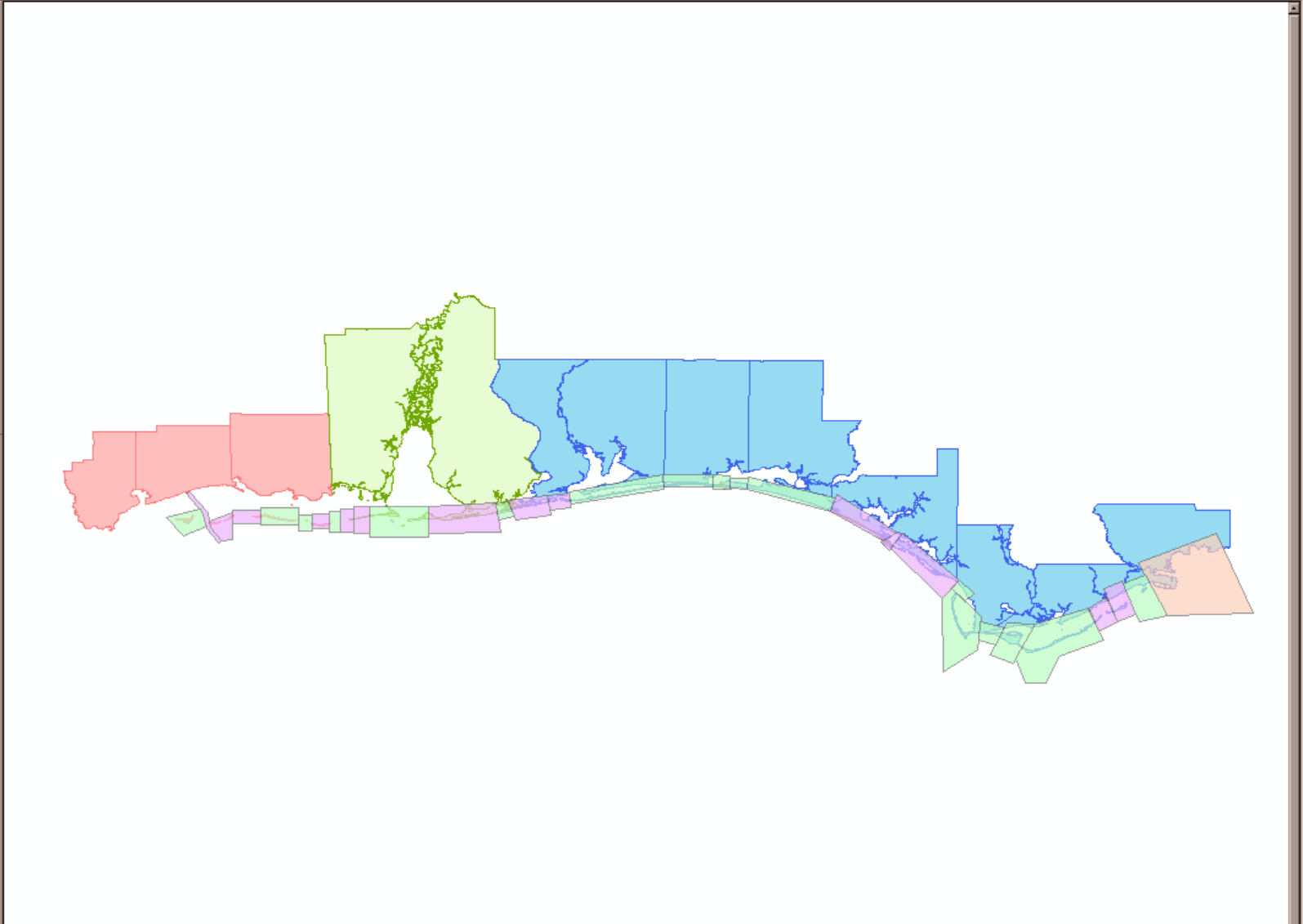
- Grid - Panama City Survey - June 2000
- Grid - SHOALS Survey - 2001**

OK

Cancel

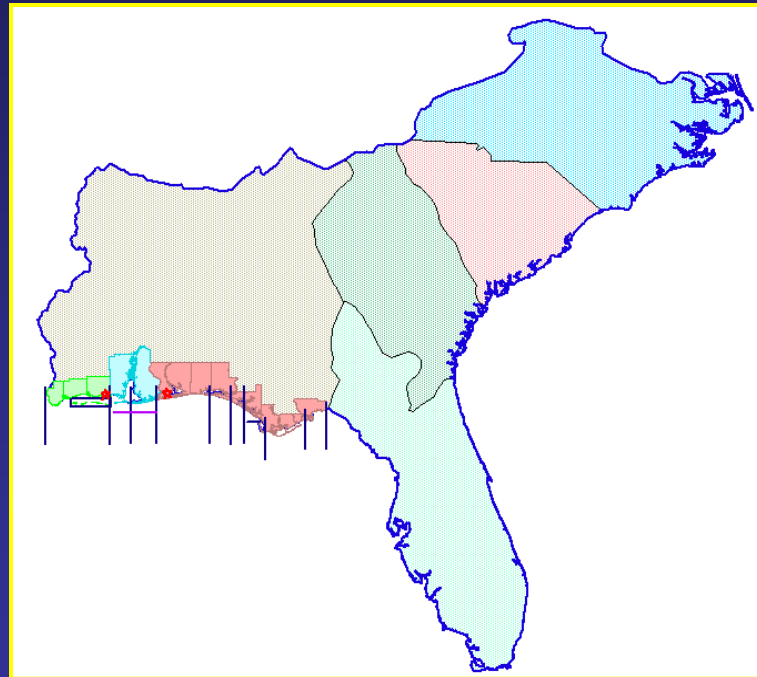
Layers

- xrate_all_dd
NETALL
 - 101265.60 - -37032
 - 37032.23 - 2582.52
 - 2582.53 - 37157.13
 - 37157.14 - 84532.74
 - 84532.75 - 181804.6
- regboxes
 - <all other values>
 - LEGEND
 - Cell Balance
 - Cell Gain
 - Cell Loss
- baycounty_dd
- eastpass_dd
- panamacity_dd
- perdidopass_dd
- rsm_dd_gulfcc
 - <all other values>
 - STATE_NAME
 - Alabama
 - Florida
 - Mississippi



SAD Enterprise GIS Vision

Integration of geospatial technology *infrastructure* delivering spatial information, products, services & standard datasets to all *business elements and processes* of the organization



SAD Initiative

RSM GIS Pilot Project

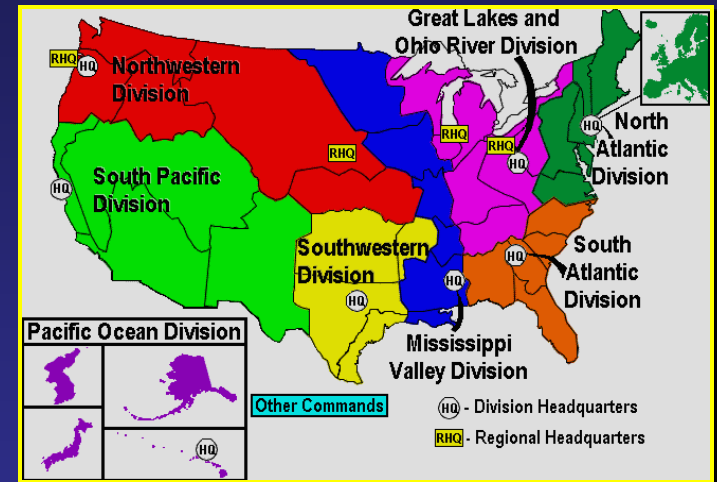


Mobile District



Future of RSM in Mobile

- Establish RSM PDT
- Integrate into District's PMBP
- Expand to All District Projects
- Assist to National Program



<http://gis.sam.usace.army.mil/Projects/RSM/>
<http://gis.sam.usace.army.mil/>



Mobile District

