NOAA Satellites and Information

National Environmental Satellite, Data, and Information Service

National Coastal Data Development Center

HABSOS Data Management Architecture

Overview and Status

Dr. Tim Orsi and Jeanne Allen
NOAA/NCDDC/PSI
228-688-3908
tim.orsi@noaa.gov

10 June 2003

National Coastal Data Development Center

Presentation Outline

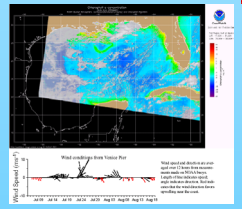
- History (review)
- Overview (review)
- ArcIMS Application
- Data Needs
- HABSOS Modular Design
- Accomplishments
- Future Plans

GOM HAB Programs/Projects
- Recent History-

1989: EPA GMP Public Health Focus Team
1997: U.S. Interagency ECOHAB funds
Regional ECOHAB-FL program
1998: Texas Harmful Algal Bloom Strategy (TEXHABS)
1998: USEPA/GED, NRL, NOAA/NOS collaboration
to develop SeaWiFS application to HABS
1999: NOAA Coastwatch issues first HAB bulletin
2000: HABSOS Workshop – Pensacola Beach, FL
2001: HABSOS Pilot Project initiated
2002: Gulf of Mexico States Accord (St. Petersburg, FL)
2003: HABSOS Case Study Final Report (in prep)
2003: Binational Collaboration Workshop on Red Tide
Programs (New Orleans, LA)

ECOHAB: Florida
Ecology and Oceanography of Harmful Algal Blooms in Florida

HARMFUL ALGAL BLOOMS OBSERVING SYSTEM
HABSOS



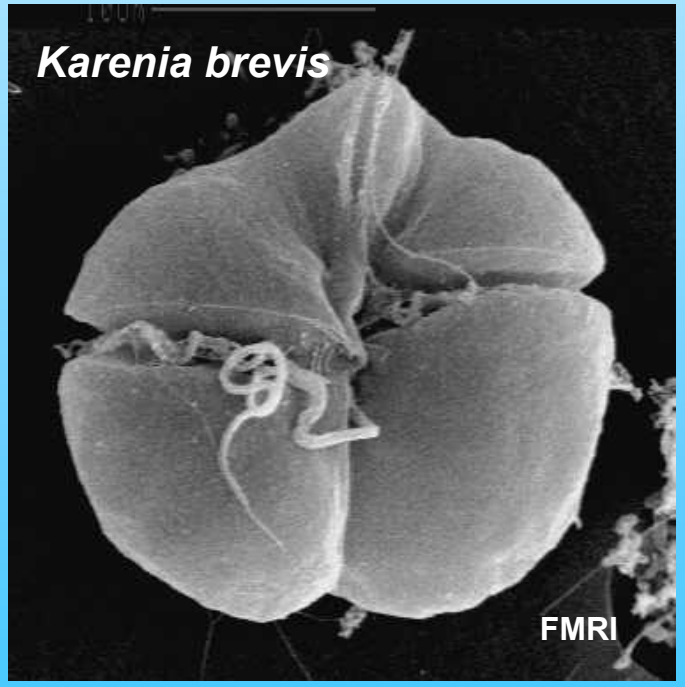
Harmful Algal BloomS Observing System (HABSOS)

Multi-agency initiative to develop a virtual HAB communication and decision support system for GOM state resource managers

User-defined

HABSOS Goals:

- Detection/early warning
- Forecasting
- Prediction



Voluntary . . . Unprecedented level of cooperation

Partner Organizations

- USEPA/GMP
- NAML/LABNET
- NOAA – NCDDC, NOS, Coastwatch
- US-CGOOS
- CNMOC
- Alabama (DISL, ADCNR, ADPH, ADEM)
- Florida (FDACS, FFWCC/FRMI)
- Louisiana (LDEQ, LDHH, LUMCON, LSU)
- Mississippi (MDMR, MDEQ, USM)
- Texas (UTMSI, TDH, TPWD)

Other Contributors

- NAVOCEANO
- USFDA
- USCOE
- NRL
- SAML/CASTNET
- U. Colorado
- Texas A&M University
- USF/JSU
- Marathon Oil/CASE
- Planning Systems Inc.
- Neptune Sciences Inc.
- Anteon Corp.
- Veridian

HABSOS User Requirements

- State managers make decisions regarding
  - Public health issues (fish/shellfish consumption, shellfish bed closures, beach advisories)
  - Aquaculture issues (sites, disease, mortality)
  - Economic issues (tourism, beach clean-up, monitoring, fisheries)
  - Dissemination of information to public
- State managers need, want and prefer synthesized data and information
- 24 hour advance notice is high priority
  - An alert that an event is in progress
  - A forecast of where/when (movement, landfall)
  - An alert of conditions favorable for initiation

HABSOS-Harmful Algal Blooms Observing System - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites History

Address http://sanddollar/website/habsos_gom/viewer.htm Go

HABSOS - Harmful Algal Blooms Observing System

Credits

Help

Visible Active

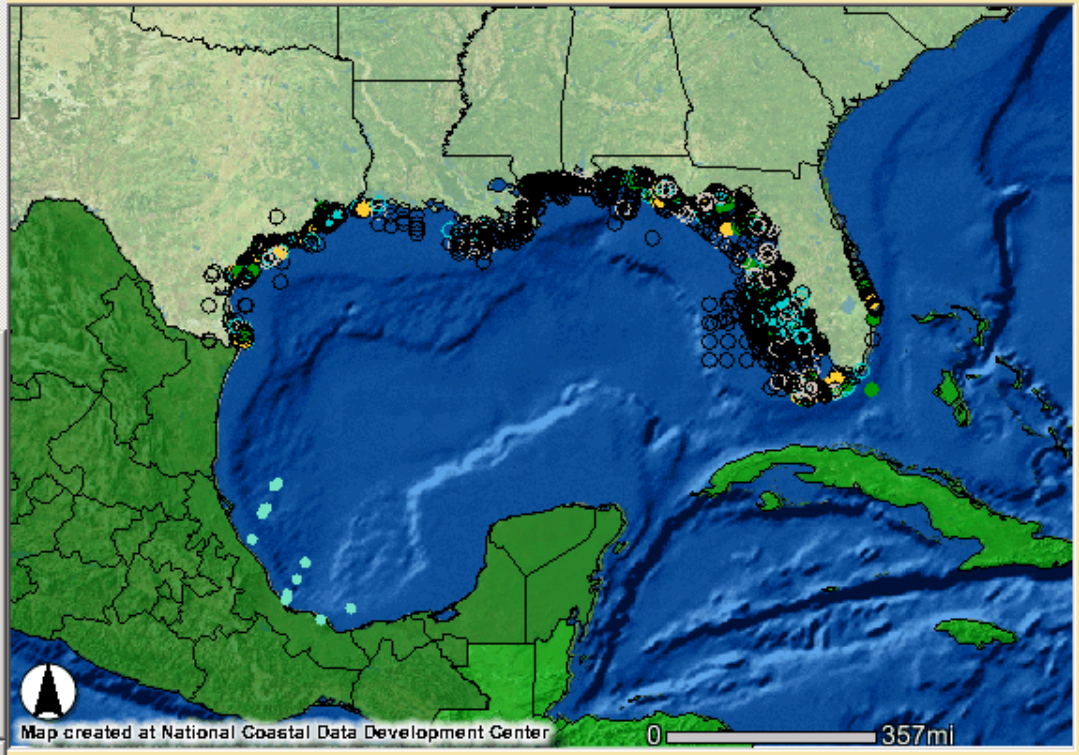
GOM MAP DATA

Visible Active

- [x] GOM Cell Counts
- [x] Mexico Toxicity Data
- [ ] US Cities
- [ ] Mexico Cities
- [ ] Water Gauges
- [ ] NDBC Buoys
- [ ] COOPS
- [ ] Metar Stations
- [ ] GOM Bathymetry
- [ ] US Rivers
- [ ] Mexico Rivers
- [ ] US Counties
- [x] US States
- [x] Mexico States
- [x] North America
- [x] Relief Image

Refresh

Legend Toggle Zoom In Zoom Out Full Extent Active Last Pan Identify Clear Print



U.S. States –All States– Go

Mexican States –All States– Go

Query Functions

Begin Year 1996 End Year 2001

Begin Month January End Month December

Begin Day 1 End Day 31

Salinity (ppt) >=

Temperature (C) >=

Submit

Imagery

Add it Delete it

SST Chlorophyll

Date

Map: -74.81 , 15.56 -- Image: 564 , 385 -- ScaleFactor: 0.05054195556296164

Local intranet

HABSOS-Harmful Algal Blooms Observing System - Microsoft Internet Explorer

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HABSOS - Harmful Algal Blooms Observing System

Credits

Help

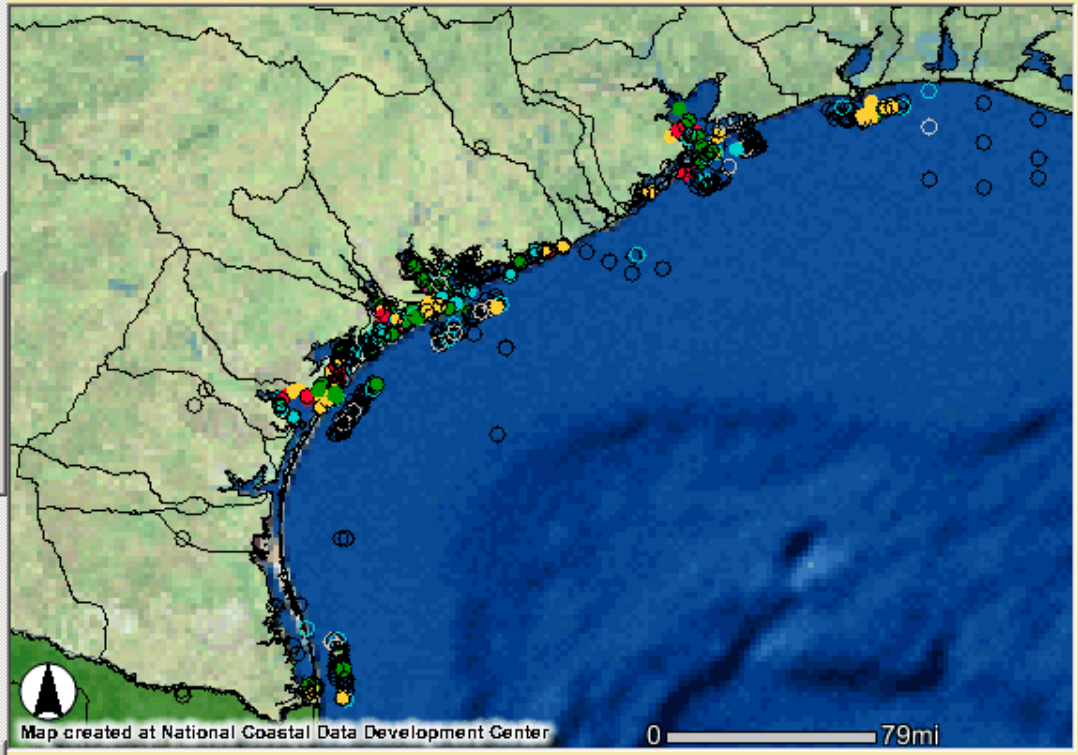
TEXAS

Visible Active

- TX Marinas
- TX Hard Substrate Reefs
- TX Beach Access Points
- TX Aquaculture Facilities
- TX Place Names
- Texas Artificial Reefs
- TX Three Marine League Line
- TX Coastal Hydrography
- TX Detailed Hydrography
- Major Rivers
- Private Oyster Leases
- San Antonio Bay System Oyster Reefs
- Galveston Bay System Oyster Reefs
- Coastal Hydrography

Refresh

Legend Toggle Zoom In Zoom Out Full Extent Active Last Pan Identify Clear Print



U.S. States Texas Go

Mexican States –All States– Go

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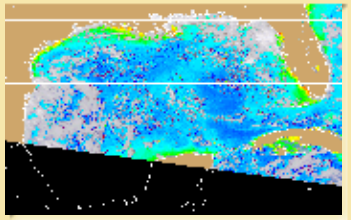

Add it Delete it

SST Chlorophyll

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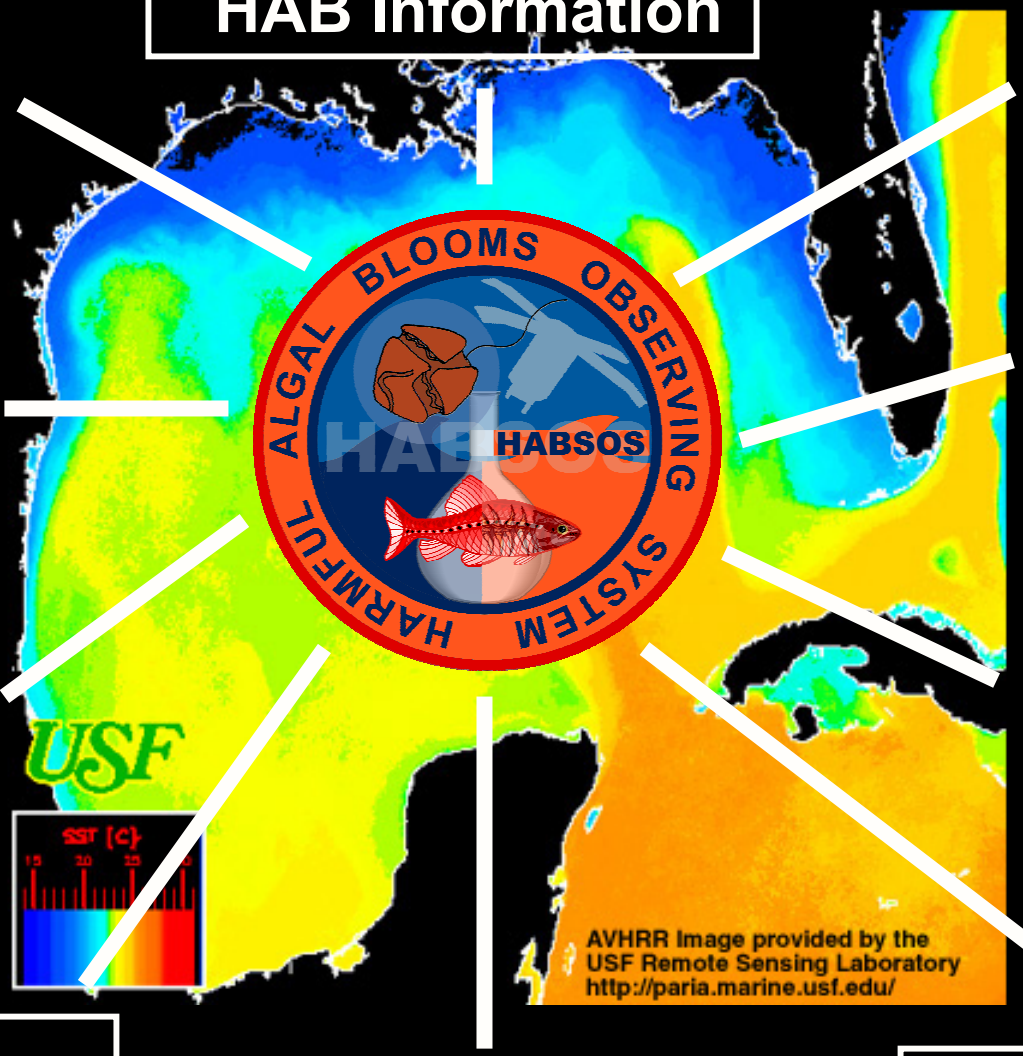
Local intranet

HABSOS Data Needs



HAB Information

Aquatic mortality

Shellbed Information

Foundation Layers

Event Reporting

Modeling

Volunteer Watch

Oceanography

Remote sensing

Meteorology

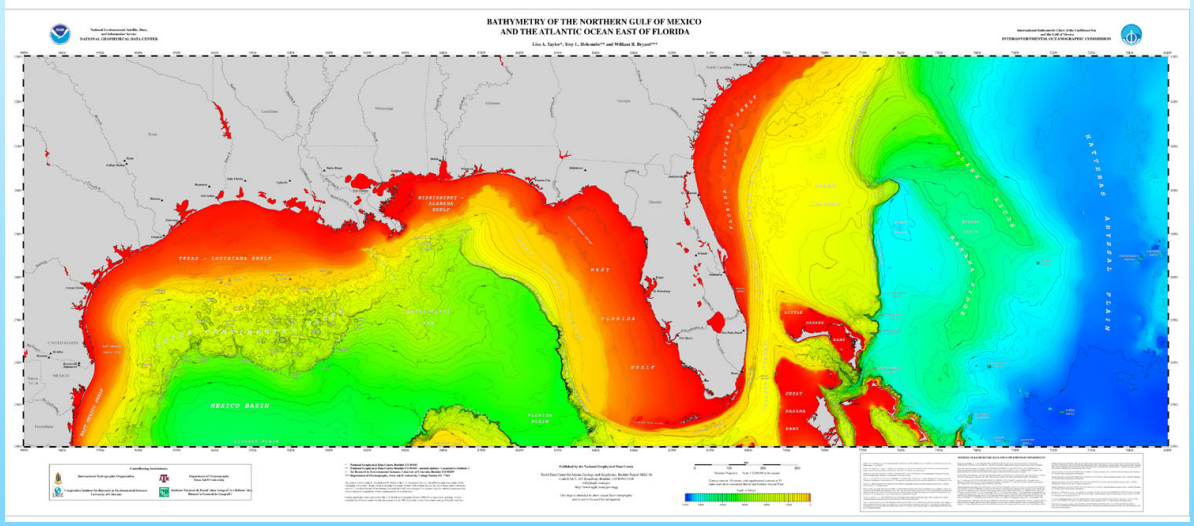
HABSOS Modular Design

- Natural evolution of a conceptual development framework
- Some overlap but, for the most part, each module is characterized by a distinct provider group with unique aspects to its data stream
- Advantages
  - Permits development of a data flow schematic of each module
  - Aids in identifying key participants and agencies
  - Focuses resources, bringing together technical experts and other interested parties under a common theme
  - Mimics the Integrated Ocean Observing System (IOOS) concept of an end-to-end system (observation to application)
  - Will lead to more accurate cost estimates for sustaining the operational HABSOS for the Gulf of Mexico

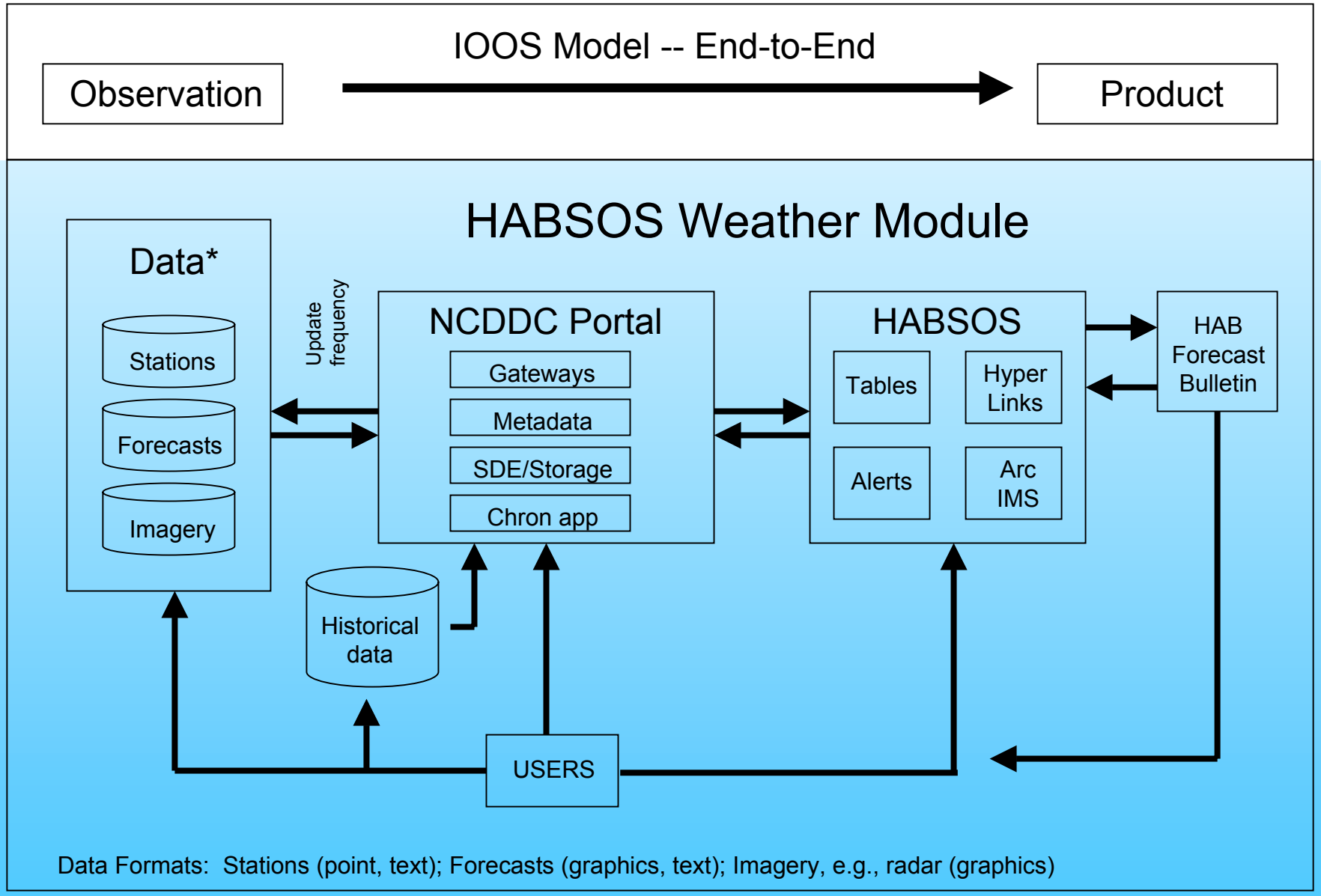
Foundation Layers

Data Needs:

Bathymetry
Coastlines
Cites
Rivers
Imagery
State/international boundaries



Dr. David Divins (NESDIS NGDC) has expressed interest in expanding the NDGC coastal relief map to the Mexican Gulf if the data were available



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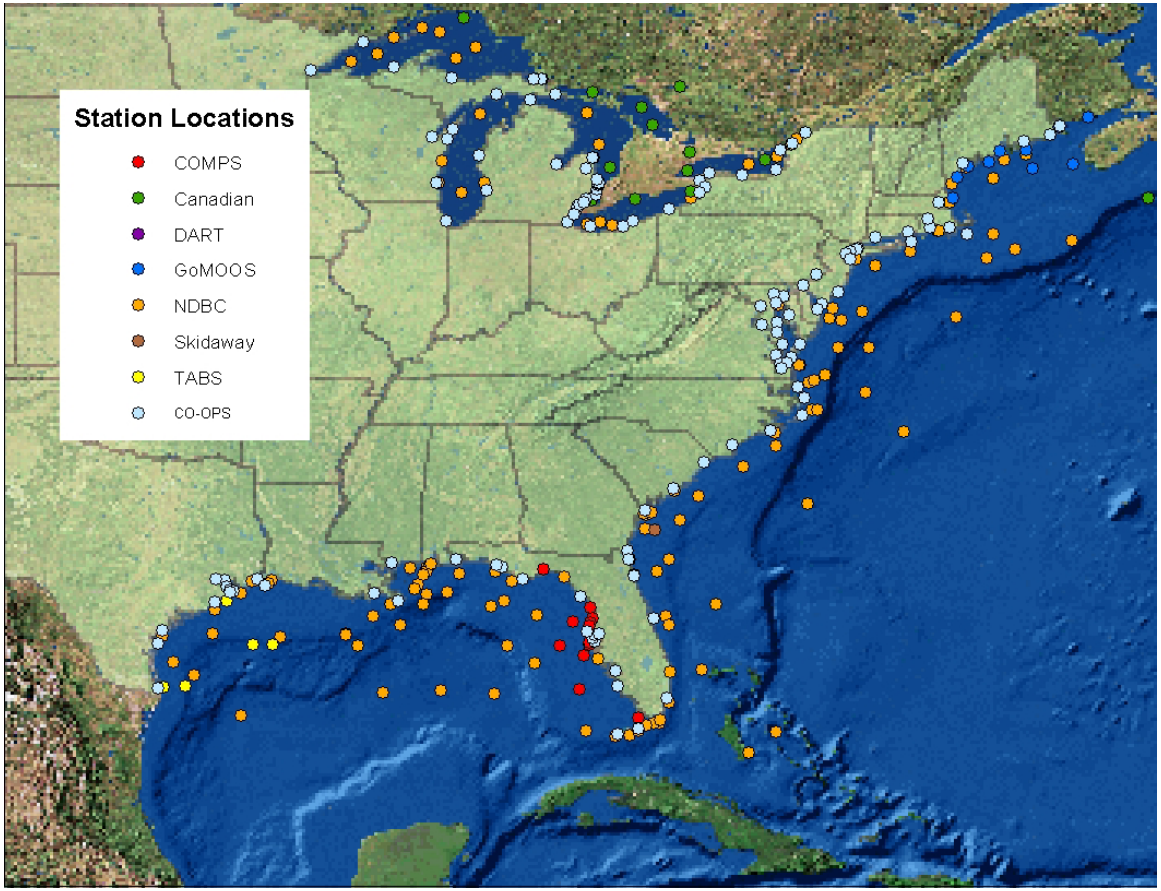
Oceanography

Data Needs:

- Temperature
- Salinity
- Currents
- CODAR
- Nutrients
- Wave conditions
- Tides

Linking GOM Observing systems



HAB Information

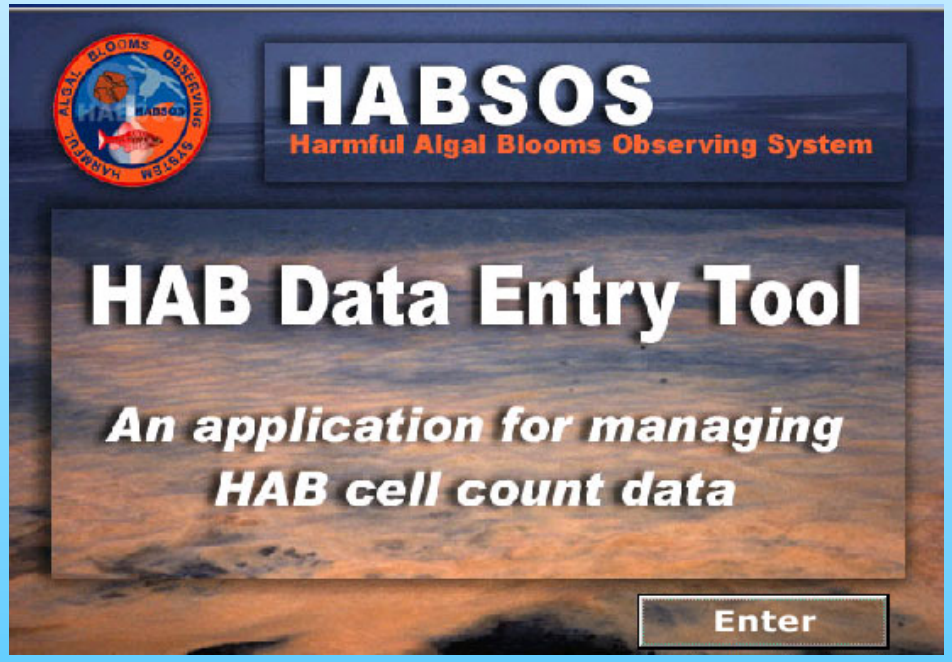
Data needs:

- Cell counts
- Toxicity

Issue: "Data Readiness"

Finding: Just because data are available or in hand does not mean they will be usable.

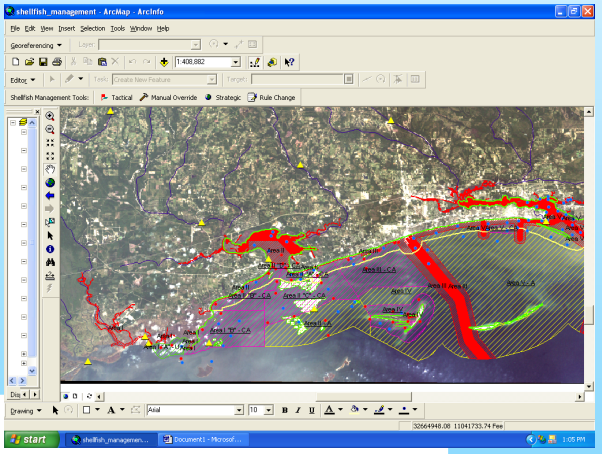
Need for streamlining data flow into HABSOS



Shellfish Bed Information

Data Needs:

- Harvesting areas
- Water quality sites
- Closure history
- Oyster reef locations
- Marinas
- River gauges



JSU
Dr. Chigbu

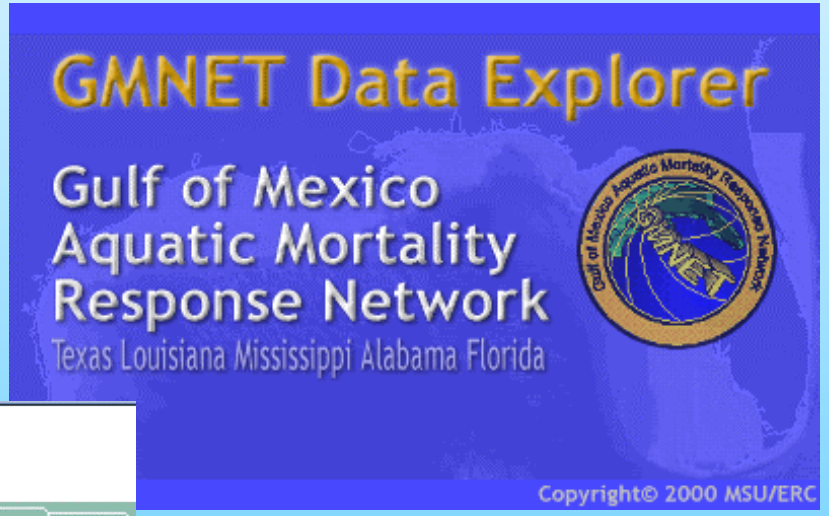
HABSOS is leveraging existing applications

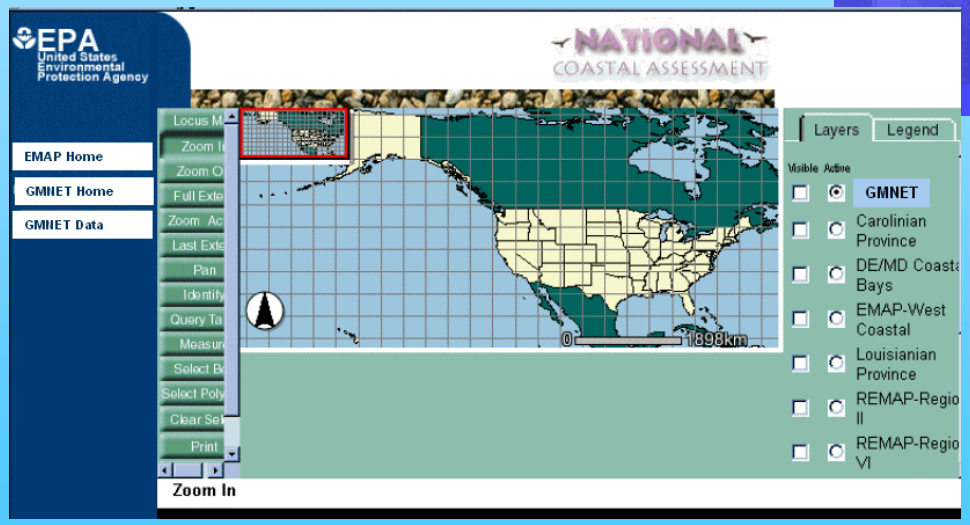
SIMS
Shellfish Program Information

NOAA NOS
Dr. Paul Comar
Dr. Laura Kracker

Aquatic Mortality

HABSOS is leveraging GMNET, a newly developed application for State resource managers





EPA/FWC FMRI
Linda Harwell
Darlene Haverkamp

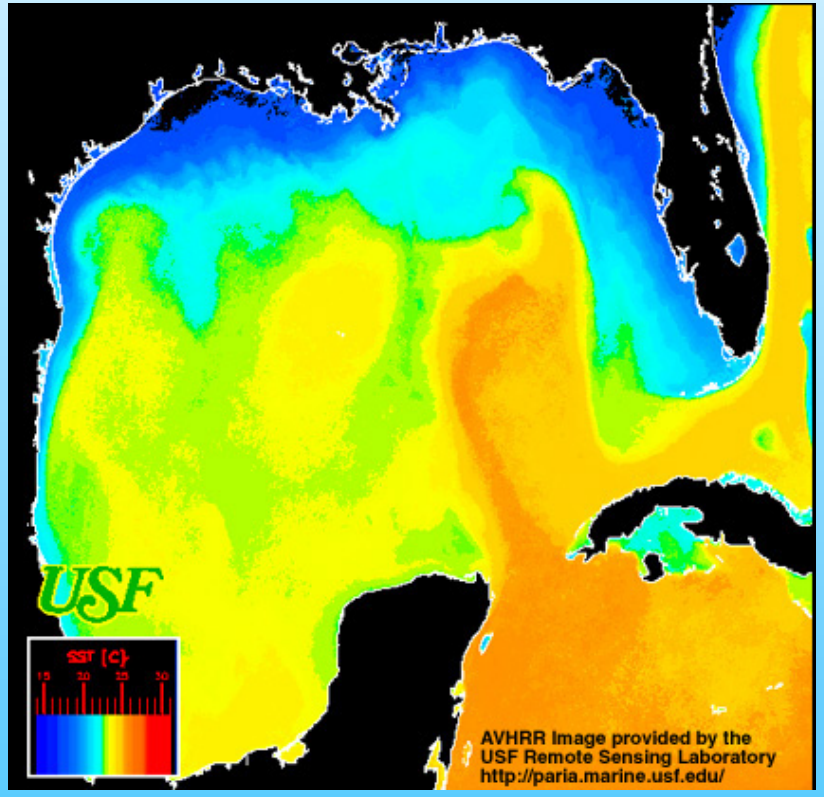
Remote Sensing

Data Needs:

- SeaWiFS
- MODIS
- AVHRR
- Others??

Issues:

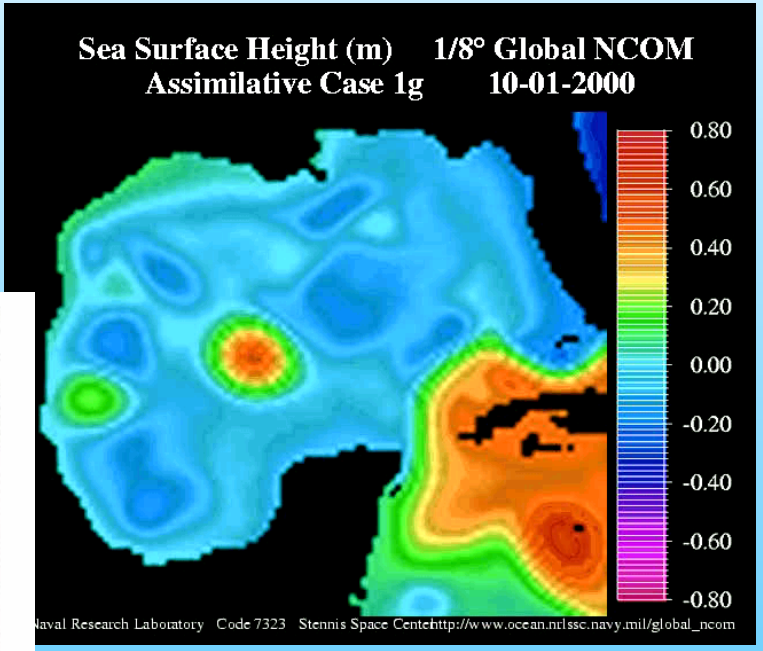
- Chlorophyll detection threshold
- HAB-specific identification

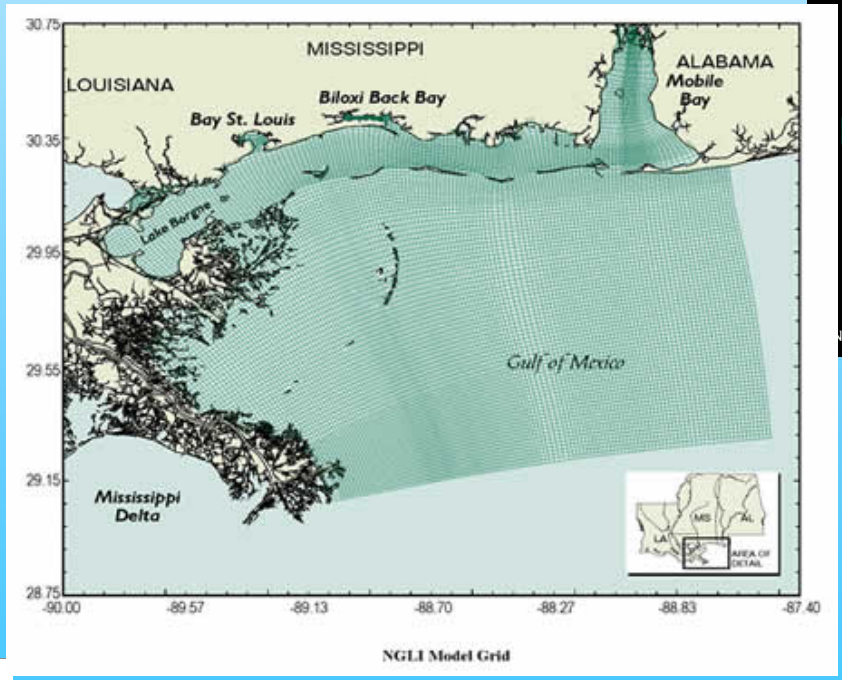


USF – Dr. Frank Muller-Karger

Environmental Models

Data pulls from NAVOCEANO, NRL, USF, University of Colorado etc





ECOM
PDOM
COAMPS
SWAN

Event Reporting

On-line application for event description, advisories, group questions, press releases for state resource managers

- Weather alerts
- Bloom alerts
- Mortality reports
- Shellbed status
- Beach status

Volunteer Watch

Inspired by west Florida's volunteer program

Observations of opportunity

- Cruise ships
- Offshore helicopter service companies
- Others

Extension of South Carolina Phytoplankton Monitoring Network (NOAA NOS Dr. Steve Morton, Kate Schaefer)

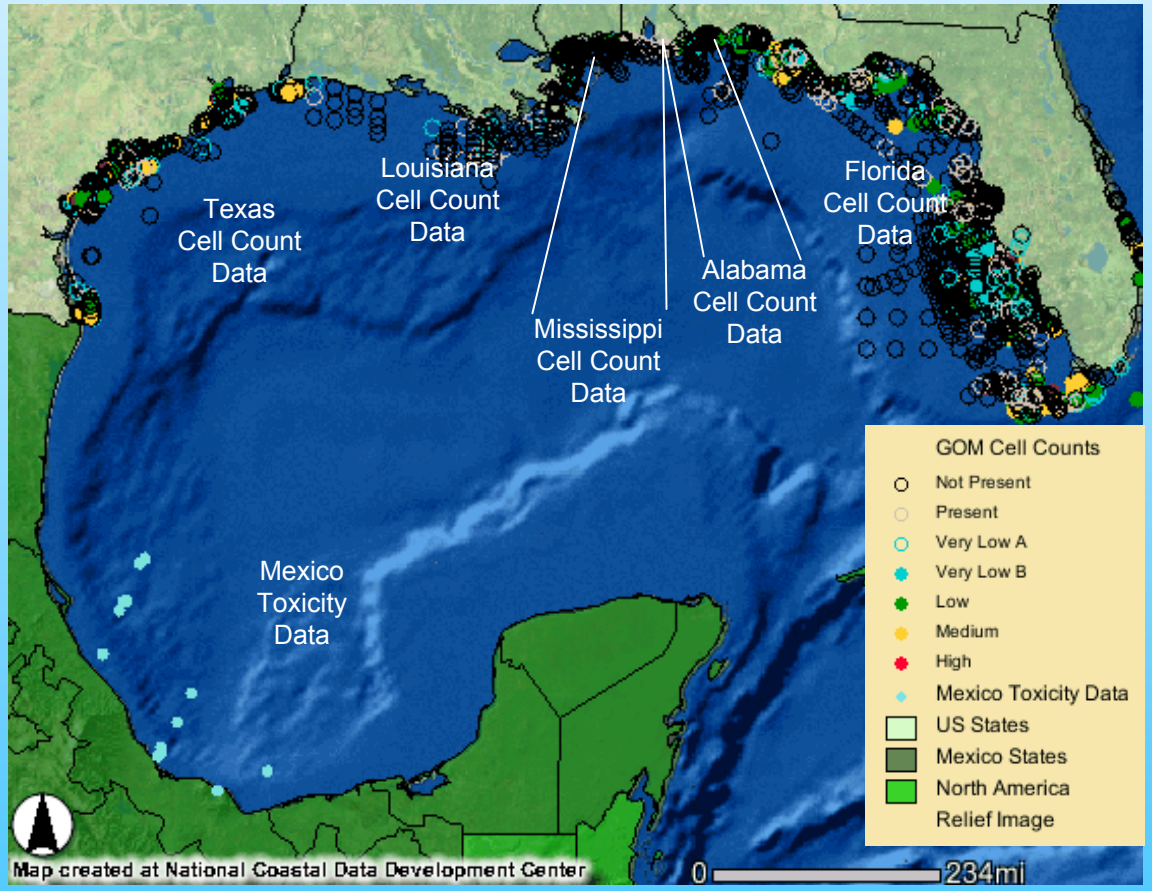
HABSOS Accomplishments

- Minimized political and economic barriers to data acquisition and sharing
- Strengthened, formalized and expanded the HAB network throughout the Gulf of Mexico including the Mexican Gulf States
- Created on HAB regional information center (RIC) (www.ncddc.noaa.gov/habsos)
- Created a virtual ArcIMS application with customized functions for spatial and temporal analysis and monitoring
- Created a common online data entry tool/database to enhance flow of HAB data streams
- Collaborated with and leveraging other similar biological databases (SIMS, GMNET) for cost-effective use of capabilities and resources
- Created a prototype operational HABSOS ArcIMS application with near real-time capabilities

HABSOS Future Plans

- Automate data capture/incorporation process
- Upgrade system to ArcSDE and Oracle for real-time delivery
- Continue to acquire, convert, and ingest ancillary data for HABSOS trend analyses
- Enhance functionality of HABSOS website (downloads, report generation, etc.)
- Expand HABSOS to include the Mexican Gulf States

Future HABSOS



Mexico Data:

Dr. Mauro Loyo Varela, Health Secretary and Director of Health Services of Veracruz

Dr. Jorge Nicolás Chantiri Pérez, Director of Sanitary Regulation and Protection