Great Lakes Coastal Program Managers Meeting

Buffalo, NY

September 23-25, 2008

Heather Stirratt

America's OCEANS & COASTS
SAFE, HEALTHY, AND PRODUCTIVE

Presentation Objectives

- Get to know NOAA projects in the Great Lakes region
- Learn about NOAA assets and how they can help you
- Identify opportunities for collaboration

=> Improve customer service by representing the full agency and better integrating our products and services

NOAA Mission

To understand *and* predict changes
in the earth's environment
and conserve *and* manage coastal *and* marine resources
to meet our nation's economic, social,
and environmental needs.

DIGITAL COAST

Home Data Tools Training In Action

Because data alone is not enough...

Digital Coast gives organizations that manage coastal resources easy access to data and related resources.

Data

Learn more about the kinds of data available and download data for your area of interest.

Click here to learn about data types

Access data for the geographic region of your choice.

Download Data

Tools

Use these tools to turn data into useful information your organization needs.

Click here to see a list of tools

Training

Update your skills by participating in one of these training programs.

Click here to view training courses

Digital Coast in Action

See how data and tools are used to address coastal management issues.

Click here to see Digital Coast in action

About Digital Coast

Digital Coast provides the total package needed by state, local, and non-profit organizations.

It not only offers easy access to downloadable data, but also the data-specific training, sample applications, and tools needed to address coastal issues.

Read more...

Joint Project Agreement Update…

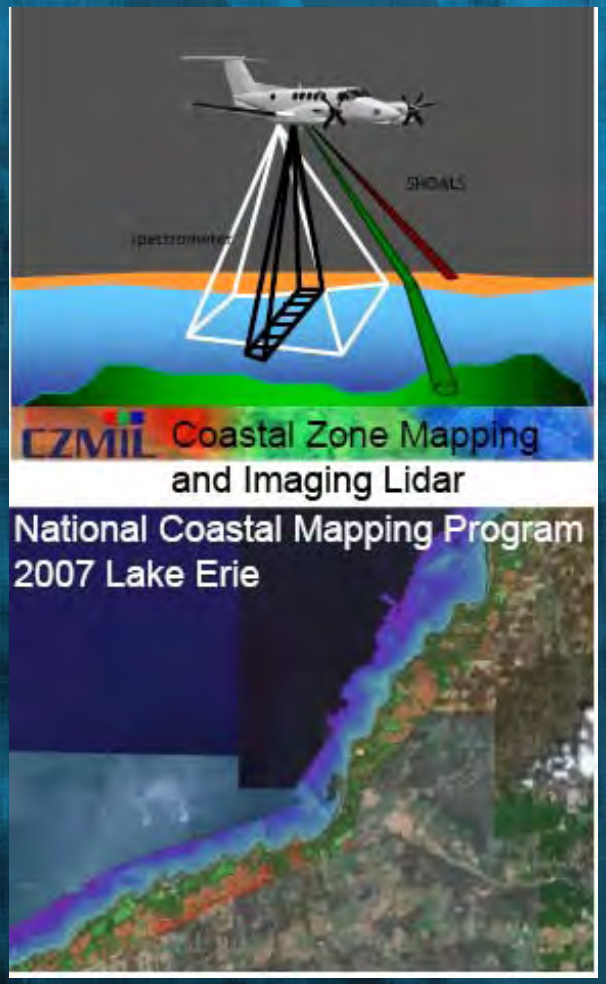
- Smart Growth Case Studies
- Great Lakes Habitat Priority Planner
- Training
  - Impervious Surface Analysis Tool (ISAT)
  - Non-point Source Pollution and Erosion Comparison Tool (N-SPECT)
- Outreach to CZ Community
  - GLIN Coastal Pages
- Ports and Navigation
- Data and Information Integration and Dissemination

Integrated Ocean Observing

Great Lakes Observing System

- IOOS® currently funding the development and management of GLOS as part of a national network of regional observing systems
- New Executive Director of Great Lakes Observing System - Jennifer Read

Light Detection And Ranging (LIDAR)



Seamless Topobathy – Lake Ontario

- Models of 100-year water supplies and levels for Lake Ontario (IJC LOSL);
- Water supply sequences based on different climate change scenarios and hydrological models that could be used to generate additional supply sequences (IJC LOSL; Croley 2003; Mortsch *et al.* 2005);

Impacts of Falling Lake Levels on Coastal Habitat Distribution and Function in the Great Lakes: Assessing Management Options for Wetland Migration

A proposed project by The Nature Conservancy (TNC) with support from the NOAA Coastal Services Center (CSC) and others

In the face of climate change, water levels in the Great Lakes are forecast to decline by significant amounts due to higher temperatures, reduced winter ice cover, changing wind patterns, and subsequent dramatic increases in evaporation. Great Lakes water levels, and their fluctuations, are critical to determining the distribution and function of coastal habitats. Seasonal, annual, and multi-year fluctuations around the mean water level are considerable and are dependent on precipitation, temperature, and water supplies from tributaries and connecting channels. Regulation of water levels on Lake Superior and Lake Ontario, through dams in outlet rivers, adds an additional layer of complexity to the examination of the impacts of climate change. Consequently, translating changes in average lake levels to changes in habitat availability, distribution, and quality is highly complex, but understanding these impacts is necessary to develop effective conservation and management strategies.

Project Objectives – This project will support conservation and management strategies that incorporate climate change impacts by:

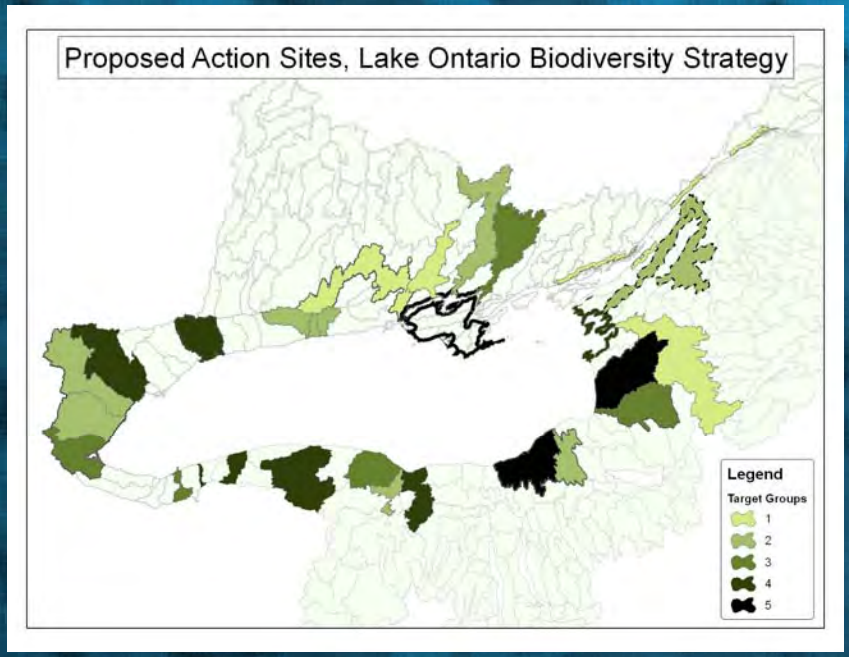
- Developing predictions of climate change effects on lake levels in a form useful for modeling coastal habitat change on a regulated lake;
- Predicting the impacts of these changes on wetlands and littoral habitats to identify conservation strategies that are locally and regionally appropriate; and
- Considering how regulation of lake water levels may interact with changing hydrology, and providing guidance to decision makers on approaches to regulation that may lessen impacts.

Products and analyses from the project will be informed by and shared with regional councils, agencies, coastal managers, and the public so that conservation priorities for coastal habitat protection and management can take into account likely climate change impacts. Key steps in this 3-year project include:

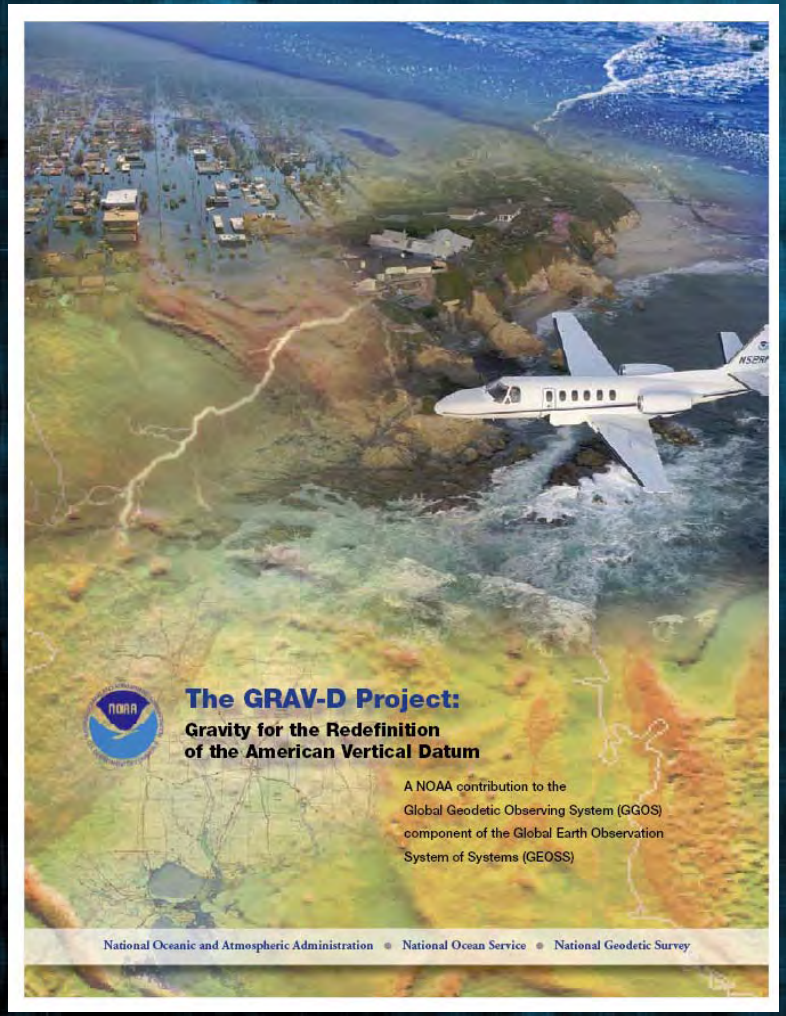
1. Convene a workshop of scientists, coastal managers, and modelers experienced in water management, hydrology, ecology, and climate change and establish a bi-national collaborative working group.
2. Create high-resolution elevation maps for priority areas of shoreline, including both topography and bathymetry (a topobathy surface), to model coastal habitat response to water level changes.
3. Develop plausible future water supply sequences for Lake Ontario that are based on regional climate models or downscaling from global models.
4. Combine water supply sequences with alternative water regulation plans to predict lake levels. Examine impacts on factors that drive coastal habitat distributions and how different dam regulation plans may influence climate change impacts.
5. Identify potential areas to protect and/or restore by considering factors that might promote, impede, or prohibit habitat and species adaptation to climate change.
6. Convey habitat scenarios to the coastal management community for consideration in conservation and development decisions.

Relationship to Existing Great Lakes Efforts – This project will assemble climate modelers, ecologists, coastal managers, and water regulators—whose professions are interrelated and often complementary, but whose time and funding limit collaboration—to address needs of the management community and bring together key data sets and approaches for modeling impacts of climate change on Lake Ontario coastal habitats. Many components of this project already exist or are under development:

- Great Lakes Regional Needs Assessments: 1) *Great Lakes Needs Assessment*, July 2006 (Great Lakes Commission and NOAA CSC) and 2) *Preparing for a Changing Climate*, October 2000 (Great Lakes Regional Assessment, *www.geo.msu.edu/glra/assessment/assessment.html*)
- 2001 bathymetry of the nearshore and topography of portions of the above-water shoreline (International Joint Commission Lake Ontario-St. Lawrence study (IJC LOSL)); new data from USACE and counties.
- Regional Climate Models (RCMs) for the Great Lakes that provide regionally relevant climate predictions for key drivers of lake level (i.e., Kling *et al.* 2003 and newer ones developed by Environment Canada, NOAA Great Lakes Environmental Research Lab, and others)



Gravity for the Redefinition of the American Vertical Datum (GRAV-D)



Wisconsin Farm June 2008

Source: http://news.bbc.co.uk/2/hi/americas/7445834.stm

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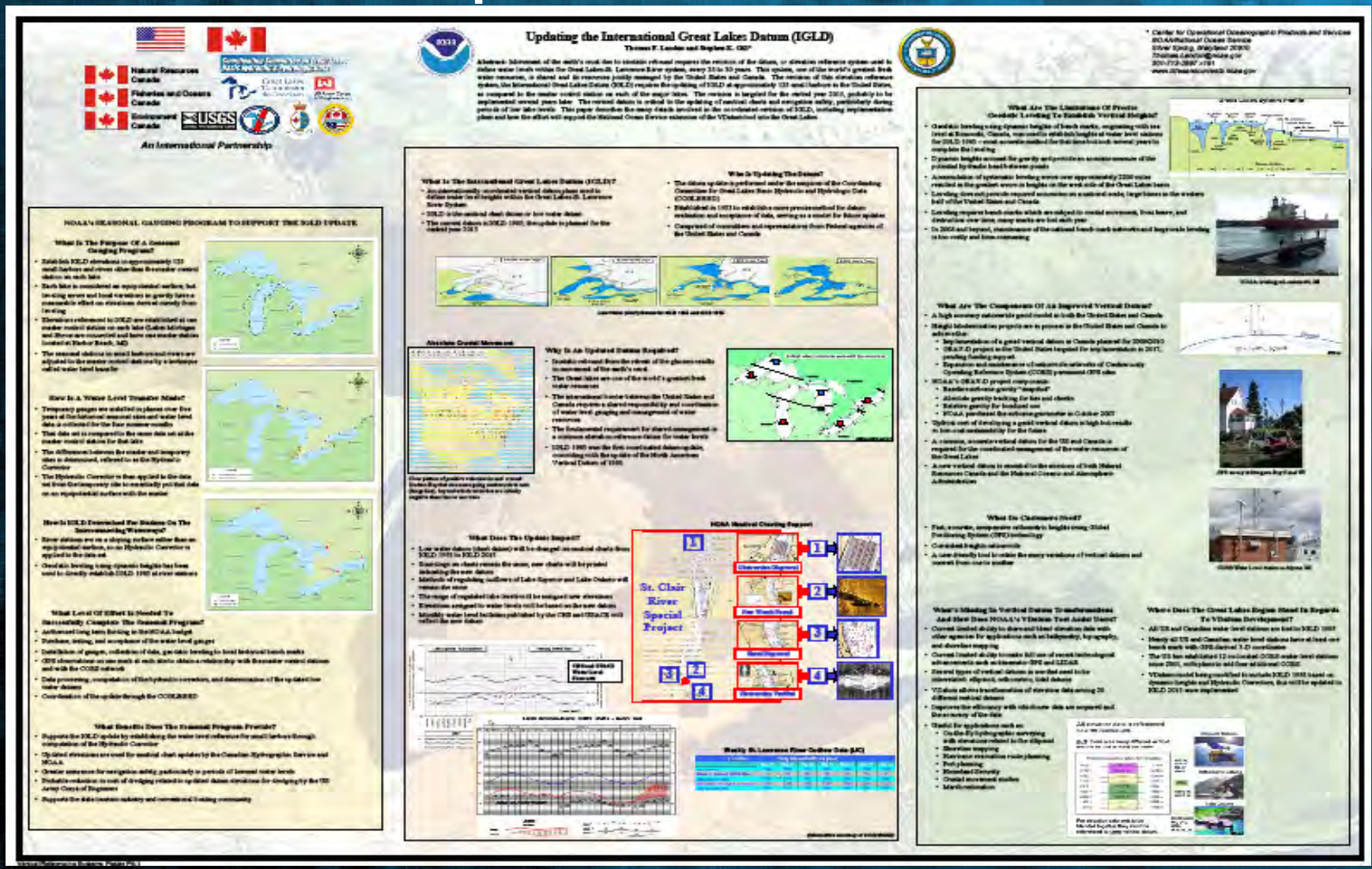
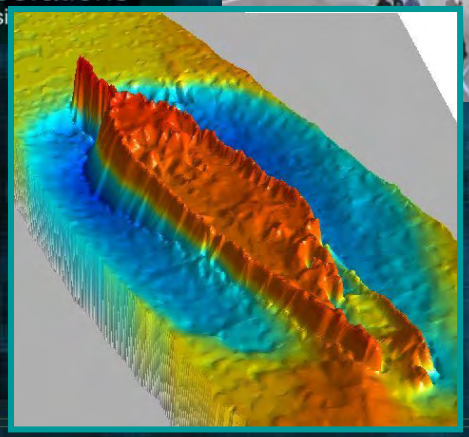
International Great Lakes Datum Update - 2015



Preserving Great Lakes Maritime Heritage



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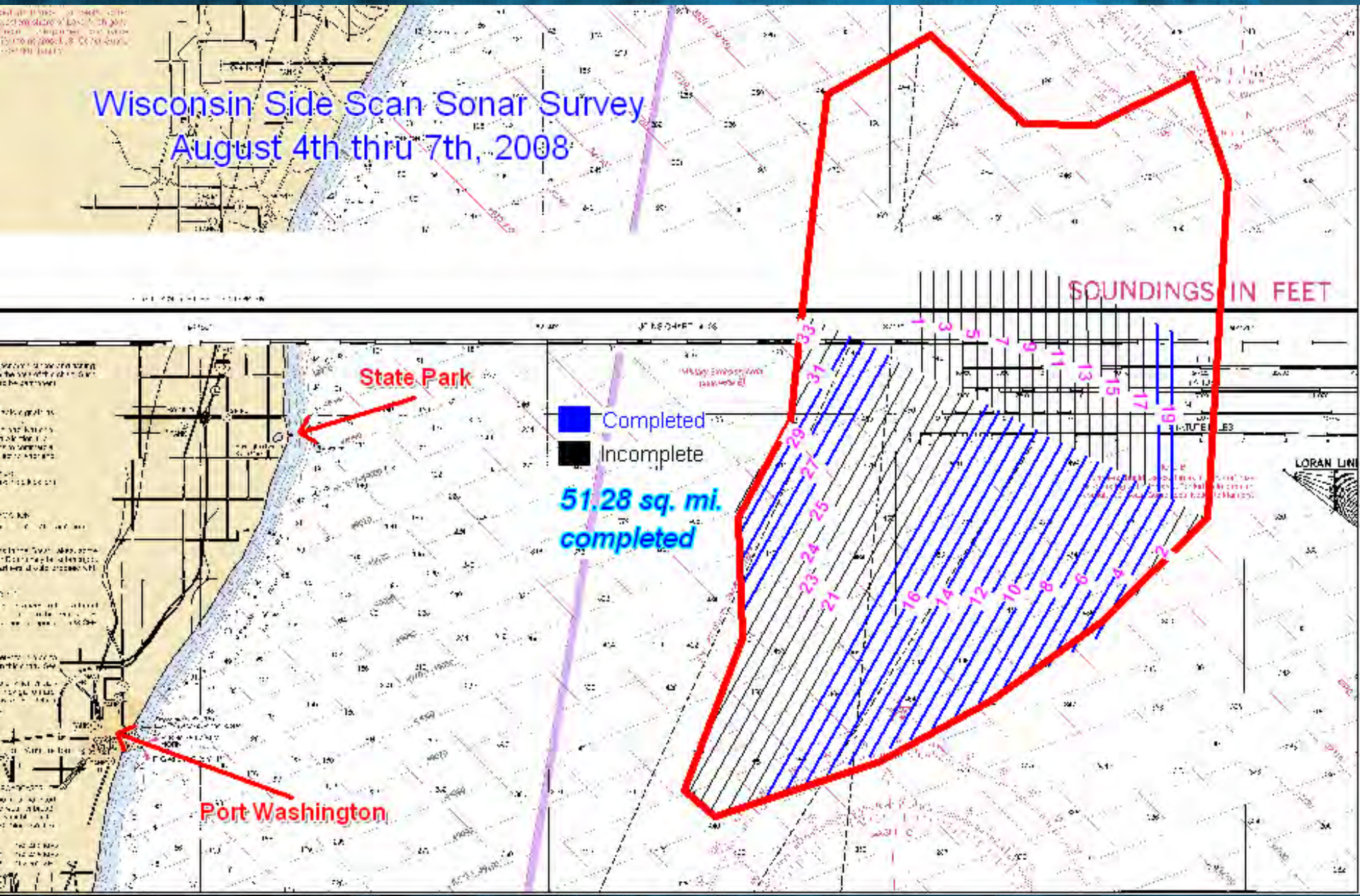
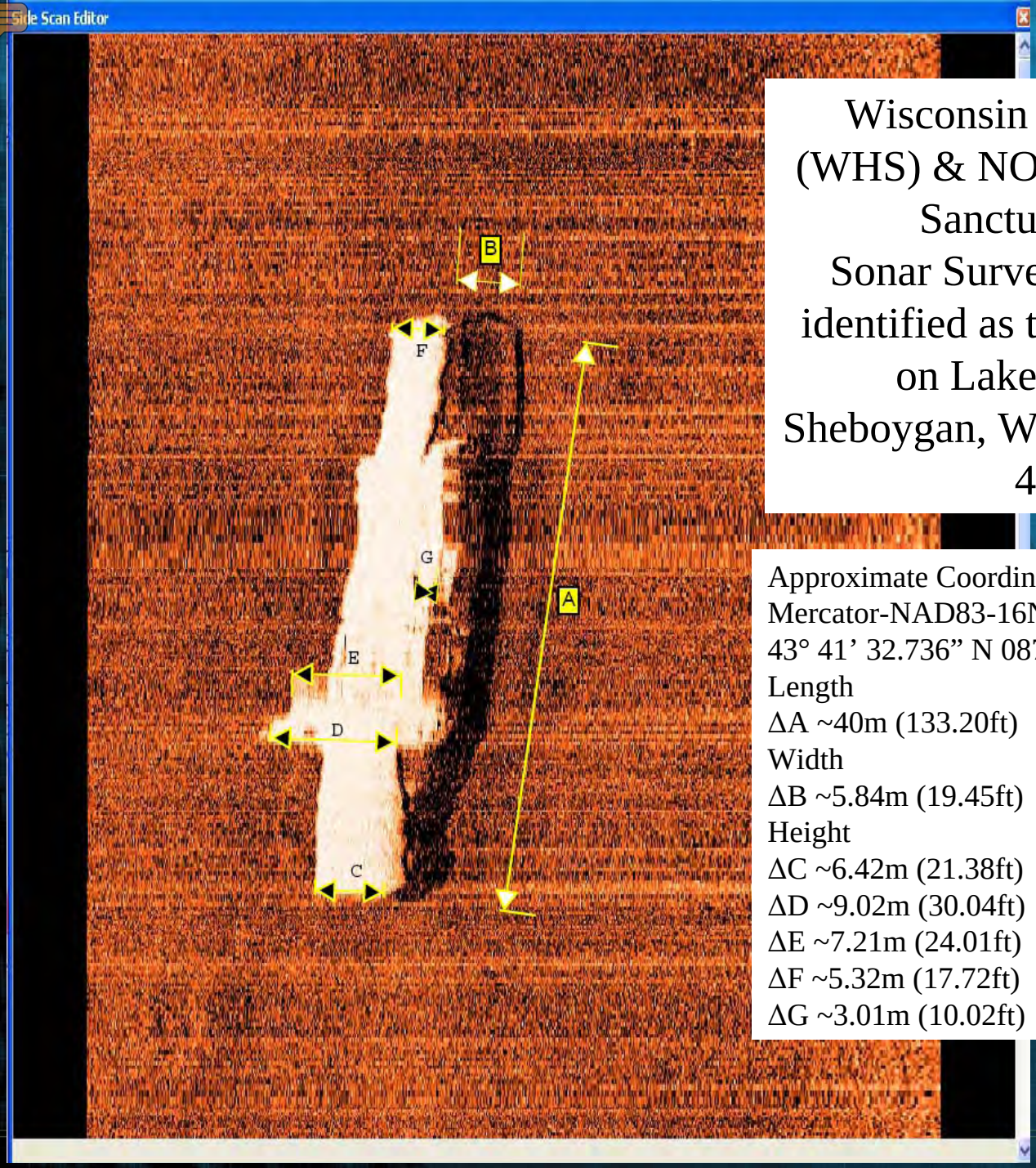

Wisconsin Side Scan Sonar Survey
August 4th thru 7th, 2008
SOUNDINGS IN FEET
State Park
Completed
Incomplete
51.28 sq. mi.
completed
Port Washington

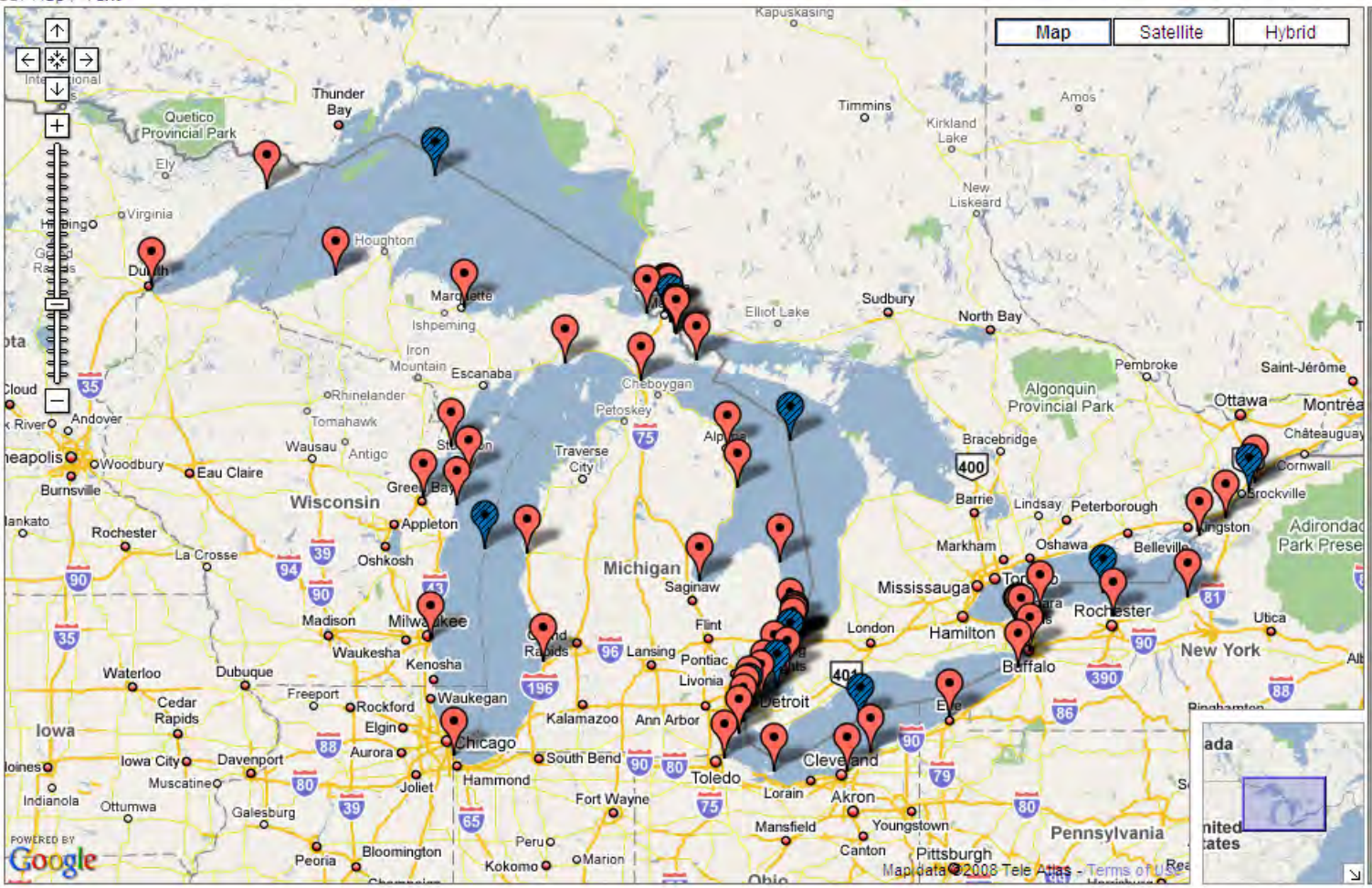
Robert C. Pringle (Tugboat Steamer)



Wisconsin Historical Society (WHS) & NOAA National Marine Sanctuary Side Scan Sonar Survey of the shipwreck identified as the Robert C. Pringle on Lake Michigan near Sheboygan, Wisconsin from August 4-8, 2008

Approximate Coordinates (Universal Transverse Mercator-NAD83-16N-Degrees Minutes Seconds)
43° 41’ 32.736” N 087° 33’ 17.43” W
Length
ΔA ~40m (133.20ft)
Width
ΔB ~5.84m (19.45ft)
Height
ΔC ~6.42m (21.38ft)
ΔD ~9.02m (30.04ft)
ΔE ~7.21m (24.01ft)
ΔF ~5.32m (17.72ft)
ΔG ~3.01m (10.02ft)

Water Level and Current Stations



Name	ID
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Bergen Point West Rea...	8519483
XML i WL VER WL PRED MET OBS	
Sandy Hook	8531680
XML i WL VER WL PRED MET OBS	
Ogdensburg	8311030
XML i WL VER WL PRED MET OBS	
Alexandria Bay	8311062
XML i WL VER WL PRED MET OBS	
Fort Gratiot	9014098
XML i WL VER WL PRED MET OBS	
Oswego	9052030
XML i WL VER WL PRED MET OBS	
Niagara Intake	9063012
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Buffalo	9063020
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Cleveland	9063063
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Marblehead	9063079
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Toledo	9063085
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Harbor Beach	9075014
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Alpena	9075065
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Rock Cut	9076024
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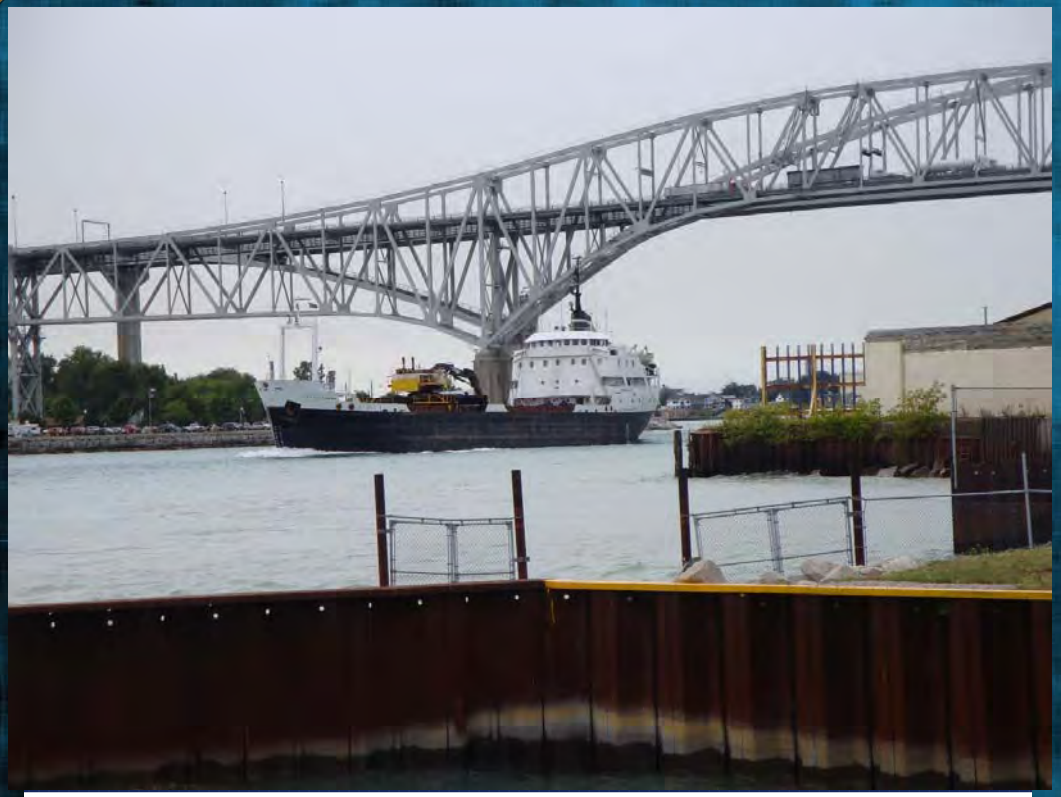
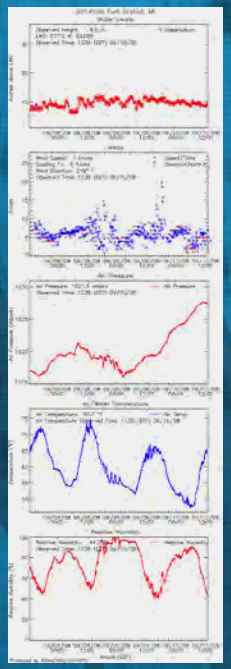
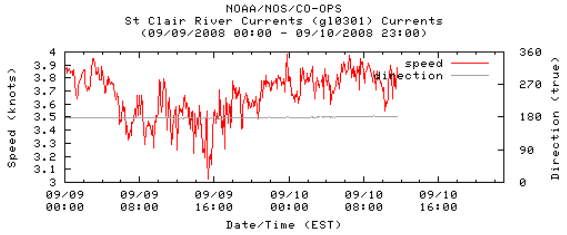




St Clair River Currents - Data Disclaimer

Station ID: gl0301

Current Data



Click here for a larger plot

Begin Date: 09 / 09 / 2008 00:00

End Date: 09 / 10 / 2008 23:00

Time Zone:
- Greenwich (UTC)
- Local

View Tabular Data | View Plot | Reset

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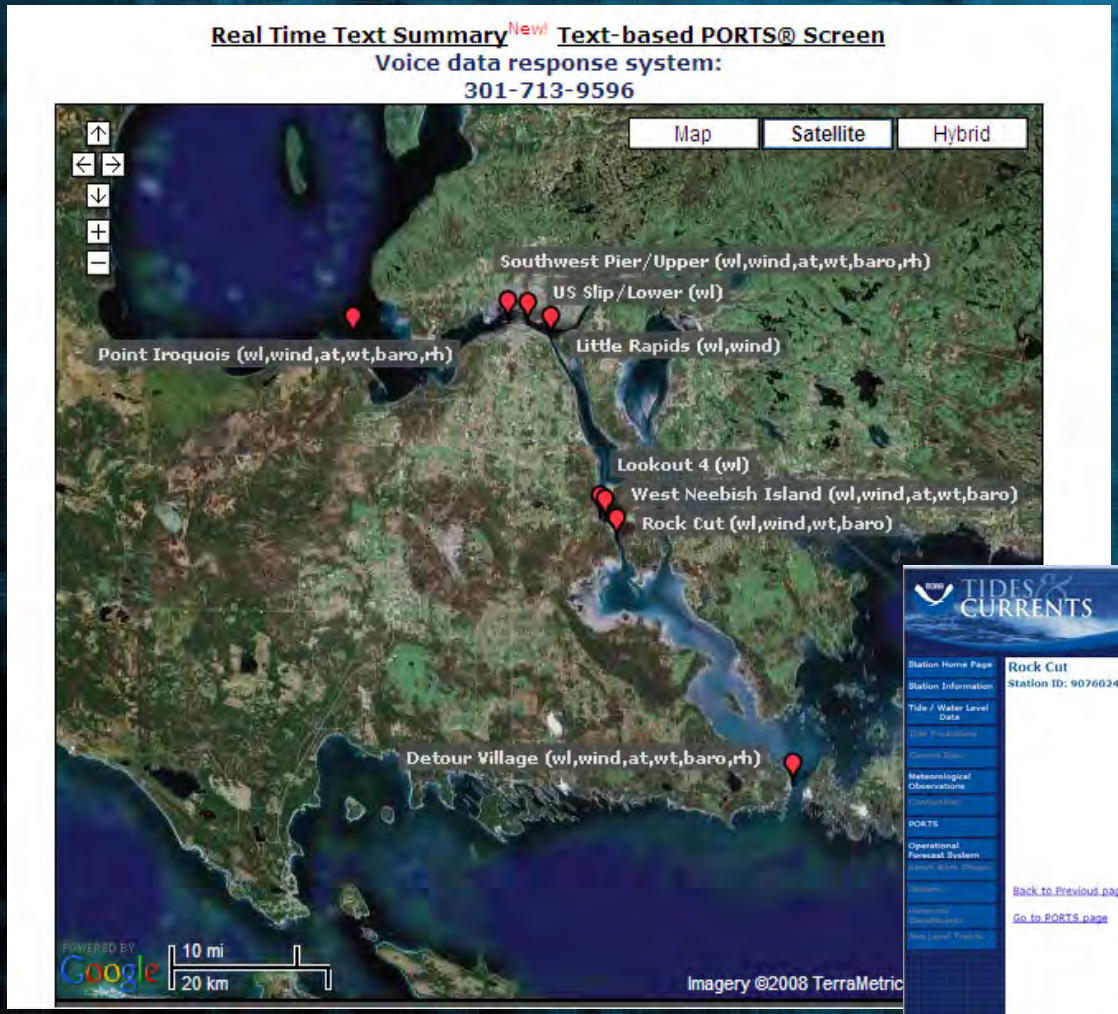
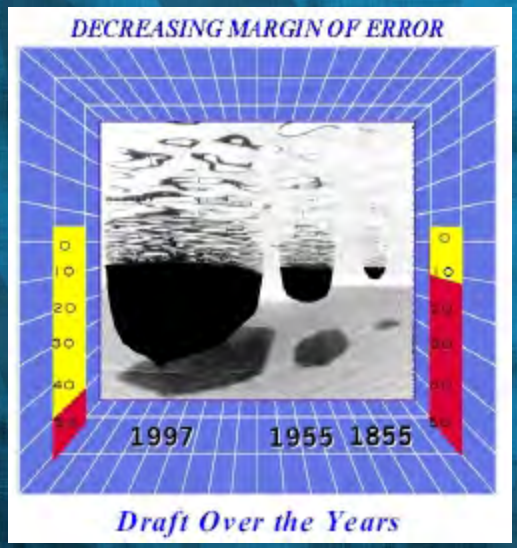
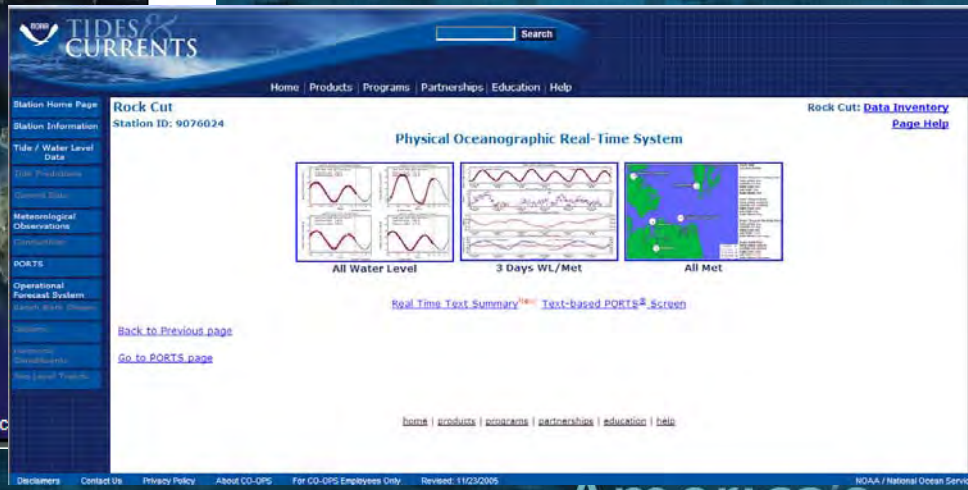
Physical Oceanographic Real-Time System (PORTS®)







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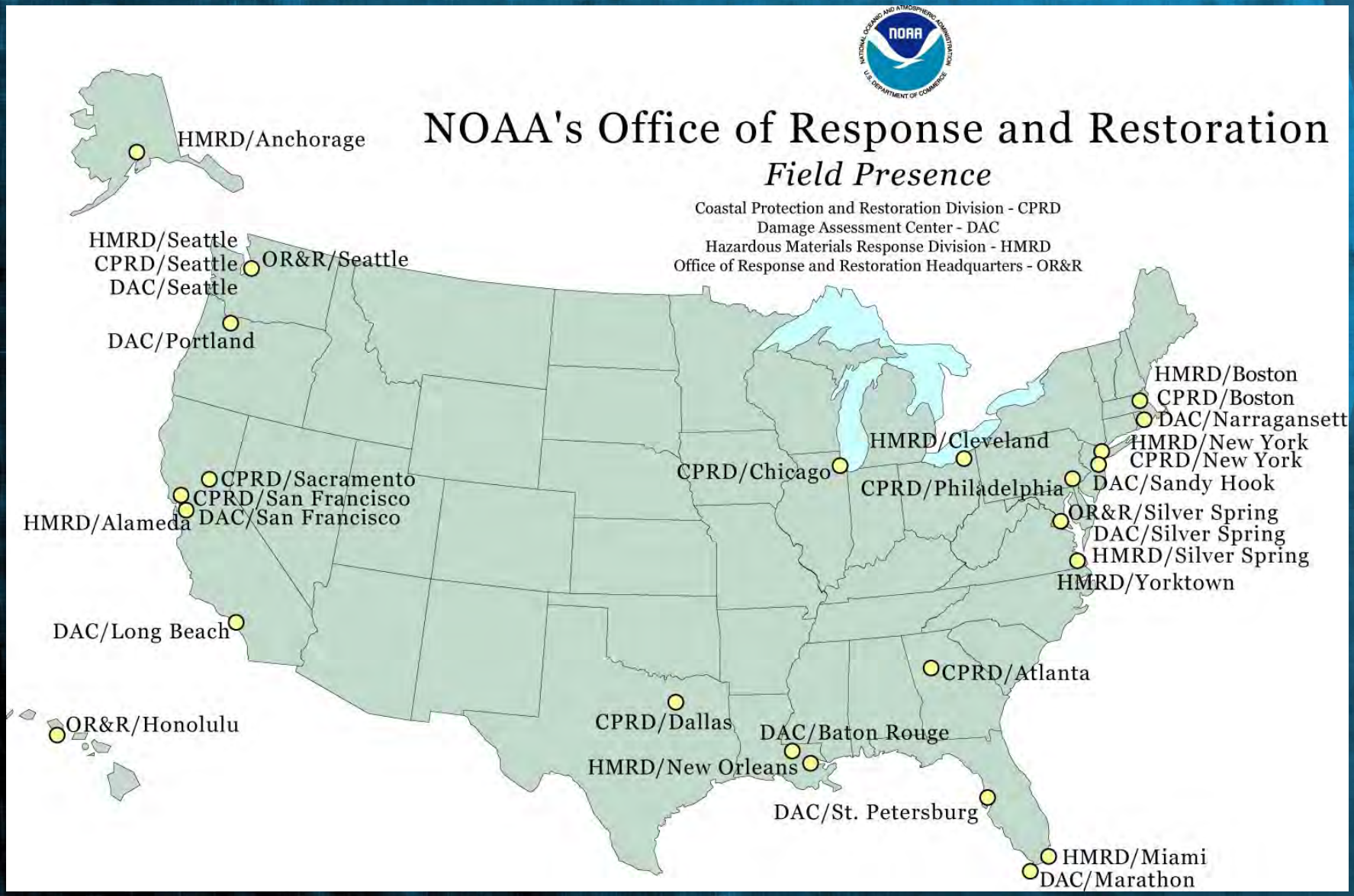
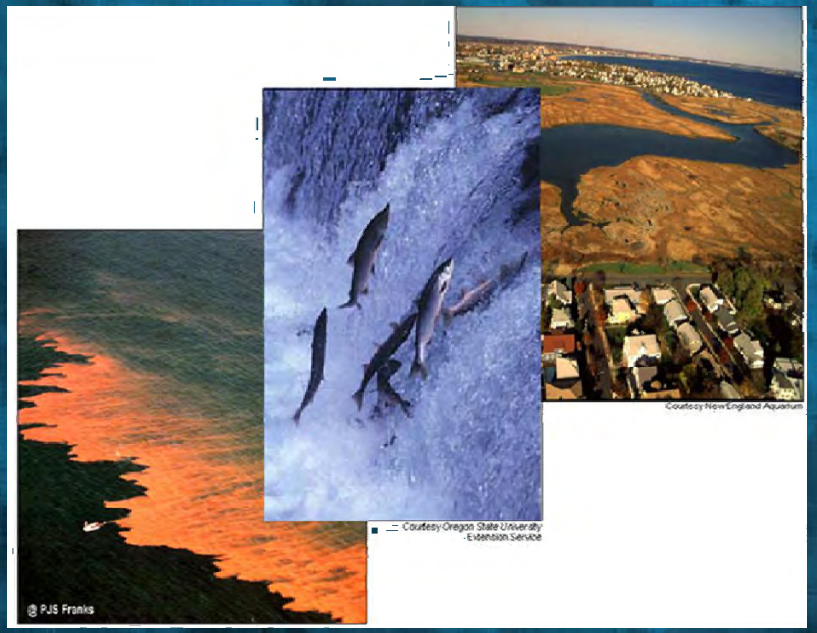

NOAA's Office of Response and Restoration
Field Presence
Coastal Protection and Restoration Division - CPRD
Damage Assessment Center - DAC
Hazardous Materials Response Division - HMRD
Office of Response and Restoration Headquarters - OR&R
HMRD/Anchorage
HMRD/Seattle
CPRD/Seattle
DAC/Seattle
OR&R/Seattle
DAC/Portland
CPRD/Sacramento
CPRD/San Francisco
HMRD/Alameda
DAC/San Francisco
DAC/Long Beach
OR&R/Honolulu
CPRD/Chicago
HMRD/Cleveland
CPRD/Philadelphia
CPRD/Dallas
DAC/Baton Rouge
HMRD/New Orleans
DAC/St. Petersburg
CPRD/Atlanta
HMRD/Boston
CPRD/Boston
DAC/Narragansett
HMRD/New York
CPRD/New York
DAC/Sandy Hook
OR&R/Silver Spring
DAC/Silver Spring
HMRD/Silver Spring
HMRD/Yorktown
HMRD/Miami
DAC/Marathon

Research in the Great Lakes

- Multiple Stressor Research
- Climate
- Center for Sponsored Coastal Ocean Research (CSCOR)
- Center of Excellence for Ocean and Human Health



Forecasts, Monitoring, and Event Response

- Ecological Forecasting (ECOFORE)
- Water Level Forecasting
- Mussel Watch
- Monitoring and Event Response for Harmful Algal Blooms (MERHAB)
- Integrated Water Resources Science Service (IWRSS)

LandSat image of *Microcystis* bloom in Western Lake Erie, August 2003

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Human Dimensions

- Survey Design
- Needs Assessments
- Stakeholder Participation
- Human Dimensions Wheels
- Array of Social Science Tools and Management Applications

NOAA Great Lakes Regional Team Priorities

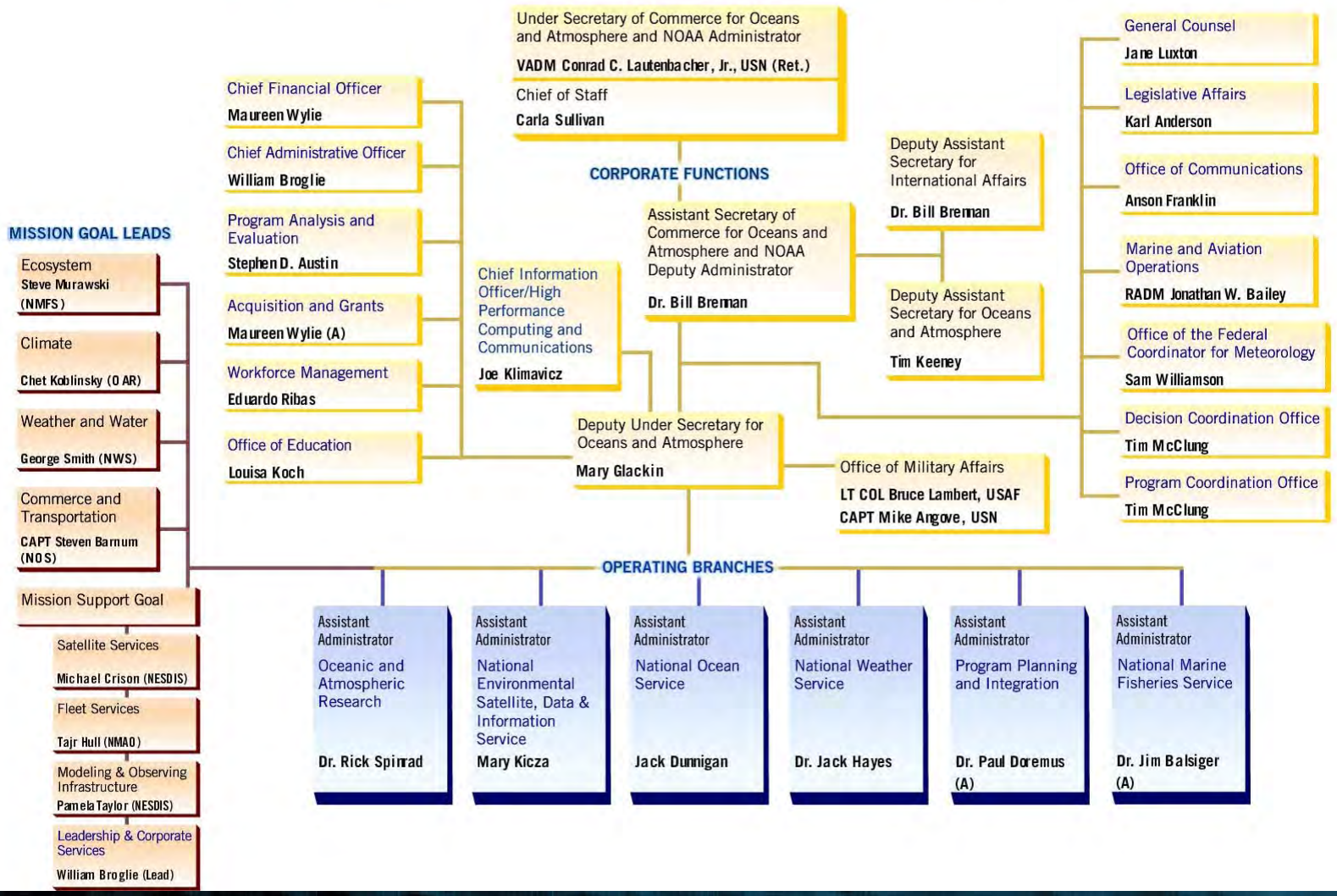
- Aquatic Invasive Species
- Restore/Protect Habitat
- Restore Areas of Concern
- Control Pollution
- Reduce Bioaccumalative Toxins
- Standardize Information Collection, Storage, and Distribution
- Sustainable Water Resources
- Minimize Risk to Human Health
- Navigation Services
- Evaluate/Interpret Information to Forecast Climate Change
- Educate the Public about Great Lakes Maritime Heritage
- Great Lakes Coastal Strategy

Future Challenges

- High impact events
- Climate change
- Projected increased growth in trade
  (quantity and volume)
- Energy needs
- Coastal migration
- Partnerships

Backup Slides

NOAA ORGANIZATION



NOAA's Ocean Service