Enabling Coastal Solutions through IT:
Gulf of Maine Ocean Observing System (GoMOOS)

Tom Shyka, GoMOOS

RNRF Congress on Building Capacity for Coastal Solutions

December 6, 2004

Users

- Fishing industry
- Aquaculture
- Shipping
- Recreational boating
- Military
- Research and monitoring
- Search and rescue

Issues

- Fisheries management
- Harmful algal blooms
- Coastal development
- Offshore development
- Endangered species
- Security
- Climate change

Need: A sustained system for measuring and predicting conditions in the Gulf of Maine

GoMOOS Goal

To provide data and information that serve public and private sector needs to:
- Solve practical problems,
- Predict events, and
- Further understand natural systems…

…in the Gulf of Maine.

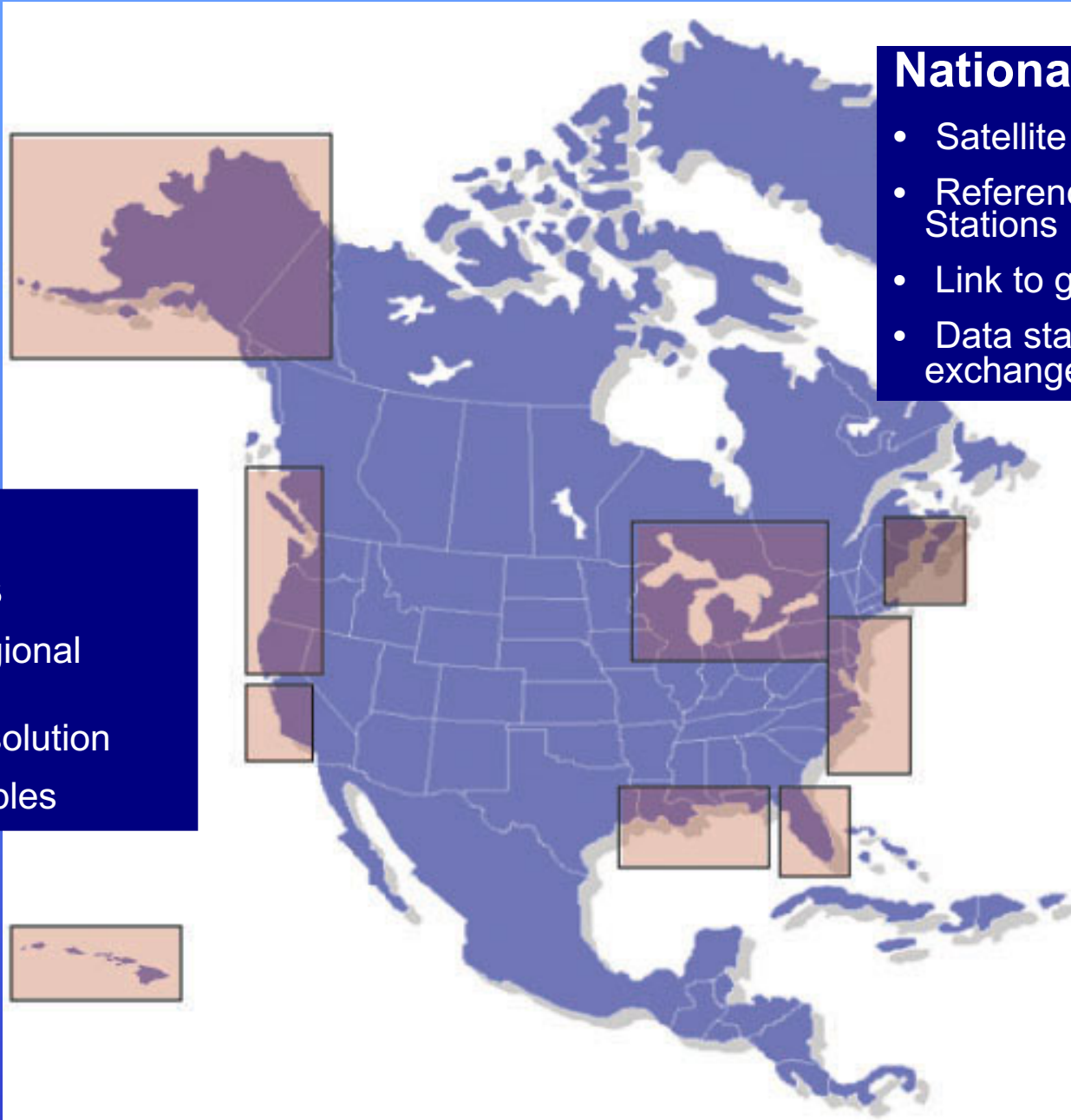A Coastal Oceanic Analog of the National Weather Service ….

Integrated Ocean Observing System (IOOS)

National System

- Satellite remote sensing
- Reference, Sentinel Stations
- Link to global module
- Data standards & exchange protocols

Regional Systems

- State & Regional Priorities
- Greater resolution
- More variables

Evolution of GoMOOS

Began As:

Ended As:

Research project to understand GoM → Utility project to facilitate research

Science/PI organizational model → Non-profit corporate organizational model

Researchers as primary users → Researchers as one user group among many

GoMOOS
A Pilot Regional Ocean Observing System

- Serving all Gulf of Maine – Nova Scotia, New Brunswick, ME, NH, MA
- A public service utility
- Incorporated as a nonprofit entity
- Membership organization – multi-sector
- Governed by a Board of Directors – Elected from membership

Sponsors:

Membership

Research/Education:
Bedford Institute of Oceanography
Bigelow Laboratory for Ocean Science
Dalhousie University
Maine Maritime Academy

National Undersea Research Center at
Univiversity of Connecticut
Rutgers University
University of Maine
University of Mass. – Dartmouth
University of New Hampshire
University of Rhode Island
Woods Hole Oceanographic Institute

Marine:
Atlantic Pilotage Authority
Eastport Port Authority
Federal Marine Terminals
Penobscot Bay & River Pilots Assn.
Saint John Marine Pilots
Saint John Port Authority

Industry:
Bath Iron Works
Connor Brothers, Ltd.
Horizon Marine Inc.
Maine Lobstermen Association
Mass. Lobstermen Association
NOBSKA Development Corp.
OEA Technologies, Inc.
Portland Pipe Line Corporation
RD Instruments Inc.
Satlantic, Inc.

Government:
Maine Dept. of Marine Resources
Maine Science & Technology Foundation
Maine State Planning Office
MIT Sea Grant
NOAA - Northeast Fisheries Science Center
Mass. Coastal Zone Management
Mass. Water Resources Authority
Stellwagen Bank National Marine Sanctuary
USGS – Woods Hole Field Center

Nonprofit:
Gulf of Maine Aquarium
Island Institute
New England Aquarium

Data Acquisition

Buoys -- Near real-time oceanographic and meteorological conditions

Satellite -- Big picture view of the Gulf of Maine

Models -- Forecasts of Gulf wide circulation, temperature, salinity and waves

HF Radar -- Hourly maps of surface currents
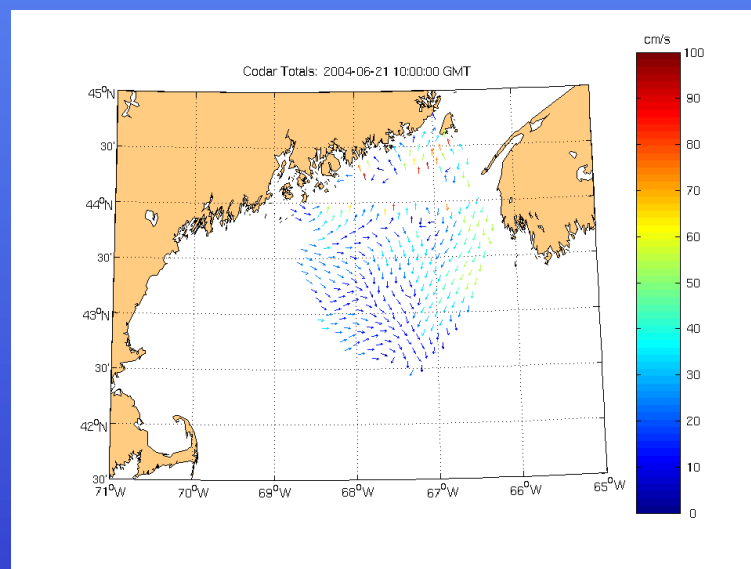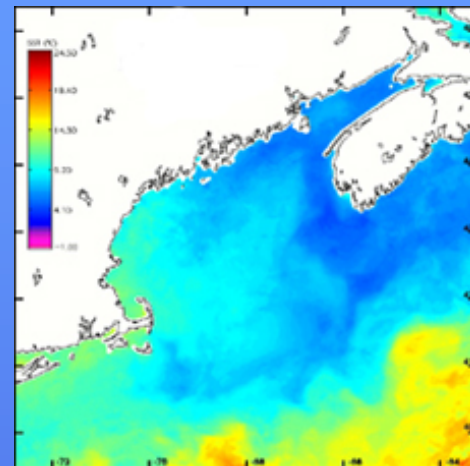
Data Management and Product Development

- Data management
  - Processing, distributing, and archiving
- Data/Information product development
  - Identifying users needs
  - Developing tools to meet user requirements
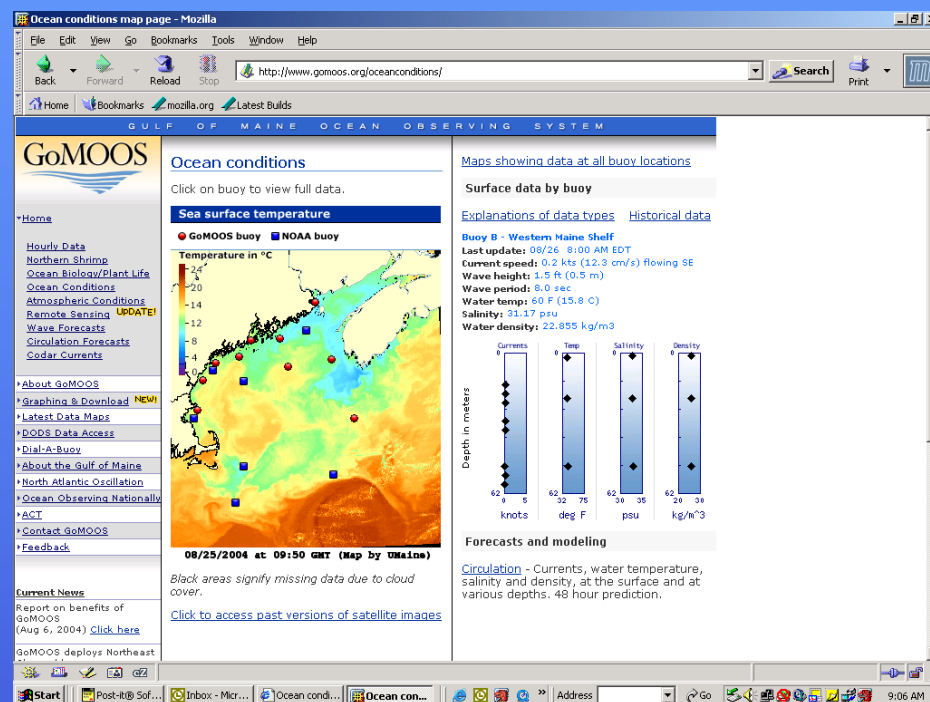
Requirement from Users and IOOS

- Sharing/Integration of data across organizations
- Addressing IT and organizational/institutional issue around sharing data

Issues to Integrating Data

- Many organizations collect data but:
  - Data is stored in different formats
  - Limited connectivity between data sets
  - No standard way to discover data
  - Difficulty in integrating data from different sources
  - Unique policies and procedures per institute

Gulf of Maine Spatial Data Project: Addressing data sharing issues

FGDC/GeoConnections Cooperative Agreements Program:

- Create an environment for data sharing in the Gulf of Maine based on adopted international standards

- Demonstrate data sharing between US and Canadian institutions for a common geographic region - the Gulf of Maine

Gulf of Maine
Spatial Data Project Outcomes

- Access and integrate data in real time from multiple sources

- Address dynamic resource management issues using shared spatial data

- Ensure the widest range of potential users of spatial data have access for their specific application

GoMOOS Proposal and Project Steps

- Identify Partners and Data

- Implementing data interoperability standard

- Develop a portal for sharing and integrating data

- Develop a demonstration tool that uses data for specific issue

- Document project issues and solutions

Step 1: Identify Project Partners for International Collaboration

Lead Partners

- GoMOOS
- DM Solutions Group

Proposal Partners

- Bedford Institute of Oceanography
- Canadian Hydrographic Survey
- Census of Marine Life - Gulf of Maine Program
- Geologic Survey of Canada
- Gulf of Maine Council on the Marine Environment
  - Gulf of Maine Mapping Initiative (GOMMI)
- Massachusetts office of Coastal Zone Management
- me3 Technology Consultants
- NOAA - Coastal Services Center
- NOAA - Northeast Fisheries Science Center
- USGS - Woods Hole Field Center

Step 2: Implement an Interoperability Standard

- Web Mapping Service (WMS)
    - Open GeoSpatial Consortium (OGC)
    - Dynamic sharing of maps via the web
- Implement standard with partners
    - Data owners maintain and provide access to most current spatial data
    - Partners decide on platforms and software
- Provide organizational and technical support by the project leaders

Step 3: Develop Data Portal and Demonstration Products

- Gulf of Maine Mapping Portal (GoMMaP)
  - Integrating data and resources
- Gulfwatch mapping tool
  - Contaminant mapping
- OpenIOOS mapping tools
  - Putting the "I" in IOOS

Home   Sitemap

Gulf of Maine Mapping Portal - GoMMaP

About GoMMaP   Explore Maps   Resources   Contact & Feedback

About GoMMaP
- Project Partners
- Project Background

Explore Maps
- View Maps
- Make Maps
- Gulf Watch

Mapping Resources
- How to Build a Mapping Application
- How to Publish Data
- Open Standards
- Frequently Asked Questions

Contact & Feedback

Welcome to GoMMaP

The Gulf of Maine Mapping Portal (GoMMaP) is designed as a single point of access to Gulf of Maine maps that are available from organizations that utilize web mapping services. GoMMaP also serves as a resource for organizations that would like to contribute geographic data through web mapping services or add mapping content to a website.

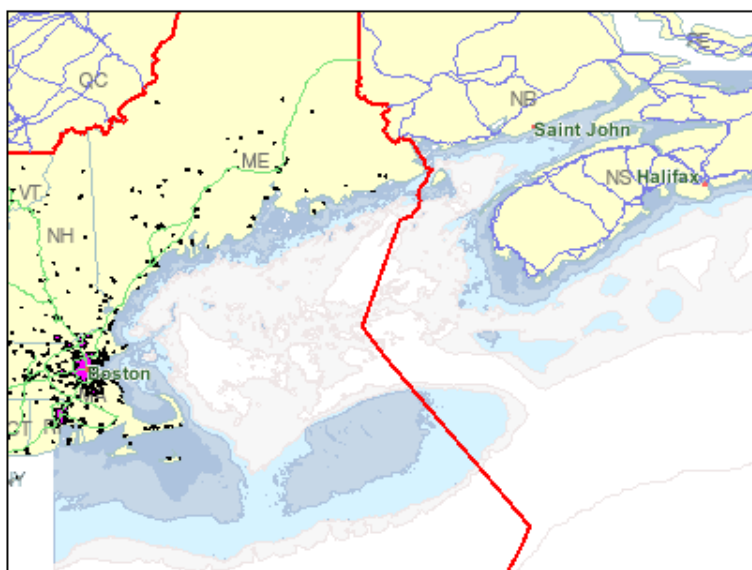GoMMaP is unique because it utilizes web mapping services to dynamically integrate multiple distributed on-line data sources into one or several map images. Web mapping allows data to be shared across organizations, platforms, and formats.

GoMMaP Features

Map Viewer
Provides users with easy access to maps about the Gulf of Maine that are dynamically created by integrating maps made available over the web.
> View Maps

Map Builder
Online tool that allows users to create custom maps by choosing from the 100s of maps and layers served over the web by the project partners.
> Build Maps

Data Publishing Resources
"How to" documents for organizations that are interested in making their geographic data accessible through GoMMaP.
> Read More

Web Mapping Capabilities
"How to" documents that provide guidance for adding mapping content to a website.
> Read More

Open Standards

Events

August 9, 2004 - **Wrap-up meeting for the GeoConnections / FGDC funded GoMMap Project**
New England Aquarium, Boston, Massachusetts

News

■ **Gulf of Maine Mapping Portal - GoMMaP**

Home   **Sitemap**

About GoMMaP   **Explore Maps**   **Resources**   **Contact & Feedback**

View Maps

Explore Maps

View Maps

Make Maps

Gulf Watch

Map Viewer is a simple yet powerful online tool that provides users with easy access to maps about the Gulf of Maine that are dynamically created by integrating maps made available over the web.

The maps available in the Map Viewer are not meant to be comprehensive. They represent just a subset of all the maps available from organizations that have implemented web mapping services. The maps in the viewer demonstrate the capability to dynamically create a single map by combining maps and layers from multiple organizations over the web.

> Start exploring maps now

Make your own map from the many maps and layers served by the GoMMaP partners and others with the **Map Builder**.

How to Use Map Viewer

Detailed instructions coming soon.

File   Edit   View   Favorites   Tools   Help

← Back ▾ | → ▾ | 🗙 🔄 🏠 | 🔍Search 🌟Favorites 📁Media ⟳ | 🖨 ▾ 🖨 🖼 📄 ⩗

Address 🔳 http://dev1.dmsolutions.ca/cwc2/cwc2.php?service=VCG&request=GetApplication&version=0.1.0&LANGUAGES=en-CA&TEMPLATES=http://dev1.dmsolutions.ca   ▾ ⟶Go   ‖ Links »

Home   Sitemap

Gulf of Maine Mapping Portal - GoMMaP

About GoMMaP   Explore Maps   Resources   Contact & Feedback

View Maps   Make Maps   Gulf Watch Demo

Human Infrastructure

MapSize: | Small ▾ | | Choose a map ▾ |
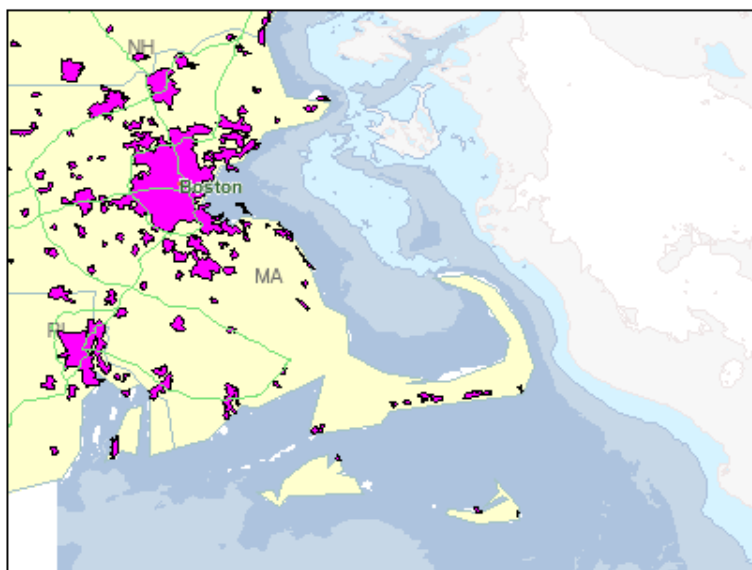
☐ **Real Time Ocean Observations**

   ☐ **NOAA CSC: Latest AVHRR SST Imagery**

   ☐ **GoMOOS: Latest SST**

   ☐ **GoMOOS: Latest SST (NDBC)**

   ☐ **GoMOOS: Latest Wind Barbs**

☐ Human Infrastructure

   ☑ **USGS: Major North American Cities**

   ☐ **USGS: US cities**

   ☑ **USGS: US EEZ boundary**

   ☑ **USGS: US Urban Areas**

   ☑ **NOAA CSC: US Interstates**

   ☑ **NOAA CSC: Canada Highways**

0   18   36   54   72   90 mi

Longitude: -69.180

Latitude: 41.109

🔄 Redraw Map | ☰ Map Legend

🏁Start | Inbox - Microsoft O... | Microsoft PowerPoi... | GoMMap - View ... | Address | ⟶Go   12:42 PM
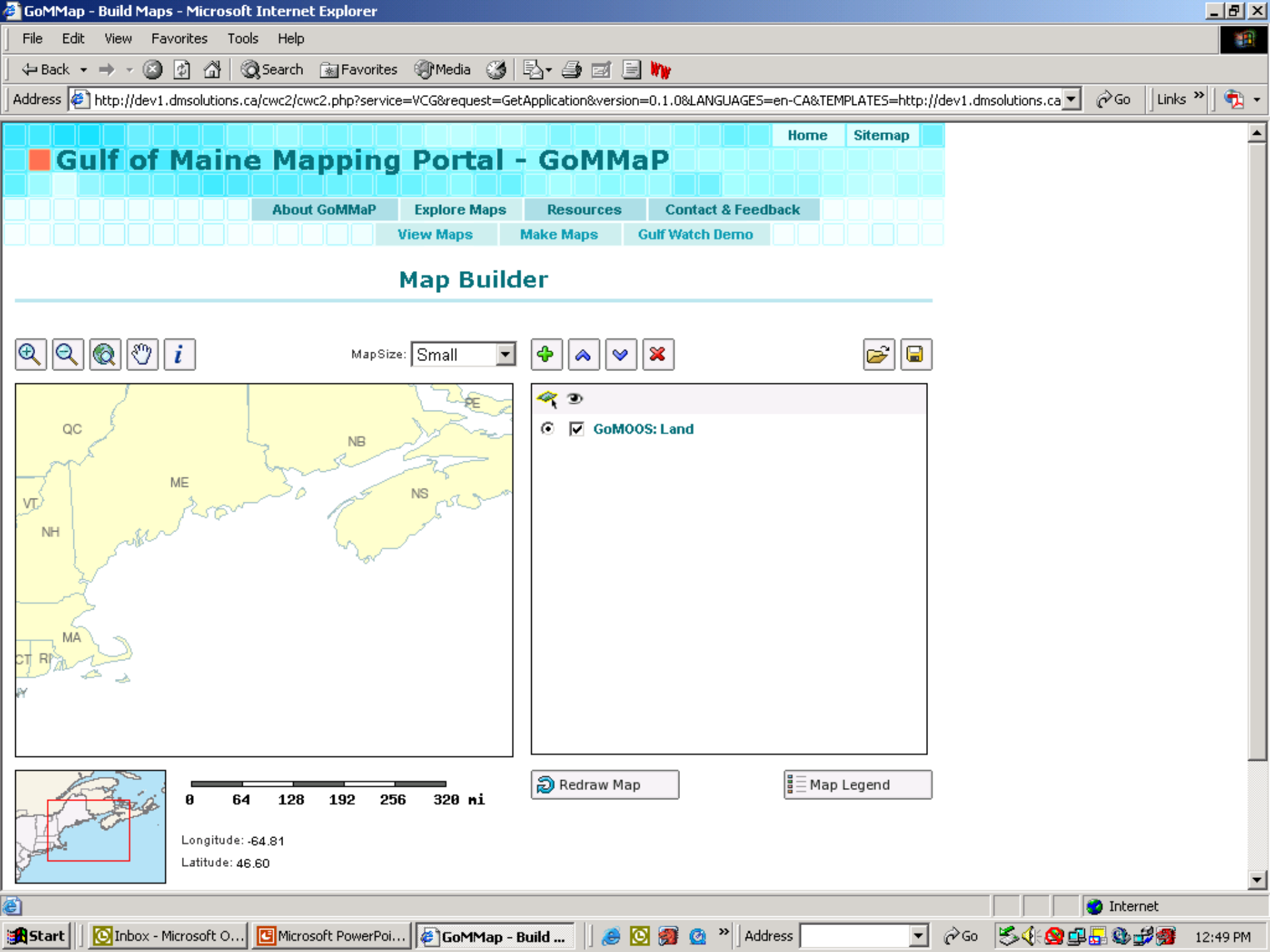
GoMMap - Build Maps - Microsoft Internet Explorer

File   Edit   View   Favorites   Tools   Help

Back | Search   Favorites   Media

Address http://www.gommap.org/cwc2/cwc2.php?service=VCG&request=GetAp
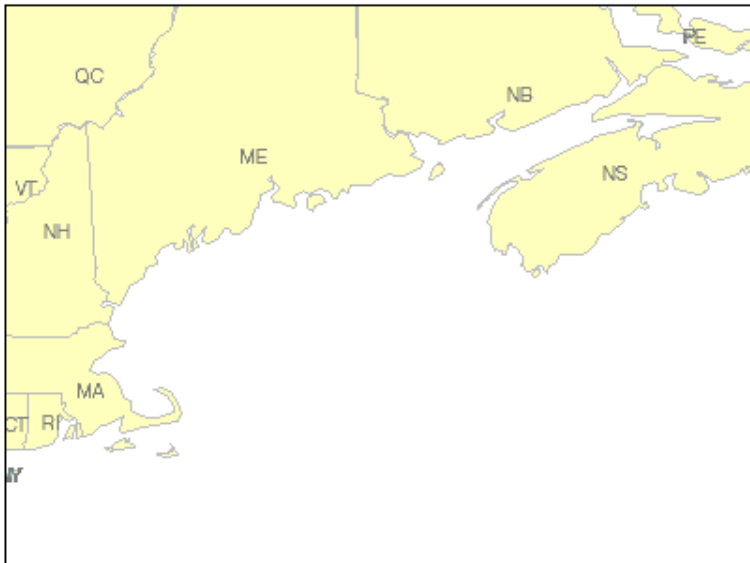
Gulf of Maine Mapping Portal -

About GoMMaP   Explore Maps

View Maps

Map Build

MapSize: Small

0   64   128   192   256   320 mi

Longitude:

Latitude:

Map Browser - Microsoft Internet Explorer

Explore WMS Layers
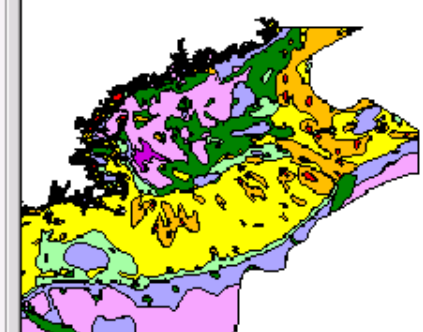
BROWSE: Select a server in the list below to browse its WMS layers.
SEARCH: Supply search terms in the field below and click the search button.
Select 'Search Results' from the list at any time to browse the found WMS layers.
ADD TO MAP: Click the 'add to map' button at the bottom of this dialog to add the selected layer.

USGS - Woods Hole   Servers

enter search terms   Search

WMS Map Server
  Gulf_of_Maine
    map_extent
    Canada
    NOS80k
    State Bounds
    Water features: bay, estuary, stream, lake
    Lakes
    US urban areas
    Major Water (rivers, lakes)
    US cities
    Continental Margin sediment distribution
    US EEZ boundary
    Fed/State boundary

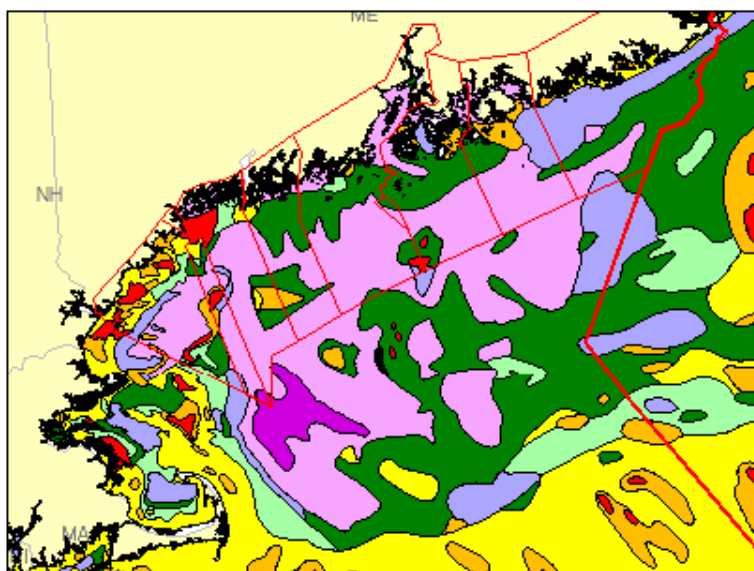**Abstract:** Continental Margin sediment distribution
no abstract

Add Layer   Close

Done   Internet

Start | RNRF | GoMMap - Build Ma... | Map Browser – M... | Address | Go | 8:01 AM

⬅ Back ▾ ⇒ ▾ 🗙 🔄 🏠 | 🔍Search 🌟Favorites 🎬Media 🕘 | 📧▾ 🖨 📝 ▾ 📄 WW | Links »

Address 🔗 http://www.gommap.org/cwc2/cwc2.php?service=VCG&request=GetApplication&version=0.1.0&LANGUAGES=en-CA&TEMPLATES=http://dev.gommap.org/gommap/builder.html&COI ▾ 🔗Go

🟧 **Gulf of Maine Mapping Portal - GoMMaP**

Home   Sitemap

About GoMMaP   Explore Maps   Resources   Contact & Feedback

View Maps   Make Maps   Gulf Watch Demo

Map Builder

MapSize: Small ▾

- ☑ **Maine lobster zones**
- ☑ **US EEZ boundary**
- ☑ **Continental Margin sediment distribution**
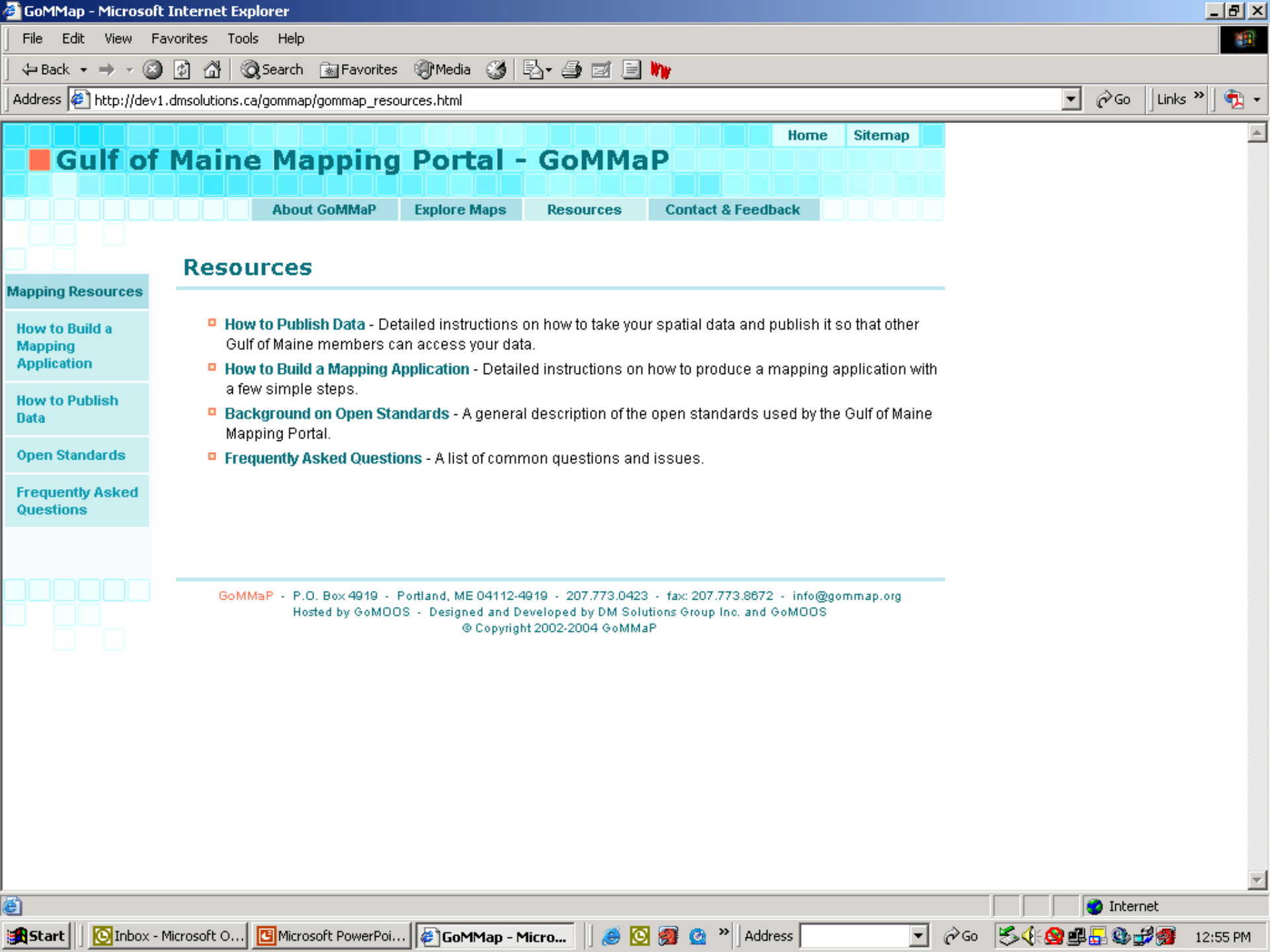- ☑ **GoMOOS: Land**

0   32   64   96   128   160 mi

Longitude: -66.76

Latitude: 43.16

🔄 Redraw Map   ⋮≡ Map Legend

Home   Sitemap

Gulf of Maine Mapping Portal - GoMMaP

About GoMMaP   Explore Maps   Resources   Contact & Feedback

Resources

Mapping Resources

How to Build a Mapping Application

How to Publish Data

Open Standards

Frequently Asked Questions

▫ **How to Publish Data** - Detailed instructions on how to take your spatial data and publish it so that other Gulf of Maine members can access your data.

▫ **How to Build a Mapping Application** - Detailed instructions on how to produce a mapping application with a few simple steps.

▫ **Background on Open Standards** - A general description of the open standards used by the Gulf of Maine Mapping Portal.

▫ **Frequently Asked Questions** - A list of common questions and issues.

**Gulf of Maine
Council on the
Marine Environment**

Promoting cooperation to maintain and
enhance environmental quality
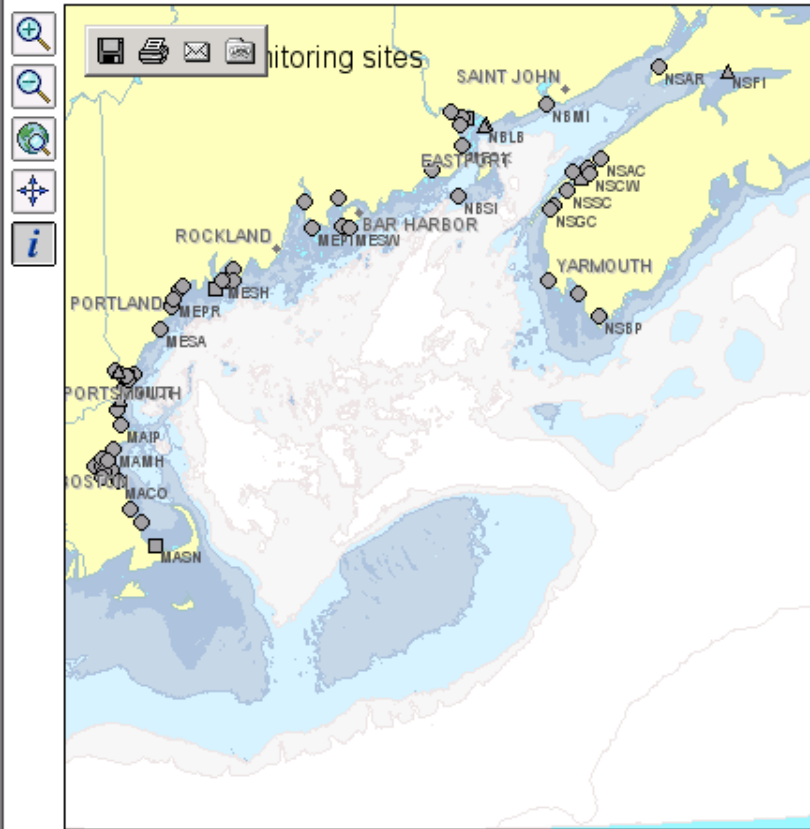
Gulfwatch Contaminants Monitoring Program > Mapping Tool

An interactive map for displaying data on contaminants in blue mussels since 1993

DATA   GRAPHS   ABOUT

Select Data:

Year: Contaminant:
[Select year ▾]   [Select contaminant ▾]   ↻ View Sites

↻ Update Map   ✚ Map Layers

Zoom to region:

[Select zoom region ▾]

Gulfwatch is a chemical contaminants monitoring
program organized and administered by the Gulf of
Maine Council on the Marine Environment.

Gulfwatch monitoring sites for the 9-year review

A total of 38 sites between 1993 - 2001 have been used to
collect blue mussel (Mytilus edulis) tissue to be analyzed for a
variety of contaminants. Sampling program consisted of three
types: those sampled annually (5 benchmark sites); those
sampled every three years (27 rotational sites); and some multi-
year sites (6) were sampled 4 to 6 years. Since 1991,
Gulfwatch has collected blue mussels at 14 other sites (data
not shown here) on a less frequent basis.

■ Sampled every year (benchmark site)

⊙ Sampled every 3 years

△ Sampled every 4 - 6 years

Click any site on the map   **List of site locations**

(Map of Gulf of Maine monitoring sites with labels: SAINT JOHN, NSAR, NSPI, NBMI, NBLB, EASTPORT, NSAC, NSCW, NBSI, NSSC, NSGC, BAR HARBOR, ROCKLAND, MEPI, MESW, YARMOUTH, PORTLAND, MEPR, MESH, MESA, NSBP, PORTSMOUTH, MAIP, MAMH, BOSTON, MACO, MASN)

Monitoring sites

0   120   240   360 km

How to use this map

File　Edit　View　Favorites　Tools　Help

←Back　→　　Search　Favorites　Media　Links　»

Address http://www.gomoos.org/chameleon/gulfwatch/　Go

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Gulfwatch Contaminants Monitoring Program > Mapping Tool

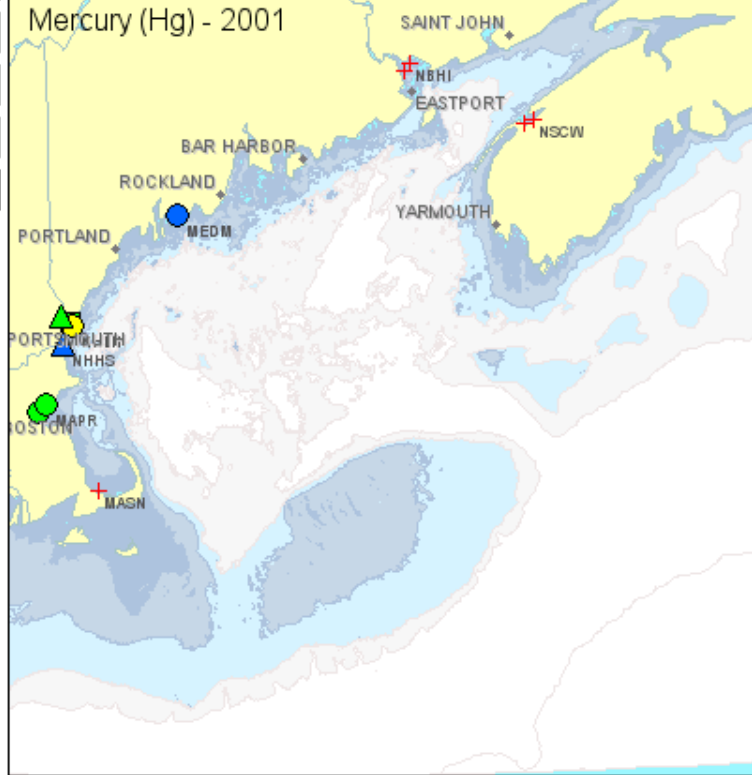An interactive map for displaying data on contaminants in blue mussels since 1993

DATA　GRAPHS　ABOUT

Median Concentrations
Mercury (Hg) - 2001

SAINT JOHN

NBHI
EASTPORT

NSCW

BAR HARBOR

ROCKLAND

YARMOUTH

MEDM

PORTLAND

PORTSMOUTH
NHHS

MAPR
BOSTON

MASN

0　　120　　240　　360 km

Select Data:

Year:　**Contaminant:**
2001　Mercury (Hg)　View Sites

Update Map　Map Layers

Zoom to region:
Select zoom region

Gulfwatch is a chemical contaminants monitoring
program organized and administered by the Gulf of
Maine Council on the Marine Environment.

Mercury (Hg)　**Click any site on the map for detailed
(ug/g dry**　**information.**
weight)

+　0 - .2

●　.21 - .4　□　Sampled very year

●　.41 - .79　○　every 3 years
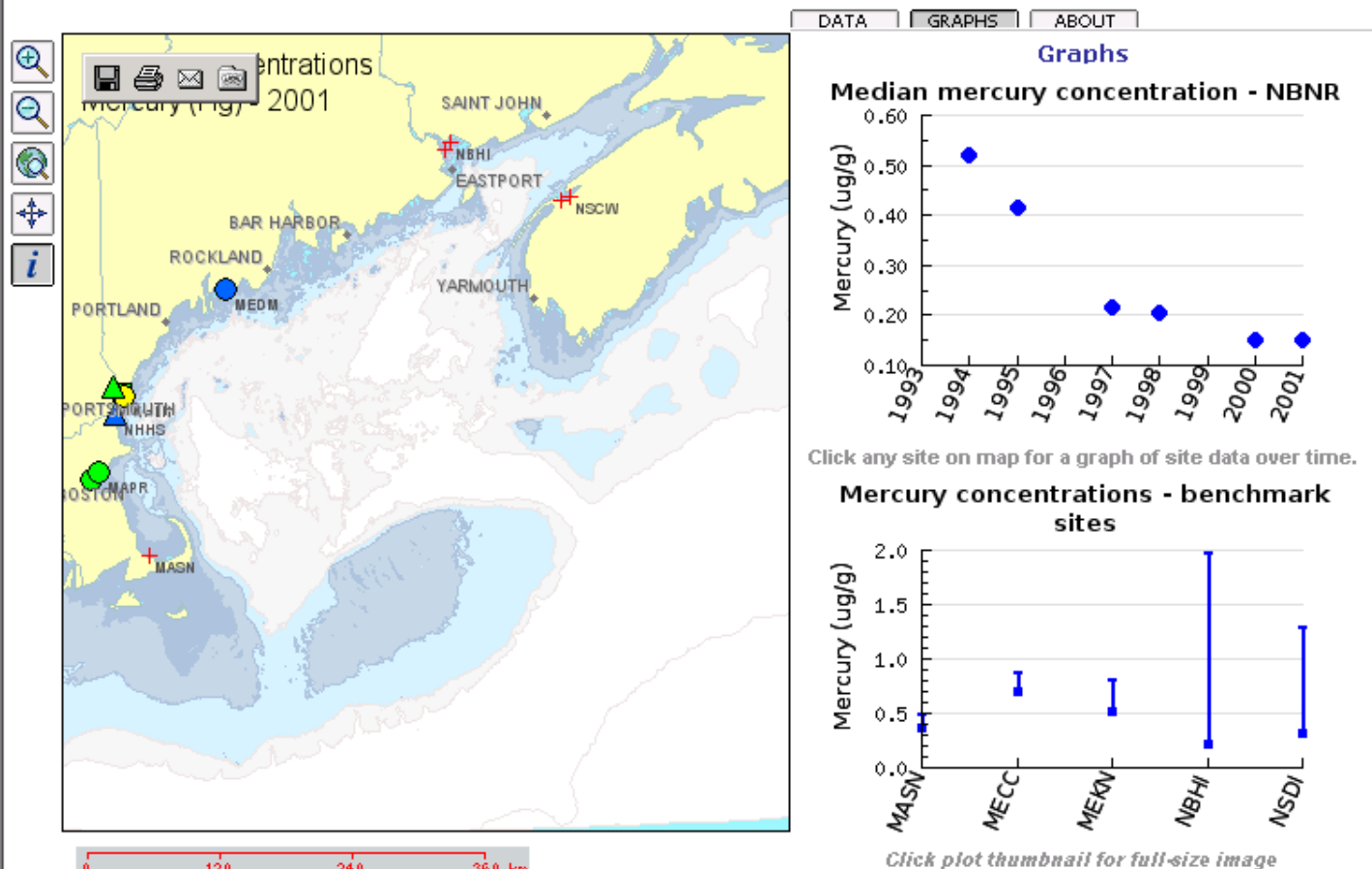
●　.8 - 1.19　△　every 4 - 6 years

●　1.2 - 1.48　★　Statistically significant trend

●　> 1.48

Concentrations are micro or nano-grams per gram of dry weight of
mussel tissue. Colors represent different ranges for different
contaminants.

Start　RNRF　Gulfwatch Conta...　GoMOOS Annual M...　Address　Go　8:34 AM

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Promoting cooperation to maintain and
enhance environmental quality

Gulfwatch Contaminants Monitoring Program > Mapping Tool

An interactive map for displaying data on contaminants in blue mussels since 1993

DATA   GRAPHS   ABOUT

Graphs

Median mercury concentration - NBNR

Click any site on map for a graph of site data over time.

Mercury concentrations - benchmark sites

Click plot thumbnail for full-size image

entrations
Mercury (ug/g) 2001

SAINT JOHN

NBHI
EASTPORT
NSCW
BAR HARBOR
ROCKLAND
YARMOUTH
MEDM
PORTLAND
PORTSMOUTH
NHHS
MAPR
BOSTON
MASN

0   120   240   360 km

File   Edit   View   Favorites   Tools   Help

Address http://dev.gomoos.org/chameleon/gulfwatch/index.phtml

Gulf of Maine Council on the Marine Environment

Promoting cooperation to maintain and enhance environmental quality

Gulfwatch Contaminants Monitoring Program > Mapping Tool
Contaminants from mussel tissue in the Gulf of Maine

DATA   GRAPHS   ABOUT

Median Concentrations
ppDDE - 1999

MAME

MAMH

BOSTON

MALI

MACO

MAPY

Select Data:

Year: Contaminant:
1999   ppDDE

Update Map   Map Layers

Zoom to region:
Select zoom region

ppDDE
Nano-grams / gram dry weight (ng/g dry wt.)

+   <= 1.2

●   > 1.5 and <= 5

●   > 5 and <= 10

○   > 10 and <= 15

●   > 15 and <= 20

●   > 20

Warning: Bubble size represents different
concentration ranges for different contaminants.

Click on a site for more information.

0   19   38   57 km

Start   Post-it® Sof...   Inbox - Micr...   Gulfwatch ...   Microsoft Po...   Address   Go   7:16 PM

Layer Manager - Microsoft Internet Explorer
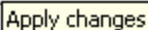
File Edit View Favorites Tools Help

Back | Search Favorites Media | » | Go Links

Layer Manager

1) The column of radio buttons selects an "active" layer. Use the promote and demote buttons to move an active layer up or down in the draw order. Use the delete button to remove an active layer from the map composition.
2) The column of checkboxes toggles the layer visibility in the map composition.
3) Click the apply button to apply changes to the map composition.

Active Layer

△ ▽ ✕ | ⟳ Apply

Apply changes

Mass_GIS_WMS

- ☐ MA Major Ponds (Mass. GIS WMS)
- ☑ MA Major Watersheds (Mass. GIS WMS)
- ☐ MA Shellfish sampling stations (Mass. GIS WMS)
- ☐ MA Shellfish growing areas (Mass. GIS WMS)

Canada_Atlas_WMS

- ☐ Pop. Place Labels (CA Atlas WMS)
- ☐ Pop. Places (CA Atlas WMS)
- ☐ Water 1:2M (CA Atlas WMS)
- ☐ Drainage 1:2M (CA Atlas WMS)
- ☐ Drainage 7.5m (CA Atlas WMS)

USGS_WMS

- ☐ Gulf of Maine 10m bathymetry (USGS WMS)

NOAA_WMS

- ☐ Pop. Places (US NOAA WMS)

Promoting cooperation to maint
enhance environmental

PHS   ABOUT

ontaminant:
pDDE

✚ Map Layers

n:

am dry weight (ng/g dry wt.)

5
0
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20

e size represents different
nges for different contaminants.

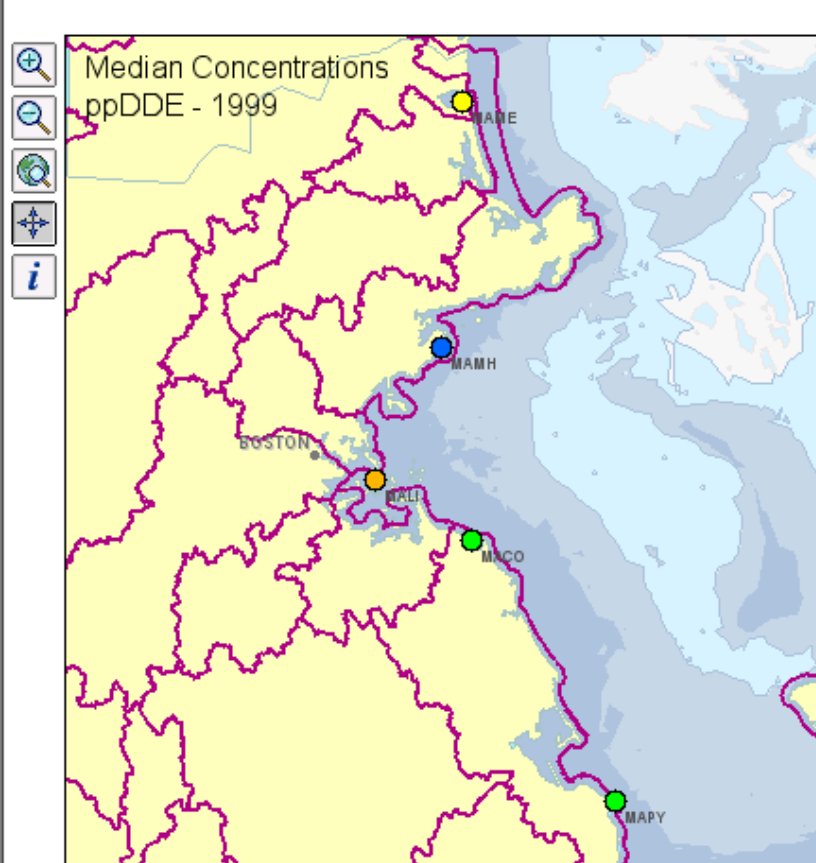n a site for more information.

Done   Internet

Gulf of Maine Council on the Marine Environment

Promoting cooperation to maintain and enhance environmental quality

Gulfwatch Contaminants Monitoring Program > Mapping Tool
Contaminants from mussel tissue in the Gulf of Maine

DATA   GRAPHS   ABOUT

Median Concentrations
ppDDE - 1999

Select Data:

Year: Contaminant:
1999   ▾   ppDDE   ▾

🔄 Update Map   ➕ Map Layers

Zoom to region:

Select zoom region   ▾

ppDDE
Nano-grams / gram dry weight (ng/g dry wt.)

+   <= 1.2

●   > 1.5 and <= 5

●   > 5 and <= 10

●   > 10 and <= 15

●   > 15 and <= 20

●   > 20

Warning: Bubble size represents different concentration ranges for different contaminants.

Click on a site for more information.

MAINE

MAMH

BOSTON

MALI

MACO

MAPY

0   19   38   57 km

http://www.openioos.org/

🔍 Search

🏠 Home   📂Bookmarks   📂Grid   📂Apple   📂NPR   ✎ Dictionary

Welcome to www.openioos.org

About OpenIOOS.org   *...where standards enable innovation*

This fairly new site is an information center for a community effort to demonstrate interoperability using Open GIS Consortium (OGC) standards. Here you will find information, news and links for our interoparability demo. We update the site frequently, so check back often. For detailed project information visit the project wiki.

About IOOS

This demo supports a national effort to create an Integrated Ocean Observing System (IOOS). The OceanUS office plans and coordinates the IOOS in cooperation with the NOPP Federal agencies and the National Federation of Regional Associations. The OceanUS Data Management and Communications (DMAC) plan provides the framework for interoperability.

Latest News

Click here for the new Hurricane version of the IOOS Interoperability demo. The demo is still in development but represents the efforts of many organizations to provide and integrate data relevant to Atlantic hurricanes.

Click here for the latest version of the Interoperability demo. It is still under development and reasonably stable. Detailed information about this version of the demo can be found on the here on the project wiki.

Links

Latest update of the Interoperability Demo showing SST and wind observations from multiple partners. This application uses WFS to retrieve data, using a PostGIS database as the local cache. The result is an application that is fully OGC compliant, with the performance of a local data source.

The original Interoperability Demo shows SST and wind observations from multiple partners using WMS.

Done

File   Edit   View   Go   Bookmarks   Tools   Window   Help

http://www.openioos.org/hurricane/index.phtml

🔍 Search

🏠 Home   📁 Bookmarks   📄 mozilla.org   📄 mozillaZine   📄 mozdev.org   📄 NPR

I O O S   O G C   C o m p l i a n t
P r o t o t y p e   H u r r i c a n e   O b s e r v a t i o n s

Zoom to: North America

🔍+ 🔍− 🔍⊕ ✛ ✋ ⓘ

Filter by Time and Date

Date: September   26   2004

Time: 3:00:00   Time Zone: -04

Legend

🔄 Apply

☐ Hurricane Storm Tracks
  ☑ 🔴6 Hurricane Jeanne Latest Position
  ☑ 🔴 Hurricane Jeanne Storm Track
  ☐ 🟢 Hurricane Ivan Storm Track
  ☐ 🟢 Hurricane Frances Storm Track
☑ In-Situ Wind Observations
  ☑ ╱ Wind Observations
☐ Satellite Imagery
  ☑ 🟩 MODIS Low Resolution RGB
  ☐ 🟩 MODIS High Resolution RGB
  ☐ ╱ QuikSCAT Winds
  ☐ 🟩 Optimally Interpolated SST
  ☐ 🟩 MODIS SST
  ☐ 🟩 AVHRR SST
  ☐ 🟩 CoastWatch AVHRR SST
  ☐ 🟩 MODIS Chl-A
☐ Radar
  ☐ 🟩 Texas Mesonet Radar
☐ Model Output
  ☐ ╱ ETA 10 Meter Winds Model Output
  ☐ 🗺 ETA Sea Level Pressure Model Output
☐ Storm Surge
  ☐ 🔵 Storm Surge (NOAA)
☐ In-Situ SST
  ☐ 🟠 Sea Surface Temperature

Map labels: Washington VA, NC, GA, BM, Havana, Kingston, Belmopan, Guatemala, San Salvador, Managua, San Jose, Panama, Caracas, CO

09/21 05 AM EDT, 09/21 11 PM EDT, 09/25 11 AM EDT, 09/22 11 AM EDT, 09/19 11 PM EDT, 09/22 11 PM EDT, 09/23 05 AM EDT, 09/19 11 AM EDT, 09/19 05 PM EDT, 09/19 05 AM EDT, 09/18 05 PM EDT, 09/18 11 AM EDT, 09/18 11 PM EDT, 09/18 05 AM EDT, 09/17 05 PM EDT, 09/17 11 AM EDT, 09/16 05 PM EDT, 09/15 05 PM EDT, 09/15 11 AM EDT, 09/15 05 AM EDT, 09/14 05 PM EDT, 09/13 11 PM EDT

0   290   580   870   1160   1450 mi

This is an experimental product and should not be relied on for official hurricane information.
For official National Weather Service products go to The National Hurricane Center website.

http://www.openioos.org

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Home   Bookmarks   mozilla.org   mozillaZine   mozdev.org   NPR
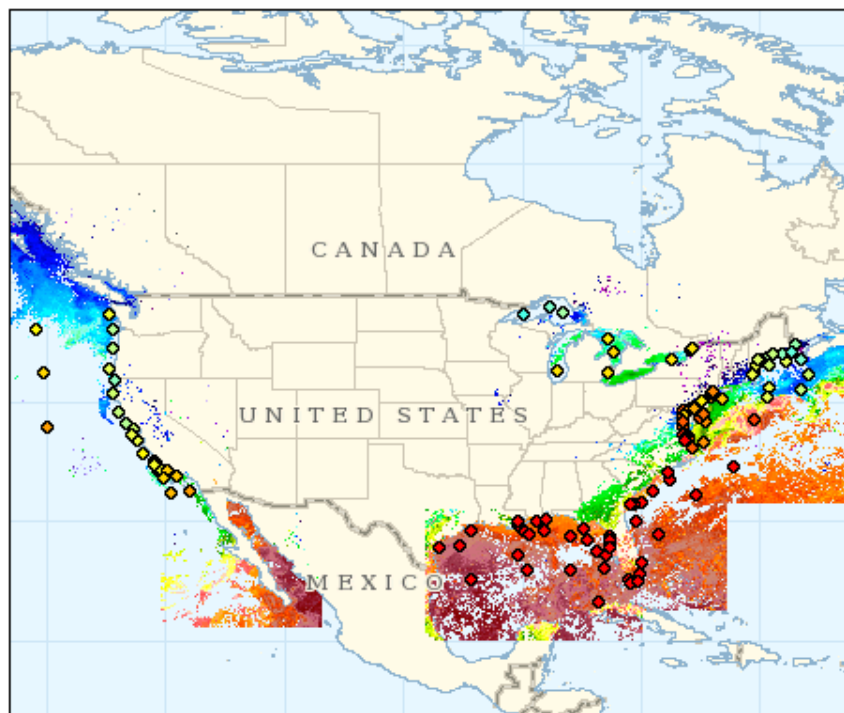
IOOS OGC Compliant WMS and WFS
Prototype Wind and SST Observations

Zoom to: North America

Filter by Time and Date

Date: October   1   2004

Time: 8:00:00   Time Zone: -04

Legend

Show layers by: Apply

☑ In-Situ SST
   ☑ ● Sea Surface Temperature
☐ In-Situ Wind Observations
   ☐ Wind Observations
☐ In-Situ DST
   ☐ ● Deep Sea Temperature
☐ Satellite Imagery
   ☑ CoastWatch AVHRR SST
   ☐ Latest COOA - MODIS SST
☐ Base Layers
   ☑ Base Layers
   ☐ Bathymetry Contours
   ☐ SST Color Ramp

• Key to reading map symbols

0   560   1120   1680   2240   2800 mi
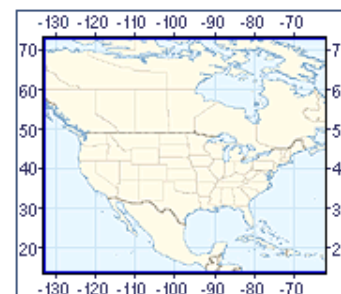
IT can do a lot, but there are limITs…

- IT is only a tool

- Information ≠ Knowledge

- Need organizational support to develop, implement, and maintain

- Requires commitment across institutions for the sharing of data

One step towards a Solution: Gulf of Maine Ocean Data Partnership

- International effort to promote and coordinate the sharing, linking, electronic dissemination and use of data from the Gulf of Maine region.

- Provide access through a public internet portal to multiple databases from agencies in the US and Canada collecting information about the Gulf of Maine

- Enable more complete and easier to understand data integration for both science, management and policy making

Conclusions

- IT can enhance information sharing and lead to better decision making

- Institutions can implement existing interoperability standards for spatial data to allow for dynamic access to information needed for decision making

- Community involvement is needed in developing new standards e.g. Marine Metadata Initiative (MMI)

- Institutional barriers can be overcome by commitment to long term partnership and working together to develop joint IT solutions

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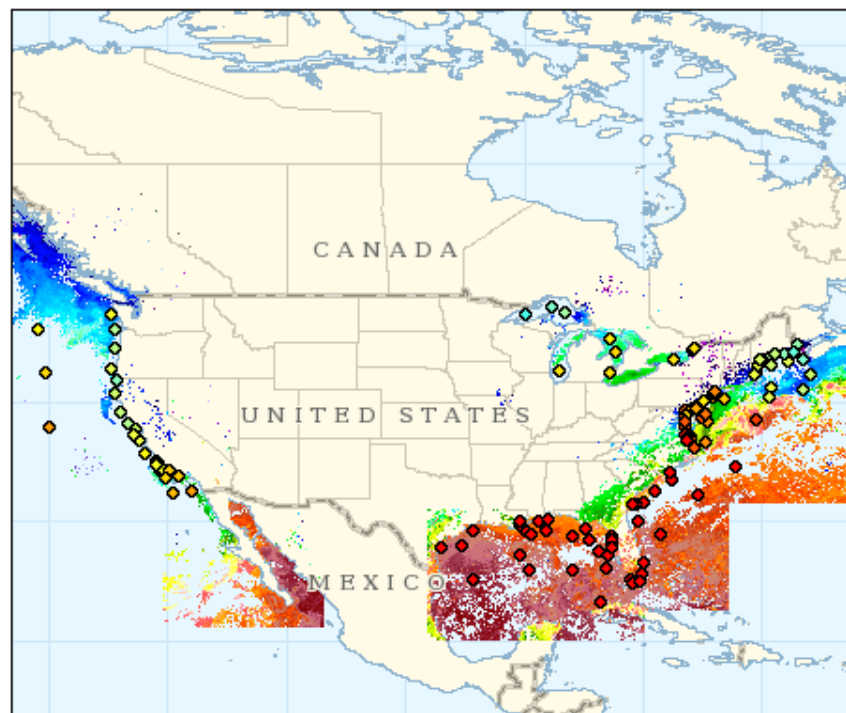🏠 Home   📂 Bookmarks   ✎ mozilla.org   ✎ mozillaZine   ✎ mozdev.org   ✎ NPR

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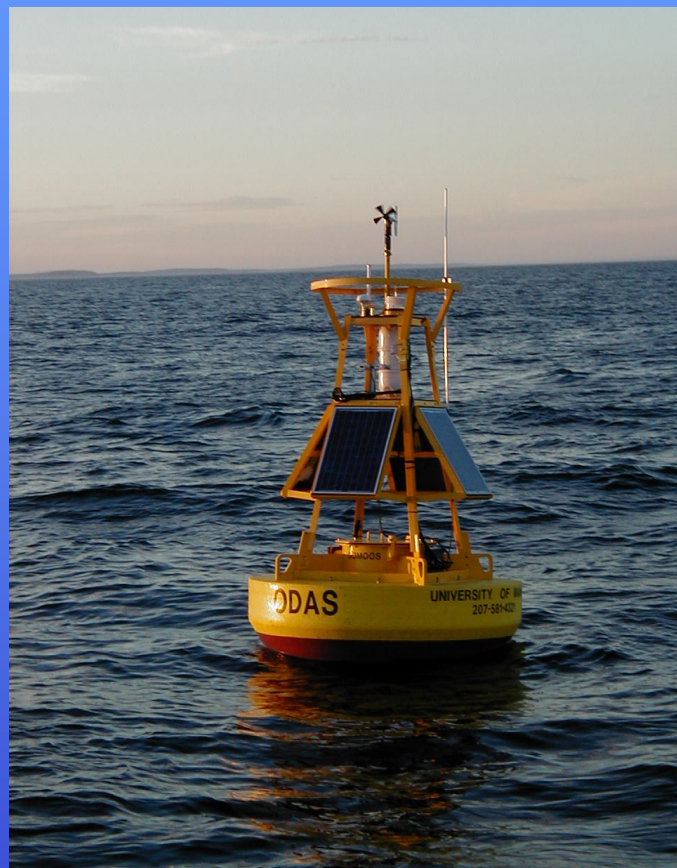 ☐ ▨ SST Color Ramp

▪ Key to reading map symbols

CANADA

UNITED STATES

MEXICO

0   560   1120   1680   2240   2800 mi
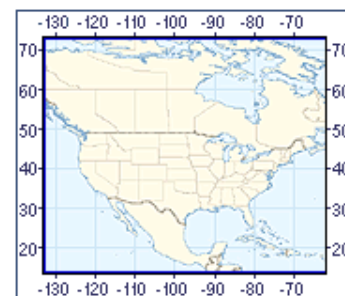
Thank you

Thank you

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