Applying Observing Data for Coastal Decision Making: Impacting Resources

IOOS, NERRS and Partners: Supporting Coastal Resource Management within the Mid-Atlantic Region

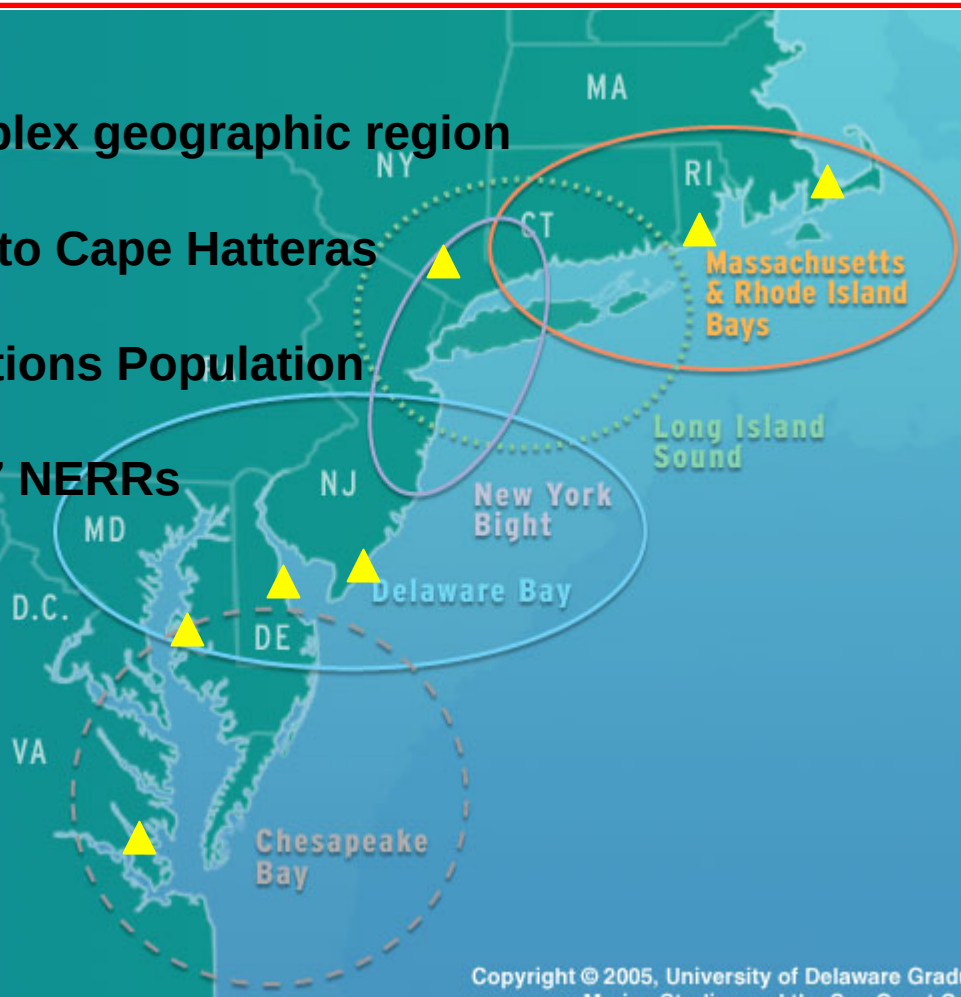
William Reay
Virginia Institute of Marine Science, College of William and Mary
Chesapeake Bay NERR

Michael DeLuca
Rutgers University
Jacques Cousteau NERR

MACOORA

Mid-Atlantic Coastal Ocean Observing Regional Association

- Most complex geographic region
- Cape Cod to Cape Hatteras
- 23% of Nations Population
- Contains 7 NERRs



Copyright © 2005, University of Delaware Graduate College of Marine Studies and the Sea Grant College Program

CSC NERRS IOOS Enhancement Proposal

Mid-Atlantic, Northwest and Northeast

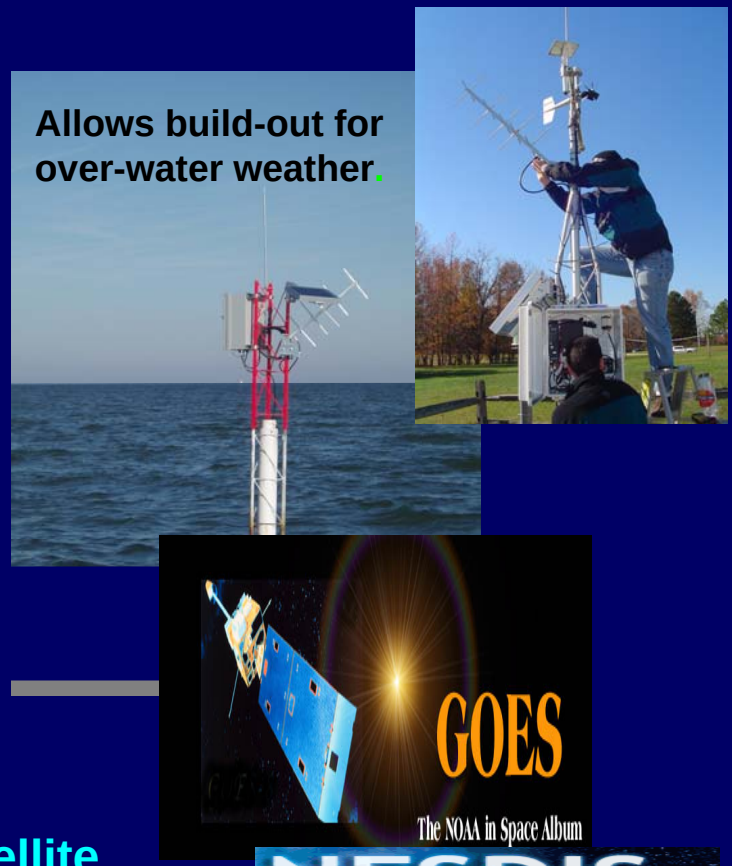
Goals:

- To establish NERRS as a timely provider of environmental information
- Information supports integrated research, education and stewardship applications.
- Key component of the Integrated Ocean Observing System.

Outcomes:

- Near-term: Build capacity; Demonstrate products.
- Mid-term: Decision-makers have the skill sets and capacity to inform resource management with real- and near real-time data streams from the NERRS.
- Long-term: Coastal and ocean decision-makers are applying scientific data and information generated by NERRS.

CSC NERRS IOOS Enhancement Proposal



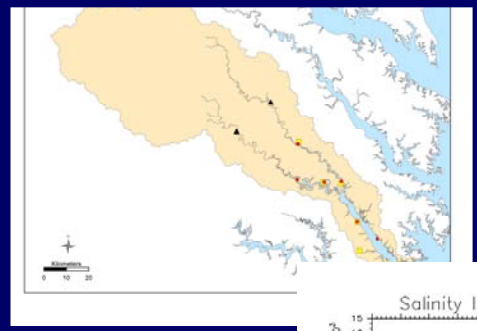
Part I. Telemetry

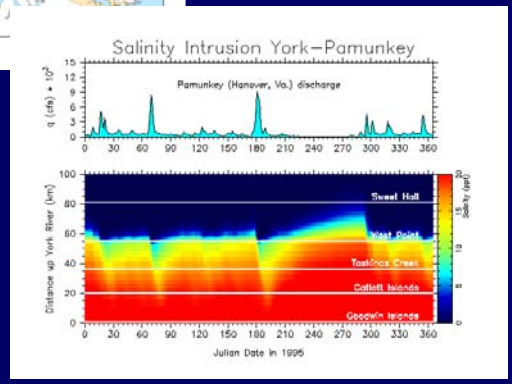
- Sutron: Water Quality
- Campbell: Weather

Part II. Data Management

- NOAA National Environmental Satellite Data and Information Service
- NERRS Central Data Management Office
- NWS / HADS; Format and Content Compliant Metadata

CSC NERRS IOOS Enhancement Proposal





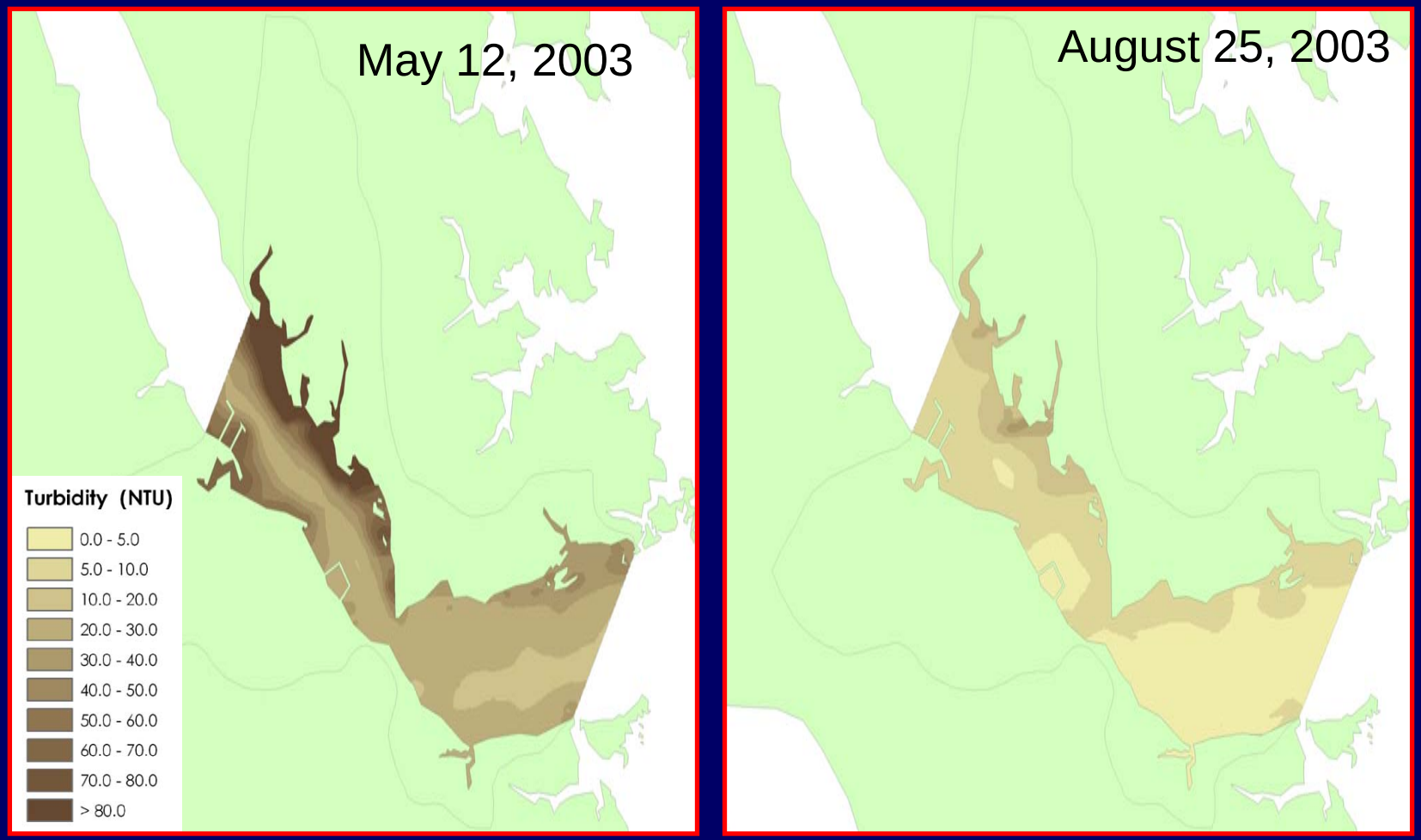
Part III. Pilot Projects

- Ecosystem Health
- Natural and Anthropogenic Forcings

Part IV. Product Evaluation

- Coastal Training Program Focus Groups

WILLIAM & MARY
VIMS
VIRGINIA INSTITUTE OF MARINE SCIENCE
SCHOOL OF MARINE SCIENCE
MARYLAND
DEPARTMENT OF
NATURAL RESOURCES
Chesapeake Bay
Shallow Water Monitoring Program:
Data Applications to SAV Water Quality Criteria
and Restoration

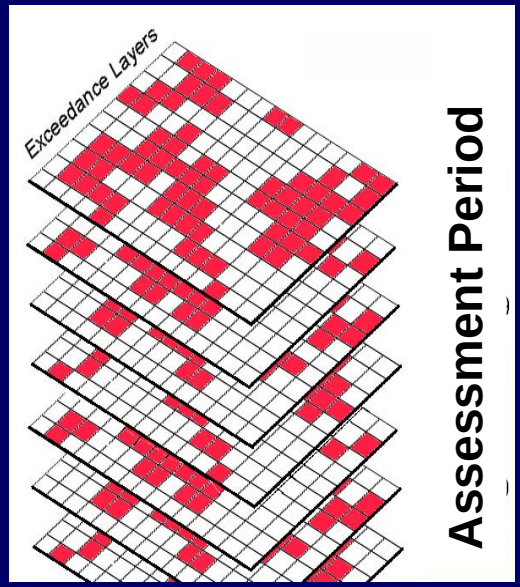

May 12, 2003
August 25, 2003
Turbidity (NTU)
0.0 - 5.0
5.0 - 10.0
10.0 - 20.0
20.0 - 30.0
30.0 - 40.0
40.0 - 50.0
50.0 - 60.0
60.0 - 70.0
70.0 - 80.0
> 80.0

DATAFLOW

Habitat Criteria Assessment Method:

Cumulative Frequency Diagram

1.

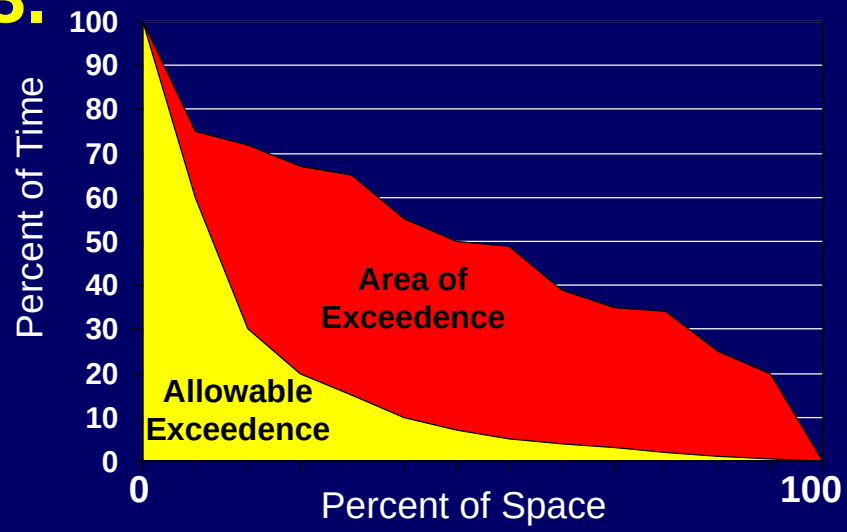


2.

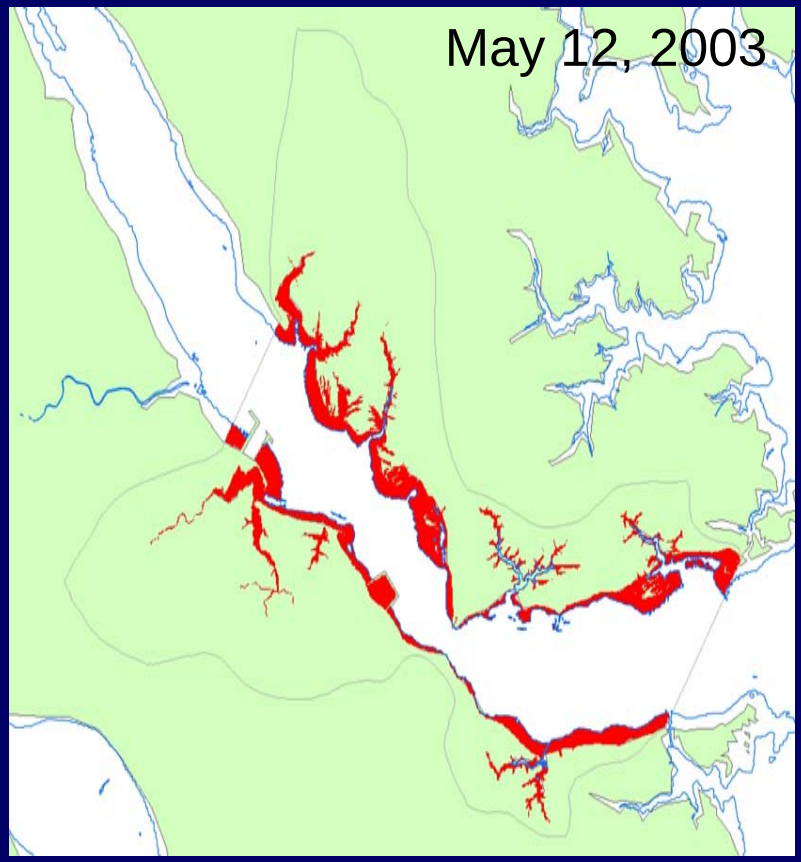
X **Y**

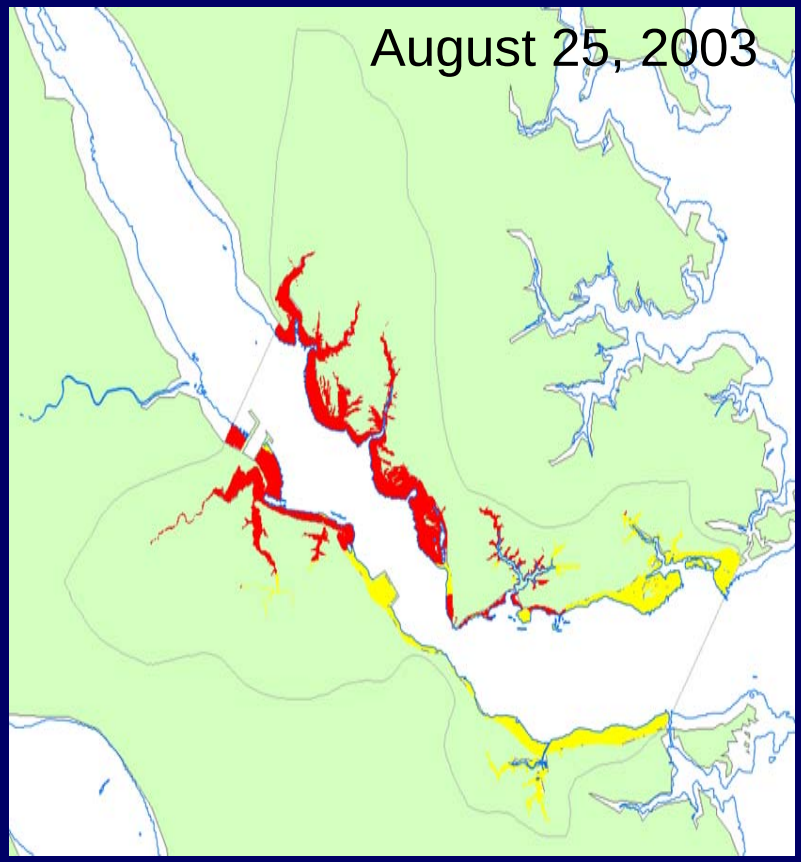
Cruise Date	% Area Exceeding	Rank	Cumulative Probability
	100		0
Jun 02	75	1	4
Mar 02	72	2	13
May 03	67	3	21
May 02	65	4	29
Apr 02	55	5	38
Jun 04	50	6	46
Mar 03	49	7	54
Apr 04	39	8	63
May 04	35	9	71
Apr 03	34	10	79
Jun 03	25	11	88
Mar 04	20	12	96
	0		100

3.



Chesapeake Bay
Shallow Water Monitoring Program:
Data Applications to SAV Water Quality Criteria and Restoration





1 m MLW Contour

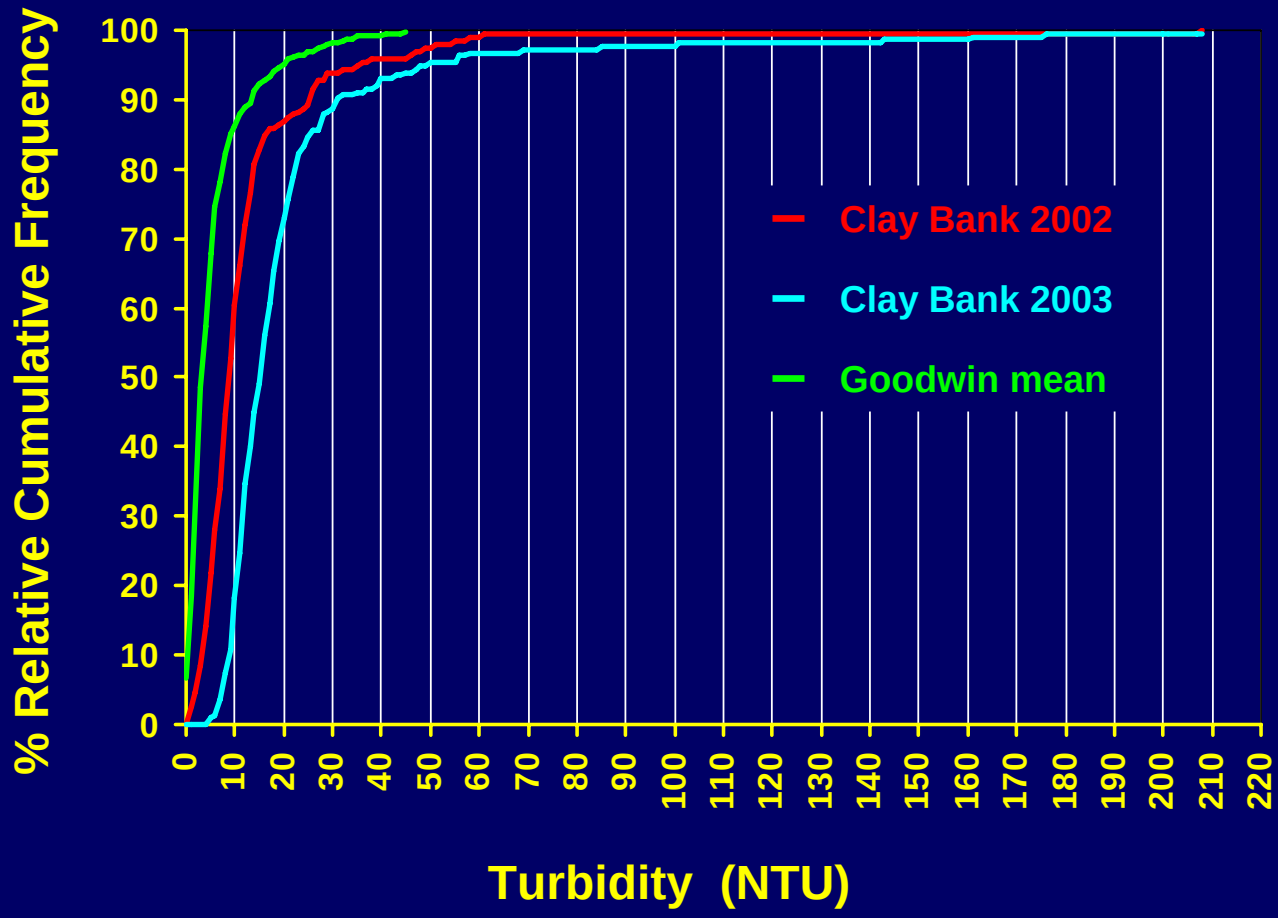
Water Clarity Non-attainment

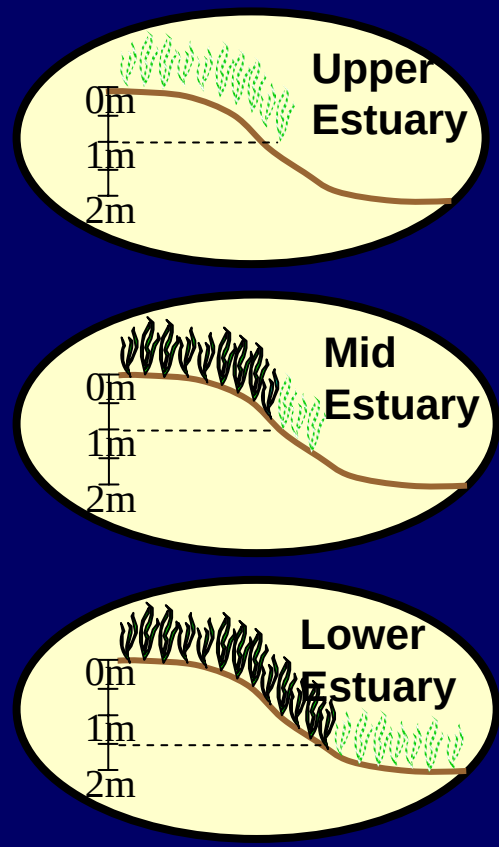
Water Clarity Attainment

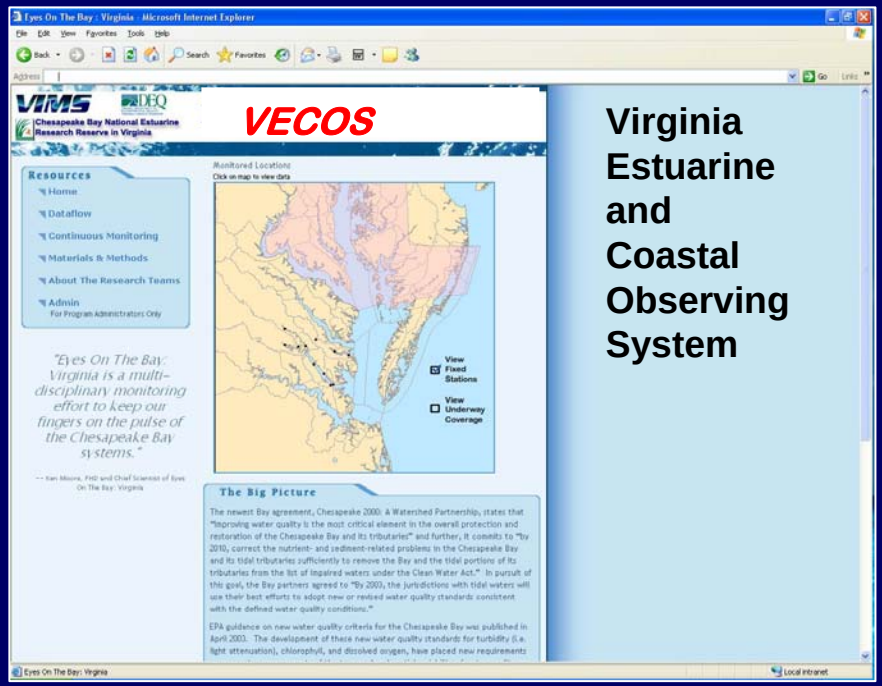
Continuous Fixed Stations

Habitat Criteria Assessment Method:

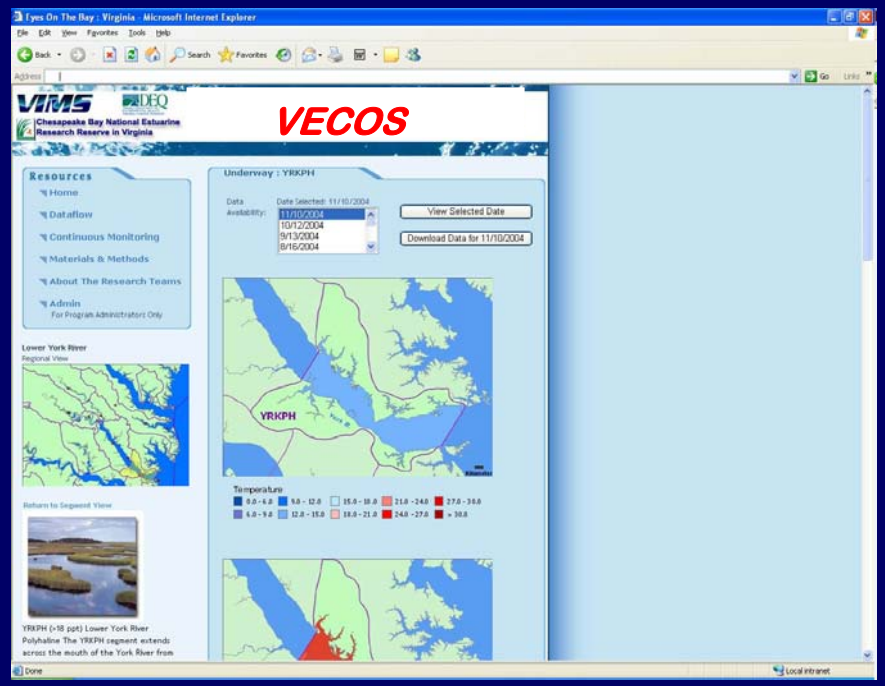
Cumulative Frequency Diagram

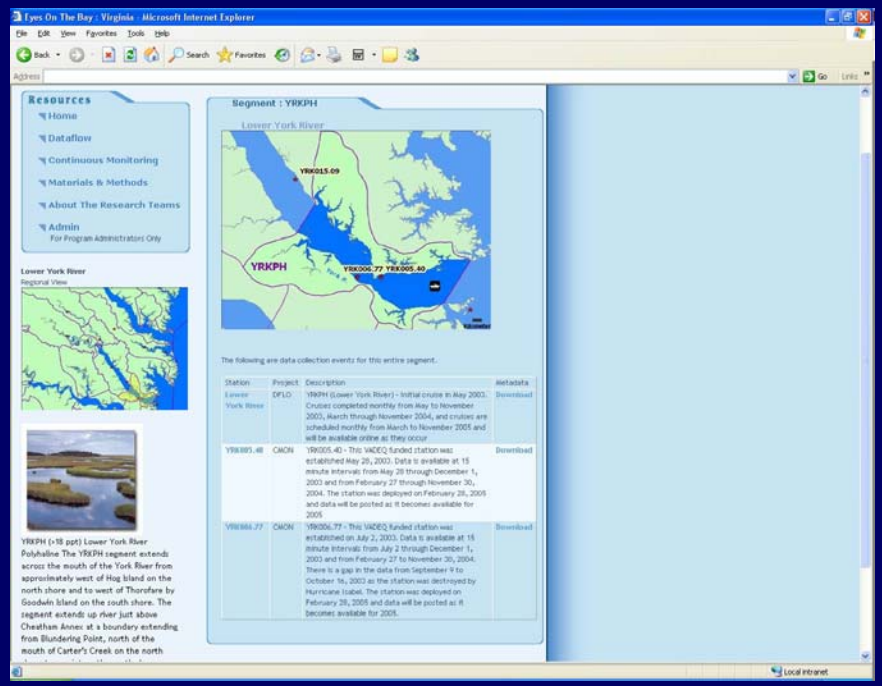


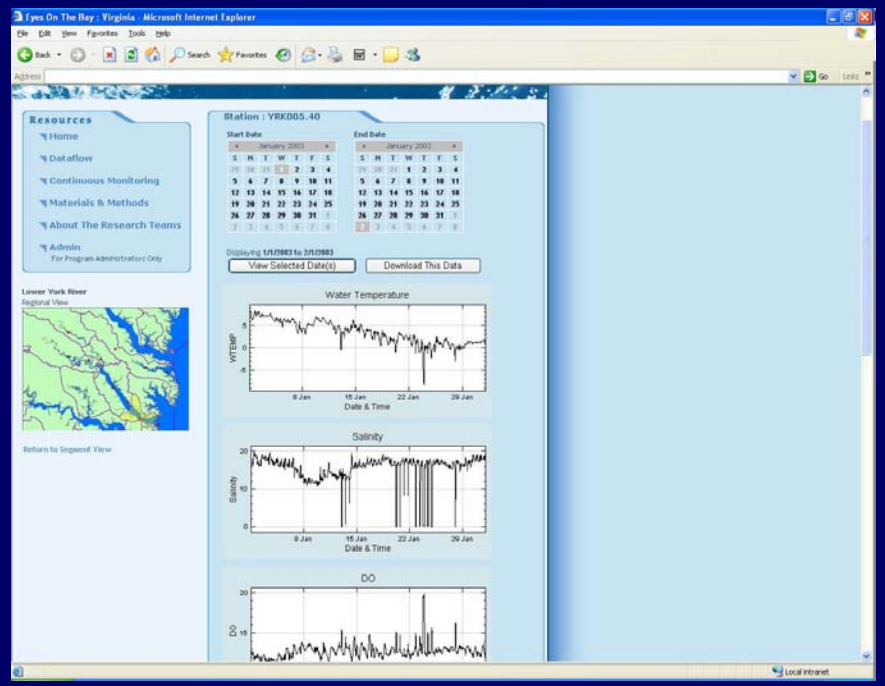




Virginia Estuarine and Coastal Observing System





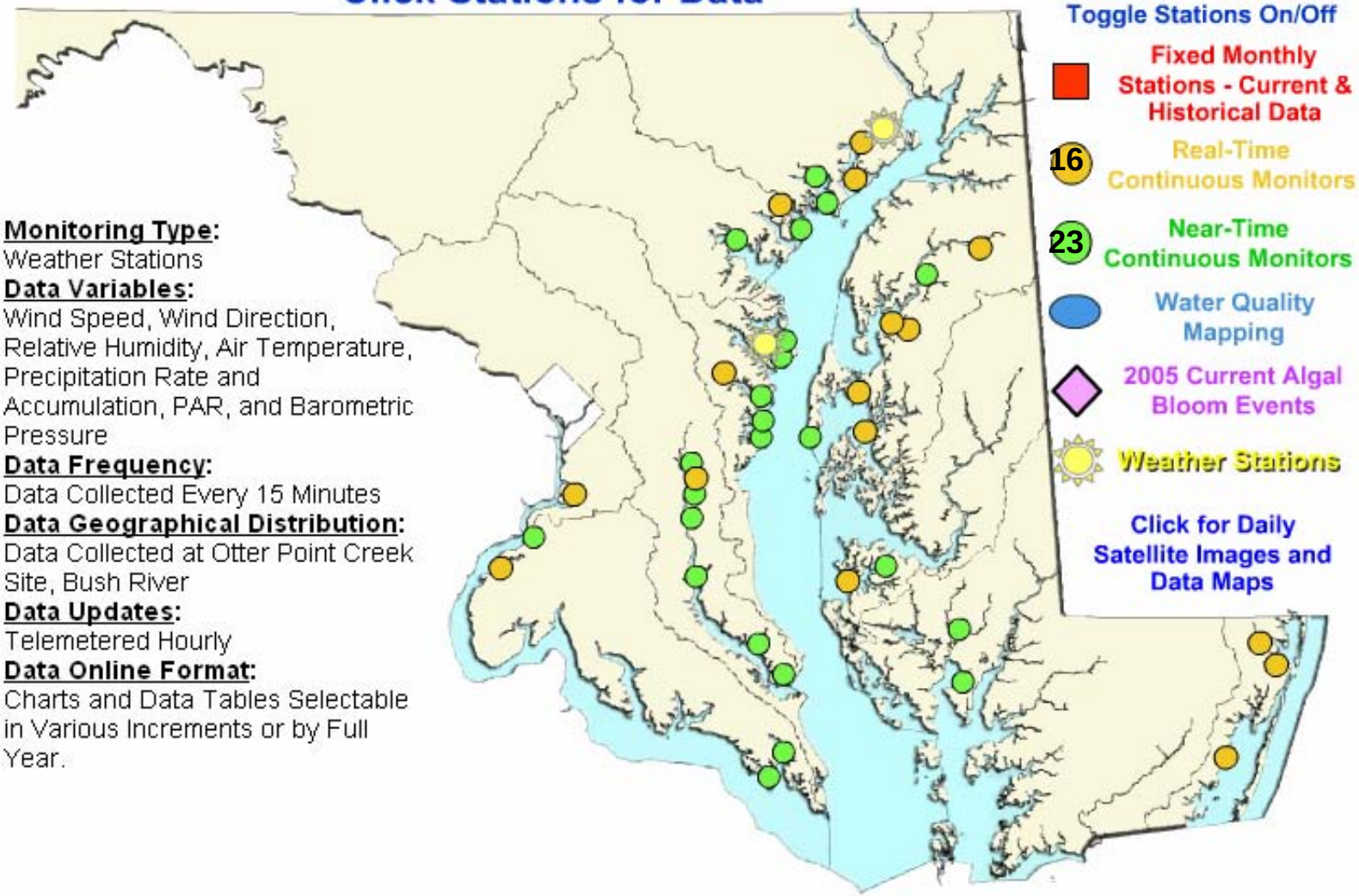


Eyes on the Bay

www.eyesonthebay.net

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Click Stations for Data



Monitoring Type:
Weather Stations

Data Variables:
Wind Speed, Wind Direction, Relative Humidity, Air Temperature, Precipitation Rate and Accumulation, PAR, and Barometric Pressure

Data Frequency:
Data Collected Every 15 Minutes

Data Geographical Distribution:
Data Collected at Otter Point Creek Site, Bush River

Data Updates:
Telemetered Hourly

Data Online Format:
Charts and Data Tables Selectable in Various Increments or by Full Year.

StriperTracker

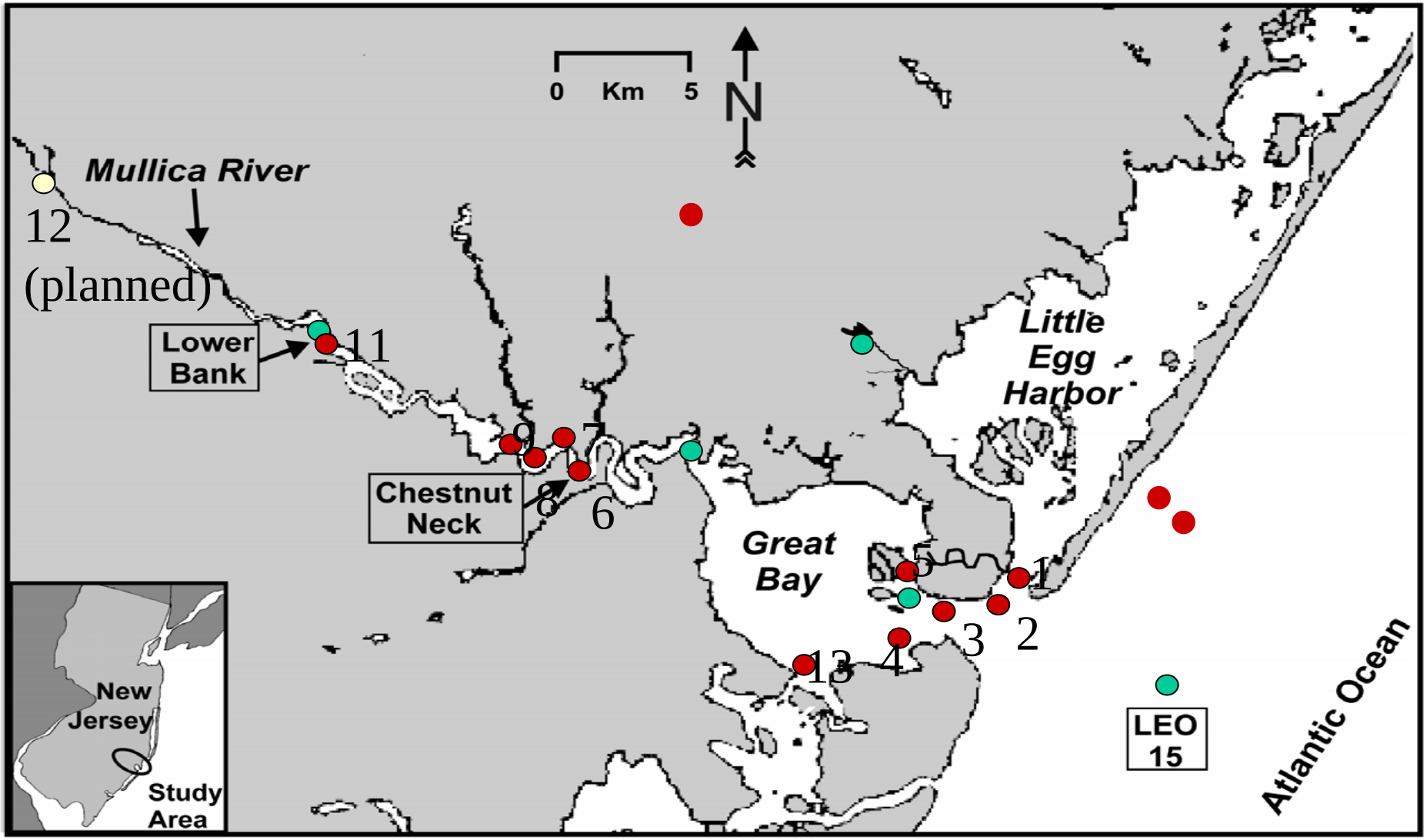
an estuarine observatory to monitor transmitter-tagged fish

Impetus

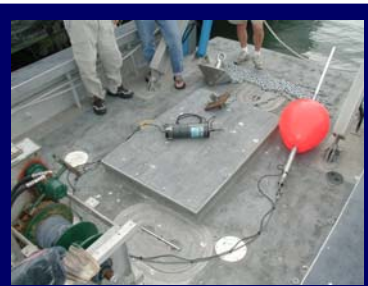
- Contribute to a calculation of fish population size through an understanding of stock structure, habitat use, migratory pathways
- Examine structure of estuarine habitat from the fish-eye view
- SWMP data application
- Census Of Marine Life

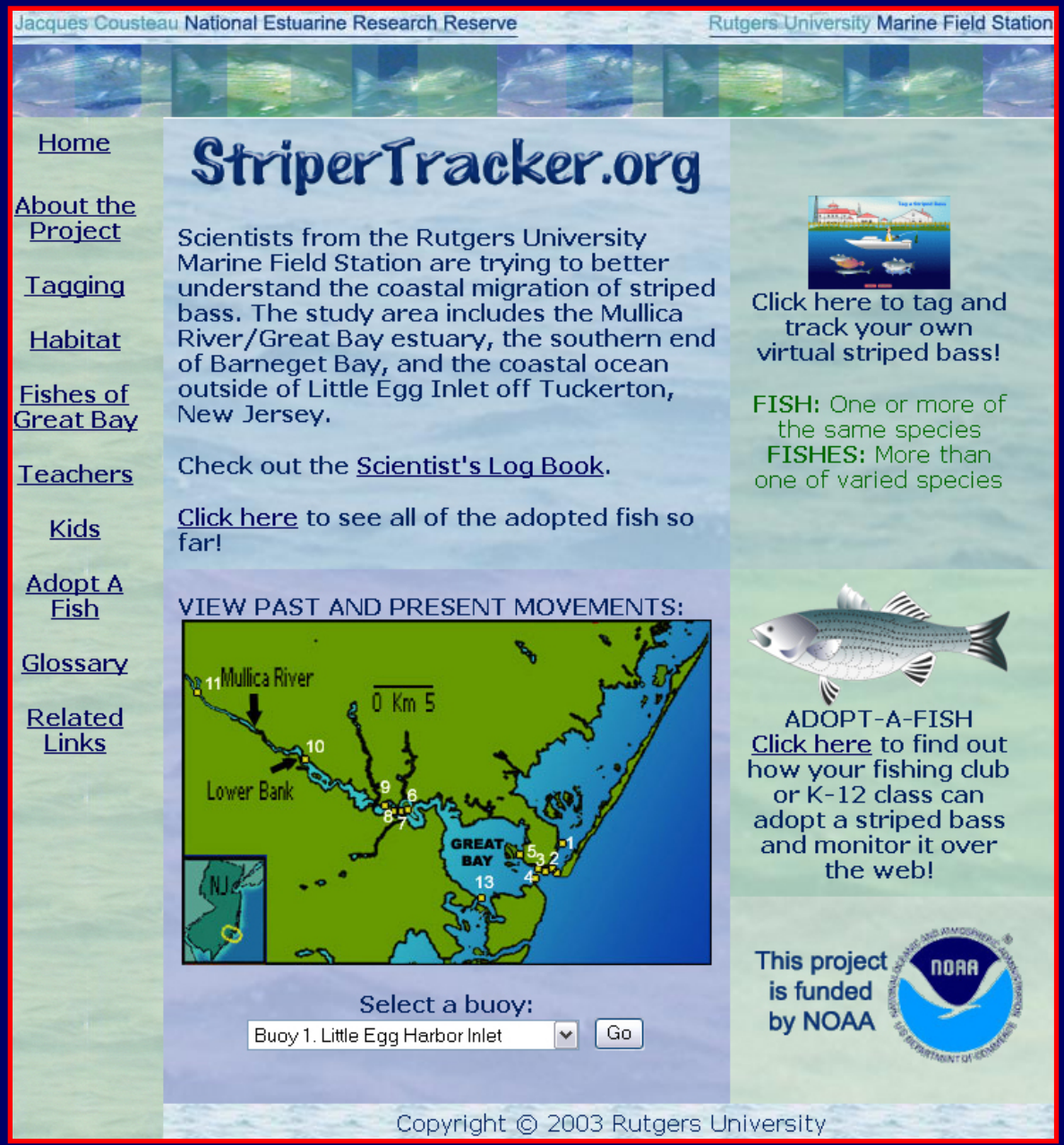
NOAA's Undersea Research Program

Jacques Cousteau National Estuarine Research Reserve



- – existing hydrophones
- – planned hydrophone
- – Physical/chemical data logger





StriperTracker Website

- Provides movement data to public
- Includes lesson plans for teachers
- Scientist's Log updates
- Information on biology and links to more
- Adopt-a-fish program for community participation

StriperTracker

Next Steps:

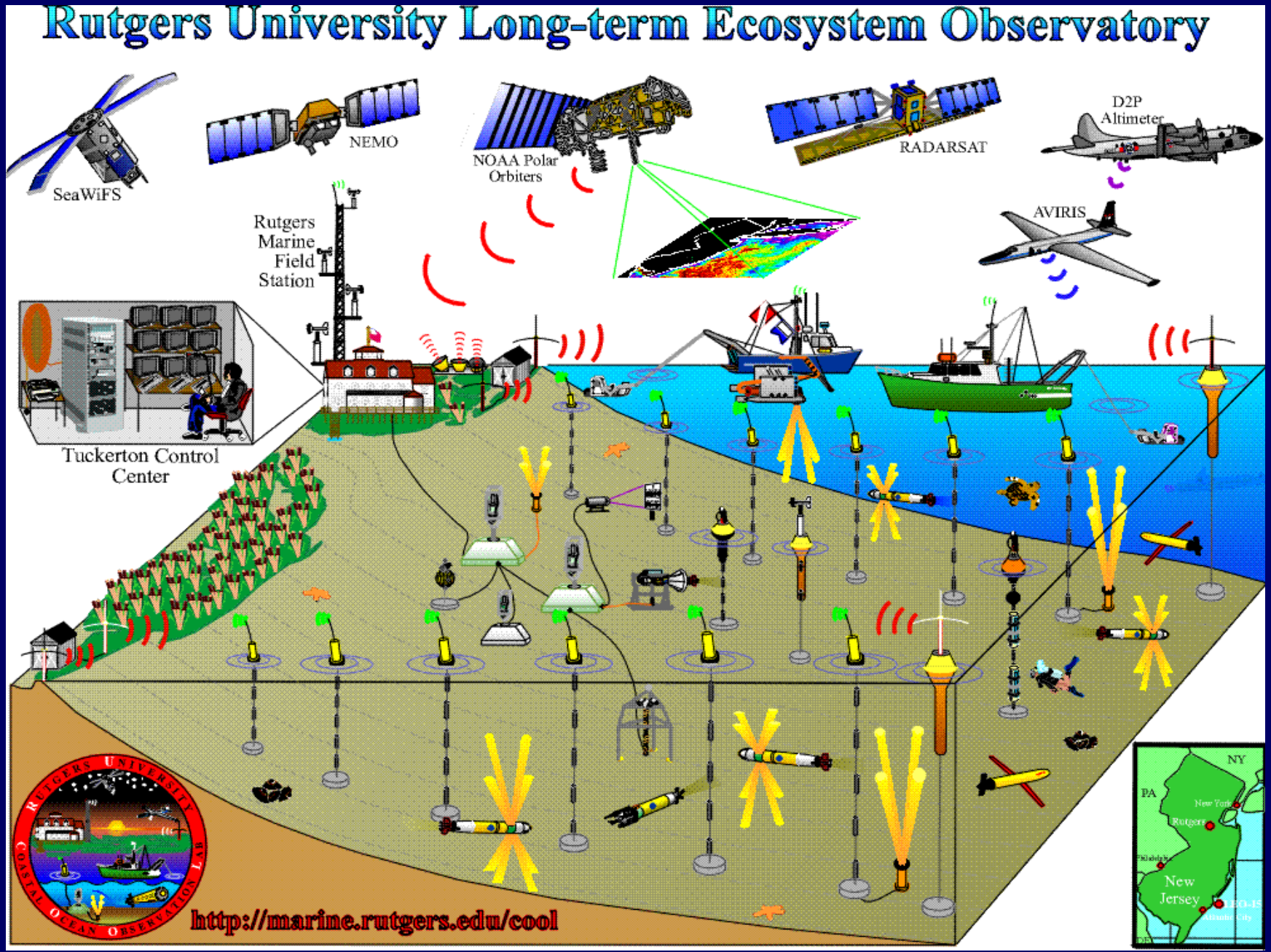
- Pilot at other NERRS
- Engage Fishery Scientist Coastwide

Striped Bass migration routes from the principal spawning grounds of the Chesapeake Bay, Delaware River, and Hudson River

Jacques Cousteau National Estuarine Research Reserve

NOAA's Undersea Research Program

Rutgers University Long-term Ecosystem Observatory



SAIC. From Science to Solutions™

William & Mary VIMS
Virginia Institute of Marine Science
School of Marine Science

Chesapeake Bay
National Estuarine
Research Reserve

CBOS
Chesapeake Bay Observing System

Wind and Waves Stations

COOPERATIVE EXPANSION AND INTEGRATION DEMONSTRATION (CCIED): Wind, Waves, Dissolved Oxygen

Principal Providers (North to South):

- ***NOAA Chesapeake Bay Office***
- ***University of Maryland Center for Environmental Science***
- ***Virginia Institute of Marine Science College of William and Mary***
- ***Old Dominion University***

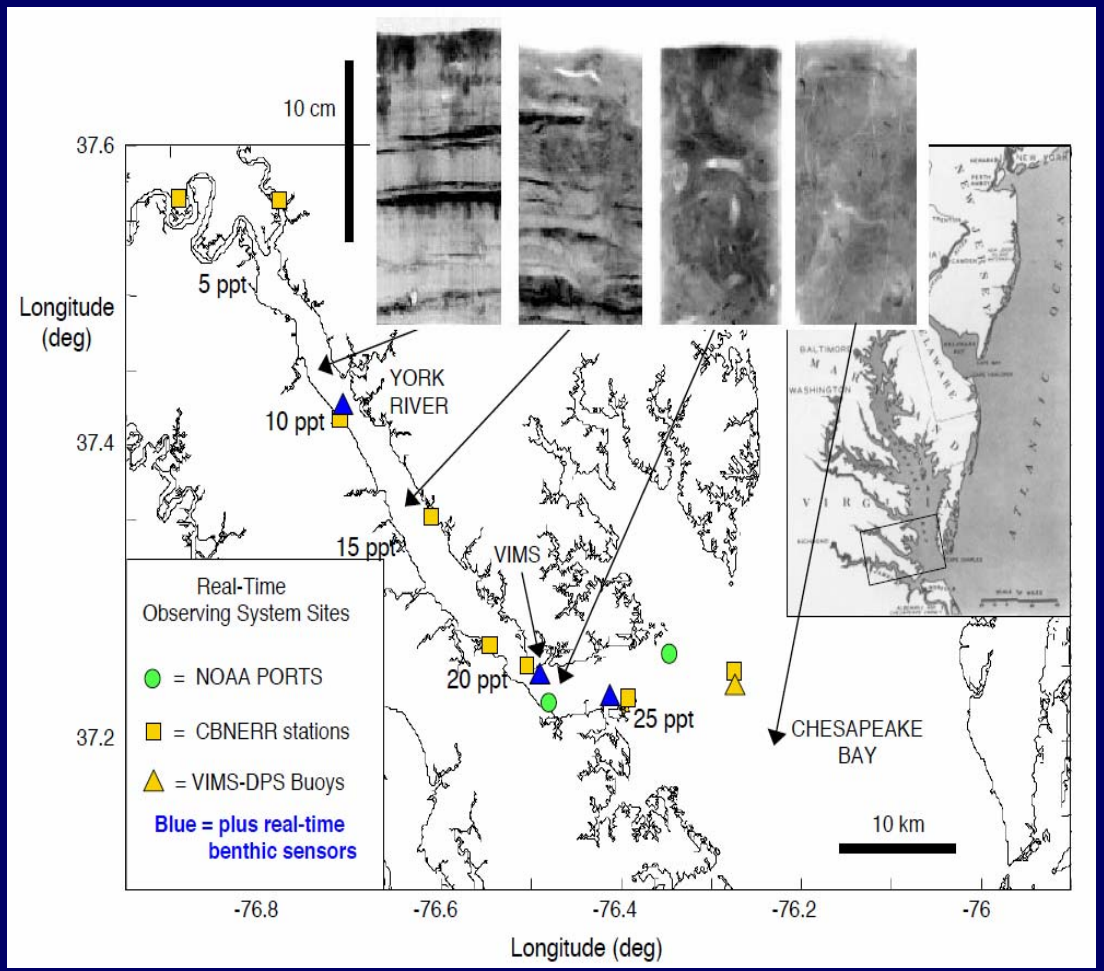
Principal User: National Weather Service

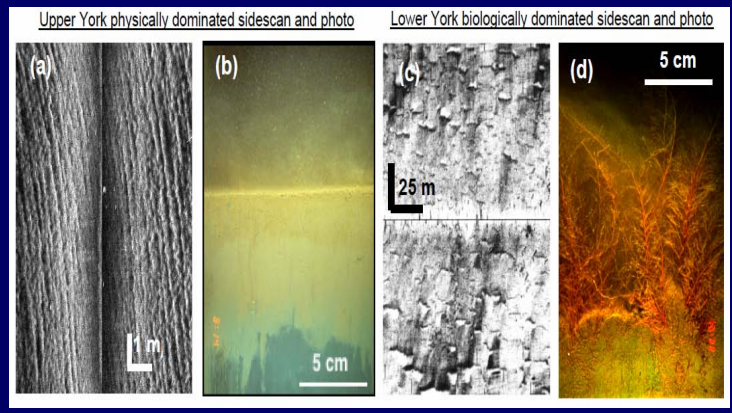
Principal Product

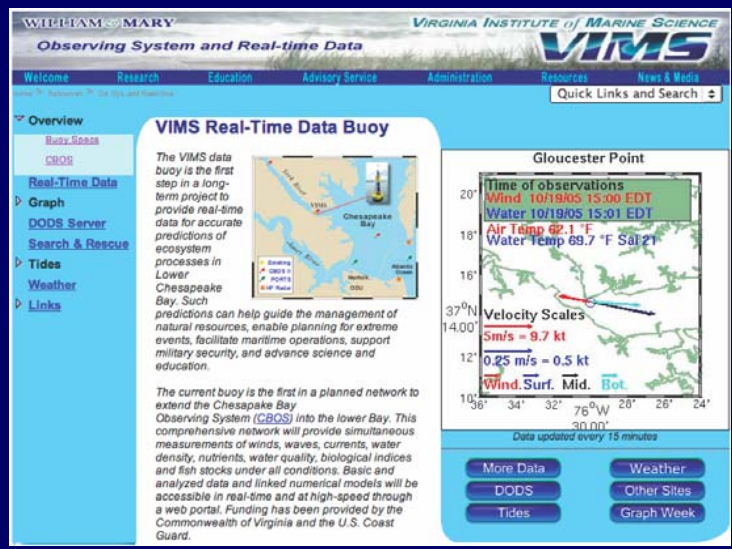
Improved wind and wave forecasts, but data also will improve hydrodynamic modeling, and ecological forecasts of hypoxia, sea nettles, harmful algal blooms,…, which are important for coastal managers.

MUDBED: MULTI-DISCIPLINARY BENTHIC EXCHANGE DYNAMICS

PIs: Diaz, Friedrichs, Kuehl, Harris, McNinch, Sanford, Schaffner

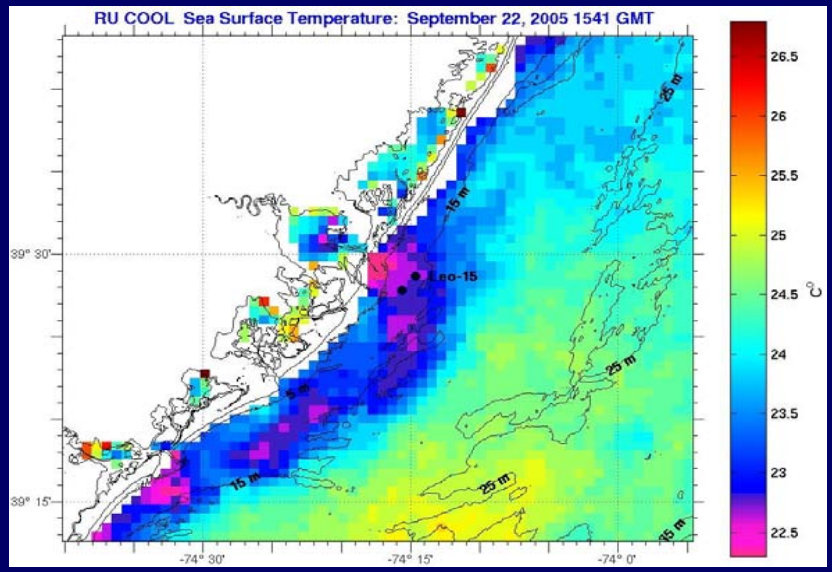


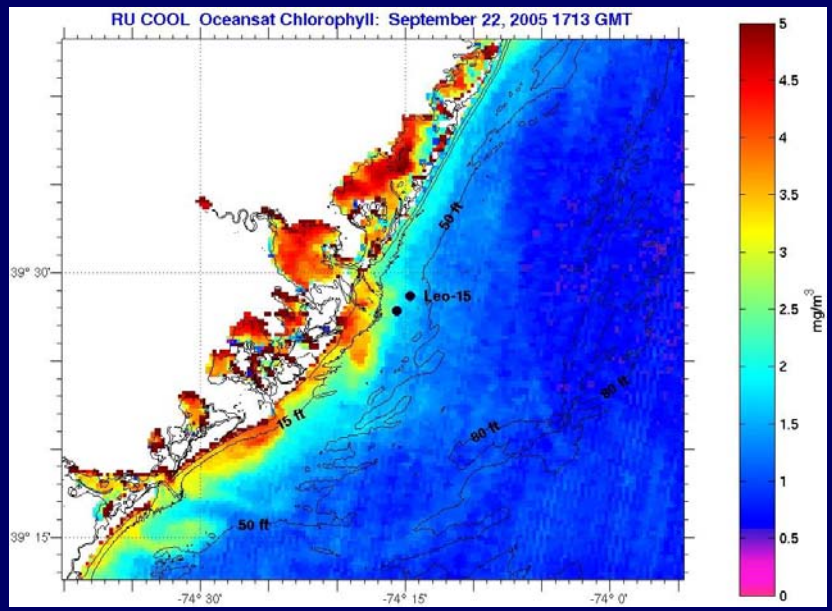


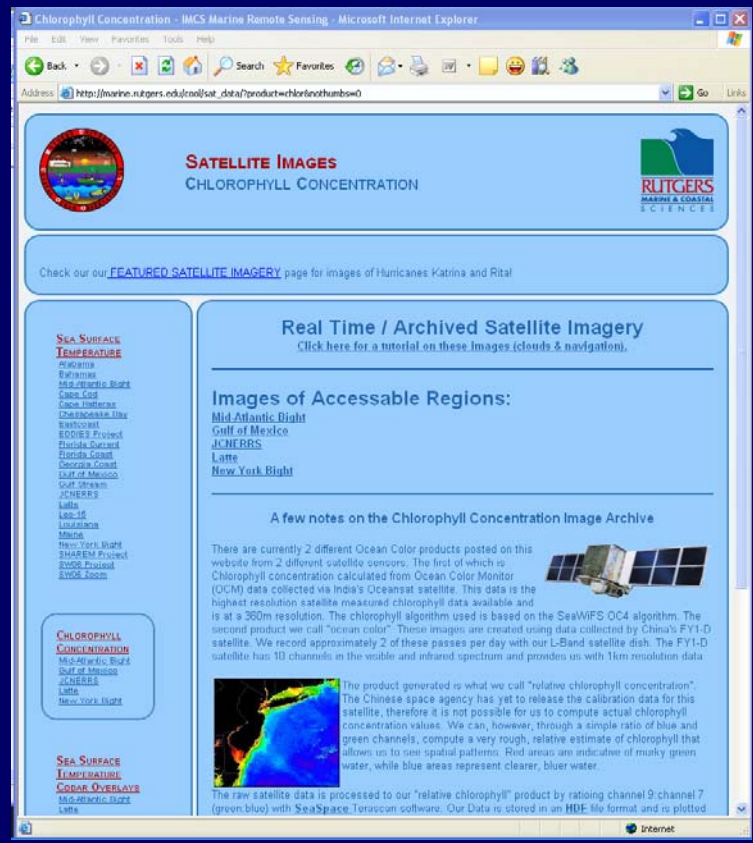


http://www.vims.edu/realtime

Verification of "Relative Chlorophyll" values based on satellite imagery





- Oceansat and FYI-D (PRC) Satellites
- 360 m resolution
- SeaWifs OC4 algorithm/Blue-green ratio

Real-time Satellite Data Webpage
www.marine.rutgers.edu/cool/sat_data