

NOAA IOOS Program Office Regional Status Assessment for Great Lakes Observing System



February 29, 2008

Roger L. Gauthier, Principal Investigator

GLOS Structure and Governance

- GLOS-RA leadership
 - Roger Gauthier, Interim Executive Director
 - Christine Manninen, E/O and Communications Coordinator, NFRA Board member
 - 12 member Board of Directors
 - Program Review Panel not yet constituted
 - Great Lakes Sea Grant Network lead for E/O
- Organizational structure
 - Public non-profit, Michigan corporation
 - 501(c)(3) tax exempt status pending

GLOS Structure and Governance

- Board membership
 - No affiliations
 - No formal user group representation
 - Monthly conference calls
 - Annual Business/Technical meetings
 - Quarterly calls/meetings of subsystem teams



Board of Directors

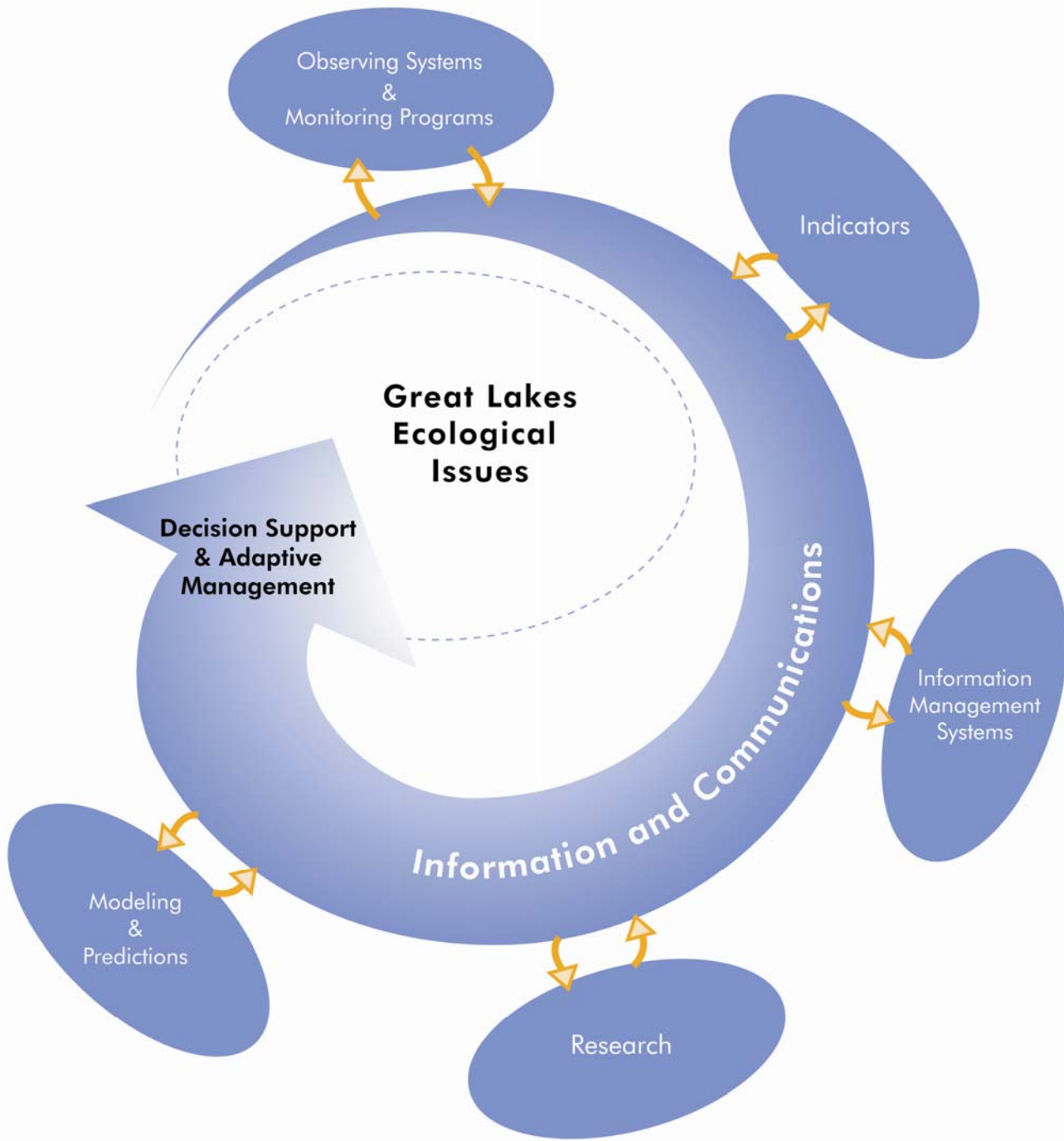
- Dr. Alfred Beeton (Treasurer)
- Dr. Jeffrey Boehm (Secretary)
- Dr. Gerald Galloway (BG, Ret)
- Mr. Mark Grazioli, P.E.
- Mr. Philip Keillor
- Dr. Gail Krantzberg
- Dr. Frank Kudrna, P.E. (Vice Chair)
- Mr. Dale Phenicie
- Dr. Harvey Shear
- Dr. Richard Stewart
- Mr. Nelson Thomas
- Mr. Bill Werick (Chair)

Stakeholder Engagement

- Stakeholder types: extensive
- Key stakeholder groups or individuals
- Annual meetings / Periodic workshops
- Periodic listserv announcements
- Level of involvement - high

Stakeholder Engagement

- Key issues of importance to regional stakeholders, and how the RA addresses them?
- Quantifiable, tangible expressions of support from stakeholders
 - Specific examples that demonstrate benefit of the RA to the region
- Other stakeholders?



Great Lakes Regional Collaboration Strategy

Protect drinking water supplies

Restore biologic integrity

Reduce loadings of nutrients, sediments and nutrients

Clean up toxic hot spots

Enhance resiliency to climatic variability / change

Limit adverse affects from aquatic invasive species

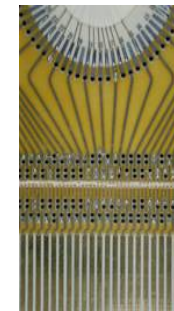
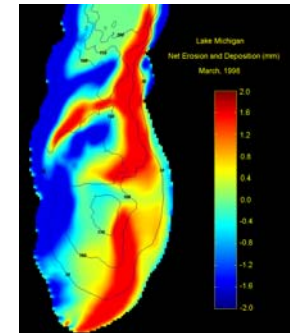
Improve navigation safety and efficiency

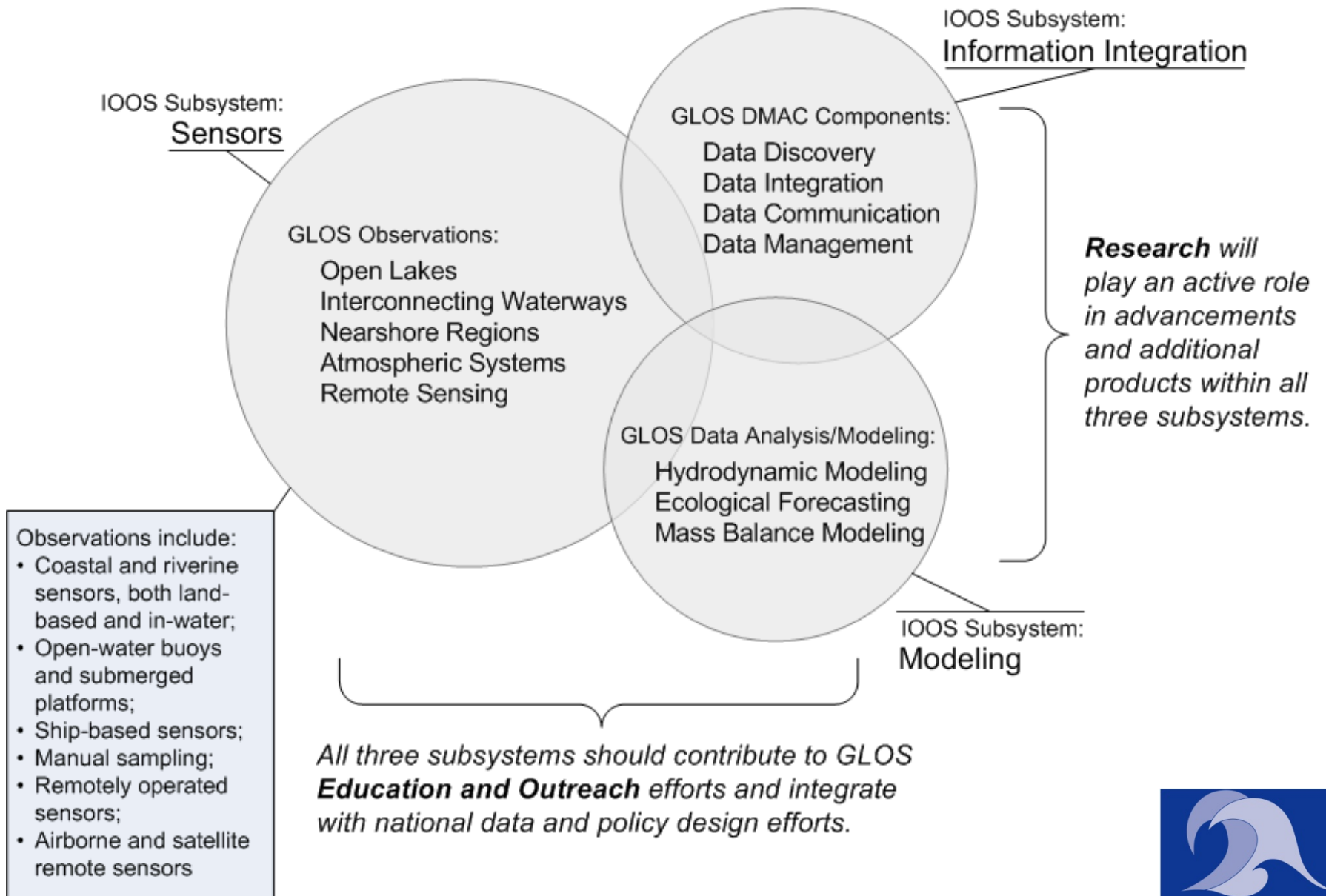
Support sustainable coastal communities

Great Lakes Observing System

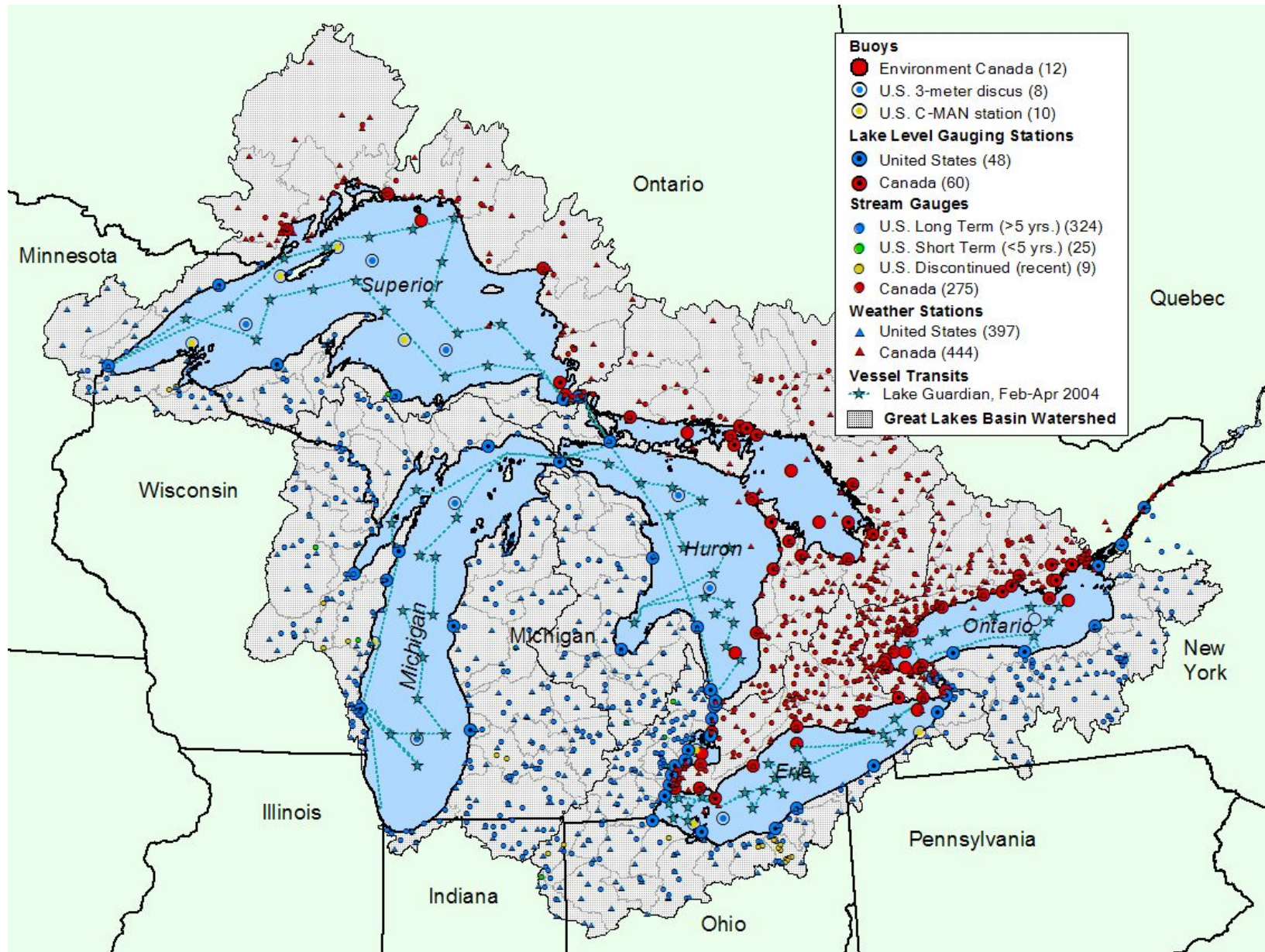
Subsystems:

- Deep Water Observations
- Science Vessels
- Interconnecting Waterways
- Nearshore Observations
- Atmospheric Monitoring
- Remote Sensing
- Modeling and Ecological Forecasting
- Information Integration
- Education and Outreach



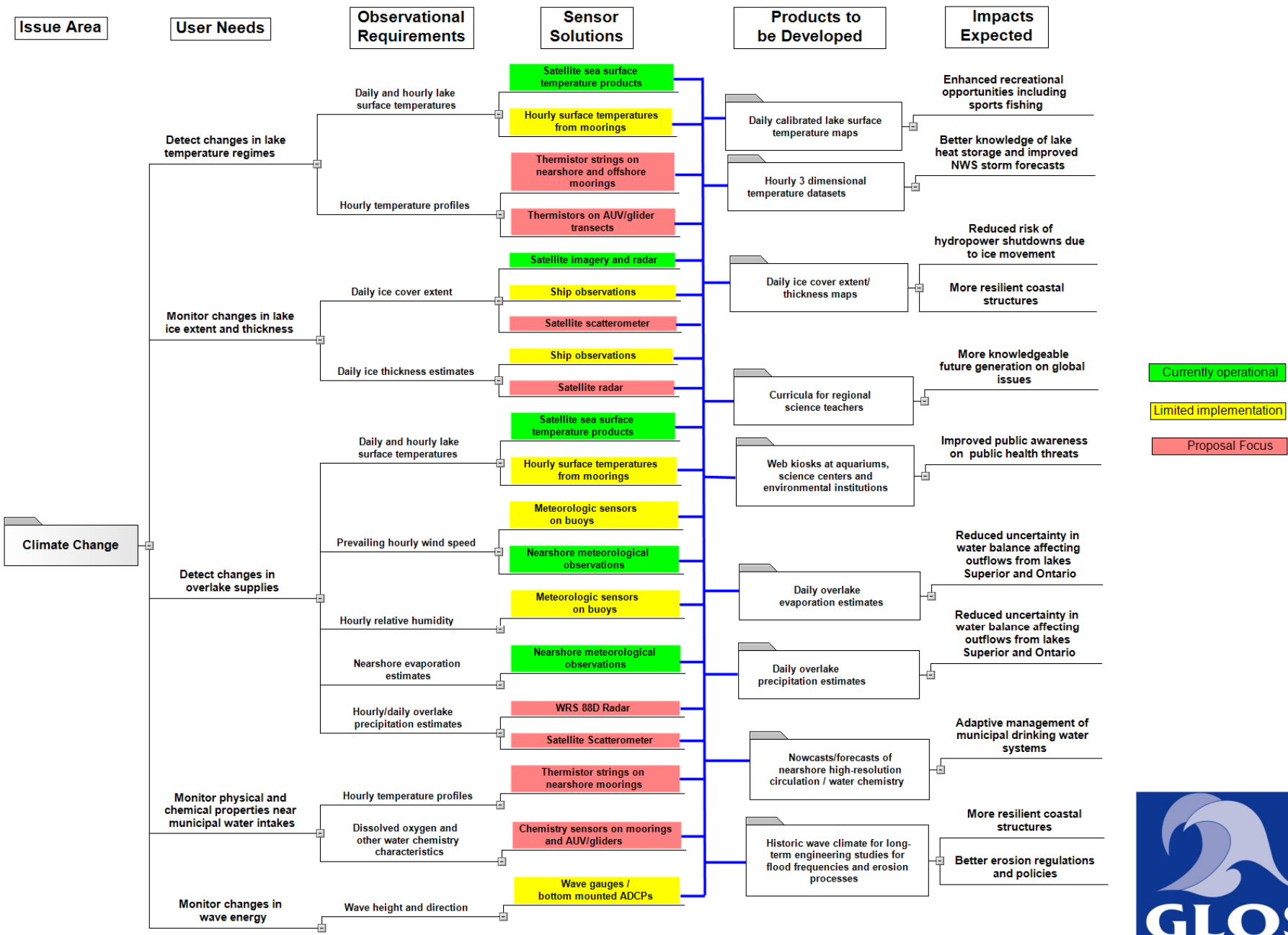


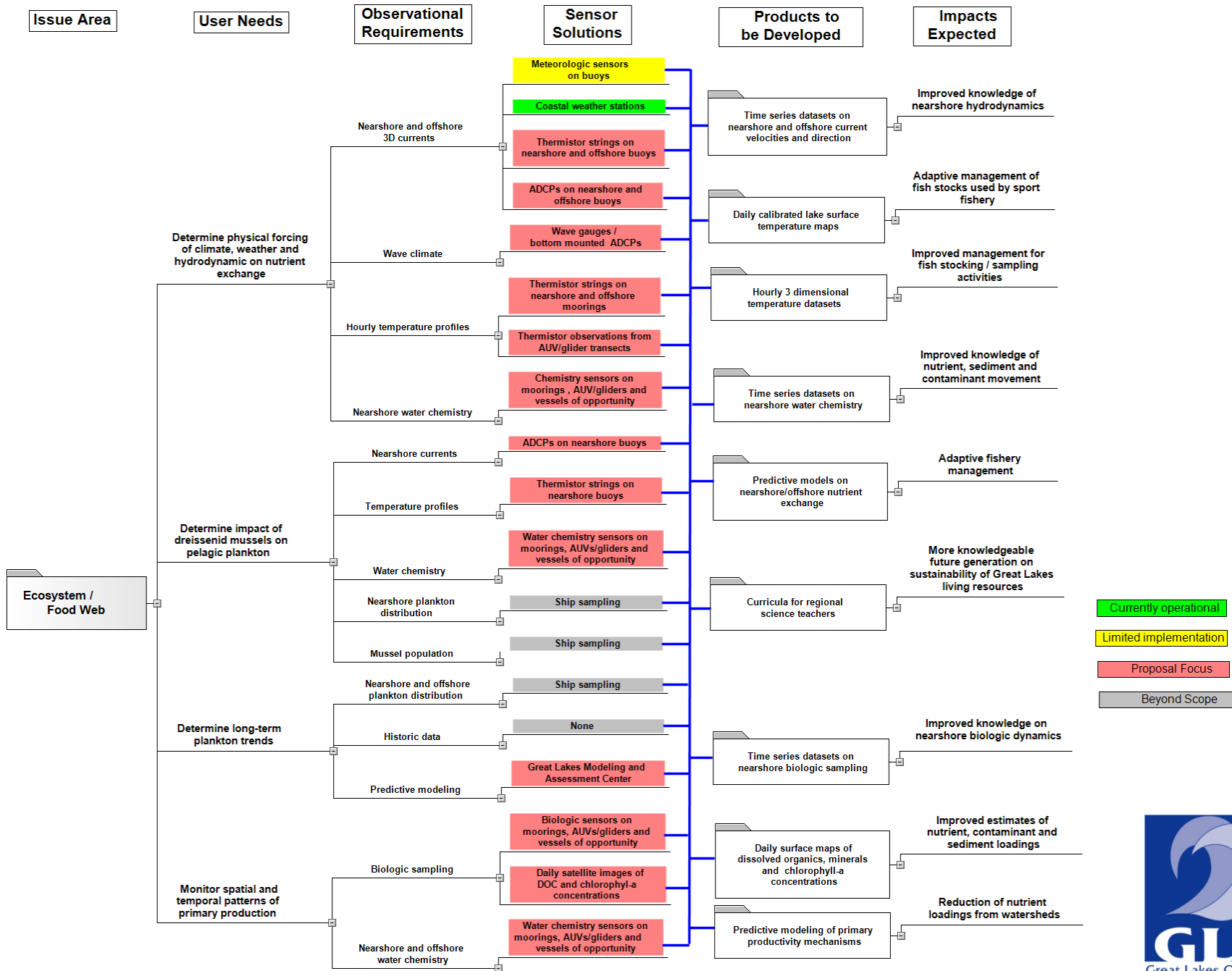
Great Lakes Federal Backbone Observations





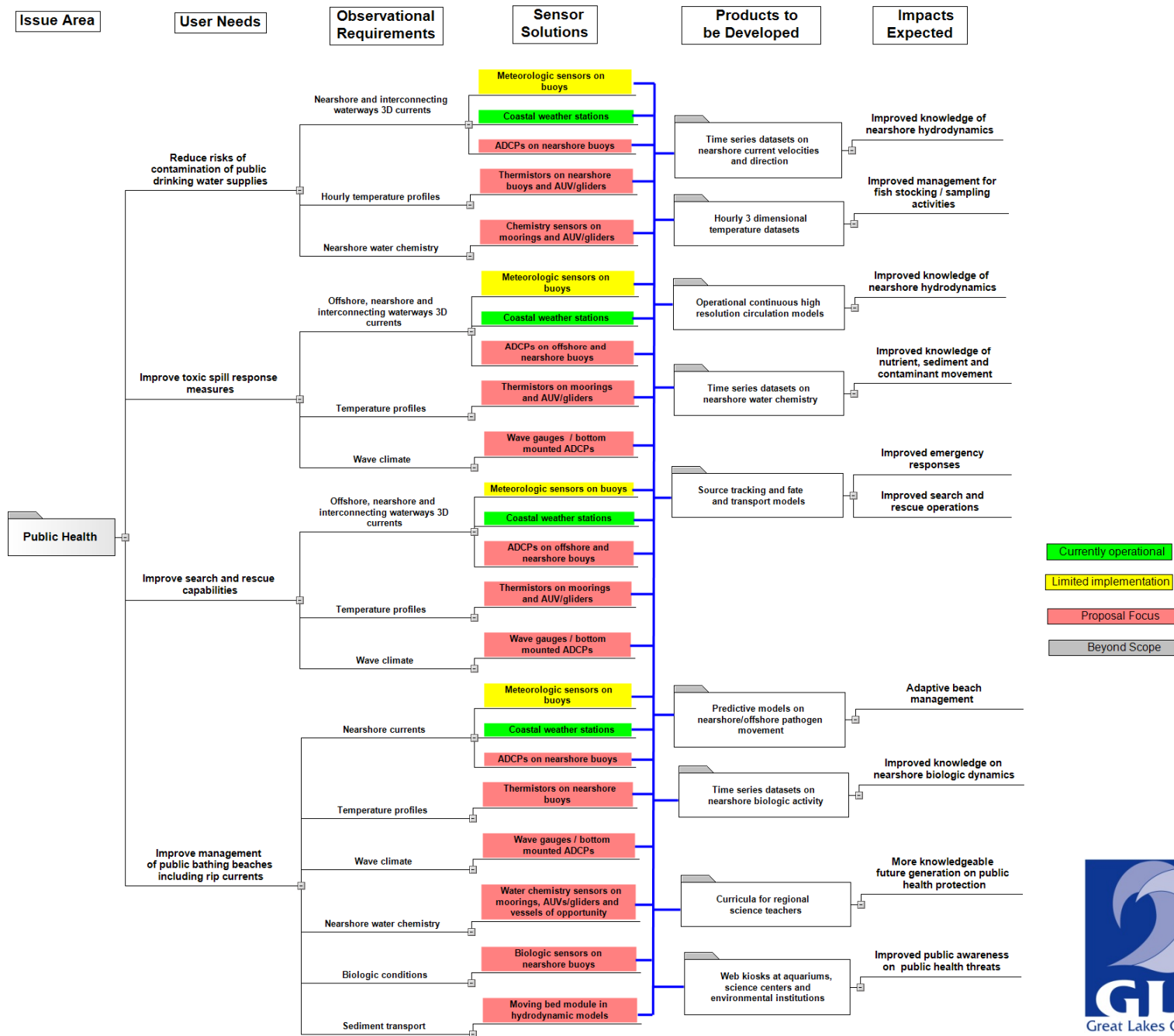
Critical Issues to be Addressed





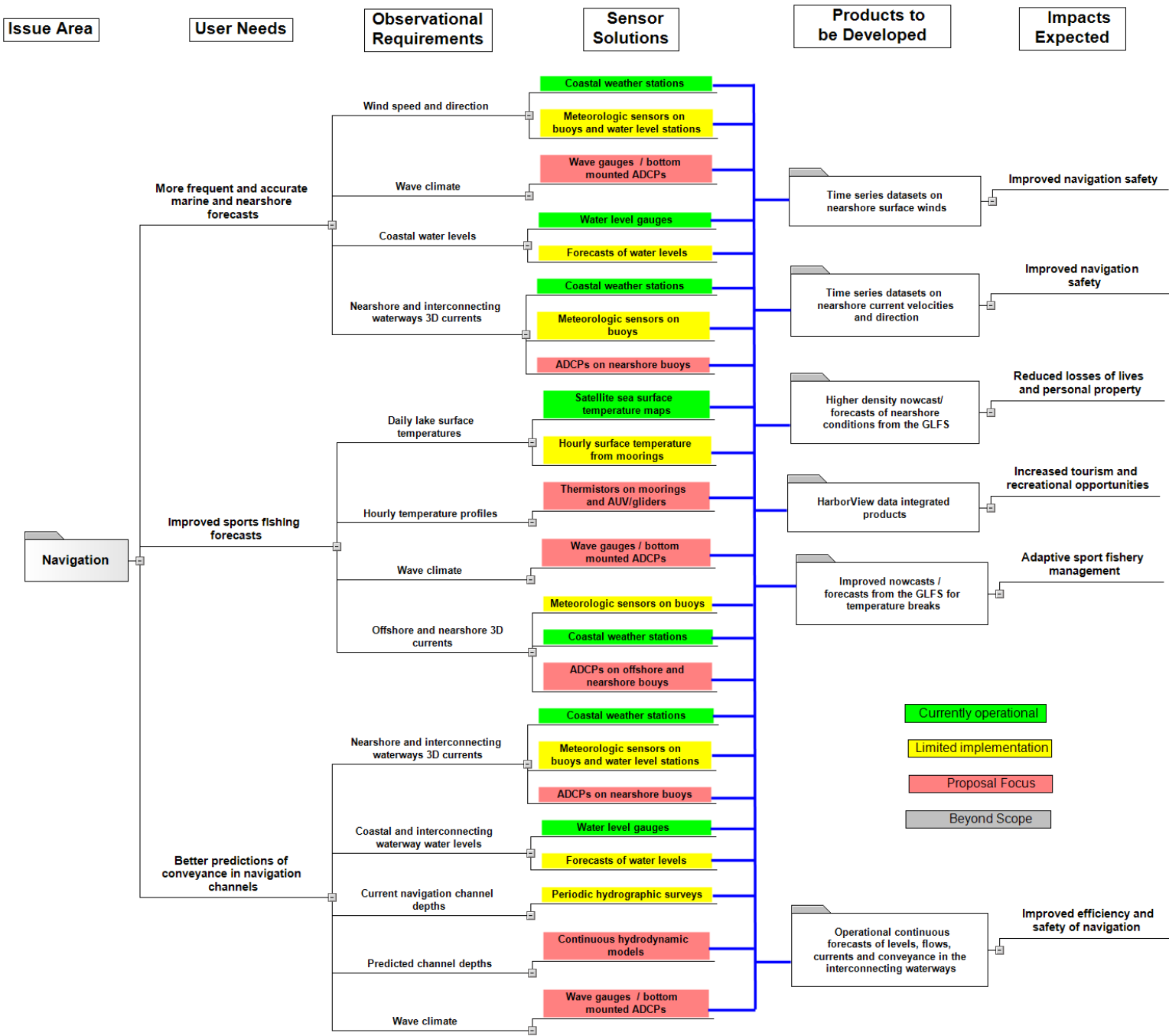
- Currently operational
- Limited implementation
- Proposal Focus
- Beyond Scope





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- Limited implementation
- Proposal Focus
- Beyond Scope





Current Activities and Funding

- A summary of key activities in the region that are related to or support IOOS, including those not funded by NOAA IOOS
- Interaction/joint work with other federal agencies
- How can NOAA IOOS best support you in engaging other Federal agencies?

Current Activities and Funding

- Sources of funding
 - NOAA IOOS and other NOAA funds
 - Other Federal
 - Non-Federal
- RA plans/efforts to match IOOS dollars with funding from other sources
 - What sources, and in what areas of work?
 - How can the NOAA Program Office help?



Regional Association Funding

Calendar Years	Funding Level	Tasks
2003 - 2004	\$ 110 K	Convene Steering Committee and establish scope
2004 - 2005	\$ 99 K	Draft Business Plan, define governance approach integrate with national elements
2005 - 2006	\$ 248 K	Establish Regional Association and Board of Directors
2006 - 2007	\$ 325 K	Enlist RA membership; conduct outreach, coordinate Regional DMAC
2007 - 2008	\$ 400 K	Expand RA membership; refine Business Plan; implement regional DMAC



Systems Grant Funding

Calendar Years	Fund Level	Tasks
2007-2008	\$ 360 K	Initiate Huron to Erie Corridor hydrodynamic modeling NOAA-GLERL (\$100 K for continuous 2d model integration), USGS-MI (\$125 K for 3d model development) Baird & Associates (\$125K for 3d model risk assessment) GLOS-RA (\$10K for coordination)
	\$ 50 K	Develop “HarborView” pilots
	\$ 65 K	Initiate Great Lakes Modeling and Assessment Center
	\$ 25 K	Offshore Implementation Plan
Total	\$500K	

RA Coordination: Cooperative Agreements

- As we reach the end of the first set of RA coordination grants, provide a summary of overall progress
 - Milestones and status
 - Updates to the RA progress reports
 - Any new information?
 - How are you doing?

RA Coordination: Cooperative Agreements

- What will change with the new RA grant in FY08?
- New directions, partners, etc.?

RA Future Development

- RA views on function and performance metrics
 - How can we best measure outputs and outcomes?
- Objectives of the RA and plans for the near-term FY08-12

RA Future Development

- Summary of top five priorities for development of RCOOS capabilities with cost estimates

Conceptual Plan



VI. Projected Costs (in \$0.1M)

Subsystem	Activity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Offshore/Deepwater	Offshore Buoys	\$0.0	\$0.2	\$0.2	\$0.2	\$0.4	\$0.5	\$0.5	\$1.0	\$1.0	\$1.0
	AUVs/Gliders	\$0.0	\$0.2	\$0.2	\$0.2	\$0.2	\$0.4	\$0.5	\$0.5	\$0.5	\$0.5
Nearshore/Coastal	Nearshore Buoys	\$0.0	\$1.1	\$1.2	\$1.3	\$1.4	\$1.5	\$1.6	\$1.7	\$2.0	\$2.5
	HF Radar	\$0.0	\$0.0	\$0.1	\$0.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
	Airborne Mapping	\$0.0	\$0.0	\$0.0	\$0.0	\$0.4	\$1.0	\$1.8	\$2.5	\$3.0	\$3.5
Ships and Vessels	Vessels of Opportunity	\$0.0	\$0.1	\$0.1	\$0.1	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3	\$0.5
	Scientific Ships	\$0.0	\$0.0	\$0.0	\$0.0	\$0.2	\$0.2	\$0.2	\$0.5	\$0.8	\$1.2
Interconnecting Waterways	Levels and Flows Instrumentation	\$0.0	\$0.1	\$0.1	\$0.1	\$0.3	\$0.3	\$0.3	\$0.3	\$0.5	\$0.5
	Hydrodynamic Modeling	\$0.4	\$0.3	\$0.3	\$0.2	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5
Remote Sensing	Lake Surface Monitoring	\$0.0	\$0.2	\$0.2	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
	Image Data Clearinghouse	\$0.0	\$0.0	\$0.0	\$0.0	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
Atmospheric	Overlake Precipitation and Evaporation	\$0.0	\$0.1	\$0.1	\$0.1	\$0.3	\$0.3	\$0.3	\$0.2	\$0.2	\$0.1
	Contaminant and Toxic Deposition Monitoring	\$0.0	\$0.0	\$0.0	\$0.0	\$0.3	\$0.3	\$0.8	\$0.8	\$1.0	\$1.5
Modeling and Assessment	GLMAC	\$0.0	\$0.1	\$0.1	\$0.1	\$0.2	\$0.2	\$0.2	\$0.5	\$0.5	\$0.5
	Great Lakes Coastal Forecasting System	\$0.0	\$0.2	\$0.2	\$0.2	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3
	HarborView Products	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
Outreach and Education	Outreach	\$0.0	\$0.1	\$0.1	\$0.1	\$0.2	\$0.2	\$0.2	\$0.3	\$0.5	\$0.5
	Curricula Development, Teacher Training	\$0.0	\$0.2	\$0.2	\$0.2	\$0.4	\$0.4	\$0.4	\$0.5	\$0.5	\$0.5
DMAC	Regional Operations Center	\$0.0	\$0.1	\$0.1	\$0.1	\$0.3	\$0.3	\$0.3	\$0.3	\$0.5	\$0.5
	Product Development	\$0.0	\$0.1	\$0.1	\$0.1	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4
Management	Workshops and Coordination	\$0.0	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.2	\$0.2
Totals		\$0.50	\$3.30	\$3.50	\$3.50	\$6.50	\$7.50	\$9.00	\$11.00	\$13.00	\$15.00

GLOS Core Variables

Physical

Lake level
Landform
Bottom character
Temperature
Surface waves
Surface currents
Ice distribution
Surface sediments
Surface color
Heat flux

Chemical

Contaminants
Nutrients
Dissolved Oxygen
Salinity

Biological

Fish Species
Abundance
Phytoplankton
Zooplankton
Pathogens
Macrophytes

Core GLOS-DMAC Functionalities

Components

Data Discovery

Data Visualization

Data Evaluation

Data Access

Data Publishing

Tenants

Empower user/organizations

Make data accessible to ALL

Be extensible/expandable

Minimize duplication

Metadata driven

Standards based

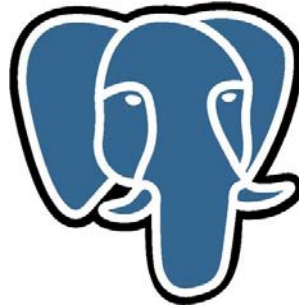
Leverage open source software

Service Oriented Architecture



Open Source Software Framework

Back-end Storage



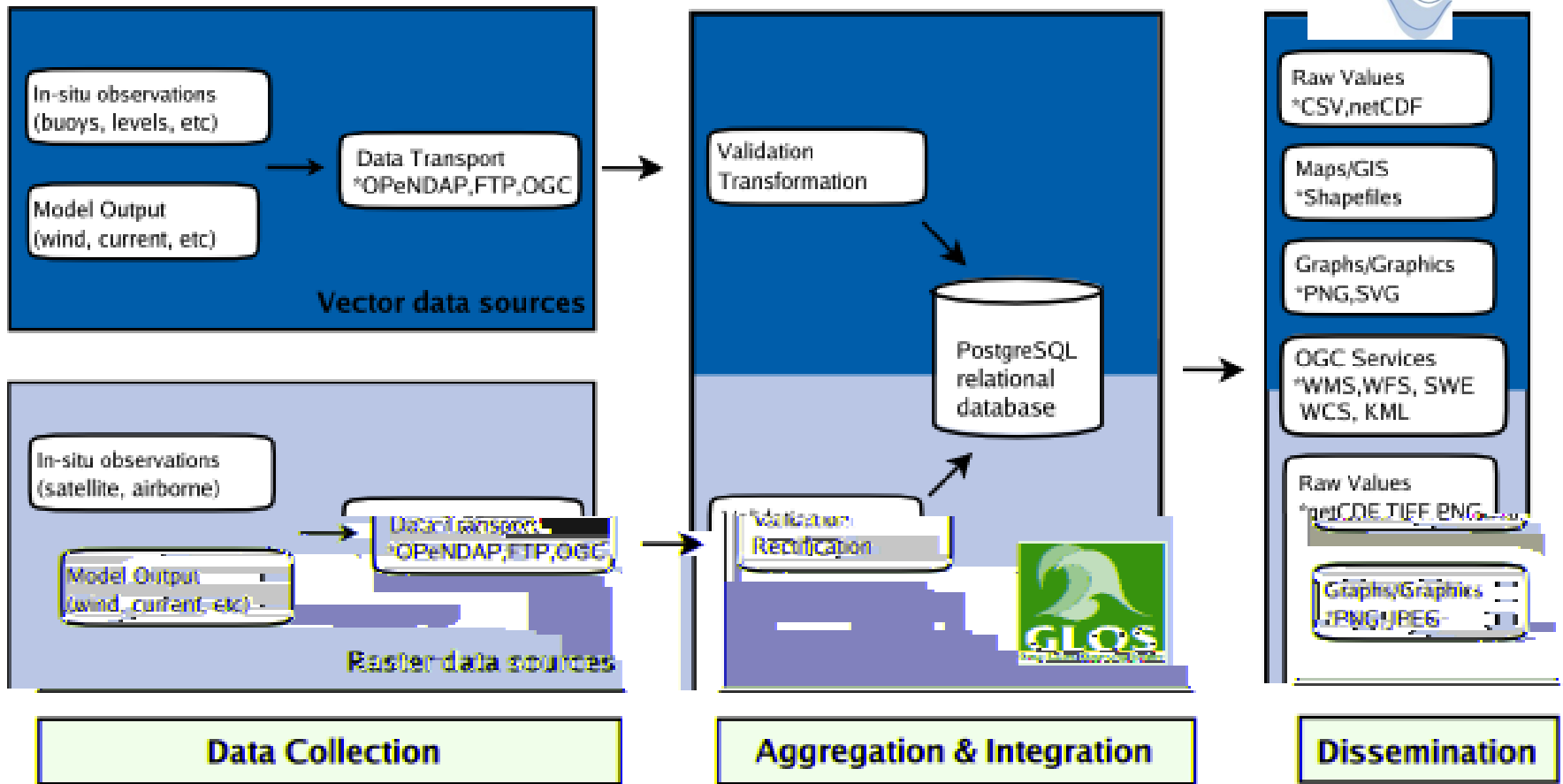
Back-end Map/Feature Generation



Front-end Data Access



GLOS Conceptual Data Flow



Data Collection

- Ingest data from a variety of sources including federal, state, local, tribal and NGO agencies.
- Collect and integrate data of varying types including observational data, model output, remotely sensed data, “traditional” GIS Layers, et al.
- Collect data across differing time scales, including historical, real-time, and near real-time datasets.

Data Aggregation and Integration

- Common database schema for incoming data
- Adherence to IOOS database schema
- Extensible / expandable
- Open source, cost effective
- Archive/repository broker



Data Access

- Standards-based (Service Oriented Architecture)
- Interoperable
- Provide multiple ways GLOS-related datasets
 - Using 3 compatible approaches:
 - Open layers, Chameleon/Map Server, Flash
 - Static maps and images
 - Time series and animated data
 - Web mapping applications
 - Direct file and database access



GLOS-DMAC Next Steps

Refine a comprehensive data schema

Incorporate additional geospatial datasets

Integrate with other IOOS DMAC and Canadian nodes

Provide additional formats and data types

(e.g. point and time series data, raster and imagery)

Improve search capabilities

Improve user interfaces



RA Views on Regional and National IOOS

- RA needs with regard to the integration of regional and national planning efforts
- RA expectations for development of the “national backbone” of observations
 - In situ, remote sensing, and data management and communications (DMAC) capabilities

Cross-regional Coordination

- Discuss existing and potential coordination with other IOOS RAs
 - On regional efforts/issues?
 - On a national scale?

Best Practices and Lessons Learned

- Describe problems encountered to date and their resolutions
- What are some “good ideas” or best practices that you can share with other RAs?

Parting Thoughts

- What support or information do you need from NOAA that you are not currently receiving?
- Is there input you would like to give to us, but don't have a venue?

Parting Thoughts

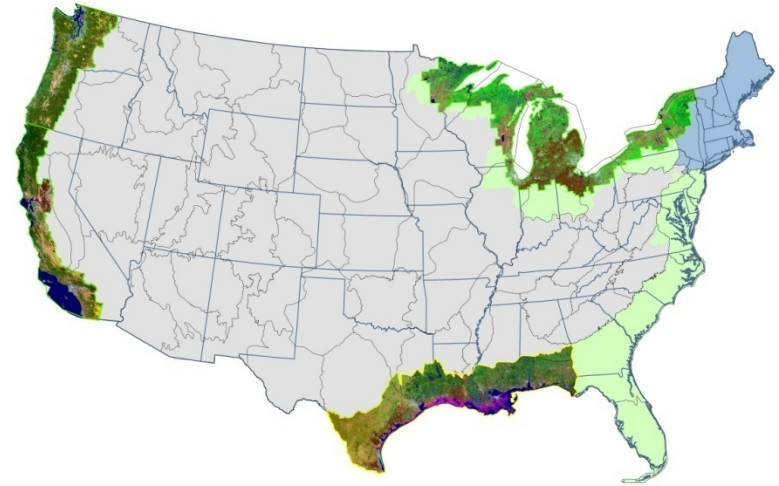
- How can NOAA IOOS best receive regular updates or information from the RAs?
 - RA and partner achievements, news items, expressions of stakeholder support, engagement of new stakeholders
 - How can NOAA IOOS best understand (and articulate) how RAs support the national system?
 - How can we help to support your
- Other parting thoughts?



Short-Term “Work-Arounds”

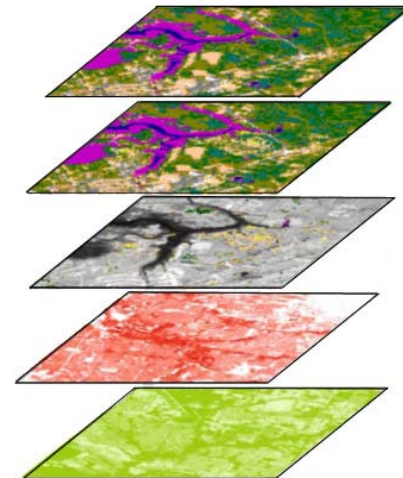
Coastal Change Analysis Program

- Standardized, accessible inputs
- Innovative, repeatable procedures
- Consistent national coverage
- Relevant, accurate products



Current Great Lakes Land Cover Products:

- Land cover circa 2001
- Land cover circa 1996
- Change data (1996 to 2001)
- Percent impervious surface
- Percent canopy surface



Station LSCM4 - Lake St Clair, MI

Owned and maintained by National Data Buoy Center

C-MAN station

VEEP payload

42.47 N 82.76 W (42°27'54" N 82°45'18" W)

Site elevation: 178.5 m above mean sea level

Air temp height: 6.0 m above site elevation

Anemometer height: 14.4 m above site elevation

Barometer elevation: 179.8 m above mean sea level

Conditions at LSCM4 as of
(5:00 am EDT)
0900 GMT on 07/21/2006:

Unit of Measure: Time Zone:

Click on the graph icon in the table below to see a time series plot of the last five days of that observation.

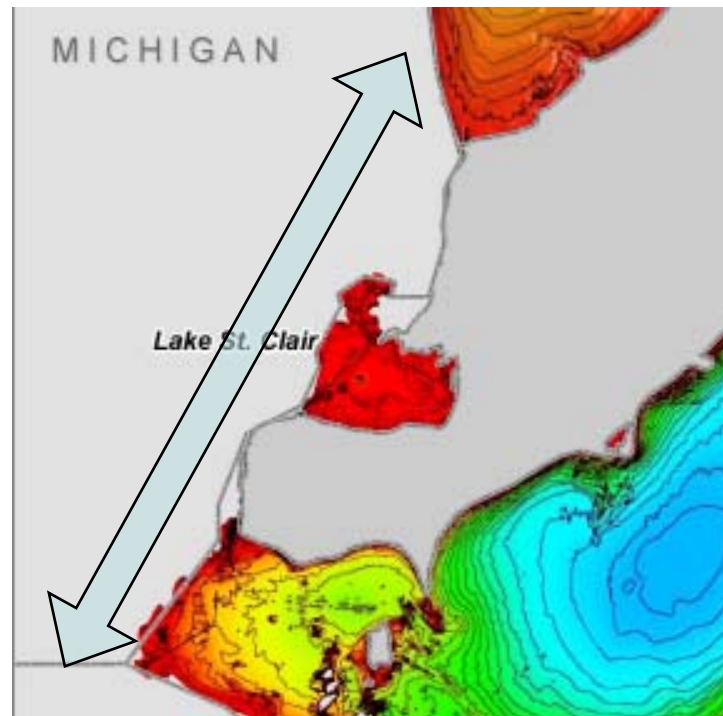
	Wind Direction (WDIR):	N (360 deg true)
	Wind Speed (WSPD):	13 kts
	Wind Gust (GST):	15 kts
	Atmospheric Pressure (PRES):	29.95 in
	Pressure Tendency (PTDY):	+0.00 in (Steady)
	Air Temperature (ATMP):	72.9 °F
	Water Temperature (WTMP):	74.7 °F
	Combined plot of Wind Speed, Gust, and Air Pressure	



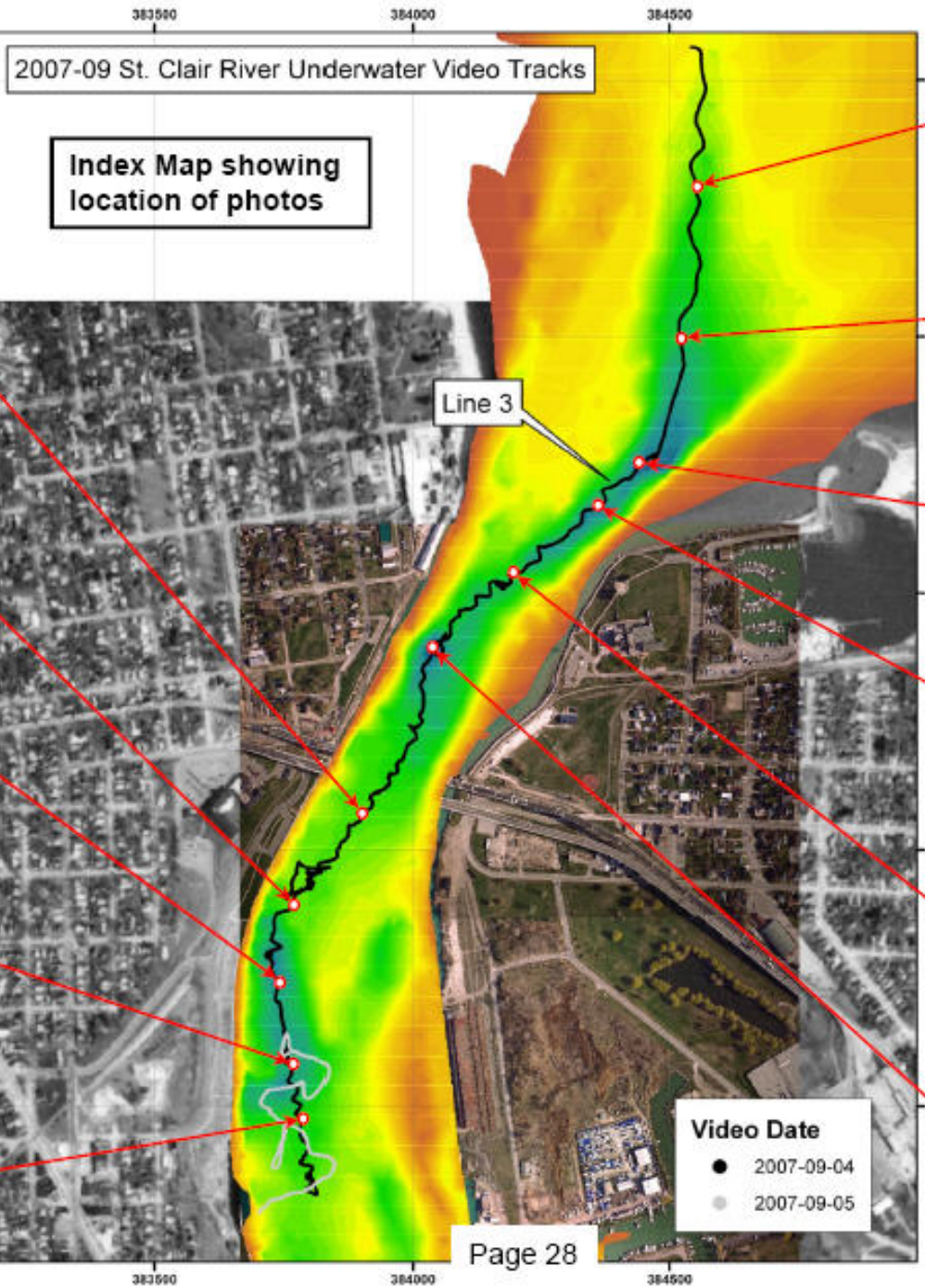
- **Funded through 2008**
- **Add ADCP in 2007**
- **Add directional waves in 2007**
- **Explore means for supporting other chemical and biologic sensor deployments**



3-D Modeling Initiative for the Huron to Erie Corridor



Attachment 8/3



2007-09 St. Clair River Underwater Video Tracks

Index Map showing location of photos

Line 3

Video Date
 ● 2007-09-04
 ● 2007-09-05

