

Great Lakes Coastal Management and Observing Needs



Summary Report of Great Lakes Focus Group

Background

On April 25, 2005 the Coastal States Organization organized a focus group in Chicago, Illinois. The purposes of the meeting were gain a deeper understanding of the opportunities a Great Lakes observing system offers coastal managers¹, learn about efforts to form a regional association, and to facilitate the identification of coastal management user needs for the evolving coastal observing system in the Great Lakes. The National Ocean Service, Coastal Services Center, the Great Lakes Observing System and the Great Lakes Commission supported the event.

Thirteen coastal resource managers from Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin participated as well as six regional resource people from state Sea Grant Programs, the International Joint Commission and the Great Lakes Commission. Eleven resource people from federal agencies and other institutions also made important contributions. Participants had expertise in water quality, fish and wildlife, land use, environmental protection, shoreline hazards and emergency response interests.

Recurring Themes

Throughout the focus group discussion a number of recurring themes were raised including:

- Great Lakes observing data offer baseline measurements applicable to state ecosystem characterization efforts as well as underpinning coastal management decision-making.
- Coastal managers needs for these data span the continuum of raw data (e.g., support existing and enable new modeling) to highly synthesized products (e.g., maps, forecasts, web site tools that allow compilation and analysis, etc.).
- The region needs to develop on-going mechanisms that integrate traditional environmental monitoring data and programs with the evolving Great Lakes Observing System (GLOS).

Products of the Focus Group

The focus group enabled participants to gain a better understanding about observing efforts in the Great Lakes and to learn about efforts to create a regional association. Other results included:

1. A statement of coastal management user needs (see table below); and
2. Guiding principles for coastal manager participation in the regional observing effort.

The focus group built on a review of coastal managers users needs from elsewhere in the country. These can be found at the Coastal States Organization web site www.coastalstates.org.

¹ Focus group participants defined coastal managers broadly to include local, state, regional (substate, interstate and international) and federal representatives and commercial users of the Great Lakes. Examples of the disciplines these managers are involved in include coastal planning and permitting, fisheries, wildlife biology, transportation, and maritime commerce

GREAT LAKES COASTAL MANAGERS NEEDS

	Aquatic Nuisance Species	Shoreline Erosion & Sediment Management	Water Quality
Need	<p>Location and ecosystem effect of ballast water discharges</p> <p>Human health and economic effect of invasive species</p> <p>Rapid response and control of the spread of non-indigenous and invasives</p>	<p>Improve management responses to coastal shoreline erosion</p> <ul style="list-style-type: none"> • calculate erosion/recession rates • determine sediment quality, supply & transport • document rip currents <p>Respond to erosion (and recreation) issues with real-time wind and wave observations in the nearshore</p> <p>Document impact of public & private shoreline structures (e.g., breakwaters, groins, etc.) on hydrology and biology</p> <p>Understand lake levels and assess impact of lake regulations on lake levels</p>	<p>Determine ambient conditions (inland, coastal, nearshore & offshore) and compliance with standards</p> <ul style="list-style-type: none"> • nutrients, pathogens/toxins, bacteria, dissolved oxygen, water chemistry <p>Determine riverine and rainfall inputs</p> <p>Develop mass loadings to understand relative contributions from the land, air and offshore</p> <p>Understand circulation of near and offshore waters</p> <p>Develop biological indicators</p>
Priority Products (in order of priority)	<ul style="list-style-type: none"> • Hydrologic modeling of plumes within harbors • Provide observations on algal blooms to ship captains and pilots to assist in compliance with ANS best management practices • High resolution, hyper-spectral imagery of wetland complexes and near-shore mapping for rapid response to invasive plants • Monitoring programs to track movements of non-indigenous species 	<ul style="list-style-type: none"> • Models linking erosion and lake levels especially during storm events (hourly predictions in embayments and river mouths), wave observations, isostatic rebound, resonance, accretion, and down cutting and steep slopes • Sediment budgets & load maps/models to understand sources (tributaries, etc.), transport & appropriate setbacks • Historical coastal shoreline & nearshore substrate maps to evaluate change (10-year intervals back to 1930s) and set baseline data including calculating erosion/recession rates (1:6,000 every 10-years) • Continuous aerial photography of coastal areas to locate habitat type, extent, & determine erosional effects • Web-based tool on effects of lake level rise at the property level, for public education and government decision-making 	<ul style="list-style-type: none"> • Hydrodynamic circulation models at various depths (e.g., spill response) & three dimensional models of upwelling and down welling • Integrated tributary-lake models (rainfall, groundwater recharge, loading, non-point, etc.) for TMDL calculation, NPS assessments, beach and shellfish closures on embayment scale down to individual beach and bed (support watershed planning) • Microbial source tracking • Mobile, short term (i.e. three year) near-shore data stations (e.g., wind and wave, chlorophyll) • Monitoring & evaluations on BMP effectiveness • Better temporal resolution for key nutrients and bacteria • Water quality monitoring data throughout the water column (e.g., large scale chlorophyll, etc.)
Data Mgt., Format & Delivery	<ul style="list-style-type: none"> • Volunteer protocols and web-based reporting method for volunteer observations 	<ul style="list-style-type: none"> • Predictive models • GIS information products • Topography & bathymetry (LIDAR) mapping on 10-year cycle for shorelines and more intensive mapping in wetlands 	<ul style="list-style-type: none"> • Circulatory modeling for multiple applications • Real time data available on internet • Predictive models • Bulletin for water supply managers that integrates water quality monitoring data

Recommendations

1. Integrate Great Lakes efforts – There is an overwhelming sense that a vast amount of useful monitoring data and information exists but is not readily accessible. Participants recommended that the GLOS place a priority on bringing greater coherence (e.g., policies to accelerate data sharing) to the region’s data management efforts. Examples offered were the Regional Data Exchange, scientific vessel community, a web-based research compendium that has a “clickable” map, and habitat restoration efforts with GLRC.
2. Broaden stakeholder engagement – It is timely for GLOS to further engage the region’s state coastal managers in explaining what GLOS is, how it will benefit coastal management and ways GLOS can build their capacity to better address priority issues. Prepare “crosswalk” of agency mandates with monitoring and data gathering efforts. Request that they use agency strategic and/or operational plans as a basis for documenting agency priorities.
3. Sustain regional interaction – The Coastal Management, Research Reserve, and Sea Grant program managers should use the NOS/OCRM regional meeting format (and other venues) to continue to identify ways GLOS can assist them in managing the Great Lakes coastal resources.
4. Communicate coastal managers’ needs – The results of this focus group (e.g., materials, amended narrative of coastal managers’ needs, etc.) should be provided to GLOS, Great Lakes managers and to coastal managers around the county.

5. Explore land use change – Participants identified land use change as the top priority but did not have time to articulate their monitoring and observing needs. This work needs to be accomplished.
6. Participate in GLOS – Great Lake coastal managers should identify ways to effectively participate in GLOS. Initial actions may include defining the expectations for coastal manager representatives, soliciting Great Lakes managers to determine those willing to participate in GLOS, and their reporting mechanisms back to their colleagues.

**Coastal Manager Participation
in the Great Lakes Observing System**

Guiding Principles
These principles set the context for state coastal managers participation in the activities of GLOS.

- 1. Coastal observing needs to be set in a Great Lakes context**
 - Formally integrate coastal managers at the highest levels of decision-making in GLOS as well as in advisory capacities
 - Assist managers to integrate ongoing environmental monitoring (e.g., water quality, fishery trawls, river & watershed monitoring, etc.) and traditional knowledge with observing data in ways that produce value-added products.
 - Augment existing data sets/information on biological resources and chemical conditions in ways that facilitate work on timely and important regional issues
 - Target products at specific places and needs
- 2. Support capacity building of coastal managers and users**
 - A regional system needs to dedicate resources to help managers use observing data and information (e.g., professional development and training to use raw data, help others in accessing and using these materials, etc.)
 - Assist managers create and disseminate information derived from observing data
- 3. Require service to users**
 - Support targeted projects needed by coastal managers and that they contribute to (e.g., sustain effective partnerships, area-wide characterizations with multiple applications, etc.)
 - Prepare materials useful to policy-makers (e.g., local officials, members of cabinet, legislators, etc.)