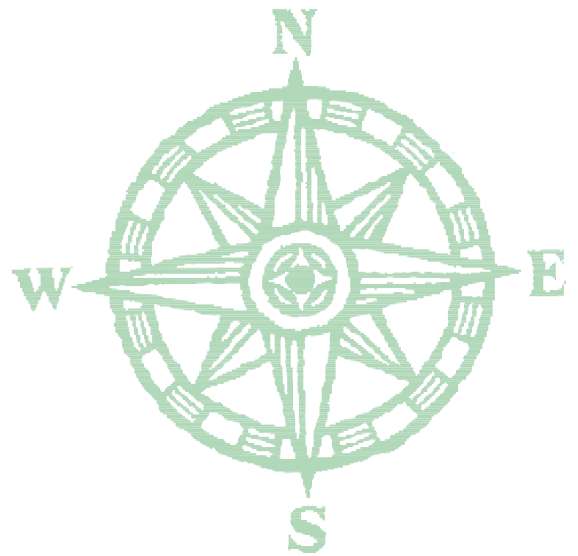


**NOAA
GREAT LAKES**

**ENVIRONMENTAL
RESEARCH
LABORATORY**

**STRATEGIC PLAN
2000**



GREAT LAKES ENVIRONMENTAL RESEARCH LABORATORY

STRATEGIC PLAN 2000-2005

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INTRODUCTION AND BACKGROUND

Vision

GLERL aspires to be a preeminent, world-class, multi-disciplinary environmental research laboratory that provides both a solid scientific understanding and the leadership necessary for the wise use and management of Great Lakes and coastal marine environments.



The NOAA Great Lakes Environmental Research Laboratory (GLERL) is one of 12 Federal research laboratories within the Oceanic and Atmospheric Research (OAR) line office of NOAA. GLERL was formed in 1974 to provide a focus of NOAA's environmental research in the Great Lakes. During its history, GLERL has made important scientific contributions to the understanding and management of the Great Lakes and other coastal ecosystems. As stated in the OAR Strategic Plan: "We have a dual responsibility to address urgent current issues through transfer of new concepts to practical use, and to explore facets and trends in our environment that will influence our future." GLERL scientists thus play a critical role in academic, state, Federal, and international partnerships, and GLERL research provides information to support decisions that affect the environment, recreation, public health and safety, and the economy of the Great Lakes and coastal marine environments.

GLERL houses a unique combination of scientific expertise in biogeochemical, hydrological, ecological, physical limnology, and oceanographic sciences. GLERL's research is currently organized into eight broad research themes: Nonindigenous Species, Integrated Long-term Monitoring and Assessment, Ecosystem Dynamics and Food Webs, Aquatic Contaminants, Episodic Events, Climate Change and Variability, Water Resources, and Hydrodynamics and Physical Processes. This broad range of disciplines is needed to adequately understand and address the important issues that confront the effective management of aquatic environments. GLERL's strength and future lies in the breadth of science and the ability to bring multiple disciplines to bear on today's problems from an ecosystem perspective and to determine and forecast how ecosystems are changing, the nature and causes of those changes, and the impact of those changes on human and economic scales.

As a Federal research laboratory within NOAA, GLERL has a duty to produce high-quality scientific information that addresses issues of importance to the nation regarding the wise use of Great Lakes and coastal marine environments and that supports NOAA's mission. The purpose of this Strategic Plan is to provide the broad program guidance needed to maintain and improve the value of the research and services that GLERL provides to the region and to the nation. GLERL's *Vision* states its aspirations, GLERL's *Mission* outlines its role within NOAA, and GLERL's *Values* are the principles that guide its activities. GLERL's *Goals* describe the purpose and basic direction for its activities, the *Activities* describe the mechanisms through which the mission and goals are accomplished, and the *Products and Services* describe the specific outputs of GLERL.

VALUES

In order to accomplish its vision and mission, GLERL recognizes specific values and principles that guide its activities:

Mission

GLERL conducts high-quality research and provides scientific leadership on important issues in both Great Lakes and marine coastal environments leading to new knowledge, tools, approaches, awareness, and services.

- **Excellence** – GLERL seeks to provide research and scientific products of the highest quality possible.
- **Relevance** – GLERL conducts research and produces products that are relevant to regional and national needs.
- **Diverse Scientific Approach** – GLERL combines multidisciplinary breadth and disciplinary depth in scientific approaches.
- **Responsiveness** – GLERL is flexible and adaptive to new problems/issues.
- **Customer Orientation** – GLERL has a strong customer service orientation and strives to provide user-friendly information and positive customer interactions.
- **Cooperation** – GLERL has strong interactions and a commitment to partnerships with other agencies, industry, educational institutions, and the public.
- **Recognition** – GLERL encourages and rewards both individual and team achievements.
- **Safety** – GLERL promotes research performance in a safe, healthy, and environmentally friendly manner.
- **Skilled Workforce** – GLERL promotes a high-skilled and productive workforce and use of state-of-the-art-technology.

GOALS

1. *Expand and improve scientific knowledge of aquatic ecosystems, and processes within the Great Lakes and marine coastal environments.*

New knowledge is gained through rigorous programs of research and monitoring. The information obtained from these activities provides the fundamental understanding necessary to model and predict the structure and function of aquatic environments, and to identify and integrate information to improve the scientific basis for decision-making.

2. *Develop new tools, approaches, and concepts for improved modeling, predictions and management of issues within the Great Lakes and coastal environments.*

New tools, approaches, and models use the new knowledge and the growth of understanding obtained from research and monitoring to advance assessment and prediction. Improved models are able to better predict ecosystem behavior, and hence offer better guidance to resource managers and decision makers.





3. *Deliver services and expert information to the scientific, regulatory, and coastal-user communities.*

The purposes of these services are to: (a) allow others to make use of the new knowledge, tools, models, and approaches developed as the result of research and monitoring, (b) provide expert scientific information to decision makers and regulators, (c) permit the application of the latest scientific technology, and (d) improve the use of science in society.

4. *Provide the general public with information and services to enhance public awareness, understanding, and safety.*

These services cover a wide range of functions ranging from providing expert advice in public forums to educating the general public. The purpose of providing information and services is to lead to a better-informed general public and to improved public participation in decision making.

5. *Lead and coordinate multi-institutional scientific program development throughout the Great Lakes and coastal aquatic communities.*

Through leadership and coordination, GLERL advocates and encourages new programs and partnerships to address and evaluate new environmental issues, and to apply research results to solutions for existing issues.

ACTIVITIES

GLERL uses both traditional disciplinary approaches to investigate scientific environmental problems, as well as integrated and multidisciplinary approaches to investigate the complex links between different components of aquatic ecosystems. GLERL performs field, analytical, laboratory, and modeling investigations to improve understanding and prediction of coastal and estuarine processes. It places special emphasis on a systems approach to problem-oriented and solution-focused research to develop environmental service tools. Assistance is provided to resource managers and others who wish to use the information, tools, and services developed to formulate better strategies for sustainable use of healthy environments and restoration of degraded ecosystems.

GLERL uses six basic types of activities to achieve its goals. The activities cover a broad spectrum and include investigating basic processes, applying research results, and providing products and services.



Research — GLERL conducts research that is both proactive and reactive. Proactive, or fundamental research, improves our basic understanding of how aquatic environments work. One of the intentions of such research is to recognize the significance of an emerging issue and be prepared to address the issue if problematic. Reactive or problem-solving research is conducted in response to recognized problems deemed highly relevant to society. Scientific output must be readily available to those who need it.

Long-Term Monitoring — GLERL's monitoring programs use multidisciplinary resources to assess status and trends in aquatic environments. Long-term monitoring permits identification of perturbations that may signal changes in the ecosystem, puts current trends into an historical framework, and provides a context to assess the impact of predicted changes. These programs are long-term, involve partners, and employ the latest technologies.

Technology Development — GLERL develops new tools, models, and approaches that are an integral need for assessing environmental conditions and for scientific advancement.

Information Synthesis and Assessment — GLERL compiles and interprets information and data to assess the state of scientific knowledge on relevant issues and makes them available to those who need it.

Multi-Institutional Program Development — GLERL leads, coordinates, and develops multi-institutional scientific programs with public, private, state, Federal, and international partners for the expansion and transfer of environmental knowledge and technology.

Communication and Education — GLERL's programs deliver information, assessments, and expert council to the scientific, regulatory, educational, and general public communities.

PRODUCTS & SERVICES

GLERL activities produce a number of products and services that are made available to the agencies, industries, scientific communities and public interested in and responsible for Great Lakes and coastal marine issues. These products and services include:

Scientific Information and Products

Publication of information in the scientific literature (books, journal articles, proceedings, etc.)



STRATEGY TO ACCOMPLISH GLERL'S VISION

Scientific Information and Products (continued)

Science presentations, posters, and reports
 Databases and data analyses
 Development of new instruments, procedures, and models
 Development of improved numerical tools
 Predictions and forecasts
 Transfer of new technologies to other users
 Development of new scientific programs, proposals, and initiatives

Scientific Services

Organize and participate in workshops and scientific symposia
 Participate in scientific program development
 Develop new partnerships
 Service on panels, committees, and boards
 Review and edit scientific proposals and publications
 Training (internships, graduate student advisor, post-doctoral mentor)
 Share use and development of facilities
 Expert council

Public Information and Products

Web publications
 Brochures and short summaries
 Public and educational presentations
 Items for the general news media
 Displays for the general public
 Popular science articles
 Teaching

GLERL's primary strategy to achieve its vision of developing a center of excellence for world-class environmental research is to maintain and foster high productivity, scientific excellence, and societal relevance. GLERL's strategic plan will provide an active conscious rationale for setting priorities, making decisions on disciplinary focus, and allocating resources. To achieve its vision, GLERL will also:

- Maintain a strong diversity of research specialties that permits a multidisciplinary approach to solving the complex ecosystem problems facing Great Lakes and coastal marine communities and that fosters new scientific understanding and technologies.
- Maintain the ability to sustain an approach that employs a balance of laboratory experiments, field observations, and numerical/theoretical modeling.



- Foster partnerships and collaboration with national and international scientists, academia, governmental, and private entities to better promote the knowledge base, research efficiency, and the wise use of coastal resources.
- Continue to encourage independent research, peer-reviewed publications, and external funding opportunities.
- Enhance integration of credible and useful scientific information to decision-makers in government and the private sector.
- Seek a stable funding base with moderate growth and enhanced external support mechanisms.
- Ensure a state-of-the-art technology and infrastructure to meet the challenge of broad ecosystem problems. A solid infrastructure of both equipment and personnel are essential to pursue complex multidisciplinary research. Among the requirements for research in Great Lakes and coastal environments are state-of-the-art vessels that permit the operation of scientific personnel safely under varied environmental conditions. State-of-the-art equipment, sensors, and computer technology are required to insure the highest quality and quantity of data for such assessments.
- Develop an integrated monitoring program with state-of-the-art techniques that permit the coupling of chemical, physical, and biological parameters at appropriate time and space scales necessary for whole-ecosystem predictive modeling.
- Foster and maintain a well-trained, efficient core of professional staff. GLERL will continue to recruit new, highly-skilled scientists and technicians. GLERL will also support and participate in training programs that help develop GLERL's human capital and expertise in the research areas important for studying issues in the Great Lakes and coastal marine environments.

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