

NGI Science, Education, and Research Management Plan

September 24, 2008 (Version 2.0)



1.0 Purpose

The Purpose of this document is to discuss the process whereby the Northern Gulf Institute (NGI or “the Institute”), along with its member institutions, develops a program of scientific inquiry that supports the needs of the National Oceanographic and Atmospheric Administration (NOAA) line offices and, at the same time, remains nimble enough to expand its research agenda when new intellectual and partnership opportunities arise. This document defines the Institute’s proposal development and evaluation process and establishes a mechanism for additional expansion of the Institute’s intellectual pursuits within the NOAA context and with other governmental and non-governmental organizations. The primary guiding documents for the Institute are the NGI Strategic and Implementation Plans. This document is meant to supplement them and will point researchers to other pertinent documents that identify regional research, operational and educational needs.

2.0 Background

NOAA has established a cooperative institute (CI), the Northern Gulf Institute, collaboratively with five academic institutions, Mississippi State University (lead), University of Southern Mississippi, Louisiana State University, Florida State University, and Dauphin Island Sea Lab. NOAA’s Office of Oceanic and Atmospheric Research (OAR) is providing research funding to support significant NOAA interaction with the NGI and to increase NOAA research activities in the northern Gulf of Mexico region in one or more of the NGI’s four thematic areas: (1) Ecosystem Management, (2) Geospatial data integration and visualization in environmental science, (3) Climate Change and Climate Variability Effects on Regional Ecosystems, and (4) Coastal Hazards.

[NOAA Cooperative Institutes](#)¹ are positioned at an essential middle ground between NOAA labs and Sea Grant programs² (for example see www.masgc.org). CIs are not burdened with a large number of career commitments to scientists, and can thus be more nimble than NOAA labs in adjusting programs and recruiting necessary expertise from across the universities involved. However, CIs are created to address research issues and topics that require a longer-term, sustained approach than is typical for Sea Grant programs. Sea Grant programs typically address immediate priorities at the local and state levels, in part because of their strong outreach programs. The NGI and the Mississippi-Alabama Sea Grant have established a memorandum of agreement to cooperate in planning and for research. The directors of the Louisiana and Florida Sea Grant organizations have agreed to serve on the NGI Advisory Council.

CIs also are closely connected to the research program within NOAA through its labs and research centers, and can thus provide highly complementary and synergistic research programs that capitalize on the strength of academia working in collaboration with NOAA scientists. NGI occupies a unique place in the overall NOAA CI organization in that it is composed of a consortium of universities and NOAA scientists. Funding is split at approximately 75% for the

¹ www.nrc.noaa.gov/ci/

² www.masgc.org

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university led projects and 25% for NOAA led research. As NGI matures, the collaboration between these funding sectors will increase.

The five research institutions that make up NGI bring depth and breadth to the NGI's scientific research that is world class. NGI scientists are competitive in most any environment, including their ability to compete for NOAA funding regardless of the contractual circumstances. It follows then that the function of the NGI is not to improve the ability of our institutions to compete for funding but to improve the linkage of this group of world-class scientists with NOAA's mission-oriented research and to form research teams more capable than any one of our institutions. The benefits to NOAA of a Memorandum of Agreement (MOA) with the NGI include preferred access to and, to some extent, more direct influence about the direction of the research activity in each of the member institutions. It is advantageous for NGI to build better exposure to the NOAA mission needs among its members so that our individual institutions and NOAA can enhance the potential of the NGI. The NGI clearly adds value to high quality work at our individual institutions through several mechanisms that the MOA with NOAA facilitates:

- The NOAA/NGI MOA lowers institutional and disciplinary barriers to collaborative and/or mission-oriented research at both NOAA and in our member institutions;
- The administrative structure of NGI in itself and as part of the CI community provides a conduit to NOAA and helps investigators navigate the agency;
- The NOAA/NGI MOA streamlines funding processes and facilitates flexibility and fast response, all of which are a huge advantage to our individual institutions, NGI, and NOAA.
- NGI provides direct, visible added value to NOAA by:
 - Leveraging other funding sources (NASA, EPA, USGS, DOD, USDA, DOI, etc.) to facilitate a broad, vigorous research agenda.
 - Taking a major role in organizing and executing government and legislative relations to support the NOAA agenda.
 - Providing NOAA with strong education and outreach components.
 - Connecting NGI scientists, post-docs and graduate students to NOAA and NOAA's mission.

3.0 NGI Objectives. The distinctive objectives, as listed in the NOAA/NGI Memorandum of Agreement are:

- Provide sustained attention to scientific, technical and systems integration with NOAA and among the NGI members. Develop, maintain and refine a NGI research and transition program that fills priority gaps or reduces important limitations in current regional awareness, understanding and decision support among upland-watershed systems and practices, coastal transition areas and resources, coastal-ocean

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waters, and coastal hazards. NGI will maintain a link on its [web page](#)³ to important documentation concerning the research and operational needs of the northern Gulf of Mexico. Principal among these (but not necessarily limited to these) are the [Gulf of Mexico Alliance Governors' Action Plan 2](#)⁴ presently in draft format (Some information on this in the NGI Year 4 RFP, Attachment 1), the [Gulf Coast Services Center \(NOAA\) Needs Assessment](#)⁵ and the [Gulf of Mexico Research Plan](#)⁶ sponsored by the national and Gulf of Mexico Sea Grant College Programs. The Sea Grant: *Priority Gulf of Mexico Research Needs Analysis I* will be released later in 2008 Excerpts from a draft copy are included as attachment 2 to the NGI Year 4 RFP. Develop a steadily increasing interdependent research and development program that takes advantage of each of NGI's core institutional strengths, to support its priority research themes in the Northern Gulf: (1) Ecosystem Management, (2) Geospatial Data Integration and Visualization, (3) Climate Change and Climate Variability Effects on Regional Ecosystems, and (4) Coastal Hazards. Through the NGI Web Site, Research Plans, Annual Performance Reports, NGI Workshops, and other means, NGI will document its contributions to NOAA's five major mission goals: (1) Ecosystem - Protect, Restore, and Manage Use of Coastal and Ocean Resources through Ecosystem-Based Management, (2) Climate – Understand Climate Variability and Change to Enhance Society's Ability to Plan and Response, (3) Weather and Water – Serve Society's Needs for Weather and Water Information, (4) Commerce and Transportation – Support the Nation's Commerce with Information for Safe, Efficient and Environmentally Sound Transportation, and (5) Mission Support – Provide Critical Support for NOAA's Mission.

- Provide quality research and technology access to NOAA and NOAA-led NGI projects via direct access to the research and outreach faculties at the NGI university campuses and Stennis Space Center.
- Develop graduate-level education opportunities, NOAA career contacts, and scientific research experience to students from all relevant disciplines.
- Leverage NOAA investments in the NGI by fostering collaboration within and among NGI member institutions, with NOAA Line Offices, with federal, state and non-government organizations in the region, and with selected cooperative research and development activities involving the private sector.

4.0 Guiding Principles of the Northern Gulf Institute

- Support the best innovative science and technology research that will benefit the northern Gulf of Mexico region.
- Advance NOAA's mission to understand and predict changes in Earth's environment and provide environmental stewardship of the Nation.

³ www.northerngulfinstitute.org

⁴ http://www2.nos.noaa.gov/gomex/past_events/welcome.html

⁵ www.csc.noaa.gov/bins/products/GoMexNA_FINAL_1-21-08.doc

⁶ <http://masgc.org/gmrp/index.htm>

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- Original planning for the CI was reflected in the draft MOA between NGI and NOAA, which sets out a collection of themes of mutual interest. For NGI to continue to develop and evolve to the benefit of our institutions and NOAA partners, this science plan will continually need to be adjusted to align with NOAA's recently developed research plan.

Core funding for the Institute comes from NOAA's Office of Oceanic and Atmospheric Research however, NGI has responsibility to cross NOAA organizational lines and support all appropriate components of NOAA.

NGI investigators should explore all means possible to develop collaborations with NOAA investigators (and *vice versa*), and potential user community. Current NGI project information is available on the NGI website at www.NorthernGulfInstitute.org. Other partners and opportunities to develop collaboration are encouraged. An example would be the [National Estuarine Research Reserves](#) program, which provides field experimental sites for research and education that have extensive monitoring infrastructure in place. Of particular importance in our region are the National Estuarine Research Reserves at Grand Bay (Mississippi), Weeks Bay (Alabama) and Apalachicola Bay (Florida)⁷ and the EPA's [Barataria-Terrebonne](#)⁸ and [Mobile Bay](#)⁹ National Estuary Programs. In addition, other opportunities to develop collaboration are also readily available with the U.S. Geological Survey's [Center for Coastal and Watershed Studies](#)¹⁰ and the various GOMA Priority Issue Teams¹¹.

Collaboration of educational efforts to ensure support of NOAA's Education Plan is a critical component of NGI research and outreach activities. The three central goals of the NOAA Education Plan¹² are:

Goal 1

promote environmental literacy by increasing understanding and use of NOAA data, information and programs.

Goal 2

Build NOAA's capability to engage audiences and enable informed decision making.

Goal 3

Increase the number of people, particularly in underrepresented groups, who choose education and careers supporting NOAA's mission.

Therefore, the purpose of NGI Education and outreach programs will be to:

⁷ www.nerrs.noaa.gov

⁸ www.btneq.org/home.asp

⁹ www.epa.gov/owow/estuaries/programs/mobile.htm

¹⁰ <http://coastal.er.usgs.gov>

¹¹ <http://www2.nos.noaa.gov/gomex/>

¹² http://www.oesd.noaa.gov/NOAA_Ed_Plan.pdf

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- Insure that the results of NGI research are appropriately transmitted to our coastal-zone managers and K-Grey customers. NGI researchers will look for opportunities to conduct joint fact finding with their customers during outreach exercises.
- The presence at our institutions of very strong education programs both at the graduate level and at the undergraduate level creates the opportunity for NGI to educate high quality students in NOAA's mission, to introduce our students to NOAA research and operations personnel, and to supply NOAA with a source of new scientists. NGI has made a significant investment in education and outreach. NGI researchers are encouraged to involve students with NOAA researchers and facilitate students work at NOAA during summer internships, fellowships and similar programs.
- NGI will fund fellowships at the post-doctoral and graduate-student level that focus on NOAA strategic issues and NGI themes.
- NGI researchers are encouraged to include educational information in all aspects of NGI involvement including, for example, the labeling of photographs with an aim toward the NOAA Education Plan goals.
- NGI plays an important role educating junior scientists of NOAA's scientific interests and opportunities.
- NGI researchers should be referring to the NOAA's Strategic Education Plan for further direction (draft, closed for comment on August 29, 2008)¹³.
- Education and Outreach. The presence at our institutions of very strong education programs both at the graduate level and at the undergraduate level creates the opportunity for NGI to educate high quality students in NOAA's mission, introduce our students to NOAA research and operations personnel, and supply NOAA with a source of new scientists. NGI has made a significant investment in education and outreach. We should strive to connect our students with our NOAA counterparts and, if possible, have our students work at NOAA during summer internships, fellowships and similar programs.
- NGI will fund fellowships at the post-doctoral and graduate-student level that focus on NOAA strategic issues and NGI themes.
- NGI must play an important role educating junior scientists of NOAA's scientific interests and opportunities. We should all be aware of NOAA's scientific research plan, Research in NOAA: A Five Year Plan Fiscal Years 2008-2012¹⁴.

5.0 NGI Research Themes

The research themes of the NGI as established in the original response to the federal funding opportunity are:

Ecosystem Management. Research in this theme focuses on promoting sustainable coastal development, facilitates community resiliency, and enables an ecosystem approach to management. These foci are based upon enhanced scientific understanding of the

¹³ http://www.oesd.noaa.gov/08%20NOAA%20Education%20Strategic%20Plan%20Full%20Draft%207_14.pdf

¹⁴ www.nrc.noaa.gov/plans_docs/5yrp_2008_2012_final.pdf

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interconnections between the marine ecosystem and the adjacent watershed including their human health and resource stewardship implications.

Geospatial data integration and visualization in environmental science. This theme focuses on research upon data integration techniques and geospatial technologies (GIS and remote-sensing), as well as the development of decision- support tools that enable improved regional ecosystem forecasting, ecosystem management and ecosystem policy decisions.

Climate Change and Climate Variability Effects on Regional Ecosystems. Research conducted under this theme focuses on climate change and climate variability effects upon marine ecosystems and the socioeconomic well-being of the region and the adjacent watershed as well as ecosystem effects upon climate processes.

Coastal Hazards. Research in this theme encompasses the physical and biological systems, as well as the biological and socio-economic dimensions, associated with coastal hazards.

While the Institute does not anticipate significant deviations from the guiding principals and themes, additional funding from NOAA or other agencies may be sought by the Institute to perform research in broader areas than those defined by the NGI Themes at the discretion of the NGI Director and Fellows. The Institute anticipates addressing research of the larger ecosystem and moving beyond the original coastal Gulf of Mexico and coastal watershed focus to a broader study of the watersheds and oceanic processes that influence the Northern Gulf of Mexico.

6.0 Annual Proposal Development and Evaluation criteria.

- A call for new letters of intent and proposals will be made in the third quarter of each award year. The proposal must follow the outline defined in the Call for Letters of Intent and Proposals document which, in general, follows the guidelines established for proposals to the National Science Foundation. Proposals for extensions or further development of current research are allowed.
- The evaluation of each letter of intent and proposal will be performed by the NGI Program Staff and by the NGI Council of Fellows. A separate evaluation will also be made by NOAA line offices selected by the NOAA CI Program Manager. **Selection Procedures:** The NGI management and the OAR Office of Laboratories and Cooperative Institutes will collaborate on reviewing Letters of Intent and advise potential proposers. This will lead to an expedited proposal review and selection process. Proposals will be evaluated jointly by the NGI Fellows and selected NOAA reviewers. The joint group will submit proposal reviews to the NGI Director and NOAA Program Director for Cooperative Institutes, after which final decisions will be made by the NGI Director as to which projects will be invited to submit full proposals. The NGI Fellows have the authority to invite other proposals if they believe that critical research gaps continue to exist. Letters of Award will be sent in a timely manner.

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Annual Proposal Review: All funded multi-year projects will be reviewed on an annual basis. The renewal and the continuing support of the proposals are subject to availability of funds, and dependent upon satisfactory progress, demonstrated quality of the work being carried out, and demonstrated NGI/NOAA interactions. All projects ending during the review cycle are required to submit a final report.

- The primary evaluation criteria are as follows:
 - How does the proposal further NOAA goals and reflect NOAA research priorities, information needs and management support; and contribute specifically to one or more of the NGI Themes?
 - How does the proposal reflect regional interests, requirements and applications; and, what provisions are made to extend local investigations to regional applications? For example, see Gulf of Mexico Alliance Governors' Action Plan¹⁵, the Gulf Coast Services Center (NOAA) Needs Assessment¹⁶ and the Gulf of Mexico Research Plan¹⁷. Note that the Gulf of Mexico Alliance is preparing an Action Plan #2. Information about this plan will be attached to the NGI Year-4 Call for LOIs and Proposals. What is the scientific and or technical merit of the project? This criterion assesses whether the proposed approaches in the work plan are technically sound and/or innovative and if the methods are appropriate.
 - With whom and how will the project collaborate and in what ways (i.e., cooperative research linkages, involvement of prospective users in the project)? Specific attention should be given to collaboration among NGI institutions, with NOAA research and line organizations, other federal agencies (EPA, NASA, USGS, COE, etc.), and the Northern Gulf and user communities.
 - Does the project describe the baseline conditions for the project: i.e., the "state of the science", "gaps in management systems", "lack of public understanding," etc. against which project progress can be measured and communicated? Why is this research important?
 - Does the project use students or post-doctoral personnel in the project?
 - What approach and steps are proposed to make the transition from research to decision-support uses of project results?
 - Overall qualification of applicants and partners. This criterion ascertains whether the applicant possesses necessary education, experience, training, facilities, and administrative resources to accomplish the project.
 - What are the project costs? This criterion evaluates the budget to determine if it is realistic and commensurate with the project needs and time-frame.

7.0 Reports

¹⁵ http://dep.state.fl.us/gulf/files/files/GulfActionPlan_Final.pdf

¹⁶ www.csc.noaa.gov/bins/products/GoMexNA_FINAL_1-21-08.doc

¹⁷ <http://masgc.org/gmrp/index.htm>

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7.1 Annual NGI Spring Meeting. Depending on the format of the meeting, each project will be expected to produce either a poster or short presentation of their results and plans.

7.2 Annual Progress Report. On or about June 1 of each year an annual progress report will be due to the NGI Program Office for inclusion in the NGI Annual Progress Report to NOAA. The period of the report is usually from July 1 of the previous year until June 30 of the reporting year. In the final year of a project, the report will cover the total period of the project. The format of the annual project progress report will be distributed to the individual PIs after it is approved by the Council of Fellows.