

National Ocean Service
Center for Sponsored Coastal Ocean Research

1) The most recent laboratory evaluation for the Center for Sponsored Coastal Ocean Research was conducted as part of a comprehensive NOS internal program evaluation concluded in 1999. This document is a large notebook and is unavailable in pdf format. We suspect the substance of this report may be marginally relevant to the Research Review Team.

2) Please provide a brief history, and mission of your laboratory /center.

The Center for Sponsored Coastal Ocean Research (CSCOR), which includes the Coastal Ocean Program (COP) provides a focal point through which the NOAA/NOS National Centers for Coastal Ocean Science (NCCOS), together with partners within NOAA and other organizations with responsibilities for the coastal environment and its resources, can make significant strides toward finding the solutions that will protect coastal resources and ensure their availability and well-being for future generations. The mission of CSCOR/COP is to provide the highest quality research in support of coastal management decisions through competitive, peer-reviewed research and holistic ecosystem studies. This is accomplished through research to understand and describe coastal systems, data synthesis and modeling to assess and predict ecosystem conditions, and translation of scientific results to engage, inform, and advise the public. CSCOR/COP has developed operating principles that guide project design and management to ensure the production of the highest quality science directed to issues of importance to NOAA, Congress, and coastal managers. These operating principles revolve around competitive research, ecosystem focus, national priorities, effective partnerships (both within and external to NOAA), prediction endpoint, operational transfer, and research translation. Each program strives to incorporate these principles to the fullest extent possible.

3) Please provide a listing of *major* customers of the laboratory /center, with a one sentence description of what is being done for them.

- NOAA Fishery Managers -- providing critically needed research and models necessary for fishery stock assessments, ecosystem management, and understanding the impacts of climate and ecosystem variability on the sustainability of commercially important fishery resources (e.g. Georges Bank, Gulf of Alaska, Chesapeake Bay, Gulf of Mexico).
- NOAA Operations Managers -- providing the design, development, and testing of prototype forecasting systems which can then be transferred to an appropriate operational framework within NOAA (past efforts- CoastWatch, Coastal-Change Analysis Program, Great Lakes Coastal Forecast System, current efforts- harmful algal bloom forecasting efforts in the Gulf of Maine, Florida Coast, and Pacific Northwest).

- NOAA Estuarine Reserve Managers -- providing an understanding and the ability to predict the impacts of natural and anthropogenic stressors (i.e. multiple stressors) on estuarine systems so that managers can sustain and restore estuarine habitats within an integrated and comprehensive framework.
- NOAA Marine Protected Area Managers -- providing the regional, coupled physical-biological models necessary to aid in the placement, evaluation, sustainability, and management of planned marine protected areas and the establishment of effective MPA networks.
- Interagency Task Forces -- providing the monitoring and predictive models necessary to evaluate planned ecosystem scale restoration efforts and to aid in the adaptive management of the Gulf of Mexico and South Florida ecosystems (Nutrient Reductions in the Gulf of Mexico Watershed, Everglades and South Florida Restoration efforts).
- State Coastal Zone Managers -- providing research and models capable of predicting the effects of climate change on nearshore resources and habitats, the ecosystem impacts of eutrophication, harmful algal blooms, and hypoxia, and the linking of ecological, social and economic changes in coastal ecosystems and the well being of coastal communities.
- State Resource Managers -- providing the management oriented models to conduct “what-if scenarios, new tools and techniques for incorporation into harmful algal bloom monitoring and testing programs, the capability and funds to respond to major harmful algal bloom events, and the synthesis and translation of peer-reviewed research.
- Tribal Communities -- providing the research and tools necessary to help tribal communities manage and mitigate the short and long term risks associated with the harvesting and consumption of resources susceptible to contamination by harmful algae.

4) A short summary of research being conducted

- HABs (ECOHAB) -- ECOHAB produces the information and methods needed for managing HABs so that States can take appropriate prevention, control, and mitigation efforts to protect human and ecosystem health and local economies. This information is derived largely from ecosystem-based research, consisting of long-term regional research projects, supported by shorter targeted studies. NOAA program area: Ecosystem Goal, Ecosystem Research subgoal, HAB research
- HABs (MERHAB) -- MERHAB assists State and Tribes respond to current threats from harmful algal blooms by forging working partnerships between leading government, public, and private entities in an impacted region. Through MERHAB, researchers and managers are transferring technology for pro-active detection of algal cells and toxin to improve the efficiency and effectiveness of coastal monitoring programs. NOAA program area: Ecosystem Goal, Ecosystem Research sub-goal, HAB research.
- Hypoxia (GOM) -- Through its monitoring, observational, experimental and modeling studies, the northern Gulf of Mexico hypoxia research program is

- improving the understanding and predictions of the northern Gulf of Mexico ecosystem and provides information sought by the public and management entities. NOAA program area: Ecosystem Goal, Ecosystem Research subgoal.
- Fisheries Ecosystems (GLOBEC) -- GLOBEC's focus has been to monitor, observe, understand and describe marine ecosystems through extensive field studies and to develop predictive models of these ecosystems to enable ecosystem-based management of important fisheries. NOAA program area: Ecosystem Goal, Ecosystem Research subgoal, fisheries management research.
 - Synthesis and Ecological Forecasting – CSCOR/COP is addressing the need for the delivery of key products and technologies developed by research programs through the dedicated synthesis of results and information generated by coastal studies and the development of ecological forecasts with identified management applications. Through these efforts CSCOR is assuring the dissemination and translation of key research results and the transfer of successful models and products to the management community. NOAA program area: Ecosystem Goal, Ecosystem Research subgoal, ecological forecasting.
 - Coral Reef Ecosystems (CRES) - The Coral Reef Ecosystems Studies (CRES) program funds competitive, long-term, ecosystem-scale research on the underlying processes that regulate coral reefs. These programs conduct management-oriented research and monitoring projects, leveraging funds and working in partnership with county, state, and federal agencies, and private, academic and stakeholder organizations to achieve on-the-ground results in coral reef conservation. NOAA program area: Ecosystem Goal, Ecosystem Research subgoal, coral research.
 - South Florida - The overall goal of CSCOR's South Florida program is to fund high priority research and observational data collection needed to develop a capability to predict and assess the impacts of proposed Everglades Restoration activities on the coastal system from the mangroves to the coral reefs and to fulfill NOAA commitments to the South Florida Ecosystem Restoration effort and the Comprehensive Everglades Restoration Plan. NOAA program area: Ecosystem Goal, Ecosystem Research subgoal.
 - Multiple Stressors - Understanding how multiple stressors affect natural systems will improve our ability to manage and protect these systems. CSCOR's multiple stressor research studies strive to (1) quantify the effects of eutrophication in concert with other anthropogenic and natural stressors; (2) develop indicators of cumulative stress at individual, population, and ecosystem levels; (3) evaluate the effectiveness of potential mitigation strategies; and (4) extend the approaches, results, models and techniques developed in the projects to other coastal ecosystems. NOAA program area: Ecosystem Goal, Ecosystem Research subgoal.
 - Career - The purpose of the CSCOR/COP Career program is to support NOAA/NOS activities designed to facilitate and/or enhance the development of qualified professionals in the fields of coastal ocean science, management, and policy. The CAREER program will enhance students understanding of the role of science and technology in identifying and addressing management problems, understanding the socioeconomic context in which decisions are made, and the

nature of the political process. NOAA program area: Ecosystem Goal, Ecosystem Research subgoal, outreach and education.

5.) Please provide a listing of 3-5 major accomplishments in the last five years.

- Research conducted through our Gulf of Mexico Hypoxia Program led to a scientific consensus, followed by the first ever “Action Plan” to improve the Gulf of Mexico “dead zone”. In 2003 this program enabled NOAA and scientists to issue the first advance forecast of the annual hypoxic event in the Gulf of Mexico. Future knowledge gained through this program will lead to enhanced predictive models capable of examining a multitude of interacting factors (e.g. nutrient input, freshwater inflow, circulation patterns) on the size of the hypoxia zone and how hypoxia affects commercially important species of the region and allow for the assessment of alternative management strategies for Mississippi River nutrient loads within the context of long-term changes in eutrophication and hypoxia.
- Research conducted through CSCOR/COP programs has produced a suite of regional, coupled physical-biological ecosystem models capable of addressing a variety of key management concerns related to the effects of multiple stressors on coastal ecosystems. Models are currently being developed for the ecosystem of the Gulf of Maine, Chesapeake Bay, South Florida, Great Lakes, Gulf Coast, and Pacific Northwest. These models will ultimately be transferred to state and federal management entities and incorporated into regional observing systems.
- New remote sensing technologies such as optical detectors, underwater vehicles (AUV’s) and satellite sensors, to detect and track HAB movements in time for coastal managers to take proactive measures to protect public health. This concept has already proved successful in Florida where routine HAB bulletins developed from satellite imagery and field sampling are providing resource managers advanced warning of potentially toxic blooms off the coast. Other areas currently in development are Texas waters and the Pacific Northwest.
- The development of predictive coupled physical and biological ecosystem models which have or are being used to aid the management decisions of important fishery resources such as the reopening of closed areas on Georges Bank to scalloping useful to the New England Fishery Management Council and a one year prediction of the survival rate of returning salmon to the Coho and Columbia River-of use to the NMFS Northwest Regional Office and the Northwest Power Planning Council (an interstate body that makes decisions on water use within the Columbia River Basin).
- The development of a suite of rapid and highly selective tools and sensors for the monitoring and testing of harmful algal blooms. These tools are aiding in the assessments of public health impacts of harmful algal blooms, the detection of toxins and harmful species at low concentrations/levels, and to understand to effects of sub-lethal exposure to toxins. Some of this technology has already been incorporated into ongoing testing programs and has allowed for the proactive opening and closing of shellfish harvests.

6.) Please provide a summary of legal mandates for the work in the laboratory/center.

- Coastal Ocean Program, § 201(c) of Public Law 102-567.
- Harmful Algal Bloom and Hypoxia Research and Control Act of 1998, 16 U.S.C. § 1451 note (Pub. L. No. 105-383, Title VI, 112 Stat. 3447 (Nov 13, 1998))
- National Marine Sanctuaries Act (Title III of the Marine Protection, Research, and Sanctuaries Act), 16 U.S.C. §§ 1431-1445c-1.
- Executive Order 13158 [Marine Protected Areas], (May 26, 2000, 65 Fed. Reg. 34909).
- Coastal Zone Management Act, 16 U.S.C. § 1451 et seq.
- Coral Reef Conservation Act, 16 U.S.C. §§ 6401-6409.
- Marine Mammal Protection Act, 16 U.S.C. §§ 1361-1421h.
- Executive Order 13089 - Coral Reef Protection
- The Estuary (Estuarine) Protection Act, 16 U.S.C. §§ 1221-1226.
- Estuary Restoration Act of 2000, 33 U.S.C. §§ 2901-2909
- Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1801 et seq.
- Global Change Research Act, 15 U.S.C. §§ 2921-2961.
- National Climate Program Act, 15 U.S.C. §§ 2901-2908.
- Endangered Species Act