

State-by-State Project Inventory

The Center works with state and local organizations to determine which coastal resource management issues to address. These organizations assemble teams with members from private industry, nonprofits, and governmental organizations to address said issues. Each team effort results in new technology, data, expertise, and training being directed at a local issue.

This project inventory summarizes many of the Center's state projects since its inception. The results of these projects often become new tools and information resources that can be used by the broader coastal resource management community.

ALABAMA

Alabama Hazard Mitigation Training—1999

The Center conducted a three-day hazard mitigation training workshop in southern Alabama. The purpose of the workshop was to help build local capacity for developing a regional coastal hazard mitigation plan. Training sessions addressed risk and vulnerability assessment, mitigation planning, mitigation funding opportunities, developing public-private partnerships, and community education and awareness.

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Coastal Hazards GIS for Alabama—1997, 1998

www.csc.noaa.gov/products/alabama/startup.htm

The Center helped the State of Alabama develop a local Coastal Erosion and Hazard Mitigation Plan by providing geographic information system (GIS) design assistance. Using this type of system, data from disparate sources can be viewed simultaneously, providing a much clearer picture of the overall condition of the study area. The system integrated hazard identification data such as storm surge inundation maps, floodplain maps, and erosion data, as well as more commonly used data layers such as those for land use and socioeconomic information. The project served as a "beta test" for local risk and vulnerability assessment projects throughout the U.S.

Coastal Ocean Habitat Project—1999, 2000

www.csc.noaa.gov/products/gulfmex/startup.htm

The Coastal Ocean Habitat Project generated Center data products that utilized satellite observations of U.S. coastal waters. A retrospective satellite product for the northern Gulf of Mexico was produced during 2000.

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the State of Alabama will be available beginning in 2003.

Harmful Algal Bloom Project—1999 to 2003

www.csc.noaa.gov/crs/habf/

This project is developing information systems to help coastal resource managers control shellfish harvesting closures and issue public health alerts. A harmful algal bloom e-mail bulletin and a near real-time information system on the Internet are available to managers.

Needs Assessment Training—2001

Weeks Bay National Estuarine Research Reserve (NERR) served as a local host for this workshop. Participants in the two-day training included staff from other southeast NERR sites, Sea Grant, the National Estuary Program, and state coastal management programs. The goals of this training are to familiarize participants with terminology, tools, and methods and to help them understand how and when to use needs assessments.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Shoreline Data Rescue—1997 to 2003

www.csc.noaa.gov/products/shorelines/

GIS-compatible shoreline data sets that include high-resolution contemporary and historic shorelines are available from the Center's Web site. The source of the historic shoreline data is NOAA t-sheet charts dating from the 1800s. This information is most frequently used to measure shoreline change.

Topographic Change Mapping—1998

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1998. These measurements can be used for beach change studies and are available to the public.

ALASKA

Alaska Safe Navigation Project—1998

This project provided navigation information for southeastern Alaskan waters. The Center provided software programming support to develop an automatically generated Web page that can be printed out and used as a tool for safe navigation. The information provided in these reports includes marine weather forecasts, a local notice to mariners, and commercial fishing information.

Coastal Management Fellowship—1997 to 1999

www.csc.noaa.gov/cms/1997Fellows.html

A Coastal Management Fellow worked with the Alaska Department of Fish and Game on a project entitled "Development of an Ecological Characterization of the Kachemak Bay Watershed." The project involved the synthesis of information detailing physical processes, biological systems, and human uses of the bay and its watershed. The final product is used to promote ecosystem-based land-use decisions and practices based on sound ecological information.

Coastal Permitters Workshop—1998

This three-day workshop was conducted for rural coastal district representatives and state permittees working in western and northern Alaska. The workshop focused on how these managers could better use the consistency review process to more successfully address their concerns regarding land and water use issues. Rural coastal districts have a formal participating role in the state consistency review of permit applications for coastal development projects.

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Kachemak Bay Ecological Characterization—1998 to 2001

www.habitat.adfg.state.ak.us/geninfo/kbrr/coolkbayinfo/kbec.html

The Kachemak Bay Ecological Characterization (KBEC) is an interdisciplinary synthesis of information about the bay's ecosystem and the communities that depend on it. By integrating existing information and developing geographic information system (GIS) management tools, KBEC is assisting research efforts and promoting an ecosystem approach towards managing and using Kachemak Bay's natural resources. Alaska Department of Fish and Game developed KBEC through a cooperative agreement with the NOAA Coastal Services Center.

Needs Assessment Training—2001

Kachemak Bay National Estuarine Research Reserve (NERR) served as a local host for this workshop. Participants in the two-day training included staff from NERR sites, Sea Grant, the National Estuary Program, state coastal management programs, and other local partners. The goals of this training program are to familiarize participants with terminology, tools, and methods and to help them understand how and when to use needs assessments.

OPIS Alaska—2002, 2003

This proposed information system will allow increased access to ocean, coastal, and watershed information for Alaska to a variety of stakeholders, including state, local and tribal agencies, policy makers, nongovernmental organizations, and the public. The proposed geographic information system (GIS)-based application is modeled after the Ocean Planning Information System (OPIS), developed by the Center and its partners for the southeastern U.S.

Permit Tracking System—2001 to 2003

This project develops a database for the North Slope Borough permitting department that interacts with the tax assessing and geographic information system (GIS) databases to track permitting. Ultimately, non-sensitive or non-confidential information will be available via the Internet.

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Yakutat Bay Land Cover and Change Data—1997

www.csc.noaa.gov/crs/lca/yakutat.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1986 and 1993. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Yakutat Bay Region, Alaska, Land Cover and Change CD-ROM—1998

www.csc.noaa.gov/products/ak/startup.htm

The Center developed this CD-ROM to provide coastal resource managers with satellite-derived land cover data and other spatial data layers in a user-friendly, cross-platform interface. This type of interface, along with all the data, allows for enhanced analysis that is useful in addressing issues concerning fisheries practices throughout the study region. The impetus for this project was intense interest by federal, state, and local fisheries biologists, who are studying the potential impacts of movement of the Hubbard Glacier on important salmon fisheries in the Yakutat area. Satellite imagery acquired in 1993 was compared to imagery acquired in 1986 to map changes in land cover over the seven-year period.

AMERICAN SAMOA

Addressing the Challenges and Opportunities of Climate Variability and Change for Pacific Island Communities—2002, 2003

Funding for this project helps provide coastal managers, other governmental officials, businesses, and community leaders in U.S.-affiliated Pacific Islands with access to the most recent scientific information on the consequences of climate variability and change. In addition, this project will support the dialogue necessary to more fully understand local vulnerability and develop effective adaptive strategies. This project was funded with a Pacific Islands special project grant from the Center.

CZMA Bibliographies

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Developing Coastal Community Awareness—2001 to 2003

The goals of this project are to develop a community-based coastal awareness project in partnership with a village and to provide guidance and technical assistance for managing its coastal resources. The project provides information technology about land-use practices that threaten the environment and strategies for protection against them so that Samoan communities can make informed land-use and management decisions. The project is implemented through workshops, technical assistance, training, provision of equipment and materials, and assistance in implementing community-based coastal projects.

Habitat Restoration Planning—1996 to 1998

American Samoa has few areas suitable for development because land slopes tend to be very steep. As a result, the relatively flat wetland areas are targets for development. The American Samoa Coastal Management Program is attempting to prevent further losses and reclaim wetland functions through an outreach program that allows villages to develop wetland policies and to actively participate in collecting the information needed to support those policies. This project had four major components:

1) restoring mangals, 2) establishing a puzzenut and mangrove nursery, 3) establishing a gray duck preserve, and 4) managing restored mangals via a program that involves nearby villages.

Information Exchange through Partnerships—2002, 2003

The Center is leading the effort to implement the NOAA Ocean Service Pacific Services Center (PSC) in Honolulu, Hawaii. PSC is the focal point for the deployment of resources, products, and services from NOS to the Pacific Island region. The new center works in partnership with NOAA, as well as with other federal, state, academic, private sector, and local coastal resource programs, to establish a collaborative program that addresses identified coastal and ocean information needs of island states and territories. PSC works with these partners to determine the

best way to implement this collaborative effort and fund special projects that will accelerate the process.

Needs Assessment for Island Coastal Programs—2000, 2001

The Center conducted a needs assessment of each island coastal program. The goal was to collect information about the position of the coastal management program, in terms of its technical and nontechnical resources, to meet its goals. The assessment initiated the development of appropriate and feasible projects between the Center and the island coastal programs.

Pacific Islands GIS—2001 to 2003

The Pacific Islands GIS project is developing fully-integrated geographic information systems (GIS), spatial data management, and Internet capabilities within the Pacific Islands coastal programs. The project concentrates on data and structures necessary to support the Coastal Zone Management Act (CZMA) and the organizations charged with carrying out CZMA. This project helps coordinate GIS hardware and software purchases, provide GIS and metadata training, develop spatial data layers and associated metadata, create and maintain a Web site with an interactive GIS application, maintain a list server, and provide technical support to the islands.

Pacific Islands Special Projects Program—2002, 2003

Special Projects is a general program that provides services, such as technical assistance and funding, as defined by island needs. The goal of the program is to provide assistance to the Pacific Island coastal management community on a very broad range of issues related to coastal management. Through the Center's Broad Area Announcement, applicants can compete for project funding to meet their needs.

Pacific Islands Technical Assistantship Program—2002, 2003

To accommodate a need expressed by Pacific Island coastal managers, the Center has designed a specialized technical assistantship program. One of the barriers to coastal management in the Pacific is that technically trained staff, especially those with geographic information system (GIS) experience, cannot be recruited or retained. The goal of the program is to place technically trained students with Pacific Island coastal programs for two years to work on coastal management activities.

Protected Areas GIS (PAGIS)

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Safe Navigation—2002, 2003

The Pacific Services Center, along with the NOAA Coastal Services Center, is assisting the Pacific Island region on maritime and shipping issues of critical importance. These issues include increased vessel traffic, out-of-date nearshore data and information, the need for updated nautical charts, environmental implications from groundings, and the accuracy of geospatial positioning for the islands and their coastal environments.

CALIFORNIA

BeachData Volunteer Database Entry Tool—2002, 2003

This tool is an Internet-based data entry system designed to allow volunteer beach observers to enter detailed field observations of the conditions of California beaches into a searchable database.

Channel Islands National Marine Sanctuary (NMS) Marine Reserve Process—2000

The Center provided facilitation services to a multistakeholder marine reserve working group established by the Sanctuary Advisory Council of the Channel Islands NMS. The purpose of this effort was to create a consensual agreement on the establishment of marine reserves, or “no-take” areas, in the Channel Islands NMS. In addition, the Center provided technical support in the development of a GIS-based decision-support tool for the process. This GIS application helps consolidate and integrate the best available ecological and socioeconomic information, as well as local knowledge of the area.

Coastal California Land Cover and Change Data—2002, 2003

This project maps terrestrial land cover in coastal watershed environments and identifies changes in these areas. The project relies on satellite multispectral imagery as the primary information source. These data are used to distinguish major land cover classes, and previous images are being studied to locate areas that changed over time. For this project, the data will be acquired according to the Center’s Coastal Change Analysis Program (C-CAP) methods.

Coastal Management Fellowship—1996 to 1998

www.csc.noaa.gov/cms/1996Fellows.html

A Coastal Management Fellow worked with the California Coastal Commission to conduct a project designed to expand the use of geographic information systems (GIS) for coastal management in California. The project led the way toward the integrated use of GIS tools and data necessary for various regulatory, enforcement, planning, and natural resource management activities.

Coastal Management Fellowship—1998 to 2000

www.csc.noaa.gov/cms/fellow98.html

A Coastal Management Fellow worked with the California Coastal Commission to develop information and evaluation tools for an objective examination of beach nourishment projects throughout the state. Criteria and a methodology were established to evaluate and prioritize the suitability of sites for beach nourishment projects.

Coastal Management Fellowship—2000 to 2002

www.csc.noaa.gov/cms/00_fellows.html

A Coastal Management Fellow worked with the California Coastal Commission on a project entitled “Creation of a Habitat Inventory and Information System to Facilitate Wetland Preservation and Restoration in Central and Northern California.” The project identified significant wetlands in three counties using existing data, remote sensing, and development of an integrated GIS-based data structure.

Coastal Management Fellowship—2002 to 2004

www.csc.noaa.gov/cms/fellows/02_fellows.html

A Coastal Management Fellow is working with the San Francisco Bay Conservation and Development Commission on a project entitled “Development of a Water Quality Monitoring Program for Marinas in the San Francisco Bay.” The project involves collaboration with key federal, state, and local environmental protection and management agencies and organizations to develop a scientifically-based, volunteer water quality monitoring program for marinas in San Francisco Bay. The fellow is monitoring and evaluating several pilot monitoring projects at selected marinas to make recommendations for continued water quality monitoring at marinas throughout the Bay.

CZMA Bibliographies

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El Niño in San Francisco Bay—1997

NOAA hosted a workshop for property owners, marine operators, resource managers, and members of the general public on the potential effects of El Niño in the San Francisco Bay area. The workshop presented real-world needs and responses to El Niño by local maritime and environmental managers, summaries of the El Niño phenomenon, predictions and possible effects from a panel of experts, and a roundtable discussion of preparation and response strategies based on questions raised by presenters and workshop attendees.

Global Positioning System Resources in the San Francisco Bay Area—1998

NOAA hosted a day of workshops, demonstrations, and exhibits to educate resource managers, engineers, marine safety experts, surveyors, developers, petroleum facility operators, and the public about employing Global Positioning System (GPS) resources in the Bay area. Concurrent workshops focused on the application of GPS and geographic information systems to a wide range of resource management issues, including oil spill response, maritime safety, and resource delineation.

Hamilton Wetlands Restoration Workshop—2000

Accurate knowledge of tidal and terrestrial elevations is critical in the restoration of degraded or destroyed wetlands. NOAA convened a conference to present methodologies for obtaining this information to managers and practitioners involved in wetland restoration in the San Francisco Bay area. Results from a NOAA pilot study, contributing toward a restoration project on the former Hamilton Army Airfield, were presented to illustrate these methodologies and to help establish realistic expectations for the limitations of these methodologies.

Hydrographic Data Acquisition and Integrated Spatial Data Model—2002, 2003

This project is developing high-resolution, digital seafloor bathymetry data suitable for classification and delineation of benthic habitats. These data will be included in a Web site populated with marine mapping products, modeling mapping tools, and geographic information system themes pertinent to the California Department of Fish and Game and other public groups. This information will help these organizations assess habitat quality and improve sampling strategies.

Kelp Forest Restoration Project—1999, 2000

www.csc.noaa.gov/funding/PastAwards1.html

This project aided in the restoration and protection of kelp forests in southern California by educating and involving residents, businesses, teachers, and students. Kelp is a critical marine habitat that once covered hundreds of acres in this region and provided food and shelter for hundreds of species of marine life. This project was funded by a special project grant from the Center.

Marine Information System (MarIS)—2002, 2003

MarIS is a simple, wizard-driven tool that allows users with limited knowledge of geographic information systems (GIS) to access, view, and analyze spatial data and generate standard map layouts for presentations, reports, or press releases. MarIS was designed specifically for the National Marine Sanctuary's management plan review processes.

Needs Assessment Training—2000

Tijuana River National Estuarine Research Reserve (NERR) served as the local host for a two-day workshop that focused on methods and tools to assess the needs of a target audience. Participants included representatives from regional NERRs and other local partners. Networking and resource sharing opportunities were enhanced through discussions.

Ocean Color Applications Project—1996

Through this project, processing and classification techniques were developed to evaluate coastal water quality and biological and geologic variables based on remote sensing data from satellite or aircraft. Data on the bio-optical characteristics of diverse U.S. coastal waters were collected. These data are used to validate satellite measurements used for ocean color data products.

Protected Areas GIS (PAGIS)

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Public Issues and Conflict Management—2001

The California Sea Grant College Program hosted a three-day Public Issues and Conflict Management workshop in May 2001. Aimed at Sea Grant extension agents and coastal resource managers, the workshop is designed to build skills in public issues management, including meeting management and planning, collaborative processes and decision making, and media relations.

Salmonid Recovery Planning Information Resource—2002, 2003

www.csc.noaa.gov/lcr/

This information resource is a digital compilation of data and tools that will help coastal resource managers design and implement recovery plans for coho salmon and steelhead trout within the watersheds of San Mateo and Santa Cruz Counties in California. By integrating physical, ecological, and socioeconomic information from these counties with interactive tools, this resource will help coastal managers and land-use planners characterize species, watersheds, and recovery issues in their areas. Managers can also use the resource to identify and prioritize habitat restoration projects and address large-scale, long-term planning and management functions.

San Francisco Bay/Elkhorn Slough Area Land Cover CD-ROM—1998

www.csc.noaa.gov/products/sf/startup.htm

This CD-ROM includes land cover change data for the central California coast, 40 additional spatial data layers, and a means for coastal resource managers to display these map layers. This study was particularly significant because, through natural processes and urbanization, California has lost 75 percent of its original coastal wetlands. The area of study includes San Francisco Bay and the Elkhorn Slough National Estuarine Research Reserve. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

San Francisco Bay/Elkhorn Slough Area Land Cover and Change Data—1993

www.csc.noaa.gov/crs/lca/san_fran.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1986 and 1993. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

San Francisco Bay Footprint Project—2002, 2003

Through community input from a series of public workshops, the Bay Area Footprint Project will develop a comprehensive smart growth strategy for the entire San Francisco Bay region. The San Francisco Bay Conservation and Development Commission is hosting a number of workshops for this purpose. The Center is one of a number of partners in this effort.

San Francisco Bay Partnership—2002, 2003

Dredging and development activities in the San Francisco Bay are affecting eelgrass and other subtidal habitats. To help manage and restore these habitats, this partnership project aims to interpret advanced seafloor mapping data, gather supporting historical and ancillary habitat and species information, focus habitat and eelgrass assessment surveys, and apply a multiagency geographic information system (GIS) database and mapping project framework. The Center is helping to determine habitat types for natural resource management and suggest management and restoration strategies for seagrasses.

San Francisco International Airport Panel—1999, 2001

San Francisco International Airport wanted to build new runways out into the bay to address increasing air traffic congestion. Because the proposed runways would constitute one of the largest single fills ever of the bay, federal and state regulatory agencies asked NOAA to form an impartial, independent science panel to identify key questions that the permitting process must address. The panel conducted internal workshops and presented its findings to the public in 1999; a peer review process began in January 2001. A public meeting to discuss the results of the review was conducted, and a proceedings document was prepared for the airport and the Bay area regulatory agencies.

Southern California Wetlands Recovery Project—2001 to 2003

www.coastalconservancy.ca.gov/scwrp/

The Center is supporting the Southern California Wetlands Recovery Project (WRP) by developing GIS-based tools for prioritizing wetland restoration and conservation options in the five southern counties of coastal California (San Diego, Orange, Los Angeles, Ventura, and Santa Barbara). Analyses of riparian areas are being done across the region to identify areas with high ecological value and to examine the costs and benefits of using land-use and land-cover data collected at different spatial scales to map riparian vegetation. The project is also developing conceptual models that examine the habitat, hydrology, and biogeochemistry functions of wetlands within their landscape context. The WRP is a multiagency effort within California and is led by the California Coastal Conservancy.

Spatial Data Compilation for the Joint California Management Plan Review Process—2002, 2003

This compilation of over 70 spatial data layers was developed to support National Marine Sanctuary management plan review processes. The GIS databases provide the sanctuary advisory committees with the ability to analyze spatial data to help them address the issues raised during the review process.

Topographic Change Mapping—1997, 1998

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during fall 1997 and spring 1998. These measurements can be used for beach change studies and are available to the public. The mapping includes data from before and after the El Niño season.

Watershed Analysis Tool for Environmental Review—1996 to 1998

www.coastal.ca.gov/h2o/h2osumm.html

This effort produced an Internet-accessible analytical tool for managing polluted runoff across political boundaries. A major stumbling block to managing polluted runoff is the inability of management agencies to exchange and geographically rectify electronic data. Data from different

agencies are often incompatible because of differences in hardware, software, map scales, coordinate systems, and data structures. This tool overcomes these challenges. This project was conducted by the California Coastal Commission under a grant from the Center.

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS (CNMI)

Addressing the Challenges and Opportunities of Climate Variability and Change for Pacific Island Communities—2002, 2003

Funding for this project helps provide coastal managers, other governmental officials, businesses, and community leaders in U.S.-affiliated Pacific Islands with access to the most recent scientific information on the consequences of climate variability and change. In addition, this project will support the dialogue necessary to more fully understand local vulnerability and develop effective adaptive strategies. This project was funded with a special project grant from the Center.

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CONNECTICUT

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Coastal Habitat Decision Tool—2001 to 2003

In 2001, the Center solicited proposals to develop decision-support tools related to coastal habitat management. As a result of this process, the University of Connecticut was awarded funding to develop an integrated educational and technical support system for local protection of high-priority Connecticut coastal habitats.

Coastal Management Fellowship—1996 to 1998

www.csc.noaa.gov/cms/1996Fellows.html

A Coastal Management Fellow worked with the Connecticut Office of Long Island Sound Programs on a project that shared information on the restoration of degraded salt marshes with other coastal states. This sharing came in the form of a wetlands restoration database; the project also included research and monitoring activities to identify effective restoration strategies for brackish tidal marshes.

Coastal Management Fellowship—1999 to 2001

www.csc.noaa.gov/cms/99_fellows.html

A Coastal Management Fellow worked with the Connecticut Office of Long Island Sound Programs on a project entitled "Long Island Sound Sediment Quality Information Database." The fellow produced a user-friendly sediment quality information database and GIS that enhances management decisions on sediment testing plans, selection of priority pollutants for testing, and evaluation of the suitability of sediments for open-water disposal. The project made existing sediment quality and distribution information available to the public, including the academic community, in a usable format.

Coastal Management Fellowship—2002 to 2004

www.csc.noaa.gov/cms/fellows/02_fellows.html

A Coastal Management Fellow is working with the Connecticut Office of Long Island Sound Programs on a project entitled "Public Access to Coastal Environments (PACE)." The outcome of this project will be the development of a public access database and Web site. The fellow is developing a comprehensive GIS database of shoreline property ownership classification and using it to help the state organize, analyze, and share information related to public access to coastal environments in Connecticut.

Coastal Management Outreach, Education, and Training Program—2000

www.csc.noaa.gov/funding/PastAwards1.html

The primary objective of this project was to establish a coastal management outreach, education, and training program in Connecticut's Department of Environmental Protection (DEP). Funding was used to develop training materials and provide workshops for Connecticut's 36 coastal municipalities' planning and zoning authorities and staffs. Training materials addressed such topics as coastal hazard mitigation, protective buffers and setbacks from sensitive resources, the need to increase public access to marine and tidal waters, and the reduction and control of pollution from various nonpoint sources. This project was funded by a special training grant from the Center.

Eastern Connecticut Land Cover and Change Data—2000

www.csc.noaa.gov/crs/lca/mass.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1991 and 1997. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Impervious Surface Analysis Tool—2001, 2002

www.csc.noaa.gov/crs/is/

The Center developed a tool to derive impervious surface information from remotely sensed data to test how impervious surfaces affect water quality. Conducted in cooperation with the University of Connecticut's Nonpoint Education for Municipal Officials (NEMO) program and state coastal managers, this project creates a model for useful, integrated water quality products. In 2002, the Center and NEMO conducted a training session on the tool for over 30 participants from Connecticut and seven other states.

DELAWARE

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Coastal Management Fellowship—1998 to 2000

www.csc.noaa.gov/cms/fellow98.html

A Coastal Management Fellow worked with the Delaware Coastal Management Program to coordinate the development of a decision-making policy that provides a clear outline and guidance for the identification of problems related to dredging operations. In addition, the fellow developed an information management system to facilitate and expedite a comprehensive review of projects.

Coastal Management Fellowship—2001 to 2003

www.csc.noaa.gov/cms/fellows/01_fellows.html

A Coastal Management Fellow is working with the Delaware Coastal Management Program on a project entitled "Tracking and Monitoring System for Coastal Non-point Pollution Control Program (CNPCP)." The project creates a system for tracking nonpoint pollution control activities, creating a method for analyzing the effectiveness of the CNPCP on water quality control, and beginning the long-term collection of data about program areas requiring improvements.

COMPAS Delaware—1996, 1997

Under a grant from the Center, the Delaware Department of Natural Resources and Environmental Control developed a geographic information system-based approach for examining environmental impacts from dredging and nonpoint source runoff.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Rehoboth Bay, Benthic Data—2000

www.csc.noaa.gov/crs/bhm/de.html

The Center worked with the Delaware Coastal Management Program to integrate single-beam acoustic sensor data with traditional aerial photogrammetry of Rehoboth Bay. This project developed methods to acoustically identify bottom types in the naturally turbid water, in particular for the management of the nuisance alga *Ulva* (sea lettuce). The acoustic data provides bathymetric information on the bay, as well as data on the location and extent of algal accumulations. The resulting data set is being used to plan algae harvesting activities to minimize environmental impacts.

FLORIDA

Apalachicola Bay Benthic Characterization—1999 to 2001

www.csc.noaa.gov/pagis/html/apa_act.htm

The Center and the Apalachicola Bay National Estuarine Research Reserve used sediment profiling imagery (SPI), traditional benthic sampling, and single-beam acoustic sensing (RoxAnn) to map turbid water habitats in the bay. These maps are integrated with information about key physical processes, such as freshwater inflows, salinity distribution, and sediment transport, to establish baseline conditions. This information was gathered prior to expected changes in salinity and hydrodynamics from proposed upstream water flow modifications within the Apalachicola-Chattahoochee-Flint Basin.

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Coastal Management Fellowship—1996 to 1998

www.csc.noaa.gov/cms/1996Fellows.html

A Coastal Management Fellow worked with the Florida Coastal Management Program to improve hazard mitigation and redevelopment policies at the local level. This project provided local governments with the best available knowledge about hazards, risks, and vulnerability to ensure fact-based policy development.

Coastal Management Fellowship—2000 to 2002

www.csc.noaa.gov/cms/00_fellows.html

A Coastal Management Fellow worked with the Florida Coastal Management Program on a project entitled "An Evaluation of Management and Human Use Concerns in Coastal/Marine Ecosystems: A Contribution to Adaptive Coastal Management." The project focused on implementation of the second phase of the Florida Coastal Management Program's BlueWays initiative, an effort to promote adaptive coastal management.

Coastal Ocean Habitat: Florida Bay—1997 to 1999

www.csc.noaa.gov/crs/cohab/flbay/flbay.html

Satellite observations of turbidity from 1985 to 1998 are available on CD-ROM. These images are used to characterize water clarity in Florida Bay where seagrass die-offs are common.

Community-Based Habitat Restoration—2001 to 2003

NOAA's community-based restoration program helps community groups restore marine and estuarine habitat by providing funds and technical expertise. NOAA Fisheries leads the program. The Center has been a program partner since fiscal year 2001 and has co-funded several projects, including the Reef Medics program in southern Florida and a mangrove wetlands restoration project in eastern Florida.

Dry Tortugas, Essential Fish Habitat—2000, 2001

www.csc.noaa.gov/crs/bhm/torts.html

This baseline information on benthic habitats and processes is being used to evaluate the success of various management approaches. The Dry Tortugas project was conducted in cooperation with the National Ocean Service's Beaufort Lab, the Florida Fish and Wildlife Commission, and Florida International University.

Ecological Characterization of the Rookery Bay NERR—1999 to 2002

www.csc.noaa.gov/lcr/text/rookery.html

The characterization of the Rookery Bay National Estuarine Research Reserve (NERR) provides a comprehensive interdisciplinary synthesis of current and historical information about this area, both environmental and cultural. The final product, a CD-ROM and Internet site, integrates geographic information system (GIS) data and information about key landscape processes. The Rookery Bay NERR developed the characterization through a cooperative agreement with the NOAA Coastal Services Center.

Estero Bay, Benthic Data—1999

www.csc.noaa.gov/crs/bhm/ebay.html

This project documented the current benthic habitats of Estero Bay in this fast-growing area of southwest Florida. Aerial photography flown during 1999 was compared with an earlier photo data set to identify the changes that have taken place. The South Florida Water Management District and Florida Fish and Wildlife Commission were directly funded to complete this project.

Estuarine Habitat Project—1998 to 2001

www.csc.noaa.gov/crs/ehab/

The Estuarine Habitat project investigated remote sensing and modeling approaches for studying oceanic and terrestrial processes. This project focused on building new, useful methodologies and applications to aid coastal managers in assessing estuarine habitat quality.

Extension and Capacity-Building for the St. Johns Watershed, CSI Pilot—2002, 2003

www.csc.noaa.gov/csi/

The overall purpose of this pilot project for the Coastal Storms Initiative (CSI) is to assist local and state officials in improving decision-making regarding coastal storm impacts. This effort is a compilation of nine projects that address specific hazards-related issues. Taken together, the projects result in a large suite of new and improved tools, data, information, forecast models, and training for the coastal communities in the pilot study area. Partners for the project are the Florida Sea Grant Extension, Florida Coastal Zone Management, the National Weather Service Regional Office, and the NOAA Coastal Services Center.

Florida Bay Benthic Data—1991, 1995

www.csc.noaa.gov/crs/bhm/flbay.html

Significant losses of submerged aquatic vegetation (SAV) meadows occurred in Florida Bay during the late 1980s. This study was initiated to provide a comprehensive benthic habitat map of Florida Bay so that future gains or losses of SAV could be documented and monitored. The project was directly funded by NOAA and accomplished by the Florida Marine Research Institute and the NOAA Coastal Services Center.

Harmful Algal Bloom Project—1997 to 2003

www.csc.noaa.gov/crs/habf/

This project is developing information systems to help coastal resource managers control shellfish harvesting closures and issue public health alerts. A harmful algal bloom e-mail bulletin and a near real-time information system on the Internet are available to managers.

Hurricane Storm Surge Visualization—2002, 2003

www.csc.noaa.gov/csi/projects/stjohnCirculation.html

As part of the Coastal Storms Initiative, the Center is developing a risk and vulnerability assessment of the St. Johns River area using a three-dimensional visualization model to display predicted storm surge levels for various hurricane categories.

Indian River Lagoon Benthic Data—1996

www.csc.noaa.gov/crs/bhm/ir_fl.html

Seagrass is used as an indicator of overall water quality, so water quality management practices are designed to support healthy seagrass in the Indian River Lagoon. For this project, seagrass beds were mapped from 1996 aerial photography.

Marine Spill Analysis System—1999, 2000

This multiagency effort worked to pool resources and expertise to highlight a geographic information system (GIS) to be used by the marine spill and resource management community. The Marine Spill Analysis System (MSAS) is a specialized ArcView® GIS application that allows managers, biologists, and technicians to load, view, analyze, and publish spatial data sets that are unique to coastal and marine management and protection scenarios. Specialized tools have been created that allow users to study or respond to a spill, such as oil or gasoline, “from cradle to grave.”

National Estuarine Research Reserve System Data Rescue—1997 to 1999

www.csc.noaa.gov/pagis/html/esdimindex.htm

Data formerly in a hard copy format were digitized for this project. Priority was given to those data sets in danger of immediate loss due to media deterioration. Rescued data sets are accessible through the Internet via a geographic information system, and selected data and metadata were published on a CD-ROM.

Needs Assessment Training—2000

Rookery Bay National Estuarine Research Reserve (NERR) served as local host to a workshop entitled “How to Conduct a Training Needs Assessment.” Participants in the two-day training included staff from the NERR system, Sea Grant, the National Estuary Program, National Marine Sanctuaries, and the Florida Coastal Management Program, as well as local partners. The participants learned about the methodology and tools available to assess the needs of their target audiences.

New Technologies for Emergency Response—1999

Center staff collaborated with researchers from the Florida Marine Research Institute to test a new system for field data collection and response. This project, funded by NOAA’s High Performance Computing and Communications (HPCC) Program, addressed the need of NOAA and other agencies to rapidly gather, integrate, and disseminate information about impacted areas after disasters such as oil spills and hurricanes. The system featured lightweight computers

equipped with geographic information system (GIS) software, Global Positioning System (GPS) receivers, a wireless local area network (WLAN), and video cameras. The project was awarded the Best Use of Leading Edge Technologies award from HPCC at the NOAA Tech 2000 workshop.

Ocean Color Applications Project—1999, 2000

Through this project, processing and classification techniques were developed to evaluate coastal water quality and biological and geologic variables based on remote sensing data from satellite or aircraft. Data on the bio-optical characteristics of diverse U.S. coastal waters were collected. These data are used to validate satellite measurements used for ocean color data products.

Ocean Planning Information System (OPIS)—1997 to 2003

www.csc.noaa.gov/opis/

OPIS is the first system to provide the coastal management community in the southeastern U.S. with access to regional georeferenced spatial data and legal information. Major features of the OPIS Web site include an interactive mapping application, marine and coastal spatial data, data and metadata download tools, Federal Geographic Data Committee (FGDC)-compliant metadata, and legislative summary pages, all designed to support regional ocean management. In 2001, OPIS received a Hammer Award, a vice-presidential acknowledgment of projects and people that help government operate more efficiently and effectively.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Public Issues and Conflict Management—2001

The Florida Sea Grant College Program hosted a three-day Public Issues and Conflict Management workshop in April 2001. Aimed at Sea Grant extension agents and coastal resource managers, the workshop was designed to build skills in public issues management, including meeting management and planning, collaborative processes and decision making, and media relations.

Risk and Vulnerability Assessment Tools—2002, 2003

www.csc.noaa.gov/csi/projects/assessment-tool.html

As part of the NOAA Coastal Storms Initiative, the Center is developing risk and vulnerability assessment tools for the Florida and Pacific Northwest pilot projects. Local planners within the St. Johns River Watershed in Florida and the Columbia River Watershed in Washington and Oregon use this information to develop coastal hazard mitigation strategies. This project helps protect coastal communities from storm impacts by providing new and improved hazard and weather-related services and data.

Shoreline Data Rescue—1997 to 2001

www.csc.noaa.gov/products/shorelines/

GIS-compatible shoreline data sets that include high-resolution contemporary and historic shorelines are available from the Center's Web site. The source of the historic shoreline data is NOAA t-sheet charts dating from the 1800s. This information is most frequently used to measure shoreline change.

Southeast Coast and Ocean Margin Program (SEACOM)—2002, 2003

The Center is leading an effort to enhance understanding of the significant natural resources in the South Atlantic Bight, a region extending from Cape Hatteras, North Carolina, to Cape Canaveral, Florida, out to the edge of the continental margin. The program is investigating

significant natural resource areas, compiling this information into a spatial data framework, and working to inform and educate the public about the importance of discovery and management of these resources. The long-term goal is to provide an information foundation that allows managers to maintain economic vitality in the region while sustaining natural resources for future generations.

Topographic Change Mapping—1998, 1999

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1998 and 1999. These measurements can be used for beach change studies and are available to the public.

Tortugas—2000

The Center provided facilitation services to the Tortugas 2000 Working Group for the Florida Keys National Marine Sanctuary. Center staff designed and facilitated a series of meetings that focused on identifying significant concerns and key interests related to establishing an ecological reserve in the Tortugas area and on developing criteria to be used in evaluating various boundary options for the reserve.

West Continental Shelf, Essential Fish Habitat—1999

www.csc.noaa.gov/crs/bhm/wsfl.html

This cooperative project examined the nature, distribution, and function of deepwater seagrasses off the west coast of Florida, which represents one of the most extensive seagrass resources in the United States. Towed videography, single-beam acoustics, dive observation, stable-isotope analysis, and benthic sampling were some of the analyses used in this project.

GEORGIA

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Coastal Ocean Habitat Project—1996

The Coastal Ocean Habitat Project generated Center data products that utilized satellite observations of U.S. coastal waters. A CD-ROM of retrospective satellite sea-surface temperature images for the southeastern U.S. was produced in 1996.

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the State of Georgia will be available beginning in 2003.

Estuarine Habitat Project—1998 to 2001

www.csc.noaa.gov/crs/ehab/

The Estuarine Habitat project investigated remote sensing and modeling approaches for studying oceanic and terrestrial processes. This project focused on building new, useful methodologies and applications to aid coastal managers in assessing estuarine habitat quality.

Georgia Alternatives for Coastal Growth—2001 to 2003

The Center is working with Georgia partners to compare potential development scenarios at a coastal Georgia site using a geographic information system, three-dimensional visualization, and other analysis tools. The Center is also developing a Web site visualizing smart growth alternatives for coastal communities and documenting how various analysis tools can help communities analyze, communicate, and make decisions about growth and development along the coast.

Georgia Land Cover and Change Data—1999

www.csc.noaa.gov/crs/lca/georgia.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1993 and 1997. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Ocean Color Applications Project—1996 to 1999

Through this project, processing and classification techniques were developed to evaluate coastal water quality and biological and geologic variables based on remote sensing data from satellite or aircraft. Data on the bio-optical characteristics of diverse U.S. coastal waters were collected. These data are used to validate satellite measurements used for ocean color data products.

Ocean Planning Information System (OPIS)—1997 to 2003

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Protected Areas GIS (PAGIS)

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Shoreline Data Rescue—1997 to 2001

www.csc.noaa.gov/products/shorelines/

GIS-compatible shoreline data sets that include high-resolution contemporary and historic shorelines are available from the Center's Web site. The source of the historic shoreline data is NOAA t-sheet charts dating from the 1800s. This information is most frequently used to measure shoreline change.

Southeast Coast and Ocean Margin Program (SEACOM)—2002, 2003

The Center is leading an effort to enhance understanding of the significant natural resources in the South Atlantic Bight, a region extending from Cape Hatteras, North Carolina, to Cape Canaveral, Florida, out to the edge of the continental margin. The program is investigating significant natural resource areas, compiling this information into a spatial data framework, and working to inform and educate the public about the importance of discovery and management of these resources. The long-term goal is to provide an information foundation that allows managers

to maintain economic vitality in the region while sustaining natural resources for future generations.

Topographic Change Mapping—1999

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1999. These measurements can be used for beach change studies and are available to the public.

GUAM

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the Pacific Islands is available.

Information Exchange through Partnerships—2002, 2003

The Center is leading the effort to implement the NOAA Ocean Service Pacific Services Center (PSC) in Honolulu, Hawaii. PSC is the focal point for the deployment of resources, products, and services from NOS to the Pacific Island region. The new center works in partnership with NOAA, as well as with other federal, state, academic, private sector, and local coastal resource programs, to establish a collaborative program that addresses identified coastal and ocean information needs of island states and territories. PSC works with these partners to determine the best way to implement this collaborative effort and fund special projects that will accelerate the process.

Needs Assessment for Island Coastal Programs—2001

The Center conducted a needs assessment of each island coastal program. The goal was to collect information about the position of the coastal management program, in terms of its technical and nontechnical resources, to meet its goals. The assessment initiated the development of appropriate and feasible projects between the Center and the island coastal programs.

Pacific Islands GIS—2001 to 2003

The Pacific Islands GIS project is developing fully-integrated geographic information systems (GIS), spatial data management, and Internet capabilities within the Pacific Islands coastal programs. The project concentrates on data and structures necessary to support the Coastal Zone Management Act (CZMA) and the organizations charged with carrying out CZMA. This project is assisting in functions such as coordinating GIS hardware and software purchases, providing GIS and metadata training, developing spatial data layers and associated metadata, creating and maintaining a Web site with an interactive GIS application, maintaining a list server, and providing technical support to the islands.

Pacific Islands Special Projects Program—2002, 2003

Special Projects is a general program that provides services, such as technical assistance and funding, as defined by island needs. The goal of the program is to provide assistance to the Pacific Island coastal management community on a very broad range of issues related to coastal management. Through the Center's Broad Area Announcement, applicants can compete for project funding to meet their needs.

Pacific Islands Technical Assistantship Program—2002, 2003

To accommodate a need expressed by Pacific Island coastal managers, the Center has designed a specialized technical assistantship program. One of the barriers to coastal management in the

Pacific is that technically trained staff, especially those with geographic information system (GIS) experience, cannot be recruited or retained. The goal of the program is to place technically trained students with Pacific Island coastal programs for two years to work on coastal management activities.

Safe Navigation—2002, 2003

The Pacific Services Center, along with the NOAA Coastal Services Center, is working to assist the Pacific Island region on maritime and shipping issues of critical importance. These issues include increased vessel traffic, out-of-date nearshore data and information, the need for updated nautical charts, environmental implications from groundings, and the accuracy of geospatial positioning for the islands and their coastal environments.

HAWAII

Addressing the Challenges and Opportunities of Climate Variability and Change for Pacific Island Communities—2002, 2003

Funding for this project helps provide coastal managers, other governmental officials, businesses, and community leaders in U.S.-affiliated Pacific Islands with access to the most recent scientific information on the consequences of climate variability and change. In addition, this project will support the dialogue necessary to more fully understand local vulnerability and develop effective adaptive strategies. This project was funded with a Pacific Islands special project grant from the Center.

Community-Based Habitat Restoration—2001 to 2003

NOAA's community-based restoration program helps community groups restore marine and estuarine habitat by providing funds and technical expertise. NOAA Fisheries leads the program. The Center has been a program partner since fiscal year 2001 and has co-funded several projects, including the restoration and monitoring of Limahuli stream and marine habitats.

Coral Reef Mapping Workshop—1999

The Center provided the NOAA National Environmental Satellite, Data, and Information Service with support for a workshop that reviewed ways in which remote sensing from satellites, spacecraft, and aircraft can facilitate the mapping and monitoring of coral reefs. Particular attention was paid to the potential use of the technology to investigate the global problem of coral mortality (bleaching) associated with El Niño, and the implications for millions of people dependent on coral reefs for food and livelihood. The workshop proceedings are being used to advise governments and nongovernmental organizations of future needs, opportunities, and the implications of the use of the technology to monitor the health of coral reefs.

Developing Risk and Vulnerability Assessments & Hazards Mitigation Strategies—2002 to 2003

Funding for this project will educate decision makers and stakeholders about multihazard mitigation strategies and the development of effective risk and vulnerability assessments. Educational workshops for the islands of Oahu and Hawaii will provide information on developing risk and vulnerability assessments and applying assessment data to the development of a multihazard mitigation strategy. This project is funded with a Pacific Islands special project grant from the Center.

Developing Safer Communities in Maui County, Hawaii—2000

The goal of this project was to develop a prototype hazard mitigation strategy for Maui County, Hawaii, that includes a comprehensive community-wide vulnerability assessment. The Center hired a hazard mitigation specialist from the Rhode Island Emergency Management Agency, under an Intergovernmental Personnel Act agreement, to perform this work. The specialist assisted Maui County in preparing to implement multihazard mitigation measures to help reduce the costly impacts associated with natural disaster events. Outreach efforts highlighting the

process and resulting products serve as community models for the Federal Emergency Management Agency's Project Impact Initiative, as well as for the Pacific region as a whole.

Hawaiian Shoreline Variability This Century: A Demonstration of Data Capacity Building—2000, 2001

This project established a high-quality, high-density database of shoreline change histories to improve management efforts. The database is utilized by regional coastal managers to make informed, factually based land-use decisions and is available to the commercial sector through state and county geographic information system (GIS) service agencies. Additionally, the project worked to improve the understanding of why shoreline change happens, where future changes are likely to have societal impact, and how past and present coastal land use may be related to ongoing shoreline change. This project was conducted by the University of Hawaii and funded with a Pacific Islands special project grant from the Center.

Information Exchange through Partnerships—2002, 2003

The Center is leading the effort to implement the NOAA Ocean Service Pacific Services Center (PSC) in Honolulu, Hawaii. PSC is the focal point for the deployment of resources, products, and services from NOS to the Pacific Island region. The new center works in partnership with NOAA, as well as with other federal, state, academic, private sector, and local coastal resource programs, to establish a collaborative program that addresses identified coastal and ocean information needs of island states and territories. PSC works with these partners to determine the best way to implement this collaborative effort and fund special projects that will accelerate the process.

Main Eight Hawaiian Islands Land Cover Data—2002

This project mapped terrestrial land cover in coastal watershed environments. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Maui County, Hawaii, Hazards Training—2000

The Center conducted a two-day hazard mitigation training workshop in Maui County, Hawaii. The purpose of the workshop was to help build local capacity for developing a regional coastal hazard mitigation plan. Training sessions addressed risk and vulnerability assessments, mitigation planning, mitigation funding opportunities, developing public-private partnerships, and community education and awareness.

Needs Assessment for Island Coastal Programs—2001

The Center is committed to conducting needs assessments of each island coastal program. The goal of the needs assessment is to collect information about the position of the coastal management program, in terms of its technical and nontechnical resources, to meet its goals. The assessment will initiate the development of appropriate and feasible projects between the Center and the particular island coastal program.

Pacific Islands GIS—2001 to 2003

The Pacific Islands GIS project is developing fully-integrated geographic information systems (GIS), spatial data management, and Internet capabilities within the Pacific Islands coastal programs. The project concentrates on data and structures necessary to support the Coastal Zone Management Act (CZMA) and the organizations charged with carrying out CZMA. This project is assisting in functions such as coordinating GIS hardware and software purchases, providing GIS and metadata training, developing spatial data layers and associated metadata, creating and maintaining a Web site with an interactive GIS application, maintaining a list server, and providing technical support to the islands.

Pacific Islands Special Projects Program—2002, 2003

Special Projects is a general program that provides services, such as technical assistance and funding, as defined by island needs. The goal of the program is to provide assistance to the Pacific Island coastal management community on a very broad range of issues related to coastal management. Through the Center's Broad Area Announcement, applicants can compete for project funding to meet their needs.

Pacific Islands Technical Assistantship Program—2002, 2003

To accommodate a need expressed by Pacific Island coastal managers, the Center has designed a specialized technical assistantship program. One of the barriers to coastal management in the Pacific is that technically trained staff, especially those with geographic information system (GIS) experience, cannot be recruited or retained. The goal of the program is to place technically trained students with Pacific Island coastal programs for two years to work on coastal management activities.

Pacific Services Center—2001 to 2003

www.csc.noaa.gov/psc/index.html

The beginnings of a NOAA Ocean Service (NOS) Pacific Services Center, located in Hawaii, took place in 2001. The office, which is directed by a small core staff from NOS, works to bring more NOS services to the Pacific Islands. One of the concerns this office works with islanders to address is the myriad of issues surrounding the increasing cruise and commerce shipping industry.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Risk and Vulnerability Assessment Module, Maui—2000

This module builds upon the methodology developed by the Center in the *Community Vulnerability Assessment Tool* CD-ROM. The framework for a generic Risk and Vulnerability Assessment Module (RVAM) was developed to operate within various models of urban growth developed by Prescott College and NASA. RVAM functions as a planning tool to assist local decision makers in assessing a community's social, environmental, and economic vulnerability to natural disasters, and allows planners to test a variety of policy alternatives to improve the resilience of a community to these hazards. The Center and the Prescott College/NASA partnership utilized growth and hazard scenarios for Maui County, Hawaii, to develop the RVAM.

Safe Navigation—2002, 2003

The Pacific Services Center, along with the NOAA Coastal Services Center, is working to assist the Pacific Island region on maritime and shipping issues of critical importance. These issues include increased vessel traffic, out-of-date nearshore data and information, the need for updated nautical charts, environmental implications from groundings, and the accuracy of geospatial positioning for the islands and their coastal environments.

Wai'anae Ecological Characterization—2002, 2003

The Wai'anae Ecological Characterization project is developing information, data, and GIS-based tools for examining the effects of land use on coral communities and other living resources. A specific focus of the characterization is the effect of land use on sediment erodibility and discharges into coastal waters. The products of the characterization will be a CD-ROM, paper maps, and a Web site. The project is led by the Hawaii Coastal Zone Management Program and includes numerous state and local partners.

ILLINOIS

Great Lakes Land Cover and Data—1995, 2002, 2003

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1995 and 2001. The project relied on satellite multispectral imagery as the primary information source. These data were statistically analyzed and interpreted to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Remote Sensing Data Acquisition—2002, 2003

This project provides remotely sensed coastal data products obtained through contracts with private industry. All data products meet Federal Geographic Data Committee metadata standards and are freely available to federal, state, and local coastal resource managers. To date, these funds have focused on coastal land cover development, coastal topography, and submerged aquatic vegetation.

INDIANA

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the Great Lakes states is available.

GIS Applications for Coordination of Watershed and Land-Use Planning—2000, 2001

www.csc.noaa.gov/funding/PastAwards1.html

This project developed a mechanism for linking land-use planning with watershed planning at the local level in the Lake Michigan watershed of Indiana. This was accomplished through educating local officials, planning commissions, and interested citizen groups on the importance and urgency of taking proactive land-use planning steps that are coordinated with local watershed plans. Another component of this project was providing access to geographic information system (GIS) analysis and visualization tools that allow local decision makers to better understand the implications of planning decisions. This project was funded with a special project grant from the Center.

Great Lakes Land Cover and Change Data—2002, 2003

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1995 and 2001. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Remote Sensing Data Acquisition—2002, 2003

This project provides remotely sensed coastal data products obtained through contracts with private industry. All data products meet Federal Geographic Data Committee metadata standards and are freely available to federal, state, and local coastal resource managers. To date, these funds have focused on coastal land cover development, coastal topography, and submerged aquatic vegetation.

LOUISIANA

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Brown Marsh Monitoring—2002, 2003

The Center is overseeing the funding for the study and monitoring of brown marsh along the Louisiana coast. Louisiana recently suffered three years of severe drought, which was likely a major cause of a widespread dieback of marsh vegetation along the coast, principally in the salt marshes. Satellite imagery (LANDSAT) has identified the areas of impact and is being used for tracking recovery or additional marsh losses.

Coastal Louisiana Land Cover and Change Data—2000

www.csc.noaa.gov/crs/lca/louis.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1990 and 1996. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Coastal Management Fellowship—1997 to 1999

www.csc.noaa.gov/cms/1997Fellows.html

A Coastal Management Fellow worked with Louisiana's Coastal Management Division to improve and expand its current geographic information system (GIS). The goal was to identify and track coastal use permit applications and coastal habitat mitigation activities. Other parts of the project were the development of procedures to alert permit analysts to possible impacts to existing mitigation areas and an evaluation of prior habitat mitigation areas.

Coastal Management Fellowship—2002 to 2004

www.csc.noaa.gov/cms/fellows/02_fellows.html

A Coastal Management Fellow is working with the Louisiana Department of Natural Resources on a project entitled "Mitigation at the Local Level – Technical Assistance to Local Government for Mitigation Program Development." The goal of this project is to develop a program that will allow for the training of local parish personnel in the state's methodology for determining impacts from permitted activities. The fellow is developing a reporting process and database for mitigation data, as well as a mitigation manual, and is providing training sessions and technical assistance to local agencies.

Coastal Ocean Habitat Project—1999, 2000

www.csc.noaa.gov/products/gulfmex/startup.htm

The Coastal Ocean Habitat Project generated Center data products that utilized satellite observations of U.S. coastal waters. A retrospective satellite product for the northern Gulf of Mexico was produced during 2000.

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the State of Louisiana will be available beginning in 2003.

Harmful Algal Bloom Project—1999 to 2003

www.csc.noaa.gov/crs/habf/

This project is developing information systems to help coastal resource managers control shellfish harvesting closures and issue public health alerts. A harmful algal bloom e-mail bulletin and a near real-time information system on the Internet are available to managers.

Shoreline Data Rescue—1997 to 2001

www.csc.noaa.gov/products/shorelines/

GIS-compatible shoreline data sets that include high-resolution contemporary and historic shorelines are available from the Center's Web site. The source of the historic shoreline data is NOAA t-sheet charts dating from the 1800s. This information is most frequently used to measure shoreline change.

Topo/Bathy Mapping Demonstration Project—2002, 2003

This project uses the Grand Isle and Fourchon area in Louisiana as its subject to produce a demonstration digital topographic/bathymetric map. The Center has talked extensively with the U.S. Geological Survey about the integration of topographic and bathymetric data, and the development of digital mapping, digital data sets, and datum transformation tools has made such an effort possible.

Wetland Enhancement and Wastewater Treatment—1996 to 1998

Two major environmental problems currently affecting the Louisiana coastal zone are wetland loss and surface water pollution. Applying secondarily treated wastewater to wetlands may help address these problems. This project showcased treatment projects that use wetlands to filter wastewater effluents, and defined criteria for selecting acceptable waste and identifying suitable wetlands. Industries were given information about the economic factors that lead to cost-effective methods of waste treatment while protecting and enhancing valuable wetlands. This project was conducted by the Louisiana Department of Natural Resources and Louisiana State University with a grant from the Center.

MAINE

Atlantic Coast, Benthic Data—1992 to 1997

www.csc.noaa.gov/crs/bhm/atlantic.html

This project was initiated by the State of Maine Department of Marine Resources to assess the risk to coastal habitat from oil spills. State personnel consulted with other submerged aquatic vegetation (SAV) mapping experts in the region and worked with the Center's methods to accomplish a composite data set for the entire state. Videography and single-beam acoustics have been integrated with the aerial photo analysis. The resulting data are being used by a variety of state and federal agencies, as well as commercial shellfish managers.

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Benthic Habitats of Wells and York Harbors—2001 to 2003

The Center and the Wells National Estuarine Research Reserve are using sediment profiling imagery and traditional benthic sampling to map turbid water habitats in the harbors. These maps will be integrated with information about key physical processes to inventory habitats and examine impacts from dredging.

Coastal Corridor GIS Mapping—2002, 2003

Funding for this project goes toward encouraging four coastal Maine suburban communities to use smart growth principles. The project helps these communities coordinate land use, coastal resource management, and transportation planning to protect the waters of Casco Bay and area shellfish resources from nonpoint source pollution. This project is a cooperative effort among four coastal towns to use a geographic information system (GIS) as a tool to determine the most prudent way to coordinate future residential and commercial development.

Coastal Maine Land Cover and Change Data—1995

www.csc.noaa.gov/crs/lca/maine.html

This project studied the estuarine drainage areas of the Gulf of Maine, including the surrounding areas of Great Bay in New Hampshire and the St. Croix Estuary at the Maine/Canada border. This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1985 and 1995. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Coastal Management Fellowship—1997 to 1999

www.csc.noaa.gov/cms/1997Fellows.html

A Coastal Management Fellow worked with the Maine Department of Environmental Protection to improve marine habitat protection in Maine. This was accomplished through the development of an ecological assessment methodology for the state's intertidal and subtidal habitats, the creation of guidelines for compensation and mitigation purposes, and the establishment of procedures and formats to incorporate data and regulations into the state's geographic information system (GIS).

Coastal Management Fellowship—2001 to 2003

www.csc.noaa.gov/cms/fellows/01_fellows.html

A Coastal Management Fellow is working with the Maine Geological Survey office on a project entitled "Creating a Sustainable Beach Community at Camp Ellis, Maine." The goals of the project are to develop beach nourishment policy recommendations for the state and to create a hazard mitigation plan. The project also evaluates sources of sand for beach nourishment.

Community-Based Habitat Restoration—2001 to 2003

NOAA's community-based restoration program helps community groups restore marine and estuarine habitat by providing funds and technical expertise. NOAA Fisheries leads the program. The Center has been a program partner since fiscal year 2001 and has co-funded several projects, including the Drakes Island Marsh project.

Implementing a Coordinated Approach to Growth Management for Hancock County—2002, 2003

The purpose of this project is to build regional capacity to manage growth and development in coastal Hancock County. The project will develop this capacity by establishing and implementing a regional policy development process and a framework for growth and development. A steering committee will build stakeholder and community consensus, formulate regional policies, conduct a public participation symposium, plan implementation strategies, and document, evaluate, and analyze results.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Public Issues and Conflict Management—2001

The Maine Sea Grant College Program hosted a three-day Public Issues and Conflict Management workshop in October 2001. Aimed at Sea Grant extension agents and coastal resource managers, the workshop was designed to build skills in public issues management, including meeting management and planning, collaborative processes and decision making, and media relations.

Shoreline Data Rescue—1997 to 2001

www.csc.noaa.gov/products/shorelines/

GIS-compatible shoreline data sets that include high-resolution contemporary and historic shorelines are available from the Center's Web site. The source of the historic shoreline data is NOAA t-sheet charts dating from the 1800s. This information is most frequently used to measure shoreline change.

Topographic Change Mapping—2000

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 2000.

Town of Brunswick Rural Smart Growth Strategy—2002, 2003

This project is developing a locally-supported smart growth plan, based on regional coastal habitat priorities, that improves habitat connectivity and water quality protection, as well as helps to prioritize what open space lands are permanently protected. This project is a growth management partnership with various state and local agencies and is funded with a special project grant from the Center.

Using Remote Sensing to Address Coastal Management Issues: The Maine Project CD-ROM **2000, 2001**

www.csc.noaa.gov/products/maine/

This CD-ROM provides several case studies that illustrate the use of remote sensing. These efforts include restoring Atlantic salmon, employing satellite data for coastal management, using eelgrass data to improve oil spill response, analyzing land cover and habitat (Casco Bay), and characterizing wetlands. The CD-ROM also includes spatial data sets, geographic information system (GIS) tutorials, and educational information on GIS and remote sensing. For this project, spatial data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

MARYLAND

Bathymetric Survey of Chincoteague Bay—2002, 2003

The Maryland Geologic Survey is conducting systematic hydrographic surveys in the Maryland portion of Chincoteague Bay. The Center is using the hydrographic survey data to develop a detailed bathymetric model of coastal bays, which will serve as an accurate baseline for comparison with future surveys. This model data can also serve as a useful guide for managing navigation channels and boating activities. This cooperative agreement will produce the first set of detailed bathymetric data for Chincoteague Bay, which is essential for state and local agencies' navigation and resource management.

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Chesapeake Bay Land Cover and Change Data—1989

www.csc.noaa.gov/crs/lca/chesa.html

This prototype project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1984 and 1989. The project relied on satellite multispectral imagery as the primary information source. These data were statistically analyzed and interpreted to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Coastal Management Fellowship—1998 to 2000

www.csc.noaa.gov/cms/fellow98.html

A Coastal Management Fellow worked with the Maryland Coastal Zone Management Division to aid in developing policy response options for sea level rise. The project goals were to determine Maryland's current ability to respond to sea level rise, to increase public awareness of coastal hazard issues related to sea level rise, and to enhance the state's ability to plan for this issue.

Coastal Management Fellowship—2000 to 2002

www.csc.noaa.gov/cms/00_fellows.html

A Coastal Management Fellow worked with the Maryland Coastal Zone Management Division on a project entitled "Designing a Comprehensive and Regional Approach for Shore Erosion Control in the State of Maryland." The project focused on the development of a comprehensive shore protection plan and an effort to increase the public's understanding of coastal erosion processes.

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the Chesapeake Bay area will be available beginning in 2003.

Maryland Coastal Bays Sensitive Areas Management Plan—2002, 2003

The purpose of this grant is to continue the Maryland Coastal Bays Sensitive Areas Initiative by focusing on development of a management plan and public outreach and input. The goal is to create a management plan that will provide preferred alternatives for balancing sensitive aquatic resources with water-based activities in Maryland's coastal bays, while increasing public awareness of the sensitive resources in the bays.

Ocean Color Applications Project—1996, 1999

Through this project, processing and classification techniques were developed to evaluate coastal water quality and biological and geologic variables based on remote sensing data from satellite or aircraft. Data on the bio-optical characteristics of diverse U.S. coastal waters were collected. These data are used to validate satellite measurements used for ocean color data products.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Sensor Testbed—2000

This project supported the initiation of a national testbed program that fosters the development and application of new and improved in situ sensors, platforms, and telemetry systems for coastal

and ocean monitoring. Program administration, planning, and some primary technical functions were conducted at a central facility. Field activities were carried out among a national network of collaborating institutions, facilities, and sites.

Topographic Change Mapping—1996 to 1998

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1996, 1997, and 1998. These measurements can be used for beach change studies and are available to the public.

MASSACHUSETTS

Aquaculture GIS—2001, 2002

This project demonstrates how geographic information systems (GIS) and spatial modeling can be applied to marine aquaculture site analysis. The initial phase of the project focused on developing data and tools for aquaculture siting. State and federal “georegulations” were created to use GIS to display the locations of jurisdictional or regulatory boundaries relevant to aquaculture. A customized tool also allows users to access legislative summaries, contact information, forms, and fee structures that apply within these regions. The project also created a statewide shellfish habitat suitability data layer that will be used to expedite the aquaculture permitting process in Massachusetts, and it created a detailed report documenting potential applications of GIS technology for the aquaculture community.

Atlantic Coast, Benthic Data—1996

www.csc.noaa.gov/crs/bhm/mass.html

The Center partnered with the Wetlands Conservancy branch of the Massachusetts Department of Environmental Protection and the Massachusetts Coastal Zone Management Program to create a composite baseline map of submerged aquatic vegetation (SAV) in 1996. The data are being used primarily for shellfish lease management and dredge and fill permit evaluation.

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Cape Cod SAV Change Detection—1999, 2001

www.csc.noaa.gov/crs/bhm/mass_aps.html

The Center partnered with the Wetlands Conservancy branch of the Massachusetts Department of Environmental Protection to document changes in submerged aquatic vegetation (SAV) along Cape Cod between 1996 and 2000.

Coastal Management Fellowship—1996 to 1998

www.csc.noaa.gov/cms/1996Fellows.html

A Coastal Management Fellow worked with the Massachusetts Coastal Zone Management Agency to develop a database on habitat and species restoration projects in the Gulf of Maine. The database was developed to create an information exchange vehicle for managers, scientists, and consultants, and to document past, present, and potential restoration projects.

Coastal Management Fellowship—1998 to 2000

www.csc.noaa.gov/cms/fellow98.html

A Coastal Management Fellow worked with the Massachusetts Coastal Zone Management Program to develop an adaptive special area management planning model for the Parker River/Essex Bay coastal Area of Critical Environment Control. This was accomplished by the

development of regional planning strategies and by increasing local support through public participation.

Coastal Management Fellowship—2000 to 2002

www.csc.noaa.gov/cms/00_fellows.html

A Coastal Management Fellow worked with the Massachusetts Coastal Zone Management Program on a project entitled "Management of Environment Impacts of Personal Watercraft: Pleasant Bay, Cape Cod, Pilot Project." The purpose of the project was to develop sound and scientifically based resource policy to effectively manage personal watercraft use in Massachusetts' coastal waters.

Coastal Management Fellowship—2002 to 2004

www.csc.noaa.gov/cms/fellows/02_fellows.html

A Coastal Management Fellow is working with the Massachusetts Office of Coastal Zone Management on a project entitled "Marine Habitat Mapping Strategy." The goal of the project is to link resource managers with marine habitat data to help develop coastal management policies and incorporate them into regulatory decisions. The fellow is developing a coordinated and comprehensive strategy for seafloor characterization and mapping in Massachusetts' waters and is providing coastal resource managers with tools and information necessary to use seafloor characterization data to improve management of marine habitat.

Coastal Structures Inventory of Cape Cod—2002, 2003

The Center is helping to develop a georeferenced, pre-storm inventory of structures on the coast to improve state and local governments' ability to make rapid and accurate storm-related permitting decisions. The project provides a comprehensive storm-planning and response system and includes tools for viewing photographs and information on coastal structures. The system builds on the Massachusetts Ocean Resource Information System and is modeled after the South Carolina Office of Ocean and Coastal Resource Management post-hurricane recovery project.

Massachusetts Land Cover and Change Data—2000

www.csc.noaa.gov/crs/lca/mass.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1991 and 1997. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Needs Assessment Training—2000

Waquoit Bay National Estuarine Research Reserve (NERR) served as the local host for a two-day workshop that focused on methods and tools to assess the needs of a target audience. Participants included representatives from regional NERRs, Sea Grant, state coastal programs, National Marine Sanctuaries, and other local partners. Networking and resource sharing opportunities were additional benefits of this workshop.

Nonpoint Pollution Reduction in Waquoit Bay—1996 to 1998

The Massachusetts Coastal Zone Management Office and Waquoit Bay National Estuarine Research Reserve (NERR) developed indices of actual and potential ecological damage from nonpoint source pollutants, applied those indices throughout the Waquoit Bay watershed, and transferred results of their study to local managers through a workshop. This work was funded by a grant from the Center.

Ocean Color Applications Project—1999

Through this project, processing and classification techniques were developed to evaluate coastal water quality and biological and geologic variables based on remote sensing data from satellite or

aircraft. Data on the bio-optical characteristics of diverse U.S. coastal waters were collected. These data are used to validate satellite measurements used for ocean color data products.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Public Issues and Conflict Management—2001

The Massachusetts Institute of Technology (MIT) Sea Grant College Program served as the local host for this three-day workshop, which taught skills in meeting management and planning, collaborative processes and decision making, and media relations. Participants included staff members from the MIT Sea Grant College Program, coastal zone management program, New England Fisheries Management Council, National Marine Fisheries Service, the New England Aquarium, and other state agencies and organizations.

Topographic Change Mapping—1998, 2000

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1998 and 2000. These measurements can be used for beach change studies and are available to the public.

Wellfleet Harbor Mapping Project—2002, 2003

Funding for this project supports a temporary staff position to create an electronic database containing the location of natural and man-made features in Wellfleet Harbor. Ultimately, this database will be used to generate maps in a geographic information system (GIS) that will be used for managing harbor resources and will form the foundation of a comprehensive GIS database.

MICHIGAN

Coastal Management Fellowship—1997 to 1999

www.csc.noaa.gov/cms/1997Fellows.html

A Coastal Management Fellow worked with the Michigan Land and Water Management Division to conduct a project entitled "Improving Coastal Wetland Resource Decisions in Michigan." Through this project a standardized procedure was developed for making sound, consistent, and defensible decisions regarding Michigan's coastal wetland resources. This project analyzed and integrated the assessment of biological resources and human development issues.

Coastal Management Fellowship—2001 to 2003

www.csc.noaa.gov/cms/fellows/01_fellows.html

A Coastal Management Fellow is working within the Michigan Department of Environmental Quality, Land and Water Management Division, to create a publication entitled "Environmental Protection for Coastal Communities: A Guide for Local Governments." The project manages all phases of the guidebook, including research, development, final composition, and developing a dissemination strategy.

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures,

management plans, and legislative information. A bibliography of this information for the Great Lakes states is available.

Great Lakes Land Cover and Change Data—2002, 2003

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1995 and 2001. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Habitat Restoration and Conservation Plan: Lake St. Clair—2002, 2003

www.csc.noaa.gov/lcr/text/stclair.html

This project characterizes six watersheds in Michigan and Ontario, encompassing 9,300 square miles and feeding into Lake St. Clair—a region identified by the U.S. Environmental Protection Agency and its Canadian counterpart as priority habitat for preservation and restoration. The characterization includes a geospatial database, a decision-support tool designed to identify priority areas for conservation and restoration, and a draft conservation and restoration plan for coastal habitats. The Great Lakes Commission is developing the characterization through a cooperative agreement with the NOAA Coastal Services Center.

Mapping Impervious Surface in Grand Traverse County—1996 to 1998

Under a grant from the Center, the Michigan Department of Environmental Protection and Office of the Grand Traverse County Drain Commissioner developed a geographic information system-based method to map the extent of impervious surface in the county. This map provided a baseline for monitoring future growth and was integrated into other assessments that identified areas needing special protection.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

MINNESOTA

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the Great Lakes states is available.

Great Lakes Land Cover and Change Data—2002, 2003

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1995 and 2001. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Remote Sensing Data Acquisition—2002, 2003

This project provides remotely sensed coastal data products obtained through contracts with private industry. All data products meet Federal Geographic Data Committee metadata standards and are freely available to federal, state, and local coastal resource managers. To date, these funds have focused on coastal land cover development, coastal topography, and submerged aquatic vegetation.

MISSISSIPPI

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Coastal Ocean Habitat Project—1999, 2000

www.csc.noaa.gov/products/gulfmex/startup.htm

The Coastal Ocean Habitat Project generated Center data products that utilized satellite observations of U.S. coastal waters. A retrospective satellite product for the northern Gulf of Mexico was produced during 2000.

Coastal Management Fellowship—1998 to 2002

The NOAA Coastal Services Center used a cooperative agreement with the University of Southern Mississippi to administer the NOAA Coastal Management Fellowship program. The program matches highly qualified, recently graduated master's, professional, and doctoral degree students with coastal resource management hosts around the country. States with federally approved coastal zone management programs and states developing such programs are eligible.

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the State of Mississippi will be available beginning in 2003.

Estuarine Habitat Project—1998, 1999

www.csc.noaa.gov/crs/ehab/

The Estuarine Habitat project investigated remote sensing and modeling approaches for studying oceanic and terrestrial processes. This project focused on building new, useful methodologies and applications to aid coastal managers in assessing estuarine habitat quality.

Harmful Algal Bloom Project—1999 to 2003

www.csc.noaa.gov/crs/habf/

This project is developing information systems to help coastal resource managers control shellfish harvesting closures and issue public health alerts. A harmful algal bloom e-mail bulletin and a near real-time information system on the Internet are available to managers.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Shoreline Data Rescue—1997 to 2001

www.csc.noaa.gov/products/shorelines/

GIS-compatible shoreline data sets that include high-resolution contemporary and historic shorelines are available from the Center's Web site. The source of the historic shoreline data is NOAA t-sheet charts dating from the 1800s. This information is most frequently used to measure shoreline change.

Topographic Change Mapping—1998

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1998. These measurements can be used for beach change studies and are available to the public.

NEW HAMPSHIRE

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Cooperative Institute for Coastal and Estuarine Environmental Technology—1998, 1999

NOAA and the University of New Hampshire (UNH) formed the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) to promote innovative approaches to assessing, reducing, and reversing the adverse effects of contaminants in coastal and estuarine waters. Through enhanced cooperation among academia, the private sector, and federal, state, and local governments, CICEET develops and fosters the use of innovative technologies and management approaches for the long-term conservation of coastal and estuarine ecosystems. CICEET uses the 25 sites in the National Estuarine Research Reserve System as a national network of "living laboratories" for applied research, pilot projects, and application of new technologies. The NOAA Coastal Services Center chairs the advisory board for this organization.

Dealing with Growth—2001 to 2003

For this project, the Natural Resource Outreach Coalition (NROC) is combining educational programs, technical assistance, and regional problem-solving for one region in the New Hampshire watershed to help protect its natural resources. This effort maximizes available education and technical assistance resources in the area, provides ongoing assistance to municipal officials, and encourages all 43 municipalities in the watershed to address the impacts of growth on its natural resources.

Great Bay NERR Testbed—2000 to 2002

The University of New Hampshire (UNH) has initiated activities in technology development, application, and transfer in support of the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) and other NOAA-sponsored research and development. A technology testbed, focused on verification of new and existing technologies for estuarine contamination monitoring and remediation, enables the resource management community to make decisions and policy based on the latest and most efficient technologies. Centered at UNH, the technology transfer and testbed programs are networked throughout the National Estuarine Research Reserve (NERR) system.

Great Bay, New Hampshire, Land Cover and Change Data—1993

www.csc.noaa.gov/crs/lca/g_bay.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1986 and 1993. The project relied on satellite

multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Topographic Change Mapping—2000

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 2000. These measurements can be used for beach change studies and are available to the public

University of New Hampshire Capability Assessment and Commercialization Plan—1999

For this project, the Center worked with the University of New Hampshire to facilitate the commercialization of technology from the university's research division. This technology would be used to help further NOAA's coastal resource management mission. As a part of this process, a technology verification program was developed using the Great Bay National Estuarine Research Reserve as a test site.

NEW JERSEY

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Benthic Habitats of New York/New Jersey Harbor—1995 to 1998

www.csc.noaa.gov/lcr/nyharbor/

This CD-ROM and Web site provides results of an effort by the U.S. Army Corps of Engineers and the Center to identify and map the major habitats within New York/New Jersey Harbor using a combination of sediment profiling imagery and standard benthic community sampling.

Coastal Management Fellowship—2001 to 2003

www.csc.noaa.gov/cms/fellows/01_fellows.html

A Coastal Management Fellow is working with the New Jersey Coastal Zone Management Program on a project entitled "Ocean Resource Management." The project is an in-depth review and assessment of the state's coastal zone management program. It also defines ocean governance as it applies specifically to New Jersey and to an implementation strategy for the approved coastal zone management program.

Coastal Water Quality—2001 to 2003

www.csc.noaa.gov/crs/ehab/

The Coastal Water Quality project investigates remote sensing and modeling approaches for studying oceanic and estuarine processes. During 2001 and 2002, this project focused on evaluating new airborne remote sensing methodologies for measuring water quality in shallow New Jersey bays. In 2003, the project focused on helping to make those methodologies operational for use by New Jersey coastal managers.

Impervious Surfaces—2002

www.csc.noaa.gov/crs/is/

This project investigated the effects of impervious surfaces on water quality. The Center developed and evaluated a tool that derives impervious surface information from remotely sensed land cover data. The accuracy of the tool and the relationship of impervious surface cover to water quality were tested using data collected by the New Jersey Department of Environmental Protection. Conducted in cooperation with the Nonpoint Education for Municipal Officials (NEMO) program and state coastal managers in New Jersey, this project creates a model for useful, integrated water quality products.

Needs Assessment Training—2001

Jacques Cousteau National Estuarine Research Reserve (NERR) served as a local host for a workshop entitled “How to Conduct a Training Needs Assessment.” Participants in the two-day training included staff from NERR sites, Sea Grant, the National Estuary Program, state coastal management programs, and other local partners. The goals of the training were to familiarize participants with terminology, tools, and methods, and to help them understand how and when to use needs assessments.

Protected Areas GIS (PAGIS)

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The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation’s 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Regional Restoration Plan for New York/New Jersey Harbor—1997 to 1999

The Center helped the U.S. Army Corps of Engineers and the Port Authority of New York and New Jersey prepare a habitat restoration plan for New York/New Jersey Harbor. This work was part of a long-term management plan being developed by the Corps and Port Authority for dredged material from the harbor. Habitat restoration is an integral part of that plan, since some forms of habitat restoration make use of dredged material, and recently enacted federal laws make it easier for the Corps to pursue habitat restoration projects not directly linked to dredging.

Southern New Jersey Land Cover Data—1995

www.csc.noaa.gov/crs/lca/s_jersey.html

This project mapped terrestrial land cover in coastal watersheds. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes. For this project, the data were acquired according to the Center’s Coastal Change Analysis Program (C-CAP) methods.

Spatially Integrated Coastal Permitting System—2002, 2003

The goal of this project is to develop a permit-processing system that can provide an effective, single electronic interface for government agencies to deliver customized permitting services to citizens. The system details the steps required to get a permit for a particular location and development type based on the regulatory requirements of each government agency. By simply clicking on a map or entering individual development preferences, the required steps for obtaining permits are automatically generated with the necessary data and forms. The research and development of this project can serve as a reference model for other agencies and services throughout the nation.

Topographic Change Mapping—2000

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 2000. These measurements can be used for beach change studies and are available to the public.

NEW YORK

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

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www.csc.noaa.gov/lcr/nyharbor/

This CD-ROM and Web site provides results of an effort by the U.S. Army Corps of Engineers and the Center to identify and map the major habitats within New York/New Jersey Harbor using a combination of sediment profiling imagery and standard benthic community sampling.

Coastal Management Fellowship—1997 to 1999

www.csc.noaa.gov/cms/1997Fellows.html

A Coastal Management Fellow worked with the New York Division of Coastal Resources and Waterfront Revitalization to conduct a project entitled “Advancing Habitat Management and Restoration Capabilities in New York State’s Coastal Area.” The goal was to develop regional standards and protocols for coastal habitat restoration and management. The project involved updating habitat information and developing regionally modified criteria for identifying, documenting, evaluating, and designating significant coastal fish and wildlife habitat areas on Long Island.

Council on the Environment Project—1999

www.csc.noaa.gov/funding/PastAwards1.html

This project involved high school and intermediate school youth in a series of projects to protect and restore coastal areas. The project was conducted through the Training Student Organizers Program, which educates students about the environment and trains them to organize environmental improvement projects in their neighborhoods, schools, and homes. This project was funded with a special project grant from the Center.

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the Great Lakes states is available.

Great Lakes Land Cover and Change Data—2002, 2003

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1995 and 2001. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Hudson River Benthic Data—1995

www.csc.noaa.gov/crs/bhm/hr_ny.html

The Center funded the Institute of Ecosystem Studies, Cornell University, and the Hudson River National Estuarine Research Reserve to map submerged aquatic vegetation in the Hudson River.

Hudson River Watershed Partnership Project—2001

response.restoration.noaa.gov/cpr/watershed/watershed.html

This effort helps state and federal trustees integrate information about sediment chemistry, tissue chemistry, and sediment toxicity with maps that identify key habitats, potential restoration sites, and potential pollution sources. This work is part of NOAA's effort to work with the U.S. Environmental Protection Agency and other resource managers to restore natural resources damaged by polychlorinated biphenyls (PCBs).

Long Island Benthic Data—1997, 2002

www.csc.noaa.gov/crs/bhm/li_ny.html

The Center funded the New York Department of Environmental Conservation to map submerged aquatic vegetation (SAV) in the south shore bays of Nassau and Suffolk Counties. The SAV data will be used in conjunction with a terrestrial land cover data set being produced by the state.

Long Island Land Cover Data—1994

www.csc.noaa.gov/crs/lca/long_isl.html

This project mapped terrestrial land cover in coastal watershed environments. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

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Regional Restoration Plan for New York/New Jersey Harbor—1997 to 1999

The Center helped the U.S. Army Corps of Engineers and the Port Authority of New York and New Jersey prepare a habitat restoration plan for New York/New Jersey Harbor. This work is part of a long-term management plan being developed by the Corps and Port Authority for dredged material from the harbor. Habitat restoration is an integral part of that plan, since some forms of habitat restoration make use of dredged material, and recently enacted federal laws make it easier for the Corps to pursue habitat restoration projects not directly linked to dredging.

Remote Sensing Data Acquisition—2002, 2003

This project provides remotely sensed coastal data products obtained through contracts with private industry. All data products meet Federal Geographic Data Committee metadata standards and are freely available to federal, state, and local coastal resource managers. To date, these funds have focused on coastal land cover development, coastal topography, and submerged aquatic vegetation.

Topographic Change Mapping—1998 to 2000

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1998, 1999, and 2000. These measurements can be used for beach change studies and are available to the public.

NORTH CAROLINA

Assessing the Knowledge and Attitudes of Coastal Communities—2001 to 2003

This project surveys coastal residents and coastal decision-makers to determine their attitudes toward their natural environment and their understanding of the coastal area's basic nature and processes. The goal of the project is to provide an empirical foundation that allows coastal decision makers to assess the degree to which officials, people who influence coastal policy, and the general public share common attitudes and beliefs concerning important coastal issues.

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Bogue Sound, Benthic Data—2002

The Center mapped submerged aquatic vegetation using 1992 aerial photography for the Bogue Sound area.

Coastal Management Fellowship—1999 to 2001

www.csc.noaa.gov/cms/99_fellows.html

A Coastal Management Fellow worked with the North Carolina Division of Coastal Management on a project entitled "The Development of Coastal Wetland Mitigation Policy and Wetland Management Alternatives." The project goal was to develop alternatives and recommendations that clarify and improve the division's wetland mitigation policies. A second goal of the project was to develop wetland policy and management alternatives for the Atlantic White Cedar component of the Buckridge Coastal Reserve site. The fellow contributed to the formulation and adoption of clear wetland mitigation policies that improve the protection of wetland resources and contribute to the development of a final restoration plan in the Buckridge Coastal Reserve.

Coastal Management Fellowship—2002 to 2004

www.csc.noaa.gov/cms/fellows/02_fellows.html

A Coastal Management Fellow is working with the North Carolina Department of Natural Resources, Division of Coastal Management (DCM), on a project entitled "GIS Based Evaluation of Inlet Process Impacts on Oceanfront Shorelines, Transportation Infrastructure and Other Development Activities." The goal of this project is to delineate new inlet hazard areas of environmental concern (AEC) boundaries, both for existing inlets and potential new inlet areas. This will be accomplished by characterizing the nature, magnitude, location, and timing of inlet processes that represent a hazard to development activities, particularly transportation-related activities. By developing and analyzing GIS shoreline data sets from existing shoreline data, the project will develop alternatives and policy recommendations that will expand and update DCM's existing inlet hazard AEC policies.

Coastal Ocean Habitat Project—1996

www.csc.noaa.gov/products/gulfmex/startup.htm

The Coastal Ocean Habitat Project generated Center data products that utilized satellite observations of U.S. coastal waters. A CD-ROM of retrospective satellite sea-surface temperature images for the southeastern U.S. was produced in 1996.

Community Vulnerability Assessment Tool—1998, 1999

www.csc.noaa.gov/products/nchaz/startup.htm

This CD-ROM is an informational aid designed to assist communities in their efforts to reduce hazard vulnerability. Before communities can develop effective hazard mitigation strategies, they must first identify their hazard risks and assess their vulnerability to the impacts of those hazards. This CD-ROM includes a newly developed methodology for conducting a community-wide vulnerability assessment and features New Hanover County, North Carolina, in a case study. The

methodology employs geographic information system (GIS) technology as a valuable resource for conducting hazards-related analysis. A major feature of this product is a section focusing on the use of spatial data for hazards planning.

Core Sound, Benthic Data—1990

www.csc.noaa.gov/crs/bhm/nc.html

The National Marine Fisheries Service–Beaufort Laboratory and North Carolina State University tested a variety of methods for submerged aquatic vegetation (SAV) detection and mapping using imagery from 1985, 1988, and 1990. Ongoing SAV mapping and change detection projects in Core Sound contribute to restoration and environmental modeling work in the area.

Creating a Land Suitability Analysis Tool for Local Government Land-Use Planning—2000 to 2003

www.csc.noaa.gov/funding/PastAwards1.html

The goals of this project were to design an interactive ArcView pilot program for conducting land suitability analysis in local government land-use planning, to build capacity of local governments, and to put into action the recommendations of the North Carolina Coastal Area Management Act Land Use Planning Review Team. This project was funded with a special project grant from the Center.

Enhanced Flood Warning System, North Carolina Pilot—2002, 2003

The goal of this project is to develop a real-time flood forecast mapping capability in North Carolina. The mapping capability is being developed initially for the Tar River Basin, an area that experienced catastrophic flood damages during Hurricane Floyd. This project is a partnership between the State of North Carolina, National Weather Service, and the Center.

Estuarine Habitat Project—1998 to 2001

www.csc.noaa.gov/crs/ehab/

The Estuarine Habitat project investigated remote sensing and modeling approaches for studying oceanic and terrestrial processes. This project focused on building new, useful methodologies and applications to aid coastal managers in assessing estuarine habitat quality.

Lessons Learned Regarding the Use of Spatial Data and GIS during Hurricane Floyd—2001

www.csc.noaa.gov/hfloyd/

During and after Hurricane Floyd, the NOAA Coastal Services Center worked with local, state, and federal coastal resource managers and emergency preparedness officials to document spatial data and information needs and uses. The resulting document is a best practices manual filled with information that can be of use to all coastal communities.

Natural Hazards Risk Assessment Tool Development: Storm Surge Model—2000 to 2002

This goal of this project is to design and develop a prototype risk assessment tool based on the North Carolina State University Coastal Marine Environment Prediction System (CMEPS). CMEPS contains a suite of interactively linked atmospheric and oceanic model components that provide a coastal and inland waterway surge model that not only predicts general surge effects, but also event-related inland flooding. The project also includes a training component to enable private- and public-sector end users to apply the product.

Needs Assessment Training—2001

North Carolina National Estuarine Research Reserve (NERR) served as a local host for a workshop entitled “How to Conduct a Training Needs Assessment.” Participants in the two-day training included staff from NERR sites, the state coastal management program, state parks, museums, aquariums, and nonprofit organizations. The goals of the training were to familiarize participants with terminology, tools, and methods, and to help them understand how and when to use needs assessments.

North Carolina Land Cover and Change Data—2000

www.csc.noaa.gov/crs/lca/n_car.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1991 and 1997. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Ocean Color Applications Project—1996 to 2000

Through this project, processing and classification techniques were developed to evaluate coastal water quality and biological and geologic variables based on remote sensing data from satellite or aircraft. Data on the bio-optical characteristics of diverse U.S. coastal waters were collected. These data are used to validate satellite measurements used for ocean color data products.

Ocean Planning Information System (OPIS)—1997 to 2003

www.csc.noaa.gov/opis/

OPIS is the first system to provide the coastal management community in the southeastern U.S. with access to regional georeferenced spatial data and legal information. Major features of the OPIS Web site include an interactive mapping application, marine and coastal spatial data, data and metadata download tools, Federal Geographic Data Committee (FGDC)-compliant metadata, and legislative summary pages, all designed to support regional ocean management. In 2001, OPIS received a Hammer Award, a vice-presidential acknowledgment of projects and people that help government operate more efficiently and effectively.

Pre-Natural Disaster Mitigation Technology Transfer and Deployment—2000

Initial activities under this project include a workshop on the deployment of established and new technologies to lower the impacts and costs of natural hazards, and the development of a regional strategy to coordinate with federal efforts. This project is funded with a special project grant from the NOAA Coastal Services Center to the Southeast Center for Protection Against Natural Disasters (Southeast CPAND).

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Shoreline Data Rescue—1997 to 2001

www.csc.noaa.gov/products/shorelines/

GIS-compatible shoreline data sets that include high-resolution contemporary and historic shorelines are available from the Center's Web site. The source of the historic shoreline data is NOAA t-sheet charts dating from the 1800s. This information is most frequently used to measure shoreline change.

Social and Environmental Change in Coastal North Carolina—2002, 2003

The focus of this project is to develop a descriptive handbook and CD-ROM illustrating socioeconomic, demographic, and environmental change in North Carolina coastal counties. This project provides a wide audience—including Sea Grant Extension Program staff, land-use and urban planners, educators, and local government officials—with a means to describe these changes and inform management and policy decisions. This pilot project focuses on North Carolina coastal counties, but has broader applicability to other coastal states. The project is a collaborative effort among the Center, the North Carolina Sea Grant Extension Program, and a group of coastal planners, resource management professionals, and educators.

Southeast Coast and Ocean Margin Program (SEACOM)—2002, 2003

The Center is leading an effort to enhance understanding of the significant natural resources in the South Atlantic Bight, a region extending from Cape Hatteras, North Carolina, to Cape Canaveral, Florida, out to the edge of the continental margin. The program is investigating significant natural resource areas, compiling this information into a spatial data framework, and working to inform and educate the public about the importance of discovery and management of these resources. The long-term goal is to provide an information foundation that allows managers to maintain economic vitality in the region while sustaining natural resources for future generations.

Topographic Change Mapping—1996 to 2000

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1996, 1997, 1998, 1999, and 2000. These measurements can be used for beach change studies and are available to the public. These data include measurements before and after Hurricanes Dennis and Floyd.

OHIO

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the Great Lakes states is available.

Great Lakes Land Cover and Change Data—2002, 2003

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1995 and 2001. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Ohio Coastal Hazards GIS—1998 to 2002

<http://astrolabe.csc.noaa.gov/website/Ohio/>

The goal of this project is to demonstrate some of the potential uses of GIS for coastal management. The project focuses on the application of spatial data for hazard mitigation and response planning, and the issues examined include hazard vulnerability, coastal erosion, and shoreline management. The format is a simple Web-based tutorial that steps the user through a series of interactive maps illustrating various hazard assessment scenarios.

Precision Farming Demonstration—1996 to 1998

Under a grant from the Center, the Old Woman Creek National Estuarine Research Reserve characterized soils at several farms in the watershed in order to promote adoption of precision farming and other environmentally friendly agricultural practices. This project also included efforts to stabilize streambeds.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed

advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Remote Sensing Data Acquisition—2002, 2003

This project provides remotely sensed coastal data products obtained through contracts with private industry. All data products meet Federal Geographic Data Committee metadata standards and are freely available to federal, state, and local coastal resource managers. To date, these funds have focused on coastal land cover development, coastal topography, and submerged aquatic vegetation.

Shoreline Change Detection Using High-Resolution Imagery—1998

The NOAA Coastal Services Center supported the Ohio State University Civil Engineering project designed to validate the use of new high-resolution (1 meter to 15 meter) satellite imagery for shoreline mapping.

Topographic Change Mapping—1998

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1998. These measurements can be used for beach change studies and are available to the public.

OREGON

Coastal Habitat Decision Tool—2001 to 2003

In 2001, the Center solicited proposals to develop decision-support tools related to coastal habitat management. As a result of this process, Ecotrust was awarded funding to develop and deploy a primary component of the Oregon Coastal Atlas—specific tools to facilitate both access to and use of data by local-level resource managers and scientists via the Web.

Coastal Management Fellowship—1996 to 1998

www.csc.noaa.gov/cms/1996Fellows.html

A Coastal Management Fellow worked with the Oregon Ocean-Coastal Management Program to develop an estuary management information system for Oregon. The fellow developed the Dynamic Estuary Management Information System (DEMIS) using the Coos Bay estuary and watershed as a pilot area. Goals of the project were to conserve and restore estuarine habitat, mitigate for adverse estuarine effects from development, employ the best available scientific information for making coastal resource management decisions, and improve communication among local, state, and federal agencies.

Coastal Management Fellowship—1998 to 2000

www.csc.noaa.gov/cms/fellow98.html

A Coastal Management Fellow worked with the Oregon Ocean-Coastal Management Program to create a computerized database and computerized maps of potential sites for estuarine wetland creation, restoration, and enhancement, and wetland mitigation banking. This project also benefited the Dynamic Estuary Management Information System (DEMIS) in the targeted estuaries and their watersheds, and created GIS data layers for DEMIS in each estuary.

Coastal Management Fellowship—2000 to 2002

www.csc.noaa.gov/cms/00_fellows.html

A Coastal Management Fellow worked with the Oregon Ocean-Coastal Management Program on a project entitled “Littoral Cell Management Plan.” The purpose of the fellowship was to initiate and develop littoral cell management plans for two high-need jurisdictions, the City of Bandon and an unincorporated urbanized area in Lincoln County.

Coastal Oregon Land Cover and Change Data—2002, 2003

This project is mapping terrestrial land cover in coastal watershed environments and identifying changes in these areas. The project relies on satellite multispectral imagery as the primary information source. These data will be used to distinguish major land cover classes, and previous images will be studied to locate areas that changed over time. For this project, the data will be acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Columbia River Estuary Land Cover and Change Data—1996

www.csc.noaa.gov/crs/lca/col_riv.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1989 and 1992. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Columbia River Estuary Land Cover Change CD-ROM—1997

www.csc.noaa.gov/products/crest/startup.htm

This land cover classification and change detection analysis for the Columbia River includes the coastal drainage area from Willapa Bay, Washington, south to Tillamook Bay, Oregon. In 1992, the Coastal Change Analysis Program (C-CAP) entered into a cooperative project with the Columbia River Estuary Study Task Force (CREST), the National Marine Fisheries Service Point Adams Field Station (Hammond, Oregon), and the State of Washington Department of Natural Resources to perform this work, which followed the C-CAP methods. CREST is a bi-state council of local governments providing coastal and estuarine planning services in the Columbia River estuary region. Members include cities, counties, and port districts in Washington and Oregon.

Needs Assessment Training—2001

South Slough National Estuarine Research Reserve (NERR) served as a local host for a workshop entitled "How to Conduct a Training Needs Assessment." Participants in the two-day training included staff from NERR sites, Sea Grant, the Bureau of Land Management, state coastal management programs, and other local partners. The goals of the training were to familiarize participants with terminology, tools, and methods, and to help them understand how and when to use needs assessments.

Northwest Fisheries Science Center Collaboration—2002, 2003

The Center is working with the National Marine Fisheries Service Northwest Fisheries Science Center (NWFSC) to develop a salmon data management system for the Pacific Northwest. The goal of this project is to provide and maintain corporate data, metadata, applications, and project management services for research scientists and external constituents.

Oregon Coastal Shorelands Access Inventory—1999, 2000

www.csc.noaa.gov/funding/PastAwards1.html

A database inventory and geographic information system (GIS) of coastal shoreland access points was created through this project. The database and GIS products are being used as tools to improve the management of public access sites by state agencies and local governments. The comprehensive inventory is available from the Internet and includes pedestrian, vehicle, and visual access and incorporates site information on location, ownership, access type, management, facilities, landscape features, and services. This project was funded with a special project grant from the Center.

Performance Indicators Visualization and Outreach Tool (PIVOT)—1999 to 2001

www.csc.noaa.gov/products/pivot/

The PIVOT prototype developed for Tillamook County, Oregon, supports and enhances the community accountability and reporting efforts of a local watershed sustainable management initiative. Using geographic information system (GIS) data in educational graphics and interactive

maps, this Internet-based outreach tool helps bring complex sustainable management plans to life for the community. The tool is useful for clarifying issues, outlining action steps, and encouraging stakeholders to interpret the effectiveness of management decisions. The Center will continue to showcase the prototype and produce a CD-ROM that adapts the interactive Internet application to other sustainable community initiatives.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Protecting Our Ports and Harbors (POPAH)—2000, 2001

The goal of this project was to increase the resilience of ports, harbors, and their surrounding communities to earthquake and tsunami hazards in the Pacific Northwest. A demonstration project was undertaken to develop, test, and evaluate various strategies and tradeoffs to increase the resiliency of lifelines, infrastructure, and facilities in and around ports and harbors. The Center will continue developing an educationally based Internet site about tsunamis and work with local stakeholders and the Oregon Sea Grant to acquire data to be used for local risk assessments and a regional risk atlas.

Risk and Vulnerability Assessment Tools—2002, 2003

www.csc.noaa.gov/csi/projects/assessment-tool.html

As part of the NOAA Coastal Storms Initiative, the Center is developing risk and vulnerability assessment tools for the Florida and Pacific Northwest pilot projects. Local planners within the St. Johns River Watershed in Florida and the Columbia River Watershed in Washington and Oregon use this information to develop coastal hazard mitigation strategies. This project helps protect coastal communities from storm impacts by providing new and improved hazard and weather-related services and data.

Rocky Reef Habitat Survey—2002, 2003

The Oregon Department of Fish and Wildlife is using multibeam sonar to map a shallow water rocky reef area off the Oregon coast to define important fish habitat. The Center is assisting the department in determining ways to best study and develop high-quality hydrographic data that will support NOAA Ocean Service nautical chart data collection programs. The final products of this project include tidal survey data sets, Remotely Operated Vehicle (ROV) video footage, topographical model and shaded-relief bathymetry maps, and written descriptions of the habitat. These habitat maps will help Oregon public agencies better manage the state's groundfish fishery.

Topographic Change Mapping—1998

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1998. These measurements can be used for beach change studies and are available to the public. A CD-ROM, *Topographic LIDAR: The Northwest Project*, discusses the management uses of these data and was released in 2001.

PENNSYLVANIA

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one

source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Coastal Management Fellowship—2001 to 2003

www.csc.noaa.gov/cms/fellows/01_fellows.html

A Coastal Management Fellow is working within the Pennsylvania Department of Environmental Protection, Office for River Basin Cooperation, on a project entitled "Expanding the Pennsylvania Sea Grant Program through State and Regional Approaches in Aquatic Nuisance Species and Fish Consumption Advisories." The project develops a comprehensive exotic aquatic species program and fish consumption education initiative.

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the Great Lakes states is available.

Great Lakes Land Cover and Change Data—2002, 2003

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1995 and 2001. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Headwaters Conservation Park Management Plan—1996, 1997

Under a grant from the Center, the Pennsylvania Department of Environmental Resources and the Erie County Conservation District developed a management plan for Headwaters Conservation Park, which is within the Mill Creek watershed. This work included preparing a resource inventory, developing public access and interpretive facilities, and rerouting drainage to improve management of nonpoint source runoff.

Remote Sensing Data Acquisition—2002, 2003

This project provides remotely sensed coastal data products obtained through contracts with private industry. All data products meet Federal Geographic Data Committee metadata standards and are freely available to federal, state, and local coastal resource managers. To date, these funds have focused on coastal land cover development, coastal topography, and submerged aquatic vegetation.

PUERTO RICO

Benthic Habitats of Puerto Rico and the U.S. Virgin Islands—2000, 2001

<http://biogeo.nos.noaa.gov/products/benthic/>

This CD-ROM provides a benthic habitat classification manual, geospatial data, and a benthic habitat map for the nearshore waters of Puerto Rico and the U.S. Virgin Islands. The CD-ROM was created in partnership with the National Centers for Coastal Ocean Science.

National Estuarine Research Reserve System Data Rescue—1997 to 1999

www.csc.noaa.gov/pagis/html/esdimindex.htm

This project was designed to provide state coastal zone management programs with access to an integrated data-sharing system. Data formerly in a hard copy format were digitized, with priority given to those data sets in danger of immediate loss due to media deterioration. Rescued data sets are accessible through the Internet via a geographic information system, and selected data and metadata were published on a CD-ROM.

Needs Assessment for Island Coastal Programs—2001

The Center conducted a needs assessment of each island coastal program. The goal was to collect information about the position of the coastal management program, in terms of its technical and nontechnical resources, to meet its goals. The assessment initiated the development of appropriate and feasible projects between the Center and the island coastal programs.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Shoreline Data Rescue—1997 to 2001

www.csc.noaa.gov/products/shorelines/

GIS-compatible shoreline data sets that include high-resolution contemporary and historic shorelines are available from the Center's Web site. The source of the historic shoreline data is NOAA t-sheet charts dating from the 1800s. This information is most frequently used to measure shoreline change.

RHODE ISLAND

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Narragansett Bay Benthic Data—1996

www.csc.noaa.gov/crs/bhm/ri.html

This project was conducted by the Rhode Island Department of Environmental Management to create a critical resource inventory. This inventory will serve as the basis for a bay-wide approach to resource protection and restoration. The mapping effort was accomplished through the Narragansett Bay Estuary Program with primary photo interpretation by University of Massachusetts staff. NOAA Ocean Service's Beaufort Lab and the Center also incorporated videography and single-beam acoustic surveys into the project.

National Estuarine Research Reserve System Data Rescue—1997 to 1999

www.csc.noaa.gov/pagis/html/esdimindex.htm

This project was designed to provide state coastal zone management programs with access to an integrated data-sharing system that can assist coastal managers in their decision making. Data formerly in a hard copy format were digitized, with priority given to those data sets in danger of immediate loss due to media deterioration. Rescued data sets are accessible through the Internet via a geographic information system, and selected data and metadata were published on a CD-ROM.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed

advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Rhode Island Habitat Restoration Portal—2001 to 2003

www.edc.uri.edu/restoration/

The Rhode Island Habitat Restoration Portal provides information about habitat restoration in Rhode Island to federal and state agencies, nonprofit groups, and the public. GIS-based decision-support tools allow users to interactively compare potential habitat restoration sites, especially focusing on seagrass beds, salt marshes, and streams used by anadromous fish. This information system can be used to apply for grants, select potential projects, educate the public, and assist coastal managers in restoration planning.

Rhode Island Hazards Training—2000

The Center conducted a one-day hazard mitigation training workshop in Rhode Island. The purpose of the workshop was to help build local capacity for developing a regional Coastal Hazard Mitigation Plan. Training sessions addressed risk and vulnerability assessment, mitigation planning, mitigation funding opportunities, developing public-private partnerships, and community education and awareness.

Rhode Island Land Cover and Change Data—2000

www.csc.noaa.gov/crs/lca/mass.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1991 and 1997. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Statewide Hazard Risk and Vulnerability—2000, 2001

The Center worked with the Rhode Island Emergency Management Agency and Odeh Engineers, Inc., to conduct a statewide hazard risk and vulnerability assessment. The framework for the statewide assessment was first applied in the pilot community of Warwick, Rhode Island, and builds upon the methodology developed by the Center in the *Community Vulnerability Assessment Tool* CD-ROM.

Topographic Change Mapping—2000

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 2000. These measurements can be used for beach change studies and are available to the public.

University of Rhode Island Grant Management—2000, 2001

The Center manages a grant to the University of Rhode Island Graduate School of Oceanography to support the development of coastal data and information resources. This grant includes support of the Distributed Ocean Data System (DODS) and scanning of selected Sea Grant Depository documents. The DODS system provides the means for users to exchange oceanographic data and to transfer data digitally into an analysis package.

SOUTH CAROLINA

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Characterization of the Ashepoo-Combahee-Edisto (ACE) Basin, South Carolina—1997 to 2000

www.csc.noaa.gov/lcr/text/aceweb.html

To assist the state and local governments that manage environmental resources within the ACE Basin, this project produced a flexible, user-friendly source of information, data, and management tools. The resulting CD-ROM integrates diverse information about the area's physical characteristics, ecology, history, socioeconomics, and management. This project was led by the South Carolina Department of Natural Resources and was conducted in partnership with the Center.

Charleston Metro Chamber of Commerce Business Development Group—1999

A Center program, the Center for Technological Innovation (CTI), merged its operations with the Business Development Group within the Charleston Metro Chamber of Commerce. CTI, a natural fit for the Chamber, was an "incubator" for high-tech business. CTI provided many services to start-up companies, including industry analysis, market assessment, start-up expertise, and capital resource networking.

Coastal Land-Use Techniques Training Program—2000

Funding from this project was utilized to develop and implement a training program for local policy makers. Topics include coastal issues and the tools and techniques available to address these issues, plus the legal aspects of using local government power. This project was funded with a special project grant from the Center.

Coastal Management Fellowship—1997 to 1999

www.csc.noaa.gov/cms/1997Fellows.html

A Coastal Management Fellow worked with the South Carolina Office of Ocean and Coastal Resource Management to refine its existing post-storm recovery plan using a geographic information system (GIS) database. The database will expedite the decision-making and public notification process regarding the condition of beachfront structures after a major storm.

Coastal Management Fellowship—1999 to 2001

www.csc.noaa.gov/cms/99_fellows.html

A Coastal Management Fellow worked with the South Carolina Office of Ocean and Coastal Resource Management to assess the technical capabilities and information needs of local governments within the coastal zone. The fellow established an information distribution mechanism to effectively serve the needs of local governments by providing recommendations and findings from agency-generated research. The fellow also developed a planning information management system to aid staff in understanding and using information about new and innovative coastal research, and developed a procedure and mechanism for integrating information into the agency's policy development and permit review processes.

Coastal Management Fellowship—2001 to 2003

www.csc.noaa.gov/cms/fellows/01_fellows.html

A Coastal Management Fellow is working with the South Carolina Department of Health and Environmental Control, Office of Coastal Resource Management, on a project entitled "Storm water Management System Inspection Program." The project includes assessment of current storm water management procedures, legal analysis of maintenance and inspection requirements, baseline field inspections of systems, and fiscal analysis of inspection programs.

Coastal Ocean Habitat Project—1996

www.csc.noaa.gov/products/gulfmex/startup.htm

The Coastal Ocean Habitat Project generated Center data products that utilized satellite observations of U.S. coastal waters. A CD-ROM of retrospective satellite sea-surface temperature images for the southeastern U.S. was produced in 1996.

Coastal Technology Services—2001

Coastal Technology Services establishes coalitions of the Center and government agencies, academic institutions, and private and nonprofit organizations to develop and test prototype decision-making tools and information products for coastal management, and to demonstrate and verify existing and lab-proven coastal and marine technologies. Full-scale pilot projects involve design and development of a prototype, field application and evaluation with end users, final product development, and training.

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the State of South Carolina is available.

Development Costs and Benefits of Coastal Growth Patterns—2002, 2003

The goal of this project is to demonstrate to the Growth Options Partnering Committee, as well as to local governments and the development and real estate communities, that developing coastal lands in an efficient, responsible manner will profit the developer equally, if not more, than if the same lands were developed in an indiscriminant manner. The aim of the project is to perform a growth costs study using spatial data and geographic information system (GIS) technology and then report the findings to the committee. This project was funded with a special project grant from the Center.

Digital Shoreline of South Carolina CD-ROM—2000

The *Digital Shoreline of South Carolina* CD-ROM delivers the most current and accurate depiction of South Carolina's shoreline in various formats for use in geographic information system (GIS) software packages. Coastal resource managers may use these data to better understand the shoreline of South Carolina. The source data range from 1:10,000 to 1:20,000, with the large scale being useful for viewing detailed information. The shoreline maps used as the source of the digital data were created from tide-controlled photography, thereby giving users a static glimpse of conditions at mean high tide throughout the state. This project was a joint effort between the Center and the National Geodetic Survey.

Educating the Public through their Children—2001 to 2003

This project fosters citizen support for recommendations of the Clean Water Task Force and Beaufort County's Special Area Management Plan (SAMP) by educating children who, in turn, will educate their parents about the protection of their water resources. Specifically, the project informs students of the progress, findings, and recommendations of SAMP and helps them conduct their own studies. Residents from local retirement communities volunteer to assist students with water measurements and monitor biological projects.

Estuarine Habitat Project—1996 to 2001

www.csc.noaa.gov/crs/ehab/

The Estuarine Habitat project investigated remote sensing and modeling approaches for studying oceanic and terrestrial processes. This project focused on building new, useful methodologies and applications to aid coastal managers in assessing estuarine habitat quality.

Lessons Learned Regarding the Use of Spatial Data and GIS during Hurricane Floyd—2001

www.csc.noaa.gov/hfloyd/

During and after Hurricane Floyd, the NOAA Coastal Services Center worked with local, state, and federal coastal resource managers and emergency preparedness officials to document spatial data and information needs and uses. The resulting document is a best practices manual filled with information that can be of use to all coastal communities.

Ocean Color Applications Project—1996 to 2000

Through this project, processing and classification techniques were developed to evaluate coastal water quality and biological and geologic variables based on remote sensing data from satellite or aircraft. Data on the bio-optical characteristics of diverse U.S. coastal waters were collected. These data are used to validate satellite measurements used for ocean color data products.

Ocean Planning Information System (OPIS)—1997 to 2003

www.csc.noaa.gov/opis/

OPIS is the first system to provide the coastal management community in the southeastern U.S. with access to regional georeferenced spatial data and legal information. Major features of the OPIS Web site include an interactive mapping application, marine and coastal spatial data, data and metadata download tools, Federal Geographic Data Committee (FGDC)-compliant metadata, and legislative summary pages, all designed to support regional ocean management. In 2001, OPIS received a Hammer Award, a vice-presidential acknowledgment of projects and people that help government operate more efficiently and effectively.

Oyster Resources Mapping Pilot Study—2002

The South Carolina Department of Natural Resources, the Town of Hilton Head Island, and the Center initiated a pilot study to evaluate the uses of analog and digital imagery for detecting and mapping intertidal oysters.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Shoreline Data Rescue—1997 to 2001

www.csc.noaa.gov/products/shorelines/

GIS-compatible shoreline data sets that include high-resolution contemporary and historic shorelines are available from the Center's Web site. The source of the historic shoreline data is NOAA t-sheet charts dating from the 1800s. This information is most frequently used to measure shoreline change.

South Carolina Land Cover and Change CD-ROM—1999

www.csc.noaa.gov/products/sccoasts/index.htm

South Carolina's Coast: A Remote Sensing Perspective is a two-volume CD-ROM set that demonstrates the utility of information acquired by satellite and airborne remote sensing systems for coastal South Carolina. Coastal resource managers may use this information to detect land-use trends, document shoreline dynamics, and educate the public. The CD-ROMs also contain geographic information system (GIS) tutorials explaining how to access and manipulate the data, examples on how the data can be used to address coastal resource issues, and tools to aid in the data analysis.

South Carolina Land Cover and Change Data—1998

www.csc.noaa.gov/crs/lca/s_car.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1990 and 1995. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

South Carolina Oyster Restoration and Enhancement Program—2001 to 2003

www.csc.noaa.gov/scoysters/

The South Carolina Oyster Restoration and Enhancement (SCORE) program organizes volunteers and students to restore and enhance oyster habitats, establishes and promotes oyster shell recycling by the community, and fosters education by using constructed reefs as living classrooms. The SCORE Web site provides project information and includes interactive on-line tools for recording and analyzing monitoring data from the restoration sites. This project is part of NOAA's community-based restoration program, led by NOAA Fisheries.

Southeast Coast and Ocean Margin Program (SEACOM)—2002, 2003

The Center is leading an effort to enhance understanding of the significant natural resources in the South Atlantic Bight, a region extending from Cape Hatteras, North Carolina, to Cape Canaveral, Florida, out to the edge of the continental margin. The program is investigating significant natural resource areas, compiling this information into a spatial data framework, and working to inform and educate the public about the importance of discovery and management of these resources. The long-term goal is to provide an information foundation that allows managers to maintain economic vitality in the region while sustaining natural resources for future generations.

Spatial Wetland Assessment for Management and Planning (SWAMP)—2000, 2001

www.csc.noaa.gov/lcr/text/swamp.html

This GIS-based model helps coastal resource managers prioritize wetland habitats within a watershed. This ability also is helpful when addressing wetland restoration issues. SWAMP was originally developed for the Ashepoo-Combahee-Edisto (ACE) River Basin, South Carolina, but the general approach is transferable to other geographies.

Topographic Change Mapping—1996, 1997, 2000

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1996, 1997, and 2000. These measurements can be used for beach change studies and are available to the public.

TEXAS

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Coastal Ocean Habitat Project—2000

www.csc.noaa.gov/products/gulfmex/startup.htm

The Coastal Ocean Habitat Project generated Center data products that utilized satellite observations of U.S. coastal waters. A retrospective study of the northern Gulf of Mexico was produced.

Coastal Texas Land Cover Change—1992, 1997

www.csc.noaa.gov/crs/lca/texas.html

This project was a collaborative effort to map terrestrial land resources in estuarine watershed environments of the Texas coast and to identify changes in these areas. The Center provided the imagery used for analysis, as well as assistance with ground verification and accuracy assessment. The Texas Parks and Wildlife Department has used the data for environmental assessments of several coastal residential projects and to examine human impacts on Galveston Bay. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) protocol.

Corpus Christi Bay, Benthic Habitat—1994

www.csc.noaa.gov/crs/bhm/tx.html

This project was part of an effort to determine the distribution of submerged aquatic vegetation (SAV) in parts of the Corpus Christi Bay National Estuary Program site. The project, carried out by the Texas Parks and Wildlife Department, incorporated historical aerial photography from the 1950s and 1970s to develop trend data. The 1994 photography was acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods. Extensive field observations were used to identify algal communities and also determine SAV species in selected areas.

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the State of Texas will be available beginning in 2003.

Harmful Algal Bloom Project—1999 to 2003

www.csc.noaa.gov/crs/habf/

This project is developing information systems to help coastal resource managers control shellfish harvesting closures and issue public health alerts. A harmful algal bloom e-mail bulletin and a near real-time information system on the Internet are available to managers.

Maintaining Quality Standards at Coastal and Marine Managed Areas—2002, 2003

The focus of this effort is a visitor use management handbook for managers. Originally developed for the National Park Service, this redesigned handbook provides tools for planning for and managing visitor use and visitor-related impacts on coastal and marine managed areas.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Shoreline Data Rescue—1997 to 2001

www.csc.noaa.gov/products/shorelines/

GIS-compatible shoreline data sets that include high-resolution contemporary and historic shorelines are available from the Center's Web site. The source of the historic shoreline data is NOAA t-sheet charts dating from the 1800s. This information is most frequently used to measure shoreline change.

VIRGIN ISLANDS

Benthic Habitats of Puerto Rico and the U.S. Virgin Islands—2000, 2001

<http://biogeo.nos.noaa.gov/products/benthic/>

This CD-ROM provides a benthic habitat classification manual, geospatial data, and a benthic habitat map for the nearshore waters of Puerto Rico and the U.S. Virgin Islands. The CD-ROM was created in partnership with the National Centers for Coastal Ocean Science.

Buck Island, St. Croix, Methods Development and Benthic Data—1999

www.csc.noaa.gov/crs/bhm/buck_is.html

Through this project, benthic tropical ecosystem habitats around Buck Island were mapped. The Center integrated videography and single-beam acoustics into the project. The clear-water

environment allowed a detailed examination of the acoustic properties of various coral, seagrass, and other tropical habitats.

Needs Assessment for Island Coastal Programs—2001

The Center conducted a needs assessment of each island coastal program. The goal was to collect information about the position of the coastal management program, in terms of its technical and nontechnical resources, to meet its goals. The assessment initiated the development of appropriate and feasible projects between the Center and the island coastal programs.

Targeting Growth and Related Pollution Issues—2001 to 2003

The Virgin Islands Department of Planning and Natural Resources is researching smart growth initiatives, ideas, and practices to determine their usefulness in reducing nonpoint source pollution in the Virgin Islands.

Virgin Islands Hydroseeding Demonstration Project—1996, 1997

Under a grant from the Center, the U.S. Virgin Islands Department of Planning and Natural Resources purchased equipment to allow contractors and private landowners to use hydroseeding to control runoff from construction areas. The project also included an outreach program to promote understanding of the effects that runoff has on coral reefs.

VIRGINIA

Beach Nourishment on the Atlantic and Gulf Coasts of the U.S.—2002, 2003

This project helps state and local governments along the Atlantic and Gulf coasts of the U.S. make informed decisions about the nourishment of beaches by consolidating the best scientific and technical information and tools for evaluating and understanding beach nourishment into one source. This resource is a user-friendly Web site that includes relevant information and tools from the fields of coastal geology, engineering, economics, law and policy, and the biological sciences.

Benthic Habitats of the York River, Chesapeake Bay NERR—2002, 2003

The Center and the Chesapeake Bay National Estuarine Research Reserve (NERR) are using sediment profiling imagery, video sleds, traditional benthic sampling, and multi-beam SONAR to map turbid water habitats within the reserve. These maps will be integrated with information about key physical processes to inventory habitats and examine impacts from dredging and other anthropogenic disturbances.

Chesapeake Bay Land Cover and Change Data—1989

www.csc.noaa.gov/crs/lca/chesa.html

This prototype project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1984 and 1988/89. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the Chesapeake Bay area will be available beginning in 2003.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Topographic Change Mapping—1996 to 1998

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1996, 1997, and 1998. These measurements can be used for beach change studies and are available to the public.

Virginia Land Cover and Change Data—2000

www.csc.noaa.gov/crs/ccap_index.html

The Center provided technical assistance to the Virginia Institute of Marine Science, which obtained funds from other NOAA sources to update previous Coastal Change Analysis Program (C-CAP) land cover change detection data for the York River area of the Chesapeake Bay. This prototype study created a third set of land cover change and trend data for one of the four previous C-CAP Chesapeake Bay Landsat scene areas.

WASHINGTON

Coastal Management Fellowship—1997 to 1999

www.csc.noaa.gov/cms/1997Fellows.html

A Coastal Management Fellow worked with the Washington State Department of Ecology on a project entitled "Coastal Research and Local Decisions: Building the Bridge for Improved Coastal Hazard Management." The goal of this project was to develop and provide an information base for reducing the hazards associated with coastal development. Through the project, an erosion hazard monitoring program and a coastal hazards database were created. The project also facilitated local education outreach and the integration of existing information management systems.

Coastal Management Fellowship—1999 to 2001

www.csc.noaa.gov/cms/99_fellows.html

A Coastal Management Fellow worked with the Washington Department of Ecology on a project entitled "Washington State Coastal Atlas: A Digital Tool for Improved Shoreline Management." The primary goal of the project was to provide convenient access to high quality coastal information through the development of a coastal atlas. The fellow evaluated potential models for a statewide coastal information system, assessed the data needs of the coastal community, and assisted in designing a coastal atlas. The atlas effectively uses geographic information system (GIS) and Internet technologies and is able to accommodate new or updated shoreline data.

Columbia River Estuary Land Cover and Change Data—1996

www.csc.noaa.gov/crs/lca/col_riv.html

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1989 and 1992. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Columbia River Estuary Land Cover and Change Data CD-ROM—1997

www.csc.noaa.gov/products/crest/startup.htm

This land cover classification and change detection analysis for the Columbia River includes the coastal drainage area from Willapa Bay, Washington, south to Tillamook Bay, Oregon. In 1992, the Coastal Change Analysis Program (C-CAP) entered into a cooperative project with the Columbia River Estuary Study Task Force (CREST), the National Marine Fisheries Service Point Adams Field Station (Hammond, Oregon), and the State of Washington Department of Natural Resources to perform this work, which followed the C-CAP methods. CREST is a bi-state council of local governments providing coastal and estuarine planning services in the Columbia River estuary region. Members include cities, counties, and port districts in Washington and Oregon.

Community-Based Habitat Restoration—2001 to 2003

NOAA's community-based restoration program helps community groups restore marine and estuarine habitat by providing funds and technical expertise. The NOAA Fisheries Service leads the program. The Center has been a program partner since fiscal year 2001 and has co-funded several projects, including the restoration of eelgrass beds in Port Townsend.

Coastal Washington Land Cover and Change Data—2002, 2003

This project is mapping terrestrial land cover in coastal watershed environments and identifying changes in these areas. The project relies on satellite multispectral imagery as the primary information source. These data will be used to distinguish major land cover classes, and previous images will be studied to locate areas that changed over time. For this project, the data will be acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

National Estuarine Research Reserve System Data Rescue—1997 to 1999

www.csc.noaa.gov/pagis/html/esdimindex.htm

This project was designed to provide state coastal zone management programs with access to an integrated data-sharing system. Data formerly in a hard copy format were digitized, with priority given to those data sets in danger of immediate loss due to media deterioration. Rescued data sets are accessible through the Internet via a geographic information system, and selected data and metadata were published on a CD-ROM.

North Puget Sound Ecological Characterization—2002, 2003

The North Puget Sound ecological characterization is an interdisciplinary synthesis of information about the sound's ecosystem and the communities that depend on it. By integrating existing information and developing geographic information system (GIS) management tools, the characterization will assist research efforts and promote an ecosystem approach towards managing and using North Puget Sound's natural resources. The Northwest Indian College developed the characterization through a cooperative agreement with the NOAA Coastal Services Center.

Northwest Fisheries Science Center Collaboration—2002, 2003

The Center is working with the National Marine Fisheries Service Northwest Fisheries Science Center (NWFSC) to develop a salmon data-management system for the Pacific Northwest. The goal of this project is to provide and maintain corporate data, metadata, applications, and project management services for research scientists and external constituents.

Protected Areas GIS (PAGIS)

www.csc.noaa.gov/pagis/

The PAGIS project brought compatible geographic information systems (GIS), geographic data management, and Internet capabilities to each of the nation's 25 Estuarine Research Reserves and 13 Marine Sanctuaries. Through PAGIS, the reserves and sanctuaries also developed advanced data sets, underwent extensive training, and found innovative ways to make the most effective use of their new data and technological capabilities.

Protecting Our Ports and Harbors (POPAH)—2000, 2001

The goal of this project was to increase the resilience of ports, harbors, and their surrounding communities to earthquake and tsunami hazards in the Pacific Northwest. A demonstration project was undertaken to develop, test, and evaluate various strategies and trade-offs to increase the resiliency of lifelines, infrastructure, and facilities in and around ports and harbors. The Center continues developing an educationally based Internet site about tsunamis and works with local stakeholders and the Oregon Sea Grant to acquire data to be used for local risk assessments and a regional risk atlas.

Public Issues and Conflict Management Training—2000

The Washington Sea Grant Program served as the local host for this three-day training. Participants included regional Sea Grant staff and city, county, and state agency partners. The training built skills in collaborative processes, meeting management, and media relations.

Remote Sensing Data Acquisition—2002, 2003

This project provides remotely sensed coastal data products obtained through contracts with private industry. All data products meet Federal Geographic Data Committee metadata standards and are freely available to federal, state, and local coastal resource managers. To date, these funds have focused on coastal land cover development, coastal topography, and submerged aquatic vegetation.

Risk and Vulnerability Assessment Tools—2002, 2003

www.csc.noaa.gov/csi/projects/assessment-tool.html

As part of the NOAA Coastal Storms Initiative, the Center is developing risk and vulnerability assessment tools for the Florida and Pacific Northwest pilot projects. Local planners within the St. Johns River Watershed in Florida and the Columbia River Watershed in Washington and Oregon use this information to develop coastal hazard mitigation strategies. This project helps protect coastal communities from storm impacts by providing new and improved hazard and weather-related services and data.

San Juan Archipelago Mapping—2002, 2003

This study of the San Juan Archipelago is determining the best ways to obtain high-resolution, multibeam bathymetric and backscatter data, side-scan sonographs, and seismic-reflection profiles that can be used to improve navigation charts, characterize essential fish habitat, and map faults and potential landslides that may be geohazards to both Canada and the U.S. These data are used to produce maps and spatial databases that can support NOAA navigational charting efforts, characterizations of marine habitats, and delineations of submarine geology and geohazards. The NOAA Coastal Services Center is working with the San Jose State University Foundation to help develop digital data sets that will be available on NOAA Web sites.

Topographic Change Mapping—1998, 2002

www.csc.noaa.gov/lidar/

High-resolution Light Detection and Ranging (LIDAR) measurements of coastal beach topography were made during 1998. These measurements can be used for beach change studies and are available to the public. A CD-ROM, *Topographic LIDAR: The Northwest Project*, discussing the management uses of this data was released in 2001. In the summer of 2002, topographic data were again collected to assess the effects of accretion in this area.

Willapa Bay, Benthic Data—1995

www.csc.noaa.gov/crs/bhm/willapa.html

The Center partnered with the Columbia River Estuary Study Task Force, the University of Oregon, and Sound Vessels Inc. to map submerged aquatic vegetation in Willapa Bay. A principal issue in this project is the spread of the exotic estuarine emergent *Spartina alterniflora* into previously unvegetated intertidal mudflats, oyster bed, and seagrass habitats. Aerial photography, towed underwater videography, and airborne video were used to accomplish the mapping.

WASHINGTON, D.C.

Chesapeake Bay Land Cover and Change Data—1989

www.csc.noaa.gov/crs/lca/chesa.html

This prototype project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1984 and 1989. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

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CZMA Bibliographies

www.csc.noaa.gov/CZIC/

The Center's library has cataloged NOAA's Coastal Zone Information Center collection, produced by state coastal management programs under the Coastal Zone Management Act (CZMA). This collection contains documents that span a number of coastal topics and includes brochures, management plans, and legislative information. A bibliography of this information for the Great Lakes states is available.

Great Lakes Land Cover and Change Data—2002, 2003

This project mapped terrestrial land cover in coastal watershed environments and identified changes in these areas that occurred between 1995 and 2001. The project relied on satellite multispectral imagery as the primary information source. These data were used to distinguish major land cover classes, and previous images were studied to locate areas that changed over time. For this project, the data were acquired according to the Center's Coastal Change Analysis Program (C-CAP) methods.

Identification of Conservation and Restoration Sites—1996 to 1998

Under a grant from the Center, the Wisconsin Department of Administration and the Minnesota Department of Natural Resources identified potential habitat conservation and restoration sites within the Duluth/Superior watershed and assessed habitat value in the Wisconsin portion of the estuary. Although the project involved work in both Minnesota and Wisconsin, all grant funds were sent to Wisconsin because Minnesota did not have a NOAA-approved coastal zone management program at the time of award.

Remote Sensing Data Acquisition—2002, 2003

This project provides remotely sensed coastal data products obtained through contracts with private industry. All data products meet Federal Geographic Data Committee metadata standards and are freely available to federal, state, and local coastal resource managers. To date, these funds have focused on coastal land cover development, coastal topography, and submerged aquatic vegetation.

Western Lake Superior NEMO Program—2001 to 2003

This project helps local land use officials understand the impact of nonpoint source pollution and provides the support they need to engage in proactive, watershed-based planning in the Western Lake Superior basin. Nonpoint Education of Municipal Officials (NEMO) provides the information, educational opportunities, and resources that enable local officials and community planners in the Lake Superior watershed of Minnesota and Wisconsin to envision and then create an economically and environmentally sustainable community. This project was funded with a special project grant from the Center.