Science for Solutions

NOAA'S COASTAL OCEAN PROGRAM

SOUTHEAST UNITED STATES COAST WORKSHOP

To Improve Coordination
of Coastal Ocean Research

June 29-30, 1992
Charleston, South Carolina

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Coastal Ocean Office

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To obtain a copy of this report or to learn more about the COP, please write:

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January 1993

U.S. DEPARTMENT OF COMMERCE
Barbara Hackman Franklin, Secretary
National Oceanic and Atmospheric Administration
John A. Knauss, Under Secretary
Coastal Ocean Office
Donald Scavia, Director

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Acknowledgments

We sincerely appreciate the outstanding job done by our local hosts at the South Carolina Sea Grant Consortium to make the meeting a success. We especially appreciate the work of Dr. Leslie Sautter.

Workshop Organization

Chair

Larry Atkinson	Old Dominion University

Steering Committee

Larry Atkinson	Old Dominion University
Larry Crowder	North Carolina State University
Margaret Davidson	South Carolina Sea Grant Consortium
David Johnson	NOAA Coastal Ocean Program Office
Leslie Sautter	South Carolina Sea Grant Consortium

Organizers

Larry Atkinson	Old Dominion University
Alessandra Conversi	National Science Foundation
B.J. Copeland	North Carolina Sea Grant College Program
Margaret Davidson	South Carolina Sea Grant Consortium
David Johnson	NOAA Coastal Ocean Program Office
Walter Johnson	Minerals Management Service
Tom Kinder	Office of Naval Research
Ron Lai	Minerals Management Service
Curt Mason	NOAA Coastal Ocean Program Office
Robert Middleton	Minerals Management Service
Michael Reeve	National Science Foundation
Jeff Williams	U. S. Geological Survey

Agenda

Southeast U. S. Coast Workshop

Sponsored by the NOAA Coastal Ocean Program

June 29 - 30, 1992

Charleston, South Carolina

Monday, June 29

8:00 am	Workshop Participants Convene College of Charleston Conference Center
8:30 am	Introductory Remarks *Curt Mason, NOAA Coastal Ocean Program Office* Sponsor and Co-host *Margaret Davidson, S. C. Sea Grant Consortium* Local Host *Larry Atkinson, Old Dominion University* Workshop Chair
9:00 am	Projects Planned for the Southeast Region Presentations by Program Representatives -refer to List of Presentations
12:00 pm	Buffet Lunch at Conference Center
1:00 pm	Presentations by PI's of Ongoing and Planned Projects -refer to List of Presentations
5:00 pm	Brief Review of the Day and Discussion *Larry Atkinson*
5:30 pm	Adjourn DAY 1 Session
6:30 pm	Low Country Cookout (van pick-up at hotel) Marshlands House, S. C. Wildlife and Marine Resources Dept. Fort Johnson, James Island
9:00 pm	Return to Hotel

Tuesday, June 30

7:00 am	Steering Committee Breakfast, Quality Inn
8:00 am	Workshop Participants Reconvene College of Charleston Conference Center
8:30 am	Open Discussion for Working Group Formation and Charges
9:30 am	Working Groups Convene to Prepare Report on Goals, Objectives, Strategies, and Needs
12:00 pm	Buffet Lunch at Conference Center
1:00 pm	General Session Working Group Chairs Present Initial Report
2:00 pm	Working Groups Reconvene to Revise Final Reports
4:30 pm	General Session - Final Discussion of Working Group Recommendations
5:30 pm	Meeting Summary and Closing Remarks *Larry Atkinson*
6:00 pm	Meeting Adjourns

List of Presentations

Southeast U. S. Coast Workshop, June 29, 1992

Agency/ Program	Program Representatives	Title
* EPA	John Paul	The EMAP/Southeast Coastal Zone Monitoring Program
DOE	Len Pietrafesa	Anticipated and Ongoing DOE Studies, Southeast U. S. Coast
* MMS	Tom Berger	A Physical Oceanographic Field Program Offshore North Carolina
* NOAA/COP	Alex Chester	CoastWatch Operations in the Southeast U. S.
* NOAA/COP	Don Hoss	South Atlantic Bight Recruitment Experiment
* NOAA/NDBC	Ray Canada	Marine Observations - National Data Buoy Center
NOAA/NURP	Larry Cahoon	Overview of National Undersea Research Center's Activities, Southeast U. S. Coastal Region
NSF/CoOP	John Bane	Summary of CoOP Planning by Steering Committee
* NC Geological Surv.	Bill Hoffman	Summary of NC Geological Survey Offshore Activities
* ONR	Tom Kinder	Anticipated Studies along the Southeast U. S. Coast
* USACE	David McGehee	Field Wave Gaging Program, Southeast U. S. Coast
USGS	Bill Dillon	Summary of USGS Activities off the U. S. Coast

* Program/Project Summary included in Appendix B

PI's	Funding Program	Title
* Charles Barans	Sea Grant-SC	Mechanisms of Transport of Decapod Crustaceans Through Estuarine Inlets
* Bill Birkemeier	USACE	Long-Term Measurements of Coastal Process Data, Duck, North Carolina
* Jack Blanton	Sea Grant-GA	Mechanisms of Transport of Decapod Crustaceans Through Estuarine Inlets
* Cheryl Ann Butman	NSF/CoOP	Suspension, Cross-Shelf Transport and Deposition of Planktonic Larvae of Inner-Shelf Benthic Invertebrates
* Bill Dillon	USGS	Ongoing USGS studies offshore Southeast U. S. Coast
* Paul Gayes	Sea Grant-SC	Regional Stratigraphic and Geologic Framework Along the Inner Continental Shelf of South Carolina
* Earl Hayter	Sea Grant-SC	Mesoscale Modeling of Sediment Transport and Morphologic Changes at Tidal Inlets
* Bob Hodson	Sea Grant-GA	Bacterial Utilization of Marine Humic Substances in Salt Marsh and Coastal Waters of the Southeastern U. S.
* Gary Kleppel	Sea Grant-FL	The Gulf Stream Front, Its Role in Larval Fish Survival and Recruitment in Florida
* Len Pietrafesa	DOE	A Study of Sediment Motions and Bottom Boundary Layer Dynamics Over the Middle Atlantic Bight Shelf and Upper Slope
* Mac Rawson (for R. Wiegert)	Sea Grant-GA	Recruitment, Abundance, and Growth of Post-larval Juvenile Blue Crabs in a Southeastern Coastal Estuary
* Stan Riggs	Sea Grant-NC	Relationship of the Geologic Framework of Hardbottom Habitats and Nutrient-Rich Groundwater Discharge to Benthic Community Structure, Onslow Bay, NC
* Tom Tisue	Sea Grant-SC	Sediment-Water Exchange Dynamics

* Program/Project Summary included in Appendix B

Southeast United States Coast Workshop
June 29 - 30, 1992
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1. INTRODUCTION

Coastal science issues are increasingly complex and costly to address. These issues span all the disciplines associated with coastal oceanography and all the coastal science funding agencies of federal, state, and local governments. Because of the complexity of these science issues, the increasing costs associated with at-sea measurements, and especially the decreasing funds available for research, the Nation cannot continue to address these issues independently of other research activities.

Research and policies concerning the coastal ocean cut across many agencies and departments of the federal government. To ensure that federal scientific and technological policies effectively address coastal issues, an interagency mechanism to coordinate coastal ocean science and policy is needed. To address that need, the Subcommittee on U.S. Coastal Ocean Science (SUSCOS) was established under the Committee on Earth and Environmental Sciences, a committee of the Federal Coordinating Council for Science, Engineering and Technology (FCCSET). The Subcommittee is charged with developing long-range plans for the overall federal effort in coastal ocean science, including the elements of a program requiring interagency cooperation and coordination.

1.1 A Test Case: The Southeast Coast of the United States

Through regular meetings of this Subcommittee over the past year, ongoing and planned activities off the southeastern U.S. coast have been continually highlighted because, through a coincidence of timing, a number of agencies are funding a variety of projects in the region. Even though plans for most of these efforts are well underway, the Subcommittee and the program managers involved in these projects wished to explore the opportunities to improve planning, coordination, and communication among these activities. As a first step in the process, the NOAA Coastal Ocean Program agreed to sponsor a workshop in partnership with the South Carolina Sea Grant Consortium and the North Carolina Sea Grant College Program. Technical advice and support was also provided by the National Research Council (NRC) Committee on the Coastal Ocean. During the workshop, Dr. Donald F. Boesch represented the NRC.

1.2 Purpose and Scope

The workshop organizing committee realized that (1) for much of the marine-oriented research in the region, interaction and cooperative sampling is not tractable, and (2) only a subset of the full suite of research activities could be covered productively during a workshop lasting a few days. As such, this report is not intended to serve as a summary of all marine-oriented research activity in the region. By consensus of the organizing committee, the geographic scope of the workshop was limited to the coastal waters extending from North Carolina to the east coast of Florida. In the judgment of the

organizing committee, estuarine studies are not as amenable to regional cooperative sampling arrangements because they tend to be smaller and more numerous projects. Thus, the organizing committee selected shelf-oriented projects for the principal focus. Other study areas may be considered for future workshops.

The workshop goal was to facilitate interagency cooperation on coastal ocean science in the southeastern region of the United States.

The specific activities of the workshop included:

- summarize ongoing and planned research;
- identify types of data, and distribution of sampling;
- identify additional data needed to better address project objectives; and
- identify how coordination could occur.

Prior to the meeting, workshop participants (Appendix A) were asked to summarize ongoing and planned research (Appendix B). These project summaries provide a description of the project, identify types of data collected, describe the spatial and temporal distribution of sampling, and list cruise schedules. By having project summaries available in advance of the workshop, speakers focussed on identifying additional types of data needed and suggesting how their project(s) might interact with other projects.

2. SYNOPSIS OF RESEARCH ACTIVITIES

Presentations of several planned or ongoing coastal ocean programs were made by federal agency Program Managers or their representative (see List of Presentations, page viii). Program summaries of most presentations are located in Appendix B. Agencies and their programs presented include:

• Department of Energy (DOE)	Ocean Margins Program (OMP)
• Environmental Protection Agency (EPA)	Southeast Coastal Zone Monitoring Program
• Minerals Management Service (MMS)	North Carolina Physical Oceanography Field Program
• NOAA	Coastal Ocean Program (COP), CoastWatch
• NOAA	Coastal Ocean Program (COP), SABRE
• National Science Foundation (NSF)	Coastal Ocean Processes (CoOP)
• Office of Naval Research (ONR)	Sandy Duck Field Experiment, Duck, NC
• U. S. Army Corps of Engineers (USACE)	Field Wave Gauging Program, Southeast U. S. Coast

Summaries of ongoing research and activities off the southeastern U. S. coast (two of which are included in the Program Summaries section of Appendix B) were made by representatives from the following federal and state agencies:

- NOAA National Undersea Research Center (NURC)
- NOAA National Data Buoy Center (NDBC)
- North Carolina Geological Survey
- U. S. Geological Survey (USGS)

Table 1 summarizes ongoing activities or programs by several federal agencies, and includes the contact person for each.

In addition to program presentations, principal investigators of ongoing or planned research summarized their projects. Summaries for these as well as for other projects not presented at the meeting are included in the Project Summary section of Appendix B. The studies presented are funded by several agencies or agency programs, including:

- DOE Ocean Margins Program (OMP)
- NOAA/Florida Sea Grant College Program
- NOAA/Georgia Sea Grant College Program
- NOAA/North Carolina Sea Grant College Program
- NOAA/South Carolina Sea Grant Consortium
- NSF Coastal Ocean Processes (CoOP)
- USACE
- USGS

Several of the ongoing studies presented at the workshop are currently supported by multi-agency funding. Figure 1 illustrates the geographic distribution of these studies and others with single funding sources. Most studies focus on a particular segment of the coastline, however some are more region-oriented, such as the Southeast Coastal Zone Monitoring Program, CoastWatch, and an array of USGS projects.

Monitoring tides, waves and weather was also emphasized at the workshop (see Program Summaries for USACE and NOAA/NDBC). Locations of active data buoys and tide gauges are shown in Figure 2.

As stated above, the meeting's objectives did not include documenting or summarizing all of the active research off the southeast U. S. coast. The Workshop report and Program/Project Summaries will serve as a foundation on which to expand and update information on research activities within the region in order to assist in the development of future cooperative efforts.

3. RECOMMENDATIONS

3.1 Improve Communication

3.1.1 Use of an Electronic Bulletin Board by the Research Community

We recommend active use of an electronic bulletin board to improve the transfer information of immediate interest to the research community. We specify the following examples of information with broad interest to the regional community:

- Standard ASCII files of cruise tracks, mooring locations, dates of deployment;
- Drifter tracks (ASCII);

Table 1. Agency Activities in the Southeastern U. S. Coastal Region

Agency and Program	Estuarine/Inlets	Surf Zone/Shoreline	Inner Shelf	Coastal Geomorphology	5+ year measurements
NOAA Coastal Ocean Program (COP)		wind & wave model/field, water level variability **Mark Koehn*** 301-713-0278 (M.KOEHN)	SABRE **Don Hoss** 919-728-8746 (use F.CROSS)		CoastWatch: satellite data **Alex Chester** 919-728-8774 (NOAA.CWATCH.NC)
NOAA National Weather Service (NWS)					expand buoy/CMAN network, install ATCON **Mark Koehn** 301-713-0278 (M.KOEHN)
NOAA National Ocean Service (NOS)	estuarine circulation, meas. & modeling, several sites **Hank Frey** 301-443-8510 (H.FREY.NOS)				
NOAA National Sea Grant Program	inlet processes, estuarine circ. models, estuary/bay hydrodyn. **John Ahrens** 301-713-0235 (J.AHRENS)	wave generation, sediment transport, coastal hazards **John Ahrens** 301-713-0235 (J.AHRENS)			
Office of Naval Research (ONR)		infragravity waves, nearshore sediment transport **Tom Kinder** 703-696-1206 (T.KINDER)	Duck, NC Field Experiment **Tom Kinder** 703-696-1206 (T.KINDER)		
U. S. Army Corps of Engineers (USACE)	Tidal Inlets Program (anticip.) inlet sedimentary and hydrodyn. **Linwood Vincent** 601-634-2008 (C.VINCENT)	waves/currents/sed. transpt.; infragrav. waves; beach/dune mod.; beachfill engin.; episodic events (ie., hurricanes) **Linwood Vincent** 601-634-2008 (C.VINCENT)	models of wave transformation; 3-D sediment transport **Linwood Vincent** 601-634-2008 (C.VINCENT)	sediment budgets; structure foundation problems **Linwood Vincent** 601-634-2008 (C.VINCENT)	Field Data Collection Program Nat'l Wave Gage Network **David McGehee** 601-634-3000 Duck, NC Field Measurements **Bill Birkemeier** 919-261-3511 (CERC.FRF)
DOE Ocean Margins Program (OMP)			carbon cycling processes **Curtis Olsen** 202-353-5329 (C.OLSEN)		circulation/carbon/nutrient fluxes; carbon cycling **Curtis Olsen** 202-353-5329 (C.OLSEN)
U. S. Geological Survey (USGS) National Coastal Geology Program		South Carolina erosion and beach renourishment **Asbury Sallenger** 813-893-3684 (A.SALLENGER)			
Minerals Management Service (MMS)			North Carolina studies **Jim Lane** 703-787-1105/-1065 **Tom Berger** 919-832-7242 (SAIC.RALEIGH)		Intermar: (SC) sand, mineral, hardbottom resources, beach renourishment **Robert Van Dolah** 803-762-5048
National Park Service (NPS)	inlet processes **Suzette Kimball** 804-924-1455 (S.KIMBALL)			barrier island processes **Suzette Kimball** 804-924-1455 (S.KIMBALL)	
NASA		coastal initiative **Miriam Baltuck** 202-453-1675 (M.BALTUCK)			
NSF Coastal Ocean Processes (CoOP)			dynamics of simple inner shelves (pilot study) **Ken Brink** 508-548-1400 (K.BRINK)		

*Contact Person, with phone & Omnet mailbox

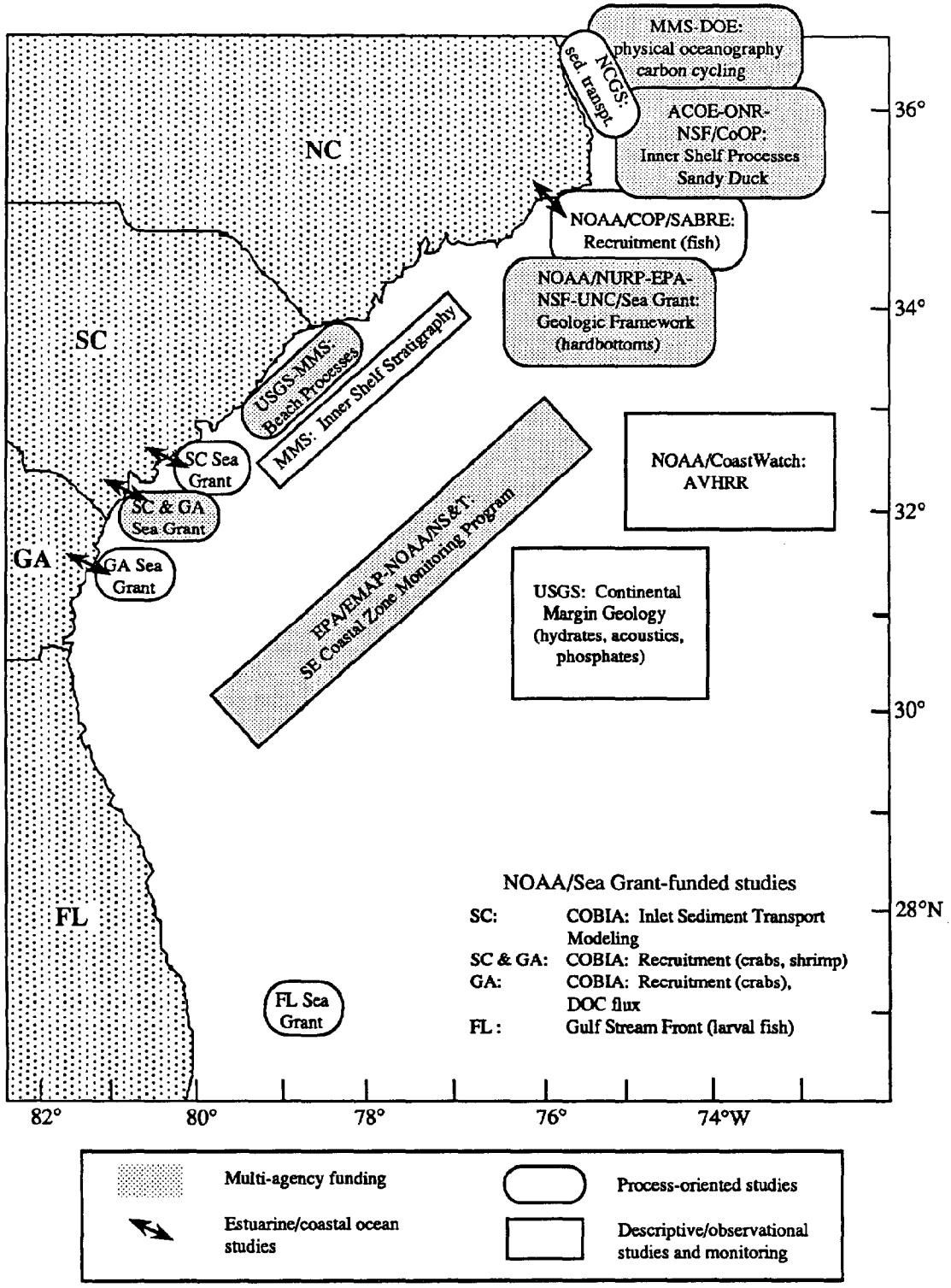

Figure 1. Studies Presented at the Southeast U. S. Coast Workshop

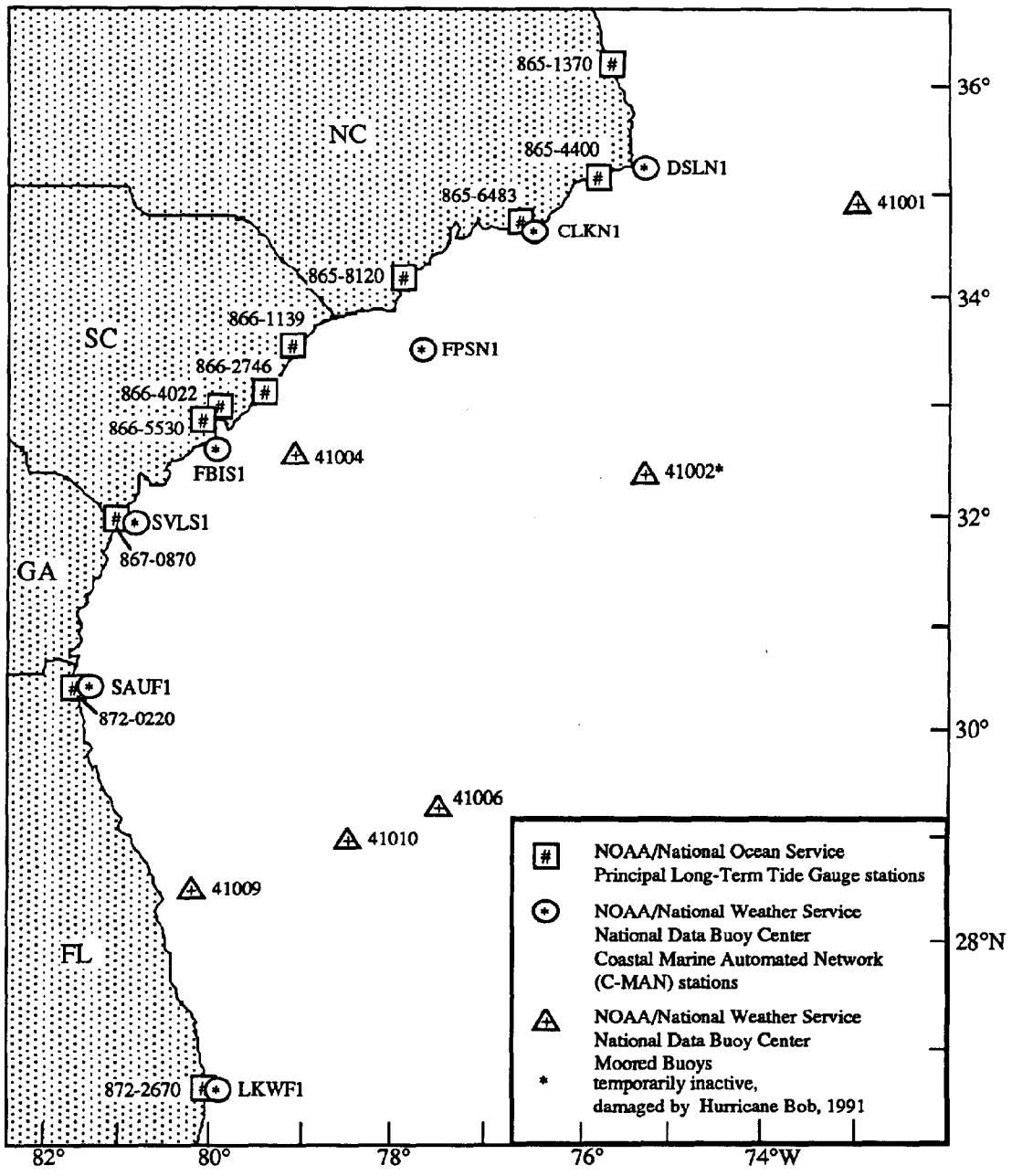

Figure 2. Active Data Buoys and Tide Gauges

- Time-lines of activities;
- Discussions between investigators;
- Areas and topics of modeling efforts;
- Ship schedules, piggy-backing opportunities;
- Periodic news from institutions and projects;
- Announcements of meetings, symposia, or local events of interest to the regional research community; and
- Availability or need for temporary loan or lease of research equipment.

We propose the use of a bulletin board named SE.US.COAST which is available to Omnet subscribers. This bulletin board, funded by the NOAA Coastal Ocean Program, is available for communications among the research community in the region. Anyone may post information, messages, comments, or discussion topics of interest to the regional research community. The information is then available to any subscriber to Omnet for a period of 60 days. A plotting package has been posted on SE.US.COAST (entitled, "GulfPlot," by Murray Brown, Minerals Management Service) which will draw the coastline for the region and allow graphical display of charted information such as mooring locations, cruise tracks, and station locations. The moderator of the SE.US.COAST bulletin board is:

Dr. David Johnson
NOAA Coastal Ocean Program
1825 Connecticut Ave., NW
Washington, DC 20235

Omnet: D.Johnson.NOAA
phone: 202/606-4330
FAX: 202/606-4334

3.1.2 Continuance of Periodic Regional Meetings

We recommend that similar meetings (based upon the present workshop) continue to be convened periodically in the southeast U.S. coastal region. We propose that part of the meeting address a single timely theme, while the rest should consist of reports of current and planned research. The meeting would also provide the opportunity to update and expand the coverage of project summaries and review coordination activities. We also recommend that the meeting not be made part of other established scientific symposia.

3.2 Continued Development of CoastWatch

We strongly support the continued development of the NOAA CoastWatch system. We especially request that C-MAN and NDBC buoy data be made available to the community as soon as possible via CoastWatch. Additionally, we encourage efforts by CoastWatch personnel to provide archived data.

The CoastWatch project is a cooperative effort, sponsored by the NOAA Coastal Ocean Program, to distribute remotely sensed, near-real-time data and satellite imagery. The goal is to provide timely data in support of federal, state, and academic activities which address coastal research and management. CoastWatch data distribution sites are available or planned for each region of the U.S. The NOAA National Marine Fisheries Service Laboratory in Beaufort, NC is the distribution site for the southeast U.S. coast. Refer to the Program Summaries (Appendix B) for additional information on CoastWatch.

3.3 Develop Protocols for Regional Sharing of Data

We recommend that data be shared as openly as possible. Agencies are encouraged to publicize and enforce their data-sharing policies for funded research. Data should be submitted for archival to the NOAA National Oceanographic Data Center (NODC) in a timely manner according to NODC guidelines at the following address:

NOAA NODC
1825 Connecticut Ave., NW
Washington, DC 20235

Availability announcements should be posted on SE.US.COAST. These announcements should include the NODC accession number to facilitate data recovery from the archive.

3.4 Identify Modeling Efforts in Future Coordination Activities

Modeling efforts were not represented adequately at this workshop. We recommend that future meetings for improved coordination of research in the region include appropriate investigators of regional modeling, as well as summaries of modeling projects.

3.5 Supporting Recommendations

3.5.1 Improve Access to Specialized Regional Databases

The methods to access specialized regional databases should be posted on the SE.US.COAST bulletin board. These could include examples such as:

- weather observations;
- ocean front analyses; and
- Coastal Zone Color Scanner (CZCS) imagery.

3.5.2 Update Project Summary Information in a Timely Manner

We recommend continuous updating of project summary information. There was a consensus among the participants that the enclosed Project Summary form provided a convenient means to summarize regional activities (Appendix C, and section 3.12 above).

4. FUTURE ACTIVITIES

4.1 Biennial Meeting

The recommendation to convene a periodic meeting of investigators and agency representatives working in the southeastern United States coastal ocean was seen as critical to the development of coordinated research. The meeting will be rotated among institutions in the southeast on a biennial basis. Logistical support will be provided by the host institution and will include housing, conference facilities, and updating of Project Summaries. The host institution will organize a Steering Committee representing the general group which will develop the thematic topics and identify session chairpersons.

The meeting will consist of both topical and general presentations. The meeting report will not be considered a publication so presenters are free to present preliminary results and speculations thus ensuring an interesting meeting. Funding for the meetings can be provided by conference fees with supplemental funding by NOAA or other agencies if appropriate.

4.1.1 1994 Conference on Southeast U. S. Coastal Ocean Research

The South Carolina Sea Grant Consortium has offered to host the First Biennial Conference on Southeast U. S. Coastal Ocean Research (SEUSCOR), scheduled for Spring 1994 in Charleston, South Carolina. The Conference Steering Committee will be assembled in the Spring of 1993. Information regarding the conference will be posted on the SE.US.COAST bulletin board (refer to section 3.1.1).

Persons wishing to take part in the conference's organizational efforts or be included for consideration on the Steering Committee should contact Dr. Leslie Sautter (see address below). Investigators who wish to include their projects in the next meeting's discussion and proceedings should complete the blank Project Summary form (Appendix C) and send to:

Dr. Leslie Reynolds Sautter
South Carolina Sea Grant Consortium
287 Meeting Street
Charleston, SC 29401

phone: 803/727-2078
FAX: 803/727-2080
Omnet: L.Sautter

5. SUMMARY

The focus of the Southeast United States Coast Workshop was on ways the scientific community can improve communication, and as a result, better coordinate activities. Establishing an electronic mail bulletin board and commiting to hold a biennial conference are examples of how the exchange of information and sharing of databases will be facilitated significantly. Active coordination of future studies will be the responsibility of both the investigators and the agency representatives. Ongoing projects which have multiple-agency funding are documented herein, and verify that cooperation has begun in the region on both the federal and investigator levels. These projects and programs may serve as templates for future coordinated efforts.

6. GLOSSARY OF ACRONYMS

AVHRR	Advanced Very High Resolution Radiometer
C-MAN	Coastal Marine Automated Network
COBIA	Coastal Ocean Boundaries Interactions and Assessments
CoOP	Coastal Ocean Processes (NSF)
COP	Coastal Ocean Program (NOAA)
CZCS	Coastal Zone Color Scanner
DOE	Department of Energy
EMAP	Environmental Mapping and Assessment Program (EPA)
EPA	Environmental Protection Agency
FCCSET	Federal Coordinating Council for Science, Engineering and Technology
MMS	Minerals Management Service
NDBC	National Data Buoy Center (NOAA)
NOAA	National Oceanic and Atmospheric Administration
NODC	National Oceanographic Data Center (NOAA)
NOS	National Ocean Service
NPS	National Park Service
NRC	National Research Council
NSF	National Science Foundation
NWS	National Weather Service
OMP	Ocean Margins Program (DOE)
ONR	Office of Naval Research
SABRE	South Atlantic Bight Recruitment Experiment (NOAA)
SEUSCOR	Southeast U. S. Coastal Ocean Research
SUSCOS	Subcommittee on the U. S. Coastal Ocean Science
USACE	U. S. Army Corps of Engineers
USGS	U. S. Geological Survey

Appendix A

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Appendix B

Program and Project Summaries

Program Summaries

(in alphabetical order by agency)

Environmental Protection Agency (EPA) Southeast Coastal Zone Monitoring Program	J. Paul A. Robertson
Minerals Management Service (MMS) Physical Oceanographic Field Program Offshore North Carolina	R. Middleton
NOAA Coastal Ocean Program (COP) CoastWatch Operations in the Southeast U.S.	A. Chester
NOAA Coastal Ocean Program (COP) South Atlantic Bight Recruitment Experiment (SABRE)	D. Hoss
NOAA National Data Buoy Center (NDBC) Marine Observations	R. Canada
North Carolina Geological Survey Summary of North Carolina GeologicalSurvey Offshore Activities	W. Hoffman
Office of Naval Research (ONR) Sandy Duck: A Field Study of Sediment and Bathymetric Response to Fluid Forcing	T. Kinder
U. S. Army Corps of Engineers (USACE) Coastal Field Data Collection Program Field Wave Gaging Program	D. McGehee

Project Summaries

(in alphabetical order by Principal Investigators)

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T. Berger	Physical Oceanographic Field Program Offshore North Carolina
W. Birkemeier	DUCK94/Sandy Duck Nearshore Field Experiments
W. Birkemeier	Long-Term Measurements of Coastal Processes Data, Duck, North Carolina
J. Blanton	Mechanisms of Transport of Decapod Crustaceans Through Estuarine Inlets
J. Blanton	South Atlantic Bight Recruitment Experiment: Physical Oceanography and Modeling
C. Butman et al.	Suspension, Cross-Shelf Transport and Deposition of Planktonic Larvae of Inner-Shelf Benthic Invertebrates
W. Dillon	Studies of Marine Gas Hydrates
R. Dodge	Field Experiment Evaluation of the Effects of Beach Restoration on Stony Corals of Southeast Florida
P. Gayes	Regional Stratigraphic and Geologic Framework Along the Inner Continental Shelf of South Carolina
P. Gayes and T. Tisue	Geological Investigations Aboard the NOAA Ship *Ferrel*: South Carolina Continental Shelf Study
J. Haines	Coastal Storm and Hurricane Impact Studies
J. Haines	Fundamental Nearshore Processes Studies, Duck, North Carolina
R. Hodson et al.	Bacterial Utilization of Marine Humic Substances in Salt Marsh and Coastal Waters of the Southeastern United States
T. Kana and E. Hayter	Mesoscale Modeling of Sediment Transport and Morphologic Changes at Tidal Inlets
G. Kleppel et al.	The Gulf Stream Front, Its Role in Larval Fish Survival and Recruitment in Florida

G. Marmorino et al.	The HIGH-RES Remote Sensing Experiment
D. Nelson and P. Gayes	Beach Erosion Assessment and Variability Along the South Carolina Coast
L. Pietrafesa	A Study of Sediment Motions and Bottom Boundary Layer Dynamics Over the Middle Atlantic Bight Shelf and Upper Slope
P. Popenoe	Geology of the Northern Blake Plateau
P. Popenoe and K. Klitgord	Mapping the Acoustic Properties of Subbottom Sedimentary Rocks off the Southeastern United States
P. Popenoe and F. Manheim	Geology, Stratigraphy, Mineral Resources,and Chemical Composition of Phosphatic Sediments Underlying the Continental Shelf and Slope Off Georgia
S. Riggs et al.	Relationship of the Geologic Framework of Hardbottom Habitats and Nutrient-Rich Groundwater Discharge to Benthic Community Structure: Onslow Bay, North Carolina
A. Sallenger	South Carolina Coastal Erosion Study
T. Tisue	Sediment-Water Exchange Dynamics
E. Wenner	Southeast Area Monitoring and Assessment Program - South Atlantic (SEAMAP-SA)/ Shallow Water Trawl Survey
R. Wiegert	Recruitment, Abundance, and Growth of Postlarval and Juvenile Blue Crabs in a Southeastern Coastal Estuary

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title:	Southeast Coastal Zone Monitoring Program	
Funding Source:	U. S. EPA Environmental Monitoring and Assessment Program and NOAA National Status and Trends Program	
Program Managers: (2 of 2)	John F. Paul U. S. EPA ERL 27 Tarzwell Drive Narragansett, RI 02882 401-782-3037 (phone) 401-782-3099 (fax)	Andrew Robertson NOAA/NOS/ORCA 6001 Executive Blvd. Rockville, MD 20852 301-443-8933 (phone)
Duration of Project:	beginning: June 1992	ending: to be determined
Study Location(s):	Geographic coverage is estuarine area from Cape Henry southward to Cape Canaveral. Sampling sites have not been determined as of July 1992.	
Cruise Schedule:	Will ships be used? yes	# of cruises planned: see below
Ship(s) being used:	anticipated to be small, trailerable vessels	
Cruise dates:	1 survey per year, beginning summer 1994 all cruises during summer	
Platforms needed:	not determined as of July 1992	
Types of data collected:	*benthic enumeration *sediment toxicity *sediment contaminants *water quality parameters	*fish tissue contaminants *fish species *relative abundances *fish visible abnormalities
Data Manager:	To be named	phone: fax: OMNET:

PROGRAM SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Program Title and Program Managers:

Southeast Coastal Zone Monitoring Program

John F. Paul (U. S. EPA ERL, Narragansett, RI) and Andrew Robertson (NOAA/NOS/ORCA Rockville, MD)

Purpose of Program:

Develop and implement a joint NOAA/EPA monitoring program for assessing the ecological condition of the southeastern U.S. coastal zone.

Abstract:

EPA's Environmental Monitoring and Assessment Program (EMAP) conducted a demonstration Project in estuaries of the Virginia Biogeographic Province (Cape Cod, Massachusetts, to Cape Henry, Virginia) in 1990. Since 1991, monitoring has continued in these estuaries, and a Demonstration Project was initiated in the estuaries of the Louisianian Province (Gulf of Mexico from north of Tampa Bay, Florida, to US/Mexican border). Since the mid-1980s NOAA has maintained a marine monitoring program called National Status and Trends Program (NS&T). During the past three years EPA and NOAA have closely coordinated these two programs through the joint EPA/NOAA Committee for Coastal and Estuarine Environmental Quality Monitoring.

NOAA has agreed to take the responsibility for implementing the consolidated NS&T/EMAP program in the coastal zone of the southeast starting in 1994. The geographic scale of this consolidated program is the Carolinian Province and extends from Cape Henry, Virginia, to Cape Canaveral, Florida. The ecological systems to be surveyed in the program include estuarine and coastal wetlands, estuaries, and coastal waters measurably influenced by the estuarine areas.

In 1992, the development of a Research Plan for implementing the consolidated NOAA NS&T and EPA EMAP effort will be initiated. Major elements of this plan will include: (1) a unified NS&T/EMAP sampling design, (2) identification of indicators of environmental condition, (3) analysis and integration procedures, (4) definition of research needs and a mechanism for filling those needs using local scientists, (5) an information management strategy, (6) quality assurance protocols, and (7) general plans for a demonstration project to show the value of the proposed approach. It is anticipated that this plan will be available for review and comment in 1993.

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title:	A Physical Oceanographic Field Program Offshore North Carolina	
Funding Source:	Minerals Management Service	
Program Managers: (1 of 1)	Robert Middleton MMS-ESB (MS-4301) 381 Elden Street Herndon, VA 22070	phone: 703-787-1717 fax: 703-787-1010 OMNET: R.MIDDLETON
Duration of Project:	42 months, October 1991 to March 1995	
Study Location(s):	continental shelf between Ocracoke Inlet, NC and Duck, NC	
Cruise Schedule:	Will ships be used? yes	# of cruises planned: 8
Ship(s) being used:		
Cruise dates:	between February 1992 and January 1994 quarterly, with 3 special event surveys during 1992	
Platforms:	15 current meter moorings, 5m below surface and 5m above bottom	
Types of data collected:	*flow across shelf break, along shore on shelf, andcross-isobath towards the beach *CTD casts *ADCp transects *lagrangian drifters deployed off shelf *satellite infrared imagery *water level *meteorological data (Savannah, GA to Atlantic City, NJ)	
Data Manager:	Tom Berger SAIC 615 Oberlin Road, Suite 300 Raleigh, NC 27605	phone: 919-832-7242 fax: 919-832-7243 OMNET: SAI.RALEIGH

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title and Program Managers:

Physical Oceanographic Field Program Offshore North Carolina

R. Middleton (MMS, Herndon, VA)

Purpose of Program:

Study the main processes affecting the physical oceanography of the Cape Hatteras region.

Abstract:

This program is being conducted by the SAIC, with Dr. Tom Berger acting as PI (see Project Summary). The duration of the project is 42 months, beginning October 1991 and ending March 1995. The purpose of the project is to study the main processes affecting the physical oceanography of the Cape Hatteras region. There is a 2-year physical oceanograpy field program which will address processes associated with flow between the slope area and shelf break, flow across the shelf break, along shore flow on the shelf, and cross-isobath flow towards the beach in the inner shelf zone. This is occurring from February 1992 through January 1994.

The field program includes an array of 15 current meter moorings with 11 moorings on the continental shelf between Ocracoke Inlet, NC and Duck, NC. The shelf moorings will measure currents 5 m below the surface and 5 m above the bottom, and on the mid- to outer shelf at mid-depth. Quarterly hydrographic cruises (approximately 70 casts per cruise) will be made on a standard grid consisting of six transects from near shore to deep water (2000-3000 m) and a transect along the 60 m isobath.

Three special event surveys will be made during the hydrographic cruises in 1992 in order to sample onshore/offshore flow events at the shelf break off Cape Hatteras. These surveys will consist of closely spaced CTD casts followed by ADCp transects in areas observed in satellite imagery. Five lagrangian drifters tracked by service ARGOS will be deployed off the shelf during the first eight hydrographic cruises. Satellite infrared imagery of the study area will be collected throughout the program as well as water level data and meteorological data from coastal stations between Savannah, Georgia and Atlantic City, New Jersey.

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title:	CoastWatch Operations in the Southeast U. S.	
Funding Source:	NOAA Coastal Ocean Program - CoastWatch	
Program Managers: (1 of 1)	Alex Chester NOAA/NMFS Beaufort Laboratory 101 Pivers Island Road Beaufort, NC 28516-9722	phone: 919-728-8774 fax: 919-728-8784 OMNET: NOAA.CWATCH.NC
Duration of Project:		
Study Location(s):	North Carolina to Florida	
Cruise Schedule:	Will ships be used? no	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:	Near real-time AVHRR imagery since 1989 *high resolution (1.4 km) SST for N. C. region *low resolution (4 km) SST for the southeast region *high resolution N. C. visible	
Data Manager:	Joe DeCampo NOAA/NMFS Beaufort Laboratory 101 Pivers Island Road Beaufort, NC 28516-9722	phone: 919-728-8773 fax: 919-728-8784 OMNET: NOAA.CWATCH.NC

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title and Program Managers:

CoastWatch Operations in the Southeast U. S.

Alex Chester (NOAA/NMFS)

Purpose of Program:

Receive, store, display, and redistribute near real-time sea surface temperature images and other remotely-sensed environmental data.

Abstract:

The NMFS/Beaufort Laboratory is the southeast regional CoastWatch site. As such, we have been receiving and storing near real-time AVHRR imagery since early 1989. We currently download three image types: 1) high resolution (512/512 pixel, 1.4 km resolution) North Carolina SST imagery extending approximately from Cape Henry, VA to Cape Romain, SC; 2) high resolution NC visible imagery; 3) low resolution (4 km) SST imagery for the southeast region, extending from Cape Henry, VA to Key West, FL. Shortly, we expect to have access to additional high resolution SST imagery covering the areas off SC-GA, FL east coast, FL west coast, and southern FL. A major goal of the CoastWatch Program is to make these remotely-sensed data available to federal, state, and academic institutions working on research/management issues of broad interest to NOAA. Participating institutions are required to sign an MOA defining the responsibilities of each party. Data currently are available via a 1-800 dial-up service. We are working to obtain access to the Internet and expect this eventually to be the primary redistribution pathway.

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title:	South Atlantic Bight Recruitment Experiment (SABRE)
Funding Source:	NOAA Coastal Ocean Program, Coastal Fisheries Ecosystems
Program Managers: (1 of 1)	Donald E. Hoss (PI of SABRE) phone: 919-728-8746 NOAA/SEFEC/Beaufort Laboratory fax: 919-728-8784 Laboratory OMNET: F.CROSS 101 Pivers Road Beaufort, NC 28516-9722
Duration of Project:	1991 to 2001
Study Location(s):	South Atlantic Bight from Cape Hatteras to Florida. Initial study area between Cape Hatteras, NC and Cape Fear, NC. The western edge of the Gulf Stream forms the offshore boundary.
Cruise Schedule:	Will ships be used? yes # of cruises planned: 3
Ship(s) being used:	NOAA R/V Albatross IV, Duke University Susan Hudson, NOAA R/V Chapman
Cruise dates:	1992: December 1-21 1993: January 4-13; February 5-26
Platforms needed:	Ships of opportunity between October 1992 and December 1993
Types of data collected:	*oceanographic *icthyoplankton *zooplankton *chemical
Data Manager:	Peter Ortner phone: 301-361-4384 NOAA/Atlantic Oceanographic fax: and Meteorological Lab OMNET: Ocean Chemistry Division 4301 Rickenbacker Causeway Miami, FL 33149

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title and Program Representatives:

South Atlantic Bight Recruitment Experiment (SABRE)

Donald Hoss (NOAA/SEFSC, Beaufort, NC)
Peter Ortner (NOAA/Atlantic Oceanographic and Meteorological Lab, Miami)
Larry Crowder (N. C. State University)

Purpose of Program:

Understand the relationship between variation in environmental factors and the variable recruitment of "estuarine dependent" fishes in the South Atlantic Bight.

Abstract:

Estuarine dependent fish, such as flounder, spot, Atlantic croaker and Atlantic menhaden, spawn offshore and are transported as larvae into estuarine nursery areas where they spend their juvenile period. The juveniles eventually move out of the estuary into the waters of the continental shelf where they mature and join the adult population. This life history strategy is typical of a large number of fish and shellfish. In fact, approximately 92% of the commercially and recreationally important fish and shellfish along the Southeast coast is made up of estuarine dependent fish.

The conceptual approach guiding SABRE is a focus upon the unique characteristics of individual survivors rather than on the estimation of mortality at the population level. SABRE is directed towards obtaining a general process-oriented understanding of natural variability in specific populations by focusing upon the linkage between environmental variability and variation in year class strength.

SABRE contrasts with traditional fisheries studies which attempt to generate an immediate prediction of next year's catch either from this year's catch or from an estimate of the pre-recruits. The primary objective of SABRE is to understand the fundamental linkages between population variability and variability in the physical (both oceanographic and meteorological) and biological environment (food availability, predation, and nursery habitat conditions). This indirect approach should yield cost-efficient, realistic methods of discriminating the resources changes related to anthropogenic stresses (overfishing, pollution, habitat destruction, etc.) from the natural variability of populations (whether internally regulated or induced by climate variation or global changes in atmospheric and oceanographic circulation).

Limited data collection began in 1991 and project termination is slated for 2001. In the early phases of the project considerable effort is going into historical data analysis including (1) physical oceanography, e.g., modeling of flow fields based on historic data including 2 dimensional (cross-shelf) flow and the 3-dimensional flow field between Capes Fear and Hatteras, (2) optical oceanography, i.e., ocean color and sea surface temperature variability, (3) larval fish ecology, e.g., age, size and birth date distribution of larvae from archived collections. Biological sampling to date has ranged from approximately 32 to 36°N. Presently, one current meter has been deployed at 34°04'N 76°45'W and additional ones are proposed for the 1992-1993 field season at sites yet to be determined.

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title:	Marine Observations of the National Data Buoy Center	
Funding Source:	NOAA/NDBC	
Program Managers: (1 of 1)	Ray Canada NOAA/NDBC B1 1100 Stennis Space Center, MS 39529	phone: 601-688-2806 fax: 601-688-3153 OMNET:
Duration of Project:		
Study Location(s):	To be determined	
Cruise Schedule:	Will ships be used? no	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms:	moored data buoys	
Types of data collected:	NOAA's existing plans for modernization of the NWS include *quantitative observations of precipitation *land surface observing capability *advanced communications, processing, and display *satellite overview across the nation still needed: *marine and upper-air observations of wind, temperature, and humidity	
Data Manager:		phone: fax: OMNET:

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title and Program Managers:

Marine Observations

Ray Canada (NOAA/National Data Buoy Center)

Purpose of Program:

Improve the capabilities for predicting severe coastal and offshore weather patterns.

Abstract:

Intense ocean storms cause hundreds of millions of dollars of damage annually to shoreline structures, loss of life, and disruption to coastal ecosystems. Coastal storms along boundaries separating markedly different air masses often intensify rapidly in a phenomenon known as explosive cyclogenesis. Between October 1991 and January 1992, three ocean "bombs" off the Atlantic coast caused $200 million damage and the loss of 12 lives. Prediction of these storms depends, in part, on the availability of coastal and offshore weather observations. Yet, the nation's 90,000 mile tidal and Great Lakes shoreline is protected by an operational NWS network of only 41 coastal stations and 23 data buoys. The sparsity of the network limits the capability of numerical models and resultant warnings and advisories to alert the public and preparedness officials with sufficient accuracy and advance notification.

The threat to lives, property, and coastal industries and environment from hurricanes is with us every year. NOAA does an outstanding job of forecasting where and when the storm will make landfall and alerting the public likely to be affected to prepare their property and evacuate low-lying areas. An average of about 550 kilometers of coastline are alerted, yet typically less than half this length is heavily impacted by the storm. At $100,000 per kilometer in preparation and evacuation costs, surely it behooves NOAA to take the observations and improve the forecasts of hurricane landfalls to minimize these costs.

NOAA's existing plans for modernization of the National Weather Service will furnish severe weather warning and quantitative observations of precipitation; a land surface observing capability; advanced communications, processing, and display; and a satellite overview across the nation. Yet this modernization does not address marine and upper-air observations of wind, temperature, and humidity. Thus, modernization requires further effort to improve mesoscale weather predication and water resources management. This presentation addresses the immediate steps needed to enhance the coastal and offshore surface marine observations portion of the modernization.

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title:	Summary of North Carolina Geolgical Survey Offshore Activities	
Funding Source:	North Carolina Geological Survey	
Program Managers:	Bill Hoffman N. C. Geological Survey N. C. Dept. of Environment, Health and Natural Resources Raleigh, NC 27611	phone: 919-733-3833 fax: OMNET:
Duration of Project:		
Study Location(s):	Outer Banks, NC *from Oregon Inlet north 12 n. m. and offshore 16 n. m. *North Carolina/Virginian border	
Cruise Schedule:	Will ships be used? yes	# of cruises planned:
Ship(s) being used:		
Cruise dates:	To be determined	
Platforms needed:		
Types of data collected:	*seismic coverage of Oregon Inlet region *future coring near NC/VA border	
Data Manager:		phone: fax: OMNET:

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title and Program Managers:

Summary of North Carolina Geological Survey Offshore Activities

Bill Hoffman (NC Geological Survey)

Purpose of Program:

The North Carolina Geological Survey is active in the offshore through project work and by publishing work done by others. Thus far, project work has concentrated on stratigraphic framework and heavy-mineral resource studies. We are now broadening our sand resource investigations by specifically evaluating the potential for beach nourishment sand resources in the offshore.

Abstract:

In 1990, we completed a reconnaissance evaluation of the heavy-mineral content of a suite of shelf-wide grab samples (87 samples on an approximately 20 km grid) collected in the 1960s by Woods Hole and the USGS. We are currently in the midst of a five-year program in the Cape Fear cuspate foreland region. The emphasis of this work is to develop a detailed stratigraphic framework by integrating shallow high-resolution seismic data with lithologic and biostratigraphic data developed from vibracores. The final product will be a comprehensive geologic report with maps and cross sections that can serve as a basis for derivative geologic, engineering, biologic, and environmental studies.

We have also recently initiated a multi-year study off the Outer Banks geared toward evaluating offshore sand resources--primarily, for use as beach nourishment material, but we are also interested in evaluating the potential for aggregate and heavy-mineral resources in this area. The first year's objective of this project is to obtain seismic coverage of a 200 square-nautical mile region from Oregon Inlet north about 12 nautical miles and offshore to about 16 nautical miles. In subsequent years, we plan to work our way northward to the North Carolina-Virginia border. This will involve cruises where we will be obtaining core samples in targets identified from a previous year's seismic survey while conducting seismic operations in an adjacent, new survey area.

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title:	Sandy Duck: A Field Study of Sediment and Bathymetric Response to Fluid Forcing	
Funding Source:	Office of Naval Research	
Program Managers:	Thomas Kinder Office of Naval Research Coastal Sciences Code 1121CS 800 N. Quincy Street Arlington, VA 22217	phone: 703-696-1206 fax: 703-696-2710 OMNET:
Duration of Project:	within the next several years	
Study Location(s):	Duck, North Carolina	
Cruise Schedule:	Will ships be used?	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:	*sediment flux under moderate to high wave conditions *synoptic measurements of the vertical distribution of flow *bathymetry (all at spatial scales between a few cm and 100 m)	
Data Manager:		phone: fax: OMNET:

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title and Program Managers:

Sandy Duck: A Field Study of Sediment and Bathymetric Response to Fluid Forcing

Thomas Kinder (Office of Naval Research, Arlington, VA)

Purpose of Program:

Predict the evolution of the bathymetry of a natural beach given the initial bathymetry, sediment characteristics, and the temporal variation of the wind, tide, and incident wave field

Abstract:

A long term goal of nearshore processes research is to predict the evolution of the bathymetry of a natural beach given the initial bathymetry, sediment characteristics, and the temporal variation of the wind, tide, and incident wave field. Such predictions are not presently possible because we do not understand the complex and interacting fluid and sediment processes, particularly small scale boundary layer processes and the three-dimensional circulation on complex bathymetry. Recent field experiments focused on measurements of wave-induced flows in mid-water column over simple topography (either no sand bar or a predominantly linear bar). Models of sediment response remain primitive and empirical. Sandy Duck will expand our knowledge of the nearshore by properly sampling processes on more complex, three-dimensional bathymetries. More specifically, the objectives of the experiment would be to study:

1) the dynamics of the bottom boundary layer and associated sediment transport. Both are poorly understood, partly owing to severely limited field data. Without field-tested sediment transport modes, our capabilities for predicting nearshore evolution will remain poor.

2) the feedback between complex topography, waves and the three-dimensional nearshore circulation. Spatial gradients in fluid flows are caused by depth variations on many scales, from ripples that affect bottom roughness to large scale bar morphology. The bathymetry in turn evolves in response to the flow field.

Sandy Duck will have two main parts: development of a conceptual model (or a system of models) appropriate to a realistic nearshore regime; and execution of an experiment to test the hypotheses of this model. There exists now no complete quantitative description of the nearshore in the sense that it is a region where several equally important (order one) processes occur and interact. The conceptual model must be developed to provide a framework for the various parts of the experiment, to ensure that hypotheses are posed properly and to enhance the interaction among investigators representing different subspecialty fields of research.

The experimental approach will be to measure sediment flux, bathymetry, and fluid flow at spatial scales ranging from a few cm to 100 m, and temporal scales ranging from seconds to weeks. The model will relate changes in large-scale bathymetry to spatial gradients in time-averaged sediment flux. Topographic processes which may influence waves and currents span a range of scales including the formation and migration of ripples, megaripples, beach cusps, bars, channels and other morphologic features. Observations will be designed to test existing large and small-scale sediment transport models and to provide information about processes (e.g., effects of megaripples on bottom stress and sand transport) for which there are as yet no models.

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title:	Field Wave Gaging Program	
Funding Source:	U. S. Army Corps of Engineers Coastal Field Data Collection Program	
Program Managers:	David McGehee CEWES-CO-P U.S. Army Engineer Waterways Experiment Station 3909 Halls Ferry Road Vicksburg, MS 39180	phone: 601-634-4270 fax: 601-634-3151 OMNET:
Duration of Project:	beginning: June 1992	
Study Location(s):	32°45' N, 78°44' W	
Cruise Schedule:	Will ships be used? no	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms:	NDBC 3 m diameter buoy	
Types of data collected:	hourly collection of the following: *wind speed *wind direction *atmospheric pressure *sea surface and air temperature *2-D energy spectra	
Data Manager:	Sam Corson CEWES-CO-P U.S. Army Engineer Waterways Experiment Station 3909 Halls Ferry Road Vicksburg, MA 39180	phone: 601-634-4270 fax: 601-634-3151 OMNET:

PROGRAM SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Program Title and Program Managers:

Field Wave Gaging Program

David McGehee (U. S. Army Corps of Engineers, Waterways Experiment Station)

Purpose of Program:

Develop national coastal wave climate

Abstract:

The efficient design, operation and maintenance of coastal structures requires accurate predictions of the expected wave conditions that will provide the dominant loading through their lifetime. Wave measurements are used to establish a climate through statistical analysis of long-term data sets and to calibrate and verify numerical hindcast, wave transformation and sediment transport models. The program has accumulated over 350 gage-years of data, and currently supports gages at 45 sites. Other activities include development of data collection, analysis and report standards and intercomparison experiments between different measurement approaches. Monthly and annual summaries are produced to contribute toward the FWGP goal of establishing a national wave climate atlas that will provide coastal designers with reliable estimates of design conditions for any desired return period at any needed location.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Mechanisms of Transport of Decapod Crustaceans through Estuarine Inlets
Funding Source:	NOAA - South Carolina Sea Grant Consortium
Principal Investigators: (2 of 2)	Charles A. Barans Elizabeth Wenner South Carolina Wildlife and Marine Resources Dept. P.O. Box 12559 Charleston, SC 29412 phone: 803-762-5084 fax: 803-762-5110 OMNET:
Duration of Project:	September 1992 to August 1995
Study Location(s):	North Edisto River Inlet, South Carolina (32°34.2' N, 80°11.7' W) and nearshore transects immediately offshore of the inlet
Cruise Schedule:	Will ships be used? yes # of cruises planned: 4
Ship(s) being used:	R/V Blue Fin (72') R/V Anita (52')
Cruise dates:	1993: May/June; September/October 1994: May/June; September/October
Platforms needed:	none
Types of data collected:	*surface and bottom plankton samples *multifrequency acoustic measurements of plankton *current velocity from moored meters *routine CTD casts
Data Manager:	David Knott South Carolina Wildlife and Marine Resources Dept. P.O. Box 12559 Charleston, SC 29412 phone: 803-762-5038 fax: 803-762-5110 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Mechanisms of Transport of Decapod Crustaceans through Estuarine Inlets

Charles A. Barans and Elizabeth L. Wenner (both at Marine Resources Research Institute, SCWMRD, Charleston, SC)

Purpose of Project:

The purpose of this interdisciplinary project is to relate the spatial and temporal distribution of postlarval blue crabs and white shrimp in the inner-shelf water entrained through an inlet to periodic (tidal, diel, lunar) and stochastic (wind, current) events.

Abstract:

We will test the following hypotheses: 1) ingress of postlarvae at the inlet is episodic and related to downwelling favorable winds, 2) larval abundance in the inlet during flood tide has a diel and/or lunar (spring-neap) cycle, and 3) larval ingress across the inlet mouth is non-homogeneous due to cross-sectional flow differences. Sampling will focus on white shrimp ingress (14 days) each spring (upwelling favorable winds) and on blue crab ingress (14 days) each fall (downwelling favorable winds). The hydrography and corresponding larval abundances of the coastal frontal zone adjacent to the study site will be sampled with CTD casts and plankton net collections along an arcuate transect outside the inlet. This will be supplemented with data from two moored current meters (S-4) along the 10 m isobath. Hydrography and plankton will be sampled from a second boat inside the inlet simultaneously with offshore transects, and will be supplemented with data from a bottom moored S-5 current meter and surface temperature-salinity sensor. Continuous plankton monitoring near the position of the current meter inside the inlet will be accomplished with a Multifrequency Acoustic Profiling System, which will allow definition of temporal changes in large-scale plankton distributions. A pilot study conducted in May 1992 determined that a large plankton pump would not sample at depth within the 4 kt tidal currents experienced in the North Edisto inlet. Sorting of the plankton collected in May has been initiated.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	A Physical Oceanographic Field Program Offshore North Carolina
Funding Source:	Minerals Management Services, Atlantic OCS Region Environmental Studies Program
Principal Investigators: (1 of 1)	Thomas Berger — phone: 919-832-7242 SAIC — fax: 919-832-7243 615 Oberlin Road, Suite 300 — OMNET: SAI.RALEIGH Raleigh, NC 27605
Duration of Project:	October 1991 to March 1995
Study Location(s):	34°30'N to 37°, shoreline eastward to 73°N, excluding Chesapeake Bay
Cruise Schedule:	Will ships be used? yes — # of cruises planned: 9
Ship(s) being used:	R/V Cape Henlopen, R/V Susan Hodson M/V Seaward Explorer
Cruise dates:	1992: 2/10-2/29, 4/29-5/10, 8/17-9/1, 11/3-11/14 1993: 2/2-2/14, 5/4-5/13, 8/17-8/29, 11/3-11/12 1994: 2/1-2/11
Platforms needed:	
Types of data collected:	*current velocity (15 moorings) *ADCP surveys (3) *hydrographic data (S, T, D) *satellite imagery *meteorological data *water level data *lagrangian drifter data
Data Manager:	Mr. Jeff Alexander — phone: 919-832-7242 SAIC — fax: 919-832-7243 615 Oberlin Road, Suite 300 — OMNET: SAI.RALEIGH Raleigh, NC 27605

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

A Physical Oceanographic Field Program Offshore North Carolina

Thomas Berger (SAIC, Raleigh, NC)

Purpose of Project:

Develop an adequate understanding of the physical oceanography of the Cape Hatteras region through study of the main processes affecting the region.

Abstract:

The two year Physical Oceanographic Field Program Offshore North Carolina will address processes associated with flow between the slope area and the shelf break, flow across the shelf break, along-shore flow on the shelf and cross-isobath flow towards the beach in the inner shelf zone from February 1992 through January 1994. The Field program includes an array of 15 current meter moorings with 11 moorings on the continental shelf between Ocracoke Inlet and Duck, North Carolina. The shelf moorings will measure currents 5 m below the surface and 5 m above the bottom and, on the mid to outer shelf, at mid depth. Quarterly hydrographic cruises (approximately 70 casts per cruise) will be made on a standard grid consisting of six transects from near shore to deep water (2000-3000 m) and a transect along the 60 m isobath. Three special event surveys will be made during the hydrographic cruises in 1992 in order to sample on shore/off shore flow events at the shelf break off Cape Hatteras. These surveys will consist of closely spaced CTD casts followed by ADCP transects in areas observed in satellite imagery. Five lagrangian drifters tracked by service ARGOS will be deployed on the shelf during each of the first eight hydrographic cruises. Satellite infrared imagery of the study area will be collected throughout the program as well as water level data and meteorological data from coastal stations between Savannah, Georgia and Atlantic City, New Jersey.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	DUCK94 Nearshore Field Experiments Sandy Duck Nearshore Field Experiments	
Funding Source:	USACOE Coastal Research Program, Coastal Engineering Research Center of the Army Engineer Waterways Experiment Station Office of Naval Research, USGS and others	
Principal Investigators: (1 of 1)	William A. Birkemeier (coord.) Field Research Facility 1261 Duck Road Kitty Hawk, NC 27949	phone: 919-261-3511 fax: 919-261-4432 OMNET: CERC.FRF attn: Birkemeier
Duration of Project:	Duck94: Aug.-Oct. 1994; Sandy Duck: prob. summer/fall 1996	
Study Location(s):	Duck, North Carolina 36°11' N, 75°45' W	
Cruise Schedule:	Will ships be used?	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:	*current velocity and direction *pressure *bed level changes using acoustic altimeters	
Data Manager:	Clifford Baron Field Research Facility 1261 Duck Road Kitty Hawk, NC 27949	phone: 919-261-3511 fax: 919-261-4432 OMNET: CERC.FRF attn: Baron

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

DUCK94/Sandy Duck Nearshore Field Experiments

William A. Birkemeier (Field Research Facility, Duck, NC)

Purpose of Project:

Develop fundamental knowledge, through field measurements, of the complex and interacting fluid and sediment processes, particularly small scale boundary layer processes and the three-dimensional circulation, on complex bathymetry. This knowledge will be used to develop an ability to predict the evolution of the bathymetry of a natural beach given the initial bathymetry, sediment characteristics, and the temporal variation of the wind, tide, and incident wave field. (A statement of scientific objectives is available.)

Abstract:

The DUCK94/Sandy Duck experiments are still in the planning and definition stage. The basic plan is to conduct two experiments, DUCK94 to be held in conjuction with the NSF sponsored CoOP experiment, and "Sandy Duck" a more comprehensive experiment tentatively scheduled for 1996. These experiments are a coordinated effort of the nearshore research, engineering, and modeling community to pool their resources to obtain field measurements of sufficient spatial and temporal coverage to be useful for model evaluation and fundamental studies of processes. Where previous filed efforts have emphasized large-scale hydrodynamic studies, these experiments will consist of nested large and small scale sediment experiments within the framework of the driving large-scale hydrodynamics.

DUCK94 is designed as a preliminary experiment for Sandy Duck. Thus a modest array of instruments will be deployed. Basic logistics and new instruments and procedures will also be tested in preparation for Sandy Duck. Plans for DUCK94 are rapidly developing. The basic plan (as of June 1992) is to extend the CoOP cross-shelf instrument array shoreward to the beach. Array elements would include current meters, pressure sensors, and acoustic altimeters (to detect bed level changes). Other instruments would be positioned inside and seaward of the surf zone to measure turbulence, sediment transport, bed roughness, wave setup, etc. A geologic study of bottom sediments and structures is also planned.

Synergy with the CoOP measurements would provide oceanographic boundary conditions at a scale never before avilable to nearshore investigators.

Although a statement of scientific objectives exists for Sandy Duck, detailed plans do not. It will likely include the deployment of a spatial array of 30-50 fixed instruments (current meters and wave gages) across the surf zone along with many of the instruments and experiments from DUCK94.

Though the number of participants is not yet set, 60 investigators, some international, have indicated an interest in Sandy Duck.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Long-Term Measurements of Coastal Process Data, Duck NC	
Funding Source:	USACOE Coastal Research Program, Coastal Engineering Research Center of the Army Engineer Waterways Experiment Station	
Principal Investigators: (1 of 1)	William A. Birkemeier Field Research Facility 1261 Duck Road Kitty Hawk, NC 27949	phone: 919-261-3511 fax: 919-261-4432 OMNET: CERC.FRF
Duration of Project:	1980 to present	
Study Location(s):	Duck, North Carolina 36°11' N, 75°45' W	
Cruise Schedule:	Will ships be used?	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:		
Data Manager:	William A. Birkemeier Field Research Facility 1261 Duck Road Kitty Hawk, NC 27949	phone: 919-261-3511 fax: 919-261-4432 OMNET: CERC.FRF

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Long-Term Measurements of Coastal Process Data, Duck, NC

William A. Birkemeier (Field Research Facility, Duck, NC)

Purpose of Project:

Conduct fundamental field studies of coastal processes (winds, waves, tides, etc.) and responses (beach erosion, bathymetric changes) in support of the Corps of Engineers' research needs. To collect long-term field measurements required by engineering studies and to provide comprehensive data and field logistics in support of a wide range of nearshore coastal studies. To conduct tests and evaluations of oceanogrpahic measuring devices which are in use or may be used by the Corps.

Abstract:

The Field Research Facility (FRF) occupies a 176 acre ocean-to-sound tract and consists of office and field operation buildings, a multipurpose meeting room, and a 554 m-long concrete and steel pier. The pier extends out to a nominal depth of 6 m at an elevation of 7.7 m. The location and design of the facility was specifically chosen to permit studying the hurricanes and intense storms that affect the area.

Critical to the research capabilities of the FRF is the Coastal Research Amphibious Buggy of CRAB, a unique three-wheeled, 10 m-high vehicle used for accurate surveying of the nearshore zone and for instrument deployments. Position of the CRAB is determined with a state-of-the-art auto-tracking survey system. Other vehicles include an amphibious LARC-V, a four-wheel drive forklift, boats, trucks, and other special purpose equipment. The facility has a staff of 10 including 4 scientists, 2 computer specialists, a secretary, and 3 technicians.

The data collection program includes a suite of meteorological instruments, five wave gages, three different directional wave gages, water level gages, a nearshore current meter, aerial photographs, video and visual observations. Bi-weekly surveys with the CRAB (out to a depth of 8.5 m) document the surrounding bathymetry. All data are automatically collected and analyzed by a network of PC's, workstations, and a VAX computer system.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Transport Mechanisms of Decapod Crustaceans through Estuarine Inlets	
Funding Source:	Georgia and South Carolina Sea Grant Programs	
Principal Investigators: (1 of 1)	Jack Blanton Skidaway Institute of Oceanog. P. O. Box 13687 Savannah, GA 31416	phone: 912-598-2457 fax: 912-598-2310 OMNET: J.BLANTON
Duration of Project:	September 1992 to August 1994	
Study Location(s):	North Ediston Inlet, SC and adjacent coastal waters 32° - 33° N 79° - 81.5° W	
Cruise Schedule:	Will ships be used? yes	# of cruises planned: 4
Ship(s) being used:	R/V Blue Fin R/V Anita	
Cruise dates:	1993: May and August 1994: May and August	
Platforms needed:		
Types of data collected:	*current velocity *subsurface pressure *wind velocity *temperature-salinity *chlorophyll	*blue crab larval conc. *white shrimp larval conc.
Data Manager:	Jack Blanton Skidaway Institute of Oceanog. P. O. Box 13687 Savannah, GA 31416	phone: 912-598-2457 fax: 912-598-2310 OMNET: J.BLANTON

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Transport Mechanisms of Decapod Crustaceans through Estuarine Inlets

Jack Blanton (Skidaway Institute of Oceanography)

Purpose of Project:

(1) relate the spatial and temporal distribution of postlarval blue crab and white shrimp entrained from shelf to estuary to periodic (tidal, diel, lunar) and stochastic (wind, current) events.

(2) examine the role of downwelling events in advecting larvae shoreward and into an inlet

Abstract:

This project is a collaborative effort sponsored by the Georgia and South Carolina Sea Grant Programs. It provides the infrastructure of an instrumented field site of meteorological and physical oceanographic data that could be used by other projects. The project will also provide a baseline of oceanographic understanding of a simple low-discharge estuary for which additional studies could be proposed.

This project will study the physical oceanographic processes that control the import of white shrimp and blue crab larvae into estuarine nurseries from the continental shelf. These larvae are brought to an estuarine entrance by the alongshelf wind-generated current. We hypothesize that downwelling-favorable winds generate sufficient cross-shelf currents to cause significant quantities of larvae to be transported into estuarine inlets.

Four cruises are planned in North Edisto Inlet and adjacent coastal waters to sample larval abundances and hydrography over consecutive flood cycles through a 14-day spring-neap tidal cycle. Sampling will occur during a spring and an autumn season. Upwelling favorable winds prevail in spring when white shrimp larvae are transported into estuarine nurseries, but there are frequent reversals to winds that favor downwelling. Winds favoring downwelling occur in autumn when blue crab come into estuaries to settle. The 14-day sampling procedure is designed to cover a daylight to dark cycle. We will examine shelf and inlet currents and water masses at strategic locations within an estuary-inner shelf domain. These data will be supplemented by sea level and meteorological data. The spatial distribution of water masses and larval abundances will be measured in the coastal front adjacent to the inlet.

The ingress of larvae into estuarine nurseries and processes that control it represent one of the bottlenecks to successful recruitment. The timing of ingress under different oceanographic conditions (tides, winds, lunar stage, etc.) will provide useful knowledge for management questions regarding year-class strengths. We hope to provide some new insights into the quantitative prediction of stock recruitment relationships.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	South Atlantic Bight Recruitment Experiment: Physical Oceanography and Modeling	
Funding Source:	NOAA Coastal Ocean Program SABRE	
Principal Investigators: (1 of 1)	Jack Blanton Skidaway Institute of Oceanog. P. O. Box 13687 Savannah, GA 31416	phone: 912-598-2457 fax: 912-598-2310 OMNET: J.BLANTON
Duration of Project:	October 1991 to September 1993	
Study Location(s):	Model Domain: 31° to 38° N 74° to 82° W	
Cruise Schedule:	Will ships be used? no	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:		
Data Manager:	Jack Blanton Skidaway Institute of Oceanog. P. O. Box 13687 Savannah, GA 31416	phone: 912-598-2457 fax: 912-598-2310 OMNET: J.BLANTON

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

South Atlantic Bight Recruitment Experiment: Physical Oceanography and Modeling

Jack Blanton (Skidaway Institute of Oceanography)

Purpose of Project:

(1) to provide physical oceanographic and modeling support, (2) to increase our basic understanding of the physical and biological dynamics of slope/shelf/estuarine waters, and (3) to advance our understanding of the physical environment in the domain extending out to the Gulf Stream front from the Virginia/North Carolina border to Cape Romain.

Abstract:

The physical oceanographic component of SABRE is a multi-institutional effort consisting of the following investigators: L. Atkinson (hydrography), E Hofmann (modeling and hydrography) and J. Klinck (modeling and hydrography) from Old Dominion University; J. Blanton (moorings and modeling), F. Werner (modeling) and P. Verity (larval ecology) from Skidaway Institute of Oceanography; and T. Lee (moorings and hydrography) from University of Miami. Field studies are in the planning stage in collaboration with A. Bratkovitch at NOAA's Great Lakes Environmental Research Laboratory.

Historical Data Analysis: Meteorological and sea level data are being used to correlate transport mechanisms due to meteorological events with menhaden larvae data sets obtained in Beaufort Inlet, NC. These data and river discharge data have been installed in an FTP directory at Skidaway Institute available to all SABRE investigators on INTERNET. These data are being used to define "typical" winter wind-stress events for the Years 1985-86 and 1987-88 which will provide relevant data for the modeling effort. We are collaborating with scientists at NMFS in Beaufort, NC.

Available current meter data from the South Atlantic Bight are being combined with other historical data to provide a synthesis of mean eddy fluxes of momentum, heat, salt and nutrients along the outer shelf. This synthesis will be needed to help design field work.

Five years of 5-day averaged SST data are being processed to create a SST time-series movie for the study area. These data are being used to derive frequencies of Gulf Stream and Virginian Coastal water intrusions.

Numerical Modeling: Modeling is taking place along two fronts. First, ideal simualtions of the 2-dimensional (cross-shelf) flow field are being used to investigate how combined wind set-up and Ekman-flow creates a zone at the coast which would form a pool of passive larvae on the inner shelf. Second, the 3-dimensional circulation will be simulated from key wind events in 1985-86 and 1987-88. Menhaden larval flux into Beaufort Inlet and age distribution was quite different in many respects during these years. These results will help design biological and physical oceanographic field sampling in the vicinity of shelf-estuarine inlets.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Suspension, Cross-Shelf Transport and Deposition of Planktonic Larvae of Inner-Shelf Benthic Invertebrates	
Funding Source:	NSF Coastal Ocean Processes (CoOP)	
Principal Investigators: (1 of 7)	Cheryl Ann Butman Woods Hole Oceanographic Inst. Applied Ocean Physics and Engineering Dept. Woods Hole, MA 02543	phone: 508-457-2000 x2442 fax: 508-457-2194 OMNET: C.BUTMAN
Duration of Project:	July 1993 to December 1995	
Study Location(s):	Duck, North Carolina 36°14'N, 75°37'W	
Cruise Schedule:	Will ships be used? yes	# of cruises planned: 2
Ship(s) being used:	R/V Oceanus R/V Cape Hatteras	
Cruise dates:	1994: August and October	
Platforms used:	cross-shelf moored arrays of plankton pumps, current meters and bottom tetrapods; along-shelf array of SeaCATS	
Types of data collected:	*zooplankton pump sampling *hydrographic and ADCP surveys *current velocity and direction	
Data Manager:	C. A. Butman (contact person) Woods Hole Oceanographic Inst. Applied Ocean Physics and Engineering Dept. Woods Hole, MA 02543	phone: 508-457-2000 x2442 fax: 508-457-2194 OMNET: C.BUTMAN

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Suspension, Cross-Shelf Transport and Deposition of Planktonic Larvae of Inner-Shelf Benthic Invertebrates

Cheryl Ann Butman (Woods Hole Oceanographic Institute)
L. Donelson Wright (Virginia Institute of Marine Science)
John L. Largier (Scripps Institute of Oceanography)
Ole S. Madsen (Massachusetts Institute of Technology)
Robert T. Guza (Scripps Institute of Oceanography)
Steven J. Lentz (Woods Hole Oceanographic Institute)
Alan L. Shanks (Grice Marine Biological Lab., Charleston, SC)

Purpose of Project:

Gain insight into the processes that may control the successful dispersal and settlement of planktonic larvae of organisms living in near-shore sandy sediments through synoptic, moored, and long-term measurements of biological (larval concentrations), and measuring physical and sediment transport parameters at the same time and space scales.

Abstract:

For many coastal species, a critical planktonic larval stage is spent in the waters of the inner continental shelf, defined here as roughly the most shoreward few kilometers of the shelf where depths are typically less than 30 m. Our knowledge of the parameters and processes affecting these planktonic larvae is, in general, painfully meager. Physical processes which strongly influence the biology, such as sediment transport and the stratification and circulation of inner shelf waters, are poorly understood. This research is aimed at gaining insight into the processes that may control the successful dispersal and settlement of planktonic larvae of organisms living in near-shore sandy sediments, as well as addressing several critical disciplinary (i.e., physical and geological) questions.

The basic hypothesis guiding this research is that planktonic larvae of organisms living in the intertidal zone (or in very shallow water) exploit the circulation of the inner shelf to control their cross-shelf transport. This control may be species-specific depending on the extent of acceptable adult habitat. Thus, obligate, sand-beach-face dwelling invertebrates, because they must return to the beach at the end of their larval period, may be expected to exert more active control over their vertical distributions in the water column (to exploit cross-shelf flows) than larvae of sandy, subtidal species for which there is a broader band of acceptable adult habitat across the inner shelf. We will measure the spatial and temporal distributions of the planktonic larvae of selected organisms, and the physical/sedimentological parameters likely to affect their distributions. Strong correlations between variations in biological and other parameters will suggest which processes control certain aspects of the biology, and whether larvae are actively selecting certain environments. Because of the state of the art, our approach is largely descriptive, but the field program is designed to evaluate several plausible physical mechanisms for cross-shelf larval transport. At the very least, these data will provide the first detailed, simultaneous characterization of the temporal and cross-shelf variability of important physical, sedimentological, and biological properties on the inner shelf, and will allow the formulation of more specific hypotheses to be tested in the future.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Studies of Marine Gas Hydrates	
Funding Source:	U. S. Geological Survey/Department of Energy	
Principal Investigators: (1 of 1)	William Dillon U. S. Geological Survey Woods Hole, MA 02543	phone: 508-457-2224 fax: 508-457-2310 OMNET:
Duration of Project:	1990 to 1996	
Study Location(s):	30° - 39° N, 70° - 78° W *seaward side of the Carolina Trough (at head of landslide) *crest of the Blake Ridge	
Cruise Schedule:	Will ships be used? yes	# of cruises planned: 1
Ship(s) being used:	R/V Cape Hatteras	
Cruise dates:	1992: 9/21-10/5	
Platforms needed:		
Types of data collected:	*sidescan sonar (midrange, deeptowed system) *seismic reflection profiles (2-channel, digitally recorded medium resolution data)	
Data Manager:	Nancy Soderberg U. S. Geological Survey Woods Hole, MA 02543	phone: 508-457-2275 fax: 508-457-2310 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Studies of Marine Gas Hydrates

William Dillon (U. S. Geological Survey, Woods Hole, MA)

Purpose of Project:

Mapping of distribution and amounts of methane hydrates in sediments of the U.S. Atlantic continental margin and analysis of geological controls on hydrates.

Abstract:

Gas hydrates, ice-like materials in marine sediments, are believed to bind immense volumes of methane. One conservative estimate suggests that marine gas hydrates contain twice the mass of organic carbon as is contained in all fossil fuels on earth, and therefore hydrate methane could be significant as an energy resource. Furthermore, methane, on a weight basis, is ten times as effective as carbon dioxide as a greenhouse gas, so may produce significant climatic effects. Hydrate processes also may strongly influence mass movements of sediment on the continental margins. There is clearly the need for a means to detect gas hydrates in the natural environment, determine their volumes, map their distribution and comprehend the geological controls on hydrate formation. The primary efforts of this project are to detect and map hydrates by remote sensing techniques using seismic reflection data. Thus we use the only two characteristics of hydrates in marine sediments that we know, at this time, to be measurable by any shipborne, remote-sensing approach. The parameters that we use are: 1) increase in acoustic velocity of hydrate-cemented sediments; 2) decrease in amplitude of seismic reflections in the zone of hydrate cementation (a parameter known as "blanking"). The increase in velocity is anticipated, because the velocity of pure hydrate (~3.3 km/s) is roughly twice that of ordinary seafloor sediment. The reason for the blanking is not as apparent, but it is a consistently observed characteristic of hydrate-cemented sediments, and we model it using a substitution model in which a "typical hydrated sediment" is mathematically "mixed" into unhydrated sediments. We use commercial multichannel seismic reflection profiles to estimate velocities, and use these velocities to calculate the amount of hydrate that is associated with various levels of seismic blanking. The available multichannel lines are widely spaced and of rather low resolution. Therefore, in order to carry out detailed mapping of hydrates off the eastern U.S., we are using a grid of medium-resolution, digitally-recorded, two-channel seismic profiles that provide a denser grid of data and also afford more detailed resolution of the shallow sediments. The velocity data from the commercial multichannel seismic profiles are used to calibrate the blanking characteristics that we measure in the higher resolution profiles, and thus to allow estimation of volumes of hydrate disclosed by the blanking.

We have mapped hydrates off the U.S. east coast from South Carolina to New Jersey. To the south of this region no significant evidence for hydrates is present, and, to the north, hydrates appear to be much less developed. Two principal hydrate concentrations occur within the mapped region, one located off South Carolina and the other off southern North Carolina. Details of our recent findings will be discussed.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Field Experiment Evaluation of the Effects of Beach Restoration on Stony Corals of Southeast Florida	
Funding Source:	NOAA/Florida Sea Grant College Program	
Principal Investigators: (1 of 1)	Richard E. Dodge Nova University Oceanographic Center 8000 North Ocean Drive Dania, FL 33004	phone: 305-920-1909 fax: 305-947-8559 OMNET:
Duration of Project:	1990 to 1992	
Study Location(s):	off Hollywood and Hallandate, Florida	
Cruise Schedule:	Will ships be used? yes	# of cruises planned:
Ship(s) being used:	Broward County's 35' vessel	
Cruise dates:		
Platforms needed:		
Types of data collected:	*turbidity *transmissivity *coral growth *coral health	
Data Manager:	Richard E. Dodge Nova University Oceanographic Center 8000 North Ocean Drive Dania, FL 33004	phone: 305-920-1909 fax: 305-947-8559 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Field Experiment Evaluation of the Effects of Beach Restoration on Stony Corals of Southeast Florida

Richard E. Dodge (Nova University)

Purpose of Project:

1) Determine the magnitude of sedimentation and turbidity associated with the 1990 Hollywood-Hallandale Beach renourishment; 2) Measure turbidity with a transmissometer and compare results with turbidimeter methods; 3) Evaluate beach nourishment dredging and filling effects on reef-building stony corals; 4) Monitor affected coral species in the field; 5) Correlate coral health parameters with sedimentation and turbidity levels.

Abstract:

Monitoring stations will be established on reef hardgrounds both at control areas and near the dredging project (borrow area and beach fill zone). Sedimentation rate and turbidity (by turbidimeter) will be measured at each station at least at 45 day intervals for one year prior to, one year following, and during dredging. Turbidity by transmissometer will be calibrated and measured prior to, during, and following dredging. Replicate specimens of three stony coral species will be transplanted to assessment sites and intensively monitored for health conditions (mortality, partial mortality, sedimentation effects, behavior, growth) over a similar time period. SEM analyses will be conducted of coral silt-rejecting ciliation.

Coral communities are at their northernmost limits on Southeast Florida reefs, where they display reduced abundance, coverage, diversity, and growth due to naturally occurring decreases in light and water temperature. In this area since 1970 there have been over 12 beach restoration projects employing offshore sand supplies. More projects are scheduled and the turbidity produced by such projects may create additional stress for stony corals. The Florida Dept. of Natural Resources, among other agencies, is concerned with the negative effect of increased turbidity on water quality and productivity. The State of Florida water quality standards for class three waters allows up to 29 NTU turbidity above background during beach construction. The effect of 29 NTU on stony corals has never been investigated, but is critical considering the number of projects planned. The Hollywood-Hallandale project provides an opportunity to examine relationships between offshore sedimentation and turbidity produced by dredging and consequent effects on offshore stony corals.

Results of this study will provide quantitative data relating magnitude of beach nourishment sedimentation and turbidity to lethal and sublethal effects on reef corals. The research information generated would verify or deny the validity of the 29 NTU standard and will allow decision-making by regulatory agencies based upon actual biological responses. In addition, the use of a transmissometer will facilitate the acquisition of turbidity data which could lead to its ultimate adoption as a standard technique.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Regional Stratigraphic and Geologic Framework Along the Inner Continental Shelf of South Carolina
Funding Source:	Minerals Management Service Continental Margins Agreement
Principal Investigators: (1 of 1)	Paul Gayes Center for Marine and Wetland Studies USC-Coastal Carolina College Conway, SC 29526 phone: 803-349-2213 fax: 803-349-2990 OMNET:
Duration of Project:	May 1992 to December 1993
Study Location(s):	Inner shelf of Santee Delta and Charleston Harbor, SC (33°12' to 32°30' N, 78°30' to 80° W)
Cruise Schedule:	Will ships be used? yes; # of cruises planned: 4
Ship(s) being used:	MS Coastal (USC-Coastal Carolina)
Cruise dates:	1992: June, July, September, November
Platforms needed:	
Types of data collected:	*high resolution (Geopulse) seismic reflection profiling *three-element sparker seismic reflection profiling
Data Manager:	Paul Gayes Center for Marine and Wetland Studies USC-Coastal Carolina College Conway, SC 29526 phone: 803-349-2213 fax: 803-349-2990 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Regional Stratigraphic and Geologic Framework Along the Inner Continental Shelf of South Carolina

Paul T. Gayes (USC-Coastal Carolina College)

Purpose of Project:

This project will detail paleodraingage on the inner- to mid-shelf, assessing mineral and sand resources. It will provide detailed shallow subcrop stratigraphy and geologic framework along the South Carolina continental shelf.

Abstract:

We are presently beginning our fourth year of MMS funding conducting seismic reflection and surficial sediment studies on the inner shelf. A main objective is to produce detailed mapping of the paleodrainage on the inner continental shelf. High resolution seismic studies have focused on the region off of Murrells Inlet and are now focusing on Winyah Bay, Santee Delta, Bulls Bay and Charleston Harbor. Some surficial sediment samples have been collected as have splits from USC-CCC and USACE vibracores for heavy mineral analyses. The paleo-Pee Dee River has been mapped from Murrells Inlet 37 miles offshore and tentatively correlated to a channel mapped on a related project 84 kilometers offshore. The inner Grand Strand area is characterized by a thin veneer of Quaternary sediment overlying Cretaceous and Paleocene deposits that are tilted up to the north.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Geological Investigations Aboard the NOAA Ship Ferrel: South Carolina Continental Shelf
Funding Source:	NOAA/S. C. Sea Grant Consortium NOAA shiptime allocation
Principal Investigators: (1 of 1)	Paul Gayes Center for Marine and Wetland Studies USC-Coastal Carolina College Conway, SC 29526 phone: 803-349-2213 fax: 803-349-2990 OMNET:
Duration of Project:	see cruise schedule
Study Location(s):	Inner shelf off Bulls Bay (32°30' to 33°15' N, 79°31' to 78°53' W) Mid-shelf Cape Fear to Hilton Head (33°41' to 31°52' N, 77°33' to 78°35' W)
Cruise Schedule:	Will ships be used? yes; # of cruises planned:
Ship(s) being used:	
Cruise dates:	Cruises completed: 1991: November 1992: March
Platforms needed:	
Types of data collected:	*seismic reflection profiles (sparker) *surficial sediment grabs (Smith-MacIntyre)
Data Manager:	Paul Gayes Center for Marine and Wetland Studies USC-Coastal Carolina College Conway, SC 29526 phone: 803-349-2213 fax: 803-349-2990 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Geological Investigations aboard the NOAA Ship Ferrel: South Carolina Continental Shelf

Thomas Tisue (Clemson University)
Paul T. Gayes (USC-Coastal Carolina College)

Purpose of Project:

This project expanded ongoing MMS geological studies of the South Carolina inner shelf by the Center for Marine and Wetland Studies. Specific project objectives were to tie together areas of site specific detailed studies along the coast with long seismic tielines and then to focus on the Bulls Bay Paleochannel of the Santee River (estimated age 250 ka).

Abstract:

A paleochannel of the Santee River system identified onshore of Highway 17 by previous borehole studies was mapped offshore onto the inner shelf using 208 kilometers of sparker seismic reflection profiles. The regional geologic trend is one of Tertiary deposits tilted up to the north existing close to the modern seafloor that are covered by a variable thickness of Quaternary deposits. The most significant accumulation of Quaternary deposits are found in the paleochannels of significant river systems. Seismic sequence boundaries were mapped and the contact between Eocene and Oligocene deposits sloped up to the north in the study area and existed at or near the surface off Cape Romain. Locations of sequence boundaries at or near the modern surface are typically sites of changes in bottom topography. An additional 274 kilometers of sparker line was completed between Cape Fear and Hilton Head connecting individual study areas along the mid-shelf.

58 surficial sediment grabs were taken across the paleochannel trend. A course-grained zone (>0.17 mm mean size) appears to be extending around Cape Romain and beginning to overlie the northern edge of the channel inshore. The existence of such old sediment at the surface suggests a very efficient sweeping of sediment landwards during the recent transgression in a sediment starved system of Bulls Bay. A similar but less well developed (leaky) pattern exists for the Murrells Inlet system. Heavy mineral distributions are presently being compiled.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Coastal Storm and Hurricane Impact Studies	
Funding Source:	U. S. Geological Survey Coastal Program	
Principal Investigators: (1 of 1)	John W. Haines U. S. Geological Survey 600 Fourth Street South St. Petersburg, FL 33701	phone: 813-893-3100 fax: 813-893-3333 OMNET:
Duration of Project:	beginning 1990, ongoing	
Study Location(s):	South Carolina Florida Gulf and Atlantic Coasts	
Cruise Schedule:	Will ships be used? no	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:	*video *survey (traditional/GPS)	
Data Manager:	John W. Haines U. S. Geological Survey 600 Fourth Street South St. Petersburg, FL 33701	phone: 813-893-3100 fax: 813-893-3333 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Coastal Storm and Hurricane Impact Studies

John Haines (U. S. Geological Survey, St. Petersburg, FL)

Purpose of Project:

Develop methods for the rapid collection of data prior to and subsequent to major coastal storm events.

Abstract:

Preliminary investigations along the South Carolina coast following Hurricane Hugo demonstrated several shortcomings in data collection methods. Analyses showed that baseline data, prior to storm impact, are critical to investigations of shoreline, beach and nearshore response. Additionally, post-storm data collection needs require rapid and regional scale collection extending for some months subsequent to storm impact.

In order to address these identified needs the USGS is investigating alternate data collection strategies. Development of remote video monitoring capabilities are being pursued with the goal of developing inexpensive long-term data sets. Video monitoring would provide local (0.1 km) near-continuous records of shoreline position, bar morphology and swash zone dynamics.

Rapid surveying methods using GPS (Global Positioning System) technology are being developed. By increasing the rate of data return we hope that rapid post-storm surveys may be gathered on a regional scale on greatly reduced time scales compared to currently available methods.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Fundamental Nearshore Processes Studies: Duck, North Carolina	
Funding Source:	U. S. Geological Survey Coastal Program	
Principal Investigators: (1 of 1)	John W. Haines U. S. Geological Survey 600 Fourth Street South St. Petersburg, FL 33701	phone: 813-893-3100 fax: 813-893-3333 OMNET:
Duration of Project:	beginning 1990, ongoing	
Study Location(s):	Duck, North Carolina	
Cruise Schedule:	Will ships be used? no	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:	*hydrodynamic (current meters, pressure sensors) *video *survey	
Data Manager:	John W. Haines U. S. Geological Survey 600 Fourth Street South St. Petersburg, FL 33701	phone: 813-893-3100 fax: 813-893-3333 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Fundamental Nearshore Processes Studies: Duck, North Carolina

John Haines (U. S. Geological Survey, St. Petersburg, FL)

Purpose of Project:

Increase our knowledge of the fundamental hydrodynamic and sediment transport processes contributing to coastal evolution.

Abstract:

The USGS has actively participated in experimental programs at the Corps of Engineers Field Research Facility (FRF) at Duck, North Carolina, since 1982. Previous investigations have focused on nearshore hydrodynamics and the evolution of large-scale morphologic features.

Field efforts focusing on small-scale sediment transport are in the planning stage. Experiments are currently planned for 1994 and 1995. The USGS plans, funding permitting, to actively participate in a multi-investigator multi-institution field program, tentatively known as "Sandy Duck".

The USGS Coastal Program is also committed to supporting further analysis of existing data from past Duck experiments. Special attention will be given to the long-term profile data regularly collected by the Corps of Engineers.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Bacterial Utilization of Marine Humic Substances in Salt Marsh and Coastal Waters of the Southeastern United States	
Funding Source:	University of Georgia Sea Grant College Program	
Principal Investigators: (1 of 3)	Robert E. Hodson Dept. of Microbiology The University of Georgia Athens, GA 30602	phone: 706-542-7671 fax: 706-542-5888 OMNET:
Duration of Project:	September 1992 to September 1995	
Study Location(s):	coastal salt marshes seaward across the continental shelf of the southeastern U. S.	
Cruise Schedule:	Will ships be used? yes	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:		
Data Manager:	Robert E. Hodson Dept. of Microbiology The University of Georgia Athens, GA 30602	phone: 706-542-7671 fax: 706-542-5888 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Bacterial Utilization of Marine Humic Substances in Salt Marsh and Coastal Waters of the Southeastern United States

Robert Hodson (University of Georgia, Athens)
Mary Ann Moran (University of Georgia, Athens)
Lawrence Pomeroy (University of Georgia, Athens)

Purpose of Project:

(1) Collect and quantify marine humic substances from coastal marshes, river estuaries, and the continental shelf of the southeastern U.S.; (2) characterize these marine humic substances with regard to the importance of terrestrial (vascular plant) versus marine (planktonic) sources; (3) characterize the biological availability of marine humics, including several molecular weight size classes; and (4) examine the effects of ultraviolet light exposure, and subsequent photochemical degradation, on the biological availability or marine humics.

Abstract:

Marine humic substances make up a significant fraction of the dissolved organic carbon (DOC) in seawater, particularly in coastal regions where they may account for 20% or more of the total DOC. Yet there has been relatively little interest in humic compounds from a trophodynamic perspective, due primarily to the assumption that humics are practically inert to biological activity, and therefore of little importance in marine microbial food webs. While the chemical composition and mechanisms of humics formation are varied and poorly understood, it is known that at least some fraction derives from the decomposition products of vascular plants. This vascular plant contribution is expected to be higher in areas influenced by terrestrial runoff or in proximity to coastal marshes, and to be lower in the plankton-dominated open ocean. We propose to use several indices of terrestrial/vascular plant influence (lignin phenols, del 13C signature, and natural fluorescence properties) to characterize marine humic substances across the continental shelf of the southeastern U. S. These analyses will form the backdrop for studies of the availability of humic substances to marine bacteria (measured as production of bacterial cells) for humics recovered from coastal salt marshes, the continental shelf, and the Gulf Stream. We will include investigations of bacterial growth on specific molecular weight fractions of humics as well as on photodegraded humic substances.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Mesoscale Modeling of Sediment Transport and Morphologic Changes at Tidal Inlets	
Funding Source:	South Carolina Sea Grant Consortium	
Principal Investigators: (2 of 2)	Timothy W. Kana Dept. of Geological Sciences University of South Carolina Columbia, SC 29208 803-799-8949 803-799-9481 (fax)	Earl J. Hayter Dept. of Civil Engineering Clemson University Clemson, SC 29634 803-656-3320 803-656-2670 (fax)
Duration of Project:	September 1993 to August 1997	
Study Location(s):	South Carolina coast at several inlets, including Capt. Sams Inlet	
Cruise Schedule:	Will ships be used? NO	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:	*inlet bathymetry *aerial photography *beach profile surveys *spot current measurements *visual observations of littoral processes	*historical bathymetry and shoreline changes from archived data *sediment sampling- textural analyses
Data Manager:	Timothy Kana Dept. of Geological Sciences University of South Carolina Columbia, SC 29208	phone: 803-799-8949 fax: 803-799-9481 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Mesoscale Modeling of Sediment Transport and Morphologic Changes at Tidal Inlets

Timothy Kana (University of South Carolina) and Earl J. Hayter (Clemson University)

Purpose of Project:

Develop a semi-empirical mesoscale coastal sediment transport and morphologic change model which simulates long-term (1-20 years or more) shoreline changes around tidal inlets in response to natural processes or engineering operations/projects. The model would be designed to bridge the gap between qualitative geomorphic models of inlets and theoretically rigorous models of small-scale (short-term) coastal processes.

Abstract:

Tidal inlets control erosion/accretion cycles and sand budgets along almost the entire shoreline in the Georgia Embayment. Complex offshore bathymetry associated with ebb-tidal deltas causes wide variations in wave energy along the beach and produces irregular patterns of erosion and accretion. A mesoscale model of inlet processes and resulting impacts on shoreline morphology would allow simulations of proposed manipulations such as dredging or rechannelization. This would be of benefit to regulatory agencies, such as the South Carolina Coastal Council, charged with evaluating the merits of inlet projects or establishing setback lines for oceanfront development.

We plan to develop a semi-empirical mesoscale coastal sediment transport and morphologic change model which simulates long-term (1-20 years or more) shoreline changes around tidal inlets in response to natural processes or engineering operations/projects. The model would be designed to bridge the gap between qualitative geomorphic models of inlets and theoretically rigorous models of small-scale (short-term) coastal processes. The semi-empirical mesoscale model will be developed by adapting available microscale models for sediment transport and shoreline change under varying wave and tide conditions. Specific objectives include:

1) conceptual model development plan (Year 1);

2) tests and extrapolation of relevant microscale transport models to mesoscale (Year 2);

3) preparation of an integrated mesoscale model that simulates processes and responses around tidal inlets (Year 3); and

4) application of the mesoscale model to prototype problems including inlet dredging, shoal bypassing, and rechannelization (Year 4).

The co-investigators working under other funding sources (private and public) have developed a database of inlet and shoreline sand budgets for several South Carolina inlets and beaches, and microscale models that simulate sediment transport. This project will build on our previous work.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	The Gulf Stream Front, Its Role in Larval Fish Survival and Recruitment in Florida	
Funding Source:	NOAA/Florida Sea Grant College Program	
Principal Investigators: (1 of 3)	Gary S. Kleppel Nova University Oceanographic Center 8000 North Ocean Drive Dania, FL 33004	phone: 305-920-1978 fax: 305-947-8559 OMNET: G.KLEPPEL
Duration of Project:	April 1990 to September 1992	
Study Location(s):	Southeast coast of Florida approximately 26°05'N from 79°55' to 80°06'W	
Cruise Schedule:	Will ships be used?	# of cruises planned:
Ship(s) being used:		
Cruise dates:	cruises completed	
Platforms needed:		
Types of data collected:	*CTD casts *chlorophyll *hplc-based plankton pigments *phytoplankton cell counts	*microzooplankton *macrozooplankton *ichthyoplankton *limited ADCP
Data Manager:	D. W. Frazel RSMAS University of Miami Miami, FL 33149	phone: 305-361-4669 fax: 305-361-4600 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

The Gulf Stream Front, Its Role in Larval Fish Survival and Recruitment in Florida

Gary Kleppel (Nova University)
Elizabeth Clarke (RSMAS, University of Miami)
Peter Ortner (NOAA/AOML, Miami)

Purpose of Project:

In this project we are characterizing the spatial and temporal variability in the biology within and adjacent to the optical front on the western boundary of the Gulf Stream off southeast Florida. We seek to determine whether this represents a unique biological habitat that favors the survival of larval fishes spawned offshore.

Abstract:

By using a strategy of relatively frequent (less than weekly to monthly), short cruises, coupled with moored instrument (coastal ADCP, inshore CTD) measurements, we have been documenting the scales of variability in the position of the Gulf Stream front, and the abundance and composition of planktonic biota associated with the front and adjacent waters since the summer of 1990. The data set is presently under analysis but some initial, somewhat preliminary, observations can be discussed.

The Gulf Stream optical front exhibits substantial shifts in position, ranging from <3 to >20 km from shore. Variability in position may be greater at monthly than at seasonal time scales. ADCP data from the shelf break region suggest energetic scales of variability in cross shelf and along shore flow exist on the order of 14-25 hours. Variability in zooplankton abundances (estimated from ADCP data) occur on time scales similar to those seen in the flow field. A regular (period + 28 d) interaction between oceanic and coastal waters is evident in CTD data from inshore moorings. The optical front of the Gulf Stream was associated with a hydrographic gradient (e.g., density) about 50% of the time, and appears to represent a shallow (<50 m) boundary between coastal and Gulf Stream water. Phytoplankton concentrations tend to be elevated along the front in about 20% of our observations. However, all of these occur between July and October (in both 1990 and 1991). Evidence of elevations in microzooplankton abundances and of differences in microplankton composition along the front, relative to adjacent waters, are being investigated. At present, the most significant observation is that the dynamic transport characteristics of the coastal-Gulf Stream boundary, and its apparent association with tidal-scale variability in circulation represents a potentially important link between the ocean and estuary for coastally transgressive fish populations.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	The High-Resolution Remote Sensing Experiment (HIGH-RES)	
Funding Source:	Office of Naval Research	
Principal Investigators: (1 of 1)	George Marmorino Naval Research Laboratory Washington, DC 20375	phone: fax: OMNET:
Duration of Project:	first experiment: Sept. 1991, second experiment July 1993	
Study Location(s):	inshore edge of Gulf Stream, off Cape Hatteras	
Cruise Schedule:	Will ships be used? yes	# of cruises planned: 2 or 3
Ship(s) being used:	2 ships/cruise	
Cruise dates:	Sept. 1991 July 1993	
Platforms needed:		
Types of data collected:	*SST, atmospheric temperature *velocity fields *surface wave spectrum *surfactant concentration *surface tension	*meteorological data *surface waves *current measurements
Data Manager:	Donald Thompson JHU/APL Johns Hopkins Rd. Laurel, MD 20723	phone: 301-953-8000 x4559 fax: OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

The High-Resolution Remote Sensing Experiment (HIGH-RES)

G. Marmorino and R. Mied (Naval Research Lab., Washington)

D. Thompson (Johns Hopkins)

F. Herr and C. Luther (ONR, Arlington, VA)

Purpose of Project:

Understand the physics responsible for the appearance of submesoscale features (length scales on the order of 10 km or less) in microwave radar images of the ocean surface.

Abstract:

The High-Resolution REmote Sensing Program (HIGH-RES) is an Accelerated Research Initiative sponsored by the Office of the Chief of Naval Research. This program seeks to understand the physics responsible for the appearance of submesoscale features (length scales on the order of 10 km and less) in microwave radar images of the ocean surface. The program includes both experimental and theoretical/modeling work in the disciplines of oceanography, microlayer physics, meteorology, and remote sensing. A pilot field experiment was conducted from 12-24 September, 1991 near the in-shore edge of the Gulf Stream off Cape Hatteras. Two research ships took part in this experiment. Each ship was equipped with a variety of sensors to measure such quantities as the sea surface and atmospheric temperature and velocity fields, the surface wave spectrum, surfactant concentration and surface tension, as well as microwave radars of various frequencies. Several buoys were moored in the vicinity of the experimental area to provide meteorological, surface wave and current measurements. In addition, a 27 MHz HF radar, installed on shore at Cape Hatteras, provided surface current field measurements at 1 km resolution over roughly a 36 by 12 km area. Two P-3 aircraft flew in support of the experiment. One of the aircraft imaged the surface with an X-band real aperture radar (RAR), while the other utilized three frequency (L-, C-, and X-band) synthetic aperture radar (SAR). X-band interferometer SAR images were also collected over the Gulf Stream and the HF radar area. Efforts were made to coordinate surface and airborne measurements with overflights of the experimental area by the European ERS-1 and the Russian Almaz satellites, respectively.

The second experiment is scheduled for July 1993, at the Gulf Stream Edge.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Beach Erosion Assessment and Variability Along the South Carolina Coast	
Funding Source:	South Carolina Coastal Council U. S. Geological Survey	
Principal Investigators: (2 of 2)	Douglas Nelson Paul Gayes Center for Marine and Wetland Studies USC-Coastal Carolina College Conway, SC 29526	phone: 803-349-2213 fax: 803-349-2990 OMNET:
Duration of Project:	April 1992 to March 1993	
Study Location(s):	Beaches and nearshore of the Grand Strand Region Successive years to run from Little River to the SC/GA line 33°52'N, 78°31'W to 33°10'N, 79°12' W	
Cruise Schedule:	Will ships be used? yes	# of cruises planned:
Ship(s) being used:	MS Coastal (USC Coastal Carolina) Chanticleer (USC Coastal Carolina)	
Cruise dates:		
Platforms needed:		
Types of data collected:	*high resolution topography/bathymetry from the dune line to -7 meters	
Data Manager:	Douglas Nelson Center for Marine and Wetland Studies USC-Coastal Carolina College Conway, SC 29526	phone: 803-349-2213 fax: 803-349-2990 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Beach Erosion Assessment and Variability Along the South Carolina Coast

Douglas Nelson (USC-Coastal Carolina College) and
Paul Gayes (USC-Coastal Carolina College)

Purpose of Project:

This project is to continue wading depth beach surveys and establish a survey program that delineates beach profile, width and volume for the entire active beach (below "closure"). A long term goal is to provide more comprehensive nearshore sediment budgets along South Carolina's coastline.

Abstract:

In the present year of funding we are establishing methods for conducting long beach profiles including the zone from the dune to -7 meters. This method will then be employed to conduct a survey of the Grand Strand area of South Carolina (Waites Island to Winyah Bay). Associated with this project will be extensive wading depth surveys to assess and define spatial and temporal variability of the Grand Strand area. Six stations have been established that have several years of previous, but biannual, wading depth surveys. Some include immediately pre- and post- Hurricane Hugo data. The present planning by the S. C. Coastal Council is to expand the deep survey program to a biannual statement program in 1993.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	A Study of Sediment Motions and Bottom Boundary Layer Dynamics Over the Middle Atlantic Bight Shelf and Upper Slope	
Funding Source:	Department of Energy - Ocean Margins Program	
Principal Investigators: (1 of 1)	Leonard J. Pietrafesa Box 8208 NCSU Department of MEAS Raleigh, NC 27695	phone: 919-515-3717 fax: 919-515-7802 OMNET: L.PIETRAFESA@NCSU
Duration of Project:	June 1, 1992 to May 31, 1995	
Study Location(s):	33° x 39° N 74° x 77° W	
Cruise Schedule:	Will ships be used? yes	# of cruises planned: 4
Ship(s) being used:	R/V Cape Hatteras (?) Onslow Bay	
Cruise dates:	not set	
Platforms needed:		
Types of data collected:	*current velocities *density *transmissometer data throughout water column *transmissometer data in benthic boundary layer	
Data Manager:	Leonard J. Pietrafesa Box 8208 NCSU Department of MEAS Raleigh, NC 27695	phone: 919-515-3717 fax: 919-515-7802 OMNET: L.PIETRAFESA@NCSU

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

A Study of Sediment Motions and Bottom Boundary Layer Dynamics over the Middle Atlantic Bight Shelf and Upper Slope

Leonard J. Pietrafesa (North Carolina State University)

Purpose of Project:

Develop state of art level of understanding of processes which affect the transport, transformation and fate of carbon on the Ocean Margins.

Abstract:

This project will determine the rates of vertical and horizontal transport of dissolved carbon dioxide and organic matter and particulates to and from the bottom by turbulent mixing, resuspension, and particle sinking and motions induced by bottom boundary layer convergences.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Geology of the Northern Blake Plateau	
Funding Source:	U. S. Geological Survey	
Principal Investigators: (1 of 1)	Peter Popenoe U. S. Geological Survey Woods Hole, MA 02543	phone: 508-457-2222 fax: 508-457-2310 OMNET:
Duration of Project:	continuing	
Study Location(s):	29° - 33° N 76° - 80° W Continental Shelf, Slope, Blake Plateau and Rise	
Cruise Schedule:	Will ships be used? yes	# of cruises planned:
Ship(s) being used:	NR-1	
Cruise dates:	Fall 1992	
Platforms needed:		
Types of data collected:	*sidescan sonar *subbottom profiles *photographs	
Data Manager:	Nancy Soderberg U. S. Geological Survey Woods Hole, MA 02543	phone: 508-457-2275 fax: 508-457-2310 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Geology of the Northern Blake Plateau

Peter Popenoe (USGS, Woods Hole, MA)

Purpose of Project:

Understand the history, mineral resources, and processes that have shaped the northern part of the Blake Plateau.

Abstract:

This is an ongoing project that examines the stratigraphy, currents, erosional mechanisms, phosphorite pavement and manganese nodule distribution, reef features, and ecological aspects of the part of the plateau known as the Charleston Bump. The GLORIA Image of the plateau, obtained in 1987, and seismic-reflection data have been used to construct maps of the bathymetry, surficial geology (phosphorite-manganese pavement distribution and thickness, scour areas, etc.), subcrop geology, seafloor character, deepwater reef mound distribution, and other features. These maps have been used to direct dives with submersibles (under the NOAA National Undersea Research Program, and the U.S. Navy) to examine features firsthand and determine the processes that have shaped them.

Dives were made with the NR-1 submarine in 1989 and 1990 on the northern Plateau to examine and document seafloor features, particularly the phosphorite pavements and scour depressions and their possible relationship to areas of groundwater discharge. An additional week of dives was made with the DELTA submersible in 1990 off South Carolina to sample the seafloor and to refine seismic-stratigraphic interpretations. A third dive series is planned for this fall that will utilize the NR-1 to make geophysical measurements.

Since the NR-1 submarine continously records current speed and direction, we have been also compiling statistical analyses of near-bottom currents relative to topography and location.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Mapping the Acoustic Properties of Subbottom Sedimentary Rocks off the Southeastern United States	
Funding Source:	Naval Oceanographic Office	
Principal Investigators: (2 of 2)	Peter Popenoe Kim Klitgord U. S. Geological Survey Woods Hole, MA 02543	phone: 508-457-2222 fax: 508-457-2310 OMNET:
Duration of Project:	October 1990 to October 1992	
Study Location(s):	28° - 37° N 70° - 81° W Continental Shelf, Slope, Blake Plateau and Rise	
Cruise Schedule:	Will ships be used? no	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:		
Data Manager:	Nancy Soderberg U. S. Geological Survey Woods Hole, MA 02543	phone: 508-457-2275 fax: 508-457-2310 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Mapping the Acoustic Properties of Subbottom Sedimentary Rocks off the Southeastern United States

Peter Popenoe and Kim Klitgord (both at USGS, Woods Hole, MA)

Purpose of Project:

Define the acoustical properties of the sedimentary rocks off the U.S. Atlantic margin and their effect on underwater sound transmission.

Abstract:

This project examines the stratigraphic, structural, and acoustic properties of the sedimentary column in the offshore southeastern United States. The project uses the geological (seismic stratigraphic) interpretation of all existing USGS Common Depth Point (CDP) and high-resolution seismic reflection profiles that cross the margin between the Bahamas and the Chesapeake Bay to build a digital data base of the distribution, thickness, depth, and the acoustical properties of the lithologic units. Seismic-stratigraphic units are assigned lithologies from velocity and well data and the velocity structure is computed from the analyses of stacking velocities and depth. A gridded data set has been generated by interactive surface modeling (ISM) techniques that shows the lithologic and acoustic properties of the sediments on a 9 km grid spacing.

Data base of the acoustic properties of subbottom sedimentary rocks off the southeastern United States.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Geology, Stratigraphy, Mineral Resources, and Chemical Composition of Phosphatic Sediments Underlying the Continental Shelf and Slope Off Georgia	
Funding Source:	MMS and USGS - Marine Minerals Program	
Principal Investigators: (2 of 2)	Peter Popenoe Frank T. Manheim U. S. Geological Survey Woods Hole, MA 02543	phone: 508-457-2222 fax: 508-457-2310 OMNET:
Duration of Project:	continuing	
Study Location(s):	30° - 32° N 79° - 81°15' W Offshore Georgia continental shelf and slope	
Cruise Schedule:	Will ships be used? no	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:		
Data Manager:	Nancy Soderberg U. S. Geological Survey Woods Hole, MA 02543	phone: 508-457-2275 fax: 508-457-2310 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Geology, Stratigraphy, Mineral Resources, and Chemical Composition of Phosphatic Sediments Underlying the Continental Shelf and Slope off Georgia.

Peter Popenoe and Frank T. Manheim (both at USGS< Woods Hole, MA)

Purpose of Project:

Examine the stratigraphy and resource potential of the phosphatic sediments underlying the continental shelf and slope off Georgia. This project is part of a continuing USGS program to geologically map the continental shelves.

Abstract:

Sediments from eight 100 m deep foundation borings drilled by the U.S. Navy (TACTS boreholes), and four additional drill holes on the continental shelf off Georgia were examined for their stratigraphy, lithology, phosphate and heavy minerals distribution, and supporting chemical information. The lithologic data from these holes was used in the analyses of a network of pre-existing high-resolution seismic-reflection data to map the distribution, thickness, depth, and resource potential of the sediments underlying the continental shelf.

These studies are presently in a finish-up phase and are not funded for 1993. Results of the above studies have been reported in U.S. Geological Survey Open-File Reports 89-559, 91-397, 92-176, and papers are presently being written to be submitted for publication in the Journal of Marine Mining, as well as the Georgia Geologic Survey Bulletin and a USGS Professional Paper.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Relationship of the Geologic Framework of Hardbottom Habitats and Nutrient-Rich Groundwater discharge to Benthic Community Structure: Onslow Bay, North Carolina
Funding Source:	NOAA/NURP, UNC Sea Grant College; DOI/MMS NMFS/Cooperative Institute for Fisheries Oceanography
Principal Investigators: (1 of 4)	Stanley R. Riggs Department of Geology East Carolina University Greenville, NC 27858 phone: 919-757-6360 fax: 919-757-4391 OMNET:
Duration of Project:	1991 to 1994
Study Location(s):	Onslow Bay continental Shelf, NC 33°40' - 33°60' N 77°20' - 77°40'W
Cruise Schedule:	Will ships be used? yes | # of cruises planned: 3/year
Ship(s) being used:	R/V Elusive (day boat); R/V Edwin Link (submersible); R/V Cape Hatteras and R/V Seaward Explorer (extended oper.)
Cruise dates:	1991: May, Aug, Sept, Nov 1992: 7/2-8/7 1993 and 1994: not set
Platforms needed:	drilling platform needed proposal submitted for part of ODP leg
Types of data collected:	*high resolution seismic *high resolution side-scan sonar *sediment/rock: distribution, sedimentology, mineralogy, petrology *ecology of benthic fauna/flora *groundwater: discharge, rates, nutrient chem., radionuclide chem. *water column chemistry: nutrients, major, radionuclide *sediment resource evaluation
Data Manager:	Stanley R. Riggs Department of Geology East Carolina University Greenville, NC 27858 phone: 919-757-6360 fax: 919-757-4391 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Relationship of the Geologic Framework of Hardbottom Habitats and Nutrient-Rich Groundwater Discharge to Benthic Community Structure: Onslow Bay, North Carolina

Stanley R. Riggs (East Carolina Univ.), William G. Ambrose (East Carolina Univ.), Scott W. Snyder (East Carolina Univ.), and Stephen W. Snyder (North Carolina State Univ.)

Purpose of Project:

(see below)

Abstract:

Onslow Bay, North Carolina is generally a sediment-starved continental shelf system dominated by hardbottoms. All of these hardbottoms do not appear to be equally productive. A large proportion of the hardbottom appear to be seafloor deserts, whereas others are virtual oases with rich associations of benthic organisms and associated reef fishes. Previous research and observations by the Co-PI's and others indicate that Onslow Bay hardbottoms are extremely variable with respect to their physical characteristics (i.e., chemical and mineralogical composition, morphology, and spatial orientation and distribution, all of which are directly dependent upon their geologic origin and subsequent geologic history) and benthic community structure (i.e., density and diversity of both fauna and flora). Also, reduced salinity submarine groundwater with high flow rates and elevated nutrient concentrations are being discharged from specific stratigraphic units into the benthic environment.

Thus, it appears that substrate characteristics and groundwater discharge may be playing significant roles in determining the benthic habitat and resulting benthic community structure. For example, the presence or absence of the following characteristcs of processes could play major roles in determining the ultimate structure of the benthic community.

1. What are the interactions and potential effects between morphology and relief of hardbottom structures and the associated mobile bottom sediments upon benthic community structure (i.e., effects of transport scouring and/or burial by thin, mobile sediments on flat vs. low-relief scarped hardbottoms)?
2. What are the consequenses of major volumes of discharged submarine groundwater upon the benthic community, particularly if they have reduced salinities and are nutrient-rich as a direct result of the associated organic-and phosphate-rich strata?
3. What are the chemical and mineralogical controls of the hardbottom surface upon the sessile epibiota and infauna (i.e., differences between sandstone, mudstone, limestone, and dolomite substrates, all of which have different apparent benthic communities)?
4. What are the type, extent, and rates of bioerosional and bioaccretionary processes that increase surface area and modify surface morphology (i.e., are scarped hardbottoms retreating and associated rubble ramps forming and in what time frame and by what processes)?

An extensive ongoing research program by the Co-PI's is presently evaluating these questions on four mid-shelf hardbottom habitats in Onslow Bay.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	South Carolina Coastal Erosion Study	
Funding Source:	USGS IGD-OEMG National Coastal Geology Program	
Principal Investigators: (1 of 1)	Asbury Sallenger U. S. Geological Survey 600 4th Street, S St. Petersburg, FL 33701	phone: 813-893-3100 fax: 813-893-3333 OMNET:
Duration of Project:	FY 1992 to FY 1997	
Study Location(s):		
Cruise Schedule:	Will ships be used? no	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:		
Data Manager:	Mark Hansen U. S. Geological Survey 600 4th Street, S St. Petersburg, FL 33701	phone: 813-893-3036 fax: 813-893-3333 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

South Carolina Coastal Erosion Study

Asbury Sallenger (USGS, St. Petersburg, FL)

Purpose of Project:

The primary purpose of the study is to assist the State of South Carolina with the gathering of scientific information needed to better manage the State's coastline. The U.S. Geological Survey will assist the South Carolina Coastal Council in setting up and conducting a state-of-the-art beach monitoring program that will help implement South Carolina's Beachfront Management Act of 1979.

Abstract:

Activities for the first year of the study include collection of semiannual wading depth and deep water bathymetric surveys, and an error analysis to assess the accuracy of semi-annual beach surveys and the accuracy of the shoreline positions determined from aerial photographs. Specific mandates in the Beachfront Management Act require high accuracy surveys to be collected state-wide to update setback requirements. Therefore, to improve the efficiency of current beach survey technology, a rapid, high-resolution bathymetric survey system which employs a satellite Global Positioning System and precision echosounder is currently being developed.

Activities proposed for FY 1993 include developing research plans in cooperation with the Coastal Council in the following areas:

1) REGIONAL SEDIMENT BUDGET: Mitigation of eroding beaches in a complex tidally dominated region must consider both local and regional (state-wide) impacts. A regional sediment budget analysis will identify sediment sources, sinks, gradients, volumes, and pathways to aid beach erosion mitigation decisions.

2) TIDAL INLETS: Tidal inlet dynamics greatly influence coastal processes in the State. Therefore, an expanded understanding of sediment flux between inlets and adjacent beaches will provide additional information for policy-makers to make wise managment decisions.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Sediment-Water Exchange Dynamics
Funding Source:	NOAA: National Sea Grant College Program; S. C. Sea Grant Consortium; and National Undersea Research Program
Principal Investigators: (1 of 1)	Thomas Tisue 363 Hunter Laboratory Dept. of Chemistry Clemson University Clemson, SC 29634-1905 phone: 803-656-2339 fax: 803-656-6613 OMNET:
Duration of Project:	beginning: 1986 ending: continuing
Study Location(s):	Winyah Bay, Cape Lookout Bight, Frying Pan Shoals Phosphorite District (Onslow Bay) Charleston Harbor Plume
Cruise Schedule:	Will ships be used? yes # of cruises planned: 2-5
Ship(s) being used:	R/V Ferrel (NOAA) R/V Elusive
Cruise dates:	1992: June, July 1993: spring
Platforms needed:	an instrumented tower at the 20 m isobath
Types of data collected:	*particle and solute concentration gradients just above the sediment-water interface *current direction and velocity profiles
Data Manager:	Thomas Tisue 363 Hunter Laboratory Dept. of Chemistry Clemson University Clemson, SC 29634-1905 phone: 803-656-2339 fax: 803-656-6613 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Sediment-Water Exchange Dynamics

Thomas Tisue (Clemson University)

Purpose of Project:

Observe concentration gradients of particles and solutes in the benthic boundary layer as a function of bottom type, hydrodynamics, and water column productivity; calculate particle and solute fluxes across the sediment-water interface by combining the observed gradients with estimates of eddy diffusivity based on current and wave recordings.

Abstract:

We have developed an instrument package for sampling concentration gradients just above the sediment-water interface. The Automated Boundary Layer Sampler (ABLS) uses an on-board microcontroller to direct the operation of a submersible, battery-operated pump. In the usual configuration, the pump plenum is connected to eight PVC cylinders, each containing a collapsed 6 L plastic sample bag. Each bag is connected to one of eight inlet ports that are arranged at logarithmic intervals from 1 cm to 2 m above the sediment-water interface. Actuation of the pump creates a pressure drop that draws water into the bags from the inlet ports. The pumping rate and inlet port cross-sections are designed to provide approximately isokinetic sampling for currents of about 10 cm/s. The most recent version of the ABLS is designed so that it can be deployed and serviced by SCUBA divers from small craft. This method of deployment also allows the device to be positioned reproducibly and oriented correctly with respect to the mean flow.

The ABLS has been used to study sediment-water exchange dynamics in Winyah Bay, Cape Lookout Bight, the Frying Pan Shoals Phosphorite District (Onslow Bay), and in the Charleston Harbor estuarine plume. The results from Cape Lookout Bight are important in establishing the method's validity. At this location, Martens made detailed studies of interstitial water chemistry and calculated interfacial fluxes from the observed profiles. We made similar flux calculations based on boundary layer gradients , and the two sets of results are in good agreement.

Our group currently is funded by the S.C. Sea Grant Consortium, and by the NOAA National Undersea Research Center (NURC) at UNC-Wilmington. The Sea grant project is directed toward studying the effect of the Charleston Harbor estuarine plume on nutrient sediment-water exchange dynamics. We want to see how increased nutrient loading affects benthic regeneration rates, in an area where the resulting signal is likely to be a strong one. This project draws on pioneering studies in the Georgia Bight by C. S. Hopkinson, Jr. (benthic and pelagic metabolism), and by J. O. Blanton (estuarine plumes and the coastal ocean boundary), and may be of interest to biologists such as E. Wenner, and others studying productivity on the inner shelf.

The project supported by NURC is part of a larger study of "live bottom" in Onslow Bay being directed by S. Riggs. The overall goal of this study is to understand the relationships between geology, hydrology, and topography, and the development of rich biotic communities at highly productive natural reefs in this area. The ABLS is being used to study exchanges of P and N across the sediment-water interface at phosphorite-rich and other sites. Freshwater percolation is evident in many locations in the study area. ABLS samples also will be analyzed for radon isotopes by W. Burnett. His data will not only help assess the extent of freshwater percolation, but may provide a direct measurement of eddy diffusivity near the interface.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Southeast Area Monitoring and Assessment Program South Atlantic (SEAMAP-SA) Shallow Water Trawl Survey
Funding Source:	NOAA - National Marine Fisheries Service
Principal Investigators: (1 of 1)	Elizabeth Wenner South Carolina Wildlife and Marine Resources Dept. P.O. Box 12559 Charleston, SC 29412 phone: 803-762-5050 fax: 803-762-5110 OMNET: P.SANDIFER
Duration of Project:	Fall 1992 through January 1994, with extension projected
Study Location(s):	South Atlantic Bight 35°06' N to 28°56' N, in coastal waters 15 to 60 ft. deep
Cruise Schedule:	Will ships be used? yes; # of cruises planned: 3
Ship(s) being used:	R/V Lady Lisa (shrimp trawler, 75')
Cruise dates:	1993: spring (mid-April to mid-May) 1993: summer (mid-July to mid-August) 1993: fall (early October to mid-November)
Platforms needed:	
Types of data collected:	*surface and bottom plankton samples for finfish and decapod crustaceans: *species composition *species abundance *species biomass
Data Manager:	Ken Savistano Southeast Fisheries Science Center Mississippi Laboratories Stennis Space Center, MS 39525 phone: fax: 601-769-9200 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Southeast Area Monitoring and Assessment Program - South Atlantic (SEAMAP-SA)
Shallow Water Trawl Survey
Elizabeth L. Wenner (Marine Resources Research Institute, SCWMRD, Charleston, SC)

Purpose of Project:

Monitor stocks of commercially important decapods and finfish

Abstract:

SEAMAP samples are collected in the South Atlantic Bight, working from Cape Hatteras, NC to Cape Canaveral, FL. A stratified random sample design is employed to sample two depth zones: 15 to 30 feet and 30 to 60 feet. Samples are collected from all inner strata in each of three seasons: spring, summer, and fall. Outer strata are sampled only in spring and fall to look for spawning aggregations of penaeid shrimp. The goal of this project is to monitor stocks of commercially important decapods and finfish (with highest priority placed on mackerels) and to amass a large, long-term database comprising species composition, abundance, and biomass of finfish and both decapod and stomatopod crustaceans collected from the coastal shelf waters of the South Atlantic Bight (SAB). Sampling is conducted aboard the R/V Lady Lisa, a 75 foot wooden-hulled, double rigged St. Augustine shrimp trawler, which is owned and operated by the state of South Carolina. Twenty minute tows are made with paired 75 foot high rise trawls.

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:	Recruitment, Abundance, and Growth of Postlarval and Juvenile Blue Crabs in a Southeastern Coastal Estuary	
Funding Source:	The University of Georgia Sea Grant College Program	
Principal Investigators: (1 of 1)	Richard G. Wiegert Department of Zoology University of Georgia Athens, GA 30601	phone: 404-542-3370 fax: 404-542-4271 OMNET: wiegert@wiegert.zoo.uga.edu
Duration of Project:	October 1992 to October 1995	
Study Location(s):	Sapelo Island, Georgia	
Cruise Schedule:	Will ships be used? NO	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Platforms needed:		
Types of data collected:		
Data Manager:	Richard G. Wiegert Department of Zoology University of Georgia Athens, GA 30601	phone: 404-542-3370 fax: 404-542-4271 OMNET:

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and Principal Investigators:

Recruitment, Abundance, and Growth of Postlarval and Juvenile Blue Crabs in a Southeastern Costal Estuary

Richard G. Wiegert (University of Georgia)

Purpose of Project:

1) To measure the relative magnitude and time of megalopal recruitment to the juvenile blue crab population.

2) To measure the habitat selection and field growth rate of juvenile blue crabs.

Abstract:

The blue crab (Callinectes sapidus) fishery in Georgia is supported largely by only a single year class of crabs. Thus, factors affecting recruitment in any one year can have a major impact on the fishery, and indices of recruitment could prove very useful in management. Although considerable information on adult stocks is available, both through work of the Georgia Department of Natural Resources work and through research supported in the past by Sea Grant, comparable information on megalopal and juvenile recruitment is scarce or nonexistent. Furthermore, existing information suggests that each estuary on the coast may have different important factors affecting the blue crab populations. This points to the need for further studies of both megalopal and juvenile recruitment, spatial distribution, and growth (of juveniles) in individual estuaries.

This project involves a set of studies designed to answer the above needs for the Duplin River estuary next to Sapelo Island, Georgia. The work builds on a database (compiled with Sea Grant support) on large juvenile and adult crabs and also provides the first Georgia site for studies of megalopal recruitment within a large informal network of sites on the southeastern Atlantic and Gulf coasts.

The objectives of the work include the following:

1) Measure recruitment of megalopal-stage crabs into the Duplin River estuary by (a) ascertaining when the pulses of megalopae enter the mouth of the Duplin River using passive sampling, (b) measuring the relative intensity of the recruitment pulses using passive and active sampling, and (c) measuring the spatial distribution of the megalopal pulses within the Duplin River and nearby parts of Doboy Sound using active sampling.

2) Determine the timing, intensity and spatial distribution of recruitment into the juvenile crab population as well as the growth rates of such crabs up to the point of entry into the juvenile-subadult population by (a) measuring the time between the megalopal recruitment and the recruitment into the small juvenile category, (b) determining the numerical intensity of recruitment into the small juvenile class relative to the intensity of megalopal recruitment, and (c) determining the habitat preference of the small crabs (3-5 mm to 30-50 mm CPW).

This work will permit completion of a model of blue crab dynamics which will aid further research on this commercially and recreationally desirable animal. It will also lay the groundwork for the development of individual estuary indices that could predict the crab stock, to the benefit of the Georgia commercial crabbers.

Appendix C

Project Summary Form

PROJECT SUMMARY SHEET

SOUTHEAST U. S. COAST STUDIES

Project Title:		
Funding Source(s):		
Principal Investigator: (1 of __ investigators)	phone: fax: Omnet: Internet:	
Duration of Project:	beginning:	ending:
Study Location(s):		
Cruise Schedule:	Will ships be used?	# of cruises planned:
Ship(s) being used:		
Cruise dates:		
Types of data collected:		
Data Manager:	phone: fax: Omnet: Internet:	

(revised 8/92)

PROJECT SUMMARY SHEET (cont.)

SOUTHEAST U. S. COAST STUDIES

Project Title and all Principal Investigators, with affiliations:

Purpose of Project:

Abstract:

Send completed form to: Dr. Leslie Sautter, SC Sea Grant Consortium, 287 Meeting St., Charleston, SC 29401 (revised 8/92)