

**Coastal Ocean Monitoring Program
(formerly the Southeast Marine Monitoring and Prediction Center)**

**NOAA Award # NA96RP0259
Semi-Annual Progress Report, 1 September 1999 to 29 February 2000**

Submitted by:

Dr. Marvin Moss
Principal Investigator
UNCW center for Marine Science
5600 Marvin Moss Lane
Wilmington, NC 28409
910-962-2365
mmoss@uncwil.edu



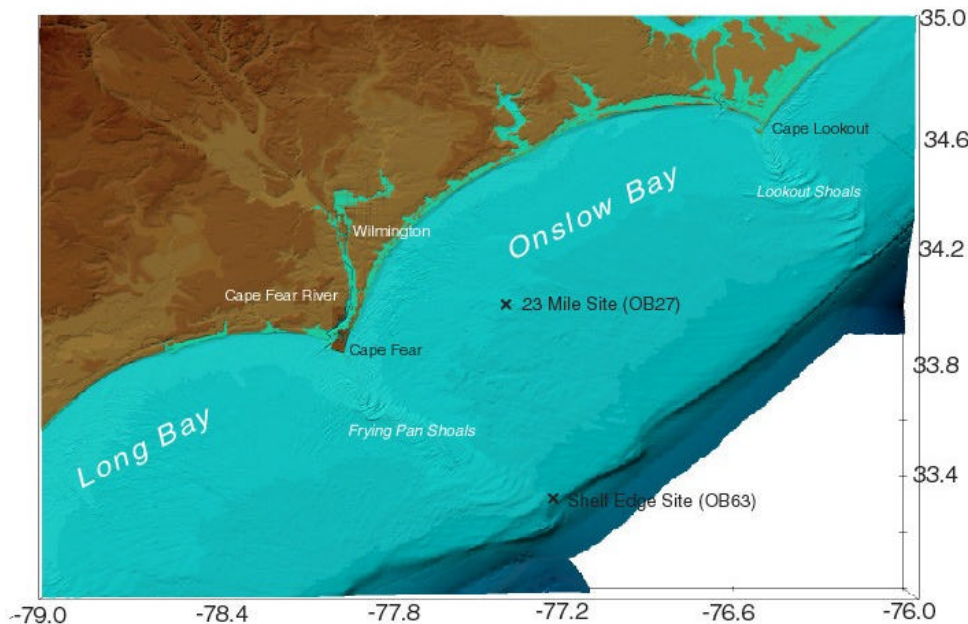
INTRODUCTION

The Coastal Ocean Monitoring Program, entitled the Southeast Marine Monitoring and Prediction Center in appropriations language, was established on September 1, 1999. As described in the original

proposal, the purpose of the program is to assess the effects of natural and anthropogenic influences on coastal processes in the South Atlantic Bight. The program is based at the University of North Carolina at Wilmington's Center for Marine Science, located on the Intracoastal Waterway (ICW) opposite Masonboro Island (Figure 1). This progress report summarizes accomplishments during the first six months of grant award # NA96RP0259.

Figure 1. COMP study area, showing location of 27 nm reef permanent mooring.

COASTAL RELIEF MODEL:
FRYING PAN SHOALS REGION OF THE SOUTH ATLANTIC BIGHT



OBJECTIVES

The first proposal to fund COMP was entitled the Coastal Ocean Monitoring Program (COMP) in 1999-2000. The appropriations language labeled the funding as the Southeast Marine Monitoring and Prediction Center. The primary scientific objectives of the first twelve month proposal were to:

- understand and model the dynamics of cross shelf transport of materials (including nutrients, sediments, and biota)
- define the relationship between physical properties (circulation, weather, storms) and coastal environmental health
- determine the influences of oceanographic forces on the recruitment of commercially important fisheries
- assess the impact of riverine input on coastal water quality and productivity

The original proposal proposed the following tasks to address the above objectives:

- establish long-term sampling stations across the continental shelf off Wilmington, NC
- establish long-term sampling stations in the Cape Fear River plume
- establish a permanent, long-term mooring and seafloor instrumentation on a mid-shelf “live bottom” reef
- integrate observations from the at-sea sampling, in situ instrumentations, and satellite imagery

During the first six months of the grant in 1999-2000, focus was shifted to intensive sampling after Hurricane Floyd (Figure 2) struck the NC coast and caused the most costly flooding in the state’s history.

RESULTS

Hurricane Floyd hit coastal North Carolina in September 1999 with extraordinary rainfall, causing unprecedented flooding. The impacts of the hurricane on the coastal ocean, particularly the discharges of contaminated floodwaters from the Cape Fear River to the coastal ocean, were studied by COMP (Cahoon et al. 2001; see www.uncwil.edu/cmsr/comp for copy of paper). Funding and work began on September 1, just before the region was struck by the hurricane. The overall monitoring program included studies of the Cape Fear River plume’s chemical and biological effects on the coastal ocean and measurement of physical, chemical and biological properties of coastal ocean waters.



Figure 2. NOAA GOES image of Hurricane Floyd a few days prior to striking the North Carolina coast.

During a series of post storm cruises, 72 sites from the ICW to the coastal ocean off South Carolina were sampled:

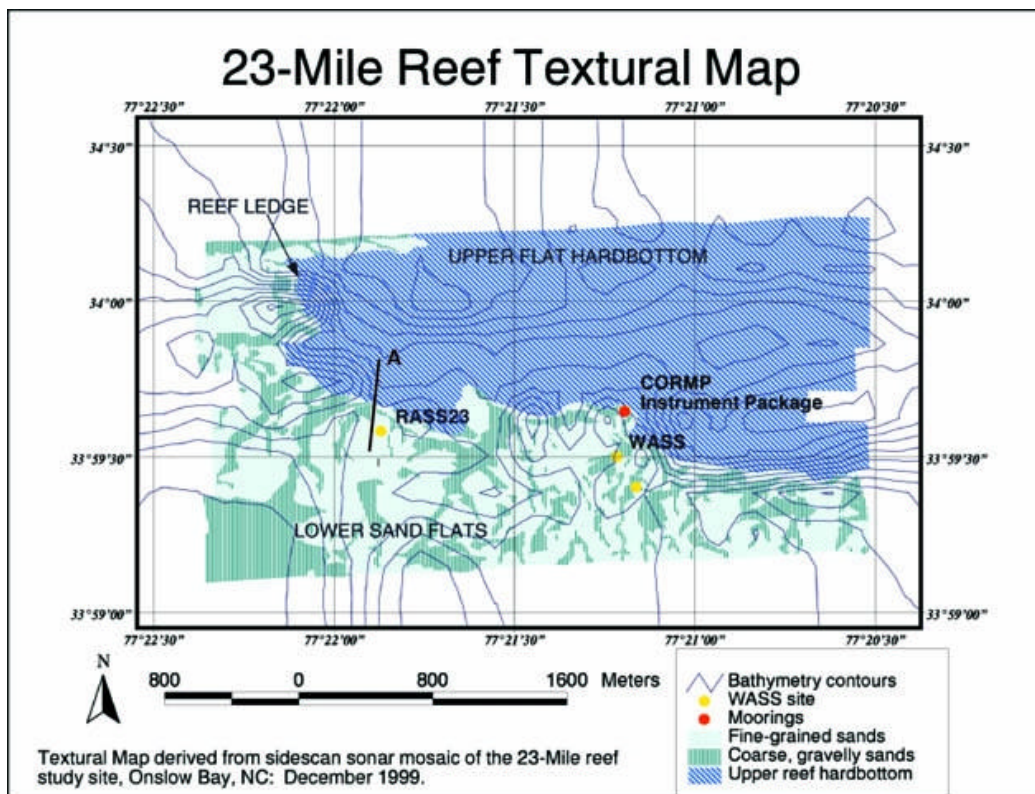
- 9/23/99, R/V Cobia: seven sites in ICW, and creeks; readings and samples for Temp, DO, Sal, % sat, pH, Chla, Dsi, turbidity, and secchi disc reading.
- 9/23/99, R/V Seahawk: nine sites in lower river and ICW; same readings and samples

- 9/28/99, R/V Cape Fear: eight sites in lower Cape Fear River and plume; same readings and samples
- 10/1/99, R/V Cape Hatteras: thirteen sites in lower Cape Fear River, plume area, and down coast (southwest into SC); CTD cast (2m and near-bottom) recorded Temp, Sal, FIC, DSI, Chla, T/N, T/P, Secchi, and Turb readings; on-deck readings with YSI of surface water Temp, DO, Sal, % Sat, pH; Shipek grabs were taken for benthic Chla, marine fungi (D. Padgett); water samples collected for TSS and plankton (Harmful Algal Blooms).
- 10/7/99, R/V Cape Hatteras: 27 sites in lower river, plume area, down coast into SC waters; same sampling as 10/1 cruise, plus barrels of water collected for groundwater analysis (A. Spivack)
- 10/14/99, R/V Cape Fear: 8 sites in lower river and plume; Cast readings for Temp, DO, Sal, % sat, pH, Chla, Dsi, and Turb; grab samples for fungi; water samples for TSS and plankton.

Charts showing sample sites and results, and cruise logs are posted on the program web site (www.uncwil/cmsr/comp).

As described by Cahoon et al. (2001), “the major water quality impacts feared in response to the flooding from Hurricane Floyd did not materialize in the Cape Fear River Estuary or the coastal ocean downstream of the river mouth.” They conclude that very high volumes of floodwater diluted the high nutrient and organic loadings to the river. Thus, COMP scientists were able to reassure the local citizenry and visitors to the area that water quality in the coastal ocean recovered within about one month of Hurricane Floyd, and that impacts were not as severe as first feared.

In addition to the post-storm sampling cruises, two other activities were completed. On 17 December, a subsurface mooring was deployed at 27 nm reef (Figure 1). The mooring will serve as the permanent station marker for the seafloor station to be completed in 2000. On 21 December, the 27 nm reef and



adjacent shelf was surveyed using side-scan sonar from the R/V Cape Fear. From this survey, a textural map of the reef was developed by COMP investigators (Figure 3 and see <http://www.uncwil.edu/people/grindlayn/cmgl/comp/> for details).

Figure 3. Textural habitat map of 27 nm reef area based on side-scan sonar survey (prepared by N. Grindlay) showing location of permanent mooring. WASS and RASS sites are historical study areas from S. Riggs work in 1990s.