View of the Coast

The New Jersey Marine Sciences Consortium is pleased to present its *2005 State of the Shore Report*, an annual assessment of the New Jersey coast presented to the public and press prior to each summer season.

New Jersey is *truly* the Coastal State. With more than 80% of its counties bordering saltwater and 127 miles of glistening shoreline, the New Jersey coast has been recognized as one of the nation's most important recreational assets. Some of its finest beaches are located here and the "Jersey Shore" is recognized as a destination for nearly 30 million residents who live within a two-hour drive of the coast.

But there is more to this priceless resource than just sunbathing and recreation; New Jersey's inshore waters and harbors underpin the State's $50 billion coastal economy by generating a vast economic engine that drives ports commerce, coastal tourism, and marine fisheries and aquaculture. Because one out of every six jobs in New Jersey is related to the coastal zone, revenues generated along the coast represent one of the State's largest economic sectors.

Recognizing the need for balance between economic vitality and quality of life issues, the Marine Sciences Consortium's (NJMSC) primary mission has focused on sustainable coastal management practices and the wise use of coastal capital. NJMSC's mission and activities are clearly in lock-step with Acting Governor Codey's recently released *New Jersey Coast 2005* report and the proposed actions therein.

New Jersey Sea Grant, the R&D arm of the NJMSC, contributes research and technology transfer towards better understanding and awareness of coastal processes and hazards, coastal ecosystem health, beach and dune nourishment, public access, fisheries and aquaculture, habitat protection, dredged materials management, water quality, and other societal issues. Similarly, NJMSC's Education Program curricula are geared toward heightening science literacy and informed decision-making, often in a fun-filled family atmosphere. Award winning events like *Coast Day NJ* and *Ocean Fun Days* help create greater public awareness and appreciation the region's coastal resources.

As we welcome the summer of 2005, NJMSC stands poised to do its part and renew its commitment to contributing solutions to coastal issues by promoting economic growth balanced by a quality of life that is among the best in the nation.

DR. MICHAEL P. WEINSTEIN
CEO, New Jersey Marine Sciences Consortium
Director, New Jersey Sea Grant College Program

This publication was supported by the National Sea Grant College Program of the U.S. Department of Commerce's National Oceanic and Atmospheric Administration under NOAA Grant #NA16RG1047. The views expressed herein do not necessarily reflect the views of any of those organizations. NJSG-05-603.

Dr. Tom Herrington, NJ Sea Grant Coastal Processes Specialist
Mr. Chris Tucker, NJDEP Bureau of Coastal Engineering

May 2005

Coastal Storm Activity and Beach Response

HURRICANES

Relatively benign summer-early fall weather in 2004 spared much of the mid-Atlantic and New England coasts from hurricane generated damage. Except for Hurricane Alex, which tracked well offshore to the southeast of New Jersey, storms tended to make landfall far south or along the Gulf Coast and moved inland well west of the coastline. While New Jersey did not experience hurricane related beach erosion, it also did not experience the beach building processes that typically accompany storm generated offshore swells.

OTHER STORM ACTIVITY

The fall-early spring period of 2003-2004 witnessed periodic storm activity that had varying degrees of impact on the New Jersey coast:

- Beginning on October 18th and extending through October 27th strong on-shore winds and waves generated by a high-pressure system to the north in combination with a slow moving coastal low created sustained winds of 10-20 knots and waves of

Sea Grant New Jersey
STEVENS Institute of Technology
NEW JERSEY MARINE SCIENCES CONSORTIUM

up to 8 feet. Although moderate beach erosion was experienced along most of the New Jersey coast, some parts of Long Beach Island were severely affected with three to four-foot vertical cuts common and losses of up to 60 feet of dry beach recorded. Nonetheless, long-period swells generated by the retreating storm allowed much of the eroded beach to recover by mid-November.

- A fast-moving coastal low off Virginia generated waves of up to 10 feet for 12 hours on November 13th but resulted in very minor beach erosion.
- Calm weather throughout most of December and January was interrupted by a fast moving coastal low that brought with it sustained 20-knot NE winds and blizzard conditions along much of the coast on January 24th. Despite waves reaching 10 feet off of Brant Beach, only minor erosion was reported along the coast.
- A fast-moving low pressure system on March 1st generated E-NE winds of 25 knots and up to 12-foot waves over 12 hours causing moderate erosion nearly statewide.
- Beginning March 24th, and culminating on May 7th, a series of 8 minor coastal storms affected the region, each separated by an average of 5 to 7 days. Peak recorded wave heights reached 9 feet during a 12-24 hour period. The cumulative effects of the storm events resulted in moderately eroded beaches along most of the New Jersey coast south of northern Ocean County, and severe erosion along portions of Long Beach Island that had never previously recovered from the October 2004 storm.

Coastal Assessment

The lack of sustained long-period swell conditions in the fall of 2004 reduced the typical width of the State's beaches prior to the winter storm season. Although none of the 2003-2004 winter storms were characterized by significant storm surge or extreme wave heights, the absence of natural "buffering" processes on many beaches in the fall resulted in local erosion during the prolonged storm event of October 18th-27th. Similarly, the beach transitioned betweenh periods of recovery and erosion until early spring, when 8 of the 12 minor winter storms occurred within 6 weeks. The combination of lack of dry beach width at the end of the fall and the frequency of storm events in April/May resulted in moderately eroded beaches south of Monmouth County. Overall, however, the relatively mild winter storm season of 2003-2004 allowed natural processes to slightly increase beach widths along the New Jersey coast during the following summer.

Because few of the 12 winter storms were of significant duration or strength, much of the sand eroded from the dry beach has been retained in nearshore sandbar repositories. Any sustained periods of gentle wave activity should allow this sand to return to the dry beach profile in early summer 2005. Beach visitors may find less room for their beach chairs in early June but should expect to see a wider beach as the summer progresses. Surfers and fishermen are likely to experience ideal recreational conditions during the early summer as the wide offshore bars will create good surf and deep gullies inshore of the bar.

Summer Outlook

Neutral conditions produced by El Niño/Southern Oscillation are expected to prevail over the tropical Pacific Ocean between June and August. Based on the neutral ENSO condition and continued Atlantic Ocean warming, noted hurricane forecaster Dr. William Gray, head of the Tropical Meteorology Project at Colorado State University, foresees another active Atlantic hurricane season. It is estimated that the 2005 summer storm season will bring with it approximately 7 hurricanes (average is 5.9) and 13 named storms (average is 9.6). Generally, active hurricane seasons are beneficial to the Jersey Shore as tropical storms that pass well east of the New Jersey coast (east of Bermuda) generate large, long-period swells that are extremely efficient in moving sand up onto the beach berm.

- Photo by Paul Merino