

Western Carolina University Students Help Analyze Irene's Damage on NC Outer Banks

Students and faculty from the Program for the Study of Developed Shorelines (PSDS) at Western Carolina University got to see firsthand the damage Hurricane Irene left on North Carolina's Outerbanks the weekend of Aug. 26.

The program is a research center on campus that takes a worldwide and scientific view of developed shorelines. To analyze the damage of Hurricane Irene, the PSDS took aerial photographs both before and after the storm.

"The comparison of post-storm imagery to pre-storm baseline data allows for quantification of storm-induced changes," said *Andy Coburn*, Associate Director of the Study of Developed Shorelines.

Because of safety procedures, PSDS visits impacted locations as soon as possible after the storm has departed.

"Safety is our primary concern," Coburn said.

Irene had weakened to a tropical storm prior to landfall, and damages were supposed to be petty, yet Coburn was *"surprised to see the magnitude and extent of impacts."*

Irene flooded and damaged two sections on Highway 21 along the coastline of the Outer Banks and roads were damaged on Pea and Ocracoke Island. There was also significant flooding in the area.

PSDS Director **Dr. Rob Young** flew over the affected areas following the storm and reported the following details on damages:

1) In general the storm did little damage to ocean front property along the northern Outer Banks. Some dune scarping is visible, but storm surge was less than expected. Even so, Hurricane Irene has opened a new inlet just south of the freshwater ponds on Pea Island National Wildlife Refuge on Hatteras Island. The inlet is not as large as the so-called 'Isabel Inlet,' but at flight time there was continued tidal exchange and filling in the inlet will require some time. There is also a small breach of the island just north of Rodanthe in the Mirlo Beach area. Maintaining Highway 12 in light of even small storms like Hurricane Irene has become an unending challenge for NCDOT. It certainly makes one wonder about the planned replacement of the Bonner Bridge. Even if we can build an immovable bridge, will there be a road left to connect to?

2) The \$30+ million beach nourishment project at Nags Head has survived the storm, although there certainly has been some loss of sand along the beach. The degree of loss is difficult to assess 'on the fly' from the air. PSDS Associate Director Andy Coburn flew the beach on August 25, two days before the hurricane. In our judgment, Hurricane Irene would not have caused significant damage to any properties, with or without the new beach.

3) The primary impact from Hurricane Irene to the North Carolina Outer Banks was from significant soundside flooding impacting many areas of Duck, Kitty Hawk, Collington Beach, Roanoke Island, and others. Much of this water has filled natural swales and dips on the backside of the islands, and will be around for some time.”

Coburn, an expert on coastal management state, feels “*the coastline does not need to be rebuilt, but if it is, and it probably will be, there is absolutely no reason to put everything back the way it was before since Irene is a preview of what the North Carolina coast can expect in the future.*”

The PSDS provides information and advice to organizations from state government agencies to nonprofit organizations. PSDS’s advice to North Carolina’s government includes, “*the state needs to be innovative, flexible, and forward-looking rather than preserve the status quo.*”

”Also, there is no reason to protect or rebuild oceanfront and sound front structures that are damaged and destroyed. The vast majority of these are investment properties and provide very little, if any, benefit to society.

Every member of WCU’s community, as North Carolina residents, are part owners of the N.C. coastline under the Public Trust doctrine. Because of this, we are all responsible for the shoreline ecosystems and the species that live there, said Coburn.