



Preliminary Assessment
IRENE UPDATE #4 (8/27/11)

Irene made landfall at Cape Lookout as a Category 1 hurricane at 7:30 am on 8/27/2011 (Fig. 1). The Cedar Island Ferry Terminal measured sustained winds of 90 mph, gusting to 110 mph at about the time of landfall and sustained winds of 85 mph, gusting to 101 mph was measured at Atlantic Beach later that morning. For Bogue Banks the back side (return flow) of *Irene* produced much higher winds than the front side and prolonged the impacts of *Irene*. This update provides a very preliminary assessment of beach and other conditions based on visual observation, which will be filled in with statistics and more photographic documentation over the next several days.

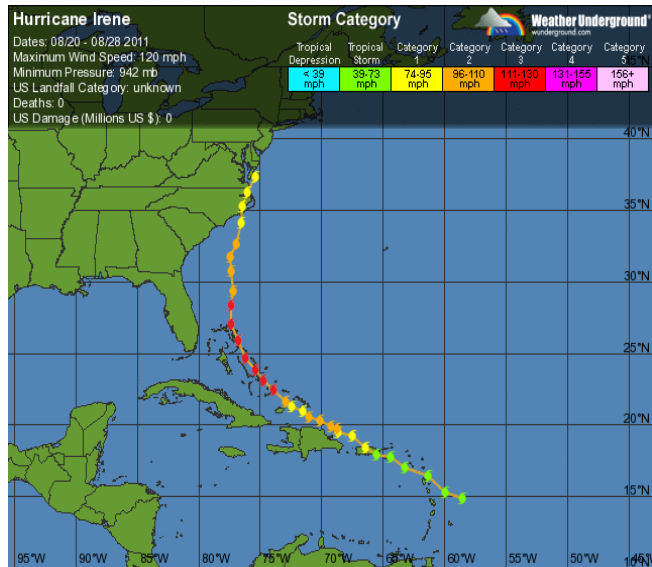


Fig. 1 – Track, intensity, and general U.S. landfall location of *Irene*.

There was soundside flooding along Bogue Banks and pier/dock damage resulted that was likely the cause of the initial build up/push of water from generally easterly flow. That water was quickly blown in the other direction as west winds took command after the *Irene* passed north of Cape Lookout. There appears to be no catastrophic damage to homes and buildings on the island, but it was not uncommon to see areas of vinyl siding and roof shingles missing from homes.

Beach Erosion

Erosion was not catastrophic but there was dune erosion along most of Bogue Banks, and figure 2 is a representative example of the type of dune erosion that occurred. The “old” existing high dunes (or emplaced foredune in east Emerald Isle) incurred no or very little damage. However, the incipient dune field that has been created in the past several years with the aid of public/private sand fencing and planting did suffer noteworthy erosion. In some places it was simply worse than others (see figure 3 and 4). Making any precise assessments concerning berm erosion (flat part of the beach) will be difficult until our survey is completed. In general however, much of the sand that was removed from the upper part of the beach tends to be translated offshore in bar configurations, which creates a very “flat” looking beach immediately after the storm. Some of this sand will accrete back onto the beach – some will not, and again, our repetitive surveys help us catalogue the volume and location of sand along the beach profile.



Fig. 2 – “Before” (left panel) and “after” (right panel) from Memorial Park, Pine Knoll Shores. Notice the remaining sand fence posts and absence of sand and fencing slats between the posts on 8/27/11.



Fig. 3 – 12th Street, Emerald Isle looking east – “worse” incipient dune erosion.



Fig. 4 – Indian Beach 4WD Ramp, looking east – almost no incipient dune erosion.

In closing, we will provide more information concerning wave heights and other physical parameters soon. Sea conditions; besides causing beach erosion, also caused damage to the piers along Bogue Banks as widely reported in the media (Fig.5)



Fig. 5 – Sheraton fishing pier (8/27/11).