carteret county Shore protection office protectthebeach.com

SHORELINES – July 2007

The 2007 Hurricane Season

While Memorial Day weekend ushers in the traditional fun of the summer season, the white knuckles begin to show at the Shore Protection Office just a few days later with the beginning of the 2007 Hurricane Season, which runs from June 1st to November 30th. Most experts agree the Atlantic Ocean basin is in the middle of a trend of heightened tropical cyclone activity coupled with warming climate and seas that may help produce larger numbers and more intense hurricanes over the next several years. A ***tropical cyclone*** is a warm-core, atmospheric closed circulation rotating counter-clockwise in the Northern Hemisphere (that's us) and clockwise in the Southern Hemisphere. A tropical cyclone becomes a ***tropical storm*** when the maximum sustained surface wind speed ranges from 39 mph to 73 mph using the U.S. 1-minute average, and a ***hurricane*** is designated when the cyclone reaches a maximum sustained surface wind of 74 mph or more.

Last year (2006), experts predicted a similar fate but overlooked the eventual development of the El Niño Southern Oscillation (ENSO) warm phase in the tropical pacific, or *"El Niño"*, a term meaning Little Boy or Christ Child coined by South American fishermen noting the appearance of unusually warm water in the Pacific Ocean occurring near Christmas. *El Niño* occurs once every 2 to 7 years and generally produces atmospheric conditions that suppress the formation of tropical cyclones in the Atlantic. Hence 2006 became known as the "year of the shear" – monikered for the vertical wind shear so prevalent last summer and early fall. The bad news (at least for us here on the Atlantic) is that the 2006-07 *El Niño* has waned and *"La Niña"* (the girl child) conditions are slowly developing. *La Niña* is the cold phase of ENSO and as you may have guessed by now, the atmospheric conditions associated with *La Niña* provide favorable conditions for tropical cyclone development. As this edition of *Shorelines* goes to press, we are currently in a neutral phase of ENSO. There is also some rather new research also being conducted linking African dust levels in the atmosphere to tropical cyclone activity (more dust equals less storm development) but ENSO almost certainly has a larger imprint.

So what can we expect this year? As of May 22nd, the National Oceanic & Atmospheric Administration, or NOAA predicts 13 to 17 named cyclones, with 7 to 10 becoming hurricanes, of which 3 to 5 could become major hurricanes of Category 3 strength or higher (sustained winds of 111 mph and higher). Similarly, on April 3rd researchers at Colorado State University predicted 17 named cyclones, with 9 becoming hurricanes, of which 5 could be classified as major. And finally, a team at N.C. State University predicts there will be 12 to 14 named cyclones, with 8 to 9 becoming hurricanes – with 4 to 5 becoming major according to an April 19th news release. The average is 10.1 named systems – 4.2 tropical storms and 5.9 hurricanes, with 2.3 of those hurricanes as major (see accompanying table). We've already had near miss this year when a deep low pressure system formed off the Carolina coast in early May – this became the precursor to subtropical storm *Andrea* as the system migrated south. Compared to tropical storms, a subtropical storm usually possess a cold center and has a broader zone of maximum winds located farther from the center of circulation.

carteret county Shore protection office
protectthebeach.com

PREDICTIONS FOR THE 2007 HURRICANE SEASON

	Average	NOAA (max.)	Colorado State Univ.	N.C. State Univ. (max.)
Total No. of Named Tropical Cyclones	10.1	17	17	14
Tropical Storms	4.2	7	8	5
Hurricanes / Major	5.9 / 2.3	9 / 5	9 / 5	9 / 5

Adding insult to injury, Carteret County has the dubious honor of having the highest probability of encountering hurricane-force winds in the entire Country for 2007 at 22.4%, according to a team including a University of Central Florida statistics professor and a Georgia researcher. Of the 852 counties included in the analysis, the probability of hurricane-force winds (74 mph or greater) this year is 15 percent or greater in 61 counties. The 20 counties with the highest probabilities include 10 in Florida, 8 in North Carolina, 1 in Louisiana and 1 in South Carolina.

Obviously, tropical cyclone forecasting can sometimes be as much of an art form as an applied science with *El Niño* conditions, local and regional weather patterns, sea surface temperatures, and a host of other variables complicating an expert's predictive capacity. However, as tropical cyclones travel across or up the Atlantic this year, we will be keeping an eye on five variables that help us provide a very back of the napkin assessment of possible impacts to the beach. We'll dive into these variables and discuss some coastal processes next month followed by an explanation of the damage mitigation and assessment measures we take in the subsequent month of the *Island Review*…that is if we don't have a storm or hurricane strike in the interim!