

" EFFECTS OF HURRICANE HAZEL ON THE COAST OF N. C. "  
(OCTOBER 15, 1954)

The hurricane that struck the North Carolina coast on October 15, 1954 was no doubt the most severe that has occurred in the Cape Fear area in the past century. The Signal Service established a weather station in Wilmington on January 1, 1871 and complete records have been maintained for 84 years. For 81 year the Weather Office was located in the business section of Wilmington and all instruments had a roof exposure. Nearby buildings and terrain may have had some influence on the records. On October 1, 1951 the office was moved to the New Hanover County Airport, four miles northeast of the old location. Instrumental exposure is more satisfactory at the airport. The surrounding area is level and there are no obstructions to the free flow of the wind in any direction. During the 81 years the instruments were exposed in the city the highest wind velocity recorded was 73 mph, (corrected) . This was recorded in a hurricane on September 9, 1881. During the passage of Hurricane Hazel the following wind velocities were recorded: Maximum 61 mph.. Fastest Mile 82 mph and Highest gust 98 mph. (corrected). The New Hanover County Airport is located seven miles inland. During severe storms the wind velocities are always higher on the exposed beaches. It is reasonable to assume that velocities well over 100 mph prevailed on the beaches during the passage of the hurricane.

Along the entire length of the North Carolina coast there is a chain of long, low, narrow sand bars and islands. During recent years many beach resorts and expensive summer homes have been constructed on the beaches. Through the many inlets between the islands hundreds of pleasure and

commercial fishing boats pass.

Most all of the hurricanes that move up the Atlantic coast each year follow a path well to the east of Cape Fear. A few move inland south of Charleston. There was a feeling among the local people that the contour of the coast and the Gulf Stream steered the hurricanes away from Cape Fear. For this reason the people have always felt that destructive storms would not strike here. Old records and reports indicate that since 1740 not more than eight destructive hurricanes have struck here. Each generation of people must learn from experience that the region is not immune from severe hurricanes.

Hurricane Hazel was watched with interest during the week it moved slowly across the Caribbean Sea. No one felt it was a threat to this area. The general opinion was the hurricane would pass well to the east, in the Cape Hatteras area. During the morning of the 14th the weather appeared threatening. There were scattered cumulus and strato-cumulus clouds moving from the east and alto-stratus moving rapidly from the south. The cloud condition appeared ominous and threatening all morning. This feeling of anxiety was verified when shortly before noon a telephone call came from the Regional Office in New York. The Regional Office advised conditions were becoming more serious and that the hurricane would strike in the Wilmington area. Additional assistance would be rushed to the Weather Bureau Office here. The wind was moderate to fresh east becoming northeast around 4 PM and north-northeast after 9 PM. The barometer fell slowly during the day, from 30.10 (msl) at 1 AM to 29.91 at 7 PM. After that the fall was more rapid, reading 29.71 at midnight.

The 11 AM Advisory on the 14th indicated that conditions were becoming critical. Upon receipt of the advisory Northeast Storm Warnings were displayed along the coast and warnings were telephoned to all Weather Bureau representatives at key points in the eight counties under the Wilmington supervision. The weather continued to become more threatening. Intermittent rain squalls began at 5 PM. The Weather Bureau Office ordinarily is closed from 10 PM to 6 AM. Plans were made to keep the office open all night with two men on duty. (An assistant was sent over from Charlotte) Hurricane Warnings were hoisted at 5 PM and the warnings telephoned to all points along the coast and the interior sections of the eight counties.

The rain squalls increased in frequency. At 10:30 PM a trip was made to Wrightsville Beach to observe the sea conditions and discuss the situation with the mayor and police officials. A very heavy storm swell was breaking on the beach. The surf was observed for half an hour. Swells were breaking at 15 to 20 second intervals and water came higher on the beach than the observer had seen in his five years here. Conditions seemed to be very serious. At the police station the 11 PM Advisory was received from the Weather Bureau Office and it seemed to indicate the storm was more serious than previous reports indicated. A representative of Radio Station WGNI was present and after a conference He arranged for a special radio broadcast by the "Weather Man". In the extemporaneous broadcast the people were told that destructive hurricanes had struck this area in the past and they could be expected in the future. The present hurricane was reported to have destroyed a city in Haiti and killed several hundred people. It was now much stronger than when it struck Haiti. It now had winds up to 130 mph and was due to strike the coast here early the next

morning, only six hours away. The situation was discussed with the Radio Station WGNI and the station decided to remain on the air all night. Advisories and bulletins were broadcast at frequent intervals and a broadcast was made direct from the Weather Bureau Office each hour throughout the night.

At 2 AM (15th) Hurricane Warnings were hoisted from Wilmington to Charleston and this information was telephoned to the Displaymen and Weather Bureau representatives along the coast. The worst possible situation was at hand. A very severe hurricane was moving up from the south and would pass a short distance west of Wilmington. The Cape Fear area would be in the dangerous right hand sector and could expect winds above 100 mph, and dangerously high tides. From all indications a disaster was only a few hours away. The beach authorities were given this information. Additional calls were made to the Displayman at Southport and the Weather Bureau representative at Shallote. These two individuals ( Mrs. Jessie M. Taylor at Southport and F. C. Simmons at Shallote) remained at their telephones most all of Thursday night and Friday morning warning the people along the coast. (Ft. Caswell, Long Beach, Holden Beach, and Ocean Isle). Calabash and Little River have no telephone service, messengers were sent to these communities. The death toll might have been much higher had these two people not worked so hard to relay our warnings to the people in the most critical areas. Evacuation of Wrightsville Beach was completed by about 3 AM and the police left the island at 8 AM on the 15th. Water was then two feet deep at the shopping center and destruction had begun on the beach.

As the storm increased many people sought refuge in the administration building at the airport.

The wind increased and there were very heavy rain squalls. The wind was east 30 mph with gusts to 50 mph. Communications lines went out at 6:33 AM. At 7:30 the wind direction shifted to southeast and the velocity increased to 55 and 60 mph, with gusts to 92 mph and at 10:42 AM there was a gust to 98 mph. The barometer fell rapidly and reached the low point 28.68 at 11:05 AM. The wind shifted to southwest at 11:35 and the velocity decreased slightly to 30 to 40 mph with gusts as high as 86 mph. Highest velocity occurred before the wind shifted. The rain squalls ended at 11:05 AM when the barometer was lowest, and the visibility increased from one to fifteen miles plus at 11:35. There were light showers from 12:00 (noon) to 1:30 PM. The total rainfall for the storm was 3.85 inches. When the wind shifted to southwest the temperature dropped eleven degrees (75 to 64). Breaks in the overcast began appearing at 2 PM and there was sunshine from 3:30 to sunset. The wind shifted to west and west-northwest and decreased to 10 mph by 4:30 PM.

The hurricane was of unusual width. Hurricane force winds evidently prevailed all along the coast from near Charleston to the Cape Hatteras area. The Myrtle Beach CAA Control Tower reported wind NE 92 knots ( 110 mph) and barometer reading 28.47 at 9:25 AM.

All reports indicate a definite storm-wave. The time of highest water came during or shortly after the lowest pressure and maximum wind. At Holden Beach the water reached 17.6 ft. above mean low water. At the drawbridge across the Inland Waterway to Wrightsville Sound the water rose four feet above the pavement on the bridge, a height of 14.5 ft above mean low water. At the Custom House dock in Wilmington, 30 miles upstream from the sea, the Cape Fear River reached 8.2 ft. This is believed to be the highest water stage ever known in the Cape

Fear River at Wilmington. Water came clear across Wrightsville Beach and appears to have been about 5 ft. deep at the shopping center. Harbor Island was inundated as were all of the beach communities on the coast.

One hundred yards north of the Weather Bureau Office there is a large hangar which had a sheetiron roof. At 7:59 AM the roof was stripped off and it fell across a power line. Emergency power was used at the Weather Office until power lines were repaired after the storm. Communication lines went out at 6:33 AM on the 15th and were not restored until 4:45 PM on the 16th. The Cape Fear Amateur Radio Club provided emergency communication and enabled the Weather Bureau Station to send out observations at 15 minute intervals. The CAA Control Tower was abandoned for two hours during the height of the storm.

After the hurricane passed many strange objects are reported to have been found along the coast here. These include green coconuts, pieces of bamboo, large tropical clams weighing eight pounds, and a mahagony bowl upon which is carved " Made in Haiti ".

The Civil Defense authorities quickly called on the National Guard and by 2 PM (15th) troops were guarding the disaster areas to prevent looting. Incredible reports came in regarding destruction of beach communities. All communications to Wilmington were destroyed and the city was isolated from 10:15 AM (15th) to 12:03 PM (16th). One half of the telephones (10,500) in the Wilmington section were "knocked out" . The city was without electricity and service was not fully restored for three days. Many suburban areas were still without electricity, two weeks after the storm. The two radio stations were off the air during most of the 15th and all of the 16th.

The Weather Bureau Office was completely swamped with telephone calls and people coming for information and advice. The telephone company assigned an employee to watch the Weather Bureau switch-box and try to keep the line open. Service was maintained but the load was so heavy that perhaps not more than one call in a hundred reached the office.

In the city many stores lost plate glass windows and there was much damage to buildings and roofs. Great numbers of TV antennas were damaged and some streets were blocked by fallen trees. The damage will total thousands of dollars but it appears very light for such a severe storm.

Water in the river reached the highest stage on record. There was great loss due to flooding of buildings and warehouses along the river banks. Many ships in the Wilmington Reserve Fleet ("mothball ships") broke loose in the storm. Damage to the fleet is estimated at one million dollars.

The hurricane casualty list total nineteen. All deaths occurred in the Long Beach, Holden Beach, Ocean Isle area. The property loss has been estimated as high as \$75,000,000. The total for the North Carolina-South Carolina beaches has been estimated as high as \$99,000,000. On Long Beach, west of Southport, many new homes had been constructed. Everything on the island was destroyed. Where three hundred homes once stood there are now none. Destruction was also complete on Holden Beach and Ocean Isle, west of Long Beach. Even on Topsail Island, 50 miles or more away, east every house was destroyed or suffering major damage. The Red Cross has reported there was a total of 1635 homes destroyed and those damaged total 16,655.

## MISCELLANEOUS NOTES ON THE HURRICANE

President Eisenhower designated the Carolina coast a "Disaster Area". The army sent troops to assist the National Guard in guarding the stricken communities. U. S. Engineering troops were sent to clear the streets and highways. In places sand was four feet or more deep. Heavy dirt moving equipment was brought in and at Carolina Beach alone the engineers moved 100,000 cu. yards of sand from the streets. Two weeks after the hurricane, private property was still buried and the tremendous task of rebuilding had hardly begun. Similar conditions prevail at all other beach communities. Sections of the highway that have been opened present strange sights. Ridges of sand six feet and more high line the highways and streets and resemble snow banks along cleared highways in the northern states.

At Long Beach the destruction is incredible, worse than any tornado loss. Well built concrete block buildings with concrete floors and paved driveways were carried away. No litter or debris remains as is seen after a tornado strikes a community. Concrete floors, driveways, and large sections of the paved highway were undermined, broken up and swept away by the wind and water. Nothing remains of this community of three hundred well built modern homes. The buildings stood in a space of some 75 to 100 yards between the highway and the beach. During the hurricane erosion was so great the beach now reaches the highway. People lost their homes as well as their land. The highway destruction is strange. Some sections are buried under four to six feet of sand. Other sections were undermined, broken up and swept away. At such places the highway is blocked by deep gullies resembling the arroyos of the far southwest.

The wide extent of the hurricane is amazing. Destruction to beach communities, in North Carolina, extend for over one hundred miles along the coast. Topsail Beach, 50 miles or more northeast of where the hurricane struck the coast, was virtually wiped out. Swansboro had serious damage to waterfront installations. Morehead City and Beaufort received serious damage. At Atlantic Beach, near Morehead City, the destruction resembles that at Wrightsville Beach, 100 miles away.

The Morehead City citizens believe the hurricane was the worst ever known there. (Evidently the present generation knows nothing about the hurricane that struck the city August 18, 1879. In that storm Cape Lookout reported wind velocity of 165 mph. estimated after the anemometer blew away at 105 (true). Two hotels and 1000 yards of railway track were carried away in that storm.

The bridge between Morehead City and Beaufort is out of service. One report received stated water under the bridge is now 45 ft. deep. The depth was 32 ft. before the hurricane. Sections of the highway and bridge across North River, east of Beaufort, were destroyed. The farthest east building damage noted was at Williston, about 125 miles northeast of the Hurricane center. The fishing pier at Cedar Island, 150 miles up the coast, northeast, was destroyed. At Atlantic the wind velocity was estimated 85 mph and Morehead City, 100 mph. Only a little rain fell at Morehead City and no rain fell at Atlantic. When the barometer reached the lowest point, 28.68 at Wilmington, the wind shifted from southeast to southwest and there was a slight decrease in velocity. (Highest wind was recorded before the wind shifted) The rain ended.

The temperature fell eleven degrees and the office windows quickly "fogged over" with condensation. The ceiling lifted and the turbulent cumulus clouds indicated thunderstorm conditions. (No thunder was heard) Light showers began at 12:00 (noon) and ended at 1:30 PM.

Wrightsville Beach...Weather conditions about same as at Wilmington except wind estimated at 125 mph. Water about five feet deep over the island. Eighty nine houses destroyed, 530 damaged. Damage estimated \$3,000,000.

Carolina Beach...Largest community struck. 475 houses destroyed, 1,365 damaged. City manager reports one half of taxable wealth gone.

Southport...Damage estimated at \$5,000,000

Long Beach...Destroyed. All of the 300 houses gone.

Holden Beach...Lost all of its 200 houses.

Ocean Isle...No houses remain.

Casualties on Holden Beach, Ocean Isle and Long Beach...Total nineteen.

The Coast Guard Station on Oak Island reported lowest barometer 28.60. Wind estimated 140 mph. Greatest velocities came after wind shifted to southwest, highest water came after the wind shift. Water estimated 10 ft. above mean low water. Highest water at Southport 13 ft .

A Coast Guard boat (83 ft.) rode out the storm near Lockwoods Folly. It reported lowest barometer 28.30. Highest wind estimated 140 mph.

A boat belonging to the U. S. Engineers was left stranded one mile south of Lockwoods Folly. Between 9 AM and 10 AM the lowest barometric pressure noted was 28.65. The boat was grounded some distance from the Inland Waterway and evidently endured violent wind and weather conditions. It is apparent the crew did not observe the lowest barometer reading, perhaps the barometer was

damaged by the storm. High water was estimated at 18 feet.

At the Holden Beach drawbridge the water reached 17.6 ft.

The shrimp boat, "Nina Fay", Capt. Julian Fulford, was somehow able to ride out the storm. The position was in the vicinity of Holden Beach bridge. The "eye" of the hurricane passed about 11 AM at which time the barometer read 27.90. The estimated time in the "eye" was short, perhaps only 10 minutes, not greater than 15 minutes. There was a lull then the wind shifted to southwest. Capt. Fulford reports the wind velocity greatly exceeded anything He had ever experienced in many years at sea. He said He could not estimate the velocity, it may have been 150 mph, perhaps more and perhaps less. It greatly exceeded anything He had ever heard of or experienced. His boat was the only one in the vicinity to survive.

Ocean Isle...The "eye" of the hurricane lasted 10 or 15 minutes, most people estimated 10 minutes. People stated the wind was terrifying. They could not even guess what the velocity might have been. All buildings on the island destroyed. People interviewed had been evacuated to the mainland, across the Inland Waterway.

Calabash...Water estimated 18 ft. above mean low water. Highest water came after the "eye" passed. Estimates of time required for the "eye" to pass ranged from 6 to 15 minutes. Highest water and highest wind came after the "eye" had passed.

Little River...The fishing boat "Judy Linda", Capt. LeRoy Kinlaw, rode out the hurricane at Tilgham Point, where the Inland Waterway crosses Little River. At 10:30 AM (15th) the boat was in the "eye" of the hurricane and at that time the barometer read 27.70. Estimated time in the "eye" was 30 minutes. This is

the longest time estimated for the passage of the storm center. Highest water estimated at 14.5 feet. Highest water and wind came just after the "eye" passed. Capt. Kinlaw brought his barometer to the Weather Bureau Office for comparison on the 26th. At the time the station pressure was 30.16 and ship barometer read 30.15. There seems to be no reason to question the reading of 27.70 in the "eye" of the hurricane.

There was general agreement about the weather conditions in the "eye". The rain ended, the clouds thinned but there was no sunshine. There was little or no wind. People at Calabash stated the sudden "kaming" of the wind and low pressure affected their ears, and there was a "spooky", eerie feeling or sensation while they were in the "eye". Local people on the Carolina coast use the old English pronunciation of "kam" for calm. "The wind kamed in the "eye". A local lady said the "kam" spell gave her "the creeps". After a few minutes she saw a very black, ugly bank of clouds coming from the southwest. There was an awful roaring noise, which scared her worse than ever. In just a matter of seconds the "kam" was over and the awful wind blowing from the southwest. The fishermen said it may have been 150 mph but they could not estimate it.

The ocean is not visible at Calabash. On both sides of the Inland Waterway the land rises to perhaps 75 ft. and is densely wooded with pine forests. The Inland Waterway resembles a river flowing between hills. This channel extends east and west and through it the wind velocity must have been terrific both before and after the passage of the hurricane center.

NOTE...The mast on the storm warning tower at Southport was bent by the high wind.

NOTE...All places mentioned in this report are in North Carolina. The

NOTE...CONTINUED...stream known as "Little River" empties into the ocean on the N. C. - S. C. boundry. A small fishing village named Little River is located on the North Carolina side of the river. The town of Little River , South Carolina was not visited and no reports are available from points on the South Carolina coast.

Incredible stories are being told regarding the erosion on the beaches. It is reported that new channels or inlets have been washed out across the chain of sand island along the coast and new coast maps will have to be surveyed.

Effects of the hurricane as it passed inland were amazing. Forests of pine and other trees appear to be scorched by fire. All trees and plants along the coast appear to have been burned. Thousands of trees were broken or uprooted. Cedar trees seemed to suffer more than others. Many cedars up to two feet in diameter were twisted and broken off. Groves fo pecan trees were heavily damaged. Building destruction is said to have been greater in the interior sections of the state than at inland points near the coast. From all indications the hurricane did not decrease in intensity as it moved into the interior. Wilmington was isolated after the passage of the storm and no news or reports were received.As a result the effects of the storm after it passed inland are not known here except from occasional information received from people who passed through the stricken areas after the storm passed. Information regarding wind velocities and lowest barometric pressure readings at stations in the interior is not available here. Destruction on the coast was so stunning that to the local people the hurricane ceased to exist when it left this area.

STATION	HIGH WATER	HIGHEST WIND	LOWEST BAROMETER
Myrtle Beach, S. C.		110 mph	28.47
Little River, N. C.	14.5 ft	150 mph	27.70
Calabash, N. C.	18.0 ft	150 mph	
Holden Beach Bridge	17.6 & 18.0 ft	150 mph	27.90
Lockwoods Folly Inlet		140 mph	
Oak Island	10.0 ft	140 mph	28.60
Frying Pan Shoal Light Ship		60 mph	28.30
Southport	13.0 ft		
Masonboro Sound (Wrightsville Sound Drawbridge)	14.6 ft	125 mph	
Cape Fear River at Wilmington, N. C. (Custom House)	8.2 ft		
Swansboro	8.0 ft		
Hurst Beach Bridge	7.9 ft		
Beaufort-Morehead City	8.8 ft	100 mph	
Atlantic	5.0 ft	85 mph	

NOTE...All wind velocities estimated except for Wilmington, Myrtle Beach,  
and Frying Pan Light Ship.