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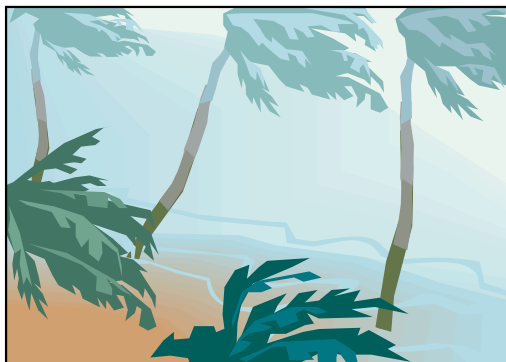
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CHARLESTON HURRICANE GUIDE



U.S. Department of Commerce
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National Environmental Satellite, Data, and Information Service
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HURRICANE HISTORY

Over the 119-year period 1871 through 1989, a total of 964 tropical cyclones (tropical storms and hurricanes) have been recorded over the North Atlantic area. Of these, 25 have been recorded within a 50-mile radius of Charleston, South Carolina, but in many cases more distant storms have caused severe damage.

In 1680, Charleston was established between the Ashley and Cooper Rivers, and on this site the Indians told of a storm that had raised the water level over the treetops. In 1686, a hurricane brought devastation to the Charleston area, driving ships upon the land, destroying houses and crops, and killing livestock. The great hurricane of September 1752 was considered by many to be the worst in the Charleston area during colonial times. Homes and wharves were destroyed, many people drowned and numerous others were injured. All vessels in the harbor, except a war ship, were driven ashore and most were destroyed.

On September 7, 1804, an intense hurricane destroyed most of the wharves, and few ships in the harbor escaped without significant damage. Trees were uprooted, fences blown down, and several houses unroofed. The hurricane of August 1813 was probably not as intense as those in 1752 and 1893. Less lives were lost, yet it must be considered as one of Charleston's major disasters. Fifteen to twenty people were drowned, a dozen houses destroyed, and the estimated damage to the city and shipping was severe.

The September 1854 hurricane closely duplicated the path of the 1804 hurricane. It also did considerable damage to wharves, shipping, and property. In August 1893, a severe hurricane hit South Carolina, inflicting a loss of 1,000 to 2,000 lives and property damage of ten million dollars. Wind at Charleston was recorded at 120 mph.

1899, OCTOBER 31 - Little damage occurred in South Carolina, although dangerous gales prevailed off the coast as the strongest quadrant of the storm remained east of Charleston. Maximum winds reached 58 mph at Charleston with the center of the storm entering South Carolina near Myrtle Beach. The storm did considerable damage north of South Carolina.

1904, SEPTEMBER 14 - This storm entered South Carolina between Charleston and Georgetown. Excessive rainfall was reported in northeast South Carolina and wind to 70 mph occurred at Georgetown. Coastal damage amounted to 9.5 million dollars.

BE PREPARED

1. Know the elevation of your property above mean sea level so you can relate high water forecasts to your area. Learn the high water (storm surge) history for your area.
2. Have a safe evacuation route planned.
3. Keep flashlights, portable radio, emergency cooking facilities, and extra medical supplies stocked.
4. Have plans for securing valuables, livestock, and pets.
5. Know how to reach emergency services (e.g., Red Cross).
6. Keep your car fueled.

IN CASE OF A HURRICANE WARNING

1. Leave low-lying areas.
2. Moor small boats securely, then evacuate them.
3. Board, shutter, or tape windows; brace doors.
4. Secure objects that may fly about in the wind.
5. Leave mobile homes for more substantial shelter.
6. Stay indoors away from doors and windows, unless asked to evacuate.
7. Listen for Bulletins. If asked to evacuate, **GO!** It means your life is in danger.

The United States Navy currently recommends evasion at sea for all seaworthy vessels when Charleston is directly threatened by a hurricane. This is based upon the lack of terrain features that could provide shelter during a hurricane, the lack of suitable anchorage during a hurricane, and the effects of a strong storm surge.

Because of the extreme danger of extensive flooding and the historical record of loss of life on the barrier islands, these islands should be evacuated whenever there is a storm surge threat.

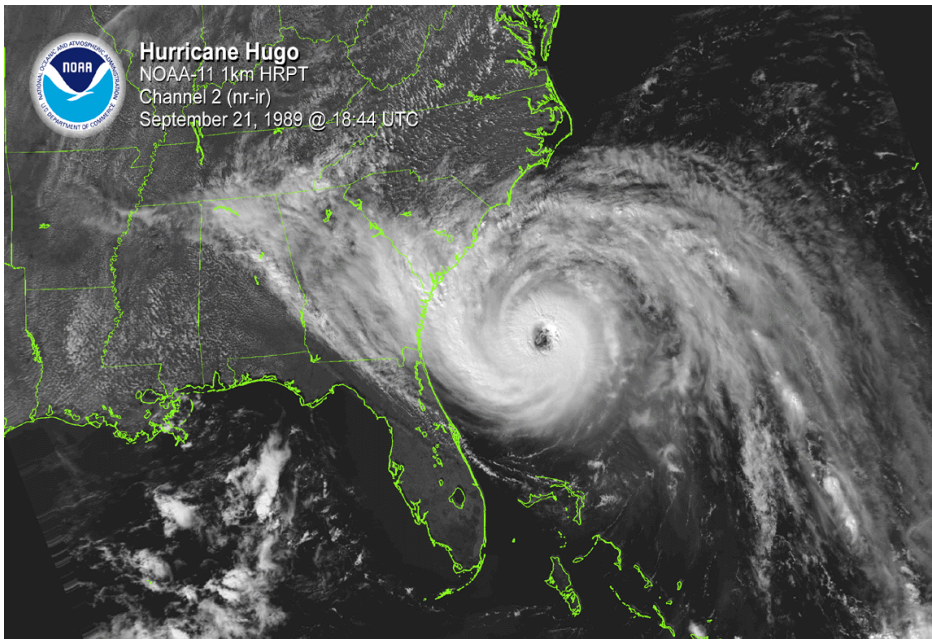
Tropical Storm: Closed isobars, distinct rotary circulation, highest wind speed 39-73 mph (34-63 knots).

Hurricane: Closed isobars, strong and very pronounced rotary circulation; wind speed of 74 mph (64 knots) or more.

Storm Surge: An abnormal rise in water level caused by a storm. Coastal areas and estuaries are affected.

Hurricane Watch: Hurricane conditions are a real possibility and may threaten the area within 24 hours; it does not mean they are imminent. Everyone in the area covered by the watch should keep abreast of the latest advisories and bulletins. Be prepared to take quick action if a hurricane warning is issued.

Hurricane Warning: Hurricane conditions are expected within 24 hours or less. Coastal areas are identified where sustained winds of 74 mph (64 knots) are expected to occur. The hurricane warning may also describe areas where dangerously high water, flooding, or exceptionally high waves are forecast, even though winds may be less than hurricane force. Hurricanes also spawn tornadoes, so as a hurricane approaches one should listen for tornado watches and warnings and be ready to take immediate shelter.



Hugo was a Category 4 hurricane and it was the most destructive hurricane in Charleston history.

1911, AUGUST 28 - A severe hurricane made landfall between Savannah and Charleston. The barometric pressure at Charleston fell to 29.30 inches and winds reached an estimated 106 mph. Seventeen people lost their lives, and damage to Charleston alone totaled over a million dollars.

1916, JULY 14 - Southeasterly winds reached 76 mph at Charleston with a rainfall of 16 inches. There was severe river flooding, crops were lost, and roads and communications were disrupted along the entire South Carolina coastline, but no lives were lost.

1940, AUGUST 11 - This severe storm came ashore near the Georgia-South Carolina border. It caused major damage, killing 34 people and inflicting an estimated 6.6 million dollars in damage.

1947, OCTOBER 15 - This storm caused moderated damage, estimated at \$200,000. Strong gales were observed from Charleston southward with tides reaching 6 feet above normal at Charleston and 9 feet above normal at Parris Island. Wind gusts of 65 mph at Parris Island caused only light damage.

1952, AUGUST 30 - Winds were estimated at 90 mph at Beaufort, South Carolina near where the storm made landfall. Excessive rains and gales were reported over much of the eastern part of the state with two deaths and three million dollars in storm damage.

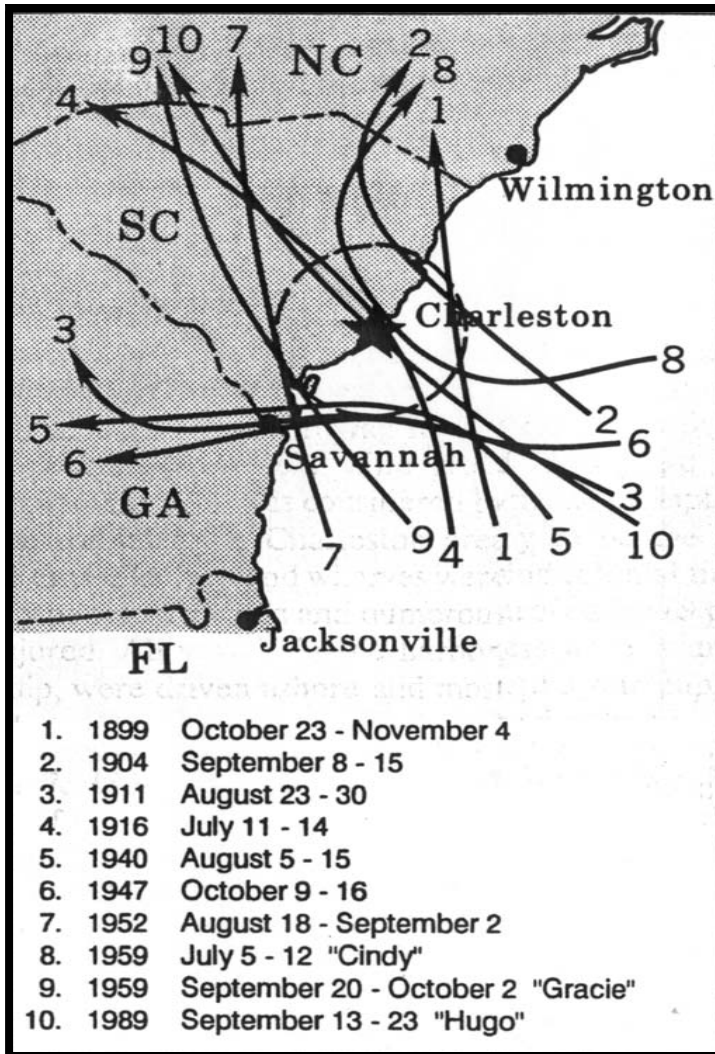
1959, JULY 8 - **"CINDY"**, Gale force winds and heavy rains did relatively little damage as the storm moved across South Carolina. There was considerable flash flood and one man killed. Unofficial estimates placed as much as 10 inches of rainfall in the Columbia area.

1959, SEPTEMBER 29 - **"GRACIE"** caused considerable damage to the coast between Charleston and Beaufort, with winds over 100 mph near Charleston. Highest tides observed at Charleston were 6 feet above normal. Seven deaths, moderate to heavy flooding, and considerable crop damage were also attributed to the hurricane. **"GRACIE"** was the last significant hurricane to hit within 50 miles of Charleston until **"HUGO"** struck almost 30 years later.

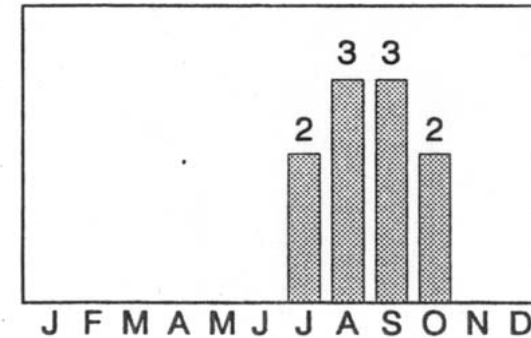
1989, SEPTEMBER 21 - **"HUGO"**, the most destructive hurricane on record to hit the U.S. mainland prior to 1989. In August 2004 **"CHARLEY"** was the strongest and most destructive hurricane to strike the U.S. since **"ANDREW"** in 1992. **"HUGO"** made landfall almost directly over Charleston shortly before midnight on September 21. It struck at high tide with winds of 135 miles per hour devastating the city. Total storm damage was estimated at over 16.1 billion dollars, with roughly one billion of that in

Charleston alone. Considerable damage occurred along the South Carolina coast from Charleston to Myrtle Beach, and 57 deaths were attributed to the storm in the Carolinas, Virginia, and New York and 29 deaths in U.S. Virgin Islands, also. Early warnings and the fact that most residents heeded these warnings and evacuated resulted in a remarkably low death rate from such a devastating storm. **"HUGO"** maintained hurricane force winds and a discernible eye as it moved across South Carolina, finally diminishing to tropical storm strength as it passed near Charlotte, North Carolina where damage was also high.

THE FOLLOWING MAP SHOWS TRACKS OF THE TEN HURRICANES THAT CAME WITHIN 50 MILES OF CHARLESTON BETWEEN 1899 AND 1989.



TOTAL NUMBER OF HURRICANES OCCURRING IN EACH MONTH WITHIN A 50 MILES RADIUS OF CHARLESTON, S.C. 1899 - 1989



Other noted storms that have caused damage to the Charleston area, but fell outside the 50-mile radius are:

"HAZEL", a severe 1954 storm that killed one person and caused 27 million dollars in damage to South Carolina.

"DONNA", September 1960, moved parallel to the South Carolina coast about 60 miles out to sea. This intense storm ranked as one of the costliest hurricanes since 1899, but caused comparatively little damage to South Carolina. It did spawn a tornado in the Charleston area, demolishing several buildings, damage many others, and causing ten injuries.

"DAVID", September 1979, crossed the coastline near Savannah, Georgia. During its track across South Carolina, it spawned five tornadoes. No deaths were reported in the Palmetto State, but the total property damage reached 10 million dollars.

DEFINITIONS TO KNOW

Tropical Disturbance: Rotary circulation slight or absent at surface, but sometimes better developed aloft; no closed isobars (lines of equal atmospheric pressure) and no strong winds; a common phenomenon in the tropics.

Tropical Depression: One or more closed isobars and some rotary circulation at surface; highest wind speed less than 39 mph (34 knots).