

= Christmas 1994 nor'easter =

The Christmas 1994 nor'easter was an intense cyclone along the East Coast of the United States and Atlantic Canada . It developed from an area of low pressure in the southeast Gulf of Mexico near the Florida Keys , and moved across the state of Florida . As it entered the warm waters of the Gulf Stream in the Atlantic Ocean , it began to rapidly intensify , exhibiting traits of a tropical system , including the formation of an eye . It attained a pressure of 970 millibars on December 23 and 24 , and after moving northward , it came ashore near New York City on Christmas Eve . Because of the uncertain nature of the storm , the National Hurricane Center (NHC) did not classify it as a tropical cyclone .

Heavy rain from the developing storm contributed to significant flooding in South Carolina . Much of the rest of the East Coast was affected by high winds , coastal flooding , and beach erosion . New York State and New England bore the brunt of the storm ; damage was extensive on Long Island , and in Connecticut , 130 @, @ 000 households lost electric power during the storm . Widespread damage and power outages also occurred throughout Rhode Island and Massachusetts , where the storm generated 30 @-@ foot (9 @.@ 1 m) waves along the coast . Because of the warm weather pattern that contributed to the storm 's development , precipitation was limited to rain . Two people were killed , and damage amounted to at least \$ 21 million .

= Meteorological history =

The storm originated in an upper @-@ level low pressure system that moved southeastward from the central Great Plains into the Deep South of the United States . After reaching the southeast Gulf of Mexico , the disturbance underwent cyclogenesis , and the resultant system moved through Florida on December 22 in response to an approaching trough . National Hurricane Center forecaster Jack Beven noted that " as it moved out into the Bahamas , it appeared to take on the characteristics of a tropical storm . " The uncertain nature of the storm prevented the NHC from issuing advisories on it , and forecasters lacked sufficient data to fully assess the cyclone for potential tropical characteristics . The same trough that pushed the storm across Florida had moved to the north , allowing for high pressure to develop in the upper levels of the atmosphere .

Deemed a " hybrid storm " , the cyclone rapidly intensified in warm waters of up to 80 ° F (27 ° C) from the Gulf Stream combined with a cold air mass over the United States . The system continued to rapidly intensify while moving within the Gulf Stream ; it developed central convection , an unusual trait for an extratropical cyclone , and at one point exhibited an eye . Despite these indications of tropical characteristics , " There was no front associated with it and it had a warm core , but the radius of maximum winds was more than 150 nautical miles (170 mi ; 280 km) , so under the standard NHC criteria it didn 't qualify as a tropical storm . " On December 23 and 24 , the nor'easter intensified to attain a barometric pressure of 970 mb (29 inHg) . An upper @-@ level low pressure system that developed behind the storm began to intensify and grew to be larger in size than the original disturbance . In an interaction known as the Fujiwhara effect , the broad circulation of the secondary low swung the primary nor'easter northwestward towards southern New York and New England . The original low passed along the south shore of Long Island , and made landfall near New York City on December 24 . Subsequently , it moved over southeastern New York State . On December 25 , the system began to rapidly weaken as it moved towards Nova Scotia , before the pair of low pressure systems moved out to sea in tandem in the early hours of December 26 .

= Effects =

= Southeast United States =

In South Carolina , flooding associated with the cyclone was considered to be the worst since 1943 . Over 5 inches (130 mm) of rainfall was reported , while winds brought down trees and ripped

awnings . In addition , the coast suffered the effects of beach erosion . Thousands of electric customers in the state lost power . As a result of the heavy rainfall , several dams became overwhelmed by rising waters . Extensive flooding of roads and highways was reported , many of which were closed as a result . Up to 3 feet (0 @. @ 91 m) of water flooded some homes in the region . Approximately 300 people in Florence County were forced to evacuate because of the flooding , and at least 200 homes were damaged . Two deaths were reported in the state . One woman was killed when her vehicle hydroplaned and struck a tree , and another person drowned after her car was struck by another vehicle . Total damage in South Carolina amounted to at least \$ 4 million .

Strong winds occurred along the North Carolina coast . Diamond Shoals reported sustained winds of 45 miles per hour (72 km / h) , and offshore , winds gusted to 65 miles per hour (105 km / h) . On Wrightsville Beach , rough surf eroded an 8 @- @ foot (2 @. @ 4 m) ledge into the beach . On Carolina Beach , dunes were breached and some roads , including portions of North Carolina Highway 12 , were closed .

= = = Mid @- @ Atlantic = = =

As the primary storm entered New England , the secondary low produced minor coastal flooding in the Tidewater region of Virginia on December 23 . Winds of 35 to 45 miles per hour (56 to 72 km / h) and tides to 1 to 3 feet (0 @. @ 30 to 0 @. @ 91 m) above normal were reported . In Sandbridge , Virginia Beach , Virginia , a beachfront home collapsed into the sea . Several roads throughout the region suffered minor flooding . Strong winds resulting from the tight pressure gradient between the nor 'easter and an area of high pressure located over the United States brought down a few utility poles , which sparked a brush fire on December 24 . The fire , quickly spread by the wind , burned a field . The winds brought down several trees .

Damage was light in Maryland . Some sand dunes and wooden structures were damaged , and above @- @ normal tides occurred . In New Jersey , high winds caused power outages and knocked down trees and power lines . Minor coastal flooding of streets and houses was reported . Otherwise , damage in the state was minor .

The storm brought heavy rainfall and high winds to New York State and New York City on December 23 and 24 . Gusts of 60 to 80 miles per hour (97 to 129 km / h) downed hundreds of trees and many power lines on Long Island . Several homes , in addition to many cars , sustained damage . Roughly 112 @, @ 000 Long Island Lighting Company customers experienced power outages at some point during the storm . As the cyclone progressed northward into New York State , high winds occurred in the Hudson Valley region . Throughout Columbia , Ulster and Rensselaer Counties , trees , tree limbs , and power lines were downed by the winds . At Stephentown , a gust of 58 miles per hour (93 km / h) was reported . Ulster County suffered substantial impacts , with large trees being uprooted and striking homes . Across eastern New York State , 25 @, @ 000 households lost power as a result of the nor 'easter . On the North Fork of Long Island , in Southold , a seaside home partially collapsed into the water .

= = = New England = = =

In Connecticut , the storm was described as being more significant than anticipated . Gale @- @ force wind gusts , reaching 70 miles per hour (110 km / h) , blew across the state from the northeast and later from the east . Trees , tree limbs , and power lines were downed , causing damage to property and vehicles . The high winds caused widespread power outages , affecting up to 130 @, @ 000 electric customers . As a result , electric companies sought help from as far as Pennsylvania and Maine to restore electricity . Bruno Ranniello , a spokesman for Northeast Utilities , reported that " We 've had outages in virtually every community . " In New Haven , the nor 'easter ripped three barges from their moorings . One of the barges traveled across the Long Island Sound and ran aground near Port Jefferson , New York . A man in Milford was killed indirectly when a tree that was partially downed by the storm fell on him during an attempt to remove it from a relative 's

yard . Northeast Utilities , which reported the majority of the power outages , estimated storm damage in the state to be about \$ 6 ? \$ 8 million (1994 USD ; \$ 8 @. @ 8 ? \$ 11 @. @ 8 million 2008 USD) .

Effects were less severe in New Hampshire and Vermont . In southern New Hampshire , a line of thunderstorms produced torrential rainfall , causing flooding on parts of New Hampshire Route 13 . Flash flooding of several tributaries feeding into the Piscataquog River was reported . In Maine , the storm brought high winds and heavy rain . Along the coast of southern Maine and New Hampshire , beach erosion was reported . Additionally , minor flooding was reported across the region , as a result of heavy surface runoff and small ice jams . In Rhode Island , the power outages were the worst since Hurricane Bob of the 1991 Atlantic hurricane season . Throughout the state , approximately 40 @, @ 000 customers were without electric power . As with Massachusetts , downed trees and property damage were widespread . There were many reports of roof shingles being blown off roofs and of damage to gutters . In Warwick , several small boats were damaged after being knocked into other boats . The highest reported wind gust in the state was 74 miles per hour (119 km / h) at Ashaway , Rhode Island . Statewide damage totaled about \$ 5 million .

Massachusetts , particularly Cape Cod and Nantucket , bore the brunt of the nor 'easter . Reportedly , wind gusts approached 100 miles per hour (160 km / h) on Cape Cod and , offshore , waves reached 30 feet (9 @. @ 1 m) . At Walpole , wind gusts peaked at 88 miles per hour (142 km / h) , while on Nantucket gusts of 84 miles per hour (135 km / h) were reported . The winds left 30 @, @ 000 electric customers without power during the storm , primarily in the eastern part of the state . Power was out for some as long as 48 hours . Property damage was widespread and many trees , signs , and billboards were blown down . A large tent used by the New England Patriots was ripped and blown off its foundation . The winds also spread a deadly house fire in North Attleboro . Although not directly related to the storm , it caused seven fatalities . Because tides were low , little coastal flooding occurred . Outside the Prudential Tower Center in Boston , the storm toppled a 50 @- @ foot (15 m) Christmas tree . Rainfall of 2 to 3 @. @ 5 inches (51 to 89 mm) was recorded throughout the eastern part of the state , contributing to heavy runoff that washed away a 400 @- @ foot (120 m) section of a highway . Total damage in Massachusetts was estimated at about \$ 5 million .