

= Tropical Storm Andrea (2013) =

Tropical Storm Andrea brought flooding to Cuba , the Yucatan Peninsula , and portions of the East Coast of the United States in June 2013 . The first tropical cyclone and named storm of the annual hurricane season , Andrea originated from an area of low pressure in the eastern Gulf of Mexico on June 5 . Despite strong wind shear and an abundance of dry air , the storm strengthened while initially heading north @-@ northeastward . Later on June 5 , it re @-@ curved northeastward and approached the Big Bend region of Florida . Andrea intensified and peaked as a strong tropical storm with winds at 65 mph (100 km / h) on June 6 . A few hours later , the storm weakened slightly and made landfall near Steinhatchee , Florida later that day . It began losing tropical characteristics while tracking across Florida and Georgia . Andrea transitioned into an extratropical cyclone over South Carolina on June 7 , though the remnants continued to move along the East Coast of the United States , until being absorbed by another extratropical system offshore Maine on June 10 .

Prior to becoming a tropical cyclone , the precursor to Andrea dropped nearly 12 inches (300 mm) of rainfall on the Yucatán Peninsula . In Cuba , the storm brought flooding , especially in Pinar del Río Province . Over 1 @, @ 000 people fled their homes , mainly along the Cuyaguatzeje River . A tornado was also spawned in the area , damaging three homes . In Florida , the storm brought heavy rainfall to some areas , causing localized flooding . There were nine tornadoes in Florida , the worst of which touched down in The Acreage and downed power lines and trees , causing significant roof damage to several houses ; there was also one injury . After Andrea transition into an extratropical storm , the remnants that also spawned one tornado in North Carolina , though damage was minor . Additionally , minor flooding was reported in some areas of the Northeastern United States . Three fatalities occurred due to weather @-@ related traffic accidents in Virginia and New Jersey . There was a direct death reported after a surfer in South Carolina went missing and was presumed to have drowned . The remnants of Andrea also brought gusty winds to Atlantic Canada , causing thousands of power outages in Nova Scotia and New Brunswick .

= = Meteorological history = =

At the end of May 2013 , a broad and diffuse cyclonic disturbance developed over eastern Mexico and northern Central America , incorporating the remnants of eastern Pacific Hurricane Barbara . As a tropical wave approached from the east , an inverted trough developed on the northern edge of the active region on June 2 , setting the stage for the formation of a weak surface low pressure system over the southern Gulf of Mexico the next day . The National Hurricane Center (NHC) began monitoring the system in their Tropical Weather Outlooks , bulletins issued every six hours regarding the probability of tropical cyclone formation within 48 hours . A nearby upper trough created unfavorable conditions for tropical cyclogenesis , subjecting the low to wind shear and abundant dry air that kept it indistinct and disorganized . On June 5 , the environment became less hostile , and the system began to improve in structure .

On June 5 , a Hurricane Hunters flight found a closed center and winds of 40 mph (65 km / h) . In response , the NHC initiated advisories on Tropical Storm Andrea later that day , while centered about 310 miles (500 km) southwest of St. Petersburg , Florida . Due to somewhat unfavorable conditions , significant strengthening was initially considered unlikely . Early on June 6 , deep convection was displaced well to the east and southeast of the center as a result of wind shear up to 29 mph (47 km / h) . Despite this , Andrea intensified to attain peak winds of 65 mph (100 km / h) at 1200 UTC that day . Thereafter , unfavorable conditions , including dry air entrainment caused the storm to weaken slightly . At 2200 UTC on June 6 , Andrea made landfall in Dixie County , Florida about 10 miles (15 km) south of Steinhatchee . Simultaneously , the storm attained its minimum barometric pressure of 992 mbar (29 @. @ 3 inHg) .

After moving inland on June 6 , the NHC noted that extratropical transition was likely within 24 hours and that it " could occur sooner if the convective structure does not improve . " By later on June 7 , most of the convection became displaced to the northwest due to dry air . Around that time

, the storm began accelerating northeastward at 26 mph (42 km / h) due to an approaching mid @-@ latitude trough . Based on ground observations and Doppler radar , the system transitioned into an extratropical cyclone at 1800 UTC on June 7 , while located over northeastern South Carolina . The remaining thunderstorms around Andrea became indistinguishable from those associated with a frontal zone over North Carolina . Due to a policy created in response to Hurricane Sandy , the NHC continued to issue advisories on the remnants of Andrea as it remained a threat to the East Coast of the United States . On June 8 , it moved rapidly northeastward across the Mid @-@ Atlantic and New England . Because gale @-@ force winds were located well to the southeast of the center , the NHC ceased advisories on the remnants of Andrea . Upon reaching the Gulf of Maine , the extratropical remnants of Andrea were absorbed by another extratropical low pressure area around 0000 UTC on June 9 .

= = Preparations = =

Multiple tropical cyclone warnings and watches were posted along both the Atlantic and Gulf coasts of the United States in association with Tropical Storm Andrea . At 2200 UTC on June 5 , a tropical storm warning was issued from Boca Grande to the mouth of the Ochlockonee River in Florida . Additionally , a tropical storm watch was put into effect for Flagler Beach , Florida to Surf City , North Carolina . At 0900 UTC on June 6 , the tropical storm warning was extended from the mouth of the Ochlockonee River to Indian Pass , Florida . Simultaneously , another tropical storm warning was issued from Flagler Beach , Florida to Cape Charles Light in Virginia . Early on June 7 , the tropical storm warning on the Gulf Coast of Florida was expanded to include Boca Grande to the Steinhatchee River in Florida , before being canceled a few hours later . At 0900 UTC on June 7 , the tropical storm warning from Flagler Beach to Surf City was modified to Altamaha River , Georgia to Cape Charles Light . Throughout that day , the tropical storm warning was progressively retracted northward , with the southern terminal being at the Savannah River in Georgia at 1200 UTC , the Santee River in South Carolina at 1500 UTC , the Little River Inlet in South Carolina at 1800 UTC , and finally Surf City at 2100 UTC . Early on June 8 , all tropical cyclone warnings and watches were discontinued .

The United States Coast Guard urged marine interests and boaters in Florida , Georgia , and South Carolina to take precaution to protect their lives and vessels . In Florida , the Gulf Islands National Seashore closed their campground and a beach front road . Additionally , several state parks were closed and campers were evacuated . At Pensacola Beach , condominium associations asked residents to remove furniture from high balconies due to the anticipation of strong winds . A state of emergency was issued for Taylor County , where two shelters were opened .

= = Impact = =

Becoming a tropical storm on June 5 , Andrea marked the fourth consecutive season with a named storm in the month of June , following Hurricane Alex in 2010 , Tropical Storm Arlene in 2011 , and Hurricane Chris and Tropical Storm Debby in 2012 . This was over a month earlier than the 1966 ? 2009 average date of the first named storm , July 9 .

The precursor disturbance to Andrea dropped nearly 12 inches (300 mm) of rain on the Yucatán Peninsula in a 24 @-@ hour period . In Cuba , the Civil Defense issued a weather alarm for Pinar del Río Province from June 5 to June 6 . There was also a lower @-@ level " alert " in the adjacent provinces of Artemisa and Mayabeque . Over 1 @, @ 000 people fled their homes due to flooding , especially along the Cuyaguatzeje River in Pinar del Río Province . The city of Las Martinas received more than 10 inches (250 mm) of rainfall in 24 hours ; a few other locations reported over 8 inches (200 mm) of rain . Of the 24 dams in Pinar del Río Province , six had already filled by June 5 . The disturbance spawned a tornado in that area , which damaged three homes .

= = = Florida = = =

Along the Florida coast , storm surge produced by Andrea remained relatively minor , with surge heights ranging from 2 ? 4 ft (0 @.@ 61 ? 1 @.@ 22 m) across the state 's Gulf coast . These measurements peaked in Cedar Key , where a station documented a storm surge height of 4 @.@ 08 ft (1 @.@ 24 m) ; the same station recorded a storm tide height of 6 @.@ 26 ft (1 @.@ 91 m) . The highest wind measurement was at a mesonet site in Davis Islands , which observed sustained winds of 47 mph (76 km / h) . A total of 10 tornadoes were spawned in Florida . Near Myakka City , a tornado damaged the roofs of three single family homes , six pole barns , and four outbuildings . One horse and six chickens were killed , and another horse and two dogs were injured . Significant piles of debris and downed power lines covered State Road 70 in Myakka City . Damage was estimated at \$ 50 @,@ 000 . Another twister spawned in Sun City Center downed trees and damaged lanais , fascia and shingles . Damage reached approximately \$ 36 @,@ 000 .

Andrea dropped locally heavy rainfall in some areas of West Central Florida , with a Community Collaborative Rain , Hail and Snow Network (CoCoRaHS) station observing 6 @.@ 17 inches (157 mm) inches of precipitation near Chiefland . Minor street flooding was reported in several counties . Near the city of Coachman , the weight of saturated leaves on the roof of a dog kennel at the Pinellas County Humane Society caused a large section of the roof to collapse . In East Central Florida , the storm produced about 2 ? 3 inches (51 ? 76 mm) of rain , with isolated totals of 5 ? 6 inches (130 ? 150 mm) over a three @-@ day period in Orange , Osceola , and Volusia counties . In North Florida , the storm spawned a tornado at the Naval Station Mayport in Jacksonville . A number of " non @-@ critical " structures suffered minor impact , while other buildings experienced damaged roofs and broken windows . Strong winds were also observed in the area , with gusts up to 83 mph (134 km / h) at the Jacksonville Beach Pier ; this was the strongest wind gust associated with the storm . Another tornado was spawned on Amelia Island in Fernandina Beach , though it caused minimal damage .

Of the ten tornadoes in Florida , three were spawned in the southern portions of the state . In The Acreage , an EF @-@ 1 tornado caused minor to moderate roof damage to several homes , mainly in the form of shingles and roof covering torn off . Numerous trees were uprooted or snapped near the trunk , along with several branches falling ; this resulted in broken windows in several homes . At one home , the garage door was damaged , causing the door to blow in , which in turn led to the roof being damaged above the garage . An 85 @-@ year @-@ old woman was injured after being struck by a falling branch of an oak tree , which broke through her bedroom window . A few vehicles were moved from their original locations , while a 30 feet (9 @.@ 1 m) boat was flipped on its side . Another tornado in Belle Glade damaged an awning and downed trees and several power lines . Further south , a tornado touched down in Broward County and entered Palm Beach County before lifting back up ; it resulted in no damage .

A convective band associated with Tropical Storm Andrea moved slowly across South Florida , prompting flash flood warnings for Broward and Miami @-@ Dade County Counties . Precipitation peaked at 14 @.@ 27 inches (362 mm) in North Miami Beach , 13 @.@ 96 inches (355 mm) of which fell in a 24 @-@ hour period . Roads became impassable in the Waterways community in Aventura , leaving over 50 vehicles disabled . In nearby Golden Beach , hundreds of people became stranded in their vehicles , according to city officials . At the Biscayne Bay Campus of Florida International University , 11 @.@ 71 inches (297 mm) of rain was observed . A number of stalled vehicles and impassable roads were reported in North Miami , while 24 families were forced to evacuate due to flooding . Further north in Broward County , the city of Hollywood was particularly hard hit , with 9 inches (230 mm) of rain observed . Several vehicles became disabled after retention ponds overflowed .

= = = Elsewhere in North America = = =

Along the coast of Alabama , 13 swimmers were rescued due to strong rip currents . In Georgia , the storm brought gusty winds to the coast , reaching 32 mph (51 km / h) at Fort Pulaski . Wind damage was minor , limited to mostly downed trees and power lines in several counties ; in Chatham County , a falling tree struck a house . Generally light rainfall was reported across much of

southern and eastern Georgia , though up to 5 @. @ 34 inches (136 mm) fell near Richmond Hill . In Chatham County , a portion of U.S. Route 25 was temporarily closed due to flooding . Along the coast of South Carolina , a storm surge of 3 @. @ 55 feet (1 @. @ 08 m) was observed in Beaufort County . A surfer in Horry County went missing and was later presumed to have drowned . In several counties along the coast or just inland , trees and power lines were downed . Andrea dropped light rainfall in the state , peaking at 4 @. @ 9 inches (120 mm) near Cordova .

The storm brought significant amounts of rainfall to North Carolina in short periods of time , with a peak amount of 7 @. @ 41 inches (188 mm) near Cameron . In Raleigh , 5 @. @ 14 inches (131 mm) of rain fell in 24 hours , which broke the highest daily precipitation record for the city . Additionally , this total exceeded the average rainfall amount for the month of June . Many streams , creeks , and river overflowed in eastern North Carolina , resulting in numerous street closures in several counties . The Crabtree Valley Mall in Raleigh was closed after the parking lots became inundated . A number of low @-@ lying and creek @-@ side communities in Apex , Cary , Clayton , Durham , and Raleigh were flooded . A tornado was spawned near Varnamtown , where it downed several trees and damaged a large storage building .

The storm produced over 5 inches (130 mm) of rain in southeastern Virginia , with up to 7 @. @ 73 inches (196 mm) in Williamsburg . Several roads in Accomack County were left impassable due to high water . One indirect death occurred due to a car accident in southwestern Virginia on June 7 . In Maryland , rainfall in the eastern portion of the state was generally between 3 and 6 inches (76 and 152 mm) . Poor drainage in some areas resulted in multiple road closures in Caroline and Talbot counties , the latter of which reported about 20 roads shutdown . Radar estimates of precipitation in Delaware were between 2 and 4 inches (51 and 102 mm) , while 5 @. @ 19 inches (132 mm) was observed in Smyrna . Flash flooding occurred in areas of poor drainage , causing several road closures , especially in central Delaware . Radar estimates of precipitation in eastern Pennsylvania ranged from 2 to 4 inches (51 to 102 mm) , with a peak of 4 @. @ 09 inches (104 mm) in Langhorne . There , the Neshaminy Creek reached 9 feet (2 @. @ 7 m) above flood stage . In Delaware County , flooding was reporting along the Chester Creek .

Heavy rainfall was reported in New Jersey , amounting to more than 5 in (130 mm) in Oceanport . The heavy precipitation resulted in traffic jams and caused flooding along the Millstone and Raritan rivers . Three car accidents were blamed on the storm , two of which were fatal . Numerous roads flooded across the state , leading to several high @-@ water rescues . Overflowing rivers and streams in Bergen and Union counties flooded low @-@ lying and poor drainage areas . The Rockaway River at Boonton reached 5 feet (1 @. @ 5 m) above flood stage from the afternoon of June 8 until the following morning . Winds of 35 mph (55 km / h) downed some trees and power lines , leaving 500 ? 2 @, @ 000 residences without power . A plane traveling from Palm Beach , Florida to Boston , Massachusetts had to make an emergency landing at Newark Liberty International Airport after being struck by lightning . In New York , 4 @. @ 77 inches (121 mm) fell at Central Park in New York City in only a few hours , causing flash flooding in some areas . Train 3 on the New York City Subway briefly suspended service from 96th Street station to the 148th Street station .

In Connecticut , the storm dropped up to 6 @. @ 64 inches (169 mm) in Gales Ferry , causing flash flooding in Fairfield and New London counties . About 3 to 5 inches (76 to 127 mm) of precipitation fell throughout Rhode Island , flooding many streets , several basements , and stranding a number of cars , particularly in Providence County . An exit ramp of Interstate 95 in Providence was flooded with 1 @. @ 5 feet (0 @. @ 46 m) of water . An estimated 3 and 5 inches (76 and 127 mm) of precipitation fell in eastern Massachusetts . A number of roads were inundated in Bristol County , including Routes 24 and 79 and the ramps onto Interstate 95 . Many cars were stranded in about 2 feet (0 @. @ 61 m) of water in Fall River . Several basements were flooded in New Bedford , while several streets were flooded or left impassable . Elsewhere in New England , light rainfall was observed in Maine , New Hampshire , and Vermont .

As a post @-@ tropical cyclone , Andrea brought rain and gale @-@ force winds to Atlantic Canada . Officials closed the Confederation Bridge to high @-@ profile vehicles due to the blustery conditions . More than 4 @, @ 000 customers in Nova Scotia and parts of New Brunswick lost power

as the storm moved through on June 8 .