= Subtropical Storm Andrea (2007) =

Subtropical Storm Andrea was the first named storm and first subtropical cyclone of the 2007 Atlantic hurricane season . It developed out of a non @-@ tropical low on May 9 about 150 miles (240 km) northeast of Daytona Beach , Florida , three weeks before the official start of the season . After encountering dry air and strong vertical wind shear , Andrea weakened to a subtropical depression on May 10 while remaining nearly stationary , and the National Hurricane Center discontinued advisories early on May 11 . Andrea was the first pre @-@ season storm to develop since Tropical Storm Ana in April 2003 . Additionally , the storm was the first Atlantic named storm in May since Tropical Storm Arlene in 1981 .

The storm produced rough surf along the coastline from Florida to North Carolina , causing beach erosion and some damage . In some areas , the waves eroded up to 20 feet (6 m) of beach , leaving 70 homes in danger of collapse . Offshore North Carolina , high waves of 34 feet (10 m) and tropical @-@ storm @-@ force winds damaged three boats ; their combined nine passengers were rescued by the Coast Guard , although all nine sustained injuries . Light rainfall was also reported in some coastal locations . Damage was minimal , but six people drowned as a result of the storm .

= = Meteorological history = =

In early May , an upper @-@ level trough dropped southward through the western Atlantic Ocean , forcing a back @-@ door cold front ? a cold front that moves southwestward ahead of a building surface ridge to its north or northeast ? southward . For several days , forecast models had anticipated for the trough to evolve into a closed low pressure area , and on May 6 , a frontal low with a large and well @-@ defined circulation developed about 90 miles (140 km) east of Cape Hatteras . The low maintained scattered convection around its circulation center , and in conjunction with the strong high pressure to its north , a very tight pressure gradient produced gale force winds near the coastline . The extratropical storm tracked southeastward and later turned to the southwest while steadily deepening ; on May 7 , it attained hurricane @-@ force winds . With a lack of tropical moisture , its corresponding convection was minimal and scattered .

The National Hurricane Center first mentioned the possibility of tropical cyclogenesis on May 8 , while the storm was located about 230 miles (370 km) east @-@ southeast of the South Carolina coastline . Its associated convection had steadily increased as it tracked slowly westward at 5 ? 10 mph (8 ? 16 km / h) . The system changed little in organization throughout the day , though by the following morning , hurricane specialists indicated the low was acquiring subtropical characteristics as it tracked over progressively warmer waters . Early on May 9 , a Hurricane Hunters flight into the system revealed winds of 45 mph (70 km / h) and a flat thermal core , which indicated the system was neither warm @-@ core nor cold @-@ core . In addition , satellite imagery indicated a consolidation of the convection near the center , as well as hints of upper @-@ level outflow and a contraction of the radius of maximum winds from more than 115 miles (185 km) to about 70 miles (120 km) . Based on the observations and the hybrid structure of the system , the National Hurricane Center classified the low as Subtropical Storm Andrea at 1500 UTC on May 9 about 150 miles (240 km) northeast of Daytona Beach , Florida . During a subsequent analysis of the storm , researchers estimated that the storm had transitioned into a subtropical cyclone nine hours earlier . As Andrea developed before June 1 ? the traditional start of hurricane seasons in the Atlantic Ocean ? it became the first pre @-@ season storm since Tropical Storm Ana in April 2003 . Additionally , the storm was the first Atlantic named storm in May since Tropical Storm Arlene in 1981 .

Upon first becoming a subtropical cyclone , Andrea was embedded within a large , nearly stationary deep @-@ layer trough , resulting in a westward movement . Drifting over sea surface temperatures of no more than 77 ° F (25 ° C) , the organization of the system deteriorated with a significant decrease in convection . By early on May 10 , much of the associated weather was located to the east of the cyclone within a band of moderate convection due to a brief spell of westerly vertical wind shear . The center of circulation had become disorganized , with several small cloud swirls

within the larger circulation . This disorganization of the center , combined with increasing wind shear and dry air suppressing convective activity , caused it to begin weakening later that morning . By 1500 UTC on May 10 , only a few thunderstorms remained near the center , and thus the NHC downgraded Andrea to subtropical depression status . Though a few intermittent thunderstorms persisted over the eastern semicircle , the depression remained disorganized and weak ; the National Hurricane Center discontinued advisories early on May 11 , after it had been without significant deep convection for 18 hours about 80 miles (125 km) northeast of Cape Canaveral , Florida .

Later on May 11 , convection re @-@ fired over the center as the system drifted south @-@ southeastward , though it lacked sufficient organization to qualify as a tropical cyclone . By May 12 , shower activity had organized greatly to the east of the center , and the National Hurricane Center remarked that a small increase in convection would result in the formation of a tropical depression . It accelerated east @-@ northeastward away from the continental United States without redeveloping , and after passing over cooler waters , the remnants of Andrea merged with an approaching cold front on May 14 .

= = Preparations = =

Due to rough surf from the precursor low , local National Weather Service offices issued a High Surf Advisory for much of the coastline from Florida through North Carolina . Upon first becoming a subtropical cyclone , the National Hurricane Center issued a tropical storm watch from the mouth of the Altamaha River in Georgia southward to Flagler Beach , Florida . The watch was discontinued after Andrea weakened to a subtropical depression . Additionally , a gale warning was issued for much of the South Carolina coastline .

At Isle of Palms in South Carolina , workers and dozens of firefighters prepared sandbags in preparation for high tide after waves from the storm previously caused moderate beach erosion . As a precaution , officials there intentionally cut power and gas to multiple uninhabited buildings . Officials closed schools in Dare County , North Carolina due to the threat for high winds from the storm . The North Carolina Department of Transportation also canceled ferry transportation to and from Ocracoke and Knotts Island , North Carolina .

= = Impact = =

Prior to becoming a subtropical cyclone , the low produced gale @-@ force winds and dangerous surf near the coast from North Carolina through Georgia , and later along the coast of Florida . Significant swells were also reported in the Bahamas . The waves caused beach erosion and washed up against coastal houses along the southeast coast of the United States .

= = = Southeast U.S. = = =

Off the coast of North Carolina , the storm produced 34 @-@ foot (10 @-@ m) waves and storm force winds which damaged three boats ; their combined nine passengers were rescued by the Coast Guard . All nine were injured to some degree ; three endured hypothermia , one received a broken rib , and one Coast Guardsman experienced back injuries from the surf . Another boat and its four occupants were reported missing , and after twelve days they remain missing . Rough waves from the precursor low left two kayakers missing near Seabrook Island , South Carolina . One was found the next day , and the other was found dead a week later .

Onshore , winds reached 52 mph (84 km / h) in Norfolk , Virginia , with an unofficial report of 57 mph (92 km / h) near Virginia Beach . Similar observations occurred along the Outer Banks , with the winds knocking some tree limbs onto power lines ; some isolated power outages were reported . Wind damage included some roofs losing shingles from the winds . In Elizabeth City , North Carolina , an outer rainband dropped 0 @.@ 5 inches (10 mm) of precipitation in about two hours as well as several lightning strikes ; one bolt of lightning injured two firefighters . The winds covered portions of

North Carolina Highway 12 with sand , and for a day the route was closed after waves from the storm washed out about 200 feet (60 m) of roadway . In some locations , the waves eroded up to 20 feet (6 m) of beach , leaving 70 homes in imminent danger . On St. Simons Island in Georgia , the storm produced a storm tide of 8 @.@ 09 feet (2 @.@ 43 m) . Trace amounts of rainfall occurred in the southeastern portion of the state .

= = = Florida = = =

In Florida , waves of over 10 feet (3 m) in height capsized a boat near Lantana ; the two occupants were rescued without injury . Additionally , the waves displaced a sailboat that had previously been washed ashore in Juno Beach . Large waves flooded a parking lot and destroyed several fences and tree branches at Jupiter Beach , which resulted in its temporary closure ; nearby a maintenance shed was destroyed . Eight Leatherback Sea Turtle nests in Boca Raton were destroyed after the surf reached the dunes . Due to high surf , the beach pier at Flagler Beach was closed for about a day . Minor to moderate beach erosion caused the Florida Department of Transportation to fill in areas near the seawall with sand . One death occurred when a surfer drowned in the rough waves off the coast at New Smyrna Beach in Volusia County . Outer rainbands produced light rainfall , with the highest report in the Jacksonville National Weather Service area of responsibility totaling 0 @.@ 77 inches (20 mm) ; the bands also caused tropical storm force wind gusts in the northeastern portion of the state . The winds spread smoke from local brush fires through the Tampa Bay area to Miami . High winds from Andrea were reported as fueling severe wildfires in northern Florida and southern Georgia .