

= Hurricane Kate ( 1985 ) =

Hurricane Kate was the final in a series of tropical cyclones to impact the United States during 1985 and the latest in any calendar year to strike the country at hurricane intensity on record . The eleventh named storm , seventh hurricane , and third major hurricane of the annual hurricane season , Kate originated from the interaction of an upper @-@ level trough and tropical wave northeast of Puerto Rico on November 15 . Though the system tracked erratically during the first hours of its existence , the intensification of a region of high pressure to the cyclone 's north caused Kate to turn westward . A favorable atmospheric pattern allowed the newly developed system to intensify to hurricane intensity on November 16 , and further to Category 2 intensity three days later . Kate made its first landfall on the northern coast of Cuba at this intensity prior to emerging as a slightly weaker storm during the evening hours of November 19 . Once clear of land , it began to strengthen quickly , becoming a Category 3 and reaching its peak intensity of 120 mph ( 195 km / h ) the following day . On November 21 , a cold front moving across the Mississippi Valley resulted in a north and eventual northeast turn of the cyclone , and Kate came ashore near Mexico Beach , Florida , as a minimal Category 2 hurricane with winds of 100 mph ( 160 km / h ) . Gradual weakening ensued as the cyclone moved along the Southeast United States coastline , and Kate transitioned to an extratropical cyclone on November 23 , a day after exiting the coastline of North Carolina .

The threat of Hurricane Kate in Cuba prompted the evacuation of 360 @, @ 000 people . Heavy rainfall in Cuba caused numerous mudslides and flooding , killing 10 people and leading to severe agriculture damage . Wind gusts over hurricane intensity resulted in widespread power outages , significant building damage , and major crop damage . Damage totaled roughly \$ 400 million , making it the most damaging hurricane to strike the island in many decades . In preparation of the system , many hurricane watches and warnings were put into effect . Hundreds of thousands of residents were evacuated , and the governor of Florida declared a state of emergency for six counties in Florida ; this was later relinquished following the relatively minor impacts of Kate . In addition , many shelters were opened . When Kate struck the Florida Panhandle , it became the first hurricane to make landfall in that location since Hurricane Eloise in 1975 . Storm surge and flooding rains destroyed much of the oyster industry , causing many people to lose their jobs in the weeks after the storm . Gusts over 100 mph ( 160 km / h ) contributed to downed trees and building damage , while a combination of the wind and rain led to downed power poles . Across the remainder of the Southeast United States , several inches of rainfall led to flash flooding , damage to roadways , and major tree damage . Overall , Kate resulted in 15 fatalities and \$ 700 million in damage .

= = Meteorological history = =

Before the formation of Hurricane Kate , a ridge was located across the southeastern United States for much of the autumn of 1985 ; concurrently , a major trough persisted across the western portion of the country . As a result , weather conditions across the Gulf of Mexico and western Atlantic Ocean in November were more typical of the pattern in late September , including sea surface temperatures of 81 ° F ( 27 ° C ) . On November 13 , a weak tropical wave began interacting with a trough to the northeast of the Lesser Antilles . It gradually organized due to the favorable conditions , and on November 15 , a Hurricane Hunters flight into the area indicated the development of a tropical cyclone . As gale force winds were already present , the system was immediately declared Tropical Storm Kate , about 240 miles ( 385 km ) northeast of San Juan , Puerto Rico .

With a ridge to its north , Kate tracked westward after developing , and an upper @-@ level low developed to the southwest of the storm . The combination of the two provided favorable outflow , allowing Kate to quickly intensify . On November 16 , the storm attained hurricane status while moving through the southeastern Bahamas . After continued strengthening , Kate made landfall at 0600 UTC on November 19 over north @-@ central Cuba with a well @-@ defined eye . When it moved ashore , Kate had a pressure of 967 mbar ( 28 @. @ 6 inHg ) and winds of about 110 mph (

180 km / h ) . The hurricane maintained its well @-@ defined eye while moving across northern Cuba , and about 12 hours after making landfall , it emerged into the southeastern Gulf of Mexico just east of Havana . Over the next 24 hours , Kate re @-@ intensified off the southwest coast of Florida as it passed about 85 mi ( 135 km ) southwest of Key West . On November 20 , the Hurricane Hunters observed winds as strong as 125 mph ( 200 km / h ) , and a buoy recorded a gust of 136 mph ( 219 km / h ) ; this was the highest recorded wind gust from a buoy in the Gulf of Mexico until Hurricane Lili in 2002 . Based on these observations , it was estimated that Kate attained peak winds of about 120 mph ( 190 km / h ) around 1200 UTC on November 20 .

Hurricane Kate maintained peak intensity for about 18 hours . On November 21 , a cold front moving through the Mississippi Valley deflected the hurricane to the north and northeast . The combination of cooler waters and wind shear from the front weakened Kate to an intensity of 100 mph ( 160 km / h ) by the time the hurricane struck Crooked Island near Mexico Beach , Florida late on November 21 . After landfall , Kate continued to the northeast , crossing into Georgia and weakened into a tropical storm . Kate emerged from North Carolina into the Atlantic Ocean late on November 22 . Encountering even colder waters and continued shear , the storm weakened further while turning to the east @-@ southeast . On November 23 , Kate transitioned into an extratropical cyclone to the west of Bermuda , terminating at 1800 UTC that day .

Until 2011 , Kate 's was considered the second @-@ latest hurricane landfall in the United States , behind only a cyclone in 1925 that struck on December 1 ; however , a systematic reanalysis indicated the 1925 system was only a tropical storm . In turn , Kate took the record . With Kate 's landfall , the 1985 season had six hurricanes that struck the United States , only one short of the record seven in 1886 .

## == Preparations ==

By November 18 , a hurricane warning was in effect for the southeast and central Bahamas and the Turks and Caicos Islands . Flood warnings were issued for northern Puerto Rico and the Dominican Republic . In preparation for the hurricane 's arrival , officials forced 360 @,@ 000 people to evacuate in north @-@ central Cuba .

While Kate was moving through the Bahamas , the National Hurricane Center ( NHC ) issued a hurricane warning from Jupiter to Fort Myers , Florida , including the Florida Keys . Then @-@ Governor of Florida Bob Graham declared a state of emergency for six counties in South Florida . However , it was reversed following the relatively minor effects in South Florida . Officials recommended evacuation of the Florida Keys , leading to heavy traffic on the Overseas Highway and prompting the Red Cross to open 12 shelters . Three shelters were opened in Key West , but only 500 sought individuals utilized them during the storm . Most residents chose to endure the storm in their homes . In Fort Lauderdale , schools were closed and residents of mobile homes were required to leave .

Shortly after the storm reached its peak intensity on November 20 , the NHC issued a hurricane watch from Grand Isle , Louisiana , to Cedar Key , Florida . Later that day , a portion of the watch area was upgraded to a warning from Bay St. Louis , Mississippi to St. Marks , Florida . About 20 @,@ 000 employees on oil platforms in the Gulf of Mexico were evacuated , many by helicopter . The USS Lexington left port from Naval Air Station Pensacola to ride out the storm in open waters , and aircraft in the region were flown inland . About 100 @,@ 000 people along the Florida Panhandle were told to leave their houses after Governor Bob Graham issued evacuation orders in 13 counties . About 2 @,@ 000 people stayed in 34 shelters in Panama City . Roads in the region suffered traffic jams from the large volume of evacuees . Portions of the Florida Gulf Coast were threatened by Hurricane Elena earlier in the season , and some evacuees of that storm intended not to leave during Kate due to the poor shelter conditions they had experienced . Governor Graham activated 300 members of the Florida National Guard to prevent looting and to assist in evacuations . One person died from a stress @-@ induced heart attack in Chipley after evacuating . Outside of Florida , about 2 @,@ 200 people fled Grand Isle , Louisiana .

After Kate moved ashore , the NHC issued gale warnings along the East Coast of the United States

from St. Augustine , Florida to Chincoteague , Virginia .

= = Impact = =

= = = Caribbean and Turks and Caicos Islands = = =

Early in its duration , Hurricane Kate sank one boat near Puerto Rico and disabled three others . The crew of five on the sunken boat were rescued after 17 hours . Several homes in northern Puerto Rico were damaged , forcing hundreds to evacuate . Flooding was also reported in Dominican Republic , including around the capital Santo Domingo .

Heavy rainfall and winds up to 60 mph ( 97 km / h ) were reported in the Turks and Caicos Islands . In Jamaica , heavy precipitation caused mudslides , which in turn blocked 23 major and minor roads and destroyed many bridges , culverts , and drains . Flooding in general caused severe damage to agriculture , especially in Clarendon , Manchester , Saint Ann , Saint Elizabeth , and Trelawny Parishes . Seven fatalities were reported , while the cost to repair damage was approximately \$ 3 million ( 1985 USD ) .

As Kate moved across northern Cuba , it produced strong winds that peaked at 75 mph ( 120 km / h ) in Sagua La Grande . Wind gusts peaked at 104 mph ( 167 km / h ) in Varadero , and winds in the capital of Havana reached 70 mph ( 110 km / h ) . In Havana , high winds caused power outages and destroyed buildings . Waves of 9 feet ( 2 @. @ 7 m ) affected the city 's waterfront . Outside of Havana , the hurricane damaged sugar mills and much of the sugar cane crop ; throughout the island , the winds destroyed 3 @. @ 653 miles<sup>2</sup> ( 9461 km<sup>2</sup> ) of sugar cane and 34 @. @ 000 tonnes ( 37 @. @ 000 tons ) of sugar . The storm also destroyed 141 @. @ 000 tonnes ( 139 @. @ 000 long tons ; 155 @. @ 000 short tons ) of bananas and 87 @. @ 078 tonnes ( 85 @. @ 703 long tons ; 95 @. @ 987 short tons ) of other fruits and vegetables . Across the island , Kate damaged 88 @. @ 207 houses and destroyed 4 @. @ 382 others , affecting 476 @. @ 891 people . Many public buildings , including schools , were damaged . Throughout the country , Kate killed 10 people and injured about 50 people . Damage was estimated at \$ 400 million , which was the highest total from all landfalling hurricanes from 1903 to 1998 , unadjusted for inflation .

= = = Florida = = =

As Kate passed to the southwest of Key West , the storm produced winds of 47 mph ( 76 km / h ) there , with unofficial wind gusts of 104 mph ( 167 km / h ) . Rainfall totals in southwest Florida were generally around 1 in ( 25 mm ) , although Key West reported 2 @. @ 08 in ( 53 mm ) of precipitation . High winds downed trees and power lines , leaving areas between Key West and Big Pine Key without power . Electrical outages contributed to a mobile home being destroyed by fire , and one person died through electrocution . Above @-@ normal tides caused minor flooding and erosion along the Florida Keys . Two people died after their boat capsized in the lower Keys .

Kate was the first hurricane to make landfall in the Florida Panhandle since Hurricane Eloise in 1975 . In the region , the hurricane dropped heavy rainfall along its path , peaking at 8 @. @ 32 in ( 211 mm ) in Panama City . While Kate moved ashore , it produced an 11 feet ( 3 @. @ 4 m ) storm surge at Cape San Blas , causing beach and dune erosion in Gulf County . Storm surge flooding left 150 houses uninhabitable in Wakulla County . The hurricane damaged a bridge to St. George Island that had been rebuilt after Hurricane Elena , and large portions of U.S. Routes 90 and 98 were washed out or damaged . Just two months after Elena ravaged the Apalachicola Bay shellfish harvesting industry , Hurricane Kate destroyed remaining oyster beds , leaving many oystermen in the area without jobs .

Strong winds buffeted the Florida Panhandle , accompanied by one tornado and several funnel clouds . In Panama City , wind gusts reached 78 mph ( 126 km / h ) , damaging two houses , a motel , and a fishing pier . The winds were strong enough to remove the roof of a two @-@ story federal building . Sustained winds blew 74 mph ( 119 km / h ) at Cape San Blas , with gusts up to

108 mph ( 174 km / h ) . Across the area , Kate severely damaged 242 buildings , mostly in Franklin County , where the storm ranked as the most devastating of the late 1900s . The storm compromised about 5 @. @ 4 mi ( 8 @. @ 7 km ) of roads in the county , and throughout the region many roads were washed out . The intense winds brought down numerous trees , some of them onto adjacent structures . One fallen tree struck a car , killing one person and injuring another . The winds also downed power poles and lines . About 90 percent of Florida 's capital city Tallahassee , or about 80 @, @ 000 people , lost power , and along the coast from Panama City to Apalachicola , the storm left about 30 @, @ 000 homes and businesses without electricity . Overall , the hurricane destroyed 325 homes along the panhandle , and about 500 buildings were severely damaged .

= = = Elsewhere = = =

Light rainfall of around 1 in ( 25 mm ) from the hurricane extended into southeastern Alabama . Rainfall was much heavier in Georgia , peaking at 7 @. @ 73 in ( 196 mm ) in Bainbridge . Portions of southwestern Georgia experienced heavy damage from flash flooding and winds , and several secondary roads were washed out . Gusts of 80 mph ( 130 km / h ) downed thousands of trees , and one fallen tree killed a man west of Thomasville . The cotton , soybean , and pecan crops suffered heavy losses , estimated at around \$ 50 million . Property and utility damage was also assessed at \$ 50 million , and damage from flash flooding was estimated at \$ 1 million . There were scattered power outages in southern Georgia , affecting fewer than 3 @, @ 000 customers by Georgia Power Company 's estimation . While Kate was moving across southeastern Georgia , it produced a 62 mph ( 100 km / h ) wind gust in Savannah . The city also reported 1 @. @ 73 in ( 44 mm ) of rainfall .

Further northeast , Charleston , South Carolina reported a wind gust of 50 mph ( 80 km / h ) . The highest rainfall total in the state was 6 @. @ 56 in ( 167 mm ) in Hampton . The rains caused flash flooding that washed out secondary roads and a bridge . The storm knocked tree limbs onto power lines , which left about 48 @, @ 000 people without power . In Beaufort , trees fell onto four cars and a mobile home , and high waves sunk a boat . In Wilmington , North Carolina , the storm dropped 1 @. @ 99 in ( 51 mm ) of precipitation . Rains across the state caused generally minor flooding , although several cars were swept off roadways . Rising floodwaters prompted the evacuation of a nursing home in Kannapolis . Rainfall extended northward into Virginia . Damage throughout the United States was estimated at \$ 300 million .

As an extratropical cyclone , Kate moved north of Bermuda and produced wind gusts of 26 mph ( 42 km / h ) on the island .

= = Aftermath = =

In the month after Hurricane Kate struck the island , the government of Cuba issued a request to the United Nations ( UN ) World Food Council for international assistance . In response , various UN member nations collectively provided \$ 60 @, @ 000 for pesticides ; \$ 250 @, @ 000 for herbicides , fungicides , and potato seeds ; and \$ 1 @. @ 381 million in cooking oils and beans to fulfill the dietary needs of over 475 @, @ 000 people for 60 days . The Soviet Union also donated about \$ 15 million worth of rice and wheat flour .

Hurricane Kate delayed a runoff mayoral election in Key West by two weeks . Shortly after the storm , the police departments of both Leon and Jackson Counties ordered a nightly curfew . Two disaster relief centers were opened in Franklin County , one in Apalachicola and the other in Eastpoint . On December 3 , 1985 , then @- @ President of the United States Ronald Reagan declared seven Florida counties as disaster areas , making them eligible to receive federal aid .

Due to the widespread power outages along the Florida Panhandle , electrical companies enlisted extra workers to repair downed lines . Officials had put a curfew in place for Tallahassee due to power outages created by the hurricane , and the curfew was lifted on November 24 after power was gradually restored and roads were cleared of debris . Police officers in the city arrested 20 people for violating curfew or creating unrest .

Some sections of coastline already suffering from severe erosion lost additional swaths of beach to a 10 @-@ foot ( 3 m ) storm surge and strong waves . Many fishermen before and after the storm encountered diminished fish catches after the hurricane .