= Hurricane Juan (1985) =

Hurricane Juan was a large and erratic tropical cyclone that looped twice near the Louisiana coast , causing widespread flooding . It was the tenth named storm of the 1985 Atlantic hurricane season , forming in the central Gulf of Mexico in late October . Juan moved northward after its formation , and was subtropical in nature with its large size . On October 27 , the storm became a hurricane , reaching maximum sustained winds of 85 mph (140 km / h) . Due to the influence of an upper @-@ level low , Juan looped just off southern Louisiana before making landfall near Morgan City on October 29 . Weakening to tropical storm status over land , Juan turned back to the southeast over open waters , crossing the Mississippi River Delta . After turning to the northeast , the storm made its final landfall just west of Pensacola , Florida , late on October 31 . Juan continued quickly to the north and was absorbed by an approaching cold front , although its moisture contributed to a deadly flood event in the Mid @-@ Atlantic states .

Juan was the last of three hurricanes to move over Louisiana during the season , after Danny in August and Elena in early September . It formed rapidly in the northern Gulf of Mexico , allowing little time for thorough preparations or the evacuation of offshore oil rigs . As a result , nine people died in maritime accidents off Louisiana . Onshore , the hurricane dropped torrential rain totaling 17 @.@ 78 in (452 mm) in Galliano , Louisiana . The combination of the rainfall and a high storm surge flooded 50 @,@ 000 houses and many communities in southern Louisiana , causing extensive agriculture losses . Damage in Louisiana alone approached $ 1 billion (1985 USD) . Elsewhere , flooding in Texas forced the closure of roadways , while heavy rains damaged crops and houses in southern Mississippi . The outer rainbands of Juan spawned 15 tornadoes along the Florida Panhandle , causing over $ 1 million in damage . Overall , Juan directly inflicted about $ 1 @.@ 5 billion in damage , making it among the costliest United States hurricanes , and there were 12 deaths . This excludes the effects from the subsequent flooding in the Mid @-@ Atlantic .

= = Meteorological history = =

The interaction between a tropical wave and a upper @-@ level low moving southeastward from Texas spawned a broad trough over the central Gulf of Mexico on October 24 . That day , there was a marked increase in convection , or thunderstorms . At the same time , the pressure gradient between the trough and a high pressure area over the southeastern United States produced winds of near gale force across the northern Gulf of Mexico . Early on October 26 , a tropical depression developed about 380 mi (610 km) south @-@ southwest of New Orleans . Within 12 hours , the depression intensified into Tropical Storm Juan , based on satellite imagery and reports from the Hurricane Hunters . Initially , the structure was akin to that of a subtropical cyclone , with light winds near the center . Juan moved erratically at first , eventually tracking more steadily to the north @-@ northeast on October 27 . After turning to the northwest late on October 27 , Juan intensified into a hurricane , with maximum sustained winds of 75 mph (120 km / h) , based on reports from the Hurricane Hunters .

Under the effects of a larger upper @-@ level low , Juan slowed on October 28 while approaching the Louisiana coastline . At 1200 UTC that day , the hurricane attained peak winds of 85 mph (140 km / h) . After executing a loop just offshore southern Louisiana , Juan turned back to the east , making landfall at peak intensity near Morgan City at 1100 UTC on October 29 . Subsequently , Juan turned sharply to the northwest , executing another loop over southern Louisiana near Lafayette . Late on October 29 , the hurricane weakened to tropical storm status , emerging into Vermilion Bay early the next day with winds of 65 mph (100 km / h) . Juan turned to the east , moving along the southern Louisiana coast and re @-@ organizing slightly .

On October 31 , the storm moved across the Mississippi Delta near Burrwood , Louisiana , and accelerated to the northeast , influenced by an approaching upper @-@ level trough . At 1200 UTC that day , Juan attained a secondary peak of 70 mph (110 km / h) . In the subsequent six hours , the storm weakened slightly , making its final landfall just west of Pensacola , Florida with winds of 65 mph (100 km / h) late on October 31 . After striking Florida , Juan turned to the north and

weakened over land . After moving through Alabama , the storm became extratropical over Tennessee on November 1 . Although the Atlantic hurricane best track ceased tracking the circulation at 1800 UTC that day , Juan continued generally northward through the Ohio Valley , and the center eventually crossed into Canada . The energy from Juan helped spawn an occluded low in the Tennessee Valley , which produced more rainfall throughout the region . An approaching cold front absorbed the remnants of Juan on November 3 .

= = Preparations = =

Before Juan made landfall , about 100 people evacuated around Port Arthur , Texas . In Louisiana , about 6 @,@ 550 people evacuated , including only 700 of the 1 @,@ 900 residents on Grand Isle ; many of those who stayed behind there were trapped after the onslaught of the storm surge . About 6 @,@ 000 people evacuated in Mississippi due to the threat for flooding . Many schools were closed along the coast in Louisiana and Mississippi , and two beaches were closed both sides of the Brownsville , Texas shipping channel . On October 28 , governor Edwin Edwards declared a state of emergency for 13 Louisiana parishes , while officials issued flash flood watches for 42 of Louisiana 's 64 parishes . Governor George Wallace also declared a state of emergency for Alabama , and shelters were opened along the coast .
Due to the erratic motion and large size of Juan , tropical cyclone warnings and watches were issued for large portions of the northern Gulf Coast . Around the time of landfall , hurricane warnings were issued from Port Arthur , Texas to Mobile , Alabama , with gale warnings farther to the east to Apalachicola , Florida and extending to the west to Port O 'Connor , Texas . The storm 's quick development left people generally unprepared . National Hurricane Center forecaster Neil Frank likened Juan to " a spinning top [that] will spin around unpredictably and do whatever it wants . "

= = Impact = =

While on its erratic path off the northern Gulf Coast , Juan killed 12 people , nine of whom offshore due to overturned oil rigs or boats . The hurricane directly caused about $ 1 @.@ 5 billion in damage , making it the fourth costliest United States hurricane at the time without adjusting for inflation ; it was behind only Hurricane Frederic of 1979 , Hurricane Agnes of 1972 , and Hurricane Alicia of 1983 . The damage total included losses to the oil industry , wrecked crops , and overall flooding damage , mostly in Louisiana . According to the Federal Emergency Management Agency (FEMA) , Juan injured 1 @,@ 357 people , mostly to a minor extent . Juan struck less than two months after Hurricane Elena hit the northern Gulf Coast , resulting in further damage to already ravaged areas .
For about five days , Juan and its precursor produced gale force winds along the northern Gulf of Mexico . The strongest winds in relation to Juan were on offshore oil rigs , with one rig recording peak sustained winds of 92 mph (148 km / h) and gusts to 110 mph (176 km / h) . Juan also produced high waves waves that damaged several rigs , of which two were overturned . One of the rigs collapsed and fell onto an adjacent rig about 35 mi (56 km) south of Leesville , Louisiana amid hurricane @-@ force winds and high seas . The collapsed rigs , built in 1956 and 1961 , were designed to withstand 45 ft (14 m) waves that would accompany a 25 year storm at the time , though Juan produced waves approaching 70 ft (21 m) . The combination of the waves and strong winds in advance of the storm prevented early evacuation of the oil rigs . A boat of evacuees overturned in the midst of the storm , killing one and hospitalizing two others ; the remaining workers were rescued by the United States Coast Guard , and overall the agency rescued at least 160 people . While conducting a search and rescue mission , a boat named Miss Agnes capsized about 60 mi (97 km) south of Grand Isle , Louisiana ; two members of the crew went missing and were presumed killed , and two other occupants were rescued . A jackup rig capsized near the mouth of the Mississippi River , killing three . A rescue helicopter off the coast of Louisiana caused three severe injuries when the rescue basket blew onto the evacuated oil rig amid strong winds .
Because it looped twice near the coastline , Hurricane Juan brought extensive rainfall from eastern

Texas to the western Florida Panhandle . In Texas , the highest precipitation total was 12 @.@ 84 in (326 mm) at a station southwest of Alto . The highest rainfall related to Juan in the United States was 17 @.@ 78 in (452 mm) , recorded in Galliano , Louisiana . Farther east , there were more reports of high rainfall , measured at 10 @.@ 52 in (267 mm) and 12 @.@ 23 in (311 mm) in Biloxi , Mississippi and Fairhope , Alabama , respectively . In Florida , the highest rainfall was 11 @.@ 71 in (297 mm) near Pensacola . As well as the heavy rainfall , Juan produced heightened tides along the Gulf Coast , peaking at 8 @.@ 2 ft (2 @.@ 5 m) in Bayou Bienvenue in Louisiana . Tides peaked at around 3 @.@ 3 ft (1 m) in the other coastal states , although offshore winds caused below @-@ normal tides in western Louisiana and Texas after Juan exited the area . The storm also spawned a few tornadoes , most of them weak . Two were in Mississippi , each damaging a mobile home and downing several trees , and at least three occurred in Alabama , causing isolated building and tree damage .

Hurricane Juan was one of the latest tropical cyclones in the year to affect Texas . The heavy rainfall from the storm caused flooding in the southeastern portion of the state , primarily in low @-@ lying areas and along bayous . The flooding forced several roads to close , but there was minimal housing damage . Tides reached about 4 ft (1 @.@ 2 m) above normal near Galveston , causing coastal flooding and closing a portion of Texas State Highway 87 , but little beach erosion . Due to Juan 's structure being closer to a subtropical cyclone than a typical hurricane , it produced strong winds well away from its center , with gusts of 58 mph (93 km / h) reported along the Texas coast . The winds were strong enough to knock down trees and power lines , causing power outages . One person drowned in a boating accident off the Texas coast .

In Mississippi , heavy rain from Juan flooded about 340 homes and businesses , mainly in the southern portion of the state . High winds and waves damaged ports in Pass Christian and Long Beach . Several boats were damaged along the coast , and the seafood industry suffered losses . Beach erosion damaged coastal roads , leaving debris and marsh grass behind when the storm passed . The total storm cost in the state was estimated at $ 776 @,@ 000 . In neighboring Alabama , Juan only produced wind gusts of 40 mph (64 km / h) , which caused little damage , but the storm 's rainfall contributed to Mobile recording its wettest October on record . The rains caused flooding along streets and low @-@ lying areas , but property generally escaped unscathed . The flooding did cause locally heavy crop damage ; some farmers lost 50 % of their soybean crop , and the pecan crop was damaged after earlier being affected by Hurricane Elena . Damage in the state was minor , estimated at over $ 65 @,@ 000 .

Farther east in Florida , high waves caused flooding , beach erosion , and the loss of seawalls previously damaged by Elena . The rough surf washed away a house on Captiva Island . The outskirts of Juan also spawned 15 tornadoes along the Florida Panhandle , causing $ 1 million in damage . The tornadoes injured six people , destroyed 19 buildings , and damaged about 40 others . One of the tornadoes struck Okaloosa Island and Fort Walton Beach , killing a dog and damaging two hotels along U.S. Route 98 .

= = = Louisiana = = =

Due to the cyclone 's slow movement over Louisiana , it dropped over 10 in (250 mm) of rainfall across much of the southern portion of the state . The intense rainfall increased levels along rivers in southwestern Louisiana . High waves and a storm surge of 5 to 8 ft (1 @.@ 5 to 2 @.@ 4 m) flooded low @-@ lying and coastal areas of southeastern Louisiana . The hurricane 's erratic path prevented farmers from harvesting crops for three days . The combination of flooding from rainfall and storm surge covered widespread areas of crop fields , mostly affecting soybean and sugar . Other crops in the state had previously been harvested . About 200 cattle drowned in Terrebonne Parish , and thousands were stranded . Crop damage was estimated at over $ 304 million , including $ 100 million to the soybean industry , with overall damage near $ 1 billion across the state . As well as its impact on crops , Juan severely affected the shrimp industry by washing many shrimp offshore and killing others . The storm left about $ 2 @.@ 9 million in damage to oil facilities in the state , including the cost of damaged pipelines . Overall , Juan flooded about 50 @,@ 000 houses in

Louisiana , causing $ 250 million in property damage .

Near Port Fourchon in Lafourche Parish , the storm surge damaged portions of Louisiana Highways 1 and 3090 and flooded about 1 @,@ 200 homes , some to their roofs . Two levees in the parish were washed out and one was overtopped , inundating 100 houses near Lockport . In Terrebonne Parish , the powerful storm surge swept away parked cars , knocked a home off its foundation , and damaged a 300 ft (91 m) portion of a levee . In the parish , 800 homes were flooded , and 15 @,@ 000 people were left homeless . The storm surge also washed out a 6 @,@ 000 ft (1 @,@ 800 m) portion of the levee protecting Grand Isle , and damaged another 14 @,@ 000 ft (4 @,@ 300 m) . The levee , built in 1984 , sustained $ 500 @,@ 000 in damages , which flooded the island with 4 ft (1 @.@ 2 m) of ocean water . Most of the island lost power , and the city hall and high school , set up as shelters , utilized generators during the storm . In Jefferson Parish , which contains Grand Isle , the storm surge entered 2 @,@ 233 homes and inundated about 3 @,@ 100 cars . In Violet , a man drowned when he fell from his boat into a flooded canal , and another fisherman drowned in Atchafalaya Bay . The surge flooded a 3 mi (4 @.@ 8 km) section of Louisiana Route 23 in Plaquemines Parish , entering several homes , as well as a portion of Route 22 . Between Livingston and Ascension parishes , about 800 homes were flooded , and another 53 homes were flooded in Tangipahoa Parish . Waters from Lake Pontchartrain swept over Airline Highway and portions of a 4 ft (1 @.@ 2 m) high levee , flooding 250 nearby homes . The storm surge washed out three bridges and flooded 800 homes in St. Tammany Paris , while high waters killed a man in Slidell . One man was electrocuted and killed in Arnaudville when stepping on a downed wire .

While approaching its final landfall as a weak tropical storm , Juan created a storm surge of 6 @.@ 5 ft (2 @.@ 0 m) along the Chandeleur Islands to its west , resulting in extensive beach erosion . The island chain is an important buffer to parts of mainland Louisiana against storms , but is frequently physically manipulated by intense hurricanes . Hurricanes Danny and Elena also impacted the islands in 1985 . Large portions of the Louisiana coastline lost 40 to 100 ft (12 to 30 m) of beach due to the storm , with several new temporary inlets created along barrier islands .

= = = Inland and Mid @-@ Atlantic = = =

In the states inland from the Gulf Coast , Juan produced lighter rainfall than where its track moved across , but there were totals as high as 6 @.@ 65 in (169 mm) in Arkansas . Rains directly from Juan extended into the southeastern United States , reaching 11 @.@ 17 in (284 mm) on Grandfather Mountain in North Carolina , and through the Mid @-@ Atlantic with totals as high as 2 @.@ 82 in (72 mm) in Bakerstown , Pennsylvania . Through the Midwestern United States , Juan dropped over 4 in (100 mm) of rainfall in portions of Kentucky , Michigan , and Wisconsin .

The rains from Juan and the low it spawned in the Mid @-@ Atlantic moistened grounds across the region . The hurricane 's track helped bring a plume of moisture into the Mid @-@ Atlantic , which set the stage for a major flooding event when a low pressure area stalled on November 5 west of Washington , D.C. Major flooding occurred in Virginia and West Virginia , causing $ 1 @.@ 4 billion in damage and 62 deaths .

= = Aftermath = =

On October 29 , Louisiana Governor Edwin Edwards requested that the state 's congressional delegation ask President Ronald Reagan for a disaster declaration . President Reagan responded and issued a disaster declaration on November 1 , which included the parishes of Ascension , Jefferson , Lafourche , Livingston , Plaquemines , Saint Bernard , Saint Charles , Saint John the Baptist , Saint Tammany , Tangipahoa , and Terrebonne , as well as the Lower Ninth Ward of New Orleans . The Louisiana Department of Transportation and Development estimated that highways in the state would require $ 3 million in repairs from damage wrought by the hurricane .

Oil companies lost two to three days of production due to being closed by the hurricane . The Louisiana National Guard assisted farmers by dropping hay to stranded cattle over a two @-@ week period . The American Red Cross ran out of funds while responding to the effects of Juan and the

mid @-@ Atlantic flooding , following the previous responses to hurricanes Elena and Gloria , as well as flooding in Puerto Rico ; this prompted an emergency fundraising appeal . The agency had provided about $ 8 million worth of assistance to families in southern Louisiana . Along the Apalachicola Bay , the series of hurricane strikes severely damaged the local oyster industry , leaving hundreds of oystermen out of work . The high waves caused by Juan prompted the United States Minerals Management Service to recommend increased inspections on older rigs and improve evacuation plans . Hurricane Juan was one in a series of hurricanes that struck Louisiana coast over many years that contributed to the loss of the coastal wetlands .