Hurricane Jerry (1989)

Hurricane Jerry caused minor damage in Texas and flash flooding in Kentucky and Virginia in October 1989 . The fourteenth tropical cyclone , tenth named storm of the season , Jerry developed from a tropical wave in the Bay of Campeche on October 12 . Initially a tropical depression , the system moved north @-@ northwestward across the Gulf of Mexico and strengthened into Tropical Storm Jerry early on the following day . Jerry continuously deepened until October 14 and then maintained intensity while curving northeastward and briefly decelerating . Later that day , the storm re @-@ curved north @-@ northwestward . Jerry began to intensify on October 15 and soon became a Category 1 hurricane on the Saffir ? Simpson hurricane wind scale . Early on October 16 , Jerry made landfall on Galveston Island , Texas with winds of 85 mph (140 km / h) . Less than six hours later , Jerry weakened to a tropical storm and then a tropical depression shortly thereafter . Late on October 16 , Jerry was absorbed by a frontal system while situated over southwestern Arkansas .

Storm surge and rough surf along the coast of Texas destroyed a 20 mile (32 km) section of Texas State Highway 87 , which was never repaired . Due to strong winds , about 52 @,@ 000 homes and businesses were left without electricity , most of them in the Galveston area . Many homes , businesses , and buildings were inflicted damage because of strong winds and three tornadoes spawned by the storm . Despite the issuance of a hurricane warning just eight hours prior to landfall , Jerry caused only three fatalities in Texas , possibly due to the storm 's small size ; a car fell over the Galveston Seawall , killing its three occupants . Minor wind and coastal flood damage was reported in Louisiana . Jerry and its remnants brought flash flooding to portions of the Upland South , particularly in the states of Kentucky , Virginia , and West Virginia . In eastern Kentucky , hundreds of homes were flooded and many bridges , culverts , and roads were washed out ; this left hundreds of residents stranded . Damage in Kentucky reached at least $ 5 million . Similar impact occurred in Virginia ; with $ 3 @.@ 4 million (1989 USD) in damage in Buchanan County . In West Virginia , overflowing rivers in the western portions of the state forced hundreds to evacuate . Throughout the United States , Jerry resulted in about $ 70 million in damage .

Meteorological history

A tropical wave emerged into the Atlantic Ocean from the coast of northwest Africa on September 23 . No additional signs of tropical cyclogenesis were observed as the tropical wave crossed the Atlantic Ocean or the Caribbean Sea . The tropical wave decelerated upon reaching the Yucatán Peninsula , where it became a broad low pressure area , based on surface pressure fields and convective motions indicated in satellite imagery . While emerging into the Bay of Campeche on October 12 , the intensity of the low was estimated via Dvorak technique . At 1900 UTC on October 12 , a reconnaissance aircraft flight confirmed an atmospheric circulation , and the system was then classified as Tropical Depression Fourteen . However , post @-@ analysis indicates that the depression developed seven hours earlier , while located about 230 miles (370 km) east @-@ northeast of Veracruz , Veracruz .

While moving north @-@ northwestward , satellite and reconnaissance aircraft reports indicated the depression strengthened into Tropical Storm Jerry early on October 13 . Jerry then gradually intensified and moved northward between 5 and 10 mph (10 and 15 km / h) . Early on October 14 , the storm turned to the north @-@ northeast and decelerated in response to an approaching mid- to upper @-@ level trough . Increasing upper @-@ level wind shear temporarily limited further intensification . However , after a mid- to upper @-@ level cut @-@ off low pressure area moved southward , the upper @-@ level outflow pattern became more favorable , causing Jerry to resume strengthening . The cut @-@ off low then forced Jerry to re @-@ curve north @-@ northwestward , while stronger steering currents and a high pressure ridge increased the storm 's forward motion to more than 10 mph (16 km / h) . While approaching the Gulf Coast of the United States , deep convection began to develop near the center , and by 1800 UTC on October 15 , Jerry strengthened into a Category 1 hurricane .

After reaching hurricane status late on October 15 , the storm continued to intensify while approaching the coast of Texas . At 2100 UTC , Jerry attained its minimum barometric pressure of 982 mbar (29 @.@ 0 inHg) . The storm strengthened slightly further before making landfall on Galveston Island near Jamaica Beach , Texas with winds of 85 mph (140 km / h) at 0030 UTC on October 16 . Jerry 's landfall is among the latest dates in the satellite era that a hurricane struck the upper Texas coast . After moving inland , the storm then accelerated while turning toward the north and then north @-@ northeastward . At 0600 UTC on October 16 , Jerry weakened to a tropical storm and to a tropical depression about six hours later . Late on October 16 , the cyclone was absorbed by a frontal system over southwestern Arkansas .

= = Preparations = =

Jerry was an unpredictable storm as the strengthening before landfall and the continuation to the northwest was not anticipated . Equipment failure meant that data was not readily available . The National Hurricane Center forecast model was also disabled , throwing the accuracy of Jerry 's track off . Tropical cyclone warnings and watches began early on October 14 , with a hurricane watch for Port Arthur , Texas to the mouth of the Mississippi River in Louisiana . At 2200 UTC later that day , a tropical storm watch was issued for the entire coast of Louisiana . Another tropical storm watch was posted from Port O 'Connor , Texas to Morgan City , Louisiana at 1200 UTC on October 15 .
Due to the unpredictability of the storm , a hurricane warning was issued from Freeport , Texas to Intracoastal City , Louisiana at 1600 UTC , only eight hours prior to landfall . Simultaneously , two separate tropical storm warnings were posted , from Matagorda to Freeport and Intracoastal City to Morgan City . Although the storm had already made landfall , a tropical storm warning was issued from Freeport to Intracoastal City at 0400 UTC on October 16 . By six hours later , all tropical cyclone warnings and watches were discontinued .
About 4 @,@ 000 oil company employees were evacuated off the rigs in the Gulf of Mexico , at least 1 @,@ 300 of them by helicopter . In Louisiana , approximately 8 @,@ 000 people evacuated ? 1 @,@ 000 from Grand Isle and 7 @,@ 000 others from Cameron Parish .

= = Impact = =

= = = Texas = = =

Rainfall from Hurricane Jerry peaked at 6 @.@ 4 inches (160 mm) in Silsbee . Jerry caused light beach erosion along the Texas coast . The storm destroyed a 20 miles (32 km) section of Texas State Highway 87 , between High Island and Sabine Pass . As of 2008 , the destroyed section of the highway was not been repaired , despite plans for it to be rebuilt . In Galveston County , abnormally high astronomical tides and rough surf from Jerry resulted in coastal flood damage . Beach erosion was reported , while some sand dunes were flattened . On the western end of Galveston Island , beachfront roads were inundated and covered with debris , glass , and boards . In Brazoria County , high tides caused minor road damage in Surfside Beach . Storm surge in Chambers County caused coastal flooding in Anahuac . Three people were killed when their car was either blown or washed off the Galveston Seawall during the storm . The eye of the Hurricane went directly over Kemah where waterfront businesses suffered considerable damage , including restaurants , boat docks , and bait stands . Property losses in the city of Kemah was estimated to have reached $ 2 million . In the upper end of Galveston Bay in Harris County , businesses in low @-@ lying areas were affected by coastal flooding .
At Scholes Field , sustained winds of 75 mph (121 km / h) and gusts up to 100 mph (160 km / h) were observed , ripping doors off the hangars . A walkway and four boats were damaged at the Hanks Creek Marina , located on the eastern shore of Sam Rayburn Reservoir , while the marina itself was deroofed . Similar impact was reported at the nearby Shirley Creek Marina . Strong winds destroyed four high steel towers , which supported power lines that traversed the northern

Galveston Bay near the Houston Ship Channel . Elsewhere in eastern Texas , wind damage was relatively minor , mainly limited to shattered windows , toppled trees and power lines , and generally light impact to houses , mobile homes , buildings , farm buildings , and businesses in several counties in eastern Texas . Falling trees blocked numerous roads and struck houses and power lines , leaving approximately 52 @,@ 000 homes and businesses without electricity , most of them in the Galveston area . There were three tornadoes in the county , the first of which unroofed some buildings in Galveston . The second tornado , also touching down in Galveston , inflicted roof damage to many businesses , homes , and apartment complexes . The third tornado , spawned in League City , toppled several trees and a flag pole . In Chambers County a tornado near Kemah inflicted damage to a beach house . Another tornado in the county spawned in downtown Baytown shattered windows at a hospital , a mall , and store windows . In Polk County , a small tornado caused minor damage , totaling $ 10 @,@ 000 .

= = = Elsewhere = = =

In Louisiana , tides ranging from 2 to 3 feet (0 @.@ 61 to 0 @.@ 91 m) above normal lashed the coast . However , coastal flooding damage was minimal . Gusty winds in the northwestern portion of the state downed some trees and power lines . Jerry and its remnants dropped rainfall in several other states , including Alabama , Arkansas , Illinois , Indiana , Kentucky , Maryland , Mississippi , Missouri , New Jersey , Ohio , Virginia , and West Virginia .
Similar rainfall was reported in Kentucky , ranging from 4 to 6 inches (100 to 150 mm) . Flash flooding caused significant damage in several counties . Numerous roads and bridges were washed out . Hundreds of homes were damaged or destroyed , forcing hundreds to evacuate . Additionally , many cars were damaged or swept away . The Kentucky River overflowed at Hazard in Perry County , inundating a number of streets with up to 4 feet (1 @.@ 2 m) of water . About ten families were forced to evacuate . Damage in Perry County exceeded $ 1 million . In neighboring Letcher County , 100 bridges and culverts were washed out , while about 50 homes were impacted by flooding . Damage in the county reached $ 2 million . In Floyd County , over 750 students and teachers were stranded at a school in McDowell after the Frasure Creek overflowed , inundating several classrooms with over 2 feet (0 @.@ 61 m) of water . Over 200 homes were flooded and many bridges and roads washed in Pike County , with damage reaching $ 2 million . Many residents were left isolated in eastern Kentucky after flooding destroyed bridges and roads . According to state disaster assessment teams , hundreds of residents in eastern Kentucky and West Virginia had flood damage to their houses . Due to the impact from flooding in eastern Kentucky , President George H. W. Bush declared Clay , Floyd , Jackson , Knott , Knox , Leslie , Letcher , Magoffin , Owsley , Perry and Pike counties as disaster areas .
Heavy rains in West Virginia overflowed the Tug Fork and Guyandotte rivers . About 150 homes were evacuated in Matewan , where the Tug Fork River crested at 6 feet (1 @.@ 8 m) above its banks . Farther south in Williamson , the river overflowed its banks by about 3 feet (0 @.@ 91 m) . On October 19 , Governor of West Virginia Gaston Caperton toured flood @-@ ravaged areas of the state , including Mingo and Logan counties . Heavy rainfall extended eastward into extreme western Virginia . In northern Buchanan County , flash flooding destroyed or heavily damaged numerous businesses and homes . Additionally , many private bridges were swept away and more than 100 roads were inundated . Approximately 30 families were evacuated in the Hurley area , where up to 5 inches (130 mm) of precipitation was observed . Damage in Buchanan County totaled $ 3 @.@ 4 million . President Bush declared Buchanan County as a disaster area on November 8 .