

= Hurricane Carla =

Hurricane Carla ranks as the most intense U.S. tropical cyclone landfall on the Hurricane Severity Index . The third named storm and first Category 5 hurricane of the 1961 Atlantic hurricane season , Carla developed from an area of squally weather in the southwestern Caribbean Sea on September 3 . Initially a tropical depression , it strengthened slowly while heading northwestward , and by September 5 , the system was upgraded to Tropical Storm Carla . About 24 hours later , Carla was upgraded to a hurricane . Shortly thereafter , the storm curved northward while approaching the Yucatán Channel . Late on September 7 , Carla entered the Gulf of Mexico while passing just northeast of the Yucatán Peninsula . By early on the following day , the storm became a major hurricane after reaching Category 3 intensity . Resuming its northwestward course , Carla continued intensification and on September 11 , it was upgraded to a Category 5 hurricane . Later that day , Carla weakened slightly , but was still a large and intense hurricane when the storm made landfall near Port O'Connor , Texas . It weakened quickly inland and was reduced to a tropical storm on September 12 . Heading generally northward , Carla transitioned into an extratropical cyclone on September 13 , while centered over southern Oklahoma . Rapidly moving northeastward , Carla 's remnants reached the Labrador Sea , Canada and dissipated on September 17 , 1961 .

While crossing the Yucatán Channel , the outer bands of Carla brought gusty winds and severe local flooding in western Cuba and the Yucatán Peninsula , though no damage or fatalities were reported . Although initially considered a significant threat to Florida , the storm brought only light winds and small amounts of precipitation , reaching no more than 3 @. @ 15 in ( 80 mm ) . In Texas , wind gusts as high as 170 mph ( 280 km / h ) were observed in Port Lavaca . Additionally , several tornadoes spawned in the state caused notable impacts , with the most destructive twister resulting in 200 buildings severely damaged , of which at least 60 were destroyed , and 8 deaths and 55 injuries . Throughout the state , Carla destroyed 1 @, @ 915 homes , 568 farm buildings , and 415 other buildings . Additionally , 50 @, @ 723 homes , 5 @, @ 620 farm buildings , and 10 @, @ 487 other buildings suffered damage . There were 34 fatalities and at least \$ 300 million ( 1961 USD ) in losses in Texas alone . Several tornadoes also touched down in Louisiana , causing the destruction of 140 homes and 11 farms and other buildings , and major damage to 231 additional homes and 11 farm and other buildings . Minor to moderate damage was also reported to 748 homes and 75 farm and other buildings . Six deaths and \$ 25 million in losses in Louisiana were attributed to Carla . Heavy rainfall occurred in several other states , especially in Kansas , where flash flooding severely damaged crops and drowned 5 people . Overall , Carla resulted in \$ 325 @. @ 74 million in losses and 43 fatalities .

= = Meteorological history = =

As early as September 1 , a tropical disturbance ? an area of convective activity ? was observed tracking westward across the Caribbean Sea within the Intertropical Convergence Zone ( ITCZ ) . Around that time , an anticyclone was situated over the western Caribbean Sea at the upper @- @ tropospheric levels . Surface charts indicate that a low @- @ level circulation was developing early on September 3 . Thus , it is estimated that a tropical depression ? a tropical cyclone with sustained winds with winds of less than 39 mph ( 63 km / h ) ? developed about 175 miles ( 282 km ) northwest of Barranquilla , Colombia at 1200 UTC . Initially , the center of circulation remained difficult to locate on surface charts due to lack of data . At San Andrés , winds shifted west at about 12 mph ( 19 km / h ) , while barometric pressures dropped to 1 @, @ 007 mbar ( 29 @. @ 7 inHg ) . The Weather Bureau Office in Miami , Florida issued its first bulletin at 1600 UTC on September 4 , while the depression was centered about 250 miles ( 400 km ) east @- @ southeast of Cabo Gracias a Dios , Nicaragua .

It is estimated that sustained winds reached 45 mph ( 75 km / h ) at 1200 UTC on September 5 , thus the depression strengthened into a tropical storm and was named Carla , while located just northeast of Cabo Gracias a Dios . A reconnaissance aircraft flight reported that Carla was continuing to intensify , with surface winds of 50 mph ( 85 km / h ) . Radars reported an unusually

large tropical cyclone , with convective bands extending about 520 miles ( 840 km ) outward from the center . Around 0000 UTC on September 6 , Carla passed near Swan Island , which reported a barometric pressure of about 995 mbar ( 29 @. @ 4 inHg ) and wind gusts of 60 mph ( 95 km / h ) from the southwest . Based on observations obtained by a reconnaissance aircraft at 1100 UTC on September 6 ? namely a barometric pressure of 982 mbar ( 29 @. @ 0 inHg ) ? a bulletin issued by the Weather Bureau an hour later indicated that the storm had " probably reached hurricane intensity " . According to post @-@ season analysis , Carla reached hurricane status at that time .

Shortly after becoming a hurricane on September 6 , Carla curved northward in the northwestern Caribbean Sea . At 1200 UTC on September 7 , the storm intensified into a Category 2 hurricane while located east @-@ northeast of Cozumel , Quintana Roo , Mexico ( actual use of the Saffir @-@ Simpson Hurricane Wind Scale , which was developed in 1971 , was not in effect ) . Shortly thereafter , Carla crossed the Yucatán Channel and entered the Gulf of Mexico . A strong high pressure area forced Carla to resume its original northwesterly course . Early on September 8 , the storm strengthened into a Category 3 hurricane while located just north of the Yucatán Peninsula . Thus , Carla was the third major hurricane of the season . Carla was upgraded to a Category 4 hurricane early on September 10 , while approaching the Gulf Coast of the United States . At 0000 UTC on September 11 , Carla strengthened into a Category 5 while located in the northwestern Gulf of Mexico . Six hours later , the storm reached its maximum sustained wind speed of 175 mph ( 280 km / h ) .

Although it weakened back to a Category 4 hurricane late on September 11 , Carla reached its minimum barometric pressure of 931 mbar ( 27 @. @ 5 inHg ) . Later that day , the storm struck Matagorda Island , Texas ( seven miles south of Port O 'Connor ) with winds of 145 mph ( 230 km / h ) . Carla rapidly weakened inland , and degenerated to a Category 2 hurricane on September 12 , while passing just east of Port Lavaca . Six hours later , the storm was downgraded to a Category 1 hurricane near Shiner , shortly before being downgraded to a tropical storm between Taylor and Coupland . Beginning late on September 12 , the storm curved just east of due north . After reaching Oklahoma early on September 13 , Carla transitioned into an extratropical cyclone while located over rural Johnston County . The extratropical remnants of Carla moved rapidly northeastward and brought heavy rainfall to some areas of the Great Plains and Midwestern United States . By September 14 , it entered Canada near Sault Ste . Marie , Ontario . Continuing swiftly northeastward across Ontario , Quebec , and Labrador , before the remnants dissipated over the Labrador Sea on September 17 .

= = Preparations = =

Occurring a year after Hurricane Donna , officials in the Florida Keys took precautions to brace for potential impact from the storm . The United States Navy flew their planes out of Key West , while Coast Guardsmen evacuated Alligator Reef Light , American Shoal Light , and Sombrero Key Light . Ships docked at Key West sailed out to sea to ride out the squalls . On the morning of September 7 , a hurricane watch was issued from the entire coast of Louisiana eastward to Apalachicola , Florida . On September 8 , a hurricane watch was issued along the southwest coast of the state from Vermilion Bay westward . It was later extended westward to include the entire coast of Texas , and eastward to Apalachicola , Florida . A portion of the hurricane watch from Aransas Pass , Texas to Grand Isle , Louisiana was upgraded to a hurricane warning at 1600 UTC on September 9 . An estimated 500 @, @ 000 people fled the coasts of Texas and Louisiana , making it the largest evacuation in the history of the United States , at the time . Further , at least half of those people were from Texas . In small towns along the coast of Texas , 90 ? 100 % of their populations evacuated , while 20 % of people left the larger cities . Many in Galveston stayed due to protection from the Galveston Seawall .

= = Impact = =

Carla spawned the largest hurricane @-@ related tornado outbreak on record at the time , when 26

tornadoes touched down within its circulation . However , it was overwhelmingly surpassed by Hurricane Beulah in 1967 , which spawned at least 115 tornadoes . Throughout its path , 43 fatalities and about \$ 325 @. @ 74 million in damage were attributed to Carla . Most of the impact occurred in Texas , where the storm made landfall as a large and strong Category 4 hurricane .

= = = United States = = =

= = = = Texas = = = =

Abnormally high tides and storm surge was reported along the coast of Texas , reaching at least 10 feet ( 3 @. @ 0 m ) above mean sea level at many coastal areas between Sabine Pass and Port Aransas . The highest tide reported was 18 @. @ 5 feet ( 5 @. @ 6 m ) at Port Lavaca , with large wave heights including 12 @. @ 6 feet ( 3 @. @ 8 m ) in Matagorda , 10 @. @ 9 feet ( 3 @. @ 3 m ) in Port Aransas , 10 @. @ 8 feet ( 3 @. @ 3 m ) in Freeport , 10 @. @ 1 feet ( 3 @. @ 1 m ) in Texas City , and 10 feet ( 3 @. @ 0 m ) in Galveston and Sabine . Because the storm was a Category 4 hurricane at landfall , Carla produced strong winds , especially near its path . The strongest sustained winds include 115 mph ( 185 km / h ) in Matagorda , 110 mph ( 180 km / h ) in Victoria , and 88 mph ( 142 km / h ) . Additionally , the highest wind gust observations include 175 mph ( 282 km / h ) in Port Lavaca , 160 mph ( 260 km / h ) in Matagorda , and 150 mph ( 240 km / h ) in Aransas Pass , Austwell , Edna , Port Aransas , and Victoria . Carla produced heavy rainfall in Texas , peaking at 17 @. @ 48 inches ( 444 mm ) in Bay City . Other significant precipitation totals include 16 @. @ 49 inches ( 419 mm ) at Scholes International Airport at Galveston , 14 @. @ 94 inches ( 379 mm ) in Downtown Galveston , 13 @. @ 05 inches ( 331 mm ) in Wharton , 12 @. @ 55 inches ( 319 mm ) in Liberty , 12 @. @ 47 inches ( 317 mm ) in Dickinson , 11 @. @ 81 inches ( 300 mm ) in Flantonia , 10 @. @ 59 inches ( 269 mm ) in Columbus , 8 @. @ 75 inches ( 222 mm ) in Hallettsville , and 8 @. @ 9 inches ( 230 mm ) in Smithville .

The most significant damage to property occurred between Port Arthur and Corpus Christi . Port O 'Connor , lying nearest to the location of Carla 's landfall , was virtually destroyed . In Victoria , the highest sustained wind speed was 110 mph ( 180 km / h ) , while gusts reached 150 mph ( 240 km / h ) . About 4 @. @ 260 homes were damaged , with around 500 severely damaged or destroyed . 43 businesses and 26 public buildings were also significantly impacted . Damage in the city of Victoria reached \$ 10 million . Of the 26 tornadoes spawned by Carla , eight of them in Texas caused significant impact . A tornado near Bay City destroyed two radio towers and damaged several buildings . Near Jacksonville , a tornado injured three people , caused the destruction of one house and impacted 3 others , resulting in \$ 25 @. @ 000 in damage . Twenty @- @ two people were injured , 18 homes and 6 commercial buildings were destroyed , and 40 additional homes were damaged in a tornado in Channelview , located near Houston ; losses reached \$ 200 @. @ 000 . In the early morning hours of September 13 , an F4 tornado moved across Galveston Island along a 15 @- @ mile ( 24 @- @ kilometer ) long , 230 @- @ yard @- @ wide path ( it crossed into Galveston Bay as well ) , severely damaging 200 buildings , of which at least 60 were destroyed , and causing eight deaths and 55 injuries . A few hours later , another twister in the area resulted in the destruction of six houses and extensive lesser damage . In Hardin , a tornado damaged six homes . Several structures sustained impact during a tornado in Fulbright . The final twister occurred during the late afternoon hours in Latex . It caused two injuries , and resulted in \$ 5 @. @ 000 in losses , after damaging two houses and three garages .

Then little @- @ known newsman Dan Rather reported live from the Galveston Seawall during the storm , an act that would be imitated by later reporters . This marked the first live television broadcast of a hurricane . Rather also alerted the public of the size of Carla in a way that " literally changed the way the world sees hurricanes " , according to a fellow reporter . Broadcasting live at the Weather Bureau Office in Galveston , Rather asked a meteorologist to draw an outline of the Gulf of Mexico on a transparent sheet of plastic . He then held the map over the black and white radar screen , which put the size of Carla into perspective . CBS was so impressed with Rather 's

work that he was offered the position of correspondent . Throughout Texas , Carla destroyed 1 @, @ 915 homes , 568 farm buildings , and 415 other buildings . Additionally , 50 @, @ 723 homes , 5 @, @ 620 farm buildings , and 10 @, @ 487 other buildings suffered damage . There were 460 injuries according to the American Red Cross , though the Monthly Weather Review listed a slightly higher number , 465 . The storm caused 34 fatalities in Texas . Causes of death include 20 people drowning , eight from tornadoes , four electrocutions , and one heart attack . Overall , damage in the state was " conservatively " estimated at \$ 300 million . A breakdown of damage indicates \$ 200 million incurred to property and \$ 100 million to crops , mostly from unharvested rice and lesser impact to cotton and citrus .

= = = = Louisiana = = = =

In southeastern Louisiana , abnormally high tides lashed the coast , though no beach erosion was reported . Rainfall was heavy , peaking at 13 @. @ 9 inches ( 350 mm ) in Many . Other observed precipitation totals include 5 @. @ 6 inches ( 140 mm ) in Baton Rouge , 5 @. @ 57 inches ( 141 mm ) in Morgan City , 4 @. @ 25 inches ( 108 mm ) in Shreveport , 3 @. @ 16 inches ( 80 mm ) in New Orleans , 2 @. @ 25 inches ( 57 mm ) in Lafayette , 2 @. @ 19 inches ( 56 mm ) in Alexandria , 2 @. @ 1 inches ( 53 mm ) in Jonesville and West Monroe , and 1 @. @ 37 inches ( 35 mm ) in Lake Charles . In the western portions of Louisiana , sustained winds peaked at 44 mph ( 71 km / h ) and gusts reached 55 mph ( 89 km / h ) . Only minor damage occurred , limited to roofs , glass , and downed tree limbs . Winds caused a local river to reach 1 foot ( 0 @. @ 30 m ) above flood stage . The 11 tornadoes spawned by Carla in Louisiana destroyed 140 homes and 11 farm and other buildings , while causing major damage to 231 additional homes and 11 farm and other buildings . Additionally , 748 homes and 75 farm and other buildings suffered minor to moderate damage . Six fatalities and 199 injuries occurred , mostly related to the tornadoes . Damage in Louisiana totaled to about \$ 25 million . A breakdown of losses include \$ 6 million to agriculture , \$ 5 million to buildings , \$ 4 million to boats and beach property , \$ 3 million to roads and bridges , \$ 5 million to oil platforms just offshore , and \$ 2 million in miscellaneous damage .

= = = = Oklahoma = = = =

Carla and its remnants brought heavy rainfall and strong winds to portions of Oklahoma . About 2 ? 8 inches ( 51 ? 203 mm ) of rain fell in Grant , Tillman , Washita Counties . Heavier amounts of at least 5 inches ( 130 mm ) fell in Atoka and Pushmataha County . Precipitation in the state peaked at 7 @. @ 68 inches ( 195 mm ) in Kingfisher . More than 140 city blocks were flooded with up to 6 feet ( 1 @. @ 8 m ) in residential areas of Kingfisher and up to 3 feet ( 0 @. @ 91 m ) in business areas . 225 homes and buildings in the city suffered water damaged . Throughout the state , damage in other areas included 90 homes and buildings in Tulsa , 50 homes each in El Reno and Oklahoma City , and 10 homes in Pawnee . Additionally , water inundation washed out several bridges and highways in northeastern parts of the state , leaving roads impassable . Sustained winds between 30 and 55 mph ( 48 and 89 km / h ) and gusts up to 70 mph ( 110 km / h ) were recorded in Oklahoma . Winds injured two people due to airborne debris . Winds and rain combined severely disrupted electrical and telephone services and caused \$ 670 @, @ 000 in damage , with \$ 600 @, @ 000 to property and \$ 70 @, @ 000 to crops .

= = = = Illinois = = = =

The storm dropped precipitation amounts of 7 inches ( 180 mm ) throughout northwestern Illinois , with a peak of 8 @. @ 18 inches ( 208 mm ) in Mount Carroll . Thus , Carla is the second wettest tropical cyclone in Illinois , behind only Hurricane Audrey in 1957 . Additionally , up to 6 @. @ 29 inches ( 160 mm ) fell in 24 hours . Severe local flooding occurred , especially in the northern portions of the state . Heavy property and agricultural damage occurred . Streets and basements were reported to have flooded , while bridge approaches and a few small bridges were washed out .

Precipitation of 2 @. @ 5 ? 3 @. @ 5 inches ( 64 ? 89 mm ) in Chicago flooded about 60 viaducts and 1 @, @ 000 basements . After the Chicago River rose 5 feet ( 1 @. @ 5 m ) , the lock gate to Lake Michigan was opened to release excess water . However , the abrupt onrush of water resulted in about \$ 75 @, @ 000 in damage to boats at Wilmette Harbor .

= = = Elsewhere in the United States = = =

Winds in Key West reached 30 mph ( 48 km / h ) , while much of Florida reported rainfall from the outer bands of Carla . In Kansas , 4 to 7 inches ( 100 to 180 mm ) of rain in only 6 hours caused flash flooding . With a peak amount of 8 @. @ 52 inches ( 216 mm ) in Haddam , Carla was the rainiest tropical cyclone in Kansas , until being surpassed by Hurricane Paine in 1986 and Tropical Storm Frances in 1998 . Severe crop damage occurred , especially in areas of Chautauqua and Shawnee Counties and to the south of the Kansas River . Many highways were left impassable due to water inundation . A family of 4 drowned after their car was swept off a road near Waverly . A fifth fatality occurred after a car with one occupant was swept into a tributary of the Marmaton River near Fort Scott . The storm persistently produced winds of 35 to 50 mph ( 56 to 80 km / h ) , causing further agricultural damage .

In Nebraska , rainfall peaked at 5 @. @ 68 inches ( 144 mm ) in Hubbell , making Carla the rainiest tropical cyclone in the state . Heavy precipitation also fell in Missouri , especially in Brookfield , Lee 's Summit , and Pleasant Hill . The maximum rainfall total in Missouri was 9 @. @ 34 inches ( 237 mm ) in Concordia . One fatality was reported in Missouri , though the cause of death is unknown . Rainfall in Iowa peaked at 9 @. @ 03 inches ( 229 mm ) near Chariton , making Carla the rainiest tropical cyclone in the state . Up to 8 inches ( 200 mm ) of rain fell in a 12 @- @ hour period in the Lower Peninsula of Michigan , mostly between Cheboygan and Grand Rapids . However , the Weather Prediction Center indicated precipitation amounts of 6 @. @ 07 inches ( 154 mm ) in Boyne Falls . Regardless , Carla is the wettest tropical cyclone in the history of Michigan . Despite , the rainfall , flooding in Michigan was relatively minimal , limited to an washed out dam in Traverse City . Precipitation in Wisconsin reached 7 @. @ 58 inches ( 193 mm ) in Brodhead , causing Carla to rank as the wettest tropical cyclone in the state . Precipitation peaks in other states include 4 @. @ 44 inches ( 113 mm ) in Alabama , 5 @. @ 48 inches ( 139 mm ) in Arkansas , 6 @. @ 37 inches ( 162 mm ) in Mississippi , and 3 @. @ 6 inches ( 91 mm ) in Indiana .

= = = Elsewhere = = =

In Cuba , broadcasts reported severe flooding near Pinar del Río , and in Los Colomas and Punta de Cartas . Offshore Honduras on Swan Island , a rainfall amount of 3 @. @ 89 inches ( 99 mm ) was reported along with wind gusts up to 60 mph ( 95 km / h ) . The remnants of Carla brought tropical storm force winds to some areas of Canada . In Ontario , gusty winds caused power outages in the Clarkson ? Port Credit area . Electrical services were are disrupted in New Brunswick , due to winds up to 80 mph ( 130 km / h ) in Saint John . Winds of 57 mph ( 92 km / h ) lashed Halifax in Nova Scotia , thus the Halifax Public Gardens closed for threat of falling trees and branches .

= = Aftermath = =

Shortly after the storm , Vice President Lyndon B. Johnson , a lifelong resident of Texas , toured the devastation in the state and met with officials from 18 different counties , remarking that " as always , Texans are arising to a challenge ... We have suffered hurricane , tornado , and floods , but we in Texas are a bold and brave people . " After his report to President John F. Kennedy and Congress , \$ 55 million was approved in aid for Texas , though Kennedy later requested an additional \$ 65 million . President Kennedy issued a disaster declaration for Texas , allowing all jurisdictions in the state to apply for public assistance . The president also declared 6 parishes in Louisiana a disaster area . Helicopters deployed 88 United States Marines to Galveston to patrol devastated areas . A

United States Navy task force composed of medical and construction work teams was also sent to the area . Members of the United States National Guard assisted refugees in returning to their homes and worked to prevent looting . Owing the hurricane 's intensity and destruction , the name Carla was retired and will never again be used for an Atlantic hurricane . It was replaced by Carol in the 1965 season .