

= 1933 Florida ? Mexico hurricane =

The 1933 Florida ? Mexico hurricane was the first of two Atlantic hurricanes to strike the Treasure Coast region of Florida in the very active 1933 Atlantic hurricane season . It was one of two storms that year to inflict hurricane @-@ force winds over South Texas , causing significant damage there ; the other occurred in early September . The fifth tropical cyclone of the year , it formed east of the Lesser Antilles on July 24 , rapidly strengthening as it moved west @-@ northwest . As it passed over the islands , it attained hurricane status on July 26 , producing heavy rains and killing at least six people . Over the next three days , it moved north of the Caribbean , paralleling the Turks and Caicos Islands and the Bahamas . The storm produced extensive damage and at least one drowning as it crossed the Bahamas . On July 29 , the cyclone came under the influence of changing steering currents in the atmosphere , which forced the storm into Florida near Hobe Sound a day later . A minimal hurricane at landfall , it caused negligible wind damage as it crossed Florida , but generated heavy rains along its path , causing locally severe flooding . The storm turned west , weakened to below hurricane status , and later exited the state north of Charlotte Harbor on July 31 .

Once over the eastern Gulf of Mexico , the storm shifted its course to the west @-@ southwest and gradually recovered its intensity . The path of the storm brought it close to the mouth of the Rio Grande in early August . Few ships encountered the small storm as it regained hurricane status on August 4 , just a day before striking northern Mexico with winds of 90 mph (145 km / h) ? making it close to a modern @-@ day Category 2 hurricane on the Saffir @-@ Simpson hurricane wind scale . Striking close to the border between the United States and Mexico , the storm caused extensive damage in both countries . Winds damaged buildings and crops in Tamaulipas and the southern regions of Texas , with heavy losses to citrus production in the Rio Grande Valley . While only one person died in the United States , heavy rains led to catastrophic flooding that claimed at least 31 lives in northern Mexico ; the worst @-@ hit areas were in and near the city of Monterrey . While monetary losses in Mexico were unclear , the storm did at least \$ 3 @,@ 000 @,@ 000 in damages in the United States , measured in contemporary U.S. dollars .

= = Historical context = =

The July storm was not the last to damage the Treasure Coast of Florida in 1933 : a much stronger cyclone in September , with winds of 125 mph (200 km / h) , extensively damaged the same area that the July storm affected . This storm overshadowed memories of the earlier hurricane , and would be remembered as among the worst on the Treasure Coast as late as the 1980s . The occurrence of two hurricanes on the east coast of Florida in the same season is a relatively rare event in historical records , but not unprecedented : for instance , forensic research by weather historian David M. Ludlum suggests that two or more hurricanes in 1837 may have affected the region . Citing reports from William Reid in *Law of Storms* (1838) , Ludlum noted that two hurricanes affected Central and Northeast Florida on August 1 ? 2 and September 6 , respectively , while other storms , potentially hurricanes , may have done so later in September . The September hurricane struck between St. Augustine and Jacksonville . Incidentally , the 1837 Atlantic hurricane season was apparently very active , like 1933 ; as in 2004 , a record four hurricanes hit the state of Florida , including the infamous Racer 's Storm in October .

= = Meteorological history = =

At 12 : 00 UTC on July 24 , HURDAT initialized a tropical depression some 430 miles (690 km) east of Saint Lucia in the Windward Islands . (This was at the time that another tropical system formed over 450 mi (725 km) east of Bermuda .) Prior to reanalysis in 2012 , official records indicated formation at 12 : 00 UTC on July 25 ; however , examination of observations from ships and land stations revealed a closed low a day earlier . Upon generation , the depression moved generally west @-@ northwest , toward the eastern Caribbean , becoming a tropical storm at 00 : 00

UTC on July 25 . However , ships and weather stations did not observe gales until later that day , so the winds in HURDAT were interpolated , but based on available data , the storm strengthened steadily . At 16 : 00 UTC , the British steamship Daytonian recorded a pressure of 1 @, @ 012 mb (29 @. @ 87 inHg) , followed by peak winds of Force 9 , about 45 mph (72 km / h) , from the east . Around that time , the island of Antigua also experienced gales and a pressure of 1 @, @ 002 mb (29 @. @ 59 inHg) as the storm made landfall with winds of 60 to 70 mph (95 to 110 km / h) . A barometer on Saba measured 983 mb (29 @. @ 02 inHg) , implying maximum sustained winds of 85 mph (140 km / h) ; based on this , the storm was posthumously upgraded to hurricane status at 00 : 00 UTC on July 26 , 12 hours earlier than once designated in HURDAT .

As the storm neared Saint Thomas , the island experienced northeast winds of 60 mph (97 km / h) . On its west @- @ northwest course , the storm ? now equivalent to a Category 1 hurricane ? missed Puerto Rico to its northeast . On July 27 , the cyclone brushed Grand Turk and the Caicos , producing winds visually estimated at 85 mph (137 km / h) on the former island , with a peripheral pressure of 995 mb (29 @. @ 37 inHg) . The hurricane gradually bent to the northwest as it followed the arc of the eastern Bahamas . After 15 : 00 UTC on July 28 , the Norwegian steamship Noreg encountered southeast winds of 70 mph (110 km / h) , yet pressures only dipped to 1 @, @ 002 mb (29 @. @ 58 inHg) . The storm struck Cat Island , Bahamas , around 18 : 00 UTC with winds of 80 mph (130 km / h) ; the next day , the storm made another landfall on the Abaco Islands with the same winds . During this time , the storm turned to the west @- @ northwest , nearing the east coast of Florida ; this was likely due to a robust subtropical ridge in the area .

Based on ship reports , the storm made its only landfall in the United States on Jupiter Island , between Port Salerno and Hobe Sound , Florida , around 16 : 00 UTC on July 30 . Some hours earlier , the American steamship El Almirante encountered hurricane @- @ force winds ? the only such instance at sea in the storm ? concurrent with a pressure of 998 mb (29 @. @ 46 inHg) . Another ship nearby made a reading of 992 mb (29 @. @ 29 inHg) coincident with winds of 50 mph (80 km / h) , hinting that it was taken inside the eye of the storm ; calculations by researchers determined that the central pressure was 988 mb (29 @. @ 18 inHg) at the time and at landfall in Florida . While this supported winds of only tropical storm force (70 mph (110 km / h)) , the storm had a small radius of outermost closed isobar embedded in a ridge of high pressure , so winds in Florida were deemed to be 75 mph (120 km / h) , affirming earlier reports that listed the storm as a hurricane at landfall . After landfall , the storm weakened to a tropical storm and moved slowly westward across the south @- @ central peninsula , passing over the northern end of Lake Okeechobee early on July 31 . The center of the compact tropical cyclone then passed slightly north of Punta Gorda and reached the Gulf of Mexico , between Venice and Englewood , with winds of 45 mph (75 km / h) .

From this point , few ships were near the center of the storm with which to accurately discern its location and intensity , though data on August 1 ? 2 confirmed a weaker cyclone than earlier . At 00 : 00 UTC on August 1 , the storm began a persistent west @- @ southwest motion that continued for the rest of its life cycle . A few ships on August 1 ? 3 noted modest gales of 40 mph (64 km / h) , with the lowest pressure on weather maps being 1 @, @ 004 mb (29 @. @ 65 inHg) at 12 : 00 UTC on August 3 . Based on this pressure , reanalysis inferred that the storm began gradually restrengthening a day earlier , reaching 65 mph (100 km / h) at the time of the reading . Although the storm regained hurricane status at 00 : 00 UTC on August 4 , due to the sparsity of ship data , weather forecasters at the time assumed the storm only contained gale @- @ force winds . For a day , the storm briefly angled to the west as it neared the Mexico ? United States border , reaching its final and strongest peak of 90 mph (150 km / h) late on August 4 . Anemometers in Brownsville , Texas , verified a landfall near Playa Lauro Villar , Tamaulipas , just south of the Rio Grande , near 01 : 00 UTC on August 5 . Based on the data , scientists ascertained a radius of maximum wind of about 30 mi (45 km) as the eye made landfall . Barometers in Brownsville showed pressures of 981 to 982 mb (28 @. @ 98 to 29 inHg) , attesting a central pressure of 975 mb (28 @. @ 79 inHg) in the eye . Now hooking west @- @ southwest , the storm quickly atrophied as it moved inland and vanished over easternmost Nuevo León by 18 : 00 UTC on August 5 .

= = Preparations = =

Although the storm affected several Caribbean islands , the Turks and Caicos , and the Bahamas , preparations there , if any , were unclear . Residents across Puerto Rico boarded up windows and secured roofs in anticipation of damaging winds . Governor Robert Hayes Gore placed the Hurricane Relief Organization and Red Cross on standby . As the storm neared Florida , the United States Weather Bureau ? later the National Weather Service ? posted storm warnings between Miami and Titusville . These were later extended to include the west coast of the state from Punta Rassa to Tarpon Springs . At the time , forecasters were unaware that the storm was of hurricane status ; this unawareness extended to the storm 's passage over the Gulf of Mexico . Forecasters only issued storm warnings for part of the Texas coast , including the cities of Brownsville and Freeport .

Upon news of the storm , businesses in West Palm Beach boarded up vulnerable , expensive plate glass windows . Fearing flooding , authorities were empowered by Florida governor David Sholtz to evacuate over 4 @, @ 200 ? 5 @, @ 000 residents , most of whom were black farm workers , from low @-@ lying areas around Lake Okeechobee to elevated locations . Most of the evacuees left by train , prompted by fears of washouts on the track beds . A day before the storm , the lake level reached 17 feet (5 @. @ 2 m) , heightening officials ' concerns about flooding and spurring the evacuations . Several railway companies lent free transport to their passengers , and trains were conveniently stationed around the lake . The evacuations took place in the communities of Belle Glade , Pahokee , Canal Point , Okeechobee , and Clewiston . Relief organizations and local mayors distributed milk , biscuits , and coffee to evacuees . On the west coast of the state , some residents covered their windows , but many others did not , anticipating little damage from the weak storm . Citizens received radio updates from the Weather Bureau , which gave the position and movement of the storm . Some beachfront residents , such as in Sarasota , left their homes for safety , while boaters secured their vessels .

In Texas , the Weather Bureau notified people early enough to allow mass evacuations : most coastal residents and camping visitors evacuated the vulnerable islands as the storm neared . Between 60 ? 70 % of Port Isabel 's 500 residents left before the storm , with the remainder sheltering in a sturdy brick store on the highest land available .

= = Impact = =

Throughout the hurricane 's path from the Caribbean , to Florida , and finally into Texas and Mexico , 39 people were killed . Thirty @-@ one deaths occurred in Mexico , six in Saint Kitts , and one in both the Bahamas and Texas . Although figures from Mexico were unavailable , total losses from the storm in the United States reached about \$ 3 million , inclusive of Florida and Texas , though figures for the latter state varied from \$ 500 @, @ 000 to \$ 1 @. @ 75 million , according to various sources .

= = = Caribbean = = =

As it passed over the Lesser Antilles , the storm caused at least six deaths on the island of Saint Kitts ? then known as Saint Christopher Island ? and the Virgin Islands reported torrential rains , though no damage was reported . The barometer dipped to 1 @, @ 005 mb (29 @. @ 69 inHg) as the storm bypassed the islands to the south . Crops and farm fencing on Saint Croix sustained some damage , though overall effects were limited . Coincidentally , the storm arrived the day after Hurricane Supplication Day , a local tradition marking the opening of hurricane season on the fourth Monday in July . In the Bahamas , winds of 84 mph (135 km / h) swept the Abaco Islands early on July 29 , but caused only minimal damage there . Other reports indicated more severe damage elsewhere in the islands , including across the Turks and Caicos Islands , and one death from drowning . The American schooner Adams , anchored off Grand Turk , was dragged out to sea by the hurricane 's waves .

= = = Florida = = =

Wind damage was generally minimal as the small hurricane crossed Florida , except to citrus crops and snapped vegetation in some areas . According to a survey by local fire officials , the calm eye was observed from Hobe Sound to the edge of Stuart , during which passage " hardly a needle in pine trees along the side of the road could be seen moving . " Peak winds estimated or registered at 60 to 70 mph (97 to 113 km / h) affected the coast between Stuart and Fort Pierce . The winds downed several telegraph poles and destroyed a structure at Stuart , but otherwise little damage resulted . Initial reports from Fort Pierce signaled no uprooted trees . Farther south , apart from a snapped coconut palm , the town of Palm Beach evinced little damage to foliage . In Fort Pierce , heavier losses to grapefruit were accounted at about 25 % , especially in exposed groves , and some trees suffered total loss of fruit . Shrubs and roofs in the city were damaged as well , but power and water services were quickly revived as the worst of the storm passed . Final losses to citrus in the Indian River region were tallied at 10 ? 20 % , with much greater tolls locally . Avocado and mango trees also sustained significant damage . A minimum pressure of 1 @, @ 004 mb (29 @. @ 66 inHg) occurred in Stuart , the same as in Jupiter ? both unusually high for a hurricane , though likely related to the storm 's small size . In fact , contemporary meteorologists concluded that the storm had only hit Florida at tropical storm strength , with top winds of 70 mph (113 km / h) in Stuart .

Despite the relatively modest winds , prolific rains attended the cyclone . A rain gauge at the Palm Beach Post office in West Palm Beach counted 12 @. @ 01 inches (305 mm) on July 30 ? 31 , setting a 24 @- @ hour record at that location ? 3 @. @ 19 in (81 mm) above the daily maximum for the week of the 1928 Okeechobee hurricane . This established a monthly record as well , the total being 23 @. @ 28 in (591 mm) for July . Ultimately , totals exceeding 15 @. @ 25 in (387 mm) fell over a two @- @ day span , with a storm total of 15 @. @ 7 in (399 mm) . Other rain gauges , such as one that blew over in Fort Pierce , failed to measure the true totals , which were likely underestimated . The deluge turned lawns into " small lakes , " overflowed curbs on Royal Palm Way for two blocks , and left up to 1 foot (0 @. @ 30 m) of water in the streets of Royal Park , a neighborhood in Palm Beach . Floodwaters submerged all but the highest land on a nearby golf course , which was navigable only by boat . The copious rains submerged roads and rural countryside in Palm Beach , Martin , and St. Lucie counties , but did not render highways impassible for traffic . However , roads in the Jupiter area could only be traversed " with great difficulty , " and water stood 2 @. @ 5 ft (0 @. @ 76 m) deep on parts of Dixie Highway . Floodwaters shut down a bridge in town , and aside from a West Palm Beach commuter , bus drivers were the only motorists on flooded roads . The Post described the predicament of Matt Platt , the commuter from West Palm Beach , as he entered Jupiter :

Trains were getting through but travel by car in any direction was almost taboo . [...] Water ... at times was up to the lights on his car , [and he] was the only person to drive into the town Monday [July 31] ...

? Palm Beach Post , August 1 , 1933

Reports from Jupiter detailed a town almost " cut off " by floodwaters . A washout affected a 70 @- @ foot (21 m) section of track bed on the Florida East Coast Railway in Port Salerno , halting three passenger trains for a combined 7 @. @ 5 hours . Nearby , floodwaters stranded two Florida Motor Lines buses as water rose to cover the floors . Relief vehicles later transported passengers on their way . African @- @ American communities in Stuart reported severe flooding as well , and torrential rains formed potholes in streets in West Palm Beach . The rains demonstrated that local communities could be stranded , causing funds to be expedited toward bridge repairs on the Loxahatchee River near Jupiter . As late as August 2 , floodwaters remained 1 @. @ 5 to 2 ft (0 @. @ 46 to 0 @. @ 61 m) deep along Military Trail near West Palm Beach . Flooding in some areas was the worst since a hurricane in October 1924 . Winds disrupted communications with small settlements , and Stuart was unreachable for many hours . Loose branches falling on power lines temporarily disrupted electricity in Palm Beach , where flooding affected low @- @ lying ground . The

effects were similar to those attending earlier storms . Sewers in West Palm Beach backed up , causing water to seep over Dixie Highway at several spots . The water also submerged an FEC railroad siding and was 1 @. @ 5 ft (0 @. @ 46 m) deep at the east end of the Royal Park bridge . Several cars were stranded while attempting to navigate flooded streets . Despite inconveniences , residents made good humor of the elements : newspapers noted that a parrot lost shortly before the storm was spotted in a tree , uninjured , and returned to its owner .

Inland , the storm caused no appreciable effects as it mostly crossed sparsely settled areas . Winds at Okeechobee reached 40 to 50 mph (64 to 80 km / h) as the center moved south of that town early on July 31 . Heavy rains extended over the area , with 24 @- @ hour amounts of 12 @. @ 02 in (305 mm) in Indiantown and 15 @. @ 6 in (396 mm) at a water transport lock . Additional heavy rains fell over the west coast of Florida , but to a lesser extent than on the east ; as was the case elsewhere , notable wind damage was almost non @- @ existent . Little immediate damage from wind and rain resulted in the Everglades and near Lake Okeechobee . Winds peaked at 30 mph (48 km / h) in Pahokee , along the lake 's eastern shore , and the lake level rose 18 in (457 mm) on July 30 ? 31 , which was not enough to induce flooding , although the Kissimmee River , which fed into Lake Okeechobee , rose steadily , owing to heavy rains . The Weather Bureau office in Tampa recorded peak winds of 39 mph (63 km / h) . In St. Petersburg , citizens enjoyed a refreshing northeast breeze that removed dead fronds from palms , uprooted scattered plants , and sent waves splashing over seawalls . An anemometer operated by United States Airways at Grand Central Airport , a now @- @ defunct airport on Weedon Island , clocked 40 mph (64 km / h) winds .

= = = Texas and Mexico = = =

As the hurricane affected Brownsville , strong winds ? estimated at 80 to 90 mph (130 to 140 km / h) ? rent apart tree limbs , tore off roofs , and cracked plate glass windows . Debris covered streets in nearby Port Isabel , where waterfront fishing huts were wrecked . High seas also destroyed many structures on South Padre Island and partly submerged Padre and Brazos islands . High tides eroded 500 ft (150 m) of highway on Brazos . Almost no building in Port Isabel went unscathed , with poorly built structures flattened ; among the worst hit were at a development company . Early reports confirmed that airborne glass from the local courthouse mildly injured a man in Brownsville . The storm also disrupted communications between the Texas mainland and the barrier islands , where high tides stranded 25 ? 30 campers and a detachment of cavalry from Fort Brown . Two hangars in Brownsville collapsed from the winds as well . A smokestack at a canning facility in La Feria collapsed under the strain of high winds . Water levels along the Rio Grande rose by 14 ft (4 @. @ 3 m) , though the river ultimately fell short of flood stage and spared surrounding areas of damage . The storm ruined between 8 ? 10 % of the citrus crop in the Rio Grande Valley , and caused at least one death in Texas . Localized losses to the citrus crop reached 25 % and upwards of 50 % of the cotton crop was blown away in the lower valley region . Total crop damage reached \$ 2 million .

In Mexico , the storm produced torrential rains that resulted in severe flooding , particularly in riparian areas along and near the Santa Catarina River in Monterrey , where at least 31 people died as floods made more than a quarter of the city inaccessible . The collapse of a bridge isolated the Colonia Independencia . Raging waters destroyed 300 homes in one section alone , forcing occupants to flee , and the number of homeless reached the " thousands . " Governor Lázaro Cárdenas and Mayor Calles called upon all city and state facilities for relief efforts . Many people required evacuation by boat in what were described as " thrilling rescues . " The effects of the storm prostrated electrical and communications lines as well as trees in the city . Nearer to the coast , strong winds severely damaged the famed Teatro Reforma , a theater dating to the Maximilian era of the 1860s , in Matamoros , Tamaulipas , where many homes were destroyed .