

= Hurricane Richard =

Hurricane Richard was a damaging hurricane that affected areas of Central America in October 2010 . It developed on October 20 from an area of low pressure that had stalled in the Caribbean Sea . The system moved to the southeast before turning to the west . The storm slowly organized , and the system intensified into a tropical storm . Initially , Richard only intensified slowly in an area of weak steering currents . However , by October 23 , wind shear diminished , and the storm intensified faster as it headed toward Belize . The next day , Richard intensified into hurricane status , and further into its peak intensity as a Category 2 hurricane , reaching maximum winds of 100 mph (150 km / h) . The hurricane made its only landfall on Belize at peak intensity . Over land , Richard quickly weakened , and later degenerated into a remnant low on October 25 .

Hurricane Richard caused an estimated \$ 80 million (2010 USD) in damages in its path , much of which was in Belize . In Honduras , damage was mostly limited to power outages and landslides . In Belize , most of the damage was attributed to damage to crops . Power outages were also widespread across the country . Two fatalities occurred in Belize , one direct and the other indirect . One person drowned after his ship capsized during the storm and another was mauled to death by a jaguar that had escaped its cage .

= = Meteorological history = =

The origins of Hurricane Richard can be traced back to a tropical wave that moved off the African coast on October 4 and moved westward , stalling over Venezuela on October 13 . Over the next 3 days , it drifted into the extreme southwestern Caribbean Sea , and soon developed an area of low pressure , until it stalled just north of Panama . On October 16 , the National Hurricane Center (NHC) began to monitor that area of disturbed weather in association with a weak trough of low pressure over the southwestern Caribbean Sea , which persisted across the region as Hurricane Paula dissipated over Cuba on the same day . By October 17 , the easterly and northerly trade winds flowed into the low , producing a disorganized area of convection , or thunderstorms across the region . For several days the system moved generally west @-@ northwestward toward Central America . Convection increased over the low on October 18 , and the National Hurricane Center noted the possibility of further organization due to favorable environmental conditions . Later that day , it passed near the eastern coast of Nicaragua . The storm became more organized as it turned to a north @-@ northwest drift in the northwestern Caribbean Sea .

The Hurricane Hunters investigated the system on October 19 and indicated the development of a low @-@ level circulation . As such , the NHC noted that the storm was very close to tropical depression strength . The next day , after the system turned to the east , strong upper @-@ level wind shear impeded its further development , but such conditions were expected to abate . Early on October 21 , the convection had organized and increased near the center of circulation despite still being in an area of moderate wind shear . Due to the organization , the NHC classified it as Tropical Depression Nineteen about 125 miles (200 km) south of Grand Cayman . At the time , the depression was drifting eastward , located near the base of a mid @-@ level trough and toward the west of a subtropical ridge . In the hours after its formation , the center remained located along the western portion of a cyclonically curved rainband as the convection increased . The wind shear decreased , and despite the presence of dry air to its northwest , the depression intensified to Tropical Storm Richard by 1500 UTC on October 21 , based on confirmation from the Hurricane Hunters . However post ? operational analysis revealed that the depression became a tropical storm slightly earlier , at 1200 UTC .

Upon intensifying to tropical storm status , Richard was moving southeastward , still in an area of weak steering currents and in the midst of undergoing a loop in its track . Two hurricane models predicted for the storm to intensify to major hurricane status over the western Caribbean . The official forecast was for the storm to make landfall on Belize with winds of 90 mph (150 km / h) . As Richard continued generally southward early on October 22 , its convection became ragged and linear , preventing any initial strengthening . Additionally , the circulation became elongated as the

thunderstorms deteriorated , due to the continued presence of dry air and wind shear . After turning westward , Richard moved parallel just offshore the Honduras coast , and its circulation became difficult to locate on satellite imagery .

On October 23 , Tropical Storm Richard began strengthening again , after the shear diminished and the storm took advantage of the warm waters of the western Caribbean . Later that day , a mid @-@ level eye feature became evident on satellite imagery . Additionally , the outflow gradually improved and became more symmetrical throughout the circulation . On October 24 , Hurricane Hunters indicated that Richard attained hurricane status , based on surface winds of 85 mph (135 km / h) . In addition , radar from Belize at the time indicated a nearly @-@ closed eyewall . The hurricane continued intensifying to peak winds of 100 mph (155 km / h) , and the minimum central pressure dropped to 977 millibars (28 @.@ 9 inHg) , making it a Category 2 hurricane , despite the fact that it was operationally classified as a Category 1 hurricane with winds of 90 mph (150 km / h) and a pressure of 981 millibars (29 @.@ 0 inHg) .

At around 0045 UTC on October 25 , Hurricane Richard made landfall about 20 miles (35 km / h) south @-@ southeast of Belize City , Belize at peak intensity , and just after moving ashore , the eye briefly became better defined . Within a few hours however , the inner core lost definition as the eye dissipated . The winds rapidly diminished , and Richard weakened to tropical depression status after crossing into northern Guatemala . By then , there was little deep convection remaining , and after emerging into the Bay of Campeche Richard degenerated into a remnant low on October 26 , but then turned back east as the system was forced to because of the strong wind shear . After the storm reached the Yucatán Peninsula , the system began turning north until it reached the Gulf of Mexico . The remnants of Hurricane Richard continued to move north over the Gulf of Mexico as it weakened , until the system dissipated completely , late on October 27 .

= = Preparations and impact = =

= = = Honduras = = =

Starting late on October 21 , the Government of Honduras issued a tropical storm watch for then @-@ Tropical Storm Richard , which covered the north coast of Honduras from Limón to the border with Nicaragua . When Richard finally began to head westward on October 22 , the tropical storm watch was upgraded to a tropical storm warnings ; a hurricane watch was also issued for the same location . By 1500 UTC on October 23 , the Government of Honduras had issued a tropical storm warning from Limón heading westward toward Puerto Cortés ; the tropical storm warning also included the three Bay Islands of Guanaja , Roatán , and Útila . As Richard was predicted to brush the coast of Honduras just offshore , the tropical storm warning was upgraded to a hurricane warning .

At the time Richard had intensified into a hurricane , it had moved away from eastern Honduras , and the tropical storm warning and hurricane watch was discontinued from Limón to the border with Nicaragua . While Hurricane Richard was approaching Belize on October 24 , the Government of Honduras discontinued all watches and warning that had been issued in association with the storm as was no longer considered a possible threat for landfall .

While passing to the north of the country , Richard knocked down trees and power lines on the northern Honduras coast . Some power outages occurring in areas resulted from the fallen power lines . In addition , mudslides triggered by rainfall cut off an estimated 15 @,@ 000 people in 40 small towns . Four coastal Honduran provinces were declared areas of maximum alert by the government after the storm . The offshore Bay Islands also experienced heavy rainfall due to Richard . Winds on the islands peaked at 58 mph (93 km / h) on Roatán .

= = = Belize = = =

The Government of Belize began warning of the threat of Richard on October 22 , starting with a

tropical storm watch issued for the entire east coast of the country . As Tropical Storm Richard was rapidly intensifying , the tropical storm watch on the coast of Belize was replaced with a tropical storm warning , which had been upgraded at 1500 UTC October 23 . Only three hours after the replacement of the tropical storm watch to warning , Richard was nearing hurricane status , and the tropical storm warning in place on the east coast of Belize upgraded to a hurricane warning . The hurricane warning associated with Hurricane Richard remained in place for the east coast of Belize as landfall was occurring , since the storm made landfall to the south @-@ southeast of Belize City . Prior to the storm 's landfall , an estimated 10 @, @ 000 people took refuge in storm shelters and churches .

Throughout Belize , Hurricane Richard damaged thousands of homes and leaving many without power . The Belize Zoo and Tropical Education Center , a major attraction for ecotourists and Belizeans , was in the path and heavily damaged forcing it to close to remove debris and repair their animal exhibits . Overall damage was BZ \$ 33 @. @ 8 million (\$ 17 @. @ 4 million 2010 USD) , most of which from crop damage , especially to citrus fruits . The entire grapefruit harvest was lost , an estimated 25 % of orange crops were lost , and several large trees were downed . In addition , about 200 homes were destroyed .

= = = Mexico = = =

The Government of Mexico also gave warnings of the approaching Richard , first issuing a hurricane watch also the east coast of the Yucatán Peninsula from Punta Guesa southward to the city of Chetumal , which is on the border with Belize . In addition to the hurricane watch issued for that portion for the Yucatán Peninsula , a tropical storm warning was set in effect for the same area . Although Hurricane Richard approached closely to the Mexican portion of the Yucatán Peninsula , there were no changes to the watches and warning from 1500 UTC October 23 to the time of landfall in Belize . After Hurricane Richard made landfall in Belize , the Government of Mexico discontinued the hurricane watch from Punta Guesa southward to Chetumal , although the tropical storm warnings have been cancelled .

Governor of Quintana Roo Félix González Canto declared Chetumal as the highest state of alert prior to Richard . However , areas on the northeastern coast of the Yucatán Peninsula were put on only minimum alert by the government .