

= Hurricane Bertha ( 2014 ) =

Hurricane Bertha was an unusual tropical cyclone in early August 2014 that attained minimal hurricane status , despite having a disheveled appearance and a relatively high atmospheric pressure . On July 26 , a tropical wave south of the Cape Verde Islands was monitored for possible tropical cyclogenesis . Over the following days , it slowly developed and acquired gale @-@ force winds and enough convection to be designated as Tropical Storm Bertha early on August 1 . A mostly disorganized cyclone , Bertha quickly moved across the Lesser Antilles , clipping the northern end of Martinique , later that day . During its trek across the eastern Caribbean Sea , its circulation became severely disrupted and it may have degenerated into a tropical wave . On August 3 , it traversed the Mona Passage and moved over the Southeastern Bahamas where conditions favored development . Despite an overall ragged appearance on satellite imagery , data from Hurricane Hunters indicated it intensified to a hurricane on August 4 ; it acquired peak winds of 80 mph ( 130 km / h ) that day . Turning north , and later northeast , Bertha soon weakened as it began to merge with an approaching trough to the west . This merger ultimately took place on August 6 , at which time Bertha was declared extratropical well to the south of Nova Scotia . The remnant system raced eastward across the Atlantic and later struck the United Kingdom on August 10 . Once over the North Sea , the storm stalled for a few days before resuming its eastward track . It was last noted around the Baltic Sea on August 16 .

As a tropical cyclone , Bertha 's impact was relatively minor . Widespread power outages occurred along its path but no major damage or loss of life took place . Enhanced swells and rip currents associated with the hurricane resulted in three fatalities and dozens of rescues along the East Coast of the United States . After becoming an extratropical system , it had significant effects in Western Europe . Particularly hard hit was the United Kingdom , where wind gusts reached 108 mph ( 174 km / h ) . Unseasonably heavy rains triggered widespread flooding which shut down roads and prompted evacuations . One fatality took place offshore . On mainland Europe , a small tornado outbreak resulted in scattered structural damage in Belgium , France , and Germany .

= = Meteorological history = =

On July 24 , 2014 , a westward moving tropical wave emerged off the west coast of Africa near the Cape Verde Islands . Following the development of convective activity ? showers and thunderstorms ? on July 26 , National Hurricane Center ( NHC ) began monitoring the system for potential tropical cyclogenesis . A disorganized system , development was forecast to be slow due to unfavorable environmental conditions . Organization and coverage of convection began improving by July 28 , due in part to the passage of a Kelvin wave . An area of low pressure subsequently consolidated within the disturbance on July 29 and the NHC assessed the system as having imminent potential of becoming a tropical depression . Convection soon diminished over the system , though its circulation remained well @-@ defined . Moving west @-@ northwest around the periphery of a strong subtropical ridge , the low acquired tropical storm @-@ force winds early on July 31 but continued to lack convection . A hurricane hunter aircraft investigated the system that afternoon and found winds of 45 mph ( 75 km / h ) north and northeast of the center . In the hours following the weather reconnaissance mission , a band of deep convection blossomed near the center , prompting the NHC to designate the system as Tropical Storm Bertha at 00 : 00 UTC on August 1 . Upon its classification , Bertha was situated roughly 345 mi ( 555 km ) east @-@ southeast of Barbados in the Lesser Antilles .

Within hours of Bertha 's designation on August 1 , wind shear stemming from a trough over the central Atlantic displaced convection from the circulation center . Satellite imagery depicted a well @-@ defined and vigorous circulation ; however , observations from the hurricane hunters indicated a wind field more akin to a tropical wave . Around 21 : 00 UTC , Bertha clipped the northern end of Martinique with sustained winds of 50 mph ( 85 km / h ) . Persistent shear continued to take its toll on the cyclone as it entered the Caribbean Sea with aircraft data indicating no closed circulation at 5 @ , @ 000 ft ( 1 @ , @ 500 m ) elevation . Despite this , observations from Martinique and Dominica

indicated that there was some semblance of a surface circulation , and the NHC continued to monitor Bertha as a tropical storm . Throughout August 2 , convection steadily increased in coverage and organization though the center of Bertha remained displaced from the strongest thunderstorms to the southwest . NEXRAD weather radar imagery from San Juan , Puerto Rico depicted a disorganized , possibly open circulation throughout the day . In light of this , NHC forecaster John Beven noted that the system could degenerate into an open wave around the time it reached Hispaniola later on August 2 .

Continued effects of dry air entrainment , shear , and land interaction further degraded Bertha 's structure and late on August 2 , " the system barely [ qualified ] as a tropical cyclone " . Various data sources indicated no closed circulation by 21 : 00 UTC and it was noted that advisories could be discontinued , at least temporarily . Early on August 3 , the disheveled storm moved through the Mona Passage and brushed the eastern coast of the Dominican Republic before emerging over the Atlantic Ocean . As the storm moved away from Hispaniola its movement became more northwesterly , following the edge of the subtropical ridge . Moving near the Turks and Caicos Islands , Bertha 's circulation finally became better organized and banding features developing over its eastern periphery . Subsequent strengthening of upper @-@ level outflow , decreased shear , increased mid @-@ level humidity , and high sea surface temperatures enabled rapid intensification . Deep convection wrapped cyclonically into the storm and winds reached 65 mph ( 100 km / h ) by 03 : 00 UTC on August 4 . During the early part of August 4 , structural organization began to degrade with convection becoming more limited in extent and banding features dissipating . The only factor aiding the storm was its well @-@ defined outflow . However , despite the storm 's ragged and weak appearance observations from hurricane hunters indicated that it had intensified into a hurricane by 12 : 00 UTC . Bertha is estimated to have reached its peak intensity around this time with winds of 80 mph ( 130 km / h ) and a barometric pressure of 998 mbar ( hPa ; 29 @.@ 47 inHg ) . Additionally , by this time its movement had shifted to due north and with increased forward momentum .

Through the remainder of August 4 and into the early hours of August 5 , Bertha maintained hurricane status with its atypical structure . At times , its circulation became exposed due to increasing shear . Acceleration to the north @-@ northeast ahead of a trough off the East Coast of the United States ensued as the system weakened below hurricane intensity during the overnight of August 4 ? 5 . Steadily increasing shear kept the circulation center mostly devoid of thunderstorms , with periodic bursts of convection being quickly pushed away . The storm 's motion became more northeasterly early on August 6 as it began to undergo an extratropical transition . An upper @-@ level jet streak coupled with the system that morning , prompting convection to develop away from the storm 's center . Bertha soon merged with the trough steering it northeast as it moved into the cold sector of the front , which extended from Nova Scotia to The Bahamas . The merger of these systems marked Bertha 's transition into an extratropical system , at which time it was located 290 mi ( 470 km ) south @-@ southeast of Halifax , Nova Scotia . Slight intensification took place shortly thereafter with winds increasing to 60 mph ( 95 km / h ) before weakening resumed . The system raced eastward across the Atlantic and ultimately degraded into a trough several hundred miles southwest of Ireland on August 9 . Bertha 's remnants struck the United Kingdom the following day and later moved over the North Sea . There , the storm stalled for a few days before resuming its eastward track . The decaying cyclone moved over Scandinavia on August 14 and was last noted on August 16 near the Baltic Sea .

= = Warnings and watches = =

= = Preparations and impact = =

= = = Caribbean = = =

Late on August 1 , Bertha crossed the Lesser Antilles , bringing strong winds and heavy rain to many islands . Across Martinique , the storm produced sustained winds of 46 mph ( 74 km / h ) with gusts to 54 mph ( 87 km / h ) . Numerous lightning strikes caused widespread surges in the electrical grid and left 150 @, @ 000 residences without electricity . Power was restored to all customers by the evening of August 2 . Rainfall was relatively light and less than anticipated with 1 @. @ 2 to 2 @. @ 4 in ( 30 to 60 mm ) falling across northern areas of the island and 0 @. @ 39 to 0 @. @ 79 in ( 10 to 20 mm ) over southern areas . Similar effects were felt in Guadeloupe where gusts reached 57 mph ( 92 km / h ) on La Désirade . A general 3 @. @ 9 to 5 @. @ 9 in ( 100 to 150 mm ) fell across Basse @-@ Terre Island . Few reports of downed trees and power lines were received and overall damage was negligible . Some rain and wind also affected Barbados .

Dominica Prime Minister Roosevelt Skerit declared a public holiday for the afternoon of August 1 in order for all workers to return home in advance of the storm . Several LIAT flights for the island and St. Lucia were canceled . Wind gusts on Dominica reached 43 mph ( 69 km / h ) and hundreds of people lost power .

Coincidentally , Bertha threatened the United States Virgin Islands 18 years after a hurricane in 1996 of the same name , with both affecting the primary elections . Turnout was low as expected due to the storm , with 9 @, @ 217 people ( 26 @. @ 05 percent ) of voters showing up to polls . In response to the storm , the Virgin Islands Territorial Emergency Management Agency was activated , leave for all police officers was suspended , and officers began operating on 12 ? hour shifts on August 1 . The Public Works Department appropriated sandbags and cleared storm drains in anticipation of heavy rain . The outer edges of Bertha produced near @-@ hurricane @-@ force around the United States Virgin Islands , with an offshore buoy near St. Thomas measuring a gust of 72 mph ( 116 km / h ) . Gale @-@ force winds on St. Croix snapped many tree limbs .

Across Puerto Rico , the outer bands of Bertha dropped a general 3 to 5 in ( 76 to 127 mm ) of rain , with isolated areas reaching 10 in ( 250 mm ) , over areas suffering from a drought . Accumulations peaked at 11 @. @ 11 in ( 282 mm ) in Adjuntas . Some flooding occurred on the island , resulting in the partial collapse of two roads . The Río Grande de Arecibo topped its banks between highways 10 and 123 within the Utuado Municipality . Landslides blocked a few roads around Aceitunas . Tropical storm @-@ force wind gusts , peaking at 52 mph ( 84 km / h ) , downed some trees and power lines . Prolific lightning accompanied the storm and resulted in 29 @, @ 000 residences losing power . In Arroyo , 239 people , mostly athletes , sought refuge in public shelters .

Following the designation of Tropical Storm Bertha on August 1 , the Ministry of Public Works and Communications in the Dominican Republic activated emergency operations to prepare for the storm . Several flights to and from Las Américas International Airport near Santo Domingo were canceled on August 2 . Heavy rains in the country , peaking at 4 @. @ 7 in ( 120 mm ) in Bayaguana , caused significant flooding , especially along the Soco River which overflowed its banks . The communities of Atilano , Cabeza de Toro , Campiña , Concho Primo , and Lima , were temporarily isolated by the rising waters . Less substantial flooding occurred elsewhere in the country , with seven homes inundated in Moscó . Additionally , strong winds downed many trees in the region .

Across the Southeastern Bahamas , residents were warned of the approaching storm ; however , many were preoccupied with a local regatta and ignored warnings . In the Turks and Caicos , locals brought their boats closer to shore and anchored them . Hotels were reportedly " taking seriously the threat of the storm . " Increased surf and sporadic heavy rains associated with Bertha affected portions of Cuba .

= = = United States East Coast = = =

Though Bertha remained hundreds of miles offshore , long @-@ period swells resulted in dangerous rip currents across the East Coast of the United States . Two people required rescue off the coast of Jacksonville , Florida due to rip currents . Lingering swells resulted in the drowning of a man at Mickler 's Landing in Ponte Vedra Beach . Further north near Cape Hatteras , North Carolina , a man was pulled out to sea by rip currents and rescued by the Hatteras Island Rescue Squad ; however , after being hospitalized he later succumbed to his injuries and died . Tropical storm

warnings were raised for offshore zones ; waves of 15 to 25 ft ( 4 @. @ 6 to 7 @. @ 6 m ) were forecast for areas off the Delmarva Peninsula and New Jersey . Several people were injured in rough seas at Rehoboth Beach , Delaware while lifeguards performed multiple rescues . In Ocean City , New Jersey , 25 rescues took place on August 5 . That same day , a woman nearly drowned near Atlantic City after being pulled out by rip currents .

= = = Western Europe = = =

Heavy rains from the remnant of Bertha caused widespread flooding across the United Kingdom . Flood warnings were issued for 6 regions across the nation while alerts were raised for a further 47 areas during the storm 's passage . In London , a water main burst and inundated surrounding streets . Thirty shops were affected and nearby stations of the London Underground were swamped . The Prudential RideLondon race was shortened by 14 mi ( 23 km ) due to the storm . The River Dee rose to its highest level since 1990 and flooded surrounding areas . Footbridges and paths along its banks were washed away , though no structures were affected . Lossiemouth , Scotland , received a month 's worth of rain in roughly 12 hours . Flooding in Elgin prompted the evacuation of 200 homes . Numerous roads were washed out across Scotland and First ScotRail reported widespread service disruption . High winds and flooding also damaged crops across the region , namely in Scotland .

Offshore , a man suffered a fatal head injury on his yacht amid rough seas and high winds . The Solent Coastguards flew out to rescue the man , but he was declared dead on the scene . Twenty vessels competing in the 2014 EXE Sails GP14 World Championships were caught in high winds produced by the storm and capsized in the Strangford Lough . A nearby hospital declared a major incident and the coast guard rushed to rescue the 97 sailors stranded in the water . Only one person suffered injuries , but all were treated for hypothermia .

The outer bands of Bertha 's remnants produced a prolonged period of severe weather over mainland Europe , extending from France to Sweden . In southwest Germany , gusts reached 75 mph ( 120 km / h ) . On August 10 , a small tornado outbreak occurred with touchdowns taking place in Belgium , France , and Germany . The strongest of these , rated F2 on the Fujita Scale , affected Bad Schwalbach , Germany ; 50 homes were damaged in the area and a swath of forest was heavily damaged . An F1 tornado struck an outdoor event in Luxembourg , Belgium , resulting in four serious injuries . Additionally , an EF1 storm traveled for 25 mi ( 41 km ) through the Nord @-@ Pas @-@ de @-@ Calais region of France . Another tornado , rated F0 , touched down in Kingston upon Hull , United Kingdom , on the same day .

Alerts were raised across Norway for the potential of flooding and damaging winds .