

= Hurricane Maria (2011) =

Hurricane Maria was a Category 1 hurricane that made landfall on the island of Newfoundland during September 2011 . Originating from a tropical wave over the central Atlantic on September 6 , Maria moved toward the west and slowly strengthened . While approaching the northern Leeward Islands , however , the system entered a region of higher vertical wind shear and cooler sea surface temperatures , causing it to degenerate into a low @-@ pressure area . It slowly curved toward the north and northeast around the western periphery of the subtropical ridge , and regained tropical storm status on September 10 . Maria further strengthened to attain hurricane status while making its closest approach to Bermuda . The cyclone attained peak winds of 80 mph (130 km / h) on September 16 , but weakened thereafter because of an increase in wind shear and cooler sea surface temperatures . Maria made landfall on the southeastern coast of Newfoundland during the afternoon hours of September 16 before becoming absorbed by a frontal system later on that same day .

Despite its poor organization , Maria brought heavy rainfall to portions of the east Caribbean , notably Puerto Rico . Numerous roadways and homes were flooded , and as the storm passed through the extreme northeastern Caribbean , over 15 @, @ 000 people went without power . In addition , tropical storm @-@ force winds were observed on many of the U.S. Virgin Islands . As the system passed west of Bermuda , brief tropical storm @-@ force sustained winds were recorded , along with higher gusts ; rainfall on the island , however , was minimal . In Newfoundland , strong winds were recorded , but rainfall totals were relatively minimal . There were no deaths reported in association with Maria , although the storm caused \$ 1 @. @ 3 million (2011 USD) in damage .

= = Meteorological history = =

The origins of Hurricane Maria can be traced back to a tropical wave ? an elongated area of low pressure oriented north to south ? that moved westward from Nigeria to Senegal on September 1 . The wave entered the eastern tropical Atlantic early the following day and slowly strengthened . By September 6 , it had developed a sufficient amount of convection to be designated as Tropical Depression Fourteen , while it was about 700 mi (1100 km) west @-@ southwest of the southern Cape Verde Islands . By this time , it had also developed well @-@ established outflow within the western semicircle of the low @-@ pressure center . The depression continued to increase in strength , and it was upgraded to a tropical storm six hours after formation , receiving the name Maria .

Early on September 7 , the National Hurricane Center (NHC) noted that although Maria was in an area of favorable atmospheric conditions , most intensity guidance models did not anticipate any strengthening . The system changed little in organization over the next 24 hours as it moved rapidly toward the west @-@ northwest around the southern periphery of the subtropical ridge . Though visible satellite imagery depicted a well @-@ organized circulation center , it was displaced from the strongest convection due to increased vertical wind shear . The system reached an initial peak intensity with maximum sustained winds of 50 mph (85 km / h) on September 8 before the unfavorable environment began to impede the system 's organization . Following a reconnaissance flight into the system early on September 9 , it was noted that Maria had degenerated into a non @-@ tropical disturbance , despite reports of tropical storm @-@ force winds in the northern Leeward Islands . Operationally , however , the NHC kept the system classified as a tropical cyclone and never downgraded it to a disturbance . When the system approached the northern Leeward Islands on September 10 , satellite imagery and surface observations revealed an increase in its organization ; a subsequent reconnaissance aircraft into the disturbance revealed that the remnants of Maria had regenerated into a tropical cyclone about 40 mi (65 km) east @-@ southeast of Antigua .

After reaching the southwestern periphery of the subtropical ridge , Maria turned to the north as its forward motion slowed considerably . Strong vertical wind shear over the system began to relax by September 14 , allowing Maria to slowly restrengthen as the convection redeveloped near its center

. At 1800 UTC on September 15 , Maria reached Category 1 hurricane status on the Saffir ? Simpson Hurricane Scale while located roughly 135 mi (215 km) northwest of Bermuda . Embedded within increasing atmospheric flow , the hurricane 's forward motion accelerated towards the northeast . At 0000 UTC on September 16 , Maria attained its peak intensity with winds of 80 mph (130 km / h) and a minimum barometric pressure of 983 mbar (29 @. @ 03 inHg) . Continuing on a northeastward course , Maria began to move over an area with cooler sea surface temperatures and higher vertical wind shear . Around 1800 UTC , Maria weakened to a tropical storm and made landfall near Cape St. Mary 's , Newfoundland at 1830 UTC with winds of 70 mph (110 km / h) . Shortly thereafter , the cyclone 's circulation was absorbed by a frontal system over the Avalon Peninsula of Newfoundland .

= = Preparations and impact = =

= = = Caribbean = = =

Before Maria 's arrival , tropical storm watches were issued for most of the Lesser Antilles on September 8 ; the watches were upgraded to tropical storm warnings at 2230 UTC . On the following day , Puerto Rico and many of the U.S. Virgin Islands and British Virgin Islands were placed under a tropical storm watch . The watches and warnings for the islands were discontinued around 1500 UTC on September 10 , after the strong thunderstorms diminished from Maria 's center . The storm 's effects on the island of Puerto Rico were primarily in the form of heavy rainfall . Flood waters near Patillas , Puerto Rico , destroyed several homes and bridges , causing \$ 1 @. @ 3 million (2011 USD) in damage . In the surrounding city of Yabucoa , Puerto Rico , heavy rainfall flooded and damaged around 150 homes . Many people were forced to relocate after rainfall and mud filled their homes . Near the city of Naguabo , Puerto Rico , the car of a 60 @- @ year @- @ old woman was swept away by flood waters on a road . After becoming tangled in bushes , the woman was able to get out of her car and pulled to safety . Nearly a month after the storm , U.S. president Barack Obama announced that federal disaster aid would be available to the island due to Maria .

= = = Bermuda = = =

Following Maria 's regeneration into a tropical cyclone , a tropical storm watch was issued for the island of Bermuda on September 13 . The watch was upgraded to a warning later that day , and at 1200 UTC the following day , it was replaced by a hurricane watch . All watches and warnings for the island were discontinued by September 15 . When Maria bypassed Bermuda on September 15 , its outer bands briefly produced tropical storm @- @ force winds across the island . At Commissioners Point , sustained winds reached 52 mph (83 km / h) , with gusts as high as 69 mph (111 km / h) , and winds of 36 mph (60 km / h) were reported at L.F. Wade International Airport at 1500 UTC on September 15 .

= = = Newfoundland and Labrador = = =

In anticipation of Maria , Environment Canada declared a tropical storm watch for the coast of Newfoundland on September 15 , which stretched from Arnolds Cove to Brigus South . Three hours later , it was upgraded to a hurricane watch , while a tropical storm watch was put into effect from Arnolds Cove to Jones Harbor . At 0600 UTC the following day , the watches and warnings were replaced by a hurricane warning , and areas between Brigus South and Charlottetown , Newfoundland were placed under a tropical storm warning . All tropical cyclone watches and warnings were discontinued at 2100 UTC on September 16 . While becoming absorbed by a front on September 16 , Maria made landfall on the southern tip of the Avalon Peninsula of Newfoundland , where winds of 64 mph (103 km / h) were recorded . Offshore , winds reached up to 77 mph (124 km / h) . The capital city of St. John 's experienced heavy rain , though not to the extent that had

been forecast , as the storm moved through the peninsula faster than predicted .