

= Hurricane Dean (1989) =

Hurricane Dean was the fourth named storm and second hurricane of the 1989 Atlantic hurricane season . Dean formed on July 31 and reached tropical storm status the following day east of the Leeward Islands . Dean brushed the northern Leeward Islands as a Category 1 hurricane on the Saffir ? Simpson Hurricane Scale , bringing light rain but producing no damage , before turning northward and striking Bermuda as a Category 2 hurricane . Dean continued northward before making landfall in southeastern Newfoundland .

Since Dean was initially difficult to forecast , it posed a possible threat to the Lesser Antilles , as a result , several evacuations occurred , and many hurricane watches and warning were issued . However , as Dean turned northward , all watches and warnings in the Lesser Antilles were discontinued . As Dean approached Bermuda , a hurricane watch was issued , and was later upgraded to a hurricane warning . After Dean tracked away from the island , the hurricane warning was discontinued . In addition , a hurricane warning was briefly in effect for Sable Island , Nova Scotia . The storm left \$ 8 @. @ 9 million (1989 USD , \$ 17 million 2016 USD) and sixteen injuries across Bermuda , but no fatalities were reported . In Atlantic Canada , Dean dropped light rain across Nova Scotia and Sable Island .

= = Meteorological history = =

A tropical wave moved off the coast of Africa on July 27 as detected by Meteosat imagery . By July 31 the tropical wave began being classified , using the Dvorak Technique , by satellite analysts at the National Hurricane Center , in part due to persistent deep convection . Shortly thereafter the system organized enough that the National Hurricane Center began classifying it as Tropical Depression Five , roughly halfway between Cape Verde and the Lesser Antilles . The depression moved westward at 17 mph (28 km / h) , intensifying as it did so , and eventually intensified enough to be upgraded to a tropical storm , which was named Dean by the National Hurricane Center .

Continuing generally westward , Dean continued to gradually intensify and became a hurricane on August 2 after an Air Force reconnaissance flight had recorded hurricane @-@ force winds . The following day a decreasing ridge of high pressure to the north and a trough of low pressure forming off the East Coast of the United States caused Dean to slow in its forward motion and turn northwest . The trough of low pressure forming off the East Coast of the United States was deepening , causing Dean to curve northward while remaining nearly stationary . After remaining nearly stationary , Dean began to accelerate to a forward speed of 17 mph (28 km / h) as it headed toward Bermuda . Thereafter , Dean intensified into a Category 2 hurricane , whilst the eastern half of the eyewall brushed Bermuda . Dean continued to intensify slightly after passing the island of Bermuda and became a Category 2 hurricane on August 7 . While Dean was a Category 2 hurricane , it attained its peak intensity with winds of 105 mph (165 km / h) and a minimum pressure of 968 mbar (hPa ; 28 @. @ 59 inHg) .

After peak intensity , the forward speed of Dean continued to increase as it approached Atlantic Canada while weakening back to a Category 1 hurricane . While approaching southern Newfoundland , Dean had weakened enough to be downgraded to a tropical storm on August 8 . Shortly thereafter , Dean then made landfall on the south coast of Newfoundland with winds of 65 mph (105 km / h) . Later that day , Dean emerged into the far north Atlantic and rapidly transitioned into an extratropical cyclone on the following day .

= = Preparations = =

Hurricane Dean was very difficult to forecast in its early stages as the storm approached the eastern Caribbean . Even though most forecast models predicted that Dean would skirt the Leeward Islands , the track prediction models were not consistent and , as a result , uncertainty existed in justifying the posting of watches and warnings for the Leeward Islands and Puerto Rico . One track

predicted Dean to threaten South Florida within three to four days .

Regardless , the National Hurricane Center issued hurricane warnings for Guadeloupe on August 2 and the rest of the Leeward Islands extending to the Virgin Islands . The uncertainty of the hurricanes forecast track forced residents and tourists in the Lesser Antilles to evacuate . In the British Virgin Islands , 80 American and Canadian tourists evacuated to hotels . In Puerto Rico , residents were advised to secure or stow away loose objects and stock up on emergency supplies . 1 @. @ 1 million residents in the city of San Juan went to supermarkets to get much needed supplies in anticipation that the storm might hit Puerto Rico . In Humacao , the National Guard evacuated 1 @, @ 966 people living along a coastal highway . The islands of Martinique and Dominica were placed under a hurricane watch . The warning for Guadeloupe was discontinued at 2200 UTC when the hurricane posed no threat to the island . Simultaneously , the hurricane watches in effect for Martinique and Dominica were also discontinued . As Dean continued westward , the National Hurricane Center issued a hurricane watch for the Turks and Caicos Islands . The watch was soon canceled as Dean made its northward turn towards Bermuda .

In Bermuda , the National Hurricane Center issued a hurricane watch on August 5 . The hurricane watch was later changed to a hurricane warning the following day . Dean ? s approach to the island canceled numerous inbound and outbound flights . In Atlantic Canada , the National Hurricane Center issued a hurricane warning for Nova Scotia and Sable Island , while the Canadian forecasters issued a high wind advisory .

= = Impact = =

The outer bands of Hurricane Dean produced heavy rainfall and winds up to 75 mph (121 km / h) across Antigua and Barbuda . There was no reported damage in the Leeward Islands or the Virgin Islands since the hurricane turned northward . In the Atlantic , a sailboat bound for Bermuda was caught off guard by the hurricane . The boat , which carried no radio equipment , was spotted by a hurricane hunter plane . The occupants of the boat suffered no injuries . In Bermuda , the hurricanes eastern eyewall produced 81 mph (130 km / h) sustained winds with gusts up to 113 mph (182 km / h) . Bermuda highest rainfall total from Dean was 2 @. @ 45 in (50 @. @ 8 mm) while parts of the island received 3 @- @ 5 in (76 @. @ 2 ? 127 mm) of rain .

Strong winds from Hurricane Dean caused considerable power line damage , leaving 65 @, @ 000 residents without electricity . The winds also caused minor roof damage . In Hamilton Harbor , 20 pleasure boats were damaged or sent adrift due to the rough seas . Flooding from the hurricane damaged fifteen houses . Sixteen people were injured by the hurricane , five of the injuries were considered serious . There were , however , no reports of fatalities from Dean ? s impact on Bermuda . Damage in Bermuda amounted up to \$ 8 @. @ 9 million (1989 USD , \$ 17 million 2016 USD) .

Although Dean remained away from the United States coastline , it produced storm tides of 1 @. @ 7 ft (0 @. @ 51 m) to North Carolina . In Atlantic Canada , hurricane @- @ force winds were reported in Nova Scotia and Sable Island . Newfoundland reported winds of only 50 mph (80 km / h) . Moderate rainfall was reported on Newfoundland , with most areas of the island experiencing at least 1 in (25 @. @ 4 mm) of precipitation . Rainfall on Newfoundland peaked at 2 @. @ 7 in (68 @. @ 58 mm) on the south coast of the island , near the location of Dean 's landfall . A majority of rainfall was reported on the west side of Dean , but minimal precipitation had been recorded to the east of the storm . High winds were reported on the eastern side of the storm , however , with lighter winds along the western quadrants of Dean . Offshore , waves up to 26 ft (7 @. @ 92 m) were reported and Sable Island reported rainfall of 0 @. @ 59 in (15 mm) . Although there were no reports of damage in Atlantic Canada from Hurricane Dean , three sailors had to be rescued by the Canadian Coast Guard when their boat got dismasted during the storm .