

= Hurricane Grace (1991) =

Hurricane Grace was a short @-@ lived Category 2 hurricane that contributed to the formation of the powerful 1991 Perfect Storm . Forming on October 26 , Grace initially had subtropical origins , meaning it was partially tropical and partially extratropical in nature . It became a tropical cyclone on October 27 , and ultimately peaked with winds of 85 knots (100 mph ; 160 km / h) . The storm had minor effects on the island of Bermuda as it passed to the south . A developing extratropical storm to the north turned Grace eastward ; the hurricane was eventually absorbed into the large circulation of the larger low pressure system . Fed by the contrast between cold air to the northwest and warm air from the remnants of Hurricane Grace , this storm became a large and powerful nor 'easter that caused extremely high waves and resulted in severe coastal damage along the U.S. East Coast .

= = Meteorological history = =

The origins of Grace go back to a mid @-@ level area of low pressure that formed on October 23 to the south of Bermuda . Reports from a nearby ship indicated that the low had become a surface feature by October 25 . The storm system initially contained subtropical characteristics , and the center of circulation lacked deep convection for several days . The system was designated a subtropical storm on October 26 . An area of clouds near Bermuda became increasingly convective , and gradually became entrained into the expanding and developing circulation of the subtropical storm . Thunderstorm activity persisted near the center , and on October 27 , the storm attained tropical storm status and was named Grace .

Grace continued to organize and intensify ; based on satellite intensity estimates and reconnaissance reports , the storm was upgraded to a Category 1 hurricane , the lowest level on the Saffir Simpson Hurricane Scale . Grace reached its peak intensity with winds of 85 knots (100 mph ; 160 km / h) and a minimum central barometric pressure of 980 mbar (hPa ; 28 @.@ 94 inHg) , ranking as a Category 2 . Operationally , however , the peak intensity was thought to have been 65 knots (75 mph ; 120 km / h) , which would have made it a mere Category 1 at its peak strength . The hurricane tracked generally northwestward until October 28 , when an extratropical cyclone formed along an approaching cold front off the New England coast . This storm rapidly intensified and influenced Grace 's steering currents , turning the hurricane sharply east . At around the same time , an eye feature associated with Hurricane Grace became apparent on satellite imagery , despite a lack of strong convective activity around the storm 's center . Grace accelerated as it continued eastward , and reached its peak intensity of Category 2 status on October 29 . However , the storm 's rapid forward movement led to an asymmetrical circulation . The center passed approximately 50 mi (80 km) south of Bermuda without significantly affecting the island .

Hurricane Grace turned northeast later that day , as the rapidly approaching cold front undermined the storm 's lower @-@ level center . The system became overtaken by the front and subsequently lost its status as a tropical system . It moved north along the front and merged with the large cyclone to the north . The remnants of Grace became completely indistinguishable by the next day as it was completely absorbed by the passing extratropical storm on October 30 . The nor 'easter significantly strengthened as a result of the temperature contrast between the cold air to the northwest and the warmth and humidity associated with the remnants of Hurricane Grace . The low @-@ pressure system continued deepening as it drifted southeastward and then southwestward towards the United States . The cyclone attained its peak intensity 390 miles (630 km) south of Halifax , Nova Scotia , with winds of up to 60 knots (70 mph ; 110 km / h) . The storm became known as the 1991 Perfect Storm , or more commonly , the " Perfect Storm " .

= = Preparations and impact = =

In advance of Hurricane Grace , a tropical storm warning was issued for Bermuda on October 27 . The following day , about 10 hours before the storm 's closest approach to the island , the tropical storm warning was upgraded to a hurricane warning . On October 29 , the hurricane warning was

lowered to a tropical storm warning , which was amended to a gale warning shortly thereafter . The island experienced bands of squally weather in association with the storm . Precipitation peaked at 3 @. @ 21 in (82 mm) . However , no significant damage was reported . A yacht traveling from Bermuda to New York encountered strong winds and 25 ft (7 @. @ 6 m) seas well off the Virginia coast ; its nine occupants were rescued by Coast Guard helicopters .

Because of its large size , Grace generated large swells along the East Coast of the United States ; combined with abnormally high tides , these waves reached at least 15 ft (4 @. @ 6 m) . Despite minor beach erosion , no substantial property damage occurred , although Carolina Beach , North Carolina , lost about 1 ft (0 @. @ 30 m) of sand .

Despite the light impacts from Hurricane Grace , the resultant nor 'easter caused extensive coastal damage , high seas , and powerful winds . Hurricane @-@ force wind gusts were reported in New England . The storm churned the ocean for several days ; a wave 101 ft (31 m) in height was reported by an offshore buoy . Extensive coastal flooding occurred along the coast of the Mid @-@ Atlantic and Northeastern U.S. , with effects as far north as Newfoundland and as far south as Jamaica . The nor 'easter eventually transitioned into another hurricane that made landfall in Nova Scotia . A ship known as the Andrea Gail was lost , along with her six crew members , during the storm . The story of the Andrea Gail inspired Sebastian Junger 's 1997 book , *The Perfect Storm* , and a 2000 motion picture film .