= Hurricane Ophelia (2011) =

Hurricane Ophelia was the most intense hurricane of the 2011 Atlantic hurricane season . The seventeenth tropical cyclone , sixteenth tropical storm , fourth hurricane , and third major hurricane , Ophelia originated in a tropical wave in the central Atlantic , forming approximately midway between the Cape Verde Islands and the Lesser Antilles on September 17 . Tracking generally west @-@ northwestward , Ophelia was upgraded to a tropical storm on September 21 , and reached an initial peak of 65 mph (100 km / h) on September 22 . As the storm entered a region of higher wind shear it began to weaken , and was subsequently downgraded to a remnant low on September 25 . The following day , however , the remnants of the system began to reorganize as wind shear lessened , and on September 27 , the National Hurricane Center once again began advisories on the system . Moving northward , Ophelia regained tropical storm status early on September 28 , and rapidly deepened to attain its peak intensity with maximum sustained winds of 140 mph (220 km / h) several days later . The system weakened as it entered cooler sea surface temperatures and began a gradual transition to an extratropical cyclone , a process it completed by October 3 .

Following the development of Ophelia , numerous storm watches and warnings were issued for the northeastern Caribbean Islands . Residents were urged to prepare for strong winds and substantial flooding . As the system made its closest approach , Ophelia produced several inches of rainfall , leading to mudslides and several road rescues . While light rain totals and gusty winds below tropical storm force were recorded on the island of Bermuda , storm surge and dangerous rip currents along the coast caused minimal damage . In Newfoundland , heavy rainfall contributed to floods that destroyed roads and many buildings . Following Ophelia 's transition into an extratropical cyclone , residents across Europe were urged to prepare for strong winds in excess of 75 mph (120 km / h) in some locations , as well as rainfall accumulations up to 4 in (100 mm) . In northern Ireland , a combination of moisture and significantly cooler weather produced several inches of snow across the region , cutting electricity to hundreds . Overall , there were no deaths reported in association with Ophelia , and damage was minimal .

= = Meteorological history = =

The formation of Hurricane Ophelia is attributed in part to a low @-@ latitude tropical wave that emerged off the western coast of Africa in mid @-@ September . As the wave tracked westward , it began to interact with the Intertropical Convergence Zone (ITCZ) , and was subsequently introduced with a low chance of tropical development in the National Hurricane Center 's (NHC) 48 @-@ hour Tropical Weather Outlook . Though atmospheric wind shear was only marginally favorable , the cloud pattern organized , and a surface low @-@ pressure area developed in association with the disturbance . Deep shower and thunderstorm activity continued to fire as the disturbance moved in a general westward motion , and it was assessed with a high chance of development by early on September 19 . Following satellite trends and data from the Advanced Scatterometer , the disturbance was upgraded to a tropical depression at 1800 UTC the following day , while positioned roughly 1300 mi (2090 km) east of the Lesser Antilles , and to a tropical storm six hours later .

Tropical Storm Ophelia continued to intensify as it moved west @-@ northwest . Curved convective bands became prominent in the northern semicircle of the cyclone , and deep convection developed near the center . This intensification trend was short @-@ lived , however , as increased wind shear from a nearby upper @-@ level low caused the low @-@ level center to become partially exposed . Despite the poor presentation on satellite imagery , data from a nearby buoy revealed that the system was stronger than previously thought , with maximum sustained winds of 65 mph (100 km / h) on September 22 . As the upper @-@ level low moved closer to Ophelia , inducing increasingly unfavorable shear on the storm , it caused the low @-@ pressure area to become completely void of thunderstorms . While deep convection waned significantly early on September 23 , it made a comeback by that afternoon , and an Air Force Reserve reconnaissance aircraft found 60 mph (95 km / h) winds in the system , much stronger than the intensity of 45 mph (75 km / h) the system

was assessed with before the flight . This intensity did not maintain long as the cloud pattern once again became disorganized . The low @-@ level center became exposed once again during the pre @-@ dawn hours of September 25 , and without the return of organized shower and thunderstorm activity , led to the NHC declaring Ophelia as a remnant area of low pressure , while situated 180 mi (290 km) east of the northern Leeward Islands .

Though the low @-@ level center dissipated later that afternoon , a well @-@ defined mid @-@ level center lingered . The National Hurricane Center initially assessed the remnants of Ophelia with a low chance of regeneration as deep convection fired in association with the low , but these odds were subsequently increased to a medium chance by the afternoon hours of September 26 . A new low @-@ level circulation developed within the well @-@ organized cloud mass , and the system was once again given a high chance of tropical cyclone formation that evening . Following an Air Force Reserve reconnaissance flight into the system , the disturbance was upgraded to Tropical Depression Ophelia at 1200 UTC on September 27 , and was once again upgraded to a tropical storm with maximum sustained winds of 45 mph (75 km / h) 18 hours later . As the cyclone reached the western periphery of the subtropical ridge positioned across the central Atlantic , it began to curve northward and intensify once again . Deep convection blossomed atop the center late on September 28 , and microwave imagery depicted the development of an eye . Upper @-@ level outflow expanded in all four quadrants of the cyclone by the afternoon hours of September 29 , and satellite intensity estimates continued to rise , prompting the NHC to upgrade Ophelia to a Category 1 hurricane by 1800 UTC that day .

An unexpected period of rapid deepening began early on September 30 as a well @-@ defined eye became clearly visible on satellite imagery . Ophelia intensified into a Category 2 hurricane with winds of 100 mph (160 km / h) by 0600 UTC and became the season 's third major hurricane ? a Category 3 or higher on the Saffir ? Simpson hurricane scale ? twelve hours later . Cloud tops continued to cool in the system 's eyewall late on October 1 , with cloud tops in the eye of the system warming . Ophelia intensified into a Category 4 hurricane at 0000 UTC on October 2 and simultaneously attained its peak intensity with maximum sustained winds of 140 mph (220 km / h) and a minimum barometric pressure of 940 mb (hPa ; 27 @.@ 76 inHg) as it passed east of Bermuda . Weakening ensued the following day as the hurricane entered cooler sea surface temperatures and an environment characterized by significantly more stable air . Ophelia weakened below major hurricane intensity by 1800 UTC and became a tropical storm for the final time by 0600 UTC on October 3 . The system lost its tropical characteristics and was subsequently declared an extratropical cyclone four hours later while positioned just southwest of Newfoundland . The extratropical low was absorbed by a larger weather system by the afternoon hours of the following day .

= = Preparations and impact = =

Though the center of Ophelia remained 205 mi (330 km) east of the Lesser Antilles , its outer bands produced heavy rains across the region . In Dominica , more than 4 in (100 mm) of rain fell over parts of the country , triggering flooding along several rivers . Nearly 1 @,@ 600 people were stranded and many cars were washed away by the flooding , while landslides severed access to several communities . Several businesses and schools were closed in preparation of the storm . As Ophelia made its closest approach to the region , heavy rainfall submerged Canefield Airport , and numerous roads , buildings and farms were damaged , leaving residents trapped . Gusty winds , reaching 37 mph (60 km / h) at times , and scattered thunderstorms affected portions of Guadeloupe .

Following Ophelia 's upgrade to hurricane status on September 29 , the Bermuda Weather Service (BWS) issued a tropical storm watch for the entirety of the island . Over the following days , the threat of damaging winds gradually decreased as the storm 's forecast track took it far enough east of the territory to spare the region of a direct hit . Correspondingly , the BWS discontinued the watch on the evening of October 1 . Four flights from the United States to Bermuda were canceled due to stormy conditions . Along the coast , the Department of Parks raised high surf warnings for the

entire south shore and temporarily closed Horseshoe Beach . Additionally , a few local events were postponed . Passing roughly 140 mi (220 km) east of Bermuda , the outer bands of Ophelia produced 0 @.@ 38 in (9 @.@ 7 mm) of rain and wind gusts up to 35 mph (55 km / h) across the islands .

On October 1 , Environment Canada issued a tropical storm watch for the Avalon Peninsula . Throughout Newfoundland , residents were warned of heavy rains approaching 4 in (100 mm) . Striking the region just over a year after Hurricane Igor , Ophelia revealed that repairs made in the wake of the previous hurricane were occasionally inadequate . Six roads on the Burin and Bonavista peninsulas were shut down during the storm ; two of the works sustained significant damage . Several culverts installed after Igor were washed away by Ophelia .

While Ophelia was still impacting Newfoundland , forecasters in the United Kingdom warned residents that the remnants of the storm would bring unsettled weather to the nation within a few days . In the midst of a record @-@ breaking heat wave , with temperatures reaching an all @-@ time monthly record high of 86 ° F (29 @.@ 9 ° C) , the storm was expected to bring much cooler weather across the region . Strong winds and heavy rains were also anticipated , leading to the cancellation of ferry services . Plummeting temperatures in association with the remnants of the storm were expected to produce snowfall across the United Kingdom as well . In Donegal the first snows of the season fell , leaving hundreds of residents without electricity .