

= 1960 Atlantic hurricane season =

The 1960 Atlantic hurricane season was the least active season since 1952 . The season officially began on June 15 , and lasted until November 15 . These dates conventionally delimit the period of each year when most tropical cyclones form in the Atlantic basin . The first system , an unnamed storm , developed in the Bay of Campeche on June 22 . It brought severe local flooding to southeastern Texas and was considered the worst disaster in some towns since a hurricane in 1945 . The unnamed storm moved across the United States for almost a week before dissipating on June 29 . In July , Hurricane Abby resulted in minor damage in the Leeward Islands , before impacting a few Central American countries ? the remnants of the storm would go on to form Hurricane Celeste in the East Pacific . Later that month , Tropical Storm Brenda caused flooding across much of the East Coast of the United States . The next storm , Hurricane Cleo , caused no known impact , despite its close proximity to land .

The most significant storm of the season was Hurricane Donna , which at the time was among the ten costliest United States hurricanes . After the precursor caused a deadly plane crash in Senegal , the storm itself brought severe flooding and wind impacts to the Lesser Antilles and Florida , where Donna made landfall as a Category 4 hurricane . It moved northeast and struck North Carolina and Long Island , New York , while still at hurricane intensity . Donna caused at least 227 fatalities and \$ 900 million (1960 USD) in damage . Hurricane Ethel reached Category 3 intensity , but rapidly weakened before making landfall in Mississippi , resulting in only 1 fatality and \$ 1 @. @ 5 million in losses . The final storm , Florence , developed on September 17 . It remained weakened and moved erratically over Cuba and Florida . Only minor flooding was reported . Collectively , the tropical cyclones in 1960 caused at least 250 deaths and about \$ 910 @. @ 74 million in damage .

= = Season summary = =

The Atlantic hurricane season officially began on June 15 , 1960 . It was a below @-@ average season in which seven tropical depressions formed . All seven of the depressions attained tropical storm status , which was below the 1950 ? 2000 average of 9 @. @ 6 named storms . Four of these reached hurricane status , also falling short of the 1950 ? 2000 average of 5 @. @ 9 . Furthermore , two storms reached major hurricane status , which is Category 3 or higher on the Saffir ? Simpson hurricane wind scale . Both of which became Category 5 hurricanes . Two hurricane and four tropical storms made landfall during the season and caused 387 deaths and \$ 396 @. @ 7 million (1960 USD) in damage .

Season activity began on June 23 , with the development of an unnamed tropical storm . Tropical cyclogenesis resumed in July with Hurricane Abby between July 10 and July 16 , followed by Tropical Storm Brenda from July 28 to July 31 . In mid @-@ August , Hurricane Cleo developed and had an uneventful duration . At the end of that month , Hurricane Donna formed and lasted into mid @-@ September ; it was the strongest tropical cyclone of the season , peaking as a Category 5 hurricane . There was another Category 5 hurricane in September , Ethel , which briefly existed in the Gulf of Mexico . The last storm of the season , Tropical Storm Florence , dissipated on September 25 , over a month before the official end of the season on November 15 .

The season 's activity was reflected with an accumulated cyclone energy (ACE) rating of 88 , which was the lowest total since 54 in 1954 . ACE is , broadly speaking , a measure of the power of the hurricane multiplied by the length of time it existed , so storms that last a long time , as well as particularly strong hurricanes , have high ACEs . It is only calculated for full advisories on tropical systems at or exceeding 39 mph (63 km / h) or tropical storm strength . Subtropical cyclones , such as the first storm , are excluded from the total .

= = Storms = =

= = = Tropical Storm One = = =

Observations from a reconnaissance flight on June 22 indicated that a large area of showers and thunderstorms in the Gulf of Mexico was producing winds up to 40 mph (65 km / h) . Because no circulation was reported , it was operationally classified as a tropical low , though radar stations along the Gulf Coast of Mexico indicated a circulation . Thus , the system became a tropical depression at 0600 UTC on June 22 , while located in the Bay of Campeche . The depression strengthened and was estimated to have become a tropical storm on June 23 . By early on the following day , the storm peaked with winds of 45 mph (75 km / h) . Later that day , it made landfall near Corpus Christi , Texas at the same intensity . The storm weakened slowly and moved across the Central United States , before dissipating over Illinois on June 29 .

In Texas , the storm dropped up to 29 @. @ 76 inches (756 mm) of precipitation in Port Lavaca . Thus considerable flooding occurred in some areas of south and eastern Texas . Throughout the state , more than 150 houses sustained flood damage in several counties . In addition , numerous major highways were closed , including portions of U.S. Routes 59 , 87 , 90 , and 185 , and Texas State Highways 35 and 71 . In Arkansas , a few buildings in Hot Springs were damaged from high winds . Elsewhere , light to moderate rainfall was recorded in at least 11 other states , though damage was minimal . The storm was the rainiest tropical cyclone on record in the state of Kentucky , dropping 11 @. @ 25 inches (286 mm) in Dunmore . Overall , the storm was attributed to 15 fatalities and \$ 3 @. @ 6 million in damage .

= = = Hurricane Abby = = =

A tropical wave developed into a tropical depression near the Windward Islands on July 10 . While crossing the islands later that day , the depression rapidly strengthened into Hurricane Abby . It tracked westward across the Caribbean Sea and peaked as a 100 mph (155 km / h) Category 2 hurricane on July 11 . Thereafter , Abby became disorganized and weakened back to a tropical storm on July 13 . The storm began to re @- @ organize starting on the following day , and re @- @ acquired hurricane status while located offshore Honduras . The storm made landfall in British Honduras (present day Belize) as a minimal hurricane on July 15 . Abby quickly weakened inland and by the next day , it dissipated over the Mexican state of Tabasco . However , the remnants later contributed to the development of Hurricane Celeste in the eastern Pacific .

Abby produced tropical storm force winds and up to 6 @. @ 8 inches (170 mm) of precipitation in St. Lucia . Six people died when a roof of a house collapsed . Damage in St. Lucia reached \$ 435 @, @ 000 , most of which was incurred to banana and coconut crops . In Martinique , wind gusts of 75 mph (120 km / h) and about 4 inches (100 mm) of rain damaged 33 % of banana and sugar cane crops . The resultant landslides from the precipitation extensively impacted roads and bridges . In Dominica , light winds and precipitation up to 5 @. @ 91 inches (150 mm) reaching \$ 65 @, @ 000 , entirely to roads and communications . Offshore islands of Honduras reported winds up to 52 mph (85 km / h) and light rainfall . Damage in British Honduras was light , with about \$ 40 @, @ 500 in losses , mostly to agriculture .

= = = Tropical Storm Brenda = = =

A weak low @- @ pressure area into the Gulf of Mexico developed into a tropical depression on July 28 . It failed to intensify significantly before making landfall near Cross City , Florida . The depression strengthened into Tropical Storm Brenda at around 1200 UTC on July 29 while its center was situated over southeast Georgia . Brenda tracked northward along the Georgia and South Carolina coasts , before moving inland over North Carolina . It attained its peak winds of 60 mph (97 km / h) at 0000 UTC on July 30 . Several hours later , the storm emerged over the Chesapeake Bay , before crossing the Delmarva Peninsula and accelerating into southern New Jersey . The storm passed over the state and eventually crossed Long Island before making another landfall in Connecticut . Early on July 31 , the storm transitioned into an extratropical cyclone .

Brenda was considered the worst storm to strike West Central Florida since Hurricane Easy in 1950

. It brought wind gusts up to 60 mph (95 km / h) and rainfall amounts reaching 14 @.@ 57 inches (370 mm) at the Tampa International Airport . While no casualties are directly blamed on the storm , at least one traffic @-@ related death took place . According to an American Red Cross Disaster Service report encompassing eight Florida counties , 11 houses sustained significant damage , while 567 suffered more minor damage . Around 590 families were affected overall . Total monetary damage in Florida is placed at nearly \$ 5 million . Further north , other states reported strong winds and locally heavy rainfall , though no significant damage occurred .

= = = Hurricane Cleo = = =

A strong tropical wave produced rainfall and gusty winds in The Bahamas and the Greater Antilles in mid @-@ August . The wave was closely monitored for possible tropical cyclogenesis and special bulletins were issued by the United States Weather Bureau . At 1800 UTC on August 17 , Tropical Storm Cleo developed near Cat Island in The Bahamas . The storm headed northeastward and immediately began to intensify . Operationally , the United States Weather Bureau at the hurricane warning center in Miami did not initiate advisories on Cleo until 1500 UTC on August 18 . Sustained winds were already 70 mph (110 km / h) at the time , as recorded by a reconnaissance aircraft flight . By 1800 UTC on August 18 , Cleo strengthened into a hurricane .

Throughout its duration , Cleo remained a relatively small tropical cyclone . Because the storm posed a significant threat to New England , a " hurricane watch " was issued for southeastern Massachusetts and Rhode Island on August 19 . Various gale warnings were also put into effect from Block Island , Rhode Island , to Portland , Maine . However , this was unnecessary because Cleo remained well offshore . Early on August 20 , Cleo peaked with winds of 90 mph (150 km / h) . Thereafter , the storm began to weaken and fell to tropical storm intensity while south of Nova Scotia later that day . Cleo curved east @-@ northeastward on August 20 . The storm passed near Sable Island early on August 21 , before dissipating later that day .

= = = Hurricane Donna = = =

A tropical wave , which was attributed to 63 deaths from a plane crash in Senegal , developed into a tropical depression centered south of Cape Verde late on August 29 . The depression strengthened into Tropical Storm Donna by the following day . Donna moved west @-@ northwestward at roughly 20 mph (32 km / h) and by September 1 , it reached hurricane status . Significant deepening occurred during the next 30 hours , with Donna being a moderate Category 4 hurricane by late on September 2 . Thereafter , it weakened some and brushed the Lesser Antilles later that day . On Sint Maarten , the storm left a quarter of the island homeless and killed 7 people . An additional 5 deaths were reported in Anguilla and there were 7 other deaths throughout the Virgin Islands . In Puerto Rico , severe flash flooding led to 107 fatalities , 85 of them in Humacao alone . Donna further weakened to a Category 3 hurricane late on September 5 , but eventually became a Category 4 hurricane again . While passing through The Bahamas , several small island communities in the central regions of the country were leveled , but no damage total or fatalities were reported .

Early on September 10 , Donna made landfall near Marathon , Florida on Vaca Key with winds of 130 mph (215 km / h) , hours before another landfall between Fort Myers and Naples at the same intensity . Florida bore the brunt of Hurricane Donna . In the Florida Keys , coastal flooding severely damaged 75 % of buildings , destroyed several subdivisions in Marathon . On the mainland , 5 @, @ 200 houses were impacted , which does not include the 75 % of homes damaged at Fort Myers Beach ; 50 % of buildings were also destroyed in the city of Everglades . Crop losses were also extensive . A total of 50 % of grapefruit crop was lost , 10 % of the orange and tangerine crop was lost , and the avocado crop was almost completely destroyed . In the state of Florida alone , there were 13 deaths and \$ 300 million in losses . Donna weakened over Florida and was a Category 2 hurricane when it re @-@ emerged into the Atlantic from North Florida . By early on September 12 , the storm made landfall near Topsail Beach , North Carolina with winds of 110 mph (175 km / h) .

Donna brought tornadoes and wind gusts as high as 100 mph (155 km / h) , damaging or destroying several buildings in Eastern North Carolina , while crops were impacted as far as 50 miles (80 km) inland . Additionally , storm surge caused significant beach erosion and structural damage Wilmington and Nags Head . There were 8 deaths and over 100 injuries . Later on September 12 , Donna reemerged into the Atlantic Ocean and continued to move northeastward . The storm struck Long Island , New York late on September 12 and rapidly weakened inland . On the following day , Donna became extratropical over Maine .

== Tropical Storm Six ==

== Hurricane Ethel ==

A tropical disturbance in the central Gulf of Mexico developed into Tropical Storm Ethel on September 14 . Ethel rapidly intensified , becoming a hurricane six hours later and a major hurricane by early on September 15 . The storm peaked as a Category 3 hurricane later that day , despite an abnormally high minimum pressure of 974 mbar (28 @.@ 8 inHg) . Cool and dry air began impacting Ethel , causing it to rapidly weaken back to a Category 1 hurricane while brushing eastern Louisiana . Later on September 15 , Ethel was downgraded to a tropical storm . Early on the following day , Ethel made landfall in Pascagoula , Mississippi with sustained winds of 70 mph (110 km / h) . The storm gradually weakened after moving inland , before eventually dissipating over southern Kentucky on September 17 .

In Louisiana , the outerbands of the storm produced light rainfall and hurricane @-@ force winds , though no damage was reported in that state . Offshore Mississippi , rough seas inundated Horn Island and split Ship Island . Tropical storm force winds in the southern portion of the state littered broken glass , trees , and signs across streets in Pascagoula , as well as down power lines , which caused some residents to lose power . In Alabama , winds damaged beach cottages along the Gulf Coast , and damaged crops in the southern portion of the state . Although large amounts of rain fell in the extreme western portions of Florida , peaking at 12 @.@ 94 inches (329 mm) in Milton , no flooding occurred in Florida . A lightning strike to a power station near Tallahassee caused a brief city @-@ wide blackout . The storm spawned four tornadoes in Florida , one of which destroyed 25 homes . Outside the Gulf Coast of the United States , rain fell in 8 others states , but no damage is known to have occurred . Overall , Ethel caused 1 fatality and \$ 1 @.@ 5 million in losses .

== Tropical Storm Florence ==

A westward moving tropical wave developed into a tropical depression while located north of Puerto Rico on September 17 . By the following day , the depression strengthened into Tropical Storm Florence . Later on September 18 , Florence peaked as a 45 mph (75 km / h) tropical storm as it approached The Bahamas . However , unfavorable conditions weakened the storm back to a tropical depression on September 19 . Little change in intensity occurred before Florence made landfall in western Cuba on September 21 . The storm executed a small cyclonic loop over Cuba before eventually emerging into the Straits of Florida . Florence then tracked northeastward and made landfall in Monroe County , Florida on September 23 . The storm drifted across the state slowly and reemerged into the Gulf of Mexico after more than 24 hours over Florida .

By September 26 , Florence made landfall near the Alabama @-@ Florida border and dissipated over Mississippi on the following day . On Grand Bahama , 5 @.@ 48 inches (139 mm) of rain fell in only 6 hours . No impact was reported in Cuba . The storm dropped rainfall across Florida , though the heavier amounts were mainly on the Atlantic coast . Precipitation peaked at 15 @.@ 79 inches (401 mm) near Fellsmere , while rainfall reached 10 inches (250 mm) in some areas of the Miami metropolitan area . Although Florence was a depression at landfall , sustained winds between 35 and 40 mph (56 and 64 km / h) were recorded in Ocean Ridge , while a gust as high as 52 mph (84 km / h) was reported in Vero Beach . In Jacksonville , a pressure gradient combined with

Florida to produce tides of 2 to 3 feet (0 @. @ 61 to 0 @. @ 91 m) about normal .

= = Storm names = =

The following names were used for named storms (tropical storms and hurricanes) that formed in the North Atlantic in 1960 . Storms were named Abby and Donna for the first time in 1960 . Following the season , the name Donna was retired , replaced with Dora . Names that were not assigned are marked in gray .