

= 1961 Atlantic hurricane season =

The 1961 Atlantic hurricane season featured the highest number of major hurricanes ? Category 3 or higher on the modern @-@ day Saffir ? Simpson hurricane wind scale ? until being tied by 2005 . 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 . It was an above average season in terms of tropical storms , with a total of 11 named storms . The first system , Hurricane Anna , developed in the eastern Caribbean Sea near the Windward Islands on July 20 . It brought minor damage to the islands , as well as wind and flood impacts to Central America after striking Belize as a hurricane . Anna caused one death and about \$ 300 @,@ 000 (1961 USD) in damage . Activity went dormant for nearly a month and a half , until Hurricane Betsy developed on September 2 . Betsy peaked as a Category 4 hurricane , but remained at sea and caused no impact .

One of the most significant storms of the season was Hurricane Carla , which peaked as a Category 5 hurricane , before weakening slightly and striking Texas . Carla caused 43 deaths and approximately \$ 325 @.@ 74 million in damage . Hurricane Debbie was a Category 3 storm that existed in the eastern Atlantic Ocean . Early in its duration , unsettled weather from Debbie in Cape Verde resulted in a plane crash that killed 60 people . Debbie then brushed Ireland as either a Category 1 hurricane or shortly after becoming extratropical . The next storm , Hurricane Esther , threatened to strike New England as a major hurricane , but rapidly weakened and made landfall in Massachusetts as only a tropical storm . Impact was generally minor , with about \$ 6 million in damage and seven deaths , all of which from a United States Navy plane crash . An unnamed tropical storm and Hurricane Frances caused minimal impact on land . In mid @-@ October , Tropical Storm Gerda brought flooding to Jamaica and eastern Cuba , resulting in twelve deaths .

Another significant storm was Hurricane Hattie , a late @-@ season Category 5 hurricane that struck Belize . Hattie caused 319 confirmed fatalities and about \$ 60 @.@ 3 million in damage . Destruction was so severe in Belize that the government had to relocate inland to a new city , Belmopan . The remnants of Hattie may have contributed to the development of Tropical Storm Simone in the eastern Pacific Ocean . In early November , the depression that would later strengthen into Hurricane Jenny brought light rainfall to Puerto Rico . The final storm , Tropical Storm Inga , dissipated on November 8 , after causing no impact on land . On September 11 , three hurricanes existed simultaneously ? Betsy , Carla , and Debbie ? the most on a single day in the Atlantic basin since 1893 and until 1998 . Collectively , the storms of the 1961 Atlantic hurricane season caused about \$ 391 million in damage and at least 348 fatalities .

= = Season summary = =

The Atlantic hurricane season officially began on June 15 . It was an above average season in which eleven tropical storms formed ; this was above the 1950 ? 2000 average of 9 @.@ 6 named storms . Eight of these reached hurricane status , also above of the 1950 ? 2000 average of 5 @.@ 9 . Furthermore , seven storms reached major hurricane status ; thus , 1961 had the most major hurricanes , until being tied by 2005 . Of the seven , two became Category 5 hurricanes . Four hurricanes and two tropical storms made landfall during the season , causing 348 deaths and \$ 391 @.@ 6 million in damage . Hurricane Debbie also caused damage and deaths , despite remaining offshore and then after becoming extratropical .

Although the season officially began on June 15 , the first tropical cyclone , Hurricane Anna , did not develop until July 20 . After Anna dissipated on July 24 , there were no other systems in July or the month of August . Tropical cyclogenesis did not resume until Hurricane Betsy developed on September 2 . During the next four days , two other tropical cyclones formed ? Carla and Debbie . On September 11 , the three storms ? Betsy , Carla , and Debbie ? existed simultaneously the hurricanes , the most in a single day since 1893 and until 1998 . Esther , which developed on September 10 , did not reach hurricane status until September 12 . Later that day , a tropical storm that went unnamed formed over the Bahamas and moved across the East Coast of the United

States for its brief duration .

After Debbie became extratropical on September 26 , another tropical cyclone developed four days later , Hurricane Frances . Thereafter , tropical cyclogenesis slowed in October , which featured only two systems , Gerda and Hattie . The latter was the strongest tropical cyclone of the season , peaking with maximum sustained winds of 160 mph (260 km / h) and a minimum barometric pressure of 920 mbar (27 inHg) . After weakening slightly , Hattie struck Belize on October 31 , before dissipating on November 1 . Later that day , Hurricane Jenny developed near Antigua . Jenny remained weak for much of its duration and became extratropical on November 8 . The final system , Tropical Storm Inga , formed in the Gulf of Mexico on November 5 . Three days later , Inga dissipated , one week before the season officially ended .

The season 's activity was reflected with an accumulated cyclone energy (ACE) rating of 205 , one of the highest values recorded . 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) , which is tropical storm strength . Subtropical cyclones are excluded from the total .

= = Storms = =

= = = Hurricane Anna = = =

An easterly wave developed into Tropical Storm Anna in the vicinity of the Windward Islands on July 20 . The storm moved westward across the Caribbean Sea . Favorable environmental conditions allowed Anna to reach hurricane intensity late on July 20 . Early on the following day , the storm strengthened into a Category 2 hurricane . Intensification continued , and later on July 21 , Anna became a major hurricane . After attaining peak intensity on July 22 , the hurricane slightly weakened while brushing the northern coast of Honduras . Further weakening occurred ; when Anna made landfall in Belize on July 24 , winds decreased to 80 mph (130 km / h) . Anna rapidly weakened over land and dissipated later that day .

As a developing tropical cyclone over the Windward Islands , Anna produced strong winds over Grenada , though damage was limited to some crops , trees , and telephone poles . Other islands experienced gusty winds , but no damage . Passing just north of Venezuela , the hurricane produced strong winds over the country , peaking as high as 70 mph (110 km / h) . Strong winds caused widespread damage in northern Honduras . Throughout the country , at least 36 homes were destroyed and 228 were damaged . Severe damage in the Gracias a Dios Department left hundreds of people homeless . Additionally , high winds toppled approximately 10 @, @ 000 coconut trees . Overall , Anna caused one fatality and \$ 300 @, @ 000 in damage , primarily in Central America .

= = = Hurricane Betsy = = =

In early September , a tropical wave was noted in the Intertropical Convergence Zone (ITCZ) . On September 2 , the disturbance was analyzed to have attained tropical storm strength , after nearby ship reports indicated strong winds associated with anomalously low barometric pressures . Moving steadily northwestward , Betsy gradually intensified under favorable conditions . By 12 : 00 UTC the following day , the storm had strengthened to Category 1 hurricane intensity . Shortly after , a trough situated along 50 ° W steered Betsy to a more northerly course . Another low @-@ pressure area later formed in the trough , perturbing the ridge to the north of Betsy for much of its initial stages , causing the hurricane 's central pressure to rise , despite an increase in sustained winds . However , on September 5 , a shortwave forced the low northeastward , allowing for Betsy to strengthen further .

Later on September 5 , Betsy attained Category 4 hurricane strength , before subsequently

reaching peak intensity the following day with winds of 140 mph (230 km / h) and a central pressure of 945 mbar (hPa ; 27 @. @ 91 inHg) , based on reconnaissance flights into the system . However , as a result of missing the short wave itself , the hurricane later weakened and fell to Category 3 intensity while located about 440 miles (710 km) east @- @ northeast of Bermuda . Betsy weakened further to Category 2 hurricane before becoming nearly stationary beginning on September 6 , where it maintained its intensity for several days . A separate , minor trough was later able to move the system northeastwards on September 9 . Moving into highly latitudes , Betsy began to weaken , degenerating back to Category 1 hurricane intensity on September 11 before transitioning into an extratropical cyclone the following day . The extratropical remnants continued northeastward and weakened , before dissipating west of Ireland early on September 12 . Due to its distance from any landmasses , no damage was associated with the tropical cyclone .

= = = Hurricane Carla = = =

A tropical depression developed from an area of squally weather embedded within the ITCZ in the southwestern Caribbean Sea on September 3 . Initially a tropical depression , it strengthened slowly while heading northwestward , and by September 5 , the system was upgraded to Tropical Storm Carla . About 24 hours later , Carla was upgraded to a hurricane . Shortly thereafter , the storm curved northward while approaching the Yucatán Channel . Late on September 7 , Carla entered the Gulf of Mexico while passing just northeast of the Yucatán Peninsula . By early on the following day , the storm became a major hurricane . Resuming its northwestward course , Carla continued intensification and on September 11 , it was upgraded to a Category 5 hurricane . Later that day , Carla weakened slightly , but was still a large and intense hurricane when the storm made landfall near Port O 'Connor , Texas with winds of 145 mph (233 km / h) . It weakened quickly inland and was reduced to a tropical storm on September 12 . Heading generally northward , Carla transitioned into an extratropical cyclone on September 13 , while centered over southern Oklahoma . However , the remnants continued generally northeastward and entered Canada on September 14 , before dissipating near Cape Chidley early on September 16 .

While crossing the Yucatán Channel , the outer bands of Carla brought gusty winds and severe local flooding in western Cuba and the Yucatán Peninsula , though no damage or fatalities were reported . Although initially considered a significant threat to Florida , the storm brought only light winds and small amounts of precipitation , reaching no more than 3 @. @ 15 in (80 mm) . In Texas , wind gusts as high as 170 mph (270 km / h) were observed in Port Lavaca . Additionally , several tornadoes spawned in the state caused notable impacts , with the most destructive tornado resulting in 200 buildings severely damaged , of which at least 60 were destroyed , and eight deaths and 55 injuries . Throughout the state , Carla destroyed 1 @, @ 915 homes , 568 farm buildings , and 415 other buildings . Additionally , 50 @, @ 723 homes , 5 @, @ 620 farm buildings , and 10 @, @ 487 other buildings suffered damage . There were 34 fatalities and at least \$ 300 million in losses in Texas alone . Several tornadoes also touched down in Louisiana , causing the destruction of 140 homes and 11 farms and other buildings , and major damage to 231 additional homes and 11 farm and other buildings . Minor to moderate damage was also reported to 748 homes and 75 farm and other buildings . Six deaths and \$ 25 million in losses in Louisiana were attributed to Carla . Heavy rainfall occurred in several other states , especially in Kansas , where flash flooding severely damaged crops and drowned five people . Overall , Carla resulted in \$ 325 @. @ 74 million in losses and 46 fatalities . In Canada , the remnants of Carla brought strong winds to Ontario and New Brunswick , though impact was primarily limited to power outages and falling trees and branches .

= = = Hurricane Debbie = = =

A tropical disturbance was first identified in late August over Central Africa . It was estimated to have become a tropical storm on September 6 . Later that day , Debbie passed through the southern Cape Verde Islands as a strong tropical storm or minimal hurricane , resulting in a plane crash that killed 60 people . Once clear of the islands , data on the storm became sparse , and the

status of Debbie was uncertain over the following several days as it tracked west @-@ northwestward and later northward . It was not until a commercial airliner intercepted the storm on September 10 that its location was certain . The following day , Debbie intensified and reached its peak intensity as a Category 3 hurricane with winds of 120 mph (190 km / h) . The hurricane gradually slowed its forward motion and weakened . By September 13 , Debbie 's motion became influenced by the westerlies , causing the system to accelerate east @-@ northeastward .

The system passed over the western Azores as a minimal hurricane on September 15 . At this point , there is uncertainty as to the structure of Debbie , whether it transitioned into an extratropical cyclone or maintained identity as a tropical system . Regardless , the system deepened as it neared the British Isles , skirting the coast of Western Ireland on September 16 . Shortly thereafter , the system was confirmed to have become extratropical as it continued towards the northeast . In Ireland , Debbie brought record winds to much of the island , with a peak gust of 114 mph (183 km / h) measured just offshore . Widespread wind damage and disruption occurred , downing tens of thousands of trees and power lines . Countless structures sustained varying degrees of damage , with many smaller buildings destroyed . Agriculture experienced extensive losses to barley , corn and wheat crops . Throughout Ireland , Debbie killed 18 people , with 12 in the Ireland and six in Northern Ireland . It caused \$ 40 ? 50 million in damage in the Republic and at least £ 1 @. @ 5 million (US \$ 4 million) in Northern Ireland . The storm also battered parts of Great Britain with winds in excess of 100 mph (160 km / h) .

= = = Hurricane Esther = = =

On September 10 , Television Infrared Observation Satellite (TIROS) III observed an area of disturbed weather well southwest of the Cape Verde Islands . Later that day , a tropical depression developed about 540 miles (870 km) west @-@ southwest of the southernmost Cape Verde Islands . Moving northwestward , the depression strengthened into Tropical Storm Esther on September 11 , before reaching hurricane intensity on the following day . Early on September 13 , Esther curved westward and deepened into a major hurricane . The storm remained a Category 3 hurricane for about four days and gradually moved in west @-@ northwestward direction . Late on September 17 , Esther strengthened into a Category 4 hurricane and peaked with sustained winds of 145 mph (233 km / h) on September 18 .

The storm curved north @-@ northeastward on September 19 , while offshore North Carolina . Esther began to weaken while approaching New England and fell to Category 3 intensity on September 21 . Early on September 22 , the storm turned eastward and rapidly weakened to a tropical storm . It then executed a large cyclonic loop , until curving northward on September 25 . Early on the following day , Esther struck Cape Cod , hours before emerging into the Gulf of Maine . Later on September 26 , the storm made landfall in southeastern Maine , before weakening to a tropical depression and becoming extratropical over southeastern Quebec . The remnants persisted for about 12 hours , before dissipating early on September 27 . Between North Carolina and New Jersey effects were primarily limited to strong winds and minor beach erosion and coastal flooding due to storm surge . In New York , strong winds led to severe crop losses and over 300 @, @ 000 power outages . High tides caused coastal flooding and damage a number of pleasure boats . Similar impact was reported in Massachusetts . Additionally , some areas observed more than 8 inches (200 mm) of rainfall , flooding basements , low @-@ lying roads , and underpasses . Overall , damage was minor , totaling about \$ 6 million . There were also seven deaths reported when United States Navy P5M aircraft crashed about 120 miles (190 km) north of Bermuda .

= = = Unnamed Tropical Storm = = =

TIROS III imagery indicated a vortex east of the Bahamas between September 9 and September 12 . A tropical depression formed at 12 : 00 UTC on September 12 , after TIROS revealed a surface circulation . The depression tracked northward and intensified into a tropical storm while located offshore North Carolina . Early on September 14 , it made landfall in the state near Wilmington ,

North Carolina with winds of 40 mph (64 km / h) . The storm curved northeastward and accelerated across the Mid @-@ Atlantic , New England , and New Brunswick . Upon reaching the Gulf of Saint Lawrence on September 15 , it weakened to a tropical depression and subsequently dissipated .

Impact from the storm was generally minor . In North Carolina , 3 @.@ 12 inches (79 mm) of precipitation fell at Williamston . Strong winds lashed Rhode Island , with winds as high as 70 mph (110 km / h) in Point Judith . About 29 @,@ 000 homes were left without electricity , while 1 @,@ 200 lost telephone service . Hundreds of small crafts and a few ferries and barges were swamped or sank . Hurricane @-@ force wind gusts in Massachusetts felled trees , electrical wires , and TV antennas . Some roads in the southeastern portion of the state were blocked by fallen trees . Similar impact was reported in Maine . Additionally , two homes were damaged by falling trees . One person was injured by a flying wooden plank .

== Hurricane Frances ==

A westward @-@ moving tropical wave organized into a tropical depression on September 30 , east of the northern Lesser Antilles . Six hours later , the depression strengthened into Tropical Storm Frances . Heading westward , it crossed through the Leeward Islands and entered the Caribbean Sea on October 1 . Thereafter , the lack of divergence at high levels prevented significant strengthening for a few days . While situated south of Puerto Rico on October 2 , Frances curved northwestward . The storm brought heavy rainfall to Puerto Rico , peaking at 10 @.@ 15 inches (258 mm) in the Indiera Baja barrio of Maricao . Considerable damage to roads and bridges occurred . However , due to swift evacuations of residents by the Civil Defense and American Red Cross , no fatalities were reported .

Tracking to the northwest , Frances made landfall near Cap Cana , Dominican Republic early on October 3 with winds of 60 mph (97 km / h) . No impact was reported on the island . Later on October 3 , Frances emerged into the Atlantic Ocean just southeast of the Turks and Caicos Islands . Thereafter , the storm accelerated somewhat and resumed intensification , reaching hurricane status on October 4 . Around that time , it curved northeastward and deepened further . Early on October 7 , Frances attained its peak intensity with winds of 125 mph (201 km / h) and a minimum barometric pressure of 948 mbar (28 @.@ 0 inHg) . The storm passed by Bermuda around that time , where it dropped 1 @.@ 35 inches (34 mm) of precipitation . Later on October 7 , Frances re @-@ curved to the north . Early on the following day , it turned northwestward and began to weaken , falling to tropical storm intensity around 06 : 00 UTC on October 9 . Six hours later , Frances became extratropical over the Gulf of Maine . The remnants curved east @-@ northeastward and struck Nova Scotia , before dissipating early on October 10 .

== Tropical Storm Gerda ==

A westward @-@ moving tropical wave developed into a tropical depression on October 16 , while located south of Jamaica . Shortly thereafter , the depression made landfall in Clarendon Parish . It continued northward and made another landfall near Santa Cruz del Sur , Cuba on October 17 . The depression brought heavy rainfall to Jamaica and eastern Cuba . In the former , flooding caused damage to roads and forced many to evacuate their homes in western Kingston . Five fatalities were reported in Jamaica . Flooding in eastern Cuba resulted in seven deaths . After striking Cuba , the depression emerged into the Atlantic and then crossed the Bahamas .

The depression accelerated to the north @-@ northeast and finally began to strengthen . Late on October 19 , the depression reached tropical storm intensity and was named Gerda , while located between Bermuda and the East Coast of the United States . The storm curved northeastward on October 20 , while peaking with winds of 70 mph (110 km / h) . However , a Texas Tower offshore Massachusetts observed hurricane @-@ force winds . At 00 : 00 UTC on October 21 , Gerda transitioned into an extratropical cyclone , while situated about 100 miles (160 km) east @-@ southeast of Barrington , Nova Scotia . Damage from the storm in New England was " about the same as that from a typical wintertime northeaster " . The remnants of Gerda moved northeastward

and then to the east , before dissipating between Newfoundland and the Azores late on October 22 .

== = Hurricane Hattie == =

In late October , an area of low pressure persisted in the western Caribbean Sea for several days . On October 27 , a ship and the airport on San Andres Island reported a closed center of circulation associated with the low . Thus , the system was classified as Tropical Storm Hattie starting on October 27 . Moving towards the north and north @-@ northeast , the storm quickly gained hurricane status and major hurricane status the following day . Hattie turned towards the west to the east of Jamaica , and strengthened into a Category 5 hurricane , with maximum sustained winds of 160 mph (260 km / h) before weakening to Category 4 status at landfall south of Belize City . Continuing southwest , the storm rapidly weakened over the mountainous terrain of Central America , dissipating on November 1 . The remnants may have contributed to the development of Tropical Storm Simone in the eastern Pacific Ocean .

Hattie first affected regions in the southwestern Caribbean , producing hurricane @-@ force winds and causing one death on San Andres Island . It was initially forecast to continue north and strike Cuba , which prompted evacuations . Little effects were reported as Hattie turned to the west , although rainfall reached 11 @.@ 5 in (290 mm) on Grand Cayman . The worst damage was in the country of Belize . The former capital , Belize City , was flooded by a powerful storm surge and high waves and affected by strong winds . The territory governor estimated 70 % of the buildings in the city were damaged , which left over 10 @,@ 000 people homeless . The damage was severe enough that it prompted the government to relocate inland to a new city , Belmopan . In the territory , Hattie left about \$ 60 million in damage and caused 307 deaths . The government estimated that Hattie was more damaging than a hurricane in 1931 that killed 2 @,@ 000 people ; the lower toll for Hattie was due to advance warning . Elsewhere in Central America , the hurricane killed 11 people in Guatemala and one in Honduras .

== = Hurricane Jenny == =

A surface trough of low pressure developed in the eastern Caribbean Sea on October 30 . The trough split , with the northern portion spawning a tropical depression near Antigua at 12 : 00 UTC on November 1 . In the early stages of Jenny , light rainfall was observed in Puerto Rico , peaking at 4 @.@ 97 inches (126 mm) . Moving northeastward ahead of an upper @-@ level trough , the depression remained weak for over four days . On November 3 , it curved eastward , before briefly turning to the southeast on November 4 . The depression tracked in a circular path during the next 24 hours , moving northeastward , north @-@ northwestward , and then west @-@ northward . Finally , the system strengthened into Tropical Storm Jenny early on November 6 .

Jenny intensified further and reached hurricane status at 12 : 00 UTC on November 6 . Later that day , the United States Weather Bureau began advisories and described Jenny as having " characteristic of many storms in the sub @-@ tropics late in the hurricane season . " Around 18 : 00 UTC on November 6 , Jenny attained its peak intensity with maximum sustained winds of 80 mph (130 km / h) and a minimum barometric pressure of 974 mbar (28 @.@ 8 inHg) . Thereafter , the storm briefly decelerated and weakened , falling to tropical storm intensity around midday on November 7 . Jenny curved northeastward and continued to weaken . A reconnaissance flight into the system on November 8 indicated that the storm became extratropical about 895 miles (1 @,@ 440 km) east of Bermuda . The extratropical remnants continued to move northeastward and weakened , dissipating late on November 9 .

== = Tropical Storm Inga == =

Early on November 4 , the SS Navigator encountered a weather system in the Gulf of Mexico that produced northwesterly winds of 81 to 92 mph (130 to 148 km / h) . Reconnaissance aircraft data

indicated that Tropical Storm Inga developed at 00 : 00 UTC on November 5 , while located about 145 miles (233 km) northeast of Veracruz . A strong high pressure system and a cold front entering the Gulf of Mexico from Texas caused the storm to move southward and then southeastward . Inga slowly strengthened and peaked as a 70 mph (110 km / h) tropical storm early on November 7 . Thereafter , the storm became nearly stationary and began weakening . By 12 : 00 UTC on November 8 , Inga dissipated in the Bay of Campeche , as reconnaissance aircraft found no closed circulation .

= = = Other storms = = =

A report from Mexico indicates that a tropical depression off the west coasts of Tabasco and Coatzacoalcas . The depression significantly impacted the northern portions of Veracruz with heavy rainfall on June 30 . However , the Atlantic hurricane best track does not list this system as a tropical depression .

= = Storm names = =

The following names were used for named storms (tropical storms and hurricanes) that formed in the North Atlantic in 1961 . Storms were named Frances , Hattie , Inga and Jenny for the first time in 1961 . The names Carla and Hattie were later retired . Names that were not assigned are marked in gray .