

= 1990 Atlantic hurricane season =

The 1990 Atlantic hurricane season was the most active Atlantic hurricane season since 1969 . It officially began on June 1 , 1990 , and lasted until November 30 , 1990 . These dates conventionally delimit the period of each year when most tropical cyclones form in the Atlantic basin . One tropical depression did form before the season officially started , however .

Though very active , the season featured relatively weak systems , most of which stayed at sea . The 1990 season was unusual in that no tropical cyclone of at least tropical storm strength made landfall in the United States , although Tropical Storm Marco weakened to a depression just before landfall . 1962 was the last season prior to this one when no storm of at least tropical storm strength made landfall in the US . There have been a total of 6 such seasons in which no storms have made landfall in the United States at at least tropical storm strength ; these were the 1853 , 1862 , 1864 , 1922 , 1962 , and 1990 seasons .

Two of the season 's hurricanes were notable . Hurricane Diana killed an estimated 139 in the Mexican states of Veracruz and Hidalgo ; property damage estimates are unavailable , but damage was widespread . Hurricane Klaus brought flooding to Martinique , and caused torrential rainfall across the southeastern United States after combining with Tropical Storm Marco and a frontal boundary . As a result of effects from Diana and Klaus , both names were retired following the season .

= = Season summary = =

= = = Pre @-@ season forecasts = = =

Forecasts of hurricane activity are issued before each hurricane season by noted hurricane experts such as Dr. William M. Gray and his associates at Colorado State University ( CSU ) . A normal season as defined by the National Oceanic and Atmospheric Administration ( NOAA ) , has eleven named storms , of which six reach hurricane strength , and two major hurricanes . In April 1990 , it was forecast that six storms would reach hurricane status , and there would be " three additional storms " from the previous year , which would indicate 14 named storms . The forecast did not specify how many hurricanes would reach major hurricane status . In early June 1990 , CSU released their predictions of tropical cyclonic activity within the Atlantic basin during the 1990 season . The forecast from CSU called for 11 named storms , seven of which to intensify into a hurricane , and three would strengthen further into a major hurricane .

= = = Season activity = = =

The Atlantic hurricane season officially began on June 1 , but activity in 1990 began five days earlier with the formation of Tropical Depression One on May 25 . It was an above average season in which 16 tropical depressions formed . Fourteen depressions attained tropical storm status , and eight of these attained hurricane status . There was only one tropical cyclone to reach major hurricane status ( Category 3 + on the Saffir ? Simpson Hurricane Scale ) , which was slightly below the 1950 ? 2005 average of two per season . One hurricane and five tropical storms made landfall during the season and caused 168 deaths and \$ 152 million ( 1990 US \$ ; \$ 275 million 2016 USD ) in damage . The last storm of the season , Hurricane Nana , dissipated on October 21 , over a month before the official end of the season on November 30 .

The activity in the first two months of the season were limited in tropical cyclogenesis , with the second tropical depression of the season not developing until July 22 . Following that , the season was very active , and there was a quick succession of tropical cyclone development from late @-@ July to mid @-@ August . The Atlantic briefly remained dormant , and activity resumed on August 24 with the development of Tropical Depression Eight ( Hurricane Gustav ) . Although August was a very active month , there were only two named storms in September , both of which became

hurricanes . Activity in October was high then average , with five tropical cyclones to either form or exist in the month . Following an active October , no tropical cyclogenesis occurred in the final month of the season , which is November .

The season 's activity was reflected with a cumulative accumulated cyclone energy ( ACE ) rating of 97 , which is categorized as being " near normal " since it is slightly below the mean value of 103 x 104kt<sup>2</sup> . 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 . ACE is only calculated for full advisories on tropical systems at or exceeding 34 knots ( 39 mph , 63 km / h ) or tropical storm strength . Although officially , subtropical cyclones are excluded from the total , the figure above includes periods when storms were in a subtropical phase .

= = Storms = =

Timeline of tropical activity in the 1990 Atlantic hurricane season

= = = Tropical Depression One = = =

Tropical Depression One formed on May 25 from a weak low pressure area to the west of Jamaica , which had been producing scattered showers over the island during the preceding days . The depression moved across Cuba shortly after forming , although the convection was located to the east of its poorly defined center . As it headed toward Florida , it was absorbed by an approaching cold front .

The depression did not cause significant damage . In Florida , the depression was forecast to ease drought conditions that persisted for about two years . While crossing Cuba , the depression dropped heavy rainfall , and predictions stated that precipitation amounts could reach as high as 10 in ( 254 mm ) , but the greatest amount measured was at 6 in ( 152 @. @ 4 mm ) east of Havana . Heavy rainfall also occurred across much of south Florida , peaking at 6 @. @ 20 in ( 157 @. @ 5 mm ) at the Royal Palm Ranger Station in Everglades National Park . While the depression was affecting south Florida , the National Weather Service issued " urban flood statements " warning of flooded streets in mainly low @- @ lying areas , especially in Dade and Broward counties . Standing water on many Florida expressways caused automobile accidents , especially in Dade County , where 28 accidents were reported .

= = = Tropical Storm Arthur = = =

The second tropical depression of the season developed on July 22 from a tropical wave nearly midway between the Lesser Antilles and Cape Verde . The depression slowly intensified , and was eventually upgraded to Tropical Storm Arthur , two days later . On July 25 , Tropical Storm Arthur crossed the Windward Islands chain , and it was noted that the storm made landfall on Tobago . Emerging into the Caribbean Sea , Arthur reached nearly attained hurricane status on July 25 . Thereafter , wind shear began increasing over Arthur , and a weakening trend began after peak intensity . As Arthur headed further into the Caribbean Sea , it significantly weakened and was downgraded to a tropical depression on July 27 . Later that day , Air Force reconnaissance and satellite imagery did not show a low @- @ level circulation , indicating that Arthur had degenerated into open tropical wave 130 mi ( 209 @. @ 2 km ) southeast of Kingston , Jamaica .

Shortly after Arthur became a tropical storm on July 24 , a tropical storm warning was issued for Trinidad , Tobago , and Grenada ; six hours later , it was extended to the Grenadines . About 24 hours later , all of the tropical storm warnings were discontinued . As Arthur headed further into the Caribbean Sea , a tropical storm watches and warnings were issued for Hispaniola and Puerto Rico on July 26 . All of the tropical storm watches and warnings were discontinued after Arthur weakened to a tropical depression . After Arthur made landfall on Tobago , several landslides occurred , and a major bridge had collapsed ; electrical and water services were significantly disrupted . Damage was

also reported on Grenada , where two bridges were damaged , electricity and telephone service was disrupted , and crops were affected as well . In addition , Arthur caused damage to four hotels and hundreds of houses . Wind gusts on the island of Grenada reportedly reached 55 mph ( 85 km / h ) . As Arthur passed south of Puerto Rico , there were reports of strong winds and heavy rainfall . Heavy rainfall was also reported on the south coast of Haiti as Arthur approached the country .

= = = Hurricane Bertha = = =

A tropical wave emerged off the coast of Africa , and after interacting with a cold front and an area of low pressure , developed into a subtropical depression on July 24 , offshore of North Carolina near Cape Hatteras . The subtropical depression slowly acquired tropical characteristics , and was reclassified as Tropical Depression Three on July 27 . On the following day , the National Hurricane Center upgraded the depression to Tropical Storm Bertha . It drifted northeast and became a hurricane 500 mi ( 804 @. @ 7 km ) west @-@ southwest of Bermuda on July 29 . As Bertha continued parallel to the East Coast of the United States , it had experienced strong wind shear and was downgraded back to a tropical storm later on July 29 . However , by July 30 , Air Force reconnaissance flights reported at hurricane @-@ force winds , and Bertha had re @-@ intensified into a hurricane at that time . After becoming a hurricane again , Bertha continued northeastward , but transitioned into an extratropical cyclone over Nova Scotia on August 2 .

Nine deaths were attributed to Bertha , including six crew members of the Greek freighter Corazon who perished off the Canadian coast after their ship broke up . Another fatality was caused when one person fell off the ship Patricia Star and into the Atlantic ; the other two deaths were from two people drowning in north Florida . Damage to crops and a suspension bridge were reported from Nova Scotia and Prince Edward Island ; this damage totaled to \$ 4 @. @ 427 million ( 1990 CAD ; \$ 3 @. @ 912 million 1990 USD , \$ 7 @. @ 09 million 2016 USD ) .

= = = Tropical Storm Cesar = = =

While Bertha was approaching Atlantic Canada , a tropical wave emerged into an Atlantic from the west coast of Africa , and quickly developed into Tropical Depression Four 336 mi ( 540 @. @ 7 km ) south of Cape Verde . The depression headed northwestward due to the weakness of a subtropical ridge and slowly intensified . While the depression was well west of Cape Verde , it intensified into Tropical Storm Cesar on August 2 . Cesar continued on the generally northwestward path and no significant change in intensity occurred , as it peaked at 50 mph ( 85 km / h ) shortly after becoming a tropical storm . Later in its duration , wind shear significantly increased , causing the low @-@ level circulation to be removed from the deep convection on August 6 , and Cesar weakened back to a tropical depression as a result . As it was weakening to a tropical depression , Cesar became nearly stationary , and turned abruptly eastward . On the following day , Cesar dissipated almost 1 @, @ 151 mi ( 1 @, @ 852 @. @ 3 km ) east @-@ southeast of Bermuda .

= = = Hurricane Diana = = =

A tropical wave uneventfully crossed the Atlantic Ocean and entered the Caribbean Sea either late July or early August 1990 . As the system entered the southwest Caribbean , it began to further develop , and became Tropical Depression Five on August 4 . The depression headed northwestward , and intensified enough to be upgraded to Tropical Storm Diana on August 5 . After becoming a tropical storm , Diana continued to quickly intensify , and maximum sustained winds were 65 mph ( 105 km / h ) before landfall occurred in Felipe Carrillo Puerto , Quintana Roo , on the Yucatán Peninsula . Diana weakened somewhat over the Yucatán Peninsula , but was still a tropical storm when it entered the Gulf of Mexico . While over the Gulf of Mexico , Diana again rapidly intensified , and became a hurricane on August 7 . Later that day , Diana further strengthened into a Category 2 hurricane , and peaked with winds of 100 mph ( 155 km / h ) . Only two hours , Diana made landfall near Tampico , Tamaulipas , Mexico at the same intensity . After moving ashore ,

Diana rapidly weakened , and had deteriorated to a tropical storm only four hours after landfall . By August 8 , Diana weakened back to a tropical depression near Mexico City . Diana briefly entered the Eastern Pacific Basin on August , but was not re @-@ classified , and it rapidly dissipated at the south end of the Gulf of California .

In preparations for Diana , there were several tropical storm watches and warning issued along the Yucatán Peninsula and several areas along the Gulf Coast of Mexico ; hurricane watches and warnings were also put into effect . While crossing the Yucatán Peninsula , Diana produced near @-@ tropical storm force winds , and heavy rainfall , but not damage or fatalities . However , the mainland of Mexico fared much worse , where torrential rainfall caused mudslides in the states of Hidalgo and Veracruz . As a result of heavy rainfall , many houses were destroyed , and approximately 3 @, @ 500 became homeless . Diana also produced high winds across Mexico , which toppled tree and fell electricity poles , leaving many without telephone service and block several roads . In addition , the remnants of Diana brought rainfall to the southwestern United States . Contemporary reports indicated that 139 people had been killed , with an additional 25 @, @ 000 people being injured . Damage as a result of Diana was estimated at \$ 90 @. @ 7 million ( 1990 USD , \$ 164 million 2016 USD ) .

= = = Tropical Storm Edouard = = =

A frontal wave formed near the Azores in early August . When thunderstorm activity grew near its center , it was deemed a subtropical depression on August 2 just east of the Azores . Associated with an upper @-@ level cold low , it intensified into a subtropical storm on August 3 , although water temperatures were cooler than what is usually required for tropical cyclogenesis . It tracking westward and passed near Graciosa before weakening back to a depression on August 4 . The depression executed a small cyclonic loop , developing deep and organized convection near the circulation . Late on August 6 , it transitioned into Tropical Depression Six . The depression moved northeastward toward the Azores , intensifying into Tropical Storm Edouard on August 8 . Shortly thereafter it reached peak winds of 45 mph ( 72 km / h ) , and subsequently it moved past the northern Azores . On August 10 , Edouard weakened again to depression status , and became extratropical on the following day . The remnants of Edouard dissipated on August 13 , a few hundred miles west of Portugal .

Much of the western Azores reported winds of at 35 mph ( 55 km / h ) . The island of Horta reported winds gusts from 35 to 65 mph ( 55 to 100 km / h ) . Lajes Air Force Base on Terceira Island reported a maximum wind gust of 38 mph ( 61 km / h ) . Also a tower on the island of Terceira reported sustained winds at 50 mph ( 80 km / h ) , while a gusts as high as 67 mph ( 108 km / h ) were recorded .

= = = Tropical Storm Fran = = =

On August 11 , a tropical wave developed into the seventh tropical depression of the season , while situated several hundred miles southwest of Cape Verde . The depression moved rapidly westwards , and intensified to just under tropical storm status on August 12 . However , later that day , the depression began to lose its low @-@ level circulation , while deep convection was diminishing . As a result , the depression became " too weak to classify " for Dvorak technique , and the system had degenerated back into a tropical wave early on August 13 . After weakening back to a tropical wave , the system quickly re @-@ organized , and re @-@ developed into a tropical depression twelve hours later . Later that day , the depression further intensified , and was upgraded to Tropical Storm Fran . No significant change in intensity occurred after Fran became a tropical storm and maximum sustained winds never exceeded 40 mph ( 65 km / h ) . By the next day , Fran made landfall on Trinidad at the same intensity . While on Trinidad , Fran significantly interacted with the South American mainland , and quickly dissipated on August 15 .

After Fran became a tropical storm on August 13 , a tropical storm warning was issued for Trinidad , Tobago , and Grenada . Simultaneously , a tropical storm watch came into effect for Barbados and

Saint Vincent and the Grenadines . As Fran was passing through the Windward Islands , the tropical storm watch was discontinued . Only two hours before Fran dissipated , the tropical storm warning was discontinued for Trinidad , Tobago , and Grenada . As a result of Fran , only heavy rains were reported on the Windward Islands . Light rainfall was reported on Trinidad , peaking at 2 @. @ 6 in ( 66 mm ) . In addition , wind gusts were reported up to 29 mph ( 46 km / h ) .

== Hurricane Gustav ==

A tropical depression developed from a tropical wave approximately 1 @, @ 000 mi ( 1 @, @ 609 @. @ 3 km ) east of Barbados on August 24 . After forming , the depression moved westward and on the next day intensified into a tropical storm on the following day . After becoming a tropical storm , Gustav continued to intensify as it headed west @- @ northwestward . Intensification into a hurricane occurred on August 26 , as the storm began slowly curving northward under the influence of a trough . After reaching Category 2 intensity , Gustav was affected by wind shear , and weakened , but eventually re @- @ intensified . The hurricane ultimately peaked as a Category 3 hurricane on August 31 , and was also the most intense tropical cyclone of the season , in addition to being the only major hurricane in the Atlantic that year . Around the time of attaining peak intensity , Gustav began a Fujiwhara interaction with nearby Tropical Storm Hortense . After attaining peak intensity on August 31 , Gustav weakened back , at nearly the same rate as it had intensified , and deteriorated to a tropical storm on September 2 . By September 3 , Gustav transitioned into an extratropical cyclone , 230 mi ( 370 km ) south of Iceland .

Gustav initially appeared as a significant threat to the Lesser Antilles , which was devastated by Hurricane Hugo about a year prior . As a result , several hurricane watches and warnings were issued on August 27 , but all were discontinued later that day as Gustav turned northward . The only effects reported on the Lesser Antilles were large swells , light winds , and light rains . Following the passage of Gustav , no damage or fatalities were reported .

== Tropical Storm Hortense ==

The ninth tropical depression of the season developed from a tropical wave 700 mi ( 1 @, @ 126 @. @ 5 km ) west @- @ southwest of Cape Verde on August 25 . The depression headed west @- @ northwestward , while slowly intensifying and establishing better @- @ defined upper @- @ level outflow . By August 26 , the depression intensified enough to be upgraded to Tropical Storm Hortense . After becoming a tropical storm , Hortense was steered nearly due north , under the influence on an upper @- @ level low . Hortense later headed generally northwestward , after the upper @- @ level low degenerated into a trough and moved eastward . Although intensification was somewhat slow , Hortense managed to peak as a 65 mph ( 100 km / h ) tropical storm on August 28 . On August 29 , nearby Hurricane Gustav was rapidly intensifying , and began to significantly affect Hortense with increasing vertical wind shear . Hortense weakened , with the storm degenerating into a tropical depression on August 30 . Further weakening occurred , and Hortense dissipated on August 31 circa 805 mi ( 1 @, @ 296 km ) east @- @ southeast of Bermuda .

== Hurricane Isidore ==

A vigorous tropical wave exited the west coast of Africa on September 3 . It quickly developed an area of deep convection with a well @- @ defined circulation , which prompted it being classified a tropical depression on September 4 . At the time it was situated hundreds of miles south of Cape Verde at a very low latitude of 7 @. @ 2 ° N. Initial intensification was slow as the system moved northwestward , a movement caused by a large mid @- @ level trough over the central Atlantic . On September 5 the NHC upgraded the depression to Tropical Storm Isidore . Subsequently it intensified at a faster rate , becoming a hurricane on September 6 . The following day , satellite estimates from the Dvorak technique suggested a peak intensity of 100 mph ( 165 km / h ) and a minimum barometric pressure of 978 mbar ( hPa ; 28 @. @ 88 inHg ) .

After peaking , Isidore entered a region of stronger upper @-@ level winds and quickly weakened . By September 8 it had deteriorated into a tropical storm , although re @-@ intensification occurred after the shear decreased . An eye feature redeveloped in the center of the convection , and Isidore re @-@ intensified into a hurricane on September 9 . It ultimately reached a secondary peak intensity of 90 mph ( 150 km / h ) . Isidore 's motion slowed , briefly becoming stationary , although it remained a hurricane for several days . Cooler waters imparted weakening to a tropical storm on September 16 , and the next day it became extratropical to the east of Newfoundland . There were a few ships that came in contact with Hurricane Isidore , one of which reported hurricane @-@ force wind gusts . The storm never approached land during its duration , and no damage or casualties were reported .

= = = Tropical Depression Eleven = = =

On September 18 , Tropical Depression Eleven formed midway between Africa and the Lesser Antilles from a tropical wave . Ship and reconnaissance aircraft observations reported that the depression almost reached tropical storm strength . It was sheared by strong upper @-@ level winds until it dissipated on September 27 . The system never affected land .

= = = Hurricane Josephine = = =

A tropical wave exited the coast of Africa on September 16 with copious convection . It tracked westward , developing into Tropical Depression Twelve on September 21 while located a few hundred miles west of Cape Verde . Without intensifying further , the depression turned northward , due to a weakness caused by the deepening of a 200 mbar cut @-@ off low near the Iberian Peninsula . Under the influence of a building high pressure area , the depression turned to a northwest and later westward drift . It into Tropical Storm Josephine on September 24 , although increased wind shear from a trough weakened the storm back to a tropical depression on September 26 . It remained weak for several days , gradually turning to the north due to a weak trough over the northwestern Atlantic . On October 1 , another high pressure area halted its northward movement , causing Josephine to turn to the east . That day , it re @-@ intensified into a tropical storm as it began to execute a small cyclonic loop . An approaching trough caused Josephine to accelerate north @-@ northeastward , and with favorable conditions it intensified into a hurricane on October 5 , after existing nearly two weeks .

Hurricane Josephine intensified slightly more on October 5 , attained its peak intensity later that day , with maximum sustained winds of 85 mph ( 140 km / h ) and a minimum barometric pressure of 980 mbar ( hPa ; 28 @.@ 94 inHg ) . A large mid @-@ latitude storm began developing on October 5 , and Hurricane Josephine accelerated around the east periphery on the system . Josephine weakened back to a tropical storm early on October 6 , while moving to the north of the mid @-@ latitude system . After tracking near the mid @-@ latitude cyclone , Tropical Storm Josephine transitioned into an extratropical storm on October 6 before being absorbed by it . The mid @-@ latitude cyclone later developed into Hurricane Lili .

= = = Hurricane Klaus = = =

A tropical wave developed into Tropical Depression Thirteen on October 3 , 115 mi ( 185 km / h ) east of Dominica . The depression rapidly intensified into a tropical storm , and was classified as Tropical Storm Klaus only six hours later . Because Klaus was in an area of weak steering current , it was drifting west @-@ northwestward . On October 5 , Klaus briefly intensified into a hurricane , and passed only 12 mi ( 19 km ) east of Barbuda later that day . By the following day , Klaus had weakened back into a tropical storm . After weakening to a tropical storm , Klaus began to accelerate , while turning westward . Klaus became significantly affected by wind shear , as it weakened to a tropical depression to the north of Puerto Rico on October 8 . Later that day , deep convection began to re @-@ developed near the low @-@ level circulation of Klaus , and it had re

@-@ intensified into a tropical storm . As Klaus tracked northwestward near the Bahamas on October 9 , it was absorbed by an area of low pressure , which would eventually develop into Tropical Storm Marco .

Since Klaus passed very close to the Leeward Islands , tropical storm watches and warnings were issued , as well as hurricane watches and warning , starting on October 4 . In addition , tropical storm watches and warnings were also issued for the British and United States Virgin Islands , and the Bahamas . After several watches and warnings were issued , all were discontinued by October 9 , around the time when Klaus was absorbed by the area of low pressure . In Martinique , flooding caused seven fatalities , and displaced 1 @, @ 500 other people . Heavy rainfall also occurred on other Leeward Islands , with estimates as high as 15 in ( 381 mm ) of precipitation . However , no effects were reported in the Bahamas . The remnants brought large waves and heavy rainfall to southeastern United States , which caused four deaths when a dam burst in South Carolina . In total , Klaus caused 11 fatalities , but only \$ 1 million ( 1990 USD ; \$ 1 @. @ 81 million 2016 USD ) in damage .

= = = Hurricane Lili = = =

A cold @-@ core low which affected the latter stages of Josephine developed at the surface and became a subtropical storm on October 6 , about 875 mi ( 1 @, @ 408 @. @ 1 km ) southeast of Cape Race , Newfoundland . The subtropical storm moved southwest and slowly curved westward , nearly intensifying into a hurricane . On October 11 , the subtropical storm finally acquired tropical characteristics . Simultaneously , the now @-@ tropical cyclone intensified into a hurricane , and was re @-@ classified as Hurricane Lili . After becoming a hurricane , Lili headed rapidly west @-@ southwestward , and did not intensify past maximum sustained winds of 75 mph ( 120 km / h ) . After passing 140 mi ( 230 km ) south of Bermuda later that day , Lili began to curve slowly northward , thereby avoiding landfall in the United States . While about 200 mi ( 321 @. @ 9 km ) east @-@ southeast of Cape Hatteras , Lili weakened back to tropical storm intensity . Weakening to a tropical storm , Lili curved northeastward and accelerated toward Atlantic Canada . However , Lili transitioned into an extratropical storm on October 14 , just offshore of Nova Scotia . The post @-@ tropical cyclone made landfall on Newfoundland soon afterwards .

Lili posed a threat to Bermuda , and a hurricane warning as the storm approached , but only gusty winds and light rainfall was reported . As Lili continued westward , it had also posed a significant threat to the East Coast of the United States , since some of the computer models did not predict a northward curve . As a result , several hurricane watches and warnings were issued from Little River Inlet , South Carolina , to Cape Henlopen , Delaware . However , Lili later curved northward , and only caused minor coastal erosion in North Carolina and rainfall in Pennsylvania . Lili began impacting Atlantic Canada as it was transitioning an extratropical cyclone , and the storm reportedly caused strong winds in Nova Scotia and Newfoundland . No damage total or fatalities were reported .

= = = Tropical Storm Marco = = =

As Klaus was dissipating , a new cold low developed over Cuba and developed down to the surface as a tropical depression on October 9 . The depression emerged the Straits of Florida , and quickly intensified into a tropical storm on October 10 . After becoming a tropical storm , Marco steadily intensified and eventually peaked with winds of 65 mph ( 100 km / h ) . Marco headed towards Florida , and remained just offshore of the western coast and nearly made landfall near St. Petersburg , Florida on October 12 . However , Marco continued to interact with land , and weakened to a tropical depression before actually making landfall near Cedar Key , Florida with winds of 35 mph ( 55 km / h ) . It rapidly weakened over land , and dissipated in Georgia later that day . Although it had dissipated , Marco added to the heavy rainfall already brought to the southeastern states by the remnants Hurricane Klaus .

Although only a depression at final landfall , this was officially counted as a tropical storm hit on the

United States as much of the circulation was on land before landfall in the area of St. Petersburg , Florida . In preparations for Marco , a tropical storm warning was issued for nearly the entire Gulf and Atlantic coast of Florida . In Florida , Marco caused flooding damage to houses and roads , in addition to producing tropical storm force winds across the state . However , Marco is more notable for the impact from the remnants , especially in Georgia and South Carolina , where rainfall from the storm peaked at 19 @.@ 89 in ( 505 mm ) near Louisville , Georgia . In combination with the remnants of Hurricane Klaus , Marco caused heavy rainfall in South Carolina , causing a dam to burst , leading to three fatalities . Several more fatalities were caused by the remnants of Marco and Klaus , and the system caused 12 deaths . It also caused \$ 57 million ( 1990 USD , \$ 109 million 2016 USD ) in damage , most of it from damage or destruction of residences in Georgia .

= = = Hurricane Nana = = =

On October 7 , a vigorous tropical wave emerged off the coast of Africa near Cape Verde , and despite semi @-@ favorable conditions , the wave did not develop initially , due to embedded westerlies , which caused the wave to remain disorganized , despite having deep convection . Six days later , the wave had reached the Lesser Antilles , and split , the northern portion of the wave then developed into Tropical Depression Sixteen on October 16 . The depression rapidly intensified to a tropical storm , and then a hurricane the next day , receiving the name Nana . Development increased slightly and the system reached its peak intensity of 85 mph ( 140 km / h ) that same day . Nana dissipated while heading southward on October 21 .

Nana initially posed a threat to Bermuda , and as a result , a hurricane watch was issued late on October 18 . However , after Nana weakened to a tropical storm on October 20 , the hurricane watch was downgraded to a tropical storm watch . Furthermore , Nana began to curve southeastward away from Bermuda , and later on October 20 , the tropical storm watch was discontinued . The only known effect from Nana on Bermuda was 0 @.@ 33 in ( 8 @.@ 4 mm ) of rain . Nana was a very small hurricane , the circulation probably being only 30 ? 40 mi ( 50 ? 60 km ) wide . Nana was the first storm to receive the ' N ' name since naming began in the Atlantic basin in 1950 , and the first of thirteen storms to do so .

= = Storm names = =

The following names were used for named storms that formed in the north Atlantic in 1990 . The names not retired from this list were used again in the 1996 season . This is the same list used for the 1984 season . Storms were named Marco and Nana for the first time in 1990 . Names that were not assigned are marked in gray .

= = = Retirement = = =

The World Meteorological Organization retired two names in the spring of 1991 : Diana and Klaus . They were replaced in the 1996 season by Dolly and Kyle .

= = Season effects = =

This is a table of the storms in 1990 and the affected regions , if any . Deaths in parentheses are additional and indirect ( an example of an indirect death would be a traffic accident ) , but are still storm @-@ related . Damage and deaths include totals while the storm was extratropical or a wave or low .