

= Hurricane Mitch =

Hurricane Mitch was the most powerful and destructive hurricane of the 1998 Atlantic hurricane season , with maximum sustained winds of 180 mph ( 290 km / h ) . The storm was the thirteenth tropical storm , ninth hurricane , and third major hurricane of the season . Along with Hurricane Georges , Mitch was the most notable hurricane in the season . At the time , Hurricane Mitch was the strongest Atlantic hurricane observed in the month of October , though it has since been surpassed by Hurricane Wilma of the 2005 season . The hurricane matched the fourth most intense Atlantic hurricane on record ( it has since dropped to seventh ) .

Mitch formed in the western Caribbean Sea on October 22 , 1998 , and after drifting through extremely favorable conditions , it rapidly strengthened to peak at Category 5 status , the highest possible rating on the Saffir - Simpson Hurricane Scale . After drifting southwestward and weakening , the hurricane hit Honduras as a minimal hurricane . It drifted through Central America , reformed in the Bay of Campeche , and ultimately struck Florida as a strong tropical storm .

Due to its slow motion from October 29 to November 3 , Hurricane Mitch dropped historic amounts of rainfall in Honduras , Guatemala , and Nicaragua , with unofficial reports of up to 75 inches ( 1 @ , @ 900 mm ) . Deaths due to catastrophic flooding made it the second deadliest Atlantic hurricane in history ; nearly 11 @ , @ 000 people were killed with over 11 @ , @ 000 left missing by the end of 1998 . Additionally , roughly 2 @ . @ 7 million were left homeless as a result of the hurricane . The flooding caused extreme damage , estimated at over \$ 6 billion ( 1998 USD ) .

= = Meteorological history = =

Tropical Depression Thirteen formed on October 22 over the southwestern Caribbean Sea , from a tropical wave that exited Africa on October 10 . It executed a small loop , and while doing so intensified into Tropical Storm Mitch . A weakness in a ridge allowed the storm to track slowly to the north . After becoming disorganized due to wind shear from an upper @ - @ level low , Mitch quickly intensified in response to favorable conditions , including warm waters and good outflow . It became a hurricane on October 24 and developed an eye . After turning to the west , Mitch rapidly intensified , first into a major hurricane on October 25 and then into a Category 5 on the Saffir @ - @ Simpson Hurricane Scale the next day .

At peak intensity , Mitch maintained maximum sustained winds of 180 mph ( 285 km / h ) while off the northern coast of Honduras . Hurricane Hunters reported a minimum barometric pressure of 905 mbar ( 26 @ . @ 7 inHg ) , which at the time was the lowest in the month of October and tied for the fourth lowest for any Atlantic hurricane . Initially , the National Hurricane Center ( NHC ) and various tropical cyclone forecast models anticipated a turn to the north , threatening the Yucatán peninsula . Instead , Mitch turned to the south due to a ridge that was not observed while the storm was active . Land interaction imparted weakening , and the hurricane made landfall on Honduras on October 29 with winds of 80 mph ( 130 km / h ) . Mitch slowly weakened while turning to the west over land , maintaining deep convection over waters . After moving across mountainous terrain in Central America , the surface circulation of Mitch dissipated on November 1 . The next day , the remnants reached the Gulf of Mexico , which reorganized into a tropical storm on November 3 . Mitch accelerated to the northeast ahead of a cold front , moving across the Yucatán peninsula before striking southwestern Florida on November 5 . Shortly thereafter , the storm became an extratropical cyclone , which was tracked by the NHC until November 9 .

= = Preparations = =

Due to the threat , the government of Honduras evacuated some of the 45 @ , @ 000 citizens on the Bay Islands and prepared all air and naval resources . The government of Belize issued a purple alert and asked for citizens on offshore islands to leave for the mainland . Because the hurricane threatened to strike near Belize City as a Category 4 hurricane , much of the city was evacuated in fear of a repeat of Hurricane Hattie 37 years earlier . Guatemala issued a purple alert as well ,

recommending boats to stay in port , telling people to prepare or seek shelter , and warning of potential overflowing rivers . By the time hurricane Mitch made landfall , numerous people were evacuated along the western Caribbean coastline , including 100 @, @ 000 in Honduras , 10 @, @ 000 in Guatemala , and 20 @, @ 000 in the Mexican state of Quintana Roo .

= = Impact = =

Hurricane Mitch was the deadliest Atlantic hurricane since the Great Hurricane of 1780 , displacing the Galveston Hurricane of 1900 as the second @-@ deadliest on record . Nearly 11 @, @ 000 people were confirmed dead , and almost as many reported missing . Deaths were mostly from flooding and mudslides in Central America , where the slow @-@ moving hurricane and then tropical storm dropped nearly 36 inches ( 900 mm ) of rain . The flooding and mudslides damaged or destroyed tens of thousands of homes , with total damage amounting to over \$ 5 billion ( 1998 USD , \$ 6 billion 2006 USD ) , most of which was in Honduras and Nicaragua . Prior to Mitch , the deadliest hurricane in Central America was Hurricane Fifi in 1974 , which killed an estimated 8 @, @ 000 ? 10 @, @ 000 .

= = = Honduras = = =

While offshore northern Honduras , Hurricane Mitch passed over Guanaja island . High waves eroded northern coastlines and damaged lagoons . Most of the Bay Islands had damage to their water facilities . Two days of winds exceeding 200 km / h ( 120 mph ) destroyed nearly all of the plants and trees on Guanaja , uprooting or knocking down almost the entire mangrove forest . It is estimated that the hurricane produced waves of 44 ft ( 13 m ) in height .

While moving slowly for several days offshore Honduras , Hurricane Mitch drew moisture from the Pacific Ocean and the Caribbean Sea , producing high amounts of rainfall of over 300 mm ( 12 in ) per day . The highest official total was 928 mm ( 36 @. @ 5 in ) at Choluteca , which represented more than half of the annual precipitation average ; at the same location , 466 @. @ 7 mm ( 18 @. @ 37 in ) fell in a 24 @-@ hour period on October 31 , which was more than double of the previous record set in 1985 . There were unofficial rainfall totals in Central America as high as 1 @, @ 900 mm ( 75 in ) ; rain gauges in mountainous areas were washed away . The high rainfall caused many rivers in the country to overflow " to an unprecedented extent this century " , as described by the United Nations . The rainfall collected in rivers , causing extensive river flooding across the country . The greatest depth recorded was 12 @. @ 5 m ( 41 ft ) on the Ulúa River near Chinda , whilst the greatest width recorded was 359 m ( 1 @, @ 178 ft ) on the Río Lean near Arizona . The rainfall also caused widespread mudslides across the mountainous country . In the country 's interior , particularly the southern portion , the high rainfall caused hundreds of landslides , many of them shallow and about 95 % in the form of debris flow . However , two earthflows caused significant damage near Tegucigalpa .

Hurricane Mitch wrought significant damage to Honduras , affecting nearly the entire population and causing damage in all 18 departments . The United Nations Economic Commission for Latin America and the Caribbean estimated that Mitch caused the worst floods of the 20th century in the country . An estimated 70 ? 80 % of transportation network was destroyed , including most bridges and secondary roads , amounting to \$ 236 million in damage . Hurricane Mitch left widespread power outages after damaging more than 385 km ( 239 mi ) of power lines and several power plants . About 70 % of Honduras lost access to fresh water after the storm , although many rural areas had already been experiencing water shortages . The combined damage to transportation , communication , utilities , including power and water , was estimated at \$ 665 million .

High water levels along the Choluteca River affected the capital , Tegucigalpa , reaching levels 10 m ( 33 ft ) above their banks . The floods damaged about one @-@ third of buildings , including some more than 350 years old . Across Honduras , agriculture sustained serious damage , with initial estimates of 70 % of crops destroyed . About 50 @, @ 000 bovine were killed , as were 60 % of the fowl population . Crop and agricultural damage totaled about \$ 1 billion , which would take the

country years to recover . Honduras 's Social Fund for Housing estimated that 35 @, @ 000 houses nationwide were destroyed with another 50 @, @ 000 damaged , leaving 1 @. @ 5 million people homeless ? about 20 % of the total population . This was the highest number of victims from any natural disaster in Honduras 's history . Overall , Hurricane Mitch killed about 7 @, @ 000 people in Honduras , and damage was estimated at L52,345,000,000 ( \$ 3 @. @ 8 billion ) , of which \$ 2 @. @ 005 billion was from direct damages and the remainder from indirect costs . The overall impact represented about 70 % of Honduras 's annual gross domestic product ( GDP ) .

= = = Nicaragua = = =

Though Mitch never entered Nicaragua , its large circulation caused extensive rainfall , with estimates of over 50 inches ( 1 @, @ 300 mm ) . In some places , as much as 25 inches ( 630 mm ) of rain fell on coastal areas . The flank of the Casita Volcano failed and turned into a lahar from excessive rain . The resulting mudslide ultimately covered an area 10 miles ( 16 km ) long and 5 miles ( 8 km ) wide .

Two million people in Nicaragua were directly affected by the hurricane . Across the country , Mitch 's heavy rains damaged 17 @, @ 600 houses and destroyed 23 @, @ 900 , displacing 368 @, @ 300 of the population . 340 schools and 90 health centers were severely damaged or destroyed . Sewage systems and the electricity subsector were severely damaged , and , combined with property , damage totaled to \$ 300 million ( 1998 USD ) .

Transportation was greatly affected by the hurricane , as well . The rainfall left 70 % of the roads unusable or destroyed and greatly damaged 92 bridges . Over 1 @, @ 700 miles ( 2700 km ) of highways or access roads needed replacement subsequent to the storm , especially in the northern part of the country and along portions of the Pan @-@ American Highway . Total transportation damage amounted to \$ 300 million ( 1998 USD ) . Agricultural losses were significant , including the deaths of 50 @, @ 000 animals , mostly bovines . Crops and fisheries were affected greatly as well , and , combined with agricultural losses , damage totaled to \$ 185 million ( 1998 USD ) .

The situation was further compounded by a total of 75 @, @ 000 live land mines ? left over from the Contra insurgency of the 1980s ? that were calculated to have been uprooted and relocated by the floodwaters .

In all , Hurricane Mitch caused at least 3 @, @ 800 fatalities in Nicaragua , of which more than 2 @, @ 000 were killed in the towns of El Provenir and Rolando Rodriguez from the landslide at the Casita volcano . The mudslide buried at least four villages completely in several feet of mud . Throughout the entire country , the hurricane left between 500 @, @ 000 and 800 @, @ 000 homeless . In all , damage in Nicaragua is estimated at around \$ 1 billion ( 1998 USD ) .

= = = Caribbean Sea = = =

Mitch was also responsible for the loss with all hands of Windjammer Barefoot Cruises ' schooner Fantome . The story was recorded in the book The Ship and The Storm by Jim Carrier . The schooner , which was sailing near the center of the hurricane , experienced over 50 foot ( 15 m ) waves and over 100 mph ( 160 km / h ) winds , causing her to sink off the coast of Honduras .

On the south coast of Cuba , the hurricane caused waves of up to 13 feet ( 4 m ) high and winds gusts peaking at 42 mph ( 67 km / h ) , causing numerous tourists and workers on the Isle of Youth and Cayo Largo del Sur to leave for safer grounds .

In Jamaica , where officials declared hurricane warnings 12 hours prior to its closest approach , Mitch caused moderate rainfall and gusty winds for days . Strong waves hit western Jamaica , with wave heights unofficially estimated at nearly 7 feet ( 2 m ) in height . The rainfall in outer rainbands , at times severe , flooded many roads across the island and left them covered with debris . One house in Spanish Town collapsed from the flooding , leaving four homeless . Many other homes and buildings were flooded , forcing many to evacuate . A river in northeastern Jamaica overflowed its banks , while heavy rainfall across the mountainous parts of the country caused numerous mudslides . In all , Mitch killed three people on Jamaica .

On the Cayman Islands , the hurricane caused strong waves , gusty winds , and heavy rainfall at times . Damage was relatively minimal , amounting to blown out windows and beach erosion . Strong waves damaged or destroyed many docks on the south shore of the islands , and also sank one dive ship near Grand Cayman . In addition , numerous incoming and outgoing flights were cancelled .

= = = Rest of Central America = = =

Due to Mitch 's large circulation , it dropped heavy precipitation as far south as Panama , especially in the Darién and Chiriquí provinces . The flooding washed away a few roads and bridges , and damaged numerous houses and schools , leaving thousands homeless . The hurricane left three casualties in Panama .

In Costa Rica , Mitch dropped heavy rains , causing flash flooding and mudslides across the country , mostly in the northeastern part of the country . The storm impacted 2 @, @ 135 homes to some degree , of which 241 were destroyed , leaving 4 @, @ 000 homeless . Throughout the country , the rainfall and mudslides affected 126 bridges and 800 miles ( 1 @, @ 300 km ) of roads , mostly on the Inter @-@ American Highway which was affected by Hurricane Cesar , two years prior . Mitch affected 115 sq. miles ( 300 km<sup>2</sup> ) of crop lands , causing damage to both export and domestic crops . In all , Hurricane Mitch caused \$ 92 million in damage ( 1998 USD ) and seven deaths .

While drifting through El Salvador , the hurricane dropped immense amounts of precipitation , resulting in flash flooding and mudslides through the country . Multiple rivers , including the Río Grande de San Miguel and the Lempa River overflowed , contributing to overall damage . The flooding damaged more than 10 @, @ 000 houses , leaving around 84 @, @ 000 homeless and forcing 500 @, @ 000 to evacuate . Crop damage was severe , with serious flooding occurring on 386 sq. miles ( 1000 & km<sup>2</sup> ) of pasture or crop land . The flooding destroyed 37 % of the bean production , 19 % of the corn production , and 20 % losses in sugar canes . There were heavy losses in livestock as well , including the deaths of 10 @, @ 000 cattle . Total agricultural and livestock damaged amounted to \$ 154 million ( 1998 USD ) . In addition , the flooding destroyed two bridges and damaged 1 @, @ 200 mi ( 1 @, @ 900 km ) of unpaved roads . In all , Mitch caused nearly \$ 400 million in damage ( 1998 USD ) and 240 deaths .

Similar to the rest of Central America , Mitch 's heavy rains caused mudslides and severe flooding over Guatemala . The flooding destroyed 6 @, @ 000 houses and damaged 20 @, @ 000 others , displacing over 730 @, @ 000 and forcing over 100 @, @ 000 to evacuate . In addition , the flooding destroyed 27 schools and damaged 286 others , 175 severely . Flooding caused major damage to crops , while landslides destroyed crop land across the country . The most severely affected crops for domestic consumption were tomatoes , bananas , corn , other vegetables , and beans , with damaged totaling to \$ 48 million ( 1998 USD ) . Export crops such as bananas or coffee were greatly damaged as well , with damage amounting to \$ 325 million ( 1998 USD ) . Damage to plantations and soil totaled to \$ 121 million ( 1998 USD ) . The flooding also caused severe damage to the transportation infrastructure , including the loss of 37 bridges . Across the country , flooding damaged or destroyed 840 miles ( 1350 km ) of roads , of which nearly 400 miles ( 640 km ) were sections of major highways . In all , Hurricane Mitch caused \$ 748 million ( 1998 USD ) and 268 deaths in Guatemala . In addition , Mitch caused 11 indirect deaths when a plane crashed during the storm .

In Belize , the hurricane was less severe than initially predicted , though Mitch still caused heavy rainfall across the country . Numerous rivers exceeded their crests , though the rainfall was beneficial to trees in mountainous areas . The flooding caused extensive crop damage and destroyed many roads . Throughout the country , eleven people died because of the hurricane .

In Mexico , Mitch produced gusty winds and heavy rains on the Yucatán Peninsula , with Cancún on the Quintana Roo coast being the worst hit . Nine people were killed from the flooding , though damage was relatively minimal . The maximum 24 @-@ hour rainfall total from Mitch was 13 @. @ 4 inches ( 340 mm ) in Campeche , while the highest rainfall total was 16 @. @ 85 inches ( 428 @. @

0 mm ) in Ciudad del Carmen .

= = = Florida and remnants = = =

Then a tropical storm , Mitch caused a storm surge of up to 4 feet ( 1 @. @ 2 m ) feet in the lower Florida Keys before making landfall on the Florida west coast . Key West International Airport reported peak wind gusts of 55 mph ( 89 km / h ) and sustained winds of 40 mph ( 64 km / h ) , the only report of tropical storm force in the state . Offshore , the Fowey Rocks Light reported a wind gusts of 73 mph ( 117 km / h ) . In addition , Mitch caused moderate rainfall , peaking at 7 inches ( 200 mm ) in Jupiter , though some estimates indicate localized totals of up to 10 inches ( 250 mm ) . The storm spawned five tornadoes over the state , the strongest of which was an F2 .

In the Florida Keys , multiple buildings that had been damaged by Hurricane Georges were leveled by Mitch . Tornadoes from the storm damaged or destroyed 645 houses across the state , in addition to injuring 65 people . Gusty winds left 100 @, @ 000 without power during the storm 's passage . In all , Mitch caused \$ 40 million in damage ( 1998 USD ) in Florida and two deaths from drowning when two boats capsized .

As an extratropical cyclone , Mitch passed west of Ireland and the United Kingdom . In Ireland , the storm produced gusts as high as 90 mph ( 140 km / h ) and 30 ft ( 9 @. @ 1 m ) waves . The winds knocked down trees and power lines , leaving over 30 @, @ 000 homes without power . One tree fell onto a car in Louth , severely injuring the driver . In Dublin , high winds knocked the roof off of a building , and several other buildings nationwide were damaged . The storm caused airports to close and ferry service to be suspended .

= = Aftermath = =

Because of the hurricane 's destruction in Central America and elsewhere in North America , the World Meteorological Organization retired the name Mitch in the spring of 1999 ; it will never again be used for an Atlantic hurricane . The name was replaced with Matthew in the 2004 season .

After the disaster caused by Hurricane Mitch , countries around the world donated significant aid , totaling \$ 6 @. @ 3 billion ( 1998 USD ) . Throughout Central America , which was recovering from an economic crisis that occurred in 1996 , many wished to continue the growth of the infrastructure and economy . In addition , after witnessing the vulnerability to hurricanes , the affected governments endeavored to prevent such a disaster from occurring again .

Hundreds of thousands of people lost their homes , but many took this as an opportunity to rebuild stronger houses . With a new , structurally improved foundation , homes were redesigned to be able to withstand another hurricane . However , lack of arable crop land took away the jobs from many , decreasing an already low income even lower .

Following the passage of Mitch , disease outbreaks occurred throughout Central America , including cholera , leptospirosis , and dengue fever . Over 2 @, @ 328 cases of cholera were reported , killing 34 people . Guatemala was most affected by the bacterium , where most of the deaths occurred from contaminated food . 450 cases of leptospirosis were reported in Nicaragua , killing seven people . There were over 1 @, @ 357 cases of dengue reported , though no deaths were reported from the disease .

While stalling over the western Caribbean Sea , Mitch 's strong winds produced strong waves , damaging local coral reefs . Later , the storm 's immense rainfall led to runoff polluted with debris and fresh water . This resulted in diseases occurring within the coral . However , the hurricane 's upwelling cooled the warm water temperatures , preventing significant bleaching and destruction of the coral reef .

Mitch caused such massive and widespread damage that Honduran President Carlos Roberto Flores claimed it destroyed fifty years of progress in the country . Honduras , the country most affected by the hurricane , received significant aid for the millions impacted by the hurricane . Mexico quickly gave help , sending 700 tons of food , 11 tons of medicine , four rescue planes , rescue personnel , and trained search dogs . Cuba also volunteered , sending a contingent of

physicians to the country . The U.S. administration offered at first troops stationed in Honduras , and then withdrew them a few days after the storm . They also at first offered only \$ 2 million ( 1998 USD ) in aid , which came as a shock to residents , and president Carlos Roberto Flores alike . The U.S. later increased their offer to \$ 70 million ( 1998 USD ) . The Honduran government distributed food , water , and medical services to the hurricane victims , including the more than 4 million without water . In addition , the country initially experienced a sharp increase in the unemployment rate , largely due to the destruction of crop lands . However , rebuilding provided jobs in the following years . In Costa Rica , reconstruction after the hurricane increased the number of jobs by 5 @. @ 9 % , lowering the unemployment rate slightly .