= Meteorological history of Hurricane Mitch =

Hurricane Mitch 's meteorological history began with its origins over Africa as a tropical wave and lasted until its dissipation as an extratropical cyclone north of the United Kingdom . Tropical Depression Thirteen formed on October 22 , 1998 , 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 a nearby upper @-@ level low , Mitch quickly intensified in response to improving conditions which included 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 ) . Turning westward , Mitch slowly weakened over land and maintained deep convection over adjacent 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 and 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 .

= = Origins = =

The origin of Hurricane Mitch can be traced to a tropical wave ? an elongated area of low air pressure moving from east to west ? that moved through western Africa on October 8 , as evidenced by radiosonde data . On October 10 , the wave exited the coast , and it continued generally westward without development due to strong wind shear . The wave reached the eastern Caribbean Sea on October 18 , and over the subsequent few days developed an organizing area of convection , or thunderstorms . The system organized enough to prompt a Hurricane Hunters investigation , which observed a small circulation center and flight @-@ level tropical storm force winds . As a result , the National Hurricane Center ( NHC ) estimated the system had developed into a tropical cyclone by 0000 UTC on October 22 , located 415 mi ( 665 km ) south of Kingston , Jamaica .

Upon being classified , Tropical Depression Thirteen was already near tropical storm status , with established outflow . At the time , the circulation was on the northern periphery of the convection . Initially , an upper @-@ level low to the north was shearing the convection , but steady intensification was expected due to generally favorable conditions , with an anticyclone expected to develop aloft . The depression remained nearly stationary in the southwestern Caribbean Sea , eventually executing a small loop about 260 mi ( 420 km ) east of San Andrés island . The convective structure initially was described as " amorphous " , with two rainbands extending from the center . Late on October 22 , the Hurricane Hunters observed flight @-@ level winds of 59 mph ( 95 km / h ) , which indicated surface winds of at least tropical storm @-@ force . Based on the reading , the NHC upgraded the depression to Tropical Storm Mitch .

= = Intensification = =

When Mitch was upgraded to tropical storm status , it had a small radius of maximum winds , only 9 mi ( 14 km ) at flight @-@ level . A trough moving through the eastern United States weakened a

ridge to the north , allowing the storm to move slowly northward . Additional ridging was forecast to build behind the trough , which would turn Mitch to the west to an area near the Yucatán Channel in five days . Significant intensification was initially hampered by the upper @-@ level low to the northwest generating wind shear over Mitch . As a result , the convection weakened on October 23 , despite an otherwise improving cloud pattern . Tropical cyclone forecast models anticipated significant strengthening to winds of 115 mph ( 185 km / h ) once an anticyclone aloft became established , although the NHC noted that " it [ was ] difficult to visualize such intensification with the present poorly defined pattern observed on satellite , and knowing that the global models tend to get rid of westerlies too fast . " After about 12 hours of being disorganized , the thunderstorms reformed early on October 24 , after the upper @-@ level low weakened and shear diminished . An eye quickly formed in the center of the convection . Based on Hurricane Hunter reports of 105 mph ( 169 km / h ) flight @-@ level winds , the NHC upgraded Mitch to hurricane status on October 24 . By that time , the storm was moving slowly to the north , located about 295 mi ( 475 km ) south of Kingston .

Shortly after becoming a hurricane , Mitch began undergoing rapid deepening . It developed a strong central dense overcast , fueled by low shear and warm water temperatures . The eye became better organized , and after the anticyclone became established , the hurricane developed well @-@ defined outflow in all directions . Early on October 25 , Mitch intensified into a major hurricane , which is a Category 3 on the Saffir @-@ Simpson Hurricane Scale . By that time , the hurricane had begun turning to the west , due to an intensifying ridge over the Gulf of Mexico . With what the NHC described as an " ideal environment for strengthening " , Mitch continued rapidly intensifying . In a 24 ? hour period ending late on October 25 , the barometric pressure fell 52 mbar ( 1 @.@ 5 inHg ) to 924 mbar ( 27 @.@ 3 inHg ) . While it was strengthening , Mitch made its closest point of approach to Jamaica , passing about 230 mi ( 370 km ) west @-@ southwest of the island . The NHC noted the potential for weak steering currents when the hurricane reached the western Caribbean , and the agency anticipated a general northward turn toward the Yucatán Peninsula .

The NHC estimated that Mitch intensified into a Category 5 hurricane at 1200 UTC on October 26 . At 1900 UTC that day , the Hurricane Hunters observed flight @-@ level winds of 193 mph ( 311 km / h ) in the hurricane 's northeastern quadrant , suggesting peak maximum sustained winds of 180 mph ( 285 km / h ) . Around the same time , a dropsonde recorded a minimum pressure of 905 mbar ( 26 @.@ 7 inHg ) . At the time , Mitch was considered the fourth most intense Atlantic hurricane , tied with Hurricane Camille in 1969 , and the strongest in the month of October , surpassing Hurricane Hattie in 1961 . Both records were surpassed by subsequent hurricanes . At the time , the hurricane was located about 100 mi ( 160 km ) off the north coast of Honduras . Its tropical storm force winds extended 175 mi ( 280 km ) from the center , and hurricane force winds reached 60 mi ( 95 km ) from the center .

= = Central America landfall = =

While Mitch was at peak intensity , the NHC noted that it was " not yet clear which country or countries in the northwest Caribbean are most threatened . " By late on October 26 , the Navy Operational Global Atmospheric Prediction System ( NOGAPS ) had forecast the hurricane to continue to the west and strike Belize , while the Geophysical Fluid Dynamics Laboratory ( GFDL ) computer model anticipated a general movement to the north in the western Caribbean . Mitch maintained peak winds for about 12 hours , and around that time it moved over Swan Island offshore Honduras . The motion became more westward , despite continued predictions for a northerly turn . The convection around the eye became ragged on October 27 . Gradual weakening occurred due to the southern half of the circulation moving across Honduras , which cut off inflow from the south . The eye became less distinct , and early on October 28 , Mitch weakened below Category 5 status .

Due to a weak mid @-@ level anticyclone over the Gulf of Mexico that was not observed operationally , Mitch began a slow southerly motion on October 27 , passing very near Guanaja . The NHC had anticipated the movement to be part of a small loop in the Gulf of Honduras , although

the agency noted continued uncertainty . Steadily deteriorating , Mitch weakened below major hurricane intensity late on October 28 , due to land interaction , upwelling , and possibly an eyewall replacement cycle . On October 29 , the hurricane made landfall in Honduras , east of La Ceiba , with winds of 80 mph ( 130 km / h ) . Despite being over land , the NHC continued to predict a turn to the north , which would allow for restrengthening .

Late on October 29 , Mitch weakened to tropical storm status . It moved slowly across Honduras , turning to the west . The large circulation dropped heavy rainfall throughout Central America , particularly in Honduras and Nicaragua , causing widespread flooding . While over land , Mitch initially maintained an area of deep convection , which allowed it to maintain tropical storm force winds . On October 31 , the circulation became poorly defined while moving over increasingly mountainous terrain ; however , the strongest convection persisted over the adjacent Pacific Ocean , and the NHC noted the potential for Mitch to become a Pacific tropical cyclone . Later that day , Mitch weakened into a tropical depression near the border of Guatemala and Honduras . An approaching trough weakened the ridge in the western Gulf of Mexico , allowing Mitch to make the long @-@ intended turn to the northwest . Convection gradually diminished , and the surface circulation of Mitch dissipated on November 1 near the border of Mexico and Guatemala .

= = Regeneration and extratropical transition = =

Although the surface low pressure center dissipated , the remnants of Mitch maintained a circulation aloft that reached the Bay of Campeche on November 2 . That day , the system began to trigger convection once again . Late on November 3 , the Hurricane Hunters observed a well @-@ defined low @-@ level center and flight @-@ level winds of 60 mph ( 95 km / h ) . On that basis , the NHC began reissuing advisories on Mitch about 55 mi ( 90 km ) west @-@ southwest of Campeche , Campeche on the Yucatán Peninsula . Upon reforming , Mitch was moving to the east @-@ northeast , influenced by an approaching cold front . Early on November 4 , Mitch made landfall just north of Campeche with winds of about 40 mph ( 65 km / h ) , and it quickly weakened into a tropical depression while crossing the Yucatán Peninsula .

While Mitch was over eastern Mexico , it had a rainband of deep convection in the eastern periphery . With moderately warm waters and the potential for baroclinity , re @-@ intensification was expected . After emerging into the Gulf of Mexico for a second time on November 4 , Mitch restrengthened into a tropical storm , although it was not a purely tropical cyclone ; convection was minimal near the core , and the strongest winds were over 230 mi ( 370 km ) from the center . Mitch accelerated toward the coast of Florida as it interacted with the approaching cold front . On November 5 , the circulation became elongated , and the NHC commented that " if [ it ] were not the remnants of Mitch , [ they ] would probably not be calling [ it ] a tropical cyclone . " The storm strengthened to reach winds of 65 mph ( 100 km / h ) before making a final landfall in southwestern Florida near Naples . It quickly crossed the state , producing five tornadoes and tropical storm @-@ force winds , and the storm emerged into the southwestern Atlantic Ocean . Late on November 5 , a Hurricane Hunters flight could not locate a well @-@ defined center associated with Mitch , instead observing an elongated circulation embedded in the cold front . Based on the observations , the NHC declared Mitch as an extratropical cyclone .

The extratropical remnants of Mitch continued quickly to the northeast . On November 6 , they passed north of Bermuda , and the following day intensified slightly to winds of 70 mph ( 110 km / h ) . By November 9 , the remnants passed west of the British Isles , and were last monitored by the NHC later that day .