

= Hurricane Patricia =

Hurricane Patricia (Spanish pronunciation : [paʔtʰisia]) was the second @-@ most intense tropical cyclone on record worldwide , with a minimum atmospheric pressure of 872 mbar (hPa ; 25 @.@ 75 inHg) . Originating from a sprawling disturbance near the Gulf of Tehuantepec , south of Mexico , in mid @-@ October 2015 , Patricia was first classified a tropical depression on October 20 . Initial development was slow , with only modest strengthening within the first day of its classification . The system later became a tropical storm and was named Patricia , the twenty @-@ fourth named storm of the annual hurricane season . Exceptionally favorable environmental conditions fueled explosive intensification on October 22 . A well @-@ defined eye developed within an intense central dense overcast and Patricia grew from a tropical storm to a Category 5 hurricane in just 24 hours ? a near @-@ record pace . On October 23 , the hurricane achieved its record peak intensity with maximum sustained winds of 215 mph (345 km / h) . This made it the most intense tropical cyclone on record in the Western Hemisphere , and the strongest globally in terms of 1 @-@ minute maximum sustained winds .

Late on October 23 , dramatic weakening ensued and Patricia made landfall near Cuixmala , Jalisco , with winds of 150 mph (240 km / h) . This made it the strongest landfalling hurricane on record along the Pacific coast of Mexico . Patricia continued to weaken extremely quickly , faster than it had intensified , as it interacted with the mountainous terrain of Mexico . Within 24 hours of moving ashore , Patricia degraded into a tropical depression and dissipated soon thereafter late on October 24 .

The precursor to Patricia produced widespread flooding rains in Central America . Hundreds of thousands of people were directly affected by the storm , mostly in Guatemala . At least six fatalities were attributed to the event : four in El Salvador , one in Guatemala , and one in Nicaragua . Torrential rains extended into southeastern Mexico , with areas of Quintana Roo and Veracruz reporting accumulations in excess of 19 @.@ 7 in (500 mm) . Damage in Chetumal reached 1 @.@ 4 billion pesos (US \$ 84 @.@ 1 million) .

As a tropical cyclone , Patricia 's effects in Mexico were tremendous ; however , the affected areas were predominantly rural , mitigating a potential large @-@ scale disaster . Violent winds tore roofs from structures and stripped coastal areas of their vegetation . Preliminary assessments indicate hundreds of homes to be destroyed ; seven fatalities are linked to the hurricane directly or indirectly , including one during evacuations . Total damage was estimated to be in excess of 5 @.@ 4 billion pesos (US \$ 323 @.@ 3 million) , with agriculture and infrastructure comprising the majority of losses . Flooding partially associated with remnant moisture from Patricia inflicted US \$ 52 @.@ 5 million in damage across Southern Texas .

= = Meteorological history = =

On October 11 , 2015 , an area of disturbed weather traversed Central America and emerged over the eastern Pacific Ocean . The disturbance moved slowly over the next few days , later merging with a tropical wave on October 15 . The merger of these systems and the effects of a concurrent Tehuantepec gap wind event spurred the formation of a broad area of low pressure . This feature gradually consolidated and became a tropical depression shortly after 00 : 00 UTC on October 20 ; at this time the depression was situated roughly 205 mi (335 km) south @-@ southeast of Salina Cruz , Mexico . A mid @-@ level ridge to the north steered the depression generally west and later pulled it north along an arcing path .

Development was initially slowed by locally cooler sea surface temperatures and dry air , and the depression became Tropical Storm Patricia only later that day . Once clear of the unfavorable region , Patricia traversed anomalously warm waters within an environment exceptionally conducive to rapid intensification . Dramatic strengthening began late on October 21 and continued through October 23 . Patricia reached hurricane strength shortly after 00 : 00 UTC on October 22 , featuring prominent outflow , well @-@ defined banding features , and a developing eye . Data from Hurricane Hunters investigating the cyclone indicated Patricia to have reached Category 4 status on

the Saffir ? Simpson hurricane wind scale by 18 : 00 UTC .

By the early hours of October 23 , a clear northward turn took place followed by acceleration northeast . A solid ring of ? 130 ° F (? 90 ° C) cloud tops surrounded the hurricane 's 12 mi (19 km) wide eye and signaled its intensification into a Category 5 hurricane . In a 24 @-@ hour span , Patricia 's maximum sustained winds increased by 120 mph (195 km / h) , the fastest such intensification in any hurricane observed by the National Hurricane Center (NHC) . The hurricane achieved its peak around 12 : 00 UTC on October 23 with estimated winds around 215 mph (345 km / h) and a barometric pressure of 872 mbar (hPa ; 25 @.@ 75 inHg) ; these values are based upon continued intensification after a Hurricane Hunter mission into the storm six hours prior . In the NHC 's report on Patricia , it is noted that the hurricane may have surpassed Typhoon Tip as the strongest tropical cyclone ever observed , but lack of direct observations at the time of its peak prevent analysis of such .

Later on October 23 , rapid weakening ensued as an eyewall replacement cycle took shape and wind shear increased . In the five hours up until landfall in Mexico , Patricia weakened at an unprecedented rate while still over water . However , it remained a violent hurricane and moved ashore around 23 : 00 UTC near Cuixmala , Jalisco , with winds of 150 mph (240 km / h) and an analyzed pressure of 932 mbar (hPa ; 27 @.@ 49 inHg) . This made it the most intense Pacific hurricane on record to strike Mexico . Once onshore , the high terrain of the Sierra Madre mountains accelerated Patricia 's weakening . The low- and mid @-@ level circulations of the cyclone decoupled , with the latter accelerating northeast , and Patricia dissipated on October 24 over central Mexico , less than 18 hours after moving ashore .

= = = Records = = =

Hurricane Patricia set multiple records for maximum strength , rate of intensification , and rate of weakening throughout its relatively short existence . With maximum sustained winds of 215 mph (345 km / h) and a minimum pressure of 872 mbar (hPa ; 25 @.@ 75 inHg) , Patricia is the most intense tropical cyclone ever observed in the Western Hemisphere . In terms of central pressure , it is also the second @-@ most intense tropical cyclone ever recorded worldwide , just shy of Typhoon Tip in 1979 which had a minimum pressure of 870 mbar (hPa ; 25 @.@ 69 inHg) . Patricia 's one @-@ minute maximum sustained winds ranked as the highest ever reliably observed or estimated in a tropical cyclone , surpassing Typhoon Haiyan of 2013 . The magnitude of Patricia 's rapid intensification is among the fastest ever observed . In a 24 @-@ hour period , 06 : 00 ? 06 : 00 UTC October 22 ? 23 , its maximum sustained winds increased from 85 mph (140 km / h) to 205 mph (335 km / h) , a record increase of 120 mph (195 km / h) . During the same period , Patricia 's central pressure fell by 95 mbar (hPa ; 2 @.@ 81 inHg) . Despite record over @-@ water weakening prior to striking Mexico , Patricia became the most intense Pacific hurricane to make landfall , with a pressure of 932 mbar (hPa ; 27 @.@ 52 inHg) .

= = Preparations = =

Prior to the arrival of Hurricane Patricia , the Government of Mexico issued multiple watches and warnings for coastal communities . A hurricane watch was first raised at 09 : 00 UTC on October 21 , encompassing areas of Michoacán , Colima , and Jalisco . A tropical storm watch also covered portions of Guerrero . As Patricia intensified , the government issued a hurricane warning for areas between Cabo Corrientes , Jalisco , and Punta San Telmo , Michoacán ; a tropical storm warning supplemented this for areas farther north and east . The hurricane warning was extended northward to include areas south of San Blas , Nayarit , on October 23 . Once the storm moved inland and the threat of damaging winds diminished , these warnings were gradually discontinued on October 24 .

Following Patricia 's upgrade to Category 5 status , the National Hurricane Center called the storm " potentially catastrophic " , a source of criticism and praise from various media . Citing the relatively limited damage and loss of life , some outlets , including the Associated Press , claimed the agency was exaggerating the danger posed by the storm . However , most outlets praised them for

effectively communicating the dire threat and potentially saving lives from an exceptionally powerful hurricane .

Across Michoacán , Colima , Jalisco , and Nayarit , 1 @, @ 782 shelters were opened on October 22 with a collective capacity of 258 @, @ 000 people . Officials in Manzanillo began distributing sandbags during the afternoon of October 22 . Schools across Guerrero and Jalisco suspended activities for October 22 and 23 , respectively . Civil protection officials planned to evacuate roughly 50 @, @ 000 people from Colima , Jalisco , and Nayarit . To expedite the process , 2 aircraft and 600 buses were used to shuttle evacuees . Ultimately , 8 @, @ 500 people evacuated prior to the storm 's arrival , including 2 @, @ 600 in Cabo Corrientes . One person died during an evacuation in Jalisco . Roughly 25 @, @ 000 personnel from the Mexican Army , Navy , and Federal Police were deployed preemptively . More than 500 Red Cross volunteers were on standby . The Mexican Red Cross prepositioned food for 3 @, @ 500 families . Approximately 30 kg (66 lb) of aid was prepositioned in Colima for distribution after the hurricane 's passage . The Electric Federal Commission dispatched 2 @, @ 500 crewmen , 152 cranes , 15 all @-@ terrain vehicles , 4 helicopters , and 84 generators to cope with potential power outages . Mexican authorities received praise for effectively carrying out emergency preparations .

= = Impact from precursor disturbance = =

The precursor of Patricia was a large and sprawling system that affected much of Central America with heavy rain for several days . Rainfall was enhanced by the presence of multiple systems , including a tropical wave and a second disturbance over the Caribbean Sea . One person was killed in the Alta Verapaz Department and approximately 2 @, @ 100 people required evacuation across Guatemala . A total of 442 homes and 28 @, @ 200 ha (70 @, @ 000 acres) of crops were damaged while roughly 223 @, @ 000 people were affected by flooding . Government officials deployed emergency teams and 40 million quetzal (US \$ 5 @. @ 4 million) was available for relief operations . In nearby El Salvador between 6 @. @ 3 and 7 @. @ 3 in (160 and 185 mm) of rain fell , causing similar floods . Dozens of homes were affected and four people were killed . The Goascorán River overflowed its banks twice in two days , inundating surrounding communities . Owing to widespread flooding , authorities suspended school activities across the country on October 19 . In Nicaragua , a landslide buried four miners in Bonanza ; one died while the others were rescued . The Ulúa River in Honduras over @-@ topped its banks for the first time in 17 years on October 18 , prompting the evacuation of more than 200 people . Furthermore , flooding damaged 10 homes in Jacó , Costa Rica .

The aforementioned rains extended into Southwestern and Northeastern Mexico , falling from October 18 ? 20 ; precipitation was enhanced by another tropical disturbance over the northwestern Caribbean Sea . Portions of Quintana Roo saw their most intense rainfall event on record , with 19 @. @ 8 in (502 mm) observed in Chetumal . This surpassed the previous record of 18 in (450 mm) during Hurricane Wilma in 2005 . Flooding affected approximately 1 @, @ 500 homes in the city , with 150 people seeking refuge in public shelters . Damage in Chetumal was pegged at 1 @. @ 4 billion pesos (US \$ 84 @. @ 1 million) . Seven municipalities were declared disaster areas accordingly . In nearby Veracruz , more than 24 in (600 mm) of rain caused widespread flooding ; at least 50 municipalities reported damage from the event as multiple rivers over @-@ topped their banks . Flooding in Tabasco affected 7 @, @ 500 ha (19 @, @ 000 acres) of crops . In Oaxaca , several roads were washed out by the accompanying floods and mudslides , particularly in the Sierra Norte region . Widespread flooding affected large areas of Chiapas and Guerrero , prompting dozens of evacuations . In Tapachula , Chiapas , 6 @. @ 6 in (168 mm) of rain fell in just 90 minutes , triggering flash floods that caught residents by surprise . Hundreds of families were affected and 64 homes were damaged or destroyed .

= = Impact as a tropical cyclone = =

== Mexico ==

Hurricane Patricia made landfall in Jalisco as a Category 4 hurricane during the evening of October 23 . The 15 mi (24 km) wide core of Patricia largely avoided populated centers , passing through areas with a population density less than 30 people per square mile . This , alongside effective evacuations , is credited for the relatively low death toll , despite the hurricane 's intensity . Several small communities along the path sustained tremendous damage , however . Had the hurricane moved farther east or west , the densely populated areas surrounding Manzanillo or Puerto Vallarta would have suffered a direct hit .

Throughout the affected region , the storm 's powerful winds left 261 @, @ 989 people without electricity . Twenty @-@ one of the nation 's thirty @-@ one states , and the Federal District , were affected by the hurricane 's rain . Accumulations in Jalisco peaked at 15 @. @ 09 in (383 @. @ 2 mm) on Nevado de Colima . Roughly 42 @, @ 000 ha (100 @, @ 000 acres) of crops were affected across Colima , Jalisco , Michoacán , and Nayarit , with 15 @, @ 000 ha (37 @, @ 000 acres) deemed a total loss and 27 @, @ 000 ha (67 @, @ 000 acres) partially damaged . Six deaths occurred due to direct or indirect effects of the hurricane , all in Jalisco . Damage assessments indicate total losses around 5 @. @ 4 billion pesos (US \$ 323 @. @ 3 million) , primarily from agriculture and infrastructure .

=== Jalisco ===

Striking Jalisco as a strong Category 4 hurricane , Patricia wrought tremendous damage , though the most extreme effects were relatively localized . In the small community of Emiliano Zapata , the hurricane 's violent winds tore roofs off homes and business . Countless trees were defoliated , stripped of their branches , snapped , or uprooted . Hillsides along the immediate landfall area were largely stripped of vegetation . Storm chaser Josh Morgerman described the aftermath : " ... the tropical landscape was transformed into something barren and wintry . " Furthermore , the winds toppled concrete power poles and crumpled transmission towers .

Throughout Jalisco , approximately 9 @, @ 000 homes were damaged or destroyed . The coastal hamlet of Chamela , home to 40 families , was completely flattened . More than 24 @, @ 000 ha (59 @, @ 000 acres) of crops were affected across the state : 10 @, @ 684 ha (26 @, @ 400 acres) sustained total losses while 13 @, @ 943 ha (34 @, @ 450 acres) were partially so . Damage from agriculture amounted to roughly 168 million pesos (US \$ 10 @. @ 1 million) . Total damage reached to 1 @. @ 139 billion pesos (US \$ 68 @. @ 7 million) .

A total of six deaths in incidents related to Patricia were reported in the state . Two of these deaths occurred when a tree toppled over in the storm 's powerful winds . A woman was also hospitalized after sustaining injuries in the same incident . Another four people were killed in an automobile accident in southern Jalisco . Two of the victims died in the wreckage and the other two died after being brought to a hospital .

A cargo ship ? the 735 ft (224 m) bulk carrier Los Llanitos ? was shifted off @-@ course by the hurricane and grounded near Barra de Navidad , Jalisco . Her 27 crew were unharmed but required rescue by a military helicopter . The ship was subsequently deemed a total loss and crews began scrapping the vessel on @-@ site in February 2016 .

=== Colima and Michoacán ===

In nearby Colima , preliminary surveys indicated localized but severe damage . A total of 200 schools , 107 health facilities , 34 sport facilities , and 11 @, @ 645 ha (28 @, @ 780 acres) of agriculture was affected by the storm . Severe damage was incurred by the banana crops , with losses from the fruit alone estimated at 500 million pesos (US \$ 30 @. @ 2 million) . Total damage in the state reached 1 @. @ 7 billion pesos (US \$ 102 @. @ 6 million) .

Although Patricia made landfall farther west , damage across Michoacán was severe . Numerous communities were temporarily isolated as roads were either rendered impassible or washed away

altogether by floods . A total of 1 @, @ 512 homes were damaged and another 127 were destroyed across the state , including 600 in Coahuayana . The storm severely damaged 150 homes in the Arteaga Municipality . A portion of Highway 200 was shut down in Aquila . Agriculture sustained extensive damage with 10 @, @ 000 ha (25 @, @ 000 acres) of crops destroyed ; losses in the sector amounted to 2 @. @ 5 billion pesos (US \$ 151 @. @ 2 million) . In Coahuayana alone , 5 @, @ 600 ha (14 @, @ 000 acres) of bananas were ruined , the greatest loss of crops in the municipality 's history ; thousands of residents lost their jobs as a result of the damage . Losses to health facilities in the state reached 13 @. @ 5 million pesos (US \$ 815 @, @ 000) .

= = = = Other states = = = =

The hurricane produced large swells along the shores of Guerrero on October 22 , causing damage to coastal structures . The remnants of Patricia brought heavy rain to much of northern Mexico on October 24 . Up to 7 @. @ 6 in (193 mm) of rain was observed in Tamaulipas , resulting in flooding . Dozens of structures sustained damage and hundreds were left without power , with areas in Reynosa and Río Bravo particularly affected .

= = = Texas = = =

Patricia 's direct effects in Texas were limited to southern areas of the state . Moisture associated with the hurricane streamed ahead of its circulation and interacted with a frontal boundary over the region . Antecedent rains saturated the region and produced severe flooding , with cars flooded and a train derailed . Fears arose that the collective effects of these storms would produce deadly floods , similar to those in May earlier in the year ; however , no deaths resulted . Houston received 9 @. @ 38 in (238 mm) of rain during a 24 @-@ hour span from October 24 ? 25 , and a brief tornado caused minor damage near the city . Rain fell at rates of 1 to 2 in (25 to 51 mm) per hour in southern Hidalgo County , leading to damaging flash floods . An estimated 10 to 12 in (250 to 300 mm) , or more , accumulated across the Progreso ? Weslaco area . Several feet of water rendered roads impassible , stranded cars , and affected more than 500 homes . Twenty @-@ six water rescues were conducted in the area . Damage was estimated at \$ 50 million . Several roads in and around Corpus Christi were inundated , including part of Interstate 37 . Two hours of " blinding rains " flooded the majority of eastern Willacy County , prompting multiple water rescues , and leaving \$ 2 @. @ 5 million in damage .

= = Aftermath = =

In the aftermath of the hurricane , 5 @, @ 791 Marines from Mexico 's Naval Infantry Force were deployed to assist with recovery and rescue efforts . Rescuers reached some of the hardest @-@ hit areas within a day of Patricia 's landfall . Red Cross volunteers began needs assessments on October 24 and distribution of humanitarian aid started the following day . Power was restored to 88 percent of those affected within two days of the storm . Through the nation 's livestock catastrophe fund , 150 million pesos (US \$ 9 million) were allocated for agricultural areas affected by the storm on October 29 . Of this total , 76 million pesos (US \$ 4 @. @ 6 million) were delegated to Jalisco .

The Secretariat of Social Development 's budget allowed for 250 million pesos (US \$ 15 @. @ 1 million) in relief funds for Jalisco . Of this , 34 million pesos (US \$ 2 million) were allocated for affected persons . On October 27 , Rafael Pacchiano Alamán announced an initial fund of 5 @. @ 3 million pesos (US \$ 318 @, @ 000) through the Temporary Employment Program (Programa de Empleo Temporal) to help spur economic recovery in Colima . On October 28 , 15 of Jalisco 's 125 municipalities were declared disaster areas ; assessments were ongoing in 5 ? 10 other municipalities to potentially be added to this declaration . Of the more than 24 @, @ 000 ha (59 @, @ 000 acres) of crops affected by Patricia in Jalisco , only 6 @, @ 600 ha (16 @, @ 000 acres) were covered by insurance . Through late January 2016 , Instituto Nacional del Emprendedor provided entrepreneurs with 3 @. @ 577 million pesos (US \$ 194 @, @ 000) in funds .

In January 2016 , the Michoacán Ministry of Social Development enacted a 10 million peso (US \$ 542 @, @ 000) rehabilitation program to build 605 homes in affected communities .

= = = Retirement = = =

Due to its extreme intensity , the name Patricia was retired by the World Meteorological Organization on April 25 , 2016 . It will be replaced with Pamela for the 2021 Pacific hurricane season .