

= Hurricane Barbara (2013) =

Hurricane Barbara was the easternmost landfalling Pacific hurricane on record . As the first hurricane of the 2013 Pacific hurricane season , Barbara developed from a low @-@ pressure area while located southeast of Mexico on May 28 . It headed slowly north @-@ northeastward and strengthened into a tropical storm early on the following day . After recurving to the northeast , Barbara intensified into a Category 1 hurricane on May 29 and made landfall in Chiapas at peak intensity with winds of 80 mph (130 km / h) and a barometric pressure estimated at 983 mbar (hPa ; 29 @.@ 03 inHg) . When the hurricane made landfall , it was the second earliest landfalling hurricane in the basin since reliable records began in 1966 . Barbara then moved across the Isthmus of Tehuantepec and dissipated within the mountainous terrain of Sierra Madre de Chiapas on May 30 .

The precursor of Hurricane Barbara brought light to moderate rainfall to El Salvador . Many homes were damaged , roads were flooded , and several trees were downed . One fatality was reported in the country . Landslides caused by rainfall in Guatemala forced 30 people to flee their homes . In Mexico , tropical cyclone warnings and watches were issued in anticipation of the storm . Many shelters opened in Chiapas , Oaxaca and Guatemala while schools and ports were temporarily closed during the storm . Torrential rains and power outages were reported in the area . In the state of Chiapas alone , 2 @, @ 000 houses were damaged . About 57 @, @ 000 people were left homeless . Significant impact to agriculture was also reported , with 10 @, @ 000 ha (25 @, @ 000 acres) of crops destroyed . Overall , Barbara caused 5 fatalities and at least \$ 1 million (2013 USD) in damage .

= = Meteorological history = =

A tropical wave moved off the west coast of Africa on May 16 and crossed Central America into the Pacific Ocean on May 24 . That day , the National Hurricane Center (NHC) began monitoring an area of disturbed weather about 150 mi (240 km) southwest of the Costa Rican coastline . At that time , this system was associated with a monsoon trough embedded within the Intertropical Convergence Zone . Despite being disorganized , gradual development of this system was anticipated by the NHC . On May 25 , a broad low pressure area formed southwest of Nicaragua , after the tropical wave interacted with an eastward @-@ moving Kelvin wave . Convection soon became organized around the newly formed low , and the NHC noted that the formation of a tropical cyclone within the subsequent 48 hours was likely . The NHC estimated that Tropical Depression Two @-@ E developed at 1200 UTC on May 28 about 125 mi (205 km) south @-@ southeast of Puerto Ángel , Oaxaca .

With warm water temperatures of over 86 ° F (30 ° C) and low wind shear , the newly formed tropical depression was able to quickly intensify . It developed a well @-@ defined center with concentrated deep convection . Continued organization prompted the NHC to upgrade the depression to Tropical Storm Barbara at 0000 UTC on May 29 . Post @-@ analysis indicated that Barbara intensified into a tropical storm six hours earlier than originally assessed . Barbara began exhibiting an eye @-@ like feature , and intensity estimates using the Dvorak Technique reached 40 mph (65 km / h) . At this time , Barbara had begun to recurve to the northeast , within a gap of the subtropical ridge . By midnight , the eye @-@ like feature developed into a central dense overcast (CDO) , embedded within the deep convection . The rainbands of Barbara wrapped around much of the circulation , and radar imagery indicated the eyewall was consistently becoming better defined . Thereafter , the storm entered a phase of intensification as it began to accelerate towards the Chiapan coastline .

Barbara strengthened into a hurricane around 1800 UTC on May 29 while located about 65 mi (105 km) east @-@ southeast of Salina Cruz , Mexico . At its peak intensity as it was making landfall , it had maximum sustained winds of 80 mph (130 km / h) and a barometric pressure estimated at 983 mbar (hPa ; 29 @.@ 03 inHg) . With this intensity , Barbara made landfall on the coast of Tonalá , Chiapas at approximately 1950 UTC . This marked both the easternmost and

second earliest landfalling hurricane in the basin since reliable records began in 1966 . As Barbara moved inland within the Isthmus of Tehuantepec , rapid dissipation occurred . The cloud tops warmed and Barbara degenerated into a tropical storm at 0000 UTC on May 30 . This was followed by a downgrade to tropical depression nine hours later as Barbara 's low @-@ level circulation was disrupted by the mountainous terrain . Very early on May 31 , the surface circulation of Barbara soon dissipated about 25 mi (40 km) north @-@ northwest of Coatzacoalcos , Mexico , prior to emerging into the Gulf of Mexico .

= = Preparations = =

Immediately after developing into a tropical cyclone on May 28 , a tropical storm warning was issued by the Servicio Meteorológico Nacional along the coast of southern Mexico spanning from Lagunas de Chacahua National Park in Oaxaca to Boca de Pijijiapan , Chiapas . When the storm threatened to become a hurricane , a hurricane warning was declared for this region at 1025 UTC on May 29 . In Campeche , a blue (minimal) alert was issued . In Guatemala , a " preventive " alert was issued ; Barbara was similar to Hurricane Mitch and Tropical Storm Agatha (both which devastated the nation) and thus had the potential to produce flash floods . A yellow alert (moderate risk) was declared for central and southern Oaxaca and western Chiapas . For the southeastern and eastern part of Oaxaca and southwestern and central @-@ western Chiapas , a red (high risk) alert was issued .

Many shelters were opened adjacent to rivers . In Chiapas , 122 shelters opened , having a grand capacity of 300 @,@ 000 people though only 147 people used these shelters . In these shelters , officials set up 57 health centers . In Oaxaca , shelters were set up in 20 towns and hamlets . In all , coastal residents and marine interests were advised to take extreme caution in the states of Chiapas , Oaxaca , and Guerrero . In addition , classes were suspended in Oaxaca . Both large and small boats were anchored in Playa Manzanillo , to prevent being sunk by strong winds and rough seas , and water sports were suspended in Acapulco . Ports in Chiapas were also closed because of the storm .

= = Impact and aftermath = =

= = = Central America = = =

The precursor disturbance brought light to moderate rainfall to El Salvador . Many homes were damaged , roads were flooded , and several trees were downed . A 44 @-@ year @-@ old woman died when a tree fell on her . Strong winds and high waves damaged four homes in Barrio Playa , in the municipality of Acajutla . As a result , shelters were opened , though only seven people sought refuge in them . This same disturbance brought landslides to Guatemala ; consequently , 30 people moved to shelters .

= = = Mexico = = =

Starting early on May 29 , the outer rainbands of Tropical Storm Barbara brought torrential rains to several states and power outages to Oaxaca , Chiapas , Guerrero , and Veracruz . Rainfall in the country peaked at 19 in (470 mm) . In Ocosingo , 10 in (220 @.@ 5 mm) fell in a 24 ? hour period . Upon making landfall , Barbara struck a largely undeveloped stretch of coastal lagoons , containing small fishing villages . In Acapulco , however , torrential rains caused severe flooding on roads leading to resorts , while damaging some highways . In all , considerable damage was reported .

Four people were killed in Oaxaca . A 61 @-@ year @-@ old American drowned offshore from rough seas . A 26 @-@ year @-@ old man died from drowning after attempting to cross a river . The third death was a 60 @-@ year @-@ old man in Salina Cruz . Furthermore , 14 fishermen went missing off the coast of Tapanatepec two of which were quickly found alive . Within a few days

following Barbara , eight of the remaining missing had been found alive . Of the four fishermen still unaccounted for , one was presumed to have died . The towns of Tonala and Arriaga were the worst affected by the hurricane , where dozens of trees , poles , billboards and roofs were damaged due to strong winds . Many restaurants were also destroyed because of high waves . Several homes were flooded . Many homes were destroyed , leaving many homeless . Throughout the rest of Chiapas , however , damage was minor . Statewide , 50 people were evacuated and 2 @, @ 000 homes were damaged . Throughout the region , 57 @, @ 000 people were homeless and 10 @, @ 000 ha (25 @, @ 000 acres) of crops were destroyed . Approximately 3 @, @ 500 ha (8 @, @ 600 acres) of mango crops , accounting for a total yield of 22 @, @ 751 @. @ 88 t (50 @, @ 159 @, @ 300 lb) of mangoes , were destroyed , with losses estimated at 10 ? 15 million pesos (\$ 750 @, @ 000 ? \$ 1 @. @ 1 million USD) .

Following the storm , which affected 19 @, @ 000 people , 16 medical centers were opened , containing a combined 127 doctors and 318 nurses to provide medical care to devastated municipalities . A state of emergency was declared for 36 municipalities in Chiapas and for 5 municipalities in Oaxaca .