

= Hurricane Nora (1997) =

Hurricane Nora was only the third tropical cyclone on record to reach Arizona as a tropical storm . Nora was the fourteenth named tropical cyclone and seventh hurricane of the 1997 Pacific hurricane season . The September storm formed off the Pacific coast of Mexico , and aided by waters warmed by El Niño , eventually peaked at Category 4 intensity on the Saffir @-@ Simpson Hurricane Scale .

Nora intensified and weakened quickly before taking an unusual path , which led it to make landfall twice as a hurricane in Baja California . After landfall , its remnants affected the Southwestern United States with tropical storm @-@ force winds , torrential rain and flooding . Nora is blamed for two direct casualties in Mexico , as well as substantial beach erosion on the Mexican coast , flash flooding in Baja California , and record precipitation in Arizona . Nora persisted far inland and eventually dissipated near the Arizona ? Nevada border .

= = Meteorological history = =

Nora formed early on September 16 , 1997 , while located 290 miles (460 km) southwest of the Mexican port of Acapulco , Guerrero , from the same tropical wave that had earlier created Hurricane Erika . Due to favorable conditions associated with El Niño , the tropical disturbance quickly achieved deep convection and became well @-@ organized . By 6 a.m. UTC , the U.S. National Hurricane Center had designated the disturbance as Tropical Depression Sixteen @-@ E. Half a day later , it had gained enough strength to be named Tropical Storm Nora .

A high pressure area over northern Mexico forced the storm to move west @-@ northwest for the first few days . During that time , Nora kept intensifying , becoming a Category 1 hurricane on the Saffir @-@ Simpson Hurricane Scale by noon UTC on September 18 . Nora slowed and became stationary for two days from September 18 . The eye vanished , and convection began to decrease . This was presumed to have happened because of a drop in sea @-@ surface temperatures . The cool waters temporarily weakened Nora 's winds to 75 mph (120 km / h) down from a maximum of 105 mph (165 km / h) . After leaving the area of cool waters , the storm began moving nearly parallel to Mexico 's western coast . There was a period of rapid intensification and the eye reappeared . Cloud tops cooled and at midday UTC on September 21 , Nora reached its peak intensity of 950 mbar (28 inHg) and 135 mph (210 km / h) winds , a Category 4 hurricane . The peak was brief as the cyclone encountered cool waters in the wake of Hurricane Linda , weakening the storm 's winds to 80 mph (130 km / h) by September 23 and broke its eyewall .

Nora crossed an area of abnormally warm water near the west coast of the Baja California Peninsula . It restrengthened slightly before making its first landfall near Bahía Tortugas , Baja California Sur on September 25 . When Nora was inland , the area of the storm located in the Gulf of California began to reintensify . Hurricane Nora then made a second landfall about 60 miles (95 km) south @-@ southeast of San Fernando , Baja California . Nora was one of the few hurricanes to make landfall in Northern Baja .

At landfall , a trough was accelerating Nora northwards , causing it to reach a forward speed of 30 mph (50 km / h) . Late on September 25 (UTC) , still a tropical storm , it entered the continental United States at the California @-@ Arizona state line . Nora began to weaken rapidly , and was downgraded to a tropical depression three hours later , while located between Blythe and Needles , California . Nora reached Arizona while still tropical , becoming the third known system to do so . Nora degenerated over land , and the low @-@ level center moved towards the north @-@ northeast . A remnant circulation aloft persisted , however , and was likely responsible for a period of near hurricane @-@ force winds observed at the NWS Cedar City , Utah Doppler weather radar . The remnants gradually became more diffuse over the following two days while moving generally northeastward , through portions of Utah , Colorado , Idaho and Wyoming .

= = Preparations = =

While Nora stayed off the Pacific coast of Mexico , the Servicio Meteorológico Nacional (National

Meteorological Service) issued a hurricane watch for the coast between Lázaro Cárdenas , Michoacán , and Puerto Vallarta , Jalisco , and several major ports in the shoreline closed to navigation . As the storm moved away from the mainland coast and towards the Baja California Peninsula , about 500 people were evacuated from their homes near Cabo San Lucas , Baja California Sur , and placed in shelters to prepare for the storm 's impact . At the same time , in Sonora , another 50 were evacuated from a fishing camp in Guaymas . Meanwhile , the SMN issued tropical storm warnings along the Baja California coast , as well as hurricane watches and warnings around the entire Gulf of California between Santa Rosalía , Baja California Sur , and Bahía Kino , Sonora .

On September 24 , Arizona Governor Jane Dee Hull activated an emergency response center to prepare the state 's response to the flash flooding the storm would cause on the dry desert floor , and Yuma residents began to fill approximately 55 @, @ 000 sandbags to contain the possible flooding . Hull also activated the state 's National Guard , and sent drinking water and electric generators to Yuma . Further inland , the National Weather Service issued flash flood watches for western Arizona , southeastern California , southwestern Colorado , southern Nevada and southern Utah on September 26 .

= = Impact = =

Hurricane Nora caused two direct deaths in Mexico and three or four indirect fatalities in the United States . Although the total cost of damage is not known , Nora caused up to several hundred millions of dollars of damage . The system also dropped heavy rain in the United States and Mexico , which caused flooding and power outages .

= = = Mexico = = =

Nora killed two in Mexico : an electrocution by a downed power line in Mexicali , Baja California , and a diver caught in strong underwater currents created by Nora off the coast of the San Quintin Valley .

Although Nora 's center of circulation remained well offshore from southwestern mainland Mexico , the Associated Press reported that waves up to 20 feet (6 @. @ 1 m) hit that coastline , destroying dozens of homes . Nora 's winds also produced rough seas and high waves , which caused substantial beach erosion , particularly around Acapulco , where the Pie de la Cuesta beaches were washed away . In the states of Guerrero and Jalisco , Nora brought down trees and washed away the foundations of homes , although no injuries were reported there .

Heavy rains also fell along the storm 's northeast periphery , with the highest amounts of 20 @. @ 94 inches (532 mm) falling at La Cruz / Elota and 16 @. @ 79 inches (426 mm) being measured at Liguí / Loreto . About 350 ? 400 people were left homeless by floodwaters in the town of Arroyo de Santa Catarina in northern Baja California . Heavy damage and flooding was reported in San Felipe , on the northwestern shore of the Gulf of California , as well as extensive beach erosion . Local roads and highways were destroyed and the town 's dock was severely damaged . On the northeastern shore , at Puerto Peñasco , Nora blew down trees , billboards , electric wires , taco stands , and ripped sheet @- @ metal from homes . Waves of 10 feet (3 @. @ 0 m) were reported there .

= = = United States = = =

In the United States , there were no direct deaths blamed on the hurricane . However , the California Highway Patrol attributed three or four traffic fatalities in southern California to the weather .

Damage totals in the United States are not fully known , although media summaries of Nora included a loss to agriculture preliminarily estimated at several hundred million dollars , and at least one study places the figure at \$ 150 ? 200 million (1997 USD) . It is estimated that \$ 30 ? 40 million

(1997 USD) in damage to lemon trees occurred . Although Nora was significantly weakened , near hurricane @-@ force winds were observed at the Dixie National Forest in southwestern Utah , where strong gusts sheared off the tops of large trees .

The Yuma radar indicated a small area of 10 inches (250 mm) rainfall totals along the northern Gulf of California coast of Baja California . In the United States , the largest total rainfall was recorded at the Harquahala Mountains in Arizona , where 11 @.@ 97 inches (304 mm) of rainfall were recorded as a result of Nora , causing flash floods in western Arizona .

Near Phoenix , rainfall from the storm caused the Narrows Dam , a small earthen dam , to fail . In other locations in Arizona , California , Nevada , and Utah , more than 3 inches (76 mm) occurred in a few localized areas , sometimes with precipitation comparable to the entire local yearly average rainfall . Flooding was also reported in Somerton , San Diego , El Centro , Palm Springs and Indio , while 12 @,@ 000 people lost power in Yuma , as well as Los Angeles and southwestern Utah .