= Hurricane Doreen (1977) =

Hurricane Doreen was considered the worst tropical cyclone to affect California in 32 years . The tenth tropical cyclone , fourth named storm , and second hurricane of the otherwise inactive 1977 Pacific hurricane season , it developed on August 13 . The depression tracked northwestward , intensifying into Tropical Storm Doreen later that day . Further strengthening occurred over the subsequent days , and Doreen attained its peak as a minimal hurricane early on August 15 . Executing a turn towards the north @-@ northwest , Doreen made its first landfall as a Category 1 hurricane on the Saffir ? Simpson Hurricane Wind Scale near Puerto San Carlos . Drifting offshore , Doreen made a second and final landfall near the northern portion of the Baja California as a tropical storm before rapidly weakening to a tropical depression . The tropical depression dissipated south of southern California on August 18 .

Hurricane Doreen and its remnants caused severe flooding in northwestern Mexico and the southwestern United States . In Mexico , heavy rainfall was reported on both Baja California and the mainland of Mexico . Flooding left 2 @,@ 000 people homeless in Mexicali along the United States @-@ Mexico border , in addition , 325 homes and businesses were destroyed in southern California . Several highways were also flooded during the passage of the storm , most notably , lanes on Interstate 8 and Interstate 15 were washed out . In San Diego and Imperial County , the total damage to agricultural interests was $ 25 million (1977 USD) . In addition , eight fatalities were reported in California . Elsewhere , impact from Doreen was relatively light .

= = Meteorological history = =

The origins of Hurricane Doreen were a tropical disturbance which formed 115 mi (185 km) west of Acapulco , on August 11 . Over the next two days , the system drifted westward at 7 mph (11 km / h) . By 0000 UTC August 13 , the Eastern Pacific Hurricane Center began classifying the system as Tropical Depression Ten , centered 460 mi (740 km) west of Acapulco , Mexico . Immediately after developing , the depression curved northwestward , and began slowly intensifying over sea surface temperatures (SST 's) of 82 ° F (28 ° C) . By 1800 UTC , winds increased to 50 mph (85 km / h) , and the depression was then upgraded to Tropical Storm Doreen , which was centered about 530 mi (850 km) west @-@ northwest of Acapulco . Air Force reconnaissance began investigating Doreen late on August 14 , and located the center about 185 mi (298 km) south of the tip of Baja California . Another flight into the storm shortly thereafter confirmed that Doreen had intensified into a hurricane at 1800 UTC .

At that time , the eye of Doreen was around 17 mi (27 km) in diameter . After becoming a hurricane , Doreen re @-@ curved to the north @-@ northwest as it sped up slightly to 10 mph (16 km / h) . Doreen approached the Baja California Peninsula , as it maintained minimal hurricane status . By August 18 at 1800 UTC , Doreen was centered only 17 mi (27 km) when it curved northwestward . Late on August 18 , the storm made landfall on the western coast of Baja California as a minimal hurricane . Unlike Hurricane Kathleen in 1976 which accelerated inland , Doreen moved slowly and re @-@ emerged into the Pacific Ocean , over SST 's of less than 72 ° F (22 ° C) . As a result , Doreen weakened to a tropical storm before making another landfall on the Port Eugenia Peninsula on August 16 shortly after 0600 UTC . Once again , Doreen quickly re @-@ emerged into the Pacific Ocean over the Bay of Sebastian Vizcaino . Due to SST 's as low as 68 ° F (20 ° C) , Doreen continued to weaken , and was downgraded to a tropical depression early on August 17 . After satellite imagery noted a poorly @-@ defined low @-@ level circulation , the final advisory was issued on Doreen , which was centered about 29 miles (47 km) west of San Clemente Island , California at 0000 UTC on August 18 . The remnants of the storm tracked into the Southwestern United States and dissipated over the Colorado River Valley .

= = Impact = =

Mexico

Hurricane Doreen dropped heavy rainfall along the western portions of Mexico and the Southwestern Region of the United States . In Mexico , Doreen produced heaviest precipitation along the Baja California peninsula , where rainfall peaked at 14 @.@ 80 in (376 mm) in the Los Cabos Area . The mainland of Mexico also received heavy rainfall , especially in the Sierra Madre Oriental mountains . In the city of Mexicali , the storm left more than 2 @,@ 000 people homeless , many of which were shanty @-@ style homes .

California

In anticipation of the storm , flash flood warnings were issued in the Colorado River Valley area , and were extended into southern California on August 16 , including places such as Santa Barbara County , the mountains of San Diego County , Riverside County , and portions of the Mohave Desert . Heavy rainfall fell in southern California on August 16 . An average of 2 ? 4 in (51 ? 102 mm) of rain fell over low @-@ lying areas of southern California for a period of three days . Heavier precipitation was reported in the mountainous areas , where rainfall peaked at 7 @.@ 45 in (189 mm) on San Jacinto Peak . Several other locations also reported heavy rainfall ; 3 @.@ 78 in (96 mm) was reported in Calexico and 6 in (150 mm) fell at Mitchell Caverns . At Edwards Air Force Base , the launch of Space Shuttle Enterprise on August 31 was delayed to September 7 after rainfall from Doreen flooded the runway of the previous flight .
In addition to heavy rain , high winds were reported . In Palm Springs , wind gusts were reported as high as 60 mph (95 km / h) . As a result , several trees were felled and power outages occurred . Highway 88 and 111 were under water from Brawley , near the Mexican border to the Salton Sea . California State Route 98 was also flooded from Brawly to Blythe . Two of the four lanes on Interstate 15 were washed out from Los Angeles to Las Vegas , stranding thousands of gamblers in places like Barstow . Ocotillo , a town that was devastated during Hurricane Kathleen in 1976 , was flooded again . Buses were sent to evacuate the townspeople , but the residents declined to evacuate . Overall , damage totaled $ 25 million , mostly in agricultural losses in San Diego and Imperial Counties . Eight deaths were reported . Six children were swept away in the Los Angeles River . Five of them were rescued , but the sixth was later presumed dead .

Arizona

Doreen also produced heavy rainfall in a small area of southwestern Arizona , limited to the Yuma area . Along the border of Arizona , California , and Mexico , rainfall was recorded between 2 and 7 in (51 and 178 mm) . Rainfall in the state of Arizona had peaked at 7 @.@ 01 in (178 mm) in that area . Light to moderate rainfall was also occurred in other areas of the state , such as Nogales , where 3 @.@ 10 in (79 mm) of precipitation was recorded . Damage to roads , levees , houses , dikes were reported throughout the state , especially in the Bullhead City area .
While surveying damage in southwestern Arizona , a request was made to then @-@ Governor Raul Hector Castro for $ 750 @,@ 000 in emergency services funds . The American Red Cross had been in the area and spent $ 12 @,@ 000 to assist families that were left homeless after the flood .

Elsewhere in the United States

Further west , larger swaths of rainfall occurred in Nevada , though precipitation was generally light with many areas experiencing less than 3 in (76 mm) . Rainfall in Nevada had peaked at 4 @.@ 14 in (105 mm) in Avaden , making Doreen the wettest tropical cyclone for the state of Nevada as of 2011 . In Las Vegas , major intersections were flooded due to precipitation amounts of about 1 @.@ 5 in (38 mm) . In addition to street flooding , some roofs of houses and buildings collapsed .
In New Mexico , lesser amounts of rainfall were reported , and precipitation was limited to the northeastern and southwestern portions of the state . Much it the rainfall was between 1 to 2 in (25

to 51 mm) , and precipitation with the state peaked at 2 @.@ 05 in (52 mm) in the city of Florida . Rainfall was also minimal in the state of Utah , with only a few isolated areas reporting light precipitation , and generally did not exceed 3 in (76 mm) . However , rainfall peaked at 4 @.@ 31 in (109 mm) in Logan .