

= 1987 Pacific hurricane season =

The 1987 Pacific hurricane season was the last year in which the Eastern Pacific Hurricane Center was the primary warning center for tropical cyclones in the eastern Pacific Ocean . The season officially started May 15 , 1987 , in the eastern Pacific , and June 1 , 1987 , in the central Pacific , and lasted until November 30 , 1987 . These dates conventionally delimit the period of each year when the vast majority of tropical cyclones form in the northeastern Pacific Ocean .

Despite there being 20 named systems , five above the average , only four storms directly affected land . Hurricane Eugene was the first Pacific hurricane to make landfall in Mexico in July since the 1954 season and caused all of the season 's three deaths and \$ 142 @. @ 12 million damage . Tropical Storm Pilar and Hurricane Norma also came close to land , with the former producing record rain in Baja California Sur . The remnants of Hurricanes Ramon and Norma caused rain in the Continental United States . Elsewhere , Peke was a central north Pacific hurricane that crossed the International Dateline and became a typhoon of the 1987 Pacific typhoon season .

= = Seasonal summary = =

Overall , the season continued the general trend in the 1980s of well above @-@ average seasons in the East Pacific . In 1987 , there were 20 tropical storms , 10 hurricanes , and four major hurricanes , all were well above average , save the number of major hurricanes which was only slightly above normal . The former made 1987 the fifth most active season on record at that time . Today , 1987 is tied with the 1994 Pacific hurricane season and the 2009 Pacific hurricane season as the sixth most active on record . In the Central Pacific Hurricane Center 's area of responsibility , one storm peaked at hurricane strength (Peke) and one peaked as a tropical storm (Oka) . Two tropical storms entered this area of responsibility from the east by crossing 140 ° W.

The season lasted a total 171 days beginning with the formation of Adrian and early June and the dissipation of Tropical Depression Twenty on November 25 . There was a total of 924 storms hours and 631 hurricane hours . By comparison , the long @-@ term averages at that time were 161 season days , 875 tropical storm hours , and 664 hurricane hours . 397 advisories were issued , which was below the 1977 ? 1987 average of 428 . The Hurricane Hunters did not fly into any of the storms in 1987 . This was also the first year where tropical storm watches and warnings were issued instead of gale watches and warnings for tropical cyclones . 1987 was the last season that the Eastern Pacific Hurricane Center in Redwood City was responsible for forecasting in this basin , a task it had performed since circa 1972 . The EPHC was folded into the National Hurricane Center , which took responsibility for the basin starting in the spring of 1988 .

Only one tropical storm developed in June . In July , six named storms formed . Out of these storms , Hilary was the only storm to reach major hurricane status . The month of August had a total of five named storms , four of which became hurricanes . However , August did not feature any major hurricanes , though Hurricane Jova came close , peaking as a moderate Category 2 . The month of September held the same number of named storms as August , with five named storms . The month also was the carrier of the strongest hurricane on record at that time (that had its intensity estimated from satellite imagery) , Hurricane Max , a strong Category 4 hurricane . Hurricane Norma was a Category 1 hurricane on the Saffir @-@ Simpson hurricane scale , which dissipated to the south of the Baja California Peninsula . The month of October featured only two tropical cyclones . The first system , Ramon , was a Category 4 hurricane .

Very few cyclones this season impacted land . The only landfalling hurricane of the year , Hurricane Eugene was responsible for significantly damaging about 15 sq. mi of fruit crop , where damage estimated were at \$ 2 @. @ 6 million (1987 USD) In all , damage totaled to about \$ 142 million . Tropical Storm Irwin , paralleled the coast of Mexico , causing flooding near Acapulco . Damage was totaled at \$ 2 @. @ 1 million (1987 USD) . The remnants of Norma and Pilar produced rain over Baja California Sur . The remnants of Ramon brought extremely heavy rains to the Western United States .

A moderate El Niño was present throughout the season , with water temperatures across the

equatorial Central Pacific was 1 @. @ 6 ° C (34 @. @ 9 ° F) above normal . The Pacific Decadal Oscillation (PDO) was in a warm phase during this time period ; . modern estimates place the PDO for 1987 at 0 @. @ 81 ° C (33 @. @ 46 ° F) above normal .

= = Storms = =

= = = Tropical Storm Adrian = = =

On June 7 , a tropical depression formed 400 mi (645 km) southeast of Acapulco . It strengthened into a tropical storm immediately thereafter . After peaking with maximum sustained winds of 45 mph (75 km / h) on June 8 , Adrian slowly weakened . It fell to tropical depression status on June 9 and dissipated later that day . During its life , Adrian paralleled the Mexican shoreline far offshore before looping counter @-@ clockwise over its path when it was a depression .

= = = Tropical Storm Beatriz = = =

On July 3 , a tropical depression formed 970 mi (1 @, @ 560 km) south of Cabo San Lucas . It strengthened into a tropical storm later that day . Beatriz slowly strengthened and moved generally northwest as it stayed far offshore . On July 5 , Beatriz reached its peak wind speed of 50 mph (85 km / h) . It weakened thereafter , falling to a depression on July 6 and dissipating the next day .

= = = Tropical Storm Calvin = = =

A tropical depression formed 310 mi (500 km) south of Mexico on July 5 and immediately strengthened into a tropical storm the next day . Calvin headed generally east . On July 8 , as a strong tropical storm . It then gradually weakened , falling to a depression on July 9 and dissipated the next day while located 440 mi (710 km) southwest of Cabo San Lucas .

= = = Tropical Storm Dora = = =

A tropical depression that had organized on July 15 while located 710 mi (1 @, @ 140 km) south of Cabo San Lucas . The depression strengthened into a tropical storm that same day while located around 215 mi (345 km) west of Acapulco . Dora headed west @-@ northwest and slowly strengthened . It reached its peak winds of 60 mph (95 km / h) on July 17 . It then steadily weakened , becoming a depression two days later . Dora dissipated on July 20 while located 500 mi (805 km) west of Cabo San Lucas .

= = = Hurricane Eugene = = =

A tropical disturbance developed into a tropical depression on July 22 near the coast of Mexico . It initially headed westward and strengthened into a tropical storm the same day it formed . It strengthened into a hurricane , the first of the season , on July 24 as an upper @-@ level cyclone pulled the system north . After peaking as a low @-@ end Category 2 hurricane on July 25 , land interaction weakened the hurricane to Category 1 as it made landfall south of Manzanillo . The rough topography weakened Eugene , and the hurricane was only a depression when it emerged into the Gulf of California . It promptly dissipated on July 26 .

When the storm first posed a threat to Mexico on July 24 , the port of Zinuhuatlenjo was closed for small craft . Operation classes were suspended in Acapulco . In Manzanillo , the port was officially closed down . The Mexican navy was put on alert for a total distance of 945 mi (1 @, @ 520 km) . The weather service issued navigation warnings for three coastal states and ships were urged to maintain contact with officials . Hurricane Eugene caused extremely heavy rain in coastal parts of Mexico . The highest rain was 20 @. @ 68 inches at Aquila , Michoacán . The system was

responsible for the highest tropical cyclone caused rainfall in five Mexican states . Over 5 @, @ 000 people were displaced . In Manzanillo alone , at least 60 people were rendered homeless . Most of the damage was the scattering of debris and mud . Six people were injured , and a man in Venustiano Carrazano was killed when a palm tree was blown over . In all , three fatalities were reported . The hurricane destroyed about 15 sq. mi (39 km²) of fruit crop in the country , amounting to more than \$ 2 @. @ 6 million in damage (1987 USD) . Additionally , damage to eight beach houses totaled to \$ 120 @, @ 000 . Total crop damage reached \$ 142 million (1987 USD) ; In the aftermath of the storm , the navy and army and local government devised a cleanup plan . They worked quickly to restore water and power service , and within a few days the services had been restored for most of the impacted area .

= = = Tropical Storm Fernanda = = =

At a location more westerly than typical for eastern Pacific hurricanes , Tropical Depression Nine @- @ E formed on July 24 . Heading west , the cyclone reached tropical storm intensity on July 25 . Fernanda strengthened and reached its peak strength near hurricane status on July 26 , the same day it crossed 140 ° W and entered the central north Pacific . Fernanda headed in the general direction of the Hawaiian Islands as a trough approached . The trough caused wind shear , which weakened the cyclone into a tropical depression on July 28 . Fernanda dissipated three days later .

= = = Hurricane Greg = = =

A tropical wave left the coast of Panama on July 26 . It organized into Tropical Depression Ten on July 28 while located 800 mi (1 @, @ 300 km) and it strengthened into a tropical storm the day after the system formed . Over 84 ° F (29 ° C) water , the cyclone steadily intensified as it roughly paralleled the Mexican coast while remaining far offshore . Greg became a hurricane on 1800 UTC July 31 and peaked with wind speeds of 80 mph (130 kmh) on August 1 . It then weakened as it moved over cooler water , falling to tropical storm intensity later on August 1 . At this time , Greg was located 570 mi (915 km) away from Baja California . It then weakened into depression intensity on August 2 , and completely dissipated the next day . Greg affected Mexico a few weeks after Eugene did , resulting in additional flooding . Due to both storms , the region registered rainfall amounts for times the average .

= = = Hurricane Hilary = = =

A tropical wave moved through Central America on July 30 and July 31 . Steered by a large deep @- @ layer ridge that extended as far southwest as Hawaii and as far northeast as Oklahoma , the wave moved steadily west @- @ northwest . Thunderstorm activity increased considerably after 0000 UTC July 31 . A tropical depression formed at 1800 UTC July 31 while located 775 mi (1 @, @ 245 km) south of Cabo San Lucas . The cyclone strengthened at a steady pace and reached hurricane intensity on August 1 . Hilary continued strengthening , and became a hurricane on August 2 . On August 3 , the cyclone reached Category 3 status on the Saffir @- @ Simpson Hurricane Scale , making it the first major hurricane of the season . At its peak strength , which it reached on August 4 , Hilary had winds of 120 mph (195 km / h) . It then weakened , and had fallen to Category 1 intensity on August 5 . The hurricane then restrengthened , maintaining Category 2 intensity until August 6 . The system then began a terminal weakening trend . By August 7 it was only a tropical storm . After falling to depression strength , Hilary dissipated on August 9 over 21 ° C (70 ° F) waters . In Southern California , officials hoped that Hilary would produce a major increase in waves in time for a surfing tournament finals , though only a small increase in wave action was expected .

= = = Tropical Storm Irwin = = =

A tropical depression formed on August 3 over 1 @, @ 000 mi (1 @, @ 610 km) south of Manzanillo . The depression quickly intensified into a tropical storm . Irwin fluctuated in strength as it closely paralleled the coast of Mexico . On August 6 , Irwin reached its maximum winds of 65 mph (100 km / h) ; it maintained that velocity for over two days . During August 8 , Irwin turned nearly due west and headed out to sea . Irwin weakened to a tropical depression on August 9 and immediately dissipated . Forecasters at one point in time noted the possibility of the storm impacting California . In addition , the storm produced heavy rainfall in Mexico , causing \$ 2 @. @ 1 million in damage . Although many businesses and homes received damage , no deaths were reported .

= = = Hurricane Jova = = =

A tropical depression formed on August 13 , while located 1 @, @ 095 miles (1 @, @ 760 km) south @- @ southeast from Baja California Sur . The cyclone intensified into Tropical Storm Jova the next day . The depression initially moved to the west @- @ southwest due to a ridge north of the system . It slowly strengthened and reached hurricane intensity on 1800 UTC August 16 . The intensifying hurricane then turned west @- @ northwest . When it peaked on August 17 , Jova was a moderate Category 2 hurricane . After peaking , Jova slowly weakened as it turned westbound . It was in a moderately declining state when it crossed 140 ° W and entered the Central Pacific Hurricane Center 's area of responsibility . Jova continued to weaken , and was a depression by August 20 . Jova dissipated two days later while due south of the Big Island of Hawaii over 70 ° F (21 ° C) water , although its remnants were still visible south of Johnston Atoll until at least August 24 . Jova generated heavy surf for a few days in Southern California .

= = = Tropical Storm Oka = = =

A disturbance in the intertropical convergence zone organized into Tropical Depression One @- @ C on August 26 . Twelve hours later , it was upgraded to a tropical storm and named Oka , which is Hawaiian for Oscar . Oka slowly moved west @- @ northwest and reached its peak wind speed of 60 mph (95 kmh) on August 27 . The next day , a nearby trough caused wind shear , which weakened Oka to a depression on August 29 and subsequently destroyed it .

= = = Tropical Storm Knut = = =

On August 28 , a tropical depression formed 1 @, @ 165 mi (1 @, @ 875 km) west Manzanillo , Mexico . Twelve hours later , it strengthened into a tropical storm and was named Knut . Never attaining winds stronger than 40 mph (65 kmh) , Knut stayed a tropical storm for one day . It weakened to a tropical depression on August 30 and dissipated later that day . The cyclone stayed out at sea for its entire life , and never threatened land .

Knut 's impact is unknown . However , its name was retired in 1992 .

= = = Hurricane Lidia = = =

Lidia originated from a disturbance that entered the basin on August 28 . It remained south of the Mexican coast in an area of warm sea surface temperatures , and at 1800 UTC August 29 , Tropical Depression Fifteen formed . It intensified into a tropical storm six hours after development about 860 mi (1 @, @ 385 km) away from Baja California Sur . Lidia moved northwest , paralleling the Mexican coast . It edged in a more westerly direction for a day before resuming its northwesterly path , and reached hurricane intensity on 0600 UTC September 1 . At its strongest on September 1 based on intensity estimates via Dvorak classifications , Hurricane Lidia had a wind speed of 85 mph (140 km / h) . Shortly thereafter , Lidia began weakening and lost hurricane intensity on September 2 . Lidia weakened very rapidly over cold water . Early the next day , Lidia weakened to a tropical depression and dissipated over 76 ° F (24 ° C) waters on 1200 UTC September 3 . The remnants of the storm ; however , brought showers to California . One woman was injured by a

lighting strike .

== Hurricane Max ==

A tropical disturbance left Central America on September 8 . At 1200 UTC on September 9 , a tropical depression formed over the warm waters south of the Gulf of Tehuantepec . While located 935 mi (1 @, @ 505 km) from Cabo San Lucas , the depression intensified into a tropical storm and was named Max . Heading west @-@ northwest , Max rapidly intensified and became a hurricane on September 11 , over a day after it was named . Turning northwest , Max continued to intensify . By September 20 , the cyclone reached Category 2 intensity , and became a major hurricane several hours later . On September 12 , Hurricane Max reached Category 4 intensity . The cyclone reached its maximum windspeed of 155 mph (250 km / h) on September 13 .. Meanwhile. a then @-@ record was set for the highest satellite estimates for a Pacific hurricane . At that time , Dvorak classifications , which measure a tropical cyclones intensity , were at " 7 @. @ 0 " , which was then the highest ever recorded in the basin , though this was later matched by hurricanes Hernan and Trudy of the 1990 Pacific hurricane season .

Max maintained its intensity for then unprecedented 24 hours . However , the storm crossed the 78 ° F (26 ° C) isotherm and began to weaken rapidly . The hurricane 's track then shifted north for a time , before turning to the west on September 15 . That same day , the weakened to a tropical storm . The tropical cyclone dissipated at 1200 UTC September 16 while located 865 mi (1 @, @ 392 km) north @-@ northeast of Cabo San Lucas . The hurricane was predicted to send 8 feet (2 @. @ 4 m) waves to Southern California , though Max was well past its peak at that time .

== Hurricane Norma ==

A tropical disturbance developed on September 13 while located 340 mi (550 km) southwest of Acapulco . Moving northwest , a depression formed on September 14 far from land . It took over 24 hours to reach tropical storm strength . Norma paralleled the coast far offshore . The storm steadily intensified over 84 ° F (29 ° C) sea surface temperatures . On September 17 , Norma turned to the north , and became a minimal hurricane for 12 hours as an eye became visible on infrared imagery . Norma turned northbound toward land . However , Norma remained offshore due weak southwesterly flow from a cutoff low located west of Baja California Sur . The cyclone stalled and then edged slightly east when it weakened back into a depression on September 19 . Tropical Depression Norma dissipated a mere 95 mi (155 km) south of the Baja California Peninsula ; it never made landfall .

Prior to the remains of Hurricane Norma 's arrival in the Southwestern United States , forecasters were anticipating cloudy skies over San Diego . Over the deserts and mountains near the area , there was also a possibility of heavy rainfall . The remnants ultimately caused rainfall and thunderstorms in California on September 22 and September 23 . The rainfall totaled to .70 in (18 mm) at Lindbergh Field , and .97 in (25 mm) at Lemon Grove . There were numerous power outages , small fires , some road flooding , and some property damage . In San Diego and southern Orange County , 200 @, @ 000 homes and business lost power , but the power was quickly restored . However , there are no reports of damage or flooding in Baja California from the storm ; the area the tropical cyclone stuck was sparsely populated .

== Hurricane Otis ==

Otis originated from the a tropical disturbance in the monsoon trough . It moved over the warm waters south of the Mexican Riviera from September 17 to September 19 . At 0000 UTC September 20 , the disturbance was upgraded into Tropical Depression Nineteen @-@ E while moving to the northwest . It strengthened into a tropical storm later that day while located 950 mi (1 @, @ 530 km) southwest of La Paz . Eighteen hours later on September 21 , Otis became a hurricane . It also began to turn back to the west and began to undergo a period of rapid deepening . The hurricane

would then reach Category 2 intensity on the Saffir @-@ Simpson hurricane scale . The next day , Otis reached its peak windspeed of 115 mph (185 km / h) . It would oscillate irregularly between that strength and Category 2 intensity until September 24 . That day , it began accelerating to the west as it lost strength due to increased wind shear and 26 ° C (79 ° F) water . Otis fell to tropical storm strength on September 25 and a depression on September 26 , and dissipated shortly after that .

= = = Hurricane Peke = = =

An area of disturbed weather southwest of Hawaii gathered enough convection and a closed circulation to become Tropical Depression Two @-@ C on September 21 . It immediately strengthened into a storm and was named Peke . Peke continued to strengthen as it tracked north just east of the International dateline . Peke intensified into a hurricane on September 23 and reached Category 2 intensity the next day . Peke continued heading north and shortly after weakening into a Category 1 hurricane , it turned to the northwest and crossed the dateline . It re @-@ intensified , and peaked as a 115 mph (185 km / h) typhoon on September 23 . It accelerated to the northwest and began to take in drier air , which caused weakening . On October 2 , Peke re @-@ curved to the southeast . The last advisory on this tropical cyclone was issued on October 3 as it dissipated . Peke 's remnants continued drifting erratically for over three days , first heading east , then northwest , and then southeast , at which time they were finally unidentifiable .

Hurricane / Typhoon Peke caused no damages or deaths . However , was also the first tropical cyclone of hurricane strength to cross the dateline since 1967 's Hurricane Sarah to cross the dateline at that strength . In addition , Peke was the third tropical cyclone in three years to exist on both sides of the dateline , after 1985 's Typhoon Skip and 1986 's Typhoon Georgette .

= = = Tropical Storm Pilar = = =

A tropical depression formed on September 30 while located 330 mi (530 km) south of the Baja California Peninsula . It headed north and peaked as a minimal tropical storm on October 1 . After being a tropical storm for a mere six hours , Pilar weakened to a depression and dissipated that same day . It never made landfall , dissipating just south of the southern tip of the Baja California Peninsula . It was a tropical cyclone for a total of 24 hours . The system caused no known damage on land , but Pilar dropped heavy precipitation on Baja California Sur from 1200 UTC on September 30 until 0000 UTC October 2 . An observer station reported 7 @.@ 15 in (182 mm) of rainfall . This was the most rainfall the weather station had ever recorded since its founding in 1969 .

= = = Hurricane Ramon = = =

On October 3 ? 4 an area of disturbed weather moved into the Pacific Ocean south of a high pressure area over Central Mexico . The storm became better organized over 84 ° F (29 ° C) waters . By October 5 , a tropical storm had developed 490 mi (790 km) southwest of Manzanillo , bypassing the tropical depression stage . It moved generally to the west @-@ northwest . Ramon intensified into a hurricane on October 7 and reached major hurricane status on October 8 . At its most intense on October 9 and October 10 , Hurricane Ramon had winds of 140 mph (220 km / h) . After peaking , Ramon turned to the northwest due to interaction with subtropical jetstream winds and rapidly weakened over cooler sea surface temperatures . It became a tropical storm on October 11 and a depression on October 12 . It dissipated shortly thereafter .

Torrential rains deluged Southern California , resulting in street flooding . Two people perished in separate traffic accidents . In Los Angeles , three more people perished in separate traffic incidents . Heavy rains extended west and was also reported in Hemet in Riverside County , where three people were also injured during a car accident . The rains helped dissolve a week @-@ long forest fire 16 @,@ 000 acre (65 @,@ 000 @,@ 000 m ²) on Mt . Palomar . The Spring Creek River overflowed its banks . The tropical moisture also helped end a 37 @-@ day dry spell at Salt Lake

City , marking the longest time the city went without rain since 1964 . Nationwide , Ramon killed five people , all due to road @-@ related incidents .

= = = Tropical Storm Selma = = =

On October 27 , a tropical depression formed and headed northwest , gradually re @-@ curving north . It intensified into a 40 mph (65 km / h) tropical storm on October 28 . Selma maintained that strength until the next day , when it weakened to a depression . Selma 's re @-@ curving continued , and on October 29 , it again intensified into a 40 mph (65 km / h) tropical storm . Without further strengthening , it weakened into a tropical depression , headed north northeast , and dissipated on October 31 about 880 mi (1 @,@ 415 km) east of the southern tip of Baja California .

= = Other storms = =

According to the Joint Typhoon Warning Center , on July 18 a tropical depression formed east of the International Dateline , and 2 days later it exited CPHC 's area of responsibility ; however , this storm wasn 't included into CPHC database . As it entered into western Pacific , it strengthened as a tropical storm and received the name Wynne .

On June 10 , a weak tropical depression , the second of the season , developed . It moved very little and did not affect land . It dissipated on 1200 UTC June 12 . The season 's next tropical cyclone , Tropical Depression Three formed six days after the previous one dissipated . Moving west @-@ northwest , it peaked at 35 mph (55 km / h) . On June 20 , it dissipated .

Tropical Depression Six developed on July 13 about 900 mi (1 @,@ 400 km) southwest of Cabo San Lucas . The depression had same peak intensity as Three and had dissipated on July 17 .

The final tropical cyclone developed at 1800 UTC November 24 around 1 @,@ 000 mi (1 @,@ 600 km) southwest of Baja California Sur . A very weak cyclone , the depression dissipated on November 25 , ending the above @-@ average season .

= = Storm names = =

The following names were used for named storms that formed in the eastern Pacific in 1987 . The names not retired from this list were used again in the 1993 season . This is the same list used for the 1981 season . However , the names Xina , York , and Zelda were added to name lists for odd @-@ numbered years sometime after 1985 due to that year 's season threatening to exhaust the list . Storms were named Pilar and Ramon for the first time in 1987 , as the name Selma had been used on the older lists .

Two names from the Central Pacific list were used ? Oka and Peke . This was the first usage for both names .

= = Retirement = =

The World Meteorological Organization retired one Eastern Pacific name in the spring of 1992 : Knut . It was replaced in the 1993 season by Kenneth .