= 1986 Pacific hurricane season =

The 1986 Pacific hurricane season saw several tropical cyclones bring significant flooding to the Central United States . The hurricane season officially started May 15 , 1986 in the eastern Pacific , and June 1 , 1986 in the central Pacific , and lasted until November 30 , 1986 in both regions . These dates conventionally delimit the period of each year when most tropical cyclones form in the northeastern Pacific Ocean . A total of 17 named storms and 9 hurricanes developed during the season ; this is slightly above the averages of 15 named storms and 8 hurricanes , respectively . In addition , 25 tropical depressions formed in the eastern Pacific during 1986 , which , at the time , was the second most ever recorded ; only the 1982 Pacific hurricane season saw a higher total .

Several storms throughout the season affected land . Hurricane Estelle passed south of Hawaii , resulting in $ 2 million in damage and two deaths . Hurricanes Newton , Paine and Roslyn each struck Northwestern Mexico . While damage was minimal from these three systems near their location of landfall , Paine brought considerable flooding to the Great Plains . The overall flooding event resulted in $ 350 million in damage , with the worst effects being recorded in Oklahoma . Hurricane Roslyn was the strongest storm of the season , attaining peak winds of 145 mph (230 km / h) .

= = Seasonal summary = =

Activity in the Eastern Pacific Hurricane Center 's (EPHC) area of responsibility was above average . There were 25 tropical depressions , one short of the record set in 1982 , which had 26 . Only one storm formed in the Central Pacific Hurricane Center 's (CPHC) area of responsibility , Tropical Depression One @-@ C. Six other cyclones entered the CPHC area of responsibility from the EPHC area of responsibility . In all , 17 systems formed , which is two storms above normal . In addition , 9 hurricanes were reported during the season , one more than average . An average number (3) of major hurricanes ? Category 3 or higher on the Saffir @-@ Simpson hurricane wind scale ? was also reported .

The season began with the formation of Hurricane Agatha on May 22 and ended with the dissipation of Tropical Depression Twenty Five on October 25 , spanning 147 days . Although it was nearly two weeks shorter than the 1985 Pacific hurricane season , the season was six days longer than average . The EPHC issued 406 tropical cyclone advisories , which were issued four times a day at 0000 , 0600 , 1200 , and 1800 UTC . In 1986 , Hurricane Hunters flew into three storms ; Newton , Roslyn , and Estelle . In Newton , the National Oceanic and Atmospheric Administration (NOAA) conducted environmental research in the cyclone . In addition , the National Weather Service Field Service Station provided the East Pacific with excellent satellite coverage .

During the months of May and June , four named systems developed . In July , one tropical storm and two hurricanes formed . The following month , five tropical systems developed . Towards the end of the season , tropical cyclone activity declined somewhat . While five storms formed in September , only one formed in October and none during the month of November . A moderate El Nino was present throughout the season ; water temperatures across the equatorial Central Pacific were 1 @.@ 3 ° C (3 ° F) above normal . In addition , the Pacific Decadal Oscillation (PDO) was in a warm phase during this time period .

Three tropical cyclones made landfall in 1986 . The first , Hurricane Newton made landfall near Cabo San Lucas , bringing minor damage . Another storm , Hurricane Paine brushed Cabo San Lucas , and later moved inland over Sonora . Paine caused minimal impacts at landfall , but its remnants were described as one of the worst floods in Oklahoma history . Flooding affected 52 counties in Oklahoma , which resulted in a total of $ 350 million in damage . The final storm to make landfall during the hurricane season was Hurricane Roslyn . The hurricane produced some flooding , but no serious damage . In addition , Hurricane Estelle came close enough to Hawaii to require a hurricane watch . Two drownings were reported , and the total damage was around $ 2 million .

= = Storms = =

= = = Hurricane Agatha = = =

The 1986 Pacific hurricane season 's first tropical disturbance formed 865 mi (1 @,@ 390 km) from the tip of Baja California Sur on May 20 . By 0000 UTC May 22 , the circulation began to tighten and become more organized , and thus the EPHC upgraded the disturbance into Tropical Depression One @-@ E that morning . Approximately 48 hours after becoming a tropical depression , the system was upgraded into Tropical Storm Agatha , the first storm of the season . After moving southeast , the cyclone made an abrupt change in direction , turning towards the north . Agatha strengthened into a hurricane on May 25 near the coast of Mexico , reaching its peak intensity of 75 mph (115 km / h) . Turning southeast , The system quickly weakened into a tropical depression , but regained tropical storm strength on May 28 , only to dissipate that day . Rainfall spread around both the Atlantic and Pacific Mexican coasts , peaking at 10 @.@ 75 in (273 mm) at Xicotepec de Juarez , Puebla .

= = = Tropical Depression Two = = =

A tropical disturbance formed on May 30 in the eastern Gulf of Tehuantepec . The disturbance was moving very slowly when it was upgraded to Tropical Depression Two on May 31 . The depression began to weaken six hours later and the final advisory by the EPHC was released on June 1 . Most of Mexico received rainfall , with over 3 in (76 mm) falling on Yucatán Peninsula . The worst rain occurred in Central Mexico , where over 15 in (380 mm) of precipitation fell , peaking at 18 @.@ 63 in (473 mm) in Tenosique , Tabasco . The rest of the country was hit by 1 ? 3 in (25 ? 76 mm) of rainfall .

= = = Tropical Storm Blas = = =

A tropical disturbance originated from the Intertropical Convergence Zone (ITCZ) on June 16 . The disturbance moved west @-@ northwest at 13 mph (21 km / h) below a weak upper @-@ level high , becoming the third tropical depression of the 1986 season on June 17 . The depression intensified into Tropical Storm Blas the next day . It kept that strength for only six hours , weakening into a depression again as it moved into cooler waters . After Blas 's convection dissipated , the EPHC ceased advisories on June 19 while situated roughly 600 mi (970 km) south of Cabo San Lucas .

= = = Hurricane Celia = = =

On June 24 , five days after Tropical Storm Blas dissipated , a tropical disturbance developed south of the Gulf of Tehuantepec . Later that day , its circulation had become well @-@ defined enough for the EPHC to upgrade the disturbance into Tropical Depression Four . Winds reached 40 mph (65 km / h) , enough to upgrade the system into Tropical Storm Celia on June 26 . While located off the coast of Mexico , Celia strengthened into a hurricane at 1800 UTC June 27 . An eye became evident on satellite imagery and the hurricane reached its peak intensity of 90 mph (145 km / h) on June 28 at 1600 UTC . Hurricane Celia then passed by Socorro Island . Meanwhile , Celia moved into much cooler water which enabled the hurricane to weaken rapidly . By June 30 , Celia had become a tropical depression . The EPHC released its final advisory at 1800 UTC that day as the system was dissipating .

= = = Tropical Storm Darby = = =

The fifth tropical cyclone of the season formed as a tropical disturbance on July 2 . Moving northwest at about 13 mph (21 km / h) , the disturbance entered warmer waters and strengthening

rapidly . The disturbance was upgraded into Tropical Depression Five at 1800 UTC July 3 . Turning west @-@ northwest , the depression strengthened into Tropical Storm Darby on July 5 . Darby peaked at 40 mph (60 km / h) . The stormed continued northwest for about six hours , when it reached 77 ° F (25 ° C) waters and began a weakening trend . Clouds spread northward over the US states of Arizona and California on July 6 . The cyclone dissipated on July 7 .

= = = Hurricane Estelle = = =

During the afternoon of July 16 , a tropical depression formed thousands of miles west of Mexico , and within 12 hours it strengthened into a tropical storm . On July 18 , Estelle intensified into a hurricane . Located in a favorable environment , Estelle continued strengthening to become the first major hurricane of the season on July 20 . The hurricane entered the Central Pacific Hurricane Center 's area of responsibility near its peak strength of 135 mph (215 km / h) , a Category 4 hurricane . The hurricane veered to the west and passed south of Hawaii . Estelle weakened to a tropical storm on July 23 , and on July 25 , it weakened to a depression . The storm dissipated two days later .

In advance of Hurricane Estelle , the National Weather Service issued a hurricane watch and high @-@ surf advisory for the Island of Hawaii . More than 200 people evacuated from their homes . Huge waves crashed on the shores of the Big Island on the afternoon of July 22 . The high waves washed away five beachfront homes and severely damaged dozens of others on the beach resort of Vacation Land . The total damage was around $ 2 million (1986 US $; $ 4 @.@ 32 million 2016 USD) . However , only two deaths reported from the storm , both of whom drowned offshore Oahu .

= = = Hurricane Frank = = =

The EPHC began monitoring a tropical disturbance located 195 mi (315 km) southwest of San Salvador on 1800 UTC July 23 . About 24 hours later , the disturbance was upgraded into a tropical depression . Initially moving towards the west @-@ northwest due to an upper @-@ level low and a ridge over Mexico , the storm then turned to the west as the upper @-@ level low changed direction . By July 28 , the depression was upgraded into Tropical Storm Frank . After turning back to the west @-@ northwest , Frank reached hurricane intensity early on July 30 . The storm quickly developed a well @-@ defined eye and three hours later , Hurricane Frank reached its peak intensity as a moderate Category 1 hurricane , with winds of 85 mph (135 km / h) . Hurricane Frank maintained this intensity for 18 hours . Subsequently , the hurricane began to rapidly weaken over 76 ° F (24 ° C) sea surface temperatures . Wind shear soon increased , thus accelerating the weakening process . On July 31 , Frank was reduced to tropical storm intensity . Not long after weakening into a depression , the storm entered the CPHC 's area of responsibility . Wind shear increased further , and upon entering the region , Frank moved over slightly cooler water . It transitioned into an extratropical cyclone on August 3 .

= = = Tropical Storm Georgette = = =

On August 3 , a tropical depression developed in the open ocean over 600 mi (970 km) west of the Mexican coastline . Twelve hours later , it strengthened into Tropical Storm Georgette before weakening to a depression on August 4 . It then accelerated to a very rapid speed of 23 ? 45 mph (37 ? 75 km / h) . Due to its fast speed , Georgette could not maintain a closed circulation , and thus degenerated into a non @-@ cyclonic disturbance on August 4 . The disturbance kept up its rapid forward motion , crossed the dateline and entered the western Pacific , where it reformed and reached its peak intensity as Severe Tropical Storm Georgette . By August 16 , Georgette merged with another system . It is one of only seven tropical cyclones to exist in all three tropical cyclone basins in the Pacific Ocean .

= = = Tropical Storm Howard = = =

A tropical wave crossed Southwestern Mexico and Belize in mid @-@ August . A tropical disturbance developed from this wave 50 mi (80 km) south of Acapulco on August 15 , the same day that the system moved offshore . Moving west @-@ northwest south of an upper @-@ level high , the system was classified as a tropical depression the next day about 125 mi (200 km) south of Manzanillo . Several hours later , the depression reached tropical storm intensity . Turning towards the northwest due to a trough , it failed to intensify beyond minimal tropical storm strength . Passing south of the Baja California Peninsula , the storm rapidly moved over cooler waters . Howard weakened into a tropical depression at 0600 UTC August 18 . Transversing 75 ° F (24 ° C) water , Howard dissipated . Rainfall along the southern coast reached 1 in (25 mm) in some places , with totals in excess of 5 in (130 mm) in isolated locations . Further north , rainfall was more scattered . The maximum rainfall was 9 @.@ 25 in (235 mm) in Reforma , near the southern part of the country .

= = = Tropical Storm Isis = = =

A tropical disturbance developed 265 mi (426 km) south of Socorro Island at 1800 UTC August 18 . Twenty @-@ four hours later the disturbance was upgraded into a tropical depression on August 19 . The depression intensified into Tropical Storm Isis the next day . After peaking as a moderate tropical storm at 1200 UTC August 23 , Isis weakened into a depression over 74 ° F (23 ° C) waters early on August 24 . While located some 1 @,@ 500 mi (2 @,@ 400 km) west of the Mexican coast , the tropical cyclone dissipated later that day .

= = = Hurricane Javier = = =

On August 19 , a tropical disturbance formed 460 mi (740 km) south of the Gulf of Tehuantepec and 319 mi (513 km) south of Cabo San Lucas . Satellite imagery began to show signs of developing a circulation , and the disturbance became a tropical depression on August 20 and intensified into Tropical Storm Javier hours later . Southwest of a ridge , Javier began to turn towards the west @-@ northwest . Despite an increase in forward speed , Tropical Storm Javier underwent rapid intensification , reaching hurricane intensity at 0900 UTC August 21 . About three hours later , Javier reached Category 2 strength , and briefly became a major hurricane on August 22 , only to rapidly weaken back to a Category 1 hurricane late on August 23 . Hurricane Javier sharply turned towards the north and eventually towards the northwest . Early on August 24 , Javier resumed intensification , regaining Category 3 intensity at 0600 UTC . Passing midway between Socorro Island and Clarion Island , the storm reached its peak intensity of 135 mph (215 km / h) . Moving beneath the ridge , Hurricane Javier turned to the west and subsequently weakened back into a Category 3 hurricane .

After briefly re @-@ intensifying into a Category 4 , the storm resumed weakening due to increasing wind shear , and by late on August 25 , Hurricane Javier had weakened directly into a Category 2 hurricane . Shortly thereafter , Javier was downgraded into a Category 1 hurricane . While it managed to maintain marginal hurricane intensity for 24 hours. on 1200 UTC August 28 , the EPHC announced that Javier had weakened back into a tropical storm . Shortly after that , Javier turned towards the west @-@ northwest due an upper @-@ level trough . Now over 74 ° F (23 ° C) waters , the system continued to weaken as wind shear increased further . On August 30 , Javier weakened into a depression and dissipated the next day over 1 @,@ 000 mi (1 @,@ 600 km) southwest of Southern California . Waves were 15 ft (4 @.@ 6 m) high in some areas , prompting meteorologists to issue a high surf advisory . Hurricane Javier brought the highest waves of the summer to southern California .

= = = Tropical Storm Kay = = =

In late August , a tropical disturbance formed 725 mi (1 @,@ 165 km) east @-@ southeast of

Hurricane Javier and nearly 370 mi (595 km) south of the Baja California Peninsula . Moving slowly west , the disturbance began to develop a well @-@ defined circulation , and was respectively upgraded into a tropical depression on August 23 . Passing 10 mi (20 km) south of Clarion Island , the depression strengthened into Tropical Storm Kay . The cyclone 's forward speed increased ; subsequently , Kay reached its peak intensity . After maintaining its intensity for 18 hours , Kay rapidly weakened over cold water , and was downgraded into a depression at 0000 UTC September 2 . Kay dissipated the next day several hundred miles west of the Baja California Peninsula .

= = = Tropical Storm Lester = = =

A westward @-@ moving tropical wave increased in thunderstorm activity , soon organizing into a tropical depression on September 13 . At the time of the upgrade , Lester was located more than 900 mi (1 @,@ 450 km) west of the Mexican coast . Moving towards the west , the depression soon intensified into Tropical Storm Lester . After turning towards the west @-@ northwest , Lester peaked in intensity as a moderate tropical storm . Due to a combination of strong wind shear and cold water , Lester began a slow weakening trend . While entering the CPHC 's area of responsibility at 1800 UTC September 17 , Lester had already weakened to a tropical depression . Unable to maintain a closed circulation , the final advisory was issued .

= = = Tropical Storm Madeline = = =

A tropical disturbance first developed during September 13 and September 14 over the warm waters south of Acapulco . On September 15 , the EPHC first classified the system as a tropical depression . Rapidly moving towards the west , the depression was embedded in deep easterly flow . The system attained tropical storm intensity on 1800 UTC September 16 , thus received the name Madeline . After turning towards the west @-@ northwest , Tropical Storm Madeline accelerated . It began a slow intensification trend , and peaked as a high @-@ end tropical storm on 0600 UTC September 18 . An upper @-@ level low introduced strong wind shear , and Madeline began to fall apart almost immediately thereafter . After turning towards the north , and slowing down , Madeline dissipated on September 22 .

= = = Hurricane Newton = = =

A tropical disturbance became a tropical depression on September 18 . Intensification was slow as the depression did not reach storm status until September 20 . Paralleling the coast , Newton steadily intesifed . Newton strengthened into a hurricane on September 21 . On September 22 , Newton slammed into Cabo San Lucas , and after entering the Gulf of California , Hurricane Newton attained its peak intensity 85 mph (140 km / h) . Shortly after that , Newton moved inland into the mainland of Mexico . Over land , Newton dissipated on September 23 .

Upon making landfall on the Baja California Peninsula , moderate rainfall was recorded . After the hurricane 's second landfall , damage was also minor , though 40 roofs were ripped off of homes ; trees and utility poles were also downed due to high winds . However , no injuries or fatalities were reported in association with Newton . Newton 's remnants later combined with a cold front to produce heavy rainfall that downed power lines in Kansas City , leaving 20 @,@ 000 customers without power .

= = = Hurricane Orlene = = =

Hurricane Orlene originated from a stationary tropical disturbance that was upgraded into a tropical depression on September 21 . Despite a poorly defined circulation , the cyclone intensified into Tropical Storm Orlene 12 hours after formation . Steadily gaining strength , Orlene reached hurricane intensity on September 22 . Shortly thereafter , the hurricane entered the CPHC 's area of responsibility . Upon the formation of an eye , Orlene reached its peak intensity of 80 mph (130 km /

h) . After maintaining peak intensity for 24 hours , Hurricane Orlene began to encounter strong wind shear . Subsequently , Orlene weakened rapidly and lost hurricane status at 1800 UTC September 23 . The system weakened into a tropical depression on September 24 . Tropical Depression Orelene dissipated the next day .

= = = Hurricane Paine = = =

A tropical disturbance developed on September 27 within 250 mi (400 km) of the Mexican coastline . The disturbance was upgraded into Tropical Depression Twenty @-@ Three on 0000 UTC September 28 . Tropical Depression Twenty @-@ Three moved west @-@ northwestward , lured poleward by an upper @-@ level trough near northern Mexico . At 0000 UTC September 30 , the depression became Tropical Storm Paine , southwest of Acapulco . Roughly 21 hours later , a NOAA Hurricane Hunter flight found winds of 90 mph (145 km / h) , upgrading Paine into hurricane . The hurricane peaked as a Category 2 hurricane on October 1 as it turned northwest , headed towards the Gulf of California . Hurricane Paine did not intensify further due to the presence of mid @-@ level wind shear and dry air . The outer eyewall moved across Cabo San Lucas , and the resultant land interaction was believed to have slightly weakened the inner core of the hurricane . Paine moved ashore near San José , Sonora with winds of 100 mph (160 km / h) . The storm weakened as it moved over land going through Mexico and then entering the United States . Paine dissipated on October 4 over Lake Michigan .

Rainfall from the tropical cyclone was significant in Mexico and the United States . Light rain fell in Cabo San Lucas . Meanwhile , rains around the Mexican Mainland peaked at 12 in (300 mm) in Acapulco . Near the area around where it made landfall , strong winds knocked down trees and caused disruptions to city services . In the United States , rainfall peaked at 11 @.@ 35 inches (288 mm) in Fort Scott , Kansas . The Barnsdall , Oklahoma weather station recorded 10 @.@ 42 inches (26 @.@ 5 cm) on September 29 , which set a record for the highest daily precipitation for any station statewide . The flooding affected 52 counties in Oklahoma , which resulted in a total of $ 350 million in damage . In all , Paine was described as one of the worst floods in Oklahoma history . Flooding from Paine resulted in about 1 @,@ 200 people homeless in East Saint Louis , Illinois and resulted in record discharge rates along many streams and creeks . Subsequently , many reservoirs were nearly filled to its capacity . For example , the Mississippi River in St. Louis reached the fifth highest flood stage on record .

= = = Hurricane Roslyn = = =

A tropical disturbance moved westward offshore Nicaragua and was declared Tropical Depression Twenty @-@ Four on October 15 .. During the early afternoon of the next day , ship reports indicated the formation of a tropical depression close to land . The cyclone moved at a quick pace towards the west @-@ northwest south of a warm @-@ core ridge . Early on the morning on October 16 , Roslyn became a tropical storm . By the morning of the October 17 , Roslyn had developed into a hurricane south of Acapulco . A vigorous upper trough was deepening offshore Baja California , and Roslyn began to re @-@ curve within a few hundred miles of Manzanillo . The system struck Mazatlán as a marginal hurricane on October 20 . The low @-@ level center rapidly dissipated , although a frontal low developed in the western Gulf of Mexico , which moved over southeastern Texas and later through the Mississippi Valley . The original upper @-@ level circulation maintained its northeast movement , bringing rainfall to the Southeastern United States .

Affecting a sparsely @-@ populated area , the highest reported winds from a land station were 44 mph (71 km / h) . Roslyn produced some flooding , but no serious damage . Impact was limited to flooded homes and factories , as well as some crop damage and beach erosion and only one yacht sunk . The remnants of Hurricane Roslyn produced heavy rainfall across the central and southern United States . In Matagorda , Texas , a total of 13 @.@ 8 in (35 cm) was reported .

= = = Other storms = = =

In addition to the 17 named storms , there were eight tropical depressions during the season that failed to reach tropical storm strength . The second , Tropical Depression Seven , began as a large area of thunderstorms near Hurricane Estelle on July 17 . Moving at a steady pace , the cyclone failed to intensify and attained peak intensity of 30 mph (50 km / h) . Cool sea surface temperatures and its proximity to Hurricane Estelle eventually caused the depression to dissipate late on July 18 .

Tropical Depression Eight formed on July 21 while located 1 @,@ 000 mi (1 @,@ 600 km) southwest of the Baja California Peninsula . Initially moving west @-@ northwest around an upper @-@ level high , the depression peaked with winds of 35 mph (55 km / h) . It dissipated on July 24 . Another tropical disturbance formed on July 24 . An circulation developed two days later , and thus it was classified as Tropical Depression Ten . The cyclone remained a tropical depression for about three days before moving into the CPHC 's area of responsibility on 1000 UTC July 27 . A slow weakening trend began as the depression continued to move west at speeds of 30 mph (45 km / h) . By 1800 UTC on July 29 , it had become poorly organized around 1 @,@ 000 mi (1 @,@ 600 km) west @-@ southwest of the Hawaiian Islands , and the final advisory was issued .

Tropical Depression One @-@ C formed on July 27 , possibly from the remnants of Tropical Depression Eight that dissipated a few days earlier well to the east of 140 ° W. The depression tracked westward at a fairly rapid forward speed of 35 mph (55 km / h) ; however , it failed to develop past the depression stage . One @-@ C passed well south of the Hawaiian Islands on July 28 . On July 29 at 0000 UTC , it had dissipated to the southwest of the Hawaiian Islands and the final advisory was issued by the CPHC .

An area of disturbed weather developed a circulation on August 12 and was upgraded into Tropical Depression Twelve nearly 700 mi (1 @,@ 100 km) south of the Baja California Peninsula . It drifted slowly to the northwest until it dissipated near 22 ° N 110 ° W on August 14 . Peak maximum sustained winds were estimated at 35 mph (55 km / h) . Tropical Depression Seventeen formed on September 8 , 30 km (20 mi) east of Socorro Island and dissipated on September 9 over cold water without becoming a tropical storm .

One of the last cyclones of the season formed from a westward @-@ moving tropical disturbance in the ITCZ . The disturbance moved at about 10 mph (20 km / h) and upon developing a circulation , was declared Tropical Depression Twenty @-@ One at 0600 UTC September 19 . However the depression lasted for only six hours before dissipating , likely due to the close distance between it and Tropical Storm Madeline . Tropical Depression Twenty @-@ Five was the final tropical depression of the 1986 season . It formed on October 22 at 1800 UTC near the 140 ° W line . Due to strong wind shear , the stationary storm had dissipated within 30 hours of formation . Even though no more official systems developed , a forecaster at the National Hurricane Center remarked that an unnamed tropical storm may have formed in November .

= = Storm names = =

The following names were used for named storms that formed in the eastern Pacific in 1986 . No names were retired , so it was used again in the 1992 season . This is the same list used for the 1980 season . Storms were named Paine and Roslyn for the first time in 1986 , while Orlene was previously used on the old four @-@ year lists . No central Pacific names were used ; the first name used would have been Oka . Names that were not assigned are marked in gray .