

= Typhoon Gay (1992) =

Typhoon Gay , known in the Philippines as Typhoon Seniang , was the strongest and longest @-@ lasting storm of the 1992 Pacific typhoon season . It formed on November 14 near the International Date Line from a monsoon trough , which also spawned two other systems . Typhoon Gay later moved through the Marshall Islands as an intensifying typhoon , and after passing through the country it reached its peak intensity over open waters . The Joint Typhoon Warning Center (JTWC) estimated peak winds of 295 km / h (185 mph) and a minimum barometric pressure of 872 mb (25 @.@ 8 inHg) . However , the Japan Meteorological Agency (JMA) , which is the official warning center in the western Pacific , estimated winds of 205 km / h (125 mph) , with a pressure of 900 mbar (27 inHg) . Gay weakened rapidly after peaking because of interaction with another typhoon , and it struck Guam with winds of 160 km / h (100 mph) on November 23 . The typhoon briefly re @-@ intensified before weakening and becoming extratropical south of Japan on November 30 .

The typhoon first affected the Marshall Islands , where 5 @, @ 000 people became homeless and heavy crop damage was reported . The nation 's capital of Majuro experienced power and water outages during the storm . There were no fatalities among Marshall Islands citizens , although the typhoon killed a sailor traveling around the world . When Gay struck Guam , it became the sixth typhoon of the year to affect the island . Most of the weaker structures had been destroyed during Typhoon Omar earlier in the year , resulting in little additional damage from Gay . Because of its substantial weakening , the typhoon had a disrupted inner @-@ core and produced minimal rainfall . However , strong winds scorched the plants on Guam with saltwater , causing extensive defoliation . Further north , high waves from the typhoon destroyed a house on Saipan , and heavy rainfall in Okinawa , Japan , caused flooding and power outages .

= = Meteorological history = =

The origins of Typhoon Gay were from a tropical disturbance east of the International Date Line along a monsoon trough that extended west to the South China Sea in mid @-@ November 1992 . The same trough had earlier spawned Tropical Storm Forrest and would later create Typhoon Hunt . The tropical disturbance moved westward across the dateline and gradually became better organized with increased convection . On November 14 , the Joint Typhoon Warning Center (JTWC) issued a Tropical Cyclone Formation Alert . At 1800 UTC that day , the agency initiated advisories on Tropical Depression 31W , located to the east of the Marshall Islands . The Japan Meteorological Agency (JMA) also assessed that the depression had developed by that time . The next day , the depression intensified into Tropical Storm Gay .

For most of Typhoon Gay 's existence , a strong anticyclone to its north steered the storm to the west or west @-@ northwest . The JTWC upgraded the storm to typhoon status early on November 17 , and the JMA followed suit the next day . Gay first affected Mejit Island and eventually crossed the central portion of the Marshall Islands . Owing to favorable sea surface temperatures and upper @-@ level wind patterns , the storm entered a phase of rapid deepening similar to other November typhoons near that location . On November 19 , the JTWC upgraded Gay to a super typhoon , which is a typhoon with 1 @-@ minute sustained winds of 240 km / h (150 mph) . Gradual intensification ensued , and based on satellite estimates , the JTWC estimated that Typhoon Gay attained peak winds of 295 km / h (185 mph) at 0000 UTC on November 21 . The agency also estimated that the typhoon reached a minimum barometric pressure of 872 mb (25 @.@ 8 inHg) , which would have made Gay the most intense typhoon since Typhoon Tip in 1979 . At the same time , the JMA estimated peak 10 @-@ minute sustained winds of 205 km / h (125 mph) , with a pressure of 900 mbar (27 inHg) .

After Gay attained its peak intensity , outflow from Typhoon Hunt to its northwest increased the wind shear over the typhoon . The wind shear deteriorated Gay 's northern eyewall , causing the typhoon to weaken . In the 24 hours after Gay reached its peak intensity , the JTWC estimated that the winds had decreased by 65 km / h (40 mph) to below super typhoon status ; such rapid weakening is uncommon for a storm over open waters . Tropical cyclone forecast models had

anticipated Gay to make a turn to the north and northeast , but it maintained a west @-@ northwest track toward Guam . Despite weakening steadily , the typhoon maintained a large size with a wind diameter of 1 @,@ 480 km (920 mi) . Around 0000 UTC on November 23 , Gay made landfall on Guam , becoming the third typhoon in three months to strike the island ? the others were Typhoon Omar in August and Typhoon Brian in October . Both the JTWC and the JMA estimated the typhoon to have had winds of 160 km / h (100 mph) at landfall . The influence from Typhoon Hunt diminished after Gay affected Guam , allowing it to begin restrengthening . Late on November 25 , the JTWC estimated that the typhoon attained a secondary peak intensity of 215 km / h (135 mph) . Gay subsequently slowed while moving along the western periphery of the subtropical ridge , and it turned north while gradually weakening . On November 28 , the JMA downgraded Gay to a tropical storm , and the JTWC followed suit the next day . The JMA assessed that Gay became an extratropical cyclone at 0000 UTC on November 30 ; however , the JTWC continued issuing advisories until December 1 , making it the longest @-@ lasting typhoon of the season with 63 advisories . The remnant of Gay accelerated and turned to the northeast , passing to the southeast of Japan and crossing the International Date Line .

= = Preparations and impact = =

= = = Marshall Islands = = =

Typhoon Gay first affected the Marshall Islands , striking several atolls in the archipelago with typhoon @-@ force winds . On Mejit Island , the first island to be affected , the typhoon destroyed every wooden structure and left most of the islanders homeless . High winds downed all of the island 's trees and destroyed 75 % of the crops . Nearby , Ailuk Atoll experienced similar winds , though house damage was minor despite similar crop losses . The large wind field extended to the south , affecting Maloelap and Aur atolls with winds that damaged 30 % of the houses and crops . Further south , the Marshall Islands capital city of Majuro experienced lightning strikes from the typhoon , which caused an island @-@ wide power outage and cuts to the water supply and radio communication . Debris from the storm closed the Marshall Islands International Airport for two days . On Ujae Atoll , the typhoon destroyed an automated meteorological observing station that had been installed in 1989 . The typhoon left over 5 @,@ 000 people homeless across the country , but there were no native deaths and only one injury in the archipelago owing to well @-@ executed warnings and preparations . However , large waves from the typhoon sank a boat in a small lagoon , killing one of the boat 's two sailors .

= = = Guam and Northern Marianas = = =

After affecting the Marshall Islands , Gay tracked toward Guam and became the fifth typhoon to come within 110 km (68 mi) of the island in six months . Extensive preparations were made , including the sending of ships to mitigate damage and flying United States Air Force planes to other bases in the region . The schools , government buildings , airport , and port were closed , and about 4 @,@ 300 people evacuated to storm shelters . Further north , 1 @,@ 639 people evacuated to storm shelters on Saipan , which set the record for the most storm evacuees at the time .

Despite weakening greatly from its peak intensity , Gay struck Guam with sustained winds of 160 km / h (100 mph) , with gusts to 195 km / h (120 mph) on Nimitz Hill . The winds were strong enough to disrupt power and water utilities , as well as destroy a few houses . As a result of its weakening , Gay had a disrupted inner @-@ core with little precipitation , which prompted the JTWC to label it as a " dry typhoon " ; rainfall totals on the island ranged from only 40 ? 90 mm (1 @.@ 5 ? 3 @.@ 5 in) . Despite the extreme winds , little wind @-@ thrown trees or snapped branches were observed . The combination of the winds and light rainfall , however , sprayed saltwater over the island 's vegetation , leading to near island @-@ wide loss of leaves . Majority of the local dicots withered and lost their leaves within two days after the storm , while other plants such as palms ,

cycads and gymnosperms retained their foliage but turned brown . The defoliation led to significant losses for crop farmers ; in some locations , the crops did not recover for four years . Along the east coast of Guam , Gay produced a storm surge of 1 @. @ 2 ? 1 @. @ 8 m (4 ? 6 ft) . The surge reached 3 @. @ 4 m (11 ft) on Cabras Island in northern Guam , washing sand and water onto coastal roads and breaking a boat from its moorings . The JTWC estimated that damage would have been worse had Typhoon Omar not destroyed the weaker structures three months earlier ; little additional damage occurred to the island 's capital of Hagåtña . The typhoon destroyed four iron roofs on Tinian Island , located north of Guam . On Saipan to its north , the storm surge destroyed one house and threatened the foundation of several others ; twelve families required rescue by emergency workers . The storm caused power outages , and one house sustained fire damage due to candles and kerosene lamps .

= = = Japan = = =

While Gay was becoming extratropical , Okinawa Prefecture experienced heavy rainfall . The highest total was 322 mm (12 @. @ 7 in) , and one station recorded 27 mm (1 @. @ 1 in) in a ten @- @ minute period . The rains flooded four buildings and inundated crop fields . Rough winds with gusts peaking at 82 km / h (51 mph) caused isolated power outages and the cancellation of two airline flights .

= = Aftermath = =

Marshall Islands president Amata Kabua declared nine islands as disaster areas . United States president George H. W. Bush also declared the Marshall Islands a disaster area on December 16 . Despite being an independent nation , the Marshall Islands were eligible to the same funding from the Federal Emergency Management Agency as a U.S. state or territory . The United States provided a loan of \$ 508 @, @ 245 (1994 USD) for emergency assistance and to train locals to mitigate future events . After the storm , workers near Majuro planted seeds to regrow the damaged crops .

The rapid succession of typhoons in 1992 caused a significant drop in tourism in Guam . During typhoons Omar and Gay , there was little communication between residents on the island . As a result , the Guam Communications Network was created to facilitate future relief efforts during storms .

A research paper published ten years after the storm suggested that Gay could have been stronger than Typhoon Tip , which attained the lowest barometric pressure ever recorded . While at its peak intensity , Gay registered a rating of 8 @. @ 0 for nine consecutive hours using the Dvorak technique , indicating sustained wind speeds of at least (315 km / h) 195 mph . In addition , the cyclone had a significantly colder band of clouds around the eye . Typhoon Angela in 1995 presented similar features and could have been stronger than Gay . Neither of the two had direct observations into their eyes , however , making it impossible to confirm such intensity .