

= Typhoon Lupit (2003) =

Typhoon Lupit , known in the Philippines as Typhoon Yoyoy , destroyed the food supply in several small islands in Yap State in the Federated States of Micronesia (FSM) . It formed on November 18 , 2003 , from the monsoon trough to the west of the Marshall Islands . Early in its duration , it moved generally to the west or west @-@ southwest . On November 21 , the depression intensified into Tropical Storm Lupit , the 21st storm named by the Japan Meteorological Agency of the 2003 Pacific typhoon season . Two days later , it strengthened into a typhoon and developed an eye . Lupit later began a prolonged movement to the northwest , during which it passed near several islands in Yap State . The typhoon reached peak intensity on November 26 , with peak 10 ? minute sustained winds of 185 km / h (115 mph) . It later weakened due to increasing wind shear and drier air , and after recurving to the northeast , Lupit became extratropical south of Japan on December 2 .

Typhoon Lupit first affected Pohnpei with tropical storm @-@ force winds , and later it damaged or destroyed about 200 homes in Chuuk State . There , high waves flooded roads and homes , while high winds damaged crops . Damage was heaviest in Yap State , mostly in the small Ulithi atoll and Fais Island . On both islands , the typhoon contaminated the water supply and wrecked crops . Rainfall reached 263 mm (10 @.@ 35 in) on Ulithi , and gusts reached 158 km / h (98 mph) . Throughout the FSM , damage totaled about \$ 1 @.@ 7 million , although there were no deaths . The damage prompted the FSM government to declare two states as disaster areas , as well as a disaster declaration from the United States federal government . While Lupit was becoming extratropical , it became the first typhoon in December to threaten Japan in 13 years . There , the storm dropped rainfall that resulted in mudslides and flight cancellations .

= = Meteorological history = =

The origins of Typhoon Lupit were from a disturbance that persisted in the monsoon trough on November 14 to the northeast of Kwajalein Atoll . There was a weak circulation with pulsating convection (thunderstorms) and weak outflow . The system drifted to the southwest without much organization . On November 17 , the circulation intensified , although convection was initially unable to persist . The next day , outflow increased to the northeast , and the thunderstorms developed over the center . At around 1200 UTC on November 18 , the Japan Meteorological Agency (JMA) classified the system as a tropical depression to the west of the Marshall Islands . Due to low wind shear , the Joint Typhoon Warning Center (JTWC) issued a tropical cyclone formation alert , indicating that tropical cyclogenesis was likely . Late on November 19 , the JTWC issued its first advisory on Tropical Depression 26W when the system was about 465 km (290 mi) east @-@ northeast of Pohnpei .

With a ridge located to the north , the depression tracked to the west @-@ southwest upon forming . Late on November 20 , the JTWC upgraded the depression to a tropical storm following an increase in deep convection , although the thunderstorms were located south of the center . After it turned more to the west , the JMA upgraded the depression to Tropical Storm Lupit to the northwest of Pohnpei on November 21 . Outflow gradually increased , and an eye feature was evident by November 22 . Around that time , Lupit passed about 165 km (105 mi) north of Chuuk . Based on the development of a 30 km (18 mi) eye , the JTWC upgraded Lupit to a typhoon that day , and the JMA followed suit on November 23 when the storm was near the Caroline Islands . While the typhoon was intensifying , it briefly turned to the west @-@ southwest on November 23 , before a strengthening ridge to the southeast turned Lupit to the northwest . The eye gradually became better @-@ defined as the typhoon strengthened , and it passed well to the south of Guam . On November 25 , Lupit passed about 315 km (195 mi) north of Yap in the Federated States of Micronesia (FSM) . The next day , the JTWC upgraded the system to a super typhoon , or a storm with maximum 1 ? minute sustained winds of 240 km / h (150 mph) . On November 26 , the JMA estimated that Lupit attained peak 10 ? minute winds of 185 km / h (115 mph) in the Philippine Sea , and the next day the JTWC estimated peak 1 ? minute winds of 270 km / h (165 mph) . On November 27 , the Philippine Atmospheric , Geophysical and Astronomical Services Administration classified the

system as Super Typhoon " Yoyoy " after the storm entered the agency 's area of warning responsibility .

While around peak intensity , Typhoon Lupit had good outflow channels to the north and south . It had a 26 km (14 mi) eye , and gale @-@ force winds reached a diameter of more than 740 km (460 mi) . After peaking in intensity , Lupit underwent an eyewall replacement cycle , which caused the outflow to decrease and convection around the eye to diminish . Steady weakening began on November 28 , accelerated by increasing wind shear , and late that day it weakened below super typhoon status . Lupit entered a weakness in the subtropical ridge , resulting in a turn to the north and later northeast into an area of cooler waters and drier air . The typhoon accelerated into the westerlies , and dry air entered the circulation while the convection rapidly diminished . While moving northeast off the southeast coast of Japan , Lupit weakened into a tropical storm on December 1 . That day , the JTWC issued its last advisory on the storm , and the JMA declared Lupit as an extratropical cyclone on December 2 . The next day , Lupit dissipated off the east coast of Japan .

= = Impact = =

While it was first intensifying as a tropical storm , Lupit affected Pohnpei , passing about 120 km (75 mi) north of Oroluk . Wind gusts peaked at 69 km / h (43 mph) , and the storm dropped 160 mm (6 @.@ 28 in) of rainfall . Later , the storm affected Chuuk Atoll in the FSM on November 23 . Tropical storm force winds were experienced through the state , and rainfall reached 162 mm (6 @.@ 37 in) on Chuuk and 195 mm (7 @.@ 68 in) on Ulul . The Chuuk state government helped people in low @-@ lying areas to evacuate . High waves flooded homes , and damaged roads and seawalls . About 200 houses were damaged or destroyed , and many homes affected by the typhoon had unsanitary conditions , a contaminated water supply , or lack of food . High winds downed banana and palm trees , and salt water damaged or wrecked all of the food crops in Chuuk .

Most of Yap State was affected by the typhoon , and the eye of Typhoon Lupit passed near the small atoll of Ulithi . The typhoon also passed near Fais , producing estimated gusts of over 185 km / h (115 mph) . On both islands , Lupit produced waves of 4 @.@ 2 to 5 @.@ 5 m (14 to 18 ft) , causing severe beach erosion , and sea spray and flooding contaminated water supplies . In Fais , there was little flooding because it is an elevated island , although several buildings were damaged , mostly to roofs . On Ulithi , areas along the coast were flooded up to 1 @.@ 5 m (5 ft) deep . Crops were wrecked on both islands , and on Ulithi , it was estimated that the soil would be unfit for growing for at least a year . Stations on Ulithi reported wind gusts of 158 km / h (98 mph) , and 263 mm (10 @.@ 35 in) of rainfall . Lupit affected other islands in Yap State with coastal flooding of around 1 m (3 ft) , severe beach erosion , and wrecked crops . Several islands ' water supply were contaminated . On Woleai , the storm downed trees and power lines , and the runway was closed for a week after being covered with water . Damage in Yap State was least on Yap , where winds gusted to 93 km / h (58 mph) and rainfall totaled 128 mm (5 @.@ 02 in) in a 24 ? hour period . There , Lupit downed trees and damaged crops , while high seas flooded areas . There was moderate beach erosion , and some seawalls and coastal roads were damaged .

Throughout the FSM , Typhoon Lupit caused about \$ 1 @.@ 7 million in damage , although there were no deaths or serious injuries . After the storm , the governor of the FSM declared Chuuk and Yap states as disaster areas . The government sent water to affected areas via a private airline , although damaged runways prevented 60 % of flights from being delivered . A government boat was also used to deliver supplies , but its motor was damaged . After it was repaired , the boat delivered 25 @,@ 312 litres of water and 730 bags of rice . On December 19 , United States President George W. Bush declared Yap State as a federal disaster area , which allocated funds for repairing damaged public buildings and debris removal . FEMA also provided emergency food assistance to nine islands in Yap , including Ulithi and Fais . The United Nations Office for the Coordination of Humanitarian Affairs provided \$ 10 @,@ 000 for purchasing supplies to the most affected areas . As part of Operation Christmas Drop , Japanese and American Air Force units sent four planes to

various islands with various supplies and gifts , including to areas affected by the typhoon .

While Lupit was becoming extratropical , it produced a gust of 133 km / h (83 mph) on the Japanese island of Chichi @-@ jima , and 130 km / h (81 mph) on Hachij? @-@ jima . The storm dropped heavy rainfall across Japan , peaking at 283 mm (11 @.@ 1 in) in ?shima Subprefecture . In the Izu Islands , the high rains caused mudslides and flooding that affected eight buildings . Winds reached 83 km / h (51 mph) in Miyake @-@ jima . In Yakushima , five flights were canceled due to the typhoon . Lupit was the first typhoon in 13 years to threaten Japan in the month of December .