Typhoon Chanchu

Typhoon Chanchu , known in the Philippines as Typhoon Caloy , was the most intense typhoon in the South China Sea in the month of May according to the Hong Kong Observatory (HKO) . The first named storm of the 2006 Pacific typhoon season , Chanchu formed on May 8 in the vicinity of the Federated States of Micronesia and progressed westward . It gradually intensified into a tropical storm and later severe tropical storm before moving through the Philippines . On May 13 , Chanchu entered the South China Sea and became a typhoon , according to the Japan Meteorological Agency (JMA) . Warm waters and favorable outflow allowed the storm to quickly intensify to peak maximum sustained winds of 175 km / h (110 mph) on May 15 . Around that time , the typhoon turned sharply to the north toward southeastern China . Chanchu weakened as it curved to the northeast , making landfall near Shantou , Guangdong on May 17 as a severe tropical storm . The government of China considered Chanchu the earliest typhoon to make landfall in the province . On the next day , the storm emerged into the East China Sea , becoming extratropical on May 19 before dissipating west of Kyushu .

Early in its duration , Chanchu moved through the Philippines , causing power outages and landslides in several islands . Despite a general warning against small boats sailing , a ferry departed Masbate and capsized due to the storm , killing 28 people . Throughout the country , 41 people died , and damage reached ? 117 @.@ 57 million (PHP , $ 2 @.@ 15 million USD) . While in the South China Sea , Chanchu caught many Vietnamese fisherman off guard , causing 17 ships to sink and damaging several others . Chinese ships assisted in the search @-@ and @-@ rescue mission , ultimately rescuing 330 fishermen from 22 boats ; however , 21 bodies were found , and the remaining 220 missing were presumed killed . In southern China , flooding and strong winds from Chanchu wrecked about 14 @,@ 000 houses and damaged over 190 @,@ 000 ha (470 @,@ 000 acres) of crop fields . Damage was heaviest in Shantou where it moved ashore , with flooding covering roads and entering hundreds of homes . Damage in China totaled ¥ 7 billion yuan (RMB , $ 872 million USD) , and there were 23 deaths . Rains from the typhoon killed two people in Taiwan after sweeping them up in a river , and crop damage there reached NT $ 158 @.@ 88 million (NTD , $ 5 million USD) . Later , high waves killed one person in Okinawa and left another person missing , while rains extended into South Korea .

Meteorological history

An area of convection , or thunderstorms , persisted on May 5 southeast of Yap State in the Federated States of Micronesia (FSM) . Initially it remained disorganized while tracking to the west , although a circulation became more distinct on May 7 , indicative of gradual organization . At 06 : 00 UTC on May 8 , the Japan Meteorological Agency (JMA) declared that a tropical depression had developed about 175 km (110 mi) northeast of Palau . Five hours later , the Joint Typhoon Warning Center (JTWC) issued a tropical cyclone formation alert , and at 18 : 00 UTC they classified the system as Tropical Depression 02W . The system moved to the west @-@ southwest , influenced by the subtropical ridge to the north . Early on May 9 , the JTWC upgraded the depression to tropical storm status , and at 12 : 00 UTC the JMA followed suit by upgrading the system to Tropical Storm Chanchu . Also on that day , the Philippine Atmospheric , Geophysical and Astronomical Services Administration (PAGASA) began issuing warnings on the storm as Tropical Storm Caloy .

In its formative stages , Chanchu was located in an environment generally favorable for intensification . Its tracked shifted more to the west @-@ northwest due to a building ridge to the south . Late on May 10 , the JTWC upgraded Chanchu to typhoon status , estimating 1 minute sustained winds of 140 km / h (85 mph) . By contrast , the JMA estimated it intensified only into a severe tropical storm with winds of 95 km / h (60 mph) . Turning more to the west , Chanchu made landfall on Samar in the eastern Philippines on May 11 . Despite moving through the archipelago , Chanchu intensified slightly within the Sibuyan Sea , striking Mindoro on May 12 with 1 minute winds of 160 km / h (100 mph) , according to the JTWC . On May 13 , Chanchu emerged into the South

China Sea , and later that day the JMA upgraded it to typhoon status .

Upon reaching the South China Sea , Chanchu encountered an area of warm sea surface temperatures and low wind shear . After an upper @-@ level low to the east provided favorable outflow to the south and the east , Chanchu rapidly intensified on May 14 . While the storm was active , the JTWC upgraded Chanchu to a super typhoon with peak 1 minute winds of 250 km / h (155 mph) , although the agency later downgraded the peak winds to 230 km / h (145 mph) . By contrast , the JMA estimated peak 10 minute winds of 175 km / h (110 mph) at 00 : 00 UTC on May 15 . According to the Hong Kong Observatory , the 10 minute winds reached 185 km / h (115 mph) , which made Chanchu the strongest typhoon in the South China Sea in the month of May .

By the time Chanchu attained peak winds , an eastward @-@ moving trough over China broke up the ridge to the north , causing the typhoon to turn sharply to the north into a less favorable environment . With decreased outflow and stronger wind shear , Chanchu began slowly weakening . The eye initially remained small , but the outer eyewall deteriorated on May 16 as the convection decreased in the northern periphery . The trough that previously weakened the ridge steered Chanchu to the north @-@ northeast and forced an extratropical transition . Late on May 17 , the JMA downgraded the typhoon to a severe tropical storm . Around that time , Chanchu made landfall near Shantou , Guangdong in southeastern China , about 315 km (195 mi) east of Hong Kong ; the JTWC estimated landfall winds of 130 km / h (85 mph) , while the JMA estimated them at 110 km / h (70 km / h) . Early on May 18 , the JTWC discontinued advisories , although the JMA continued tracking Chanchu over southeastern China through eastern Fujian province . Later on May 18 , the storm emerged into the East China Sea , becoming fully extratropical at 00 : 00 UTC on May 19 . The remnants continued toward Japan before dissipating at 18 : 00 UTC that day off the west coast of Kyushu in southern Japan .

= = Preparations = =

Officials in southern Leyte recommended that residents evacuate to prevent a repeat of a deadly landslide in February 2006 . Officials canceled several flights and ferry lines , stranding 10 @,@ 000 people . In all , 2 @,@ 144 people evacuated in the Philippines . PAGASA issued a storm signal number 2 for several provinces along Chanchu 's path , as well as storm signal number 1 for other areas , largely forecasting for rainfall and gusty winds .

Vietnamese fishermen in the South China Sea received 24 hours of warning from the National Hydrometerological Forecast Center before Chanchu approached the area , less time than other agencies in the region . At one point , Chanchu was forecast to become a strong typhoon and make landfall near Hong Kong . In response to the threat , officials at the Hong Kong Observatory , as well as in Macau , issued a standby signal to inform the public of the approaching typhoon . The HKO issued a warning signal number 3 on May 17 . In the territory , 60 flights were canceled with another 14 delayed , beaches were closed , and ferry service was disrupted . Ahead of the storm , about 1 million people evacuated from coastal Guangdong and Fujian provinces to government warehouses , schools , tents , or the houses of relatives . In the former province , 62 @,@ 000 fishermen were ordered to return to port , while four flights were canceled at Guangzhou Baiyun International Airport . Residents were advised to remain indoors , and workers reinforced billboards in anticipation of the strong winds . Rail and boat transport was stopped between Guangdong and Hainan across the Qiongzhou Strait due to the typhoon . Schools were closed in Guangdong during the storm 's passage , although they remained open in Fujian . In Shanghai , the speed limit of Donghai Bridge was halved because of strong winds .

Ahead of the storm , the Central Weather Bureau in Taiwan issued land and sea warnings . The Tainan city government and three county governments closed for one day . All domestic flights to offshore islands were canceled , and rail service was interrupted . Later , airlines canceled 12 flights in Japan due to the storm .

= = Impact = =

= = = The Philippines and Malaysia = = =

While moving through the Philippines , Chanchu affected several islands with strong winds and heavy rainfall . In Legazpi , Albay , strong waves wrecked 100 homes and left 1 @,@ 500 people homeless . High winds left widespread power outages , particularly in Mindoro , Batangas , and across the Bicol Region . The storm severely damaged the banana industry and affected various other fruit crops . Near Metro Manila , the winds damaged billboards , knocked over trees , and caused isolated power outages . Rough seas sank a ferry off Masbate , despite a warning against the operation of small craft , having left at sunrise to avoid the police . The Coast Guard rescued 18 passengers , but 28 people died in the wreck . An empty ferry sank at port in Tabaco . A ferry with 700 people aboard went missing , but the Coast Guard found it washed ashore with everyone safe on board . Similarly , an oil tanker washed ashore at Pinamalayan , Oriental Mindoro , and its crew of 13 was rescued . Throughout the country , Chanchu killed 41 people , mostly from the Masabate ferry wreck . The storm damaged 5 @,@ 630 homes , and destroyed 1 @,@ 013 others , forcing 53 @,@ 307 people to leave their homes . Agricultural losses totaled ? 71 @.@ 57 million (PHP , $ 1 @.@ 3 million USD) , chiefly to the corn harvest , with an additional ? 46 million (PHP , $ 850 @,@ 000 USD) in infrastructure damage .
While stalled over the South China Sea , Chanchu 's large circulation caused an increase in rainfall over Malaysia . The typhoon brought the onset of the summer monsoon in the South China Sea after shifting the prevailing winds over the region .

= = = Vietnam = = =

While moving slowly through the South China Sea , Chanchu produced strong waves that struck the east coast of Vietnam . The associated flooding washed away many shrimp from coastal ponds and also entered Thu B?n River , thus preventing its use as a source for irrigation for about 1 @,@ 000 ha (2 @,@ 500 acres) of rice paddy fields . Due to its unexpected change in course and ferocity , Chanchu caught dozens of ships off guard and damaged communications , sinking 17 ships and damaging several others . Initially , there were 400 fishermen missing , although there was conflicting information with regard to the number of ships and people affected , particularly with ships near Hainan or Taiwan . Following a request from the Vietnamese government , the Chinese government deployed rescue ships on May 19 , a day after the storm made its final landfall . Offshore Qu?ng Ngãi Province , 94 fishermen sought refuge on a Chinese island , and 22 boats were found in the Dongsha Islands offshore China . One Chinese ship rescued 97 fishermen , but also found 18 people killed . Chinese ships ultimately rescued 330 fishermen from 22 boats and provided them with food and water ; this was the country 's largest oceanic rescue at the time . Two Vietnamese boats departed from Qu?ng Ngãi to assist crews on damaged boats attempting to return to port . Medical teams greeted the ships returning to harbor , while an altar was set up for the deceased . After two weeks , the government of Vietnam ended the search , with 21 bodies found , and the remaining 220 missing fishermen presumed killed .

= = = China = = =

Typhoon Chanchu was the earliest on record to strike Guangdong at the time , having struck the country 44 days earlier than the average date for the first strike . Rainfall in the country spread across Guangdong , Fujian , Jiangxi , and Zhejiang , and Chanchu became the earliest typhoon to affect Shanghai in 80 years . Rainfall totaled over 250 mm (9 @.@ 8 in) in southeastern Guangdong and southwestern Fujian . In the former province , wind gusts peaked at 170 km / h (106 mph) in Huilai .
Upon striking China , Chanchu produced deadly flooding and landslides along its path , with flooding spreading as far northeast as Zhejiang province . One landslide in Fujian killed eight people and wrecked two houses . In Guangdong and Fujian , Chanchu wrecked 14 @,@ 000 houses and

damaged over 190 @,@ 000 hectares (470 @,@ 000 acres) of crop fields . Damage was particularly heavy in Shantou , Guangdong , where Chanchu moved ashore . There were about 200 flooded houses , and many roads covered , after rivers flooded from the heavy rainfall . The storm also caused power outages in Shantou , and damage there totaled ￥ 2 @.@ 56 billion yuan (RMB , $ 320 million USD) . In nearby Xiamen , the typhoon forced 43 factories to temporarily close , resulting in a loss of ￥ 62 @.@ 2 million yuan (RMB , $ 7 @.@ 8 million USD) . The storm killed eight people in Guangdong , five of them due to traffic accidents , and a further 15 in Fujian . Overall damage was estimated at ￥ 7 billion yuan (RMB , $ 872 million USD) , roughly evenly split between Guangdong and Fujian . This was less than expected given the winds at landfall .

 While passing east of Hong Kong , the outer rainbands of Chanchu dropped 43 @.@ 5 mm (1 @.@ 71 in) of rainfall at Sha Tin . Sustained winds in the territory reached 96 km / h (60 mph) , while gusts reached 146 km / h (91 mph) , both recorded at Tate 's Cairn . Chanchu produced a storm surge of 0 @.@ 77 m (2 @.@ 5 ft) , causing minor flooding , sinking a yacht , and injuring one person who was swept into the sea . The storm downed several trees and damaged some scaffolding . Six people were injured in the territory , including three on a jetfoil bound for Macau .

 = = = Taiwan , Japan , and South Korea = = =

 High waves in Taiwan washed an oil tanker ashore in Kaohsiung City ; all 13 crew members were rescued with helicopters . In Kaohsiung County , the typhoon wrecked several dikes in coastal cities . Chanchu also produced heavy rainfall on the island , causing flooding and landslides , the latter of which covered a highway . Swollen rivers swept away three farmers in Hualien County , who were later rescued , and killed two sisters in Pingtung County underneath the Sandimen Bridge . Crop damage totaled NT $ 158 @.@ 88 million (NTD , $ 5 million USD) .

 In Nishihara , Okinawa , high waves caused by Chanchu swept away three bathers . The Japan Coast Guard rescued one , another was killed , and the third remained missing as of May 23 . The remnants of Chanchu produced 121 mm (4 @.@ 8 in) of rainfall in Gifu Prefecture in combination with a nearby cold front , causing one landslide . A fallen tree in Nagasaki Prefecture caused a small power outage , and nearby there was a damaged home .

 The trough that engulfed Chanchu drew moisture from the typhoon , leading to heavy rainfall in portions of South Korea that reached 144 mm (5 @.@ 7 in) on Jeju Island . Along with strong winds , the rains caused ferry and flight cancelations .

 = = Aftermath = =

 In the days after Chanchu moved through the Philippines , then @-@ President Gloria Macapagal @-@ Arroyo ordered that the country 's National Disaster Coordinating Council help all towns affected by the storm . The agency helped coordinate search and rescue missions . Several areas were declared a state of calamity , mostly on Mindoro , Samar , and Batangas . The Tzu Chi Foundation visited islands in eastern Samar , providing money to the families whose houses were destroyed . Towns in the region also assisted by supplying thatch to rebuild homes . In Oriental Mindoro , the Philippine Red Cross provided food and relief items to families in Calapan . The Adventist Development and Relief Agency also provided building materials for 200 families in Mindoro . Ultimately , the government provided storm victims with ? 415 @.@ 1 million (PHP , $ 7 @.@ 6 million USD) worth of relief supplies . Rainfall from the storm caused a red tide in Taal Lake , after dispersing a Ceratium bloom .

 Immediate after Chanchu 's China landfall , officials began distributing tents , quilts , water purification tablets , and disinfectant . The government of Fujian set up a ￥ 8 @.@ 5 million yuan (RMB , $ 1 @.@ 06 million) relief fund . In the months after Chanchu , China suffered from several other damaging tropical cyclones , including Tropical Storm Bilis and Typhoon Saomai . Damage from Chanchu forced the China National Offshore Oil Corporation to shut down for a time , which contributed to an annual decrease in its oil output . The Chinese government recognized 50 people who assisted in the South China Sea search and rescue mission , and two vessels were declared "

hero ships " .

 Vietnamese president Tr?n ??c L??ng expressed his thanks to the Chinese government on May 22 for rescuing the Vietnamese on the imperiled ships . Residents and industries in Vietnam raised ? 360 million (VND , $ 36 @,@ 000 USD) for the families of the deceased fishermen , as well as providing 1 ton of rice . Trade unions encouraged workers to donate one day 's salary to help storm victims . The Vietnamese embassy in India raised about $ 1 @,@ 000 (USD) and Vietnamese people living in Greece raised ? 26 million (VND , ? 1 @,@ 300 Euros) for storm victims . Ultimately , 43 different organizations and people donated $ 29 @,@ 000 (USD) to the Vietnam Red Cross . The country 's Ministry of Labour , Invalids and Social Affairs presented an award to the Vietnam News Agency in June 2006 for its charitable donations , which included the distribution of ? 112 million (VND , $ 11 @,@ 200 USD) to storm victims . One fisherman claimed to survive for two weeks in the open seas before being rescued , although he later confessed that he was safely on another boat , and wanted his family to retain the disaster compensation ; after the man revealed that he had lied , his family was able to retain the relief funds due to their poverty . The head of the Vietnam Institute of Meteorology , Hydrology and Environment resigned two weeks after Chanchu killed many fishermen because of inadequate warnings . Then @-@ Deputy Prime Minister Nguyen Tan Dung ordered a review of the meteorological agency as a result . Within a few years after the typhoon , the meteorological agency began issuing more accurate and timely forecasts . After the many deaths of fishermen from Chanchu , the Vietnam government prevented any fishermen from leaving harbor during the passage of Typhoon Durian in November .

 After the season ended , members of the 39th meeting of the Typhoon Committee of the World Meteorological Organization met in Manila in December 2006 . They discussed retiring the name " Chanchu " , along with four other names from the season . During the 40th meeting in November 2007 , the Typhoon Committee approved the retirement , announcing that the name " Sanba " would replace Chanchu on the basin name lists beginning in 2008 .