

= Typhoon Matsa =

Typhoon Matsa , known in the Philippines as Typhoon Gorio , was the second of eight Pacific tropical cyclones to make landfall on China during the 2005 Pacific typhoon season . The ninth tropical storm and fifth typhoon of the season , Matsa developed on July 30 to the east of the Philippines . Matsa intensified as it tracked northwestward , and attained peak 10 @-@ minute sustained winds of 150 km / h ( 90 mph ) near Taiwan before weakening and striking the Chinese province of Zhejiang on August 5 . The system continued northward into the Yellow Sea , and on August 7 Matsa became extratropical after again moving ashore along the Liaodong Peninsula . Matsa is a Laotian name for a lady fish .

In Taiwan , Matsa dropped torrential rainfall of up to 1 @,@ 270 mm ( 50 in ) , which caused mudslides and moderate damage across the island . Flooding from the rainfall contaminated some water supplies , leaving around 80 @,@ 000 homes without water at one point ; much of Taoyuan County ( now Taoyuan City ) was without water for at least 5 days . As in Taiwan , the typhoon dropped heavy precipitation in the People 's Republic of China , and in combination with strong winds destroyed about 59 @,@ 000 houses and damaged more than 20 @,@ 000 km2 ( 7 @,@ 700 sq mi ) of croplands . Throughout the country , Matsa caused 25 direct fatalities and ? 18 billion ( 2005 CNY , \$ 2 @.@ 23 billion 2005 USD ) in damage .

= Meteorological history =

The origin of Typhoon Matsa is traced to the formation of an area of convection about 185 km ( 115 mi ) east of Yap in late July . The convection gradually consolidated over a weak low @-@ level circulation , and at 0300 UTC on July 30 the system was first mentioned in the Joint Typhoon Warning Center ( JTWC ) Significant Tropical Weather Outlook . Located within an area of moderate wind shear , the system continued to slowly organize , and by 1200 UTC on July 30 it was sufficiently organized for the Japan Meteorological Agency ( JMA ) to classify it as a weak tropical depression while located about 65 km ( 40 mi ) east of Yap . Shortly thereafter , the JTWC followed suit by issuing a tropical cyclone formation alert . The depression tracked steadily westward , followed by a turn to the northwest on July 31 under the influence of a mid @-@ level ridge to its east . It continued to organize , and at 1200 UTC on July 31 it intensified into Tropical Storm Matsa ; the depression was unofficially classified a tropical storm six hours earlier by the JTWC . Additionally , the Philippine Atmospheric , Geophysical and Astronomical Services Administration ( PAGASA ) named the system Tropical Storm Gorio , due to its location within the administration 's area of responsibility .

Tropical Storm Matsa gradually intensified as it tracked steadily northwestward ; by late on August 1 it strengthened into a severe tropical storm . Outflow and deep convection to the north remained limited , though the storm was able to intensify further to attain typhoon status on August 2 about 780 km ( 480 mi ) south of Okinawa . Intensification slowed , and late on August 3 Matsa reached a peak intensity of 150 km / h ( 90 mph ) while located 495 km ( 308 mi ) east of the southern tip of Taiwan as reported by the JMA ; the JTWC and the National Meteorological Center of China reported the typhoon as strengthening further to attain peak winds of 165 km / h ( 105 mph ) on August 4 . Shortly after passing over the Japanese island of Ishigaki , Matsa began to weaken steadily as it approached the coast of China , and made landfall as a minimal typhoon late on August 5 near Yuhuan in the southern region of Zhejiang Province . It crossed the Gulf of Yueqing and 40 minutes after its first landfall it struck Mainland China near Yueqing . It quickly weakened to a tropical storm , and within hours of moving ashore the JTWC issued its last advisory . Matsa turned to the north , weakening to a tropical depression on August 7 shortly before entering the Yellow Sea . The weakening depression continued northward , and became an extratropical cyclone on August 9 after hitting the Liaodong Peninsula .

= Preparations =

The Taiwan Central Weather Bureau warned for the potential for heavy amounts of rainfall across the island . This resulted in officials to close schools and offices in Taipei . Additionally , the typhoon caused the cancellation or delay of several flights in and out of Taipei , though complete air service was restored by the day after Matsa 's passage . The Taiwan Stock Exchange closed due to the threat of the typhoon .

Prior to the arrival of the typhoon , officials in China ordered the evacuation of about 2 @. @ 3 million people , mostly in Zhejiang . The typhoon also resulted in the cancellation or delay of thousands of flights , with the two main airports in Shanghai closed for 30 hours . Officials near Matsa 's projected landfall were advised to lower the levels in reservoirs to mitigate the threat of flooding . In Zhejiang , officials set up shelters for about 35 @, @ 000 boats to prevent marine damage . Due to the potential for rough seas , officials closed the port at Ningbo and Shanghai and also canceled some ferry service . Matsa was predicted to be first typhoon to affect Beijing in 11 years by dropping heavy amounts of rainfall . Local officials advised water operators to lower water levels to prevent flooding . Up to 100 mm ( 4 in ) of rainfall was forecast for the city , and officials prepared to evacuate 40 @, @ 000 residents in the outskirts of the city .

= = Impact = =

= = = Taiwan = = =

While passing to the north of Taiwan , Matsa produced strong winds reaching 144 km / h ( 89 mph ) , with gusts of up to 188 km / h ( 117 mph ) . The storm dropped heavy rainfall across the island , with precipitation totals reaching up to 1270 mm ( 50 in ) in a 30 ? hour period ; one station located in Taitung County recorded 843 mm ( 33 @. @ 2 in ) in one day , which was the highest daily rainfall total in association with the storm . The rainfall led to flooding and mudslides throughout the island . In response to the flooding , residents placed sandbags around houses and office buildings to prevent flood damage . The mudslides blocked roads across the mountainous region , leaving hundreds stranded , and in combination with flooding the mudslides washed away several bridges and damaged some roadways . Strong winds left 56 @, @ 211 houses without power , most of which were quickly repaired . Typhoon Matsa caused moderate crop damage across the island , which was still recovering from the damage caused by Typhoon Haitang a month before . More than 80 @, @ 000 homes were left without water due to the passage of the typhoon . Subsequent flooding left more than 630 @, @ 000 homes without water or receiving water at infrequent intervals . About 368 ha ( 909 acres ) of crop fields were destroyed , and crop damage from Matsa totaled NT \$ 47 million ( 2005 TWD , \$ 1 @. @ 5 million 2005 USD ) . According to the Taiwan Council of Agriculture , the banana and pear crops were the worst affected .

= = = China = = =

Upon making landfall in China , several coastal locations reported winds in excess of 120 km / h ( 75 mph ) , with wind gusts peaking at 175 km / h ( 110 mph ) . Further inland , winds reached 147 km / h ( 91 mph ) at Shanghai , the highest wind gust on record in the city . The storm produced heavy amounts of rainfall , reaching a maximum of 701 mm ( 27 @. @ 6 in ) at a station in Yongjia County . Extreme amounts of precipitation fell in short durations , including 91 mm ( 3 @. @ 6 in ) in just 1 hour and 200 mm ( 7 @. @ 6 in ) in 3 hours at Dinghai District . Just days after a previous heavy rainfall event , the rainfall from Matsa caused record @- @ breaking river flooding along eight Chinese rivers , including a station at a floodgate on Suzhou Creek which peaked at 4 @. @ 55 m ( 14 @. @ 93 feet ) .

In Zhejiang , where Matsa made landfall , high storm tides occurred along the coastline . In some areas , water levels rose quickly , with some coastal homes experiencing flooding from the tide . Rough seas off of Ningbo capsized a fishing boat , leaving its three occupants missing . About two @- @ thirds of the province reported more than 50 mm ( 2 in ) of rainfall , resulting in flooding in low

@-@ lying areas as well as several mudslides , one of which killed two people . The combined effects of the winds and rains destroyed 21 reservoirs and more than 200 km ( 120 mi ) of embankment , and damaged several water stations . Matsa damaged 3 @, @ 380 km<sup>2</sup> ( 1 @, @ 310 sq mi ) of crops , with around 224 km<sup>2</sup> ( 86 sq mi ) of cropland destroyed from the flooding . About 13 @, @ 000 houses were destroyed in the province . Throughout Zhejiang , Matsa caused \$ 8 @. @ 9 billion ( 2005 CNY , \$ 1 @. @ 1 billion 2005 USD ) in damage and five direct fatalities .

Heavy rainfall in Shanghai flooded 84 city streets ; in some locations insufficient water drainage left homes and apartments flooded , with a total of 20 @, @ 000 houses reporting flooding . The flooding also closed the city subway system for a few hours . Strong winds downed 2 @, @ 700 trees and 400 power lines in the city . The typhoon damaged a construction site in the city , leaving three injured and one person killed . Throughout the city an estimated 15 @, @ 000 houses were destroyed . Additionally , four people were electrocuted as a result of the flooding . In Shanghai alone , damage totaled \$ 1 @. @ 33 billion ( 2005 CNY , \$ 164 @. @ 5 million 2005 USD ) ; seven people died in the city .

Despite the anticipated effects , Beijing experienced only light rainfall . Throughout China , over 31 million people were affected in over eight provinces . Typhoon Matsa left the agricultural industry severely impacted , with over 20 @, @ 000 km<sup>2</sup> ( 7 @, @ 700 sq mi ) damaged . The combination of its winds and flooding damaged around 200 @, @ 000 buildings , including a total of 59 @, @ 000 destroyed houses . Damage in the country totaled about \$ 18 billion ( 2005 CNY , \$ 2 @. @ 23 billion 2005 USD ) .

= = = Okinawa and South Korea = = =

Typhoon Matsa affected the southernmost Okinawa Prefecture , and produced peak wind gusts of 182 km / h ( 51 m / s ; 113 mph ) on Ishigaki . The storm dropped moderate to heavy rainfall across the region , peaking at 318 mm ( 12 @. @ 5 in ) on Miyako @-@ jima .

The remnants of Matsa also affected South Korea , with moderate amounts of rainfall reaching 229 mm ( 9 @. @ 0 in ) in Masan .

= = Aftermath = =

Subsequent to the passage of the typhoon in Taiwan , large quantities of mud and impurities entered and polluted the Shihmen Reservoir in Taoyuan County ( now Taoyuan City ) , the county 's primary source of water . Severe cloudiness occurred in the water , and at one time the reservoir recorded 25 @, @ 000 nephelometric turbidity units . Such facilities are unable to operate with mud in the water , and in response , the Taiwan Water Corporation established temporary water stations to alleviate the situation , and the Pingting Water Treatment Plant worked to treat the problem . Furthermore , officials drilled wells to accommodate the shortage . Water supply in the southern portion of Taoyuan County was restored by five days after the storm , with supply restored to the northern portion of the county by ten days after the passage of the typhoon . The same problem had occurred previously after Typhoon Mindulle in July 2004 . As a result of the crop damage , the Taiwan Council of Agriculture opened its reserve of frozen vegetables to prevent overharvesting of the existing crops . Despite the measures , crop prices reached record levels , which led to groups calling out for the government to stabilize the price of foods . In reaction , a member of the Council of Agriculture remarked that " vegetable prices [ were ] expected to go back to normal gradually ... as supplies increase [ d ] . " The passage of the typhoon left hundreds of residents in Hsinchu County isolated from the outside world for four days . As a result , officials deployed helicopters with rescue supplies and returned with the injured . Aid from one internal organization totaled \$ NT300,000 ( 2005 TWD , \$ 9 @, @ 500 2005 USD ) . Shortly after the effects of the typhoon ended on the island , work began to repair and rebuild the impacted bridges and roads . Electricians quickly began restoring power across northern Taiwan ; by the day after the typhoon 's passage , the number of houses without power decreased by 90 % .

In the People 's Republic of China , members of the People 's Liberation Army assisted in search

and rescue operations . Officials called for about 100 @,@ 000 citizens in Shanghai for work in disaster control and distribution of relief aid , with some providing relief supplies to flooded areas by inflatable rafts . Within a month , Typhoons Talim and Khanun also affected the same area , further compounding the effects of Matsa . During the 38th Session of the World Meteorological Organization in Hanoi , Vietnam , the name Matsa was retired ; during the next session , the name Pakhar was nominated as its replacement .