

= Typhoon Etau (2003) =

Typhoon Etau , known in the Philippines as Typhoon Kabayan , produced near @-@ record winds and rainfall in Japan in August 2003 . The tenth named storm and fifth typhoon of the 2003 Pacific typhoon season , Etau developed on August 2 , and gradually intensified while moving to the northwest . Etau formed an eye and became a large storm by the time it approached Okinawa on August 7 . The typhoon attained peak winds of 155 km / h (100 mph) before weakening slightly while turning to the northeast . Etau made landfall on the Japanese island of Shikoku on August 8 , and later moved across portions of Honshu and Hokkaido . After weakening to tropical storm status , the cyclone became extratropical on August 9 and dissipated three days later .

While passing northeast of the Philippines , the typhoon caused light damage in the archipelago . The eye crossed over Okinawa , where Etau left 166 @,@ 800 people without power and caused 10 injuries . Near where Etau first struck Japan , Muroto reported a peak wind gust of 166 km / h (103 mph) , at the time the third strongest on record there . The typhoon also dropped torrential rainfall peaking at 683 mm (26 @.@ 9 in) . The combination of winds and rainfall caused landslides , particularly on Hokkaido . Nationwide , Etau killed 20 people , destroyed 708 houses , and caused ¥ 35 @.@ 1 billion (JPY , \$ 294 @.@ 8 million USD) in damage .

= = Meteorological history = =

The origins of Typhoon Etau were from an area of convection that persisted along the west side of a weak circulation near Chuuk State on July 31 . With initially moderate but steadily decreasing wind shear , the system was able to organize as it moved generally westward . On August 2 , the Joint Typhoon Warning Center (JTWC) initiated advisories on Tropical Depression 11W . That day , another circulation was developing on the western side of the system , briefly classified by the Taiwan Central Weather Bureau as a tropical depression . The eastern circulation became dominant with pronounced outflow to the south , although it was initially broad and elongated . Later on August 2 , the Japan Meteorological Agency (JMA) classified the system as a tropical depression to the northeast of Yap .

With a subtropical ridge in the vicinity of the Marianas Islands , the nascent depression moved to the northwest . On August 3 , the JMA upgraded the depression to tropical storm status , naming it Etau . An upper @-@ level low to the northeast improved northerly outflow , allowing the storm to strengthen quickly . On August 4 the Philippine Atmospheric , Geophysical and Astronomical Services Administration (PAGASA) began issuing advisories as the storm approached the region , naming it Kabayan . Late on August 4 , the JMA upgraded Etau to typhoon status , with the storm later developing an eye . An approaching shortwave trough weakened the ridge , causing Etau to turn more to the north . At around 0030 UTC on August 7 , the typhoon made its closest approach to Okinawa , passing within 120 km (75 mi) , and close enough for the 100 km (60 mi) wide eye to cross over the island . Later that day , the JMA estimated peak maximum sustained winds of 155 km / h (100 mph) , sustained over a duration of 10 minutes ; the JTWC estimated 1 minute winds of 205 km / h (125 mph) .

After reaching peak winds , Etau began turning to the north @-@ northeast due to the approaching trough , passing near Amami ?shima . By that time , the typhoon had become large , with gale force winds extending 870 km (540 mi) in diameter . Increasing wind shear and cooler air caused Etau to weaken . The typhoon still maintained 10 minute winds of 140 km / h (85 mph) when it made landfall near Muroto on the Japanese island of Shikoku , shortly before 1300 UTC on August 8 . Continuing northeastward , the typhoon weakened into a severe tropical storm as it passed near Awaji Island , before making landfall on Honshu near Nishinomiya at 2100 UTC on August 8 . While accelerating to the northeast , Etau lost tropical characteristics over land . After briefly reaching open waters to the northeast of Honshu , the storm made its final landfall near Erimo , Hokkaido at 1630 UTC on August 9 , shortly before becoming extratropical . This was based on analysis from the JMA , whereas the JTWC assessed the storm remaining offshore Hokkaido . The remnants of Etau entered the Sea of Okhotsk and persisted for several more days , dissipating on August 12 to the

west of the Kamchatka Peninsula .

= = Preparations and impact = =

Rough waves from Typhoon Etau produced rip currents on Saipan that swept up four swimmers , who were later rescued after holding onto a buoy . The outer periphery of the storm caused P36.98 million (PHP , \$ 673 @, @ 000 USD) in damage , mostly to infrastructure with some minor crop damage . Late in its duration , Etau caused damage in Russia 's Kuril Islands .

While Etau was in the vicinity of Okinawa , wind gusts at Kadena Air Base reached 181 km / h (113 mph) . Rainfall on Okinawa peaked at 215 mm (8 @. @ 5 in) , while on nearby Yakushima to the north , rainfall reached 57 mm (2 @. @ 2 in) . Throughout Okinawa prefecture , the typhoon left 166 @, @ 800 buildings without power due to the strong winds . Etau damaged seven buildings , blocked one road , and caused moderate damage to crops and fisheries . In the Amami Islands , about 45 @, @ 000 houses , lost power due to high winds from the storm , affecting 53 % of residents . Etau injured ten people in the island group , including one man who was blown off his roof . Officials closed the Naha Airport due to the typhoon , causing 293 flights in the region to be canceled . Ahead of the storm , ExxonMobil oil refineries in Okinawa were closed , but were reopened after sustaining minimal damage .

On Shikoku , Muroto reported typhoon @-@ force winds for eight hours , and wind gusts peaked at 166 km / h (103 mph) . At the time , this was the third strongest gust ever reported there , behind Typhoon Nancy in 1961 and Typhoon Shirley in 1965 . Sustained winds there reached 180 km / h (112 mph) . In Tokushima Prefecture , Etau dropped heavy rainfall peaking at 683 mm (26 @. @ 9 in) , although similarly heavy totals of 639 mm (25 @. @ 2 in) and 543 mm (21 @. @ 4 in) were reported in K?chi and Miyazaki prefectures , respectively . About 95 % of the rainfall total in K?chi fell in 24 hours . In Miyazaki , a station reported an hourly rainfall total of 79 mm (3 @. @ 1 in) . Rainfall at Biratori , Hokkaido reached 306 @. @ 2 mm (12 @. @ 06 in) in a 48 ? hour period , the highest at the station since records began in 1962 . The heavy rainfall caused landslides across Hokkaido , particularly in areas where rainfall totaled over 330 mm (13 in) . In the area around the Saru River , shallow landslides displaced about 13 @, @ 000 @, @ 000 m³ (460 @, @ 000 @, @ 000 cu ft) of soil , of which about 190 @, @ 000 m³ (6 @, @ 700 @, @ 000 cu ft) entered the river . This caused the highest sediment levels in the river since the 1960s , washing about 50 @, @ 000 m³ (1 @, @ 800 @, @ 000 cu ft) into the Nibutani Dam . Landslides also swept about 65 @, @ 000 m³ (2 @, @ 300 @, @ 000 cu ft) of soil and trees into the Appetsu River , which caused additional damage by washing away adjacent homes and bridges . In addition the rainfall , Etau spawned a weak tornado near Kumagaya on the Honshu mainland , rated around an F1 . The typhoon brought a plume of warm air to the country that caused the warmest temperatures of the year at that point .

The heavy rainfall in Tokushima caused landslides and blocked roads , resulting in disruptions to bus and train service . Strong winds overturned a truck , injuring the two occupants . In Muroto , several people were injured by flying glass . Rough waves killed two people in the same city , one in Fukuoka , damaged the seawall in Kyoto , and damaged 25 ships . In Takamatsu , Kagawa , Etau left about ¥ 1 @. @ 2 billion (JPY , \$ 10 million USD) in crop damage , mainly due to damaged greenhouses . Two workers were killed in Higashiura after being swept away by a river . On Hokkaido , heavy rainfall caused landslides , damaging hundreds of roads and bridges and isolating several villages . River flooding swept away a vehicle in Kamishihoro , killing the five occupants . Along Mount Poroshiri , 29 people were rescued by helicopter from a mountain lodge after Etau blocked off their descending trail .

Throughout Japan , Etau caused over 1 @, @ 000 flights to be canceled , and for bullet trains to operate at a slower speed , causing delays . About 62 @, @ 000 people lost power during the storm , and across the country . The typhoon destroyed 708 houses and flooded 2 @, @ 253 others , causing over 6 @, @ 000 people to evacuate to storm shelters . About 295 ha (730 acres) of fields were damaged . Throughout Japan , Etau killed 20 people and injured 93 others , 19 of them seriously . Overall damage totaled ¥ 35 @. @ 1 billion (JPY , \$ 294 @. @ 8 million USD) . Largely because Etau remained tropical and weakened over Japan , damage was much less than Typhoon

Tokage a year later , which produced comparable rainfall totals at a similar intensity but struck the country while extratropical .