= Typhoon Abe (1990) =

Typhoon Abe , known as Typhoon Heling in the Philippines , was the fourteenth named storm of 1990 Pacific typhoon season . Forming on August 23 from a tropical disturbance , the depression which would eventually develop into Typhoon Abe initially tracked in a steady west @-@ northwestward direction . As a result of an intense monsoon surge , Abe 's trajectory briefly changed to an eastward then northward path before returning to its original track . Abe only intensified by a small amount between 00 : 00 UTC August 24 and 06 : 00 UTC August 27 due to the disruptive effects of the surge , and on August 30 , Abe peaked in intensity as a Category 2 @-@ equivalent typhoon on the Saffir ? Simpson hurricane wind scale . After peaking in intensity , Abe crossed the Ryukyu Islands and the East China Sea , making landfall in China where it affected the provinces of Zhejiang and Jiangsu before entering the Yellow Sea , crossing South Korea , and finally transitioning into an extratropical cyclone .

Typhoon Abe killed 108 ? 195 people after it caused flooding and landslides in the Philippines and Taiwan , ravaged coastal areas of China , and brought high waves to Japan . Abe , which is responsible for killing 108 in China , affected half of Zhejiang 's land area and a fourth of its population , leaving thousands homeless and causing ¥ 3 @.@ 5 billion yuan (RMB , $ 741 @.@ 5 ? 743 million USD) to be lost in damages . Additional damage and one fatality occurred in Okinawa Prefecture in Japan , where at least ¥ 890 million yen (JPY , $ 6 million USD) in damage was caused .

= = Meteorological history = =

The tropical disturbance which would eventually intensify to become Typhoon Abe was first noted by the Joint Typhoon Warning Center (JTWC) in a Significant Tropical Weather Advisory as an area of persistent atmospheric convection on August 23 at 01 : 00 UTC . Located near the end of what the JTWC considered to be " an active monsoon trough " , the initial minimum sea @-@ level pressure was estimated to be approximately 1 @,@ 007 millibars (1 @,@ 007 hPa ; 29 @.@ 74 inHg) . Following this mention , the disturbance tracked in a mostly west @-@ northwestward direction , traveling beneath a subtropical ridge , with a Tropical Cyclone Formation Alert being issued at 06 : 00 UTC based on the improving state of the low .

Following an increase in the storm 's central convection , the JTWC determined at 00 : 00 UTC August 24 that it had intensified into a tropical storm which it assigned the designation 15W , and the Japan Meteorological Agency (JMA) began to monitor the system six hours later . The JMA upgraded the system to a tropical storm on its scale at 00 : 00 UTC August 25 , and by the time twelve hours had passed , a strong surge in the monsoon westerlies had started to develop to the south of the storm 's convective area , slowing its westward movement . After enhanced convection associated with the surge on the east side of Abe 's main convective cloud mass wrapped around the north , the storm 's center of circulation reorganized to the north between the competing convective masses . At 06 : 00 UTC August 27 , the JMA upgraded Abe to a severe tropical storm with winds of 95 km / h (60 mph) , and as a ragged eye developed in the storm , the JTWC upgraded Abe to typhoon status six hours later . Late on August 28 , the JMA upgraded Abe to a typhoon on its scale , with ten @-@ minute sustained winds of 120 km / h (75 mph) .

Following the monsoon surge , Abe returned to its original west @-@ northwestward track , further intensifying to become a Category 2 @-@ equivalent typhoon at 12 : 00 UTC on August 29 . A weakness appeared in the subtropical ridge in association with a short @-@ wave trough , and Typhoon Abe recurved through this weakness , taking it along the coast of China . Prior to making landfall , Abe attained a minimum atmospheric pressure of 955 millibars (hPa ; 28 @.@ 20 inHg) on August 29 at 18 : 00 UTC as determined by the JMA . It was found by the JTWC that Abe 's one @-@ minute sustained winds peaked at 165 km / h (105 mph) at 00 : 00 UTC August 30 , and the JMA determined that its ten @-@ minute sustained winds peaked at 140 km / h (85 mph) at 18 : 00 UTC on August 29 . As a direct result of this interaction with land , Abe weakened to a tropical storm at 12 : 00 UTC on August 31 , entering the Yellow Sea and crossing South Korea in the 30 hours

that followed . It was determined at 18 : 00 UTC on September 1 that the storm had transitioned into an extratropical cyclone . The JTWC ceased tracking the system at 06 : 00 UTC September 2 , and the JMA followed suit 36 hours later .

= = Impacts = =

In the Philippines where Abe was known by the PAGASA name " Heling " , as a result of flooding and landslides caused by Abe , about 150 homes were washed away along Dalton Pass , leaving 1 @,@ 500 people without homes and an additional 85 people dead . Rainfall @-@ induced landslides ravaged areas previously damaged by an earthquake a month earlier , with landslide @-@ caused fatalities totaling 32 in the Philippine provinces of Benguet , Nueva Ecija , and Nueva Vizcaya , Significant flooding in Luzon resulted in the deaths of 12 people in Manila , and Philippine Airlines responded by suspending domestic air services . In response to flooding caused by Typhoon Abe and Typhoon Becky in the Philippines , President of the Philippines Corazon Aquino issued a proclamation declaring the existence of a state of public calamity for affected areas of the country .

Parts of Okinawa Prefecture in Japan experienced high winds and heavy rainfall as Typhoon Abe passed nearby . Precipitation totals as high as 306 mm (12 @.@ 0 in) and winds of 115 km / h (72 mph) were recorded in Ohara , and total forestry losses for Ishigaki totaled ¥ 500 @,@ 000 yen (JPY , $ 3 @,@ 000 USD) . Some parts of Ishigaki experienced a suspension of their water supply , and about 800 households experienced power failures . Hundreds of millions of yen in agricultural losses , especially to sugar cane , occurred due to the typhoon , totaling ¥ 878 @.@ 53 million yen (JPY , $ 6 @.@ 0882 million USD) , and losses in the water industry totaled an additional ¥ 12 @.@ 02 million yen (JPY , $ 8 @,@ 330 USD) . The area also experienced airline flight cancellations , leaving thousands stranded while the storm passed . One person was drawn out to sea after winds of up to 110 km / h (70 mph) and high waves affected the coast .

In Taiwan , one person was killed and six others were injured as Typhoon Abe traveled across the East China Sea . Approximately 70 @,@ 000 households had their supply of electricity cut off , and floods and landslides occurred as a result of heavy rainfall .

Early on August 31 , Typhoon Abe made landfall over Zhejiang Province in China approximately 250 ? 270 km (160 ? 170 mi) south of Shanghai . In Zhejiang , where Abe was reportedly " the worst typhoon to hit the province in 34 years " , casualties of the storm numbered in the hundreds , with 65 people rendered dead , 839 wounded , and an additional 45 reported missing . Significant flooding affected vast swaths of farmland and stranded about 660 @,@ 000 people . Approximately a quarter of the province 's population , about ten million people , was affected by the storm , which left 41 @,@ 000 people without their homes and brought about the collapse of 21 @,@ 800 houses . Additionally , about 1 @,@ 000 ships at sea were destroyed , and the combined direct economic losses which resulted from Abe were about ¥ 3 @.@ 5 billion yuan (RMB , 741 @.@ 5 ? 743 million USD) . The adjacent province of Jiangsu also experienced significant impacts ; 23 people died and hundreds of others were injured as a result of the storm . Houses suffered serious impacts , with 80 @,@ 000 destroyed and 120 @,@ 000 damaged . Over 1 @.@ 34 million hectares of fields were flooded . Three people were killed and 46 were injured in Shanghai , and a suburban area experienced a tornado . Altogether , an estimated 108 people were killed in China .

Abe brought heavy rain and gale @-@ force winds to South Korea prior to transitioning to an extratropical cyclone near the east coast of the peninsula .