

= Typhoon Rusa =

Typhoon Rusa was the most powerful typhoon to strike South Korea in 43 years . It was the 21st JTWC tropical depression , the 15th named storm , and the 10th typhoon of the 2002 Pacific typhoon season . It developed on August 22 from the monsoon trough in the northwestern Pacific Ocean , well to the southeast of Japan . For several days , Rusa moved to the northwest , eventually intensifying into a powerful typhoon . On August 26 , the storm moved across the Amami Islands of Japan , where Rusa left 20 @, @ 000 people without power and caused two fatalities . Across Japan , the typhoon dropped torrential rainfall peaking at 902 mm ( 35 @. @ 5 in ) in Tokushima Prefecture .

After weakening slightly , Rusa made landfall on Goheung , South Korea with winds of 140 km / h ( 85 mph 10 minute sustained ) . It was able to maintain much of its intensity due to warm air and instability from a nearby cold front . Rusa weakened while moving through the country , dropping heavy rainfall that peaked at 897 @. @ 5 mm ( 35 @. @ 33 in ) in Gangneung . A 24 @- @ hour total of 880 mm ( 35 in ) in the city broke the record for the highest daily precipitation in the country ; however , the heaviest rainfall was localized . Over 17 @, @ 000 houses were damaged , and large areas of crop fields were flooded . In South Korea , Rusa killed at least 233 people , making it the deadliest typhoon there in over 43 years , and caused \$ 4 @. @ 2 billion in damage . The typhoon also dropped heavy rainfall in neighboring North Korea , leaving 26 @, @ 000 people homeless and killing three . Rusa also destroyed large areas of crops in the country already affected by ongoing famine conditions . The typhoon later became extratropical over eastern Russia on September 1 , dissipating three days later .

= = Meteorological history = =

The monsoon trough spawned a tropical depression on August 22 north of Bikini Atoll and southwest of Wake Island . It moved to the west @- @ northwest , a movement it would maintain for much of its duration . Early on August 23 , it intensified into Tropical Storm Rusa , about 1 @, @ 800 km ( 1 @, @ 100 mi ) east of Guam . At 1800 UTC on August 25 , the Japan Meteorological Agency ( JMA ) upgraded Rusa to a typhoon while the system was northeast of the Northern Marianas Islands . The next day , the agency estimated that the typhoon attained peak winds of 150 km / h ( 90 mph 10 minute sustained ) . Around the same time , the Joint Typhoon Warning Center ( JTWC ) estimated peak winds of 215 km / h ( 135 mph 1 minute sustained ) .

While at peak intensity , Rusa struck the Japanese island of Amami ?shima . After maintaining the peak winds for about 12 hours , Rusa weakened slightly as it continued to the west @- @ northwest , but on August 28 the JMA again reported the typhoon attained winds of 150 km / h ( 90 mph 10 minute sustained ) . Despite forecasts that it would weaken , Rusa maintained its intensity while passing south of Japan , due to minimal wind shear and warm sea surface temperatures of up to 29 ° C ( 84 ° F ) . The typhoon again weakened slightly on August 29 while passing between the Amami Islands and Japan . Thereafter , Rusa turned to the north toward the Korean Peninsula . Warm , moist air blew across the peninsula ahead of the storm , which prevented significant weakening , and an approaching cold front contributed to atmospheric instability . At around 0800 UTC on August 31 , Rusa made landfall on Goheung , South Korea , with winds of 140 km / h ( 85 mph 10 minute sustained ) . According to the JTWC , Rusa was the most powerful typhoon to hit the country since 1959 . The typhoon rapidly weakened while crossing the country , deteriorating into a tropical depression early on September 1 . Around that time , the JTWC issued its last advisory on the system . The depression turned to the northeast , and after moving through the Sea of Japan , Rusa became extratropical over Primorsky Krai in the Russian Far East late on September 1 . The extratropical remnants continued northeast and dissipated on September 4 over the Kamchatka Peninsula .

= = Preparations and impact = =

Although damage was heaviest in South Korea , Typhoon Rusa first affected Japan . The threat from the storm prompted the Okinawa government to cancel a disaster drill for the island . On the island , high seas from Rusa left two United States marines missing ; a later news report included the two missing as storm @-@ related fatalities . In the Anami Islands , Rusa destroyed six houses , forcing 38 people to evacuate . The storm left 20 @,@ 000 people without power and cancelled several flights . Winds reached 104 km / h ( 65 mph ) in Nomozaki , Nagasaki . Rains fell for seven days in the country , peaking at 902 mm ( 35 @.@ 5 in ) in Tokushima Prefecture . The heaviest of the precipitation fell in Nara Prefecture , where a station reported 84 mm ( 3 @.@ 3 in ) in one hour . At least 275 houses were flooded , and 137 houses were damaged . During its passage , Rusa injured 12 people , 4 seriously . The typhoon also produced light rain and high seas along the coast of Taiwan .

Before Rusa affected South Korea , the Korea Meteorological Administration ( KMA ) issued high sea warnings on August 29 . Airports were closed in the southern portion of the country , and dams let out water to prevent excessive flooding . Typhoon Rusa affected much of South Korea with heavy rainfall and high winds . Jeju Island off the country 's southern coast reported 660 mm ( 26 in ) of rainfall , producing flash flooding that flooded cars . On the island , high winds downed trees and left 60 @,@ 000 people without power . All lower and middle schools on the island were closed , and residents were stranded after officials halted ferry and airline service . On the South Korean mainland , winds reached as high as 180 km / h ( 110 mph ) . High amounts of rainfall were reported on Jeju Province and along the country 's southern coast , although the heaviest rainfall was only reported in a small region . In Gangneung , located in the eastern portion of the country , severe thunderstorms developed due to high instability resulting from humid air from the east interacting with the Taebaek Mountains , producing high amounts of precipitation . The city reported the highest rainfall total in the country with 897 @.@ 5 mm ( 35 @.@ 33 in ) , of which 880 mm ( 35 in ) was observed in one day . The total represented 62 % of Gangneung 's average yearly rainfall , and became the highest daily rainfall in the country 's history , exceeding the previous record set in 1981 by 300 mm ( 12 in ) . In the South Korea interior , rainfall rates were considered a 1 in 200 year event .

Damage in South Korea was estimated at \$ 4 @.@ 2 billion ( ? 5 @.@ 15 trillion KRW ) . Damage was heaviest in Gangneung , where about 36 @,@ 000 homes and 622 military buildings were flooded . At the airbase in Gangneung , floods submerged 16 jet fighters . Along the coast , high winds damaged 640 boats and about 200 @,@ 000 marine buildings , and 265 industrial buildings were also damaged . The heavy rainfall left mudslides in the country , one of which covered ten cars in Gangneung . Flooding and the landslides disrupted the country 's infrastructure ; the storm destroyed 274 bridges and damaged roads and rails at 164 locations . Rusa killed 300 @,@ 000 livestock and flooded 85 @,@ 000 hectares ( 210 @,@ 000 acres ) of crop fields , representing 6 % of the country 's agricultural lands , mostly affecting fruit and vegetables . The storm caused the Vana H Cup KBC Augusta golf tournament to end early , and a stadium to be used for the 2002 Asian Games was damaged . Across the country , 88 @,@ 625 people were forced to evacuate due to the typhoon , and 17 @,@ 046 houses were damaged . High winds left 1 @.@ 25 million people after blowing down 24 @,@ 000 power lines . There were 213 deaths in the country , and another 33 were missing and presumed dead ; This made Rusa the deadliest typhoon in the country in more than 43 years .

In neighboring North Korea , Rusa produced winds of 72 km / h ( 45 mph ) and heavy rainfall reaching 700 mm ( 28 in ) in mountainous areas of Kangwon Province ; rainfall totaled 530 mm ( 21 in ) in the county of Kosong . The rains caused flash flooding and increased surface runoff . This occurred about a month after similarly heavy rains caused severe damage in the country . The rains from Rusa damaged and flooded thousands of houses and many public buildings , and destroyed 86 @,@ 000 tonnes of crop fields ; the latter was most significant due to the country 's ongoing famine conditions . Damage was heaviest in Kangwon Province , and the typhoon affected four provinces and one administrative city . More than 26 @,@ 000 people were left homeless in the country , although advance warning allowed for evacuations . Rusa disrupted transportation by destroying 25 km ( 16 mi ) of roads and 24 bridges ; however , most of the damage was isolated to a

small region . There were three deaths in North Korea .

The typhoon also affected the Russian Far East . On Sakhalin island , Rusa 's remnants dropped heavy rainfall , the equivalence of two months average precipitation . The rains flooded 350 houses , but there were no deaths in the region .

= = Aftermath = =

Following the storm , damaged buildings polluted rivers in South Korea with chemicals and heavy metals . The country utilized 30 @, @ 000 soldiers to assist in cleaning up and repairing storm damage . President Kim Dae @-@ jung authorized emergency funding for disaster aid . Much of Gangneung lost power and water ; as a result , relief supplies were sent to the affected citizens . By ten days after Rusa struck the country , power lines were restored and transportation returned to normal . After an appeal to other residents in the country , the South Korea Red Cross chapter received \$ 49 million in donations ( ? 58 billion won ) , mostly from the country 's northwest portion . The agency provided 50 @, @ 680 meals to 16 @, @ 919 families , as well as clothing and cooking supplies . Residents in the country raised about \$ 60 million ( ? 72 @. @ 1 billion won ) in disaster relief , the highest such total for a disaster in the nation . The Chinese Red Cross sent \$ 20 @, @ 000 to the South Korean Red Cross in the weeks after the storm . On September 13 , the South Korean government declared 203 cities and counties as disaster zones , which entitled 8 @, @ 714 families who sustained storm damage to receive government loans . The combined storm damage and floods preceding the storm caused the nation 's economy to contract during the third quarter of 2002 . The 2003 fiscal year reported a \$ 300 million deficit for non @-@ life insurance companies , mostly due to losses from the typhoon . Crop damage from Rusa caused the price of rice to increase to their highest levels since 1980 . In the year after the storm , the South Korean government worked to reconstruct damaged roads and provided monthly assistance payments to families who lost their homes . However , many residents remained homeless and were residing in temporary shelters . The country 's Habitat for Humanity built 69 houses for storm victims in 2003 , although that was only for a small portion of the overall number of people affected . About a year after Rusa hit , Typhoon Maemi also struck South Korea with stronger winds , causing \$ 3 @. @ 74 billion in damage and 117 deaths . The damage total was less than from Rusa but was more significant to industrial areas .

In North Korea , the Red Cross provided relief supplies to residents affected by flooding . The agency 's international disaster relief fund provided FR75,000 ( 2002 CHF ( \$ 50 @, @ 000 USD ) .. Soldiers were used to assist in search and rescue missions and to repair damaged infrastructure . Due to storm damage , the Red Cross in North Korea distributed over 2 @. @ 1 million water purification tablets and over 11 @, @ 000 water containers . The agency also provided 32 @, @ 753 blankets and 4 @, @ 931 kitchen units . After the storm , people left homeless by the storm sought shelter with neighbors or in shelters . A South Korean dairy company donated 42 @, @ 000 cans of baby formula to North Korea .

The name Rusa was retired after its usage in 2002 , and was replaced with Nuri in 2004 .