

= Typhoon Nangka (2015) =

Typhoon Nangka was a large and strong tropical cyclone that impacted central Japan in July 2015 . Nangka started its long @-@ living journey as a tropical disturbance over the Marshall Islands and west of the International Dateline , becoming the eleventh named storm of the annual typhoon season on July 3 . It quickly intensified while moving to the west @-@ northwest , attaining typhoon status on July 6 . Nangka moved through the Northern Marianas Islands , passing directly over the uninhabited island of Alamagan . Shortly thereafter , the typhoon attained peak winds ; the Japan Meteorological Agency (JMA) estimated 10 ? minute sustained winds of 185 km / h (115 mph) , while the unofficial Joint Typhoon Warning Center (JTWC) estimated 1 ? minute winds of 250 km / h (155 mph) , making it a super typhoon . Nangka later weakened as it curved to the north , moving across central Japan on July 16 as a minimal typhoon . The storm weakened soon after , dissipating in the Sea of Japan on July 18 .

The storm first affected the Marshall Islands , bringing strong winds to the capital Majuro . Half of the city lost power , and several boats were sunk . Minimal effects were reported in the Northern Marianas Islands , and later the storm 's flow enhanced the monsoon over the Philippines . Effects were worst in Japan , where rainfall reached 740 mm (29 in) in Kamikitayama , Nara Prefecture . Total damage across the Kansai region reached ¥ 18 billion (US \$ 150 million) . Nangka killed two people in Japan , injured 55 , and damaged or flooded 220 houses .

= = Meteorological history = =

A westerly wind burst spawned Typhoon Chan @-@ hom and Tropical Storm Linfa across the western Pacific Ocean , as well as the system that would become Typhoon Nangka . On July 1 , an area of pulsing convection persisted east of the Marshall Islands , associated with a poorly @-@ defined circulation . Low wind shear , water sea surface temperatures , and good outflow favored further development . The circulation gradually became more defined as the convection organized more . At 18 : 00 UTC on July 2 , the Japan Meteorological Agency (JMA) classified the system as a tropical depression , about 80 km (50 mi) east of Aur Atoll . Based on the increasing organization , the Joint Typhoon Warning Center (JTWC) classified the system as Tropical Depression 11W at 12 : 00 UTC on July 3 . About six hours later , the JMA upgraded the depression to Tropical Storm Nangka .

When Nangka was upgraded to a tropical storm by the JTWC early on July 4 , convective bands were wrapping into the center , but limited by dry air to the west . By that time , the storm was moving to the west @-@ northwest , steered by the subtropical ridge to the north . On July 5 , the JMA upgraded the storm to a severe tropical storm . By that time , the circulation had become exposed due to moderate wind shear , although the outflow had improved . On July 6 after shear diminished , Nangka began to quickly intensify as it developed an eye in the center of the blossoming convection . As a result , the JTWC upgraded the storm to typhoon status at 06 : 00 UTC , followed by the JMA at 12 : 00 UTC . Nangka reached its first peak intensity at 12 : 00 UTC on July 7 , when JMA estimated 10 minute sustained winds 185 km / h (115 mph) . The typhoon was aided by excellent radial outflow enhanced by a TUTT cell to the northwest , and it developed a well @-@ defined eye 48 km (30 mi) in diameter .

After its first peak in intensity , Nangka slightly weakened as convection along the west side of the system was restricted due to the TUTT cell , and the eye became cloud @-@ filled . Decreasing wind shear and increasing sea surface temperatures allowed the intensification trend to resume , and the structure became more symmetric late on July 8 as it moved toward the Northern Marianas Islands . A well @-@ defined inner eye re @-@ developed inside of an outer eyewall . On July 9 , the JTWC upgraded Nangka to a super typhoon , estimating peak 1 minute winds of 250 km / h (155 mph) . The JMA also assessed a 10 minute peak of 185 km / h (115 mph) . At 06 : 00 UTC on July 9 , the eye of Nangka passed over the uninhabited island of Alamagan . The typhoon later weakened while turning more to the west due to increased wind shear . The eye became cloud @-@ filled and was no longer visible by July 11 , although the organization was sustained by good

outflow to the south . However , the convection reorganized the next day and the eye reformed . By that time , Nangka was slowing and nearly stationary as the subtropical ridge receded to the east .

On July 13 , Typhoon Nangka began moving northward toward Japan through a break in the ridge . The typhoon completed an eyewall replacement cycle , and according to the JTWC attained a secondary peak of 195 km / h (120 mph) . The re @-@ intensification was also aided by a decrease in wind shear , but was short @-@ lived due to drier air from the north and west . As the eye became more ragged , the winds continued to decrease . At 14 : 00 UTC on July 16 , Nangka made landfall along the Japanese island of Shikoku near Muroto , K?chi , still at typhoon status . Four hours later , the typhoon weakened into a severe tropical storm , and after crossing the Seto Inland Sea , Nangka made a second landfall on Honshu near Kurashiki , Okayama at 21 : 00 UTC . The convection greatly weakened as it crossed Honshu into the Sea of Japan , and the storm deteriorated further due to lower water temperatures . At 12 : 00 UTC on July 17 , the JMA downgraded Nangka to a tropical depression , and early the next day the JTWC discontinued advisories . On July 18 , Nangka dissipated in the central Sea of Japan .

= = Preparations and impact = =

On Majuro atoll in the Marshall Islands , the developing Nangka produced strong westerly winds near gale force , producing high waves and flooding along the lagoon . At least 25 vessels in the island 's lagoon broke loose from or were dragged by their moorings . High winds from Nangka tore roofs from homes and downed trees and power lines . Nearly half of the nation 's capital , Majuro , was left without power . Tony deBrum , the Marshall Island 's foreign minister , stated " Majuro [is] like a war zone . " Some coastal flooding was also noted , which resulted in crop damage .

Ahead of the storm , the Guam National Weather Service issued a typhoon watch for Agrihan , Pagan , and Alamagan , as well as a high surf advisory for Guam . The watch was later upgraded to a warning , and was canceled after the typhoon exited the region . Flights were delayed or canceled to the region due to the storm and problems with the local aircraft communication system . During the storm , there were minor power outages on Saipan in two villages that were quickly restored . On Alamagan where the storm struck , six people rode out the storm in a concrete bunker .

In the Philippines , the flow from the storm increased the southwest monsoon , causing flash floods and landslides in some areas . The outskirts of the storm later brushed the east coast of South Korea , producing 26 mm (1 @.@ 0 in) in rainfall , and wind gusts of 93 km / h (58 mph) .

= = = Japan = = =

Due to the threat of the storm , nine airlines canceled 214 flights across Japan . Meanwhile , rail service and highways were disrupted , with a portion of the Ch?? Expressway closed , and ferry rides were canceled . The Shikoku Railway Company canceled service during the storm and limited rides along the West Japan Railway Company . About 860 @,@ 000 people were advised or ordered to evacuate their homes , including 88 @,@ 100 people from 15 @,@ 400 homes who were forced to leave . After the storm passed , residents were allowed to return home .

While moving through Japan , Nangka produced peak wind gusts of 153 km / h (95 mph) in Muroto , K?chi . Heavy rains impacted much of central Japan , peaking at 740 mm (29 in) in Kamikitayama , Nara Prefecture . Owase , Mie recorded 357 @.@ 5 mm (14 @.@ 07 in) over 24 hours . The highest hourly rainfall was 84 mm (3 @.@ 3 in) in Saij? , Ehime . Kawauchi , Fukushima recorded 77 @.@ 5 mm (3 @.@ 05 in) over one hour , setting a record for the month of July .

The rains from Nangka caused rivers to exceed their banks . In Tokushima Prefecture , the Naka River flooded to the second story of nearby school buildings . Flooding stranded 1 @,@ 600 passengers on a train for four hours , which had been traveling from Tsuruga , Fukui to Himeji , Hy?go . Across Japan , strong waves and high winds killed over 11 @,@ 000 bluefin tuna on a fish farm in Kushimoto , accounting for ¥ 1 @.@ 29 billion (\$ 10 @.@ 4 million) in losses . About 15 @,@ 000 people lost power across the country . The storm damaged 30 homes and flooded

another 190 , and also damaged farming equipment . There were 55 injuries and two deaths related to the typhoon , including an elderly man who drowned after falling into a ditch . Total damage in the Kansai region reached ¥ 18 billion (US \$ 150 million) , including ¥ 7 @. @ 1 billion (US \$ 58 @. @ 9 million) in Wakayama Prefecture and ¥ 4 @. @ 9 billion (US \$ 40 @. @ 7 million) in Hyogo Prefecture . Total economic losses are estimated to be in excess of ¥ 24 billion (US \$ 200 million) .