

= Cyclone Gretelle =

Tropical Cyclone Gretelle was a deadly storm that struck southeastern Madagascar in January 1997 . The seventh named storm of the 1996 ? 97 South @-@ West Indian Ocean cyclone season , Gretelle developed within the intertropical convergence zone on January 19 , and gradually intensified while moving southwestward . On January 22 , the storm intensified to tropical cyclone status while passing northwest of Réunion ; there , Gretelle produced strong wind gusts and heavy rainfall in mountainous regions . Subsequently , the cyclone strengthened to reach peak 10 ? minute sustained winds of 140 km / h (85 mph) . On January 24 , Gretelle made landfall near Farafangana , the first in the region in 41 years . The cyclone weakened while crossing Madagascar , but restrengthened slightly in the Mozambique Channel . Gretelle meandered off the coast of Mozambique , bringing gusty winds that downed trees , but caused little damage . An approaching trough turned the cyclone to the southeast , and Gretelle dissipated on January 31 to the south @-@ southwest of Madagascar .

Damage from Cyclone Gretelle was heaviest near where it made landfall in Madagascar . In several villages , over 90 % of the buildings were destroyed , leaving about 80 @,@ 000 people homeless . Wind gusts at Farafangan reached 220 km / h (140 mph) , which knocked trees onto roads and wrecked about 138 @,@ 000 tons of crops . Heavy rainfall and high waves flooded coastal regions , in some areas up to 16 m (52 ft) deep . Overall damage was estimated at around \$ 50 million , and there 152 deaths . After the storm , there was a coordinated international relief effort to provide food and money to Madagascar .

= Meteorological history =

The intertropical convergence zone spawned a tropical disturbance on January 19 , developing a circulation just west of St. Brandon . That day , the Météo @-@ France on Réunion (MFR) classified the system as a tropical disturbance , and the Joint Typhoon Warning Center (JTWC) began monitoring the system as a low @-@ pressure area a day prior . The system intensified into Tropical Storm Gretelle late on January 20 , by which time the JTWC gave it the designation Tropical Cyclone 20S . Due to a large ridge centered near Île Amsterdam , the storm tracked generally southwestward toward the Mascarene Islands . Early on January 22 , the JTWC upgraded the storm to the equivalent of a minimal hurricane , and later that day , the MFR upgraded Gretelle to tropical cyclone status , or with 10 ? minute sustained winds of at least 120 km / h (75 mph) .

Shortly after attaining tropical cyclone status , Gretelle made its closest point of approach to Réunion late on January 22 , passing about 300 km (190 mi) northwest of the island . Subsequently , the cyclone developed a small eye , and the MFR estimated peak 10 ? minute winds of 140 km / h (85 mph) at 0000 UTC on January 23 . Meanwhile , the JTWC estimated Gretelle continued to intensify to a 1 ? minute sustained wind peak of 215 km / h (130 mph) at 0600 UTC on January 24 , equivalent to a Category 4 hurricane on the Saffir @-@ Simpson scale . Later that day , the cyclone made landfall on southeastern Madagascar near Farafangana near peak intensity . Reports from the United Nations Department of Humanitarian Affairs considered Gretelle the first cyclone to strike the region in 41 years . Gretelle rapidly weakened over land , emerging into the Mozambique Channel as a tropical depression on January 25 . Continuing to the southwest , the depression re @-@ intensified into a tropical storm on January 27 .

After becoming a tropical storm again , Gretelle slowed in the Mozambique Channel . A cold front bypassed the storm to the south , and a building ridge behind it turned Gretelle to a west @-@ northwest drift . Although it approached southeastern Africa on January 28 , an advancing trough turned the storm to the southeast . The next day , the JTWC briefly re @-@ upgraded Gretelle to the equivalent of a minimal hurricane , and on January 30 , the MFO estimated a secondary 10 ? minute wind peak of 85 km / h (50 mph) . Accelerating to the south @-@ southeast , Gretelle dissipated on January 31 well to the south @-@ southwest of Madagascar .

= Impact =

While passing north of Réunion , Grette dropped heavy rainfall in the eastern and western portions of the island . Over 48 hours , rainfall totaled nearly 1 m (3 @. @ 3 ft) at Commerson Crater , while Mafate recorded over 600 mm (24 in) . Grette produced gusts of about 100 km / h (62 mph) in portions of Réunion . Late in its duration , the cyclone produced heavy rainfall but left minimal damage in Mozambique , estimated at \$ 50 @, @ 000 . Winds of over 55 km / h (34 km / h) knocked over trees and caused power outages in Gaza and Maputo provinces . Officials in South Africa issued rain and wind warnings for the northeast coast .

In Madagascar , Grette produced wind gusts of over 200 km / h (120 mph) at Vangaindrano near where it moved ashore , and over 220 km / h (140 mph) at Farafangana . The storm also dropped heavy rainfall , although peak totals were unknown due to the meteorological station in Farafangana being destroyed . Heavy rainfall and high waves left heavy damage near the coast , washing away several boats and causing rivers to overflow . Floods in some areas reached 16 m (52 ft) deep . Where Grette made landfall , most buildings were damaged or destroyed excluding those made of concrete , leaving about 80 @, @ 000 people homeless . Among the wrecked buildings included a hospital and a prison . About 95 % of homes in Vondrozo were wrecked , and in Farafangana , 90 % of government buildings were destroyed . In both southern Midongy and Vangaindrano , nearly every building was destroyed . Grette damaged or destroyed 1 @, @ 538 homes in Manakara .

Reports from the Red Cross indicated that Grette was the severest in the region " in living memory " , with many people surviving the high tides and winds by " clinging to trees " . The storm also damaged water stations , power lines , and thousands of hectares of crops , including food reserves . The World Food Programme estimated that Grette destroyed 7 @, @ 000 tons of rice , 123 @, @ 500 tons of cassava , and 8 @, @ 000 tons of cash crops , mostly to coffee . About 40 @, @ 000 people were isolated for weeks after the storm in Befotaka and Midongy Sud , with many roads blocked by fallen trees . Overall , about 200 people were killed or left missing in Madagascar , with 152 confirmed fatalities by two weeks after the storm , 82 of whom in Vangaindrano . The International Disaster Database later listed 140 as the total fatalities related to Grette . Damage from the storm was estimated at \$ 50 million .

= = Aftermath = =

After heavy damage from Cyclone Bonita in 1996 , the government of Madagascar initiated a disaster response system that was used during Grette ; there was quick response but efforts were hampered by damaged infrastructure and disrupted transportation . The storm had cut communications in some areas , but by January 29 , or five days after landfall , telephone service was restored to Manakara . Following the storm , the Madagascar government coordinated the distribution of emergency rice rations and other relief items . On January 27 , the government launched a fundraiser on television that raised over ? 130 million (FMG , \$ 30 @, @ 000 USD) . The southern portion of the country was declared a disaster area . A plane of relief supplies flew from the capital Antananarivo to Manakara along the southeast coast , where trucks distributed the items to the affected areas . A radio station based out of the country criticized the slow pace of relief , citing the lack of available boats after many were destroyed . In addition , there were reports that government aid was being stolen by looters .

In the weeks after the storm , the hardest hit residents faced food shortages and lacked access to clean water , in an area already facing ongoing food shortages . In response , the World Food Programme and other agencies of the United Nations created a program to feed about 350 @, @ 000 people in the region over three months , providing about 5 @, @ 900 tons of food . In the months after the storm , roads were repaired , including the link from Vangaindrano to Midongy . Farmers grew additional beans and potatoes to compensate for the damaged crops , while the quick distribution of food prevented significant malnutrition . In the subsequent years , about 40 % of the forest at Manombo that regrew following Grette was of foreign nature , which threatened the original plants in the region .

Due to the scale of the cyclone damage , the government issued an international appeal for

assistance . As a result , the United Nations Department of Humanitarian Affairs provided a grant of \$ 30 @,@ 000 . UNICEF provided about \$ 48 @,@ 000 to secure drug kits for children impacted by the cyclone . The Red Cross of Seychelles donated about one tonne of clothing and 20 tonnes of tuna , and the Red Cross of Réunion sent drugs to Madagascar . The government of France also sent a crew from Réunion to Madagascar to assist in the aftermath , as well as a plane to airdrop the aid . The governments of Germany , Japan , France , the United Kingdom each donated about \$ 100 @,@ 000 to Madagascar , while the United States provided about \$ 25 @,@ 000 and 500 tons of food . The government of Japan also sent 2 @,@ 040 blankets and 10 tents . By February 18 , the total contributions by the international community reached about \$ 3 million .