

= Cyclone Sose =

Tropical Cyclone Sose was a moderate storm system that chiefly impacted the island nation of Vanuatu in early April 2001 . The developing cyclone was first detected on April 3 , while situated well to the northeast of Vanuatu . As atmospheric conditions became more conducive to intensification , the disturbance gradually consolidated as it drifted toward the west @-@ southwest . After receiving the name Sose on April 5 , the cyclone was driven southeastward , passing just west of Espiritu Santo and neighboring islands . Although it never made landfall , Sose was particularly expansive , producing a wide area of gale @-@ force winds . The cyclone peaked in strength between April 7 and 8 with maximum 10 @-@ minute sustained winds of 110 km / h ( 70 mph ) and 1 @-@ minute sustained winds of 130 km / h ( 80 mph ) , placing it at Category 2 intensity on the Australian tropical cyclone intensity scale . Ultimately , stronger wind shear and an increasingly hostile upper @-@ air pattern took their toll on the cyclone as it progressed due south ; Sose lost tropical characteristics to the northeast of Norfolk Island by April 12 . The extratropical remnants of Sose continued into the Tasman Sea .

Occurring just two months after Cyclone Paula affected Vanuatu , Sose compounded the damage already done by the previous storm , especially to crops and farmlands . Throughout the island chain , two people lost their lives to the storm . Roadways were blocked by debris and floodwaters , while schools and classrooms on several islands were damaged or ruined . The storm destroyed about 200 homes around the nation and damaged many more , particularly on southern Espiritu Santo . The storm 's large fetch generated enormous swells as far away as Australia 's Eastern Seaboard , where surfers took advantage of the abnormally intense conditions and two swimmers drowned . On Maré Island in New Caledonia , a man was swept away by a large wave and presumed dead . The storm later produced torrential rainfall and strong winds over the North Island of New Zealand , sparking damaging freshwater floods and downing trees and power lines . Hazardous driving conditions in the Waikato region led to a fatal traffic accident in which three people died . Another individual drowned in a swollen river . Sose reportedly contributed to coastal flooding as far away as Tonga . In all , Sose killed nine people ; total monetary damage is unknown . As a result of the storm 's destruction , its name was later retired .

= = Meteorological history = =

Cyclone Sose originated in a broad area of disturbed weather first identified on April 3 , well to the east @-@ northeast of Vanuatu . The system initially drifted generally toward the west under an improving upper @-@ level wind shear pattern that began to catalyze favorable outflow . Late on October 4 , the Joint Typhoon Warning Center ( JTWC ) issued a Tropical Cyclone Formation Alert on the disturbance , noting strong banding features and a well @-@ defined low @-@ level center of circulation . Tropical Depression 13F formed at 1200 UTC next day as examined by the Fiji Meteorological Service ( FMS ) , the local Regional Specialized Meteorological Center . At the time , the new cyclone was situated about 140 km ( 87 mi ) to the northwest of Espiritu Santo . The JTWC 's official " best track " entry on the storm ? designated 19P ? first lists it as a tropical depression at 1800 UTC on April 4 , though operationally , the agency did not issue its first tropical cyclone warning until late on April 5 . The storm proceeded slowly westward and gradually continued to organize , its intensification hindered by residual wind shear and its proximity to the mountainous terrain of Espiritu Santo . However , convection over the center continued to develop , and consequently the FMS upgraded 13F to Tropical Cyclone Sose at 1800 UTC .

Sose remained nearly stationary for a period of 24 hours , blocked by a strong subtropical ridge to the south . Over the course of April 6 , an approaching mid @-@ level trough of low pressure created a weakness in the ridge , allowing Sose to accelerate southeastward . The storm 's environment steadily improved in both the lower and upper levels , triggering the consolidation of deep convection around the center . As a result , early on April 7 , a central dense overcast formed . According to the FMS , Sose reached its peak strength at 1800 UTC , with maximum 10 @-@ minute sustained winds of 110 km / h ( 70 mph ) and a central barometric pressure of 975 hPa ( 28

@. @ 8 inHg ) . The cyclone passed just to the west of the islands of Vanuatu as its outer bands contracted around the well @-@ defined central dense overcast . A large feeder band persisted on the eastern side of the circulation , bridging the northwestern southeastern quadrants . The feature became a notable aspect of the cyclone 's satellite presentation . The JTWC estimated that 19P reached its peak intensity at 1200 UTC on April 8 , possessing 1 @-@ minute sustained winds of 130 km / h ( 80 mph ) and gusts up to 170 km / h ( 105 mph ) . The Tropical Rainfall Measuring Mission imaged the storm shortly thereafter , and revealed a distinct eye about 44 km ( 27 mi ) across , bounded on the southern semicircle by strong convection activity .

Sose made its closest approach to New Caledonia early on April 8 , passing about 280 km ( 175 mi ) to the northeast . A strong area of high pressure over New Zealand served to tighten to surface pressure gradient well to the south of Sose 's center , contributing to an overall very large envelope of gale @-@ force winds . In turn , the cyclone affected numerous islands on both side of its path , despite never having made landfall . As it progressed on its southeastward track , the cyclone began to show signs of weakening , at least partially due to increasing wind shear from an approaching upper trough . At the same time , a mid @-@ level ridge to the east forced the storm to turn due south ; the conflicting wind patterns undermined the cyclone 's circulation , causing its center at the surface to separate from the deep convection . Both the FMS and the JTWC reflected steady weakening , and by early on April 10 , the center had become exposed and ill @-@ defined . Sose then entered the area of responsibility of the Tropical Cyclone Warning Center in Wellington , New Zealand , where it continued to deteriorate . The JTWC issued its last warning on 19P at 0600 UTC on April 11 , while the system was located about 335 km ( 210 mi ) northeast of Norfolk Island . TCWC Wellington soon downgraded Sose to a tropical depression as it underwent an extratropical transition . Drifting south @-@ southwestward , the cyclone lost its tropical identity early on April 12 . The remnant low ultimately moved over the Tasman Sea , where it was absorbed by a broad low pressure system about to travel over New Zealand 's North Island . Abundant residual tropical moisture acted on the low pressure environment to create widespread precipitation across northern New Zealand .

= = Impact and aftermath = =

Prior to the storm 's passage of New Caledonia , residents there were advised to take basic precautions , such as remaining indoors during bouts of inclement weather . Storm warnings were hoisted over the Loyalty Islands and South Province . Vanuatu 's Department of Meteorology began posting official alerts on April 7 . Warnings for heavy rains and strong winds were posted throughout northern New Zealand in anticipation of the storm 's remnants . With Easter weekend , more motorists were already expected to be traveling longer distances , and officials grew concerned of dangerous effects on traffic from the cyclone . Police increased their presence to unprecedented levels in an attempt to control speeding and other hazardous behaviors .

Due to the storm 's " negative impact on one or more countries " , Sose was retired from the cyclical list of tropical cyclone names ; it was replaced with Sarai .

= = = Vanuatu = = =

Sose predominately affected the western islands of Vanuatu , starting from the north . Most severely impacted were the islands of Espiritu Santo , Malakula , Aoba , Efate , Erromango , Tanna , Aneityum , and the Shepherd Islands . In several locations , Sose compounded or worsened the destruction wrought by Cyclone Paula in late February and early March . The storm produced significant precipitation , heavy seas , and sustained winds exceeding 100 km / h ( 60 mph ) .

A resident of Malakula was struck and killed by a falling coconut while seeking shelter from the worsening conditions . Agriculture on nearby Ahamb Island , already impaired by Paula , was further compromised ; all crops , both those remaining after Paula and those planted in the intervening time , were destroyed . Four classrooms on the small island were also damaged beyond use . Buildings on Aoba incurred appreciable damage , while on Efate , the storm brought down utility poles ,

severely damaged local schools , and left roads covered with debris and floodwaters . Flooding in the nation 's capital city of Port Vila forced 50 residents to leave their homes in search of higher ground . Espiritu Santo , particularly the island 's south shore around Luganville , bore the brunt of Cyclone Sose . Several types of crops ( also weakened by Paula ) took a heavy beating , and 60 people had to evacuate due to encroaching floods . In total , the storm demolished 59 houses on the island and in some way damaged another 101 . A young child drowned after being swept away while attempting to cross a swollen waterway . Just offshore , the M / V Omale succumbed to the heavy seas ; all 16 of its occupants successfully swam four hours to shore .

Overall , the Vanuatu National Disaster Management Office estimated at least 50 % each of food crops and buildings in the hardest @-@ hit provinces were left in a state of damage . The United Nations Office for the Coordination of Humanitarian Affairs considered about 200 residences throughout the island nation " lost " to the storm . The National Disaster Committee met on April 9 to discuss potential emergency aid for residents of the areas hardest hit by cyclones Sose and Paula . Around the same time , the Vanuatu Red Cross stated that it would distribute supplies such as materials for makeshift shelters and water purification tablets . The Red Cross was also to provide 500 bags of rice to villages in the Shepherd Islands . Political unrest on a national level limited the government 's attention to initial recovery ; it did not immediately declare a state of emergency or file any requests for international aid .

= = = New Zealand and Australia = = =

The remnants of Cyclone Sose were a significant factor in stormy weather over the North Island of New Zealand between April 12 and April 14 . Numerous locations received 10 to 20 cm ( 3 @. @ 9 to 7 @. @ 9 in ) of rainfall , and 23 @. @ 0 cm ( 9 @. @ 1 in ) of precipitation fell at Glenbervie , Northland region , in just seven hours . The heavy rainfall rates caused " significant " flooding of low @-@ lying roads and farmlands in the region . Floodwaters inundated the township of Kaeo and entered several local businesses . The swollen Kaeo River temporarily rendered New Zealand State Highway 10 impassable to most vehicles at a bridge over the waterway . A hospital became isolated from the rest of the town . Further to the west , State Highway 1 was blocked by flooding at Rangiahua , as was State Highway 2 between Te Puke and Te Maunga Junction . At the former , the rains triggered a landslide and polluted the local supply of drinking water . Several residences throughout the region sustained damage . A 22 @-@ year @-@ old man drowned in high waters along the Wairoa River . Rising waters from the Kerikeri River threatened to affect the Mission House , the nation 's oldest surviving building , where staff were on standby to relocate furnishings if necessary .

A severe traffic accident occurred on State Highway 28 at Tapapa , Waikato , on the morning of April 13 . The head @-@ on collision was attributed to slick roads resulting from the storm . Three individuals were killed and two more were hospitalized . Several other accidents were reported around the same time . In addition to the rainfall , strong winds brought down trees and utility poles across the island and as far south as Marlborough on the South Island . There , the strong winds fanned a large fire ignited by sparks from downed power lines . The fire covered more than 70 hectares ( 175 acres ) of land and prompted several families to evacuate their homes . Three people were injured at Ohakune after a temporary tent collapsed at a local festival . Along the coast , swells triggered by Sose reached 3 @. @ 5 m ( 11 ft ) in height .

The tight pressure gradient between Cyclone Sose and the ridge to its south generated extremely rough seas along the eastern coast of Australia , especially Queensland . Along the state 's southern shore , normally protected from strong swells , waves were as high as 8 m ( 26 ft ) and frequently between 4 ? 5 m ( 13 ? 16 ft ) . A 53 @-@ year @-@ old man and his 9 @-@ year @-@ old son both drowned in the heavy surf near Gladstone on April 8 . Offshore Kingscliff , New South Wales , a yacht capsized , forcing its two occupants to swim to land . The large swells proved popular with experienced surfers looking for a challenge . Although the event became infamous within local surfing circles , at least one surfer was hospitalized after being swept against rocks , and several others required rescue . Some beach erosion was reported in several locations , leading to

minor sandbagging efforts to hamper the erosion .

= = = Elsewhere = = =

A large wave breaking on the cliffs of Maré Island in New Caledonia swept away a spectator , who was presumed dead after the rough conditions delayed searching efforts . The storm disrupted classes and school activities in parts of the archipelago , but little to no damage was reported .

The distant cyclone sent large swells toward Tonga and Samoa , coinciding with high astronomical tides . Coastal flooding on low @-@ lying islands of Tonga reportedly destroyed houses and crops .