

= 1981 ? 82 South @-@ West Indian Ocean cyclone season =

The 1981 ? 82 South @-@ West Indian Ocean cyclone season was destructive and deadly in Madagascar , where four cyclones killed 100 people and caused \$ 250 million (USD) in damage . The season was fairly active , lasting from October to May . There were nine named storms that attained gale @-@ force winds , or at least 65 km / h (40 mph) . Five of the storms attained tropical cyclone status , which have 10 minute sustained winds of at least 120 km / h (75 mph) .

The first storm was Tropical Cyclone Alex , which was named by the Australian Bureau of Meteorology (BoM) . this was due to the boundary of the basin at the time , which incorporated the Indian Ocean south of the equator and extended from the east coast of Africa to 80 ° E ; the eastern extent was later moved to 90 ° E. Two other storms ? Armelle and Damia ? also originated in the Australian basin . The latter was the strongest cyclone on record in the basin at the time by barometric pressure , estimated at 898 millibars (898 hPa) . The first storm to affect Madagascar was Benedicte in December , and was followed by tropical storms Frida and Electre in February and Justine in March . The final storm of the season was Cyclone Karla , which remained in the eastern periphery of the basin while reaching winds of 170 km / h (105 mph) .

= = Season summary = =

Météo @-@ France 's meteorological office at Réunion (MFR) issued advisories for storms in the basin during the year . At the time , the MFR area of warning responsibility was from the coast of Africa to 80 ° E , and the agency primarily used the Dvorak technique to estimate the intensities of tropical cyclones . The nine tropical storms and five tropical cyclones was identical to the long @-@ term average from 1981 to 2011 .

The Joint Typhoon Warning Center (JTWC) , which is a joint United States Navy ? United States Air Force task force that issues tropical cyclone warnings for the region , also issued advisories for storms in the year . The agency tracked a tropical depression in July 1982 . The system formed on July 4 southeast of Seychelles , and initially curved to the southwest . It failed to intensify beyond winds of 55 km / h (35 mph) , and dissipated on July 4 after turning to the northwest . At the time , the annual tropical cyclone year was from August 1 to July 31 of the subsequent year .

Four storms struck Madagascar in the season between December and March , collectively killing 100 people and causing \$ 250 million (1982 United States dollars) in damage . The storms caused widespread flooding and a state of disaster for four months , compounded by floods in January . About 180 @,@ 000 people were forced to evacuate , and there were increased levels of flood @-@ related diseases . The storms closed down many roads and destroyed widespread crops , forcing the government to import 400 @,@ 000 metric tons of rice . After the floods , workers repaired damaged roads and dykes while the government provided relief supplies . However , the ongoing floods strained the Madagascar 's resources , and the government appealed for aid to the international community on February 4 . The United States Agency for International Development provided nearly \$ 9 million in aid , mostly for rice and rebuilding roads . Other countries donated about \$ 7 @.@ 5 million in money or relief goods , such as building materials , food , clothing , and medicine .

= = Storms = =

= = Tropical Cyclone Alex = = =

While still in the Southern Hemisphere spring , the intertropical convergence zone (ITCZ) was active across the southern Indian Ocean in the middle of October . On October 18 , a low pressure area formed , based on reports from nearby ships . It moved southeastward and slowly intensified , given the name Alex . Located southwest of Sumatra , the storm curved to the south . Late on October 21 , Alex attained peak winds of 150 km / h (90 mph) , or above tropical cyclone status .

For several days , it maintained much of its intensity while curving to the southwest . The storm eventually weakened due to strong wind shear deteriorating the convection . On October 27 , Alex dissipated .

The storm developed east of 80 ° E but west of 90 ° E , which at the time was part of the warning responsibility for the Australian Bureau of Meteorology (BoM) . However , the MFR expanded its area of responsibility to 90 ° E in 1985 .

= = = Severe Tropical Storm Bessi @-@ Armelle = = =

On November 1 , an area of convection formed southwest of Sumatra just south of the equator . It moved southwestward and slowly developed a distinct low pressure area . On November 6 , the system strengthened enough for the BoM to name it Bessi while the storm was west of 90 ° E. The MFR began tracking the storm on November 8 once it reached 85 ° E , estimating winds of 100 km / h (65 mph) . Two days later , a nearby ship reported winds of 63 km / h (39 mph) . During this time , the storm moved generally west @-@ southwestward , crossing 80 ° E on November 11 ; at that time , the Mauritius Meteorology Service renamed it Armelle . The storm continued westward and gradually weakened . On November 18 , Armell deteriorated to tropical depression status , dissipating two days later between Tromelin Island and the Seychelles .

= = = Tropical Cyclone Benedicte = = =

In the middle of December , the ITCZ was active across the southern Indian Ocean , northeast of Madagascar . A circulation developed on December 16 , which preceded the development of a tropical disturbance on December 17 . Moving to the west @-@ northwest , the system slowly developed before shifting to the southwest . On December 19 , the system intensified into a moderate tropical storm while passing 75 km (45 mi) north of Madagascar . After briefly developing an eye feature , the satellite presentation degraded due to land interaction . Convection increased as the storm progressed through the Mozambique Channel , and the Madagascar Meteorological Service named it Benedicte on December 20 . The organization improved over the next few days as the eye feature became better defined . On December 23 , Benedicte intensified to tropical cyclone status , reaching peak winds of 135 km / h (85 mph) . That day , the storm turned westward toward the Mozambique coast , weakening as it approached land . Benedicte made landfall on central Mozambique on December 24 and turned northward , straddling the border with Malawi . The storm dissipated on the next day , with only a remnant area of clouds present on satellite imagery by December 26 .

While passing just north of Madagascar , Benedicte brought wind gusts of 252 km / h (157 mph) to Antsiranana , with several other localities reporting gale force winds . Antsiranana also reported 178 mm (7 @. 0 in) . The storm damaged thousands of homes and wrecked much of the region 's coffee and pepper crops . Benedicte killed 13 people and was the first in a succession of six storms that flooded the country .

= = = Tropical Depression Clarissee = = =

Toward the end of December , strong convection persisted southeast of Diego Garcia . These storms consolidated into a distinct center on December 29 , warranting its classification as a tropical depression . For several days the system meandered ? it moved northward on December 30 due to a ridge to the south , although soon thereafter turned back to the south and later to the west . Due to a Dvorak rating of 2 @. 5 , the Mauritius Meteorology Service named the system Clarisse . According to the MFR , the system only had peak winds of 50 km / h (30 mph) , as lack of atmospheric instability prevented strengthening . However , the JTWC estimated 1 minute winds of 85 km / h (50 mph) . Clarisse dissipated on January 7 about 500 km (310 mi) east of St. Brandon .

== Intense Tropical Cyclone Chris @-@ Damia ==

A low pressure area developed on January 5 near Christmas Island in the Australian basin . Moving westward due to a large anticyclone to the south , it gradually intensified and was named Chris by the BoM . The storm developed an eye on January 9 , and that day crossed 90 ° E into the south @-@ west Indian Ocean . On January 11 , the Mauritius Meteorology Service renamed the storm as Damia . On the next day , the Dvorak rating reached 6 @. 0 for the storm , and the MFR estimated peak 10 minute winds of 215 km / h (130 mph) , making it an intense tropical cyclone . The agency also estimated a minimum barometric pressure of 898 mbar (26 @. 5 inHg) . Damia turned southwestward and slowly weakened ; by January 16 , the cyclone weakened to tropical storm status , although it reintensified into a tropical cyclone the next day . Around that time , the storm passed about 20 km (12 mi) north of Rodrigues and later approached Mauritius before curving to the south . As a weakened tropical storm , Damia later curved more to the southeast and dissipated on January 23 .

On Rodrigues , Damia produced wind gusts of 113 km / h (70 mph) as well as nearly 300 mm (12 in) of rainfall in 24 hours . The storm damaged or destroyed 70 houses , forcing 500 people to shelters , while 100 km (60 mi) of unpaved roads were wrecked . Power , telephone , and water access was disrupted . Damia heavily damaged the island 's agriculture , with 25 % of the corn crop destroyed . Several fishing boats were wrecked , and 15 % of forest areas were damaged . Monetary damage was estimated at \$ 650 @, 000 (USD) , which prompted the government to request international aid for rebuilding . Estimated by pressure , Tropical Cyclone Chris @-@ Damia was the strongest tropical cyclone on record in the basin until Cyclone Gafilo in 2004 reached a minimum pressure of 895 mbar (26 @. 4 inHg) .

== Moderate Tropical Storm Electre ==

The ITCZ became active toward the end of January from the coast of Madagascar to Diego Garcia , spawning a distinct circulation on January 31 southeast of Tromelin Island , which became a tropical disturbance . Due to a trough , the system moved west @-@ southwestward toward Madagascar . On February 1 , the system was named Electre as it gradually intensified . Two days later , the storm moved ashore eastern Madagascar between Toamasina and Mahanoro with peak winds of 80 km / h (50 mph) . Electre weakened as it crossed the country and emerged into the Mozambique Channel on February 4 south of Maintirano . The storm re @-@ intensified to its former peak intensity as it turned west @-@ northwest . On February 5 , Electre made its final landfall on central Mozambique between Lumbo and Quelimane , dissipating soon thereafter .

Striking the country just two days after Tropical Storm Frida affected the region , Electre brought additional rainfall , with a peak 24 ? hour total of 151 @. 1 mm (5 @. 95 in) at Mahanoro . The storm also produced peak winds of 119 km / h (74 mph) in Mananjary . Electre caused flooding and landslides , particularly in the area around Lake Alaotra . The storm damaged all roads from eastern Madagascar to the capital city Antananarivo , as well as the rail connecting the city with Toamasina . There were 13 deaths in the country .

== Moderate Tropical Storm Frida ==

Tropical Storm Frida developed on January 31 over east @-@ central Madagascar , between Fianarantsoa and Mahanoro . It moved offshore and turned to the south . On February 1 , the storm intensified to peak winds of 65 km / h (40 mph) before turning westward and moving back ashore , steered by a ridge . Frida dissipated later that day , producing wind gusts of 119 km / h (74 mph) in Farafangana . As the storm moved through the former Fianarantsoa Province , it dropped rainfall that flooded and isolated several towns . The floods washed away bridges and knocked down power lines .

== Moderate Tropical Storm Gabrielle ==

On February 5 , a tropical disturbance formed north of St. Brandon , and quickly intensified into Tropical Storm Gabrielle by the next day . Moving to the southwest , the storm attained peak winds of 80 km / h (50 mph) . On February 6 , Gabrielle passed northwest of Mauritius and Réunion ; on the latter island , the mountainous peak Plaine des Cafres recorded gusts of 158 km / h (98 mph) . The storm continued to the southwest without much change in intensity , weakening slightly on February 9 . That day , Gabrielle turned to the west @-@ northwest and executed a tight loop before progressing southward . After turning to the southeast , the storm dissipated on February 11 .

= = = Tropical Cyclone Justine = = =

The ITCZ became active in the middle of March northeast of Madagascar , which spawned two low pressure areas on March 15 . The westernmost became a tropical disturbance on the next day between Madagascar and Tromelin . It quickly intensified while tracking to the southwest and was named Justine on March 17 . On March 18 , the storm intensified into tropical cyclone status and developed a well @-@ defined eye . At 15 : 00 UTC that day , Justine moved ashore northeastern Madagascar near Sambava . It continued southwestward and weakened over the island , emerging into the Mozambique Channel near Besalampy as a tropical storm . It re @-@ intensified into a tropical cyclone over waters , reaching peak winds of 150 km / h (95 mph) on March 22 only 20 km (12 mi) offshore Mozambique . That day , a ridge over southern Africa steered Justine to the southeast away from land , although the ridge weakened and allowed the storm to move back to the west @-@ southwest . It weakened to a tropical storm during this time . The storm turned again to the southeast on March 24 after the ridge moved to the east . Justine passed north of Europa Island before striking Madagascar again early on March 25 just north of Toliara . It became extratropical over land , and soon again reached open waters while turning to the south . Justine dissipated on March 27 within the flow of the westerlies .

While entering the Mozambique Channel , Justine was restrengthening and produced peak winds of 180 km / h (110 mph) in Besalampy . The storm also dropped heavy rainfall , with a 24 ? hour peak of 404 @.@ 5 mm (15 @.@ 93 in) in Sambava where it moved ashore . The storm was the final in a series of storms affecting the country , damaging coastal towns in the northeast and southwest . Justine damaged houses , crops , and roads , while destroying a vanilla storage shed in Sambava . While the storm was changing its trajectory offshore Mozambique , the Commandant Bourdais ship attempted to avoid the storm , only to sail through 102 km / h (62 mph) gusts and 14 m (46 ft) waves , which flooded the deck and damaged a gangway . Later , Justine passed near Europa island , producing 6 to 9 m (20 to 30 ft) waves .

= = = Intense Tropical Cyclone Karla = = =

A low pressure persisted toward the end of April between Diego Garcia and the equator . It developed a spiral area of convection on April 24 , which preceded the development of a tropical disturbance the next day . By that time , the system was already at tropical storm status and was given the name Karla . Moving southwest , the storm strengthened and organized . A ridge to the south steered Karla to the east on April 27 , although an approaching trough turned it to the southeast on the following day . Enhanced atmospheric instability helped the storm strengthen to tropical cyclone status on April 29 . On the next day , Karla attained peak winds of 170 km / h (105 mph) after developing a well @-@ defined eye . Increased wind shear and progressively cooler waters weakened the cyclone as it turned more to the south . By May 3 , the storm weakened to tropical depression status and dissipated the next day within the westerlies .

= = = Other storms = = =

A tropical depression formed south of Diego Garcia on February 12 . Given the name Heberte , it

moved southward initially , reaching winds of only 50 km / h (30 mph) . A ridge to the south turned the system back north , and Heberte dissipated on February 14 near where it formed .

There were three short @-@ lived tropical depressions toward the end of February . The first formed on February 19 about 350 km (220 mi) northeast of Tromelin Island . It moved southward toward Mauritius , bringing several days of heavy rainfall there and Réunion . The depression turned to the west @-@ northwest and dissipated on February 23 . That day , the other two depressions formed , including one between Réunion and Madagascar . Given the name Isabeau , it moved westward and dissipated on February 24 , reaching winds of only 50 km / h (30 mph) . The other depression originated in the Mozambique Channel off the southwest coast of Madagascar . On February 24 , the system passed south of the island while moving southeastward , bringing wind gusts of 79 km / h (49 mph) at Tôlanaro . It gradually became extratropical , dissipating within the westerlies on February 26 . The JTWC classified the system as Tropical Cyclone 20S , estimating 1 minute winds of 85 km / h (50 mph) , although it was only officially classified as a tropical depression .