= 1997 ? 98 South @-@ West Indian Ocean cyclone season =

The 1997 ? 98 South @-@ West Indian Ocean cyclone season was fairly quiet and had the latest start in 30 years . The first tropical disturbance originated on January 16 , although the first named storm , Anacelle , was not upgraded until February 8 , a record late start . The last storm to dissipate was an unusually late tropical depression in late July . Many of the storms suffered from the effects of wind shear , which contributed to there being only one tropical cyclone ? equivalent to a minimal hurricane . The season also occurred during a powerful El Niño .

Tropical Depression A1 , the first of the season , moved throughout most of Mozambique in January , causing landslides and flooding . One landslide affected Milange District , where many houses were swept into a river . Landslides killed between 87 and 143 people in the country . In February , Cyclone Anacelle buffeted several islands with gusty winds after becoming the strongest storm of the season , reaching maximum sustained winds of 140 km / h (85 mph) . Although Anacelle was the first named storm of the season , another tropical depression preceded it that crossed Madagascar several times . The depression eventually became Tropical Storm Beltane , and lasted 17 days . Beltane caused flooding across Madagascar due to heavy rainfall , which killed one person and left locally heavy crop damage . There were several other disturbances in February , including Cindy which dissipated 50 days after it originated , as well as a disturbance that brought heavy rainfall to Réunion and Mauritius . The rest of the season was fairly quiet , mostly with short @-@ lived tropical disturbances or storms .

= = Season summary = =

During the year , the Météo @-@ France office on Réunion (MFR) issued warnings for tropical systems in the region as the Regional Specialised Meteorological Centre . In the year , MFR tracked tropical cyclones south of the equator from the coast of Africa to 90 ° E. The Joint Typhoon Warning Center also issued warnings in an unofficial capacity .

The season had the latest start in 30 years , with the first depression forming in January . The first storm , Anacelle , was not named until February 8 , which retains the record for the latest date of the first named storm . For the early portion of the season , there were unusually quiet conditions across much of the basin , along with higher than normal pressure . The intertropical convergence zone (ITCZ) associated with the monsoon only became active in February , allowing tropical cyclogenesis to occur more frequently . There were six tropical storms during the season , of which only one attained tropical cyclone status ; these are below the averages of 9 and 4 , respectively . No storms attained intense tropical cyclone status . The season 's low activity contrasted that of the previous season , which was much more active . There were 18 days in which a storm was active , the lowest since 1982 ? 83 . An ongoing El Niño was evident during the season .

= = Storms = =

= = = Tropical Depression A1 = = =

The first system of the season originated out of a circulation that persisted in the northern Mozambique Channel on January 15 . Convection developed around the center near Grande Comore , meriting its classification Tropical Disturbance 1 . Moving southwestward , the system organized into a tropical depression on January 17 , developing a curved band of convection . Further intensification was halted as the system moved ashore Mozambique near Angoche . The depression turned to the south over land , remaining over inland Mozambique for several days . On January 18 , the JTWC classified the system as Tropical Cyclone 13S , estimating winds of 65 km / h (40 mph) , despite the storm being 55 km (35 mi) inland . The agency quickly downgraded the storm to tropical depression status , but briefly re @-@ upgraded it on January 19 as the system crossed over the extreme western Mozambique Channel . The agency again downgraded it after the

storm moved ashore . By contrast , the MFR assessed that the system remained a tropical depression and placed the circulation farther inland . On January 20 , the depression turned to the southeast over open waters , influenced by a trough to the south . Despite warmer waters , the system was unable to re @-@ intensify much due to the presence of wind shear , although the JTWC again upgraded the system to tropical storm status for a third and final time . The depression approached tropical storm intensify after developing increased convection over the center , but it weakened again on January 22 . On the next day , the system dissipated just off the southern coast of Madagascar .

In its formative stages , the depression dropped beneficial rainfall in the Comoros , reaching 163 mm (6 @.@ 4 in) at Prince Said Ibrahim International Airport . While the depression was over land , the plume of warm air from the open waters sustained heavy convection over the circulation , which dropped heavy rainfall across eastern Mozambique . The rains caused landslides and flooding in the country , which disrupted transport in three provinces , damaging several bridges . The most significant landslide occurred in Milange District at nighttime , which swept houses into a river ; about 2 @,@ 500 people were left homeless in the village . There were 73 confirmed fatalities , with another 70 people missing and presumed killed . However ; the International Disaster Database (EM @-@ DAT) later placed the total number of casualties at 87 . Rainfall also extended into Malawi , where villages were flooded and crops were damaged . While the system was accelerating to the southeast away from Mozambique , it produced gale force winds on Europa Island .

= = = Moderate Tropical Storm Beltane = = =

A northerly flow produced a low pressure area on February 1 in the central Mozambique Channel . Influenced by the monsoon trough , the system developed a distinct circulation on February 3 near Juan de Nova Island , becoming a tropical disturbance and bringing gusts of 50 km / h (30 mph) to the island . The convection organized around the circulation while moving eastward . Conditions were favorable for further strengthening , although the system made landfall in western Madagascar between Maintirano and Morondava on February 5 . After progressing slightly inland , the disturbance looped and turned to the south . The circulation became difficult to locate , but surface observations helped track the circulation southward through the country . Late on February 8 , the system reached the open waters south of Madagascar and quickly redeveloped convection southeast of the center , displaced by wind shear , and it was reclassified as a subtropical depression . The JTWC briefly classified it as Tropical Cyclone 21S on February 9 with winds of 65 km / h (40 mph) .

A building ridge to the south turned the system northeastward on February 10 and later to the northwest , bringing it back over southwestern Madagascar . On February 11 , the circulation again reentered the Mozambique Channel , and subsequently the thunderstorms rebuilt over the poorly defined center . A trough behind the ridge allowed the system to turn to the southwest and later southeast . An increase in convection on February 15 organized into a curved band , and MFR upgraded the system to Tropical Storm Beltane on the next day off the west coast of Madagascar . The JTWC also classified the system as Tropical Cyclone 23S on February 16 , possibly due to the extended duration between issuing advisories . Strong wind shear stripped the convection from the center as Beltane approached southwestern Madagascar on February 17 . Another building ridge turned the weakened depression to the northwest across the Mozambique Channel , finally dissipating on February 20 near the mouth of the Zambezi . The remnants later moved across Mozambique accompanied by locally heavy rainfall .

Due to its trajectories across Madagascar , Beltane brought heavy rainfall to the country . The persistent precipitation damaged crops , up to 100 % in some areas , and forced thousands to evacuate their houses . Floodwaters covered the village of Vohipeno , killing one person . Several roads and bridges were also washed away .

= = = Tropical Cyclone Anacelle = = =

On February 5 , the ITCZ spawned an area of convection about 1 @,@ 000 km (620 mi) southwest of Diego Garcia . The system slowly organized , aided by warm waters and weakening wind shear . On February 6 , it developed into a tropical disturbance , and became Tropical Storm Anacelle two days later . Also on February 8 , the JTWC initiated advisories on the storm as Tropical Cyclone 20S . The storm initially moved westward due to a ridge to the north , although the motion shifted to the southwest on February 9 due to a trough and the influence of the system that would become Tropical Storm Beltane . Anacelle developed an eye feature on February 10 , indicating that it attained tropical cyclone status , or winds of at least 120 km / h (75 mph) . Around that time , Anacelle passed just west of St. Brandon . On February 11 , the cyclone passed about 100 km (60 mi) east of Mauritius . Shortly thereafter , Anacelle attained peak winds while presenting a 30 km (19 mi) eye . It reached peak winds of 140 km / h (85 mph) , according to MFR , while the JTWC estimated peak winds of 215 km / h (130 mph) . An approaching trough weakened the cyclone and steered it southeastward , causing the eye to disappear . On February 13 , Anacelle became extratropical , although the remnants continued southeastward , passing near Île Amsterdam on the next day and re @-@ intensifying on February 15 in the southern Indian Ocean .

While passing near St. Brandon , Anacelle produced peak winds of 101 km / h (63 mph) , with gusts to 151 km / h (94 mph) . Later , the storm produced gusty winds of less than 120 km / h (75 mph) on Mauritius , along with 125 mm (4 @.@ 9 in) of rainfall at Port Louis . The extratropical remnants also brought gale force winds to Île Amsterdam .

= = = Moderate Tropical Storm Donaline = = =

A large area of low pressure between the Chagos Archipelago and the Mascarene Islands spawned a small tropical disturbance on March 4 . Moving southeastward , the system slowly developed as wind shear in the region slowly decreased . Despite only being a tropical depression , it was named Donaline on March 5 . On the next day , the JTWC classified it as Tropical Cyclone 26S . Increased convection organized into a central dense overcast , and Donaline intensified into a minimal tropical storm , reaching peak winds of 75 km / h (55 mph) according to the MFR . In contrast , the JTWC estimated peak winds of 100 km / h (65 mph) . The wind shear returned , causing weakening and dislocating the circulation from the convection . On March 10 , Donaline became extratropical and was absorbed by a cold front two days later .

= = = Severe Tropical Storm Elsie = = =

On March 7 , a low pressure area persisted west of the Cocos Islands in the Australian basin . It drifted westward , entering the south @-@ west Indian Ocean on March 9 as a tropical disturbance . It remained weak , with little convection over the center . Outflow gradually increased , although satellite imagery was limited in the region to only one image per day . Late on March 12 , the satellite imagery indicated a well @-@ defined tropical storm with curved convection , and the MFR immediately upgraded it to Severe Tropical Storm Elsie , estimating peak winds of 100 km / h (65 mph) . By contrast , the JTWC estimated winds of 165 km / h (105 mph) , having classified it as Tropical Cyclone 27S that day . By that time , the storm was moving steadily to the southwest due to a trough in the region related to the remnants of Donaline . Increased wind shear caused steady weakening , removing the circulation from the convection on February 14 . On the next day , Elsie weakened to tropical depression status as it curved southward . A building ridge to the south turned the system to the east , gradually looping back to the northwest . Elsie eventually dissipated on March 20 .

= = = Tropical Depression Fiona = = =

While Elsie was weakening and turning to the south , another system was forming near St. Brandon . Convection associated with the monsoon trough persisted on March 13 , becoming a tropical

disturbance two days later . The ridge steered the system to the southwest toward Rodigues , and conditions were expected to allow for intensification . As a result , the Mauritius Meteorological Service named the disturbance as Fiona on March 16 . On the next day , Fiona intensified into a tropical depression , reaching peak winds of only 55 km / h (35 mph) . Also on March 17 , the JTWC initiated advisories on Tropical Cyclone 28S . Around this time , Fiona passed about 200 km (120 mi) southeast of St. Brandon . After peaking , the convection decreased due to wind shear , causing the winds to fluctuate . On March 20 , the circulation became exposed from the thunderstorms and approached 80 km (45 mi) east of Mauritius , producing wind gusts of 70 km / h (44 mph) . The next day , Fiona dissipated into an approaching cold front .

= = = Moderate Tropical Storm Gemma = = =

After an extended period of inactivity , the ITCZ produced two areas of convection ? one was located about 550 km (340 mi) south @-@ southwest of Diego Garcia , and the other was located 900 km (560 mi) east @-@ southeast of that system . Both were classified as tropical disturbances on April 7 and subsequently interacted with each other . The eastern system , classified as Tropical Cyclone 33S , quickly dissipated due to strong wind shear and was absorbed into the western system . The disturbance continued to organize and developed a central dense overcast over the center , becoming Tropical Storm Gemma on April 8 . A ridge and a trough steered the storm to the southeast and later to the east . On April 9 , Gemma attained peak winds of 85 km / h (50 mph) , according to the MFR , while the JTWC estimated 130 km / h (80 mph) winds . As with most other storms in the year , increased wind shear caused the storm to weaken . The weaker system isolated it from the upper @-@ level steering , causing the circulation to loop southwestward . On April 16 , Gemma dissipated far to the east of Rodrigues .

= = = Other storms = = =

In addition to the named systems , there were nine tropical depressions or disturbances tracked by the MFR , and several by other agencies .

On January 2 , the tropical depression that was once Cyclone Selwyn crossed 90 ° E from the Australian region , but dissipated the next day .

On February 8 , a tropical low formed just north of Western Australia from the remnants of Cyclone Katrina , which earlier formed off the east coast of Australia . The low moved generally westward due to a strong ridge to the south . Given the name Victor , the storm intensified to a peak of 120 km / h (75 mph) before weakening steadily due to increased wind shear . On February 14 , the storm weakened to tropical depression status . Victor crossed into the south @-@ west Indian Ocean on February 16 with a well @-@ defined circulation but little convection . Despite being downgraded to a tropical disturbance , the system was named Cindy by the Mauritius Meteorological Service on February 16 . The system continued gradually weakening while turning more to the southwest , dissipating on February 19 . This marked a 50 day period in which the same system was active .

After Cyclone Anacelle became extratropical , an area of convection developed about 700 km (430 mi) northeast of Rodrigues on February 14 . The circulation moved southwestward , organizing into Tropical Disturbance D1 on February 16 . Later that day , it was upgraded to tropical depression status after the convection organized into a central dense overcast , and on the same day the JTWC classified it as Tropical Cyclone 24S . Increased wind shear weakened the depression as a trough turned it more to the southeast . On February 19 , the trough absorbed the system .

After the disturbance dissipated , a large low pressure area persisted east of Madagascar with several associated circulations . On February 24 , Tropical Disturbance D2 passed about 160 km (100 mi) west of Réunion , and continued to the southeast , passing south of Mauritius . Wind shear stripped the convection from the center and caused it to dissipate . Over a nine @-@ day period , the system dropped nearly 2 m (6 @.@ 6 ft) of rainfall in portions of Réunion , including nearly 700 mm (28 in) at Salazie on February 24 ; at that station , 255 mm (10 @.@ 0 in) of precipitation fell in just three hours . Gusts reached 100 km / h (62 mph) in some locations . The storm caused

flooding and landslides on the island as well as power outages . Rainfall also reached 240 millimetres (9 @.@ 4 in) on Mauritius . Residents were generally caught off guard by the storm due to the lack of warnings . Tropical Disturbance D3 also developed before March .

Although Tropical Storm Gemma was the final named storm , there were four subsequent tropical disturbances . The first formed toward the end of April after Gemma dissipated in the same general region . Named Tropical Cyclone 34S by the JTWC , it moved westward throughout its duration but failed to intensify due to wind shear . On April 22 , the system dissipated , never having developed beyond tropical disturbance status . The last disturbance of the year formed on July 20 about 1480 km (920 mi) east of Diego Garcia . The system moved generally southwestward , dissipating on July 23 due to wind shear . At the time , the tropical cyclone year for the basin lasted from August 1 to July 31 of the following year , although the JTWC considers the start of the tropical cyclone year to begin on July 1 . As a result , the MFR considered the system Tropical Disturbance H4 while the JTWC classified it as Tropical Cyclone 01S .

= = Storm names = =

A tropical disturbance is named when it reaches moderate tropical storm strength . If a tropical disturbance reaches moderate tropical storm status west of 55 ° E , then the Sub @-@ regional Tropical Cyclone Advisory Centre in Madagascar assigns the appropriate name to the storm . If a tropical disturbance reaches moderate tropical storm status between 55 ° E and 90 ° E , then the Sub @-@ regional Tropical Cyclone Advisory Centre in Mauritius assigns the appropriate name to the storm . A new annual list is used every year so no names are retired .