Cyclone Gillian

Severe Tropical Cyclone Gillian was the second most powerful of the 2013 ? 14 Australian region cyclone season and the strongest in the basin in four years . It developed on 8 March , 2014 , in the Gulf of Carpentaria offshore northern Australia . It drifted southeastward , moving over northwestern Queensland on 10 March as a weak tropical cyclone , and subsequently turned to the southwest and later to the west . Unfavourable wind shear , land interaction , and dry air prevented much restrengthening , and for several days Gillian was a weak tropical low . The storm moved northward and curved westward around the Top End of northwestern Australia , and subsequently moved across several islands in Indonesia , first Timor on 18 March . On 21 March , Gillian again became a tropical cyclone as it moved away from Indonesia . The next day , it passed just southeast of Christmas Island as an intensifying storm , and subsequently Gillian underwent rapid deepening . On 23 March , the Bureau of Meteorology (BoM) estimated peak 10 @-@ minute sustained winds of 205 km / h (125 mph) . On the same day , the Joint Typhoon Warning Center (JTWC) estimated peak 1 @-@ minute sustained winds of 260 km / h (160 mph) , making it a Category 5 on the Saffir ? Simpson hurricane wind scale . Increased wind shear caused the cyclone to rapidly weaken , and both BoM and JTWC discontinued advisories on Gillian on 26 March .

The cyclone affected northern Australia with gusty winds and some rainfall , while on the Indonesian island of Java , it produced strong waves . While moving near Christmas Island , Gillian downed thousands of trees and damaged the roof of one of the oldest buildings on the island . Winds gusted to 96 km / h (60 mph) , making it the first cyclone to affect Christmas Island in six years . The storm also affected the search for missing Malaysia Airlines Flight 370 .

Meteorological history

The origins of Gillian were from a weak tropical low that persisted in the eastern Arafura Sea on 6 March . The next day , the system moved into the Gulf of Carpentaria , where it developed convection , or thunderstorms , which organised into curved rainbands . The thunderstorms were located west of a circulation , was exposed due to moderate wind shear . At 06 : 00 UTC on 8 March , the Bureau of Meteorology (BoM) office in Darwin began issuing warnings on the developing tropical low . Around that time , the United States Joint Typhoon Warning Center (JTWC) , indicated the high potential for tropical cyclogenesis due to the increasingly organised circulation and convection . At 09 : 00 UTC on 8 March , the BoM upgraded the low to Tropical Cyclone Gillian , and six hours later , the JTWC initiated advisories on the storm as Tropical Cyclone 17P . After its formation , Gillian moved slowly southward toward Queensland within an area of weak steering currents . Despite ongoing wind shear , forecasters anticipated strengthening due to warm water temperatures and favourable outflow . The storm turned more toward the southeast due to the influence of a ridge to the northeast . Early on 10 March , Gillian made landfall along the western Cape York Peninsula of Queensland , after weakening below tropical cyclone status .

A strengthening ridge to the south turned the storm to the southwest , bringing Gillian back over water ; however , the circulation became poorly @-@ defined and the convection decreased due to land interaction . Early on 11 March the JTWC discontinued advisories . When Gillian was downgraded to a tropical low , the proximity to land and continued wind shear prevented initial redevelopment . The system tracked westward through the Gulf of Carpentaria due to the ridge to the south , passing just north of Mornington Island on 12 March . The next day , the convection reorganised as the circulation became better defined . On 14 March , the JTWC again assessed a high potential for Gillian redeveloping into a tropical cyclone , noting the appearance of a central dense overcast . At 06 : 00 UTC on the same day , the BoM again upgraded Gillian to tropical cyclone status in the central Gulf of Carpentaria . Due to a weak trough in the region , the storm turned to the northeast . Increasing wind shear again caused the storm to lose organisation early on 15 March , prompting the BoM to downgrade Gillian to a tropical low .

Dry air prevented the convection from initially reorganising after Gillian was downgraded . With a ridge to the south , the low turned westward around the Top End of northwestern Australia . On 17

March , the system moved north of 10 ° S , into the area of warning responsibility of the Indonesian Agency for Meteorology , Climatology and Geophysics . By that time , the low @-@ level circulation was disconnected from its mid @-@ level circulation , and land interaction with Indonesia was expected to prevent redevelopment . Late on 18 March , the storm moved over the island of Timor , and over the subsequent two days passed over several other Indonesian islands . On 21 March , the convection reorganised due to a drop in wind shear , and at 12 : 00 UTC that day , the BoM again upgraded Gillian to tropical cyclone status while the storm was about 380 km (235 mi) south @-@ southeast of Jakarta . On the same day , the JTWC also re @-@ initiated advisories on the storm , noting that the circulation had improved as it moved away from Indonesia . With low wind shear and favourable outflow , Gillian gradually intensified while moving southwestward around the ridge . On 22 March , the storm passed just north of Christmas Island while Gillian was developing an eye ; by that time , the 10 minute sustained winds had increased to 95 km / h (60 mph) within an environment favourable for continued strengthening .

At 12 : 00 UTC on 22 March , the BoM upgraded the storm to a Category 3 on the Australian tropical cyclone intensity scale with 10 minute winds of 120 km / h (75 mph) , the equivalent of a minimal hurricane ; a few hours later , the JTWC followed suit . The cyclone continued to rapidly intensify , with a well @-@ defined anticyclone providing good outflow and very low wind shear . At 12 : 00 UTC on 23 March , the BoM estimated Gillian attained peak 10 minute winds of 205 km / h (125 mph) , making it a Category 5 on the Australian scale , while located about 1000 km (620 mi) south @-@ southwest of Jakarta ; the agency also estimated peak gusts of 285 km / h (180 mph) . At 18 : 00 UTC on 23 March , the JTWC estimated peak 1 minute winds of 260 km / h (160 mph) . By that time , the eye had contracted to a diameter of 22 km (14 mi) , but was beginning to undergo an eyewall replacement cycle . In addition , Gillian was experiencing increased wind shear due to an approaching trough , indicative of weakening . It continued around the ridge and turned more to the south over open waters well to the west of Western Australia . The eye became less distinct , and early on 25 March Gillian weakened below Category 3 intensity on the Australian scale . On the same day , the JTWC also downgraded the cyclone to tropical storm strength , noting the storm 's rapid weakening corresponded to a decline in Dvorak numbers ? a system to estimate intensity via satellites . The circulation became exposed from the convection , and BoM downgraded Gillian to a tropical low on 26 March , the same day that the JTWC discontinued advisories after the circulation began dissipating .

= = Preparations and impact = =

Much of Far North Queensland was affected by rain for over a week as Gillian slowly moved through the Gulf of Carpentaria . The heaviest rains , averaging 150 to 250 mm (5 @.@ 9 to 9 @.@ 8 in) , fell along a corridor along southern part of the Cape York Peninsula from the Mitchell @-@ Alice Rivers National Park to Cooktown . 227 @.@ 4 mm (8 @.@ 95 in) of rain from 9 ? 15 March with gusts up to 57 km / h (35 mph) in Kowanyama , Queensland . On 17 March , Gillian brushed the Top End region , bringing only minor rainfall to coastal areas . Winds reached 45 km / h (30 mph) in the Wessel Islands .

Across Java , Indonesia , the storm produced moderate to heavy rains . After re @-@ intensifying into a tropical cyclone , swells of 3 to 5 m (9 @.@ 8 to 16 @.@ 4 ft) from the storm affected southern shores of the island . Though well to the north of Cyclone Gillian , the system 's circulation drew moisture away from Riau western Indonesia , leaving behind fire @-@ prone conditions . Due in part to illegal logging and slash @-@ and @-@ burn land clearing , several new forest fires began by 23 March .

On 20 March , the BoM issued a cyclone watch for Christmas Island , and the next day upgraded it to a cyclone warning . The first cyclone to affect Christmas Island since Cyclone Rosie in 2008 , Gillian approached the island as a category 2 system , causing light to moderate damage . Only one structure on the island , the Immigration Detention Centre , is constructed to cyclone @-@ standards on the island . Island administrator Jon Stanhope stated that the 1 @,@ 700 asylum seekers were likely safer than residents in permanent homes . Gale @-@ force winds , peaking at

96 km / h (60 mph) , battered the island for 15 hours . Several homes lost their roof and one family had to be evacuated ; however , most structures were left unscathed . The roof of the Rumah Tinggi Bar and Restaurant , one of the oldest buildings on the island , was torn off . Thousands of trees were reportedly downed across the island , with jungles sustaining significant losses , and there were power outages due to significant damage to the islands powerlines . Gillian also dropped 181 mm (7 @.@ 1 in) of rainfall over a 24 ? hour period on the island .

 On 23 March , several aircraft at Subang airport in Malaysia taking part in the 26 @-@ nation search for Malaysia Airlines Flight 370 were grounded due to inclement weather . It was noted that Gillian could hamper rescue efforts in the southern corridor search for the aircraft . Following the discovery of possible debris from the aircraft about 2 @,@ 500 km (1 @,@ 600 mi) west @-@ southwest of Australia , fears arose that large swells from the storm could sink the possible wreckage and make the investigation " almost impossible . "