

= Hurricane Fred (2015) =

Hurricane Fred was the first hurricane to move through the Cape Verde Islands since 1892 . The second hurricane and sixth named storm of the 2015 Atlantic hurricane season , Fred originated from a well @-@ defined tropical wave over West Africa in late August . Once offshore , the wave moved northwestward within a favorable tropospheric environment and strengthened into a tropical storm on August 30 . The next day , Fred further grew to a Category 1 hurricane with peak winds of 85 mph (140 km / h) as it approached Cape Verde . After passing Boa Vista and moving away from Santo Antão , it entered a phase of steady weakening , dropping below hurricane status by September 1 . Fred then turned to the west @-@ northwest and endured increasingly hostile wind shear , but maintained its status as a tropical cyclone despite repeated forecasts of dissipation . It fluctuated between a minimal tropical storm and tropical depression through September 4 ? 5 before curving sharply to the north . By September 6 , Fred 's circulation pattern had diminished considerably , and it dissipated later that day .

At the threat of the hurricane , all of Cape Verde was placed under a hurricane warning for the first time in history . Gale @-@ force winds battered much of the Barlavento region through August 31 , downing numerous trees and utility poles . On the easternmost islands of Boa Vista and Sal , Fred leveled roofs and left several villages without power and phone services for several days . About 70 percent of the houses in Povoação Velha were damaged to some degree . Throughout the northern islands , rainstorms damaged homes and roads , and São Nicolau lost large amounts of its crop and livestock . Monetary losses exceeded \$ 1 @. @ 1 million (2015 USD) across Cape Verde , though the rain 's overall impact on the agriculture was positive . Swells from the hurricane produced violent seas along West African shores , destroying fishing villages and submerging large swaths of residential area in Senegal . Between the coasts of West Africa and Cape Verde , maritime incidents related to Fred resulted in nine deaths .

= = Meteorological history = =

Early on August 28 , the National Hurricane Center (NHC) began monitoring a tropical wave ? an elongated area of low air pressure ? inland over West Africa . Traced by widespread cloudiness , the wave tracked toward the open Atlantic throughout the remainder of the day . A broad cyclonic rotation began to develop within the lower atmosphere on August 29 , near the Guinea coastline . The disturbance veered toward the northwest and emerged offshore near Conakry around 18 : 00 UTC that day . By then , the NHC predicted a favorable environment for tropical cyclone development within the next 48 hours . Heavy thunderstorms thrived overnight , and consolidated near a well @-@ defined low @-@ pressure center . On the morning of August 30 , satellite images and scatterometer data confirmed that a tropical depression had formed about 300 mi (480 km) west @-@ northwest of Conakry , with wind speeds of 35 mph (55 km / h) .

Although tropical cyclones in the extreme eastern Atlantic are normally propelled westward by high pressure from a subtropical ridge , this depression moved toward the northwest , along a breach in the ridge caused by another disturbance . Its cyclonic structure steadily improved : a sharply curved rainband tightened around the center , resembling the precursor to an eye . At 06 : 00 UTC on August 30 , the depression was upgraded to Tropical Storm Fred about 390 mi (625 km) east @-@ southeast of Praia , Cape Verde ? one of the four easternmost locations for a tropical storm since modern record @-@ keeping began in 1851 . Intensification trends continued at a steady pace while Fred trekked through a region with ample tropical moisture , light upper winds , and above @-@ average sea surface temperatures ; the storm developed a thick , circular central dense overcast with good outflow , and the eye feature became well established at all levels of the circulation . Based on a combination of these characteristics and satellite estimates of 75 mph (120 km / h) winds , Fred was upgraded to a Category 1 hurricane at 00 : 00 UTC on August 31 . Then centered 120 mi (195 km) east @-@ southeast of Praia , Cape Verde , it was the easternmost tropical cyclone ever to attain hurricane status in the tropical Atlantic .

A compact cyclone , Fred quickly reached its peak intensity with a minimum central pressure of 986

mbar (hPa ; 29 @. @ 12 inHg) and 85 mph (140 km / h) winds . Through the rest of August 31 , the hurricane traversed the Barlavento Islands of Cape Verde . The eye barely skirted the southern coast of Boa Vista around 12 : 00 UTC , decreasing in definition over the next 12 hours as it passed north of São Nicolau and then north @- @ northeast of Santo Antão . On September 1 , drier air and increasing wind shear aloft dispersed the inner convection , which caused Fred to weaken to a tropical storm . Rebuilding high pressure to the north over the eastern Atlantic turned the weakening storm slightly toward the west @- @ northwest over considerably cooler waters . Through much of September 1 ? 4 , convection was limited to intermittent flare @- @ ups , with the associated thunderstorms continuously blown away from the center by the strong upper winds . Despite the adverse environment and its lack of stable convection , Fred retained a robust spiral of low @- @ level clouds and gales during this period , defying the NHC 's repeated forecasts of its dissipation .

Around 12 : 00 UTC , September 4 , a waning wind circulation prompted the NHC to downgrade Fred to a tropical depression ; though its winds briefly reincreased to tropical storm force the next day , it continued as a depression with minimal convection throughout the remainder of its existence . Concurrently , a deep @- @ altitude disturbance a few hundred miles east of Bermuda began to erode the southern edge of the high @- @ pressure ridge that Fred had circumnavigated for most of its journey . This changed the steering pattern in the region , turning the depression abruptly to the north on September 6 . Over the following hours , Fred became increasingly indistinguishable as a result of its progressively worsening surroundings . It officially lost its status as a tropical cyclone at 18 : 00 UTC , degenerating into a trough , about 1 @, @ 210 mi (1 @, @ 945 km) southwest of the Azores . The remnants were absorbed into a frontal boundary shortly thereafter .

= = Preparations and impact = =

= = = Cape Verde = = =

A tropical storm warning was issued for Cape Verde upon the storm 's formation , as well as a hurricane watch in light of forecasts for further development . When Fred showed definitive signs of strengthening , the alerts were replaced by a hurricane warning , marking the first occasion of a hurricane @- @ level threat in the nation 's recorded history . On the morning of August 31 , TACV Cabo Verde Airlines suspended its flights from the capital of Praia to Dakar ; all operations at the airports of Boa Vista , Sal and São Vicente were halted soon after squally conditions across the islands . Officials ordered shipping interests on all islands to remain in port and to secure their vessels . A national music festival was canceled in Porto Novo , on the northernmost island of Santo Antão .

As it traversed the easternmost Cape Verde Islands on the afternoon of August 31 , Fred brought strong winds and thunderstorms to Boa Vista that uprooted trees , damaged roofs and plaster , and knocked out power to most of the population . Cellphone service from a local carrier went down due to a toppled transmission tower in Sal Rei . Two inhabitants were taken to hospital when their home partially collapsed , but they remained in good condition . Floods affected low @- @ lying areas of Rabil and cut off the main road to surrounding towns , hampering mobilization efforts . The southern village of Povoação Velha bore the brunt of the storm ; about 70 percent of the houses experienced some degree of damage , from broken tiles and windows to crumbled walls , with repair costs of 3 million escudos (2015 value ; \$ 30 @, @ 000 in USD) . A compromised infrastructure left the village without power and telephone services for at least five days . Throughout Boa Vista , Fred led to losses of 76 million escudos (U \$ 770 @, @ 000) , an estimated 50 million (US \$ 500 @, @ 000) occurring in the private sector .

Similar effects were felt in parts of the other eastern islands . Along the southern shore of Sal , Fred 's storm surge sunk or stranded dozens of vessels and destroyed an important tourist pier in Santa Maria . Hotels , restaurants , and other beach facilities were flooded , and roads in the town became impassable . High winds leveled the roof of a sport center at a gymnasium , which had initially been set up as a storm shelter to about 100 citizens . Elsewhere on the island , the hurricane knocked out

power to homes in Palmeira , and caused minor structural damage to Sal International Airport . At the height of the storm , flooding forced nearly 130 people living in the impoverished outskirts of Terra Boa and Espargos to relocate to shelters . On the island of Santiago , the most significant impact was due to heavy rainfall peaking at 6 @. @ 3 inches (160 mm) . The rains filled a large dam in São Salvador do Mundo to maximum capacity , which prompted residents from adjacent areas to evacuate . In São Miguel , floods and fallen trees obstructed traffic and caused 2 million escudos (US \$ 20 @, @ 000) in damage .

Fred produced gusts and downpours across the northern Barlavento Islands , with a maximum 7 @. @ 9 in (200 mm) of rainfall recorded on São Nicolau . Many old trees were uprooted across that island , and several villages lost power . The storm damaged 70 homes in Ribeira Brava , the main town , leaving several families homeless . Local farmers suffered great losses following the destruction of greenhouses and a farm . Strong winds in Cabeçalinho downed power poles and wrecked the roof of a church . In Carriçal , heavy rainfall and flooding ruined fruit and hydroponic crops , as well as damaging roads and homes . Much of the island 's livestock was lost in the storm . Damage to homes and the agriculture ? in particular banana and sugarcane ? on São Nicolau totaled 30 million escudos (US \$ 305 @, @ 000) , although considerable disruptions in the infrastructure due to broken roads and telecommunication antennae were unaccounted for . On the neighboring islands of São Vicente and Santo Antão , impact from the storm was mostly limited to power outages , floods , and damaged crops . About 35 people in Porto Novo , on the latter island , were moved to secure locations . Flooding there isolated two neighborhoods and destroyed carrot , cabbage , and tomato plantations . On São Vicente , roads were closed in and around Laginha , and a few people suffered minor injuries when a tree fell on their car .

Throughout Cape Verde , the hurricane displaced more than 50 families and caused 108 million escudos (US \$ 1 @. @ 1 million) in damage , largely to the agricultural and private sectors of the Barlavento region . Although there were no casualties onshore , two fishermen navigating through the storm were presumed dead after never returning to port in Boa Vista . Nonetheless , rainfall from Fred had a generally positive effect on the larger @- @ scale agriculture of the islands , refilling many rivers and dams and irrigating drought @- @ stricken farmland across the Sotavento region .

= = = West Africa = = =

Swells from Fred reached stretches of West African coastline , producing high surf as far north as Senegal . Along the shores of Dakar , rough seas devastated fishing districts and harbor towns , stranding boats and damaging roads and bridges . About 200 houses were demolished in the district of Hann , many of which experienced total wall collapse . In the suburb of Rufisque , the waves overtopped dams , entered homes and cemeteries , and destroyed a mosque . Outside the capital , several villages were completely isolated from their surroundings . Victims across the affected region received over 100 tons (220 @, @ 000 lbs) of rice and 12 million CFA francs (US \$ 20 @, @ 000) in relief funds .

Farther south , in Guinea @- @ Bissau , a storm surge flooded roads and low @- @ lying establishments such as offices and military barracks . Vast amounts of cropland in the Tombali Region were submerged by sea water , resulting in great losses of rice . Offshore , waves as high as 23 ft (7 m) capsized a fishing boat with a crew of 19 ; 12 were rescued shortly , though the remaining seven disappeared at sea and were presumed dead .