

= Effects of Hurricane Isaac in Florida =

The Effects of Hurricane Isaac in Florida were severe local flooding in South Florida and tornadoes in the central and northern portions of the state in August 2012 . Hurricane Isaac formed from a tropical wave while located east of the Lesser Antilles on August 21 , 2012 . The storm moved westward , crossed through the Leeward Islands , and entered the Caribbean Sea on August 22 . Isaac initially struggled to intensify and defied predictions of it strengthening into a hurricane] . The storm made its first landfall in Haiti as a midgrade tropical storm prior to making a second one in Cuba later that day . It remained somewhat disorganized while moving through the Straits of Florida and passed near the Florida Keys on August 27 . The storm threatened to strike the Tampa Bay Area during the 2012 Republican National Convention and move ashore in the Florida Panhandle as a major hurricane . However , it continued northwestward and avoided landfall in the state . The storm finally became a hurricane late on August 28 . Isaac made two landfalls in Louisiana on August 29 , the first near the mouth of the Mississippi River and the other near Port Fourchon . The storm steadily weakened and eventually dissipated over Missouri on September 1 .

Despite passing closest to the Florida Keys , impact was minimal , limited to tropical storm @-@ force winds and light rainfall . The outerbands of Isaac produced heavy precipitation further north , especially in Palm Beach , St. Lucie and Indian River counties . In the former , the resultant flooding left numerous residents in Royal Palm Beach and Loxahatchee isolated . There was extensive street flooding , and water entered a few houses . Damage in Palm Beach County alone was nearly \$ 71 @.@ 6 million (2012 USD) . Inland flooding was also reported in several other counties , though losses were generally minor . A tornado in Indian River County damaged 118 mobile homes and 15 single family homes . Further north in Central Florida and the Panhandle , the storm spawned four other tornadoes . Tides along the Gulf Coast of Florida caused erosion and coastal flooding in Bay , Collier , Franklin , Gulf , and Wakulla counties . Though winds caused little damage , around 113 @.@ 000 customers were left without electricity in South Florida . The storm resulted in two indirect fatalities , both caused by vehicles driving on slick roads in Palm Beach and Okeechobee counties . Throughout the state , damage reached approximately \$ 91 @.@ 45 million .

= = Background = =

Hurricane Isaac originated from a tropical wave that moved off the western coast of Africa on August 17 . Moving generally westward , the low @-@ pressure area initially did not have a well @-@ defined center until three days later . Convection associated with the system organized and intensified , and the tropical wave quickly strengthened into a tropical depression . In favorable conditions , the depression was upgraded to Tropical Storm Isaac by the National Hurricane Center (NHC) on August 21 . Quickly accelerating westward due to a subtropical ridge located to the northwest , Isaac later moved past the Lesser Antilles between Guadeloupe and Dominica by August 23 , where it caused numerous mudslides and power outages . Maintaining tropical storm intensity , Isaac later made its first landfall on the southern coast of Haiti early on August 25 as a result of southeast flow . There , the storm directly killed 24 people , worsening conditions still remaining after the 2010 Haiti earthquake .

Isaac began to curve northwestward due to its location between a large deep @-@ layer low pressure area in the northwestern Caribbean Sea and a mid @-@ tropospheric ridge over the western Atlantic . After briefly moving into the Gulf of Gonâve , the tropical storm made a second landfall near Cajobabo , Guantánamo , in Cuba at 1500 UTC later on August 25 , where damages were comparatively less severe than in Haiti . The storm paralleled the northern coast of the island prior to making a close pass of Key West , Florida , where it caused minor flood damage across the Florida Keys and South Florida upon entry into the Gulf of Mexico . The threat of tropical cyclone impacts in Tampa forced the postponing of the 2012 Republican National Convention . In the gulf , the tropical storm curved to the northwest and attained hurricane strength on August 27 near the southern Louisiana coast . Another ridge of high pressure caused Isaac to move towards the west and slow down as it made two landfalls on the state . Once it moved inland , the hurricane

weakened before dissipating over Missouri on September 1 .

= = Preparations = =

At 2100 UTC on August 24 , a tropical storm watch was issued for all of Florida south of the Jupiter Inlet on the east coast and south of Bonita Springs on the west coast ; it also included Lake Okeechobee and the Florida Keys . Early on the next day , the tropical storm watch was upgraded to a warning , while the Florida Keys and the mainland from Ocean Reef to Bonita Springs were placed under a hurricane watch . Further north , a tropical storm watch was issued from the Jupiter Inlet to the Sebastian Inlet . Later on August 25 , the hurricane watch was switched to a warning , while a separate hurricane watch was issued from Golden Beach southward . At 1500 UTC on August 25 , the tropical storm warning was extended northward to Sebastian Inlet . In addition , a tropical storm watch was issued further north from Sebastian Inlet to Flagler Beach on the east coast and Bonita Springs to Tarpon Springs on the west coast . About six hours later , the tropical storm watch along the west coast of Florida was extended northward to the mouth of the Suwannee River on August 25 . The tropical storm watch , which now stretched from Bonita Springs to Tarpon Springs , was extended to Indian Pass on August 26 . Simultaneously , a hurricane watch was issued from the mouth of the Mississippi River in Louisiana to Indian Pass , Florida .

After Isaac crossed the Florida Keys on August 26 , the hurricane warning was downgraded to a tropical storm warning , and the tropical storm watch from Sebastian Inlet to Flagler Beach was discontinued . Simultaneously , the hurricane watch on the Gulf Coast of the United States was upgraded to a hurricane warning along the portion from Morgan City , Louisiana , to Destin , Florida . Additionally , the tropical storm warning was discontinued from the mouth of the Suwannee River to Tarpon Springs . Early on August 27 , the tropical storm warning on the east coast of Florida was discontinued for areas lying north of the Jupiter Inlet . Six hours later , the tropical storm warning on the east coast of Florida was lifted from the Jupiter Inlet southward to Ocean Reef , including Lake Okeechobee . At 1500 UTC , all of the remaining watches and warnings for South Florida were cancelled . On August 28 , the tropical storm warning in the Florida Panhandle was discontinued for areas east of Destin . By 1500 UTC on August 29 , all tropical storm and hurricane watches and warnings were no longer in effect for the state of Florida .

During the week of August 27 , the 2012 Republican National Convention was held in Tampa , Florida . Isaac threatened to force the cancellation or postponement of the convention ; there was also potential to move the event 's location . According to the Republican National Convention spokesman James Davis , officials had been coordinating with the United States Secret Service , should the 50 @, @ 000 politicians , delegates , and reporters require evacuation . The Republican National Convention was pushed to August 28 , with the storms threatening the coast of Tampa . Chairman of the Republican National Convention Reince Priebus announced on August 25 that the convention would only convene for a short amount of time on August 27 and " immediately recess until Tuesday afternoon , August 28 " . At the same time , Governor of Florida Rick Scott announced he would not be attending the convention , together with Governor of Alabama Robert J. Bentley . On August 25 , Governor Scott declared a state of emergency for the state of Florida ahead of Tropical Storm Isaac . Amtrak suspended the Silver Meteor and Silver Star train service from Orlando to Miami on Sunday , August 26 . In Miami @-@ Dade County , evacuations were ordered for residents living in mobile homes . Additionally , the bridges across the Port of Miami were closed during the height of Isaac . Orange juice prices increased due to the threat of the storm in Florida , which produces more than 75 percent of orange crops in the United States .

The Florida Division of Emergency Management was put into partial activation , and Florida Power & Light brought in at least 4 @, @ 300 workers to help with expected power outages . Key West International Airport suspended all flights in preparation of Isaac , while all cruises and many theme parks were delayed . The United States Coast Guard activated hurricane condition " whiskey " , restricting the transportation of watercraft until the storm passed . In South Florida , specifically in Monroe County , many schools were used as shelters . In Miami @-@ Dade County , all public schools and universities ? including Florida International University and the University of Miami ?

cancelled classes . While the airport in the county remained open , it cancelled hundreds of flights and delayed many others . As the storm passed , regular services became available once again . Across the remainder of the state , especially in coastal counties , most schools and government buildings were closed . In Escambia County , a mandatory evacuation was ordered for zones A , B , and C . Many shelters were opened for those who had nowhere to go , and all county schools were shut down . At Naval Air Station Pensacola , many planes were either evacuated from the base or placed into secure hangars . Farther east in Santa Rosa County , a mandatory evacuation was also ordered for zones A , B , and C , including all mobile home parks , campgrounds , low @-@ lying areas , and RV parks . In Walton County , special needs and general shelters were opened to the public , and all schools and government offices were to be shut down throughout the duration of the storm . The Clyde B. Wells Bridge was also shut down in anticipation of tropical storm @-@ force winds .

= = Impact = =

The storm impacted nearly all of Florida , despite not making landfall in the state . Due to the weak intensity and path offshore , damage was caused primarily by flooding , rather than winds . Persistent rainbands brought heavy precipitation to much of east @-@ central and southeast Florida . In central Palm Beach County , the highest observed total precipitation was 15 @.@ 86 inches (403 mm) , though radars estimated that as much as 18 to 20 inches (460 to 510 mm) fell in some areas . The resultant flooding left entire neighborhoods isolated and caused damage to homes , businesses , and roads in Palm Beach County . Other areas , such as Broward , Indian River , Martin , Miami @-@ Dade , and St. Lucie counties , were also impacted by flooding , albeit less severely .

Tides along the Gulf Coast of Florida caused erosion and coastal flooding in Bay , Collier , Franklin , Gulf , and Wakulla counties . Though winds caused little damage , around 113 @,@ 000 customers were left without electricity in South Florida alone . Further north in Central Florida and the Panhandle , Isaac spawned five tornadoes , one each in Hillsborough , Holmes , Indian River , Jackson , and Osceola counties . All of them ranked as only F0 on the Fujita scale . The worst twister occurred in Indian River County , damaging 133 buildings , most of which were mobile homes . Throughout the state , two indirect fatalities were reported and losses reached approximately \$ 91 @.@ 54 million .

= = = Southern Florida = = =

Despite the Florida Keys being the closest to the path of the storm , effects there were minimal . In Molasses Reef , sustained winds reached 44 mph (71 km / h) , while winds peaked at 41 mph (66 km / h) in Sombrero Key . Rainfall in the Florida Keys was light , peaking at 1 @.@ 61 inches (41 mm) at the National Weather Service Office in Key West . Winds were stronger in Miami @-@ Dade County , reaching 60 mph (97 km / h) at the Atlantic Oceanographic and Meteorological Laboratory (AOML) headquarters in Virginia Key . Many trees and power lines were downed throughout the county , with an estimated 33 @,@ 000 residences experiencing power outages . Tides reaching up to 6 feet (1 @.@ 8 m) caused major beach erosion and minor coastal flooding in Naples . Between Everglades City and Chokoloskee , up to 3 feet (0 @.@ 91 m) of tidal inundation occurred , leaving roads flooded , stranding some people . In Goodland , water entered a few homes but was mainly confined to streets , yards , and marinas . Less than 2 @,@ 000 people were left without electricity in Collier County . Damage within that county was estimated to have reached \$ 6 million . Throughout southeastern Florida , 113 @,@ 000 people were left without electricity .

Heavy rainfall fell in portions of Broward County , peaking at 11 @.@ 21 inches (285 mm) at the intersection of State Road 997 and Interstate 75 near Weston . Other significant precipitation totals include 10 @.@ 86 inches (276 mm) in Miramar , and 10 @.@ 41 in (264 mm) in Coral Springs , with 7 to 10 in (180 to 250 mm) reported at numerous other locations in the county . Moderate to severe flooding occurred over parts of northern Broward County . In Lauderhill , canals overflowed

their banks and streets were flooded for a few days . Additionally , a few homes sustained minor water damage . Water also entered a few homes and businesses in Tamarac . Standing water also forced the closure of a few on @-@ ramps to the Sawgrass Expressway . Losses in Broward County reached \$ 1 million .

= = = Palm Beach County = = =

The outerbands produced relatively strong winds in Palm Beach County . Wind gusts were estimated to have reached 60 mph (97 km / h) in Tequesta , where the shutters were ripped from a life guard stand and also moved the structure about 3 feet (0 @. @ 91 m) from its original location . Additionally , winds in the area blew significant amounts of sand away , exposing rocks and creating 8 ? 10 @-@ foot (2 @. @ 4 ? 3 @. @ 0 m) drops . Slightly further south , waves of 8 ? 10 feet (2 @. @ 4 ? 3 @. @ 0 m) pounded the beaches of Jupiter , though only minimal beach erosion was reported . Nonetheless , hundreds of sea turtle nests were swept away , though 100 hatchlings were brought to the Loggerhead Marinelife Center in Juno Beach . In Palm Beach County , the outerbands dropped significant amounts of rainfall , with radar estimates as high as 20 inches (510 mm) in some areas . The highest observed precipitation total , measured in that vicinity , was 15 @. @ 86 inches (403 mm) at Lion Country Safari in Loxahatchee , while 13 @. @ 754 inches (349 @. @ 4 mm) fell in Boynton Beach , 13 @. @ 1 inches (330 mm) fell in Greenacres and 12 @. @ 55 inches (319 mm) fell in Wellington . Nearly all of the eastern half of Palm Beach County experienced at least 10 inches (250 mm) of precipitation .

Due to heavy rainfall , widespread flooding was reported , especially in the central and western portions of the county . Whole neighborhoods in The Acreage , Loxahatchee , Royal Palm Beach , and Wellington were left stranded for up to several days . In some areas , flooding was considered the worst since Hurricane Irene in 1999 . At the post office in Loxahatchee , the parking lot was flooded , forcing the building to close for several days . A major washout was reported in West Palm Beach at the intersection of State Roads 80 and 882 . Also in West Palm Beach , a road collapsed and fire rescue crews quickly closed the road . On State Road 704 , a portion of it became inaccessible to low @-@ clearance vehicles . A man died in West Palm Beach after driving through the storm and crashing into a concrete wall along Interstate 95 . Several major and minor roads were also inundated by water in Wellington . Additionally , there was flooding at the intersections of Meadow Avenue and Greenview Shores Boulevard , and Indian Mound Road and South Shore Boulevard . Heavy rainfall left several leaking roofs at an apartment complex in Pahokee .

In the southern portion of Palm Beach County , flooding and wind damage was also reported . Residents reported an unconfirmed tornado in Lake Worth . It knocked over some trees and damage a shed and some roofs , as well as cause a few power outages . The entrance to the gated community of Lawrence Grove in Boynton Beach was flooded by about 1 foot (300 mm) of water and passable only by large pickup trucks . In Delray Beach , lightning struck a tree , causing part of it to fall through an awning , break a window , and slice into a house . Streets were littered with small branches and palm fronds in Boca Raton , while low @-@ lying roads and swales were flooded with several inches of water . One small tree was uprooted across the street from City Hall . Initially , schools throughout the county were to remain open . However , in response to flooding , all Palm Beach County schools were closed on August 27 and August 28 . Thereafter , all but eight county public schools ? located in Loxahatchee and The Acreage ? were opened . Damage estimates for Palm Beach County reached \$ 71 @. @ 59 million , \$ 40 million of which was incurred to the Indian Trail Improvement District .

= = = Central Florida = = =

Precipitation amounts ranging from 4 to 8 inches (100 to 200 mm) were common throughout Okeechobee County . The most significant impacts occurred in the city of Okeechobee and adjacent areas , such as Taylor Creek . Overflowing creeks and canals caused major flood damage to 14 homes , while another 146 had minor water intrusion . Several roads were temporarily closed due to

standing water . One indirect fatality occurred along State Road 78 in Okeechobee , after a 62 ? year ? old man lost control of his vehicle and crashed . Winds were relatively light , with gusts between 30 and 40 mph (48 and 64 km / h) along the northern shores of Lake Okeechobee . In nearby Martin County , rainfall averaged between 5 and 10 inches (130 and 250 mm) . As a result , several roads in the county were temporarily impassable , while water entered one business complex in Palm City . Further north in St. Lucie County , rainfall amounts were similar . Standing water was reported on roads in Fort Pierce , Lakewood Park , Port St. Lucie , and White City .

The storm also produced heavy rainfall in Indian River County , with 16 @. @ 5 in (420 mm) reported in Vero Beach . This was the highest observed precipitation total in the state of Florida during Isaac . Elsewhere in Indian River County , rainfall amounts were generally between 7 and 10 inches (180 and 250 mm) . Throughout Indian River County , 27 homes and 2 single ? family homes were flooded , while 20 roads were temporarily closed due to standing water . An EF0 tornado touched down in Vero Beach for about two minutes , damaging 118 mobile homes and 15 single family houses . According to Indian River County Emergency Management Coordinator Dale Justice , that tornado caused \$ 850 @, @ 000 in losses . At the Vero Beach Municipal Airport , sustained winds reached 43 mph (69 km / h) . In Highlands County , up to 6 inches (150 mm) of rain forced the closure of a small portion of U.S. Route 98 between Cowhouse Road and County Road 621 in Lorida . The inundation was caused by Arbuckle Creek overflowing and washing a few inches of water on the road .

A damage survey conducted by the National Weather Service indicates that a tornado was spawned near St. Cloud in Osceola County . It destroyed an abandoned mobile home , leaving only a floor attachment to the frame . The tornado moved across a citrus grove , causing damage to trees and shrubs . Thereafter , it removed shingles and broke a window at one residence , while some fences nearby were toppled . Additionally , rainfall amounts ranging from 3 to 6 inches (76 to 152 mm) left several roads impassable . The Myakka River overflowed in Sarasota County , flooding the Ramblers Mobile Home Park . Water rose up to the doorsteps of several units , while parking lots and grassy areas were inundated by water . Due to its weaker and further westward track than initially anticipated , impact in Hillsborough County and the city of Tampa was minimal during the Republican National Convention . On the first day of the convention , August 27 , Isaac dropped 2 @. @ 03 inches (52 mm) of precipitation and brought sustained winds of 21 mph (34 km / h) to Tampa International Airport , with gusts up to 50 mph (80 km / h) . A waterspout moved onshore near Tampa , damaging 6 houses in addition to the fences and trees on those properties .

= = = North Florida and Florida Panhandle = = =

Although it passed further west and was weaker than anticipated , the outerbands and fringe of the storm produced light rainfall and two tornadoes in the Florida Panhandle . The first tornado in the region was spawned near Greenwood in Jackson County , but caused no damage . The other tornado touched down near Graceville in Holmes County and ripped off the front porch of a mobile home and downed numerous trees . Rainfall was reported for a 3 day period in Flagler County from August 26 to August 28 . In Palm Coast , communities measured between 2 and 3 @. @ 5 inches (51 and 89 mm) of precipitation . Some minor flooding occurred in parking lots . Gusty winds of 40 to 50 mph (64 to 80 km / h) felled isolated trees in the western part of the county . A few trees were also blown down in Alachua County , one of which fell onto Main Street in Gainesville . Losses in Escambia and Santa Rosa Counties amounted to \$ 10 @. @ 4 million and \$ 1 @. @ 2 million respectively .

Some coastal flooding occurred across portions of Bay , Franklin , Gulf , and Wakulla counties due to storm surge . Erosion was most significant in Franklin County , where storm surge was measured at 3 @. @ 45 feet (1 @. @ 05 m) in Apalachicola , while tides were 6 to 8 feet (1 @. @ 8 to 2 @. @ 4 m) above normal . Water Street in Apalachicola was inundated with over 1 foot (0 @. @ 30 m) of water in some places . At St. George Island State Park , waves pushed pass the dune line and flooded parking areas . Losses were estimated at about \$ 500 @, @ 000 . In Bay County , storm surge reached 2 @. @ 5 feet (0 @. @ 76 m) at Panama City , while tides were 8 to 10 feet (2 @. @

4 to 3 @. @ 0 m) above normal . The depth of inundation along 7th Avenue in Panama City ranged from a few inches to about one foot , while other roads in Lynn Haven and West Bay were also flooded . Tides along the coast of Gulf County flooded a road in Indian Pass and the access road to St. Joseph Peninsula State Park , causing closure of the park . In Wakulla County , minor coastal flooding was reported around St. Marks , with 2 to 4 inches (51 to 102 mm) of water in a few businesses . The area experienced tidal flooding only about two months earlier during Tropical Storm Debby . One vacant home experienced minor water intrusion around the time of highest tide in Shell Point .

= = Aftermath = =

Following the storm , Governor of Florida Rick Scott attended a briefing at the South Florida Water Management District before boarding a helicopter to tour flooded areas of Palm Beach County . Scott said , " We 've got to take care of everybody 's needs but we 've got to get our state back to work , " and also encouraged tourists to return to the state , especially in Key West , where hotel owners were considering cancelling reservations for Labor Day . A Florida state fund known as Neighbors to the Rescue ? with the purpose of distributing money to help recovery efforts for victims of Isaac ? was activated by the governor . The area already qualified for small business loans due to a state of emergency and after the Federal Emergency Management Agency (FEMA) reviewed damage assessments , President of the United States Barack Obama considered a disaster declaration . Initially , FEMA denied a disaster declaration . In response , Governor Scott mailed a letter of appeal to FEMA Administrator Craig Fugate . The appeal was accepted , and on October 18 , 2012 , President Obama issued a disaster declaration for Bay , Collier , Escambia , Franklin , Gulf , Martin , Monroe , Okaloosa , Palm Beach , St. Lucie , and Santa Rosa counties .