

= Hurricane Iris =

Hurricane Iris of 2001 was the most destructive hurricane in Belize since Hurricane Hattie in 1961 . Iris was the second @-@ strongest storm of the 2001 Atlantic hurricane season , behind Hurricane Michelle . It was the ninth named storm , fifth hurricane , and third major hurricane of the year , forming from a tropical wave on October 4 just southeast of Barbados . It moved westward through the Caribbean , intensifying into a tropical storm on October 5 south of Puerto Rico and into a hurricane the following day . While passing south of the Dominican Republic , Iris dropped heavy rainfall that caused landslides , killing eight people . Later , the hurricane passed south of Jamaica , where it destroyed two houses . On reaching the western Caribbean Sea , Iris rapidly intensified into a Category 4 on the Saffir ? Simpson scale . A small hurricane with an eye of only 7 mi (11 km) in diameter , Iris reached peak winds of 145 mph (230 km / h) before making landfall in southern Belize near Monkey River Town on October 9 . The hurricane quickly dissipated over Central America , although its remnants contributed to the formation of Tropical Storm Manuel in the eastern Pacific Ocean .

Destruction was heaviest in Belize and totaled \$ 250 million (2001 USD) . Because Iris was compact , the damage was largely confined to 72 % of the houses in the Toledo district and 50 % of the houses in the Stann Creek district . The hurricane damaged or destroyed 3 @, @ 718 homes nationwide , and wrecked more than 95 % of the homes in 35 villages in the poorest parts of the country . Iris left about 15 @, @ 000 people homeless , many receiving assistance from the government and the local Red Cross chapter . High winds also damaged large swaths of forest and crops , mostly affecting the banana industry . Iris killed 24 people in Belize , including 20 who died when a scuba diving boat capsized near Big Creek . The storm also killed eight people and damaged about 2 @, @ 500 homes in neighboring Guatemala , and later dropped heavy rainfall in southern Mexico , where two people died .

= = Meteorological history = =

Toward the end of September 2001 , a poorly defined tropical wave moved westward across the tropical Atlantic Ocean through an area of hostile wind shear , which was caused by a large upper @-@ level low within a trough to the northeast of the Lesser Antilles . A few days later , the upper @-@ level low detached from the trough and moved southwestward over the Caribbean Sea , allowing for an upper @-@ level ridge , or high @-@ pressure area , to form over the tropical wave . The change provided a favorable environment for tropical development , and an area of convection soon blossomed along the wave 's axis . As the tropical wave approached the Lesser Antilles , a mid @-@ level wind circulation formed within the deepest part of the convection , and a low @-@ level circulation became gradually more pronounced on satellite imagery . Although its low @-@ level circulation was small and poorly defined , the system increased in organization enough to be classified as Tropical Depression Eleven at 12 : 00 UTC on October 4 , located about 100 mi (160 km) southeast of Barbados . Operationally , however , Hurricane Hunters did not confirm the depression 's formation until nine hours later .

In its early stages , the depression moved west @-@ northwestward between the islands of St. Vincent and St. Lucia under the influence of a strong ridge to its north . Compared to its appearance 24 hours before forming , the depression exhibited improved outflow and more distinct convection , although its lower circulation remained very poorly organized . This was confirmed by a Hurricane Hunters flight into the system , which failed to report a closed circulation despite the depression 's well @-@ organized appearance on satellite imagery . At 21 : 00 UTC on October 5 , they reported a strengthening circulation with flight @-@ level winds of 74 mph (119 km / h) , corresponding to a surface wind intensity of 60 mph (95 km / h) . Based on these data , the depression was upgraded to Tropical Storm Iris , situated about 155 mi (250 km) south of the southern coast of Puerto Rico . In post @-@ season analysis , the National Hurricane Center (NHC) estimated that Iris had attained tropical storm status about nine hours earlier .

Despite the storm 's intensification and well @-@ organized satellite appearance , the circulation

failed to become better defined . In their first discussion on Iris , the NHC mentioned the potential for the system to degenerate into a tropical wave if it maintained its fast forward speed . One forecaster noted that the center was fragile and that the cyclone could dissipate quickly if it encountered stronger wind shear to its south . Although its overall appearance did not change significantly , the Hurricane Hunters reported a closed eye with a diameter 23 mi (37 km) and a stadium effect (eyewall curvature) on October 6 . Later that day , Iris reached hurricane strength just southwest of the southern tip of the Dominican Republic , and the NHC remarked that land interaction with the Greater Antilles was the only factor impeding further development . After Iris reached winds of 85 mph (140 km / h) early on October 7 , its intensity remained steady for about 24 hours . During that time , the satellite appearance became slightly ragged as its outflow became restricted , possibly due to an upper @-@ level low . By late on October 7 , the area of hurricane force winds associated with Iris extended only 25 mi (35 km) from its 16 mi (22 km) wide eye .

Early on October 8 , after turning west @-@ southwestward away from the Greater Antilles , Iris began strengthening again , with warm waters and an absence of significant wind shear . The NHC predicted peak winds of 105 mph (165 km / h) before the storm would hit Belize . It rapidly intensified with the favorable conditions , intensifying from 95 mph (150 km / h) to 140 mph (225 km / h) in a 12 @-@ hour period on October 8 , making Iris a Category 4 hurricane on the Saffir @-@ Simpson scale ; in the same duration , the minimum central pressure dropped 38 mbar (1 @.@ 12 inHg) . While intensifying , the hurricane developed concentric eyewalls , with an innermost eye having a diameter of 7 mi (11 km) . For comparison , the smallest known eye diameter on record for an Atlantic hurricane was about 3 mi (5 km) , during Hurricane Wilma in 2005 . With such a small eye , a Hurricane Hunters flight could not deploy a dropsonde into the center of Iris , and shortly after the flight , the innermost eye collapsed as the core paralleled the Honduras coastline just offshore . This resulted in a temporary and slight weakening during an eyewall replacement cycle , but within a few hours Iris re @-@ intensified to attain peak winds of 145 mph (230 km / h) just off Belize . At 02 : 00 UTC on October 9 , it made landfall at peak intensity in Monkey River Town in the southern portion of Belize .

Initially , Hurricane Iris was forecast to remain a tropical cyclone while crossing Central America and to re @-@ intensify in the eastern Pacific Ocean ; had it done so , it would have retained the name Iris . Instead , the hurricane rapidly weakened after moving into the mountainous terrain of Guatemala , and within six hours of landfall the hurricane weakened to a tropical storm . Late on October 9 , within sixteen hours of landfall , the circulation dissipated over extreme southeastern Mexico . As the remnants approached the Pacific Ocean , a new area of convection developed south of the original circulation of Iris . It gradually organized while continuing westward , developing into Tropical Storm Manuel ; the new storm ultimately lasted until October 18 before succumbing to cooler waters and wind shear .

= = Preparations = =

Over a stretch of four days , sixteen tropical cyclone watches and warnings were issued in association with Iris , affecting the Dominican Republic , the Cuban provinces of Granma and Santiago de Cuba , Jamaica , Cayman Islands , the Yucatán Peninsula , Guatemala , Honduras and Belize . The threat from Iris prompted the Jamaica National Emergency Operations Center to be activated . Shelters were opened in the country but were ultimately unused .

In Belize , a hurricane warning was issued about 23 hours before Iris moved ashore . A state of national emergency was declared on October 8 as Hurricane Iris neared landfall . All emergency response committees were activated to quickly begin recovery efforts . A mandatory evacuation was issued for Stann Creek and Toledo coastal villages and all offshore islands . The main hospital in Belize City was evacuated as a precaution and the city itself was placed under a voluntary evacuation order . Overall , 11 @,@ 380 people evacuated their homes in Belize , including many in Belize City . These evacuations were later credited for limiting the death toll . Hurricane Keith had struck the nation a year prior , preparing some citizens for what to expect . Disaster response teams arrived the day after Iris was projected to make landfall . Pan American Health Organization staff

were on standby in Belize , Guatemala and Honduras and were ready to respond to any post @-@ storm disease outbreaks .

On October 8 , the Government of Honduras declared a red alert for all northern regions , advising residents to expect " extreme weather conditions " . About 5 @,@ 000 people in the country evacuated from their homes . To the north of Belize , officials in Mexico evacuated people from fishing villages and closed ports .

= = Impact = =

= = = Lesser and Greater Antilles = = =

While Iris was in its development stages , residents as far north as Saint Thomas reported rain and thunderstorms . In the Dominican Republic , Iris dropped around 3 in (76 mm) of rainfall along the coast , forcing 35 families to evacuate their homes after rivers exceeded their banks . The rains triggered a landslide outside of Santo Domingo that destroyed a home , killing a family of three . There was another landslide in the region that injured two people . Iris 's passage near Jamaica destroyed two houses and damaged the roofs of two others , causing one injury . Otherwise , damage in the country was minimal .

= = = Offshore = = =

A 120 ft (37 m) scuba diving boat overturned during the hurricane near Big Creek , Belize , possibly hit by a tornado . The boat , named the Wave Dancer , had 28 people on board , including 20 from the Richmond Dive Club out of Richmond , Virginia ; most of them were upstairs in the boat , and none were diving . The captain had delayed returning to shore , and the passengers waited for the storm to pass along a dock , not anticipating the ferocity . Iris cut the ropes connecting the boat to the dock , causing it to overturn in 12 ft (3 @.@ 7 m) waters . Eight people survived , and 11 bodies were recovered ; it was presumed that 20 people died during the wreck , including 15 from the Richmond area and three crew members .

Another boat , the Vendera , also reportedly capsized with people on board .

= = = Belize = = =

Hurricane Iris moved ashore in Belize with winds of 145 mph (233 km / h) , although the highest measured winds were 106 mph (171 km / h) at a station in Big Creek . Because of its small diameter , Iris produced heavy damage only in a 70 mi (110 km) area of southern Belize . In that region , the hurricane produced a storm surge of up to 15 ft (4 @.@ 6 m) , with waves of over 13 ft (4 @.@ 0 m) in height , causing street flooding and some damage to the offshore cayes .

As it moved ashore , Iris damaged houses and schools in dozens of villages . In 35 villages , the storm destroyed more than 95 % of the buildings . Its small size confined the worst damage largely to Toledo and Stann Creek districts , which are the two southernmost and poorest districts of the country . The percentage of damaged houses was 72 % in Toledo district and about 50 % in Stann Creek , leaving about 15 @,@ 000 people homeless . In both districts , the storm caused power outages and contaminated water supplies . In the worst @-@ affected areas , poor Mayan people living on farms lost much of what they owned . At Placencia near the coast , about 80 % of the homes were destroyed and many of the remaining buildings had roof damage , with downed power poles in the streets . About 90 % of the houses in nearby Seine Bight were destroyed , and where Iris made landfall , over 90 % of the homes were destroyed throughout Monkey River Town . The storm damaged several roads and fishing piers in southern Belize . Iris also damaged tourism facilities , including minor impact to the Maya ruins of Belize , and damaged 20 % of the hotel rooms in the country , accounting for \$ 37 million in losses . The remainder of the country remained generally unaffected during the storm .

In southern Belize , the storm 's strong winds left crop damage , in some cases where the harvest had just begun . About 5 @, @ 000 acres (2 @, @ 000 ha) of bananas were destroyed , along with over 3 @, @ 500 acres (1 @, @ 400 ha) of rice , 3 @, @ 000 acres (1 @, @ 200 ha) of corn , and other crops to a lesser degree . The storm also flooded fields and killed several livestock . The shrimp industry lost 25 % of its catch , partly due to contaminated waters . Crop damage in Belize was estimated at \$ 103 million , mostly from banana losses . Iris 's strong winds also damaged large swaths of forest , with upwards of 40 % of trees affected in some areas . This disrupted the habitats of several animals , and it is likely that many of the howler monkeys near Monkey River were killed . The storm 's strong waves eroded the beach , although marine effects were much less than those of Hurricane Keith in the previous year . Nevertheless , there were reports of fish die @-@ offs after the storm , possibly from low oxygen due to too much decaying matter .

Nationwide , Iris damaged or destroyed 3 @, @ 718 homes , directly affecting a total of 21 @, @ 568 people , or 8 @. @ 5 % of the total population . The storm damaged or destroyed 31 schools and 17 health facilities , along with 21 government buildings . There was about \$ 25 million in damage to the transportation sector , including highways and bridges . Iris killed 24 people in and around the country , including the victims of the Wave Dancer shipwreck . Overall damage was estimated at \$ 250 million , making it the most damaging storm in the country since Hurricane Hattie in 1961 .

= = = Elsewhere in Central America = = =

High tides and heavy rainfall caused power outages across both Guatemala and Honduras . In the former , the hurricane 's rainfall generally amounted to 3 to 4 in (76 to 102 mm) , triggering flash flooding and landslides that injured nearly 100 people . The damage was heaviest in Petén Department in the northern portion of the country . The storm damaged 26 schools and 2 @, @ 500 homes in the country 's interior . An estimated 27 @, @ 500 people were affected by the storm throughout Guatemala . There were eight deaths in the country , two of them the result of falling trees .

The remnants of Iris dropped heavy rainfall over southern Mexico , accumulating 4 @. @ 80 in (122 mm) in the southern state of Chiapas . In Oaxaca , the storm produced heavy rains and damaged a total of 120 houses . A mudslide in one village demolished 20 homes and killed a child , while elsewhere in the state a man drowned after being swept away in a flooded river .

= = Aftermath = =

On October 9 , the government of Belize issued the " all clear " signal , indicating that the storm had fully passed , and began reconstruction efforts and damage assessment . The government declared Stann Creek and Toledo districts as disaster areas , and officials declared a nighttime curfew . By the day after the storm struck , the airport in Belize City had been reopened , and transportation in all but the southern portion of the country returned to normal . Residents in the southern part of the country lost access to fresh water , forcing them to drink unclean water . Officials sent medical teams to southern Belize in the most affected areas . The Belmopan Red Cross issued an appeal for residents to donate money , clothing , and food for storm victims . The Red Cross also set up shelters and gave food to more than 7 @, @ 000 people . By October 19 , most roads in southern Belize were reopened . The Belize government printed a new postage stamp to help pay for reconstruction costs , and officials authorized spending \$ 1 @. @ 2 million to rebuild damaged homes . To assist the farmers who lost crops , the Belize government provided 18 @, @ 000 lb (8 @, @ 200 kg) of maize seeds , as well as fertilizer . After the storm , the World Food Programme and the Belize Red Cross collectively provided food for the 9 @, @ 000 families in need of subsistence . By October 31 , the Red Cross had provided blankets , tarps , and hygienic supplies to 4 @, @ 800 people severely affected by the storm . Homes were gradually repaired , and crop production returned to normal by early 2002 . Around Christmas of 2001 , the Belize Red Cross provided presents to school children in 14 villages affected by the storm . The lost banana crop

caused sales to decrease by 22 % in 2002 , although sales gradually recovered .

The government of Belize issued an appeal to the international community for assistance in the days following Iris 's landfall , and various countries provided aid . The United Kingdom sent a helicopter to assist in damage assessment and a crew to clean the water . The United States also sent a crew for damage assessment and donated plastic sheeting . Although sustaining significant damage , the Government of Guatemala deployed a working team with members from throughout the country to assist in recovery in Belize . Mexico sent blankets , mattresses , food , and water , as well as a medical team . The Japanese government sent tents and blankets , and the Chinese government donated 500 lb (230 kg) of rice and dried fruits . Various United Nations departments donated about \$ 225 @, @ 000 .

The American victims of the Wave Dancer boat wreck were flown back to the Richmond , Virginia area following the storm . The insurance company covering the boat reached a \$ 4 million settlement , which was disbursed among the survivors and the victims ' families . The boat operator remained in business following the accident .

Following the major damage in Belize , the name Iris was retired in the spring of 2002 by the World Meteorological Organization and will never again be used for an Atlantic hurricane . The name Ingrid was used instead in the 2007 Atlantic hurricane season , and 2013 Atlantic hurricane season but this name was also retired after Hurricane Ingrid in 2013 caused heavy damage in Mexico .