

= Hurricane Lili =

Hurricane Lili was the second deadliest and second costliest hurricane of the 2002 Atlantic hurricane season , being surpassed by Hurricane Isidore , which affected the same areas around a week before Lili . Lili was the twelfth named storm , fourth hurricane , and second major hurricane of the 2002 Atlantic hurricane season . The storm developed from a tropical disturbance in the open Atlantic on September 21 . It continued westward , affecting the Lesser Antilles as a tropical storm , then entered the Caribbean . As it moved west , the storm dissipated while being affected by wind shear south of Cuba , and regenerated when the vertical wind shear weakened . It turned to the northwest and strengthened up to category 2 strength on October 1 . Lili made two landfalls in western Cuba later that day , and then entered the Gulf of Mexico . The hurricane rapidly strengthened on October 2 , reaching Category 4 strength that afternoon . It weakened rapidly thereafter , and hit Louisiana as a Category 1 hurricane on October 3 . It moved inland and dissipated on October 6 .

Lili caused extensive damage through the Caribbean , particularly to crops and poorly built homes . Mudslides were common on the more mountainous islands , particularly Haiti and Jamaica . In the United States , the storm cut off the production of oil within the Gulf of Mexico , and caused severe damage in parts of Louisiana . Lili was also responsible for severe damage to the barrier islands and marshes in the southern portion of the state . Total damage amounted to \$ 925 million ( 2002 USD ) , and the storm killed 15 people during its existence .

= = Meteorological history = =

A tropical wave moved off the west coast of Africa on September 16 . A low level center of circulation developed from a tropical disturbance spawned by this tropical wave midway between the African coast and the Caribbean on September 20 . The next day , the system gained sufficient organization to become a tropical depression . The depression moved westward in excess of 20 mph ( 32 km / h ) , and reached tropical storm strength @-@ becoming Tropical Storm Lili as it passed through the Windward Islands . The cyclone continued to intensify as it moved west through the Caribbean Sea , reaching a peak strength of 70 mph ( 110 km / h ) on the morning of September 24 . This was immediately followed by an abrupt weakening , and the storm 's maximum sustained winds dropped to 40 mph ( 64 km / h ) later that day . The sudden weakening was attributed to strong southerly vertical shear . The system degenerated into an open tropical wave the next morning , and remained in that state for nearly two days .

Lili regenerated near Jamaica on the evening of September 26 and gradually turned more to the west @-@ northwest while strengthening . The system became a hurricane on September 30 , just after passing through the Cayman Islands . The storm continued on its course while continuing to intensify , and made landfall twice the next day , on the Isle of Youth and near Pinar del Río as a Category 2 hurricane . Lili emerged over the Gulf of Mexico later that day , having lost little strength during its overland passage .

The system turned to the northwest and sped up , becoming a major hurricane on October 2 while 365 miles ( 587 km ) south @-@ southeast of New Orleans . This intensification continued , aided by warm sea surface temperatures in the Gulf of Mexico and good outflow . The system reached its peak strength of category 4 intensity , with winds of 145 mph ( 233 km / h ) , during that afternoon .

This strength was not maintained for long . The storm began to quickly weaken in the early morning hours of October 3 , and this rapid weakening continued until the hurricane 's final landfall near Intracoastal City , Louisiana due to a combination of vertical wind shear , cool waters just offshore Louisiana , and slowly encroaching dry air within its southwest quadrant . By the time of landfall , maximum sustained winds had dropped to 90 mph ( 145 km / h ) . The weakening was accompanied by a collapse of the inner eyewall before landfall . The system continued inland , curving to the north @-@ northeast , and dissipated when absorbed by an extratropical low near the Arkansas / Tennessee border on October 6 .

## == Preparations ==

Tropical storm watches were issued in parts of the Lesser Antilles on September 22 . These were upgraded to warnings the next afternoon , and all advisories were dropped late on September 23 once the storm had passed . Over the next week , the islands of Hispaniola , Jamaica , Cuba , the Caymans , and the Yucatán Peninsula were all under advisories of some kind at different times . Hurricane and tropical storm watches were issued for the Gulf Coast on October 1 , and were upgraded to warnings the next morning . They were discontinued after the storm moved past the following day .

Because the cyclone affected the islands as a weak tropical storm , preparations were minimal . Two hundred people evacuated their homes in advance of the storm on the islands of St. Vincent and Grenadine . In Jamaica , all schools and universities were closed in advance of the storm , and 17 public shelters were opened on the island .

Preparations were extensive in Cuba . Military officials at Guantanamo Bay , Cuba prepared for the possibility of evacuating their Al Qaeda and Taliban prisoners . A total of 130 @, @ 000 Cuban citizens , mainly in western portions of the island , evacuated their homes prior to the storm .

Significant action was taken along the Gulf Coast as the threat the storm posed , predicted to come ashore at Category Four strength , became more urgent . Over a half million people evacuated their homes in Texas and Louisiana , including everyone in Iberia Parish . A total of 200 @, @ 000 people evacuated in Louisiana . At least 2 @, @ 000 volunteers staffed 115 Red Cross shelters in Louisiana , Texas , Mississippi , and Alabama . More than 20 @, @ 000 people stayed in those shelters . The Red Cross also sent over 160 @, @ 000 meals to the area . A total of 3 @, @ 000 prison inmates in Texas were evacuated to safer inland locations . The launch of Space Shuttle Atlantis was delayed for five days when the Kennedy Space Center was threatened by the storm , the first time a launch in Florida had been delayed because of weather in Houston . Stores across the warning area were very busy in advance of the storm . In New Iberia , Louisiana , hardware stores ran out of stock , and businesses in Lafayette , Louisiana reported similar shortages .

Collegiate activities were also affected by the storm . Southern University canceled four days of classes because of Lili , and 20 Texas A & M University Galveston , Texas students evacuated to the school 's College Station location . The University of South Alabama canceled two athletic events in advance of the storm .

## == Impact ==

Hurricane Lili was both the second deadliest and the second most devastating hurricane of the 2002 Atlantic hurricane season ( Isidore killed 22 people and damaged \$ 1 @. @ 3 billion worth of property ) . A total of 13 people died in the Caribbean Islands , and 2 more were killed in the United States . Severe damage to crops and livestock occurred through the Lesser Antilles , and damage to buildings and other infrastructure was reported in other Caribbean nations and the United States .

## == Lesser Antilles ==

Lili affected the islands as a tropical storm . Winds in the area were generally below hurricane force , although some gusts exceeded 74 mph ( 119 km / h ) . Rainfall of up to 4 inches ( 100 mm ) caused deadly mudslides . The winds , combined with poor construction , tore the roofs off numerous homes and businesses . The majority of the damage was dealt to primarily to the banana crop .

St. Lucia lost at least 75 percent of its banana crop , and hundreds of homes were damaged by the strong winds . Near total loss of electricity , water , and telephone services occurred , and utility systems were heavily damaged . Four people were killed on the island , and total damage was estimated at \$ 20 million ( 2002 USD , \$ 23 @. @ 5 million 2007 USD )

Over 400 homes were damaged in Barbados , and nearly 50 trees were downed by the high gusts .

Similar to in St. Lucia , there was significant damage to the nation 's banana crop . Extensive loss of electricity and telephone service also occurred . Damage totaled at nearly \$ 200 @,@ 000 ( 2002 USD , \$ 235 @,@ 000 2007 USD )

Grenada also experienced moderate damage . A total of 14 homes ' roofs were damaged , and one was completely destroyed . The island Medical Centre 's roof was also damaged , and 12 landslides were reported . There was also mild damage to infrastructure , particularly in St. Patrick 's Parish ; three bridges were damaged or destroyed , along with seven utility poles and a water main . The entire island was without power at some point , but it was quickly restored in the southern part of the island where damage to the poles themselves was less significant .

St. Vincent and the Grenadines were heavily damaged , especially compared to other islands in the area . Several hundred homes and two schools were damaged , and the Rose Hall Police Station 's roof was lost . Still , the majority of damage was dealt to the agricultural industry . In all , damage to the islands totaled \$ 40 million ( 2002 USD , \$ 47 million 2007 USD ) .

= = = Haiti = = =

Lili passed offshore of Haiti as a dissipating tropical storm . The storm 's major impact was extremely heavy rainfall , in excess of 16 inches ( 410 mm ) near the settlement of Camp @-@ Perrin , Haiti . This caused the Ravine du Sud River to overflow , and submerge buildings in the town . Two people died in the mudslides these rains triggered , and two more drowned in the flooding around Camp @-@ Perrin . The floods also seriously damaged crops and infrastructure ; over 1700 homes were damaged and 240 were destroyed . Hatia was effected dramatically and many towns and villages submerged into rivers exceeding their bankfull discharge

= = = Jamaica = = =

Lili affected Jamaica as a strengthening tropical storm . Wind gusts in excess of 70 mph ( 110 km / h ) and rainfall over 2 feet ( 0 @.@ 61 m ) resulted in damage to homes , crops , and utility systems

Extremely heavy rainfall inundated the island . Cedar Valley recorded the most rainfall , with 23 @.@ 1 inches ( 590 mm ) measured . This led to prolific flooding that triggered mudslides across the island and killed four people . These floods decimated the island 's sugar cane crop , one of the island 's principal exports . The resultant flooding caused widespread problems with the infrastructure of the island . All of the island 's hospitals had flood damage , and three were also dealt structural damage by the strong winds . The flooding caused latrines and other sewage sources to overflow into the intake sources for the water supply , leading to fear of disease .

= = = Cuba = = =

Lili made landfall as a category two hurricane twice in Cuba , on the Isle of Youth and in the Pinar del Río Province , on October 1 . Wind gusts up to 112 mph ( 180 km / h ) and rainfall amounts reaching 6 inches ( 150 mm ) in some places caused damage to homes , businesses and crops . One person was killed .

Damage to buildings and other infrastructure was significant . The most severely affected provinces were Pinar del Río and La Habana . A total of 48 @,@ 000 homes were damaged , 16 @,@ 000 of them lost their roofs . The province Sancti Spiritus was not affected as severely , as only 945 homes were damaged , with 500 losing their roofs . The provinces in Eastern Cuba , including Guantanamo , suffered similar damage . Electricity outages for whole towns lasted weeks in parts of the western provinces . This led to loss of running water due to unpowered pumps , and deliveries of fresh water had to be made to remote villages . The tobacco and rice crops were badly depleted , but it was difficult to differentiate how much damage was caused by Lili , since Isidore had struck the region just a week earlier .

== Louisiana ==

Lili made landfall on the morning of October 3 near Intracoastal City , as a weakening category one hurricane . Wind gusts reaching 120 mph ( 190 km / h ) , coupled with over 6 inches ( 150 mm ) of rainfall and a storm surge of 12 feet ( 3 @. @ 7 m ) caused over \$ 790 million ( 2002 USD ; \$ 1 billion 2007 USD ) in damage to Louisiana . A total of 237 @, @ 000 people lost power , and oil rigs offshore were shut down for up to a week . Crops were badly affected , particularly the sugar cane , damage totaled nearly \$ 175 million ( 2002 USD ; \$ 205 million 2007 USD ) . No direct deaths were reported as early warnings and the compact nature of the storm circumvented major loss of life .

Vermillion Parish , the point of landfall , was hardest hit . Wind gusts in excess of 120 mph ( 190 km / h ) , along with a storm surge of 12 feet ( 3 @. @ 7 m ) dealt major damage to nearly 4000 homes . The worst storm surge flooding occurred in Intracoastal City , destroying 20 buildings owned by a helicopter company . One person died after the storm , and 20 were hospitalized for carbon monoxide poisoning .

Acadia Parish was also hard hit , recording wind gusts exceeding 110 mph ( 180 km / h ) , and 5 tornadoes touched down in the parish . Thousands of homes were damaged with over 2 @, @ 500 suffering severe damage . Power across the parish was knocked out , 2 people were injured and one was killed after the storm . Schools in the parish also sustained \$ 1 @. @ 6 million ( 2002 USD ; \$ 1 @. @ 9 million 2007 USD ) in damage .

== Mississippi ==

Lili 's outer rainbands dumped large amounts of rain and brought tropical storm force wind gusts to Mississippi . Pascagoula , Mississippi recorded wind gusts of 41 mph ( 66 km / h ) , and Picayune , Mississippi received 4 @. @ 14 inches ( 105 mm ) of rainfall . Minor power outages occurred , mainly in southern Mississippi , and combined with the flooding of roads and buildings caused \$ 30 million ( 2002 USD ; \$ 35 million 2007 USD ) in damage . No deaths occurred in Mississippi .

== Other areas in the United States ==

Hurricane Lili 's remnants brought heavy rainfall , peaking at four inches in Arkansas , to the Southeast , before dissipating near the Arkansas @-@ Tennessee border . No major damage was reported . In all , Lili caused \$ 820 million in damage to the United States .

== Aftermath ==

President Bush declared Louisiana a federal disaster area after the storm , making it eligible for assistance . FEMA set up three locations to apply in Mississippi and Louisiana . Applications began pouring in , 153 @, @ 000 by the time of the deadline . Over \$ 311 million in aid was granted to Louisiana . A total of \$ 50 million of that money was in the form of low interest loans , and not actual grants .

Over 1 @, @ 000 power workers from eight different states went to the worst hit areas to help restore power . Seven states sent tree trimmers to help clear debris from power lines and roads to speed the recovery process . In addition , FEMA gave SLEMCO , the state 's power company , an \$ 8 @. @ 6 million grant , which paid for 75 % of the damage to the electrical grid there . It took up to four weeks to restore power to all customers .

Hurricane Lili caused great environmental damage to the marshes and barrier islands in Louisiana . Huge fish kills were observed in marshes near the landfall point , and in the Atchafalaya Swamp . The barrier islands to the east of the landfall point , those subjected to the highest surge , were severely eroded . Sand was also deposited behind them into the brackish marshes , burying vegetation . The freshwater marshes were severely damaged by the wind and surge , some of them completely destroyed . The severe erosion created new waterways connecting inland bodies of water with the Gulf of Mexico , which eventually led to further erosion of inland lagoons .

### **= = = Retirement = = =**

The name Lili was retired in the spring of 2003 because of its destruction and deadly Caribbean track , and will never be used again in the Atlantic basin . It was replaced with Laura for the 2008 season . The names Lucy and Lisette were also suggested as possible replacement names for Lili .