

= Tropical Storm Marco (1990) =

Tropical Storm Marco was the only tropical cyclone to make landfall on the United States during the 1990 Atlantic hurricane season . The 13th named storm of the season , Marco formed from a cold @-@ core low pressure area along the northern coast of Cuba on October 9 , and tracked northwestward through the eastern Gulf of Mexico . With most of its circulation over the western portion of Florida , Tropical Storm Marco produced 65 mph (100 km / h) winds over land . However , it weakened to a tropical depression before moving ashore near Cedar Key . The cyclone combined with a cold front and the remnants of Hurricane Klaus to produce heavy rainfall in Georgia and the Carolinas . After interacting with the nearby Hurricane Lili , Marco continued northward until being absorbed by a cold front on October 13 .

In Florida , the cyclone triggered flooding of some houses and roadways . Rainfall across its path peaked at 19 @. @ 89 inches (505 mm) in Louisville , Georgia , though several locations received over 10 inches (250 mm) of precipitation . The flooding caused a total of 12 deaths , mostly due to drowning , as well as \$ 57 million in damage (1990 USD , \$ 103 million 2016 USD) .

= = Meteorological history = =

By early on October 6 , a low pressure area and circulation persisted over eastern Cuba in the middle levels of the atmosphere . The low drifted westward , and interacted with Hurricane Klaus to its east . Initially cold @-@ core in nature , the system gradually built downward to the surface , and on October 9 , the low developed a low @-@ level circulation ; at 1200 UTC the National Hurricane Center classified it as Tropical Depression Fifteen while located near the Cuban city of Caibarién , though the cyclone was initially subtropical in character . To its east , Tropical Storm Klaus continued to weaken ; the depression absorbed most of Klaus and became the dominant system . The storm tracked parallel to the coast of Cuba before veering northward and crossing the Florida Keys , where it intensified into Tropical Storm Marco about 35 mi (55 km) south @-@ southeast of Key West , Florida .

After passing midway between Key West and the Dry Tortugas , Tropical Storm Marco adopted a steady northward track and quickly intensified , reaching peak winds of 65 mph (100 km / h) on October 11 , while still southwest of Englewood , Florida . The center of the storm continued on its off @-@ shore parallel for another six hours after reaching its peak intensity , until it reached a position about six mi (10 km) west of Bradenton Beach ; although the center of the storm remained offshore , much of its circulation was over land . Initially the storm still was forecast to move ashore between Fort Myers and Sarasota . However , the cyclone continued its northward trajectory , the center remaining offshore , and it weakened to a tropical depression prior to making landfall near Cedar Key early on October 12 .

After landfall , the cyclone accelerated in forward speed northward , weakening in intensity , and , by 1200 UTC on October 12 , Marco became an extra @-@ tropical cyclone . It turned to the northeast and east through South Carolina , following behind Hurricane Lili to its northeast . For a time , the system 's proximity to Lili resulted in hints of the Fujiwhara effect , in which two tropical cyclone appear to rotate around each other . The cold front that absorbed the weakening low was to the storm 's north on October 13 , though moisture from the remnants of Marco dropped heavy rainfall across the southeast United States for another day .

= = Preparations = =

A tropical storm warning was issued at some point during the existence of the cyclone for the west coast of Florida from Key West to Apalachicola . Additionally , a tropical storm warning was put in place for the east coast from Vero Beach northward to Fernandina Beach . Before the arrival of Marco , elementary schools were closed on the three barrier islands in Lee County . Florida governor Bob Martinez ordered the closure of state offices in the Tampa Bay area , and also decided not to open the University of South Florida and nearby community colleges . Public schools

were not opened on the day of the storm 's passage in Manatee and Sarasota counties , though most other schools remained open . As the storm tracked northward , the National Weather Service issued a flood watch for much of Georgia . A flood watch was later issued for western portions of the Carolinas and for high elevations in Virginia and West Virginia .

= = Impact = =

= = = Florida = = =

With most of its circulation over the western portion of Florida during its existence , Tropical Storm Marco produced 39 ? 74 mph winds across western Florida . As it brushed the coastline , the storm developed strong convective rain bands , leading to peak sustained winds of 69 mph (112 km / h) with gusts to 85 mph (137 km / h) on the Sunshine Skyway Bridge ; the bridge was closed after gusts reached 70 mph (115 km / h) . Squalls from the storm spawned four tornadoes in the state , one of which struck the city of Crystal River , destroying a mobile home and left 2 @, @ 000 people without power for about an hour . Storm damage left about 25 @, @ 000 customers across the state without power and about 40 families temporarily homeless .

Paralleling the coastline , the storm produced a light storm surge that peaked at 2 @. @ 6 feet (0 @. @ 8 m) above normal on Sanibel Island . In some locations , the surge rose rapidly , and , despite the unusual geography of the area , the levels varied only by as much as 9 @. @ 8 inches (250 mm) than the predicted levels from the SLOSH model . The surge and waves caused minor beach erosion . Moderate to heavy rainfall fell across western Florida , peaking at 6 @. @ 14 inches (156 mm) near Bradenton ; the rainfall was beneficial after a very dry summer , though , because it fell quickly , even this amount of precipitation failed to relieve water restrictions across the area . The storm resulted in some flooding in its path , including some several homes in Manatee County , roadways , and two U.S. highways . Statewide damage totalled \$ 3 million (1990 USD , \$ 5 @. @ 43 million 2016 USD) , of which \$ 1 million (1990 USD , \$ 1 @. @ 81 million 2016 USD) occurred in Manatee County .

= = = Elsewhere = = =

As the remnants of Marco entered Georgia , they combined with the remnant moisture from Hurricane Klaus and a slow @- @ moving cold front , which caused large amounts of precipitation to fall across the eastern portion of the state . Rainfall peaked at 19 @. @ 89 inches (505 mm) at a weather station near Louisville , Georgia where over 16 inches (400 mm) fell in a 24 ? hour period . In Augusta , 2 @. @ 79 inches (71 mm) of rainfall fell in one hour , which forced the evacuation of about 300 people . Some roads in eastern Georgia were flooded up to 6 feet (1 @. @ 8 m) deep , and police officers in Augusta rescued people in flooded cars . The flooding resulted in some power outages . In the deluge , five people drowned , and 450 were left homeless . The remnants of the storm spawned a tornado in Brantley County , which destroyed 25 unoccupied homes . Damage in Georgia totaled \$ 42 million (1990 USD , \$ 76 @. @ 1 million 2016 USD) . On October 19 , 1990 , President George H. W. Bush declared several counties in Georgia as federal disaster areas , which permitted the use of emergency funds for victims .

Heavy rainfall continued northward into the Carolinas . Much of South Carolina experienced over 7 inches (175 mm) of precipitation ; statewide , the rainfall peaked at 13 @. @ 96 inches (355 mm) in Pageland . The highest totals in 100 years in some locations also ended a severe drought . In the flooding , 80 bridges in the state failed ; in total , more than 120 bridges were either closed , damaged , or destroyed . In South Carolina , the system caused three drowning deaths ; damage totaled \$ 12 million (1990 , \$ 21 @. @ 7 million 2016 USD) . In North Carolina , rainfall reached 10 @. @ 74 inches (273 mm) in Albemarle . The storm directly caused two deaths in North Carolina , and indirectly caused two traffic deaths .

Rainfall from the combined remnants of Marco and Klaus extended into the Ohio Valley , with 3

@. @ 67 inches (93 mm) recorded near Mountain City , Tennessee . Totals of 2 ? 5 inches (50 ? 125 mm) spread across northwest Virginia , western Maryland , eastern West Virginia , and the Susquehanna Valley of Pennsylvania . In New York , the rainfall combined with moisture from Hurricane Lili , which triggered flooding that closed a portion of a railway line and a highway .

Tropical Storm Marco was the only storm to strike the United States during the 1990 hurricane season ; without Marco , the season would have been the first to have no tropical storm or hurricane make landfall in the US since the 1890 season .