

= Tropical Storm Bonnie (2016) =

Tropical Storm Bonnie was a weak but persistent tropical cyclone that brought heavy rains to the Southeastern United States in May 2016 . The second storm of the season , Bonnie formed from an area of low pressure northeast of the Bahamas on May 27 , a few days before the official hurricane season began on June 1 . Moving steadily west @-@ northwestwards , Bonnie intensified into a tropical storm on May 28 and attained peak winds six hours later . However , due to hostile environmental conditions , Bonnie weakened to a depression hours before making landfall just east of Charleston , South Carolina , on May 29 . Steering currents collapsed afterwards , causing the storm to meander over South Carolina for two days . The storm weakened further into a post @-@ tropical cyclone on May 31 , before emerging off the coast while moving generally east @-@ northeastwards . On June 2 , Bonnie regenerated into a tropical depression just offshore North Carolina as conditions became slightly more favorable . The next day , despite increasing wind shear and cooling sea surface temperatures , Bonnie reintensified into a tropical storm and reached its peak intensity . The storm hung on to tropical storm strength for another day , before weakening into a depression late on June 4 and became post @-@ tropical early the next day .

Lingering over South Carolina for a few days , Bonnie brought heavy rains and widespread floods to the Southeastern United States . Rainfall totals hit 6 inches (150 mm) in much of South Carolina , and exceeded 10 in (250 mm) in some areas . Flooding resulted in the closure of the southbound lanes of Interstate 95 in Jasper County , and also inundated the Jasper County Sheriff ' s Office and Detention Center . In Ridgeland , several buildings were damaged and the local wastewater treatment plant overflowed , spilling discharge into the nearby Captain Bill Creek . Damage in this county alone exceeded \$ 640 @, @ 000 (2016 USD) . Record @-@ breaking rainfall was observed across much of the Outer Banks ; on Hatteras Island , Cape Point Campground was closed for a week due to flooding . Two people drowned in rip currents along the coastline of the Southeast United States .

= = Meteorological history = =

On May 24 , the National Hurricane Center (NHC) began monitoring an area of disturbed weather resulting from the interaction of a weakening cold front and an upper @-@ level trough . A surface area of low pressure formed late the next day , and the low eventually gained sufficient organization for the NHC to declare it a tropical depression at 5 : 00 p.m. EDT (21 : 00 UTC) on May 27 . At the time , the depression was located about 435 miles (695 km) southeast of Charleston , South Carolina , and moving west @-@ northwestwards in response to a low over the northwestern Bahamas and a ridge near the coast of North Carolina . Strong vertical wind shear and dry air in the region hindered strengthening , however , the depression was located over the warm waters of the Gulf Stream . In the afternoon of May 28 , a burst of deep convection developed near the northwestern part of the exposed low @-@ level circulation center (LLCC) , and the NHC upgraded the depression to Tropical Storm Bonnie .

Despite strong southerly shear exposing the LLCC , Bonnie intensified slightly to reach its initial peak intensity with winds of 45 mph (75 km / h) as it turned towards the north . However , the continued effects of high wind shear and dry air caused the cyclone ' s appearance to significantly degrade early on May 29 , as deep convection dissipated due to more than 46 mph (74 km / h) of southerly shear . Bonnie weakened back to tropical depression strength less than an hour prior to its landfall just east of Charleston , South Carolina . Caught in weak steering currents , the depression meandered over South Carolina for over a day before degenerating to a remnant low over the northeastern portion of the state at 11 : 00 a.m. EDT (15 : 00 UTC) on May 30 .

The remnant circulation continued to move slowly and erratically as it emerged off the coast on May 31 , before accelerating east @-@ northeastwards and reintensifying slightly . Amidst light wind shear and high sea surface temperatures (SSTs) , organization improved as convection persisted near the center , and Bonnie regenerated into a tropical depression on June 2 . The next day , despite worsening conditions , a burst of convection around the center led to Bonnie once again

being declared a tropical storm , simultaneously attaining a new minimum pressure of 1006 mbar (hPa ; 29 @. 71 inHg) . Increasing northwesterly shear and cooling SSTs soon became evident as the LLCC became exposed to the west , however Bonnie continued to maintain tropical storm strength . On the afternoon of June 4 , Bonnie began to succumb to the unfavorable conditions , and the storm weakened into a tropical depression . Early the next day , Bonnie degenerated once more into a post @-@ tropical cyclone . The storm continued moving east @-@ southeastward over the Atlantic Ocean , and eventually dissipated early the next day .

= = Preparations , impact and records = =

Upon formation , a tropical storm warning was issued , covering the Savannah River to the Little River Inlet in South Carolina . These were discontinued when Bonnie weakened to a depression at 8 : 00 a.m. EDT (12 : 00 UTC) on May 29 . Total rainfall accumulations in South Carolina from Bonnie peaked at 10 @. 43 inches (265 mm) in Ridgeland . The heavy rains affected several coastal businesses expecting high numbers of tourists over the Memorial Day weekend . The heavy rains led to significant flooding , prompting the South Carolina Highway Patrol to close at least seven roads in Jasper County , including the southbound lanes of Interstate 95 . Other road closures occurred in Dorchester and Hampton counties , after flooding rendered them impassible . Across Jasper County , four buildings sustained major damage and ten others experienced minor damage , primarily within the town of Ridgeland . Water inundated both the Jasper County Sheriff ' s Office and Detention Center , prompting the relocation of one @-@ third of its inmates . Ridgeland ' s wastewater treatment plant overflowed , spilling 75 @, @ 000 to 100 @, @ 000 gallons (280 @, @ 000 to 380 @, @ 000 liters) of discharge into the nearby Captain Bill Creek . Bonnie is estimated to have caused over \$ 640 @, @ 000 (2016 USD) in structural damage in Jasper County alone . At Charleston International Airport , a sustained wind of 31 mph (50 km / h) and a gust to 40 mph (65 km / h) were observed ; these were the highest recorded windspeeds related to the cyclone on land .

In Georgia , precipitation reached 7 @. 74 in (197 mm) at Oliver . In Bulloch County , several roads were inundated or closed due to high water . Some ponds exceeded their banks . Heavy rainfall , record @-@ breaking in some areas , was observed in much of the Outer Banks of North Carolina . Precipitation peaked at 8 @. 21 in (209 mm) at the Billy Mitchell Airport in Hatteras . At that location , 7 @. 09 in (180 mm) of rain fell on May 30 , breaking the old record set in 1940 . Furthermore , a new monthly rainfall record for the month of May was observed ? 12 @. 67 in (322 mm) of rain fell during that month . At least 7 in (180 mm) of rain fell on Hatteras Island , resulting in the closure of Cape Point Campground and its online reservation system for a week . Several beach ramps were inundated with at least 6 in (150 mm) of standing water and some were rendered impassible , however none were closed . Tropical Storm Colin would later combine with Bonnie to produce at least 10 in (250 mm) of standing water in farmlands in Hyde and Beaufort counties , damaging young and newly planted crops .

Swells generated by Bonnie created an elevated risk of rip currents along the coastline of the Southeastern United States . Several water rescues were carried out . A 21 @-@ year @-@ old man went missing at Carolina Beach on May 28 ; his body was recovered in New Hanover County , North Carolina , three days later . Further south , the body of a 20 @-@ year @-@ old man was recovered in Brevard County , Florida , after he drowned .

When Bonnie formed on May 27 , it became the first occurrence of two pre @-@ season Atlantic storms since 2012 , and only the second occurrence since 1951 . The first storm , Alex , had formed in January .