

Tropical Storm Bonnie at peak intensity (40 kts, 1008 mb) at 2 PM, 28 May, 2016. Image Courtesy of NRL Monterey

Tropical Storm Bonnie

May 29-30, 2016
South Carolina Department of Natural Resources
Land, Water and Conservation Division
South Carolina State Climatology Office

Compiled by Mark Malsick

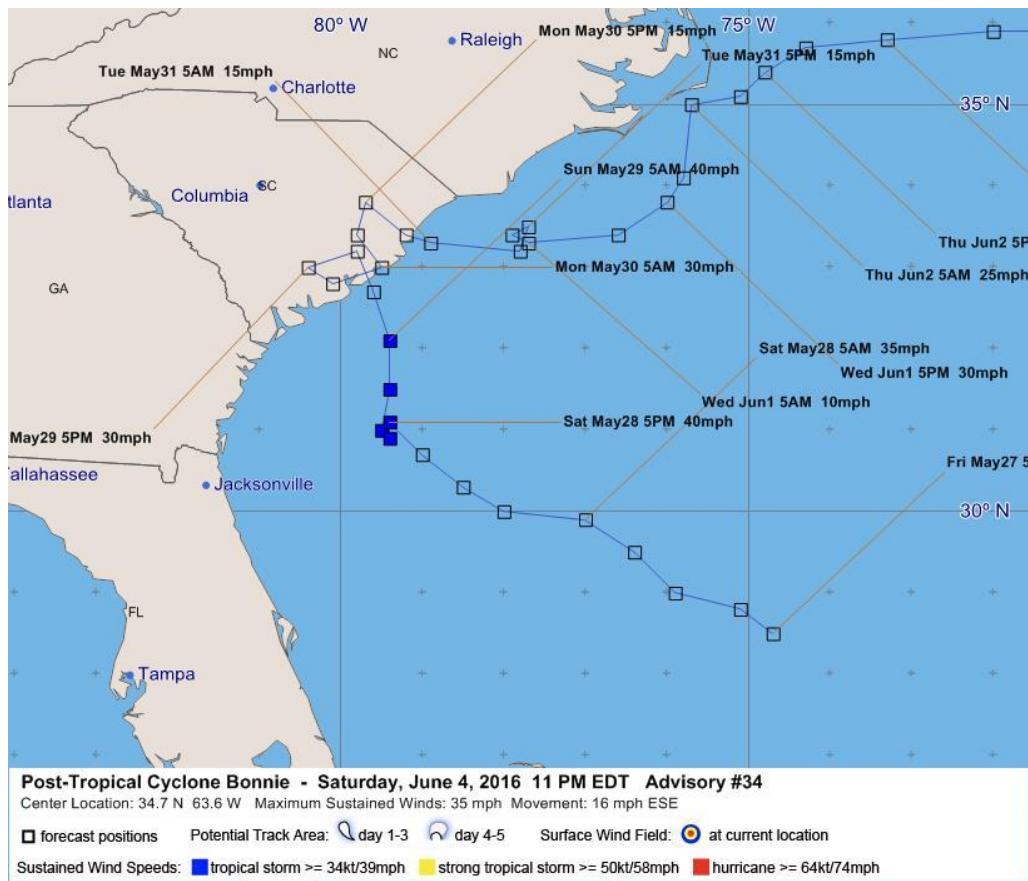


Figure 1. Tropical Storm Bonnie track

EVENT SUMMARY:

Bonnie (Fig. 1) was the first of five tropical cyclones to affect the South Carolina coastline in 2016. Bonnie was a short-lived tropical storm that strengthened from the non-tropical remnants of a decayed frontal boundary northeast of the Bahamas (Fig. 2). The initial disturbance that became Bonnie drifted west-northwest guided by the southern extent of the sub-tropical high, becoming Tropical Depression 2 on 27 May. Interaction with the Gulf Stream strengthened the storm's convection and winds, prompting the National Hurricane Center to upgrade TD 2 to Tropical Storm Bonnie, albeit briefly, during the morning of the 28th when the storm was 195 miles south-southeast of Charleston.

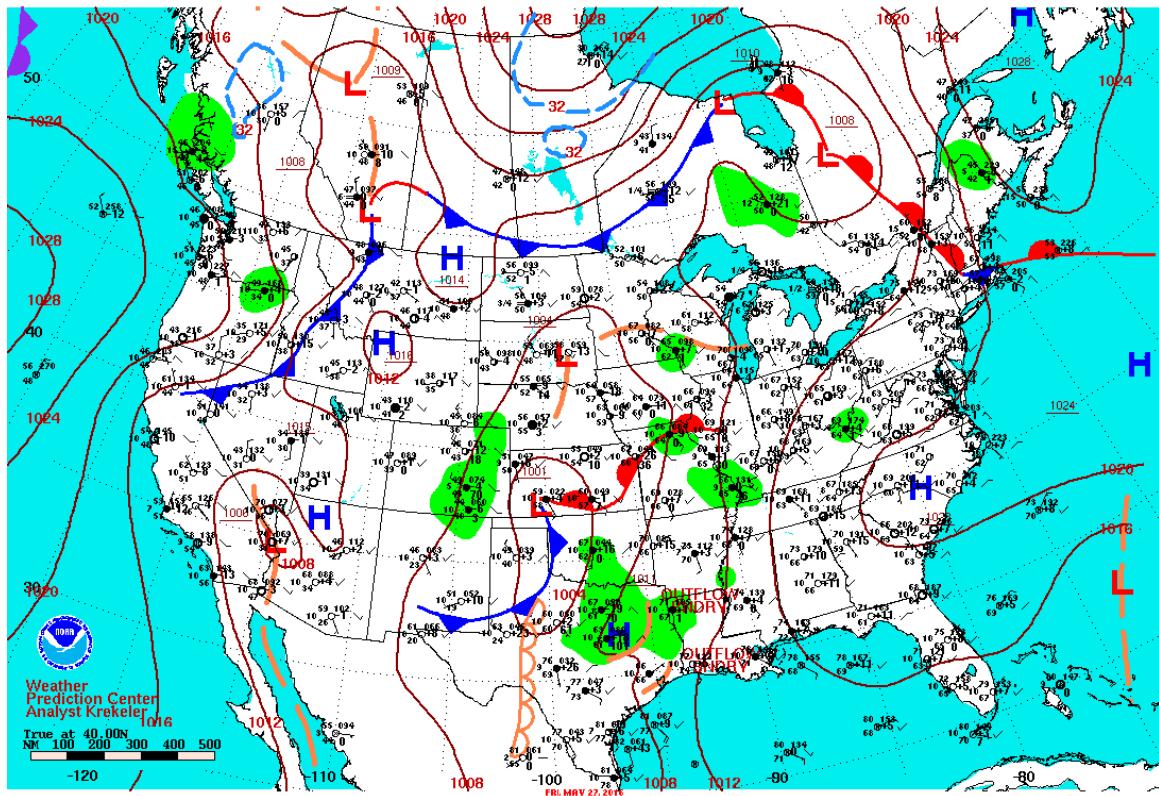


Figure 2. Surface Analysis 7:00 27 May 2016. Map courtesy NOAA/WPC

Interaction with land, and persistent shear weakened Bonnie to a tropical depression early on the morning of 29 May as the disheveled cyclone tracked north-northwest towards the South Carolina coast. Shear displaced convection northwest and exposed the center of circulation prior to landfall (Fig. 3). Bonnie made landfall as a 30 knot tropical depression on the Isle of Palms at 7:30 AM, 29 May. After landfall, in the absence of significant steering, Bonnie made a slow counter-clockwise loop over the Low Country dropping heavy rain over Colleton, Jasper and Beaufort Counties. The National Hurricane Center downgraded Bonnie to a post-tropical remnant early 30 May. The remnants of Bonnie then turned eastward and re-emerged over Atlantic coastal waters after 7 PM 30 May, tracking away from the South Carolina coast. Interacting with the warm Gulf Stream waters, Bonnie regained Tropical Storm status briefly 150 miles east-northeast of Cape Hatteras on 3 June before finally dissipating to a remnant low 48 hours later.

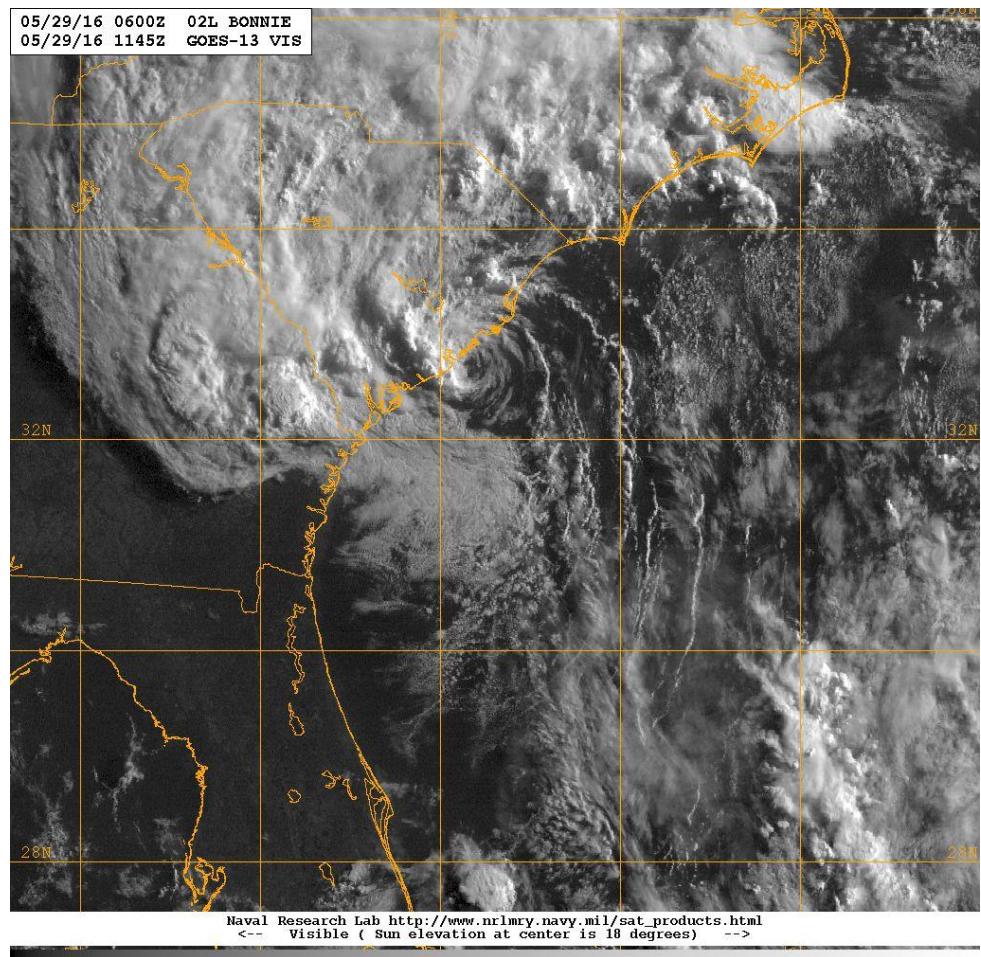


Figure 3. Tropical Depression Bonnie landfall. NRL Monterey.

SOUTH CAROLINA EFFECTS:

Tropical Depression Bonnie produced 4-10 inches of rainfall across southern South Carolina (Fig. 4.). The highest rainfall amount, 10.36 inches, was reported in Ridgeland. Flooding near mile marker 22 initially closed both north and southbound lanes of I-95. The southbound lanes of I-95 between exits 18 and 24 in Jasper County, near Ridgeland and Yemassee, remained closed for 16 hours. US Highway 17 was also closed briefly by flooding and submerged vehicles. Numerous roads in Beaufort, Dorchester, Charleston, Hampton, and Jasper Counties were also closed by flash flooding. Jasper County reported \$640,000 in flood damage to.

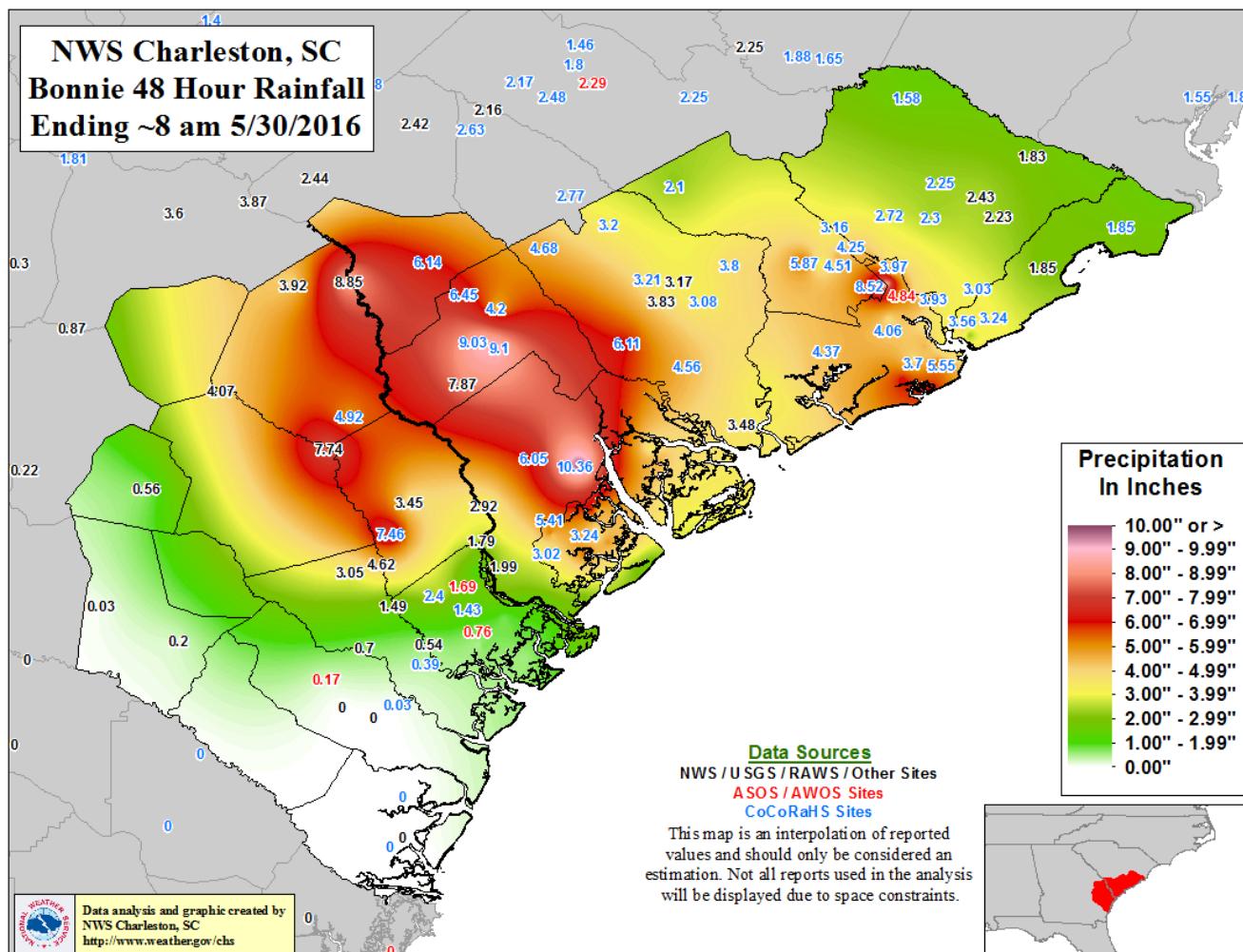


Figure 4. Tropical Depression Bonnie rainfall totals. Courtesy NWS-Forecast Office Charleston

A. Rainfall:

| | |
|---------------------------|--------------|
| Ridgeland 5.8 ESE | 10.36 Inches |
| Varnville 6.3 SSW | 9.10 Inches |
| North Charleston 2.6 NW | 8.61 Inches |
| Youmans Farm, Furman 1 SW | 7.87 Inches |
| Folly Beach | 6.28 Inches |
| Johns Island | 6.24 Inches |
| Yemasee 7.6 NE | 6.11 Inches |
| Ridgeland 2.2 WSW | 6.05 Inches |
| Bluffton 1.9 SSW | 5.42 Inches |
| Charleston AFB | 4.84 Inches |
| Hilton Head 4 N | 4.09 Inches |
| Summerville 3.3 NE | 4.05 Inches |

B. Recorded peak winds:

Airports:

| | |
|--------------------------|------------------------------------|
| Charleston AFB KCHS: | 27 KT from 290° at 7:56 AM 5/29/16 |
| Beaufort MCAS KNBC | 19 KT from 290° at 1:10 PM 5/29/16 |
| Hilton Head Airport KHDX | 22 KT from 010° at 8:35 PM 5/28/16 |

Official Coastal/Marine Sites:

| | |
|----------------------------|------------------------------------|
| NDBC 41004 Edisto Buoy | 28 KT from 247° at 5:10 PM 5/29/16 |
| NDBC 41033 Fripp Nearshore | 25 KT from 045° at 7:08 PM 5/28/16 |
| CMAN FBIS1 Folly Beach | 22 KT from 045° at 2:20 AM 5/29/16 |

C. Storm Surge/Tide:

| | |
|------------------|----------------------|
| Oyster Landing | 1.8 foot surge |
| Charleston | 3.36 foot storm tide |
| Fort Pulaski, GA | 3.95 foot storm tide |

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