

TROPICAL STORM IRMA

11 September 2017

OPEN-FILE REPORT

South Carolina Department of Natural Resources
Land, Water and Conservation Division
South Carolina State Climatology Office

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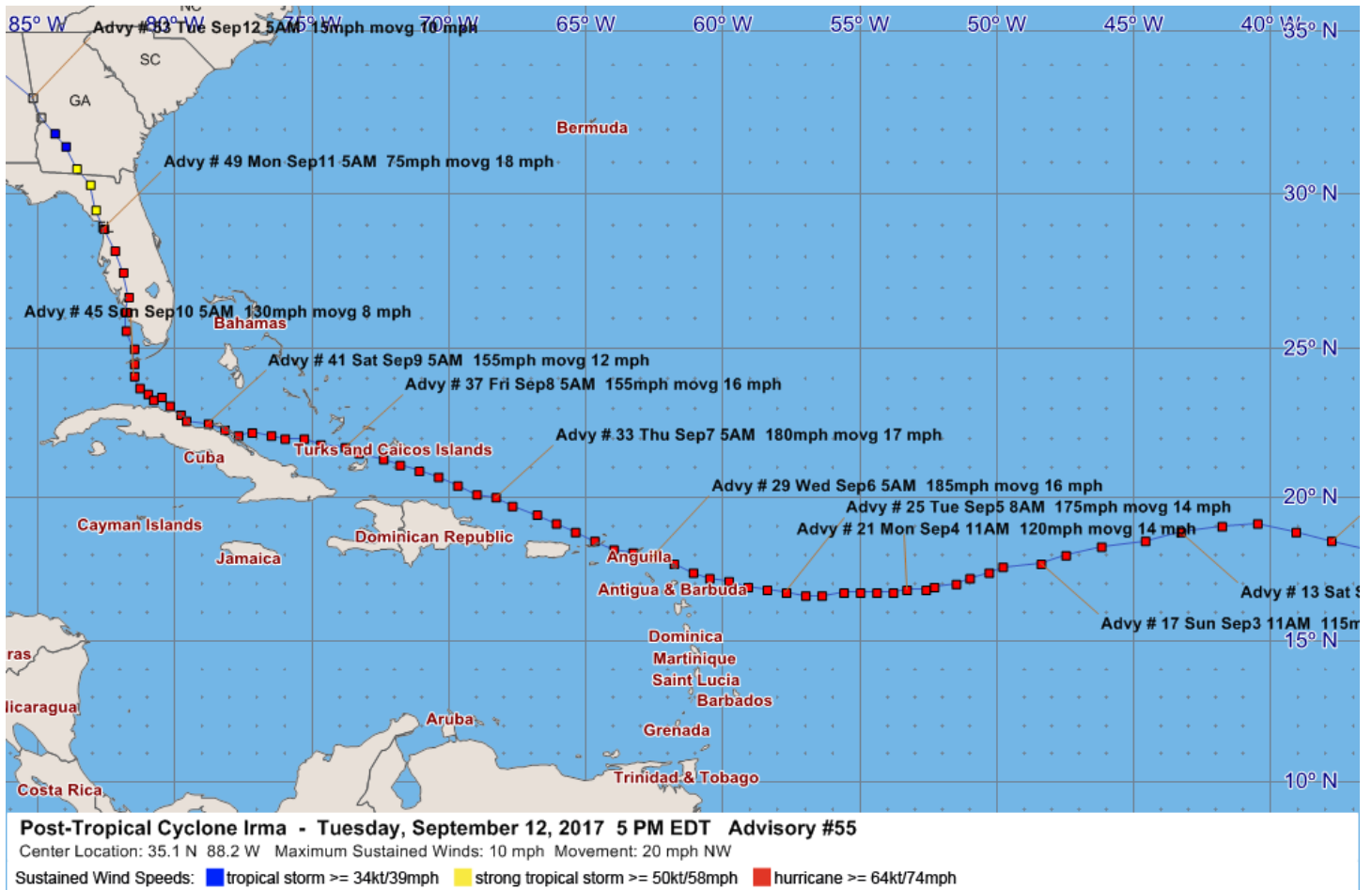


Figure 1. Track and intensity history of Hurricane Irma

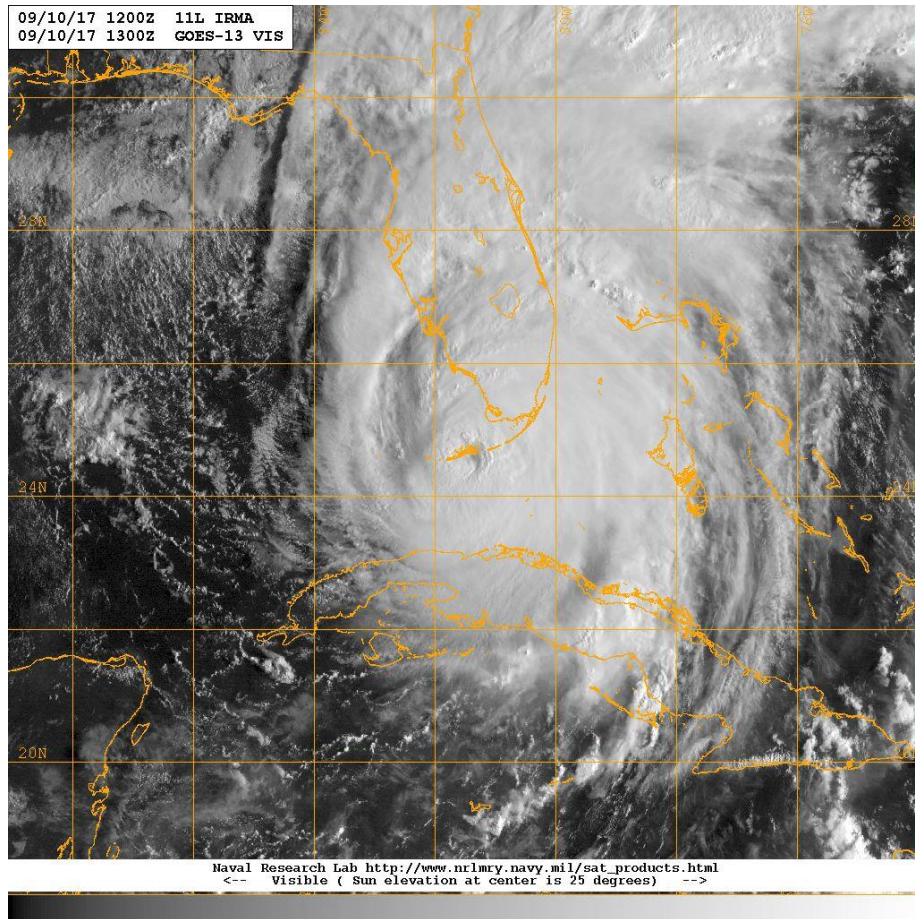


Figure 2. Hurricane Irma at Florida landfall 9:10 PM, 10 September. (Naval Research Laboratory, Monterey)

South Carolina Effects:

On Monday, 11 September, the center of Tropical Storm Irma passed 200 miles southwest of the state. The storm's expansive eastern precipitation shield affected the entire state with periods of heavy rain and damaging tropical storm force winds on Monday and early Tuesday. The strongest winds and heaviest rainfall amounts were reported along the coast and with widespread flooding due to storm surge, heavy surf, and persistent easterly winds. The Charleston Air Force Base had the highest official maximum sustained wind of 43 miles per hour and wind gusts to 59.8 miles per hour. The Beaufort Marine Corps Air Station had a peak gust of 61 mph. The 10 meter high Folly Beach C-MAN site recorded 51 mph east winds gusting to 64 mph. A nearby non-NWS WeatherFlow instrument captured a gust of 72.5 mph. The Hilton Head Airport had a minimum sea level pressure of 999.7 millibars.

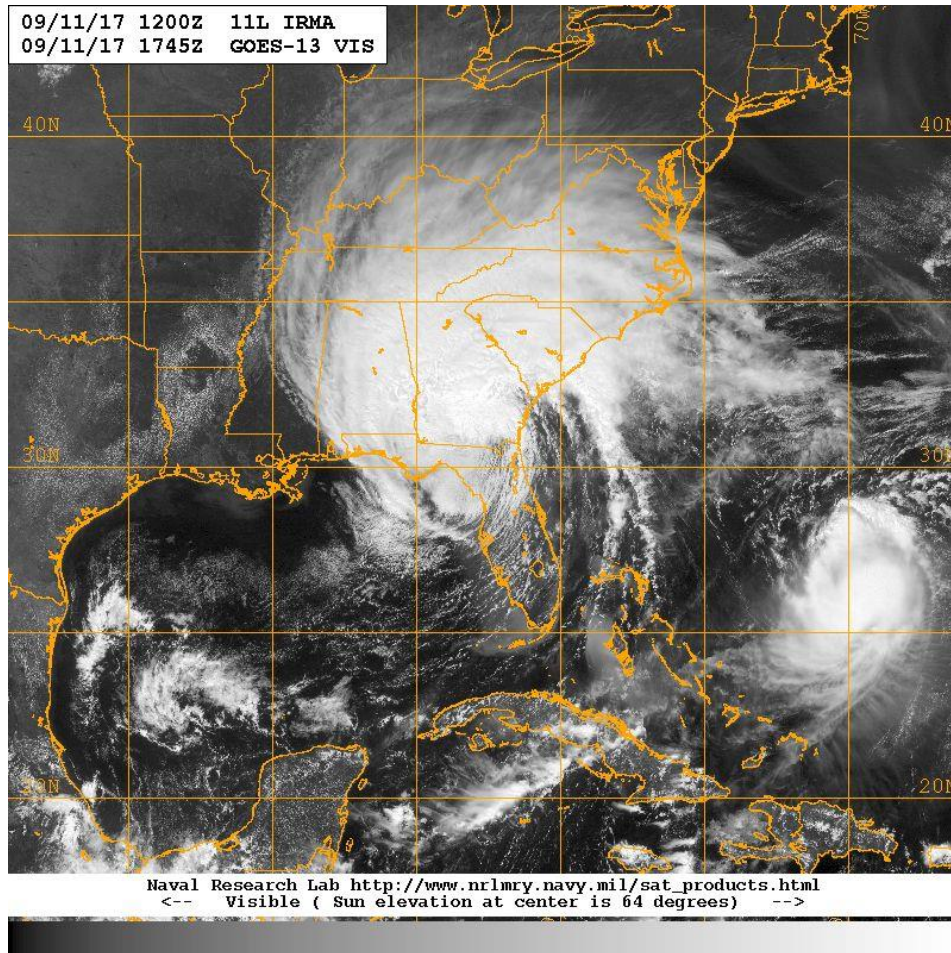


Figure 3. Tropical Storm Irma, 2:45 PM, 11 September (Naval Research Laboratory-Monterey)

Strong winds blew down hundreds of trees across Beaufort, Charleston, Colleton, Dorchester, Hampton and Jasper counties. Downed trees blocked roads and knocked out power lines. The National Weather Service confirmed the touchdown of five tornadoes in Charleston and Bamberg Counties (Table below). The first tornado touched down on the flight line damaging the roof of the control tower, several other base buildings, and blew down large oak trees on the Wrenwoods Golf Course. The Johns Island tornado touched down on the west bank of the Stono River for less than two minutes and damaged trees, knocked a home off its pilings that crushed a vehicle that was parked beneath. The James Island tornado, also on the ground for less than two minutes, touched down north of Schooner Creek and uprooted trees, and damaged several houses. The Mount Pleasant tornado touched down between Mount Pleasant and Sullivan’s Island and blew down large tree limbs and a wooded fence before dissipating after two minutes on the ground. The Olar tornado touched down northwest of the town along Thunder Road and continued northwards on the ground for two miles, downing trees and several large tree limbs before dissipating four minutes after the initial touch down.

Time (PM, EDT)	Rating	Est. Wind Speed (mph)	Width (yards)	Track (miles)	Location
2:48	EF-0	84	60	1.47	Charleston Air Force Base
5:45	EF-1	107	30	0.45	Johns Island
6:19	EF-0	83	55	0.12	James Island
7:01	EF-0	85	50	2.00	Olar (Bamberg County)
7:13	EF-0	80	90	0.57	Mount Pleasant

The peak storm surge in Charleston was 4.87 feet and the peak storm tide was 9.92 feet above mean lower low water (MLLW). The storm tide was over four feet above normal and one of the highest surges since 1989's Hurricane Hugo. Many streets were flooded and impassable in Charleston. Dramatic images showed water cascading over the Battery and filling lower Charleston Peninsula streets to waist level.

Irma's outer rain bands dropped heavy rain along the coast that exacerbated storm surge and coastal surf flooding. During a period from 8:00 p.m. September 9 through 2 A.M. September 13, the Church Creek gage near West Ashley collected 8.97 inches of rainfall. 8.22 inches was collected inland at Youman's Farm in Hampton County during the same period. 6.26 inches of rain was reported by the Beaufort Marine Corp Air Station. A CoCoRaHS observer in Beaufort reported 9.07 inches of rain.

Conditions were less dire in Georgetown and Horry counties. The Myrtle Beach International Airport reported a peak wind gust of 54 mph and a 24-hour rainfall amount of 2.91 inches. The Georgetown County Airport had a peak gust of 61 mph from the northeast but a 24-hour rainfall total of 4.33 inches. Storm surge along the coast in Horry County was estimated to be 2.5 feet.

Away from the coast, the Holly Hill 1 SW COOP observer collected 6.57 inches of rain in 24 hours. Across the Midlands rainfall amounts of 4.11 inches, 3.78 inches, and 2.52 inches were recorded at the Augusta Regional Airport in Georgia, the Columbia Metro Airport, and the Florence Regional Airport respectively. The Clemson-Oconee County Airport had the highest inland gust of 57.5 mph. The Columbia Metro Airport recorded a 51 mph gust.

Table 1: Rainfall totals (inches):

4 NNE Beaufort	9.07	Columbia Metro	3.78
6 NW Charleston	8.53	McEntire JNGB	3.74
Holly Hill	7.18	Kingstree 8 NW	3.56
1 N Yemassee	7	Saluda	3.49
5 WNW Goose Creek	6.45	Hog Back MTN	3.25
Mount Pleasant	6.44	Myrtle Beach Intl.	2.91
Barnwell	6.35	Travelers Rest	2.6
1 SSE Reevesville	6	Florence Regional	2.52
Beaufort MCAS	5.5	Greenville-Spartanburg Intl.	2.38
Charleston AFB	5.47	Bishopville	2.27
1 SW Walterboro	5.27	Greenwood	2.03
Bamberg	5.03	Anderson regional	1.84
Saluda 1 N	4.87	Sassafras MTN	1.74
Ace Basin	4.71	Marion 3 E	1.6
Charleston City	4.56	Oconee Regional	1.57
Waccamaw	4.52	Pageland	1.36
Wambaw	4.17	Rock Hill	1.16
Edgefield	4.12	Ninety Nine Islands	1.01
Orangeburg	3.86	Dillon 4 NW	0.82

Table 2: Peak Wind Gusts (mph)

Folly Beach	72.5	Walterboro	48.3
Grays Reef Buoy	69.0	Hilton Head	48.3
Isle of Palms	67.9	Barnwell Regional	48
Sullivans Island	67.9	McEntire JNGB	48
Edisto Buoy	66.7	Greenwood County	48
Folly Beach C-MAN	64.4	Florence Regional	45
Georgetown	61	Columbia Hamilton-Owens	45
Beaufort MCAS	61.0	Greenville-Spartanburg Intl.	44
Charleston City	61.0	Camden-Woodward Field	43
Charleston AFB	59.8	Newberry County	43
Charleston Exec	58.7	Sassafras MTN	43
Oconee Regional	58	Mount Pleasant	42.6
Capers Nearshore	56.4	Moncks Corner	41.4
Lancaster County	55	Hartsville	41
Fripp Nearshore	54.1	Georgetown 3 SSW	41
Myrtle Beach Intl.	54	Cedar Creek-Winnsboro Rd	41
Orangeburg Municipal	54	Pawley's island 4 SW	40
Winnsboro	53	Sumter Municipal	40
Anderson County	52	Darlington	37
Columbia Metro	51	Conway 4 NE	37
Shaw AFB	51	Sumter Municipal	37
Aiken Municipal	49	Lake Murray Towers	37
Pickens County	49	2 NW Elgin	35

ACKNOWLEDGEMENTS:

- NOAA Storm Prediction Center
- NOAA National Data Buoy Center
- NOAA Weather Prediction Center
- The National Hurricane Center
- National Weather Service Office, Charleston, South Carolina
- National Weather Service Office, Wilmington, North Carolina
- The Naval Research Laboratory-Monterey