

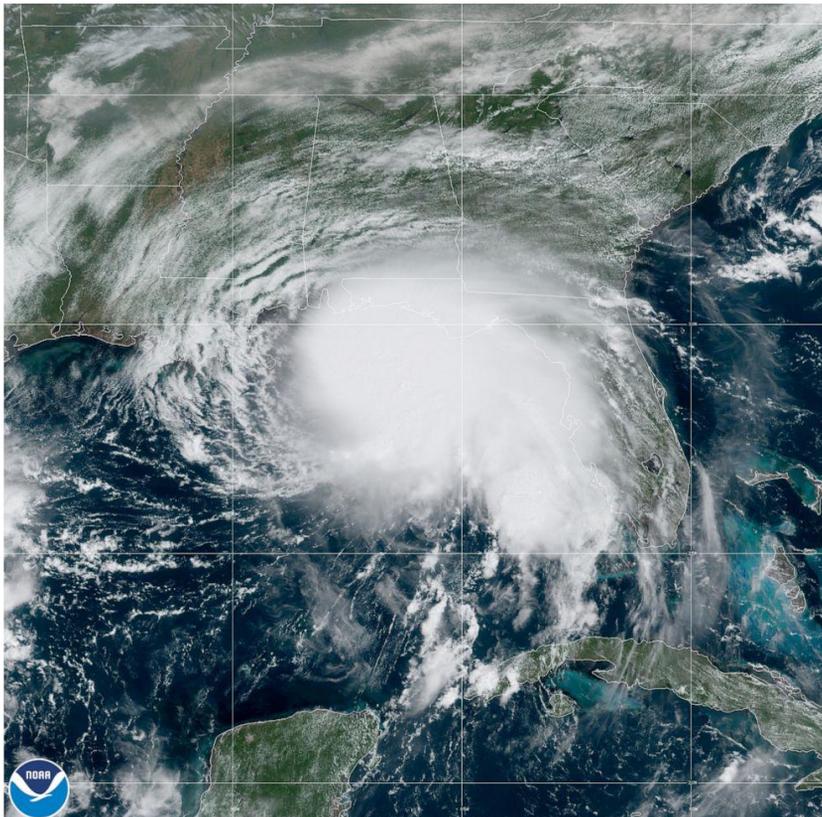


Hurricane Sally – Open File Report

South Carolina State Climatology Office

Report Date: October 16, 2020

Website: <http://www.dnr.sc.gov/climate/sco>



PRELIMINARY

Storm History and Impacts Report

September 2020

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THIS REPORT SERVES AS A PRELIMINARY DISSEMINATION OF INFORMATION ON THE IMPACTS OF TROPICAL STORM SALLY ON THE STATE OF SOUTH CAROLINA.

FOR MORE DETAILED DATA, PLEASE CONTACT:

Dr. Hope Mizzell
State Climatologist
MizzellH@dnr.sc.gov

Mr. Mark Malsick
Severe Weather Liaison
MalsickM@dnr.sc.gov

Ms. Melissa Griffin
Asst. State Climatologist
GriffinM@dnr.sc.gov

Cover Picture Credit
A satellite image from the GOES17 satellite of Hurricane Sally approaching the Gulf Coast on September 15, 2020. Additional figures and pictures used throughout this report were either created by SCO staff, or retrieved from the National Weather Service Damage Assessment Tool and WeatherBell Inc.

SYNOPTIC ANALYSIS

The National Hurricane Center (NHC) began advisories on Tropical Depression Nineteen on the afternoon of September 11, 2020. TD 19 formed on a remnant frontal boundary that had loitered off the east coast of Florida for several days. Strong ridging north of the 35 MPH tropical cyclone (Figure 1.) steered the tropical cyclone west initially for the first 24 hours across southern Florida.

On September 12, upon exiting the Florida's west coast over very warm Gulf of Mexico water, the NHC upgraded TD 19 to Tropical Storm Sally based on an increase of sustained winds to 40 MPH. Weakening of the original steering ridge, caused by a sharp 500 millibar trough over the Plains states (Figure 1.), turned Sally to a west-northwest track over the Gulf of Mexico at a leisurely 7-8 MPH. This slow speed over deep warm water, and decreasing upper-level shear, allowed Sally to rapidly intensify to hurricane strength, 100 MPH, by mid-morning September 14.

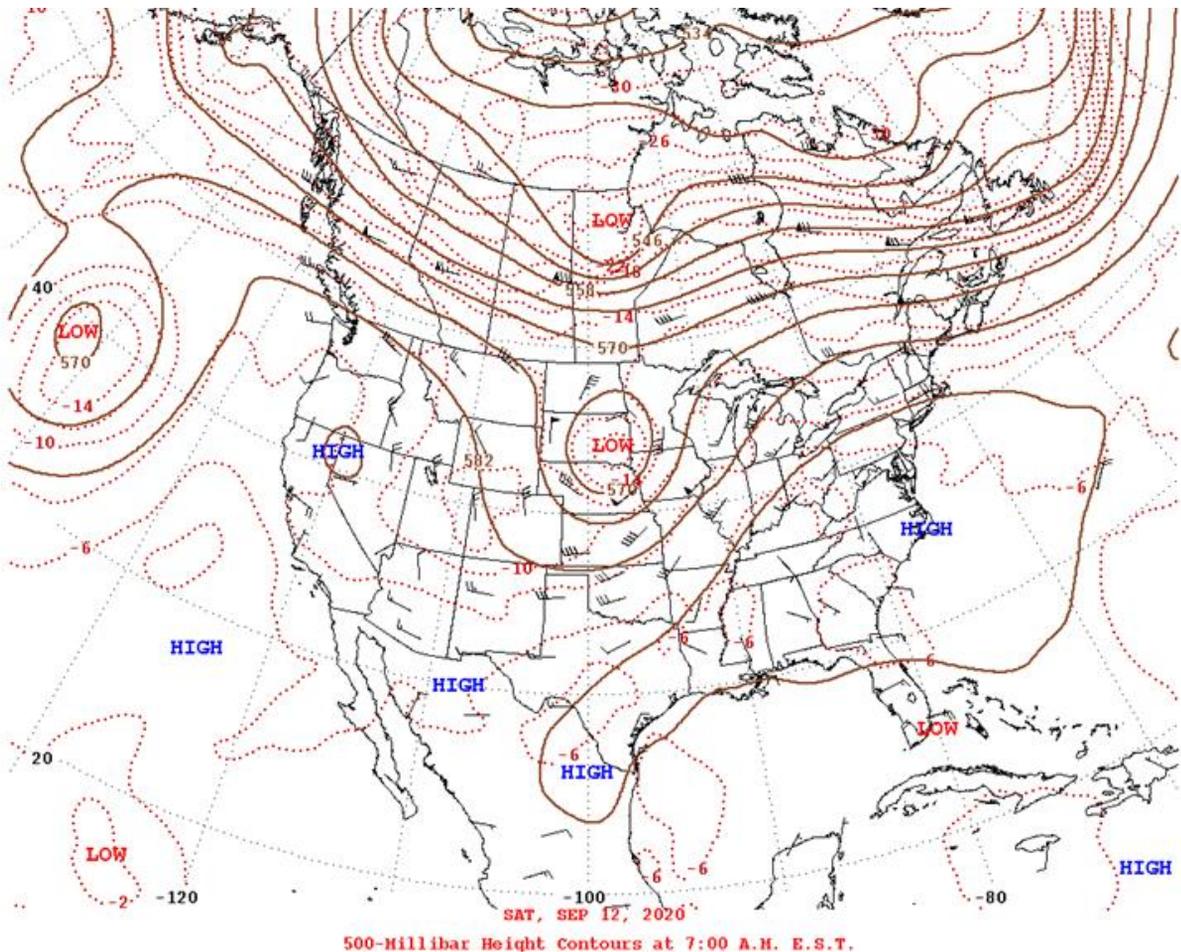


Figure 1. 500 millibar height contours September 12, 2020. NOAA Weather Prediction Center.

SYNOPTIC ANALYSIS

Steering continued to weaken, allowing Sally to slow and meander slowly west on September 15; however, cooler upwelled waters reported by NOAA buoy 42012 and increased shear decreased Sally's intensity to 80 MPH. Later that day, Sally came under the influence of two weak mid-level ridges (Figure 2.) that induced a slow nudging of Sally to the north at 2 MPH when the hurricane was 60 miles south of Mobile Bay.

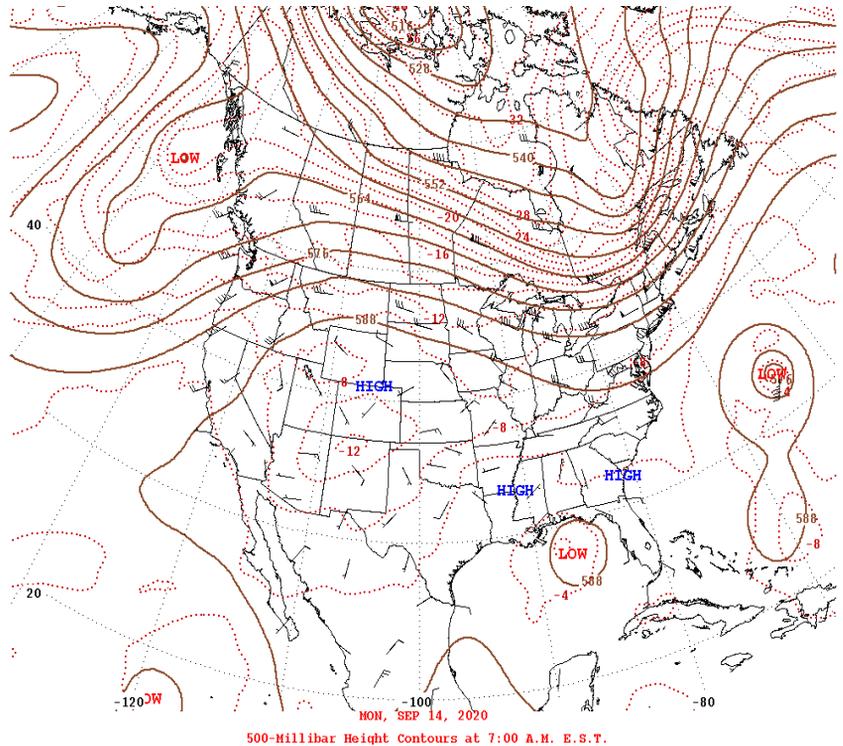


Figure 2. 500 millibar height contours September 14, 2020. NOAA Weather Prediction Center.

That slow, northerly crawl continued until Sally made landfall near Gulf Shores, Alabama, halfway between Mobile Bay and Pensacola Bay, at 4:45 AM, CDT September 16. Maximum sustained winds at landfall were 105 MPH. A rapidly deepening trough over Canada appears to have been the culprit for Sally's surprising, rapid intensification just prior to landfall (Figure 3.). Overland, Sally weakened rapidly becoming a 34 MPH tropical depression 15 hours after landfall.

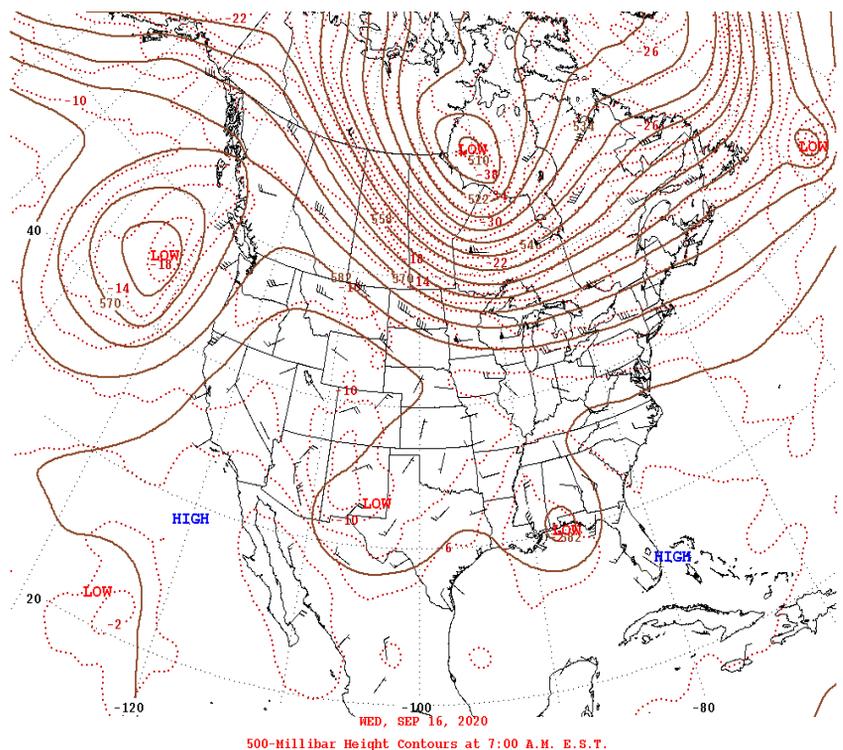


Figure 3. 500 millibar height contours September 16, 2020. NOAA Weather Prediction Center.

SYNOPTIC ANALYSIS

The Canadian mid-level trough then turned and accelerated Tropical Storm Sally northeastwards across Alabama and Georgia on September 17 (Figure 4.) before becoming completely absorbed on September 18. The remnants of Sally passed over South Carolina at 28 MPH on the evening of September 17. As Sally was absorbed by the mid-level trough, a deepening trough at 300-250 millibars west of Sally's northeast track forced strong divergence over South Carolina (Figures 5-6.). This strong divergence, Sally's remnant instability, and abundant surface moisture produced an outbreak of twelve tornadoes across South Carolina on September 17.

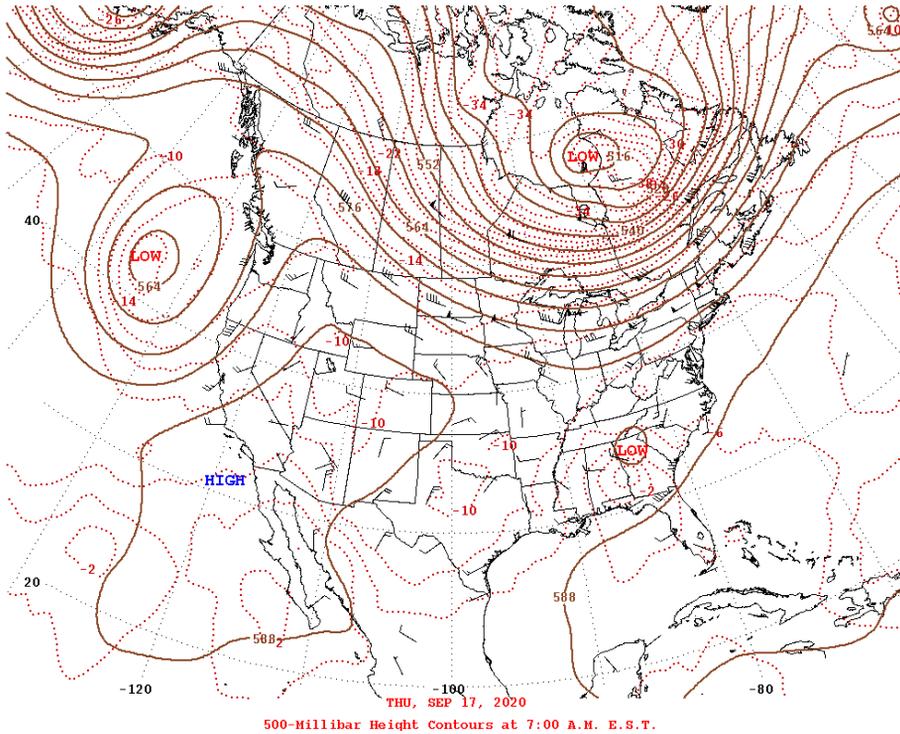


Figure 5. 300 millibar isotachs, streamlines, divergence 00Z September 17, 2020. NOAA/Storm Prediction Center

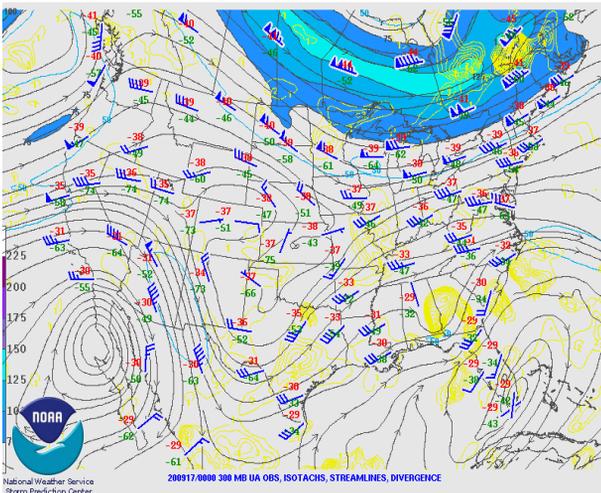


Figure 5. 300 millibar isotachs, streamlines, divergence 00Z September 17, 2020. NOAA/SPC

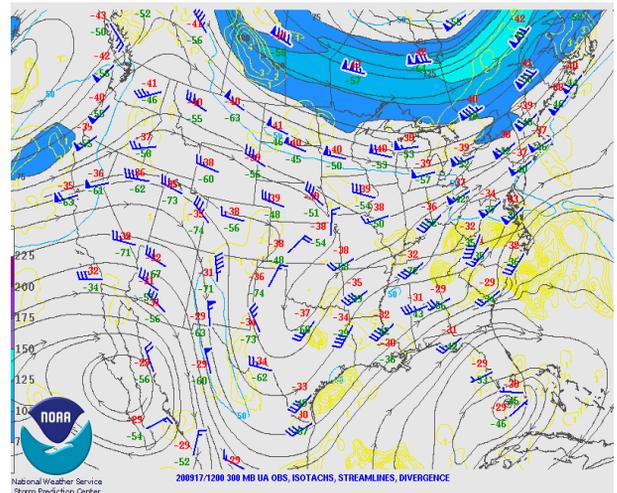


Figure 6. 300 millibar isotachs, streamlines, divergence 12Z September 17, 2020. NOAA/SPC

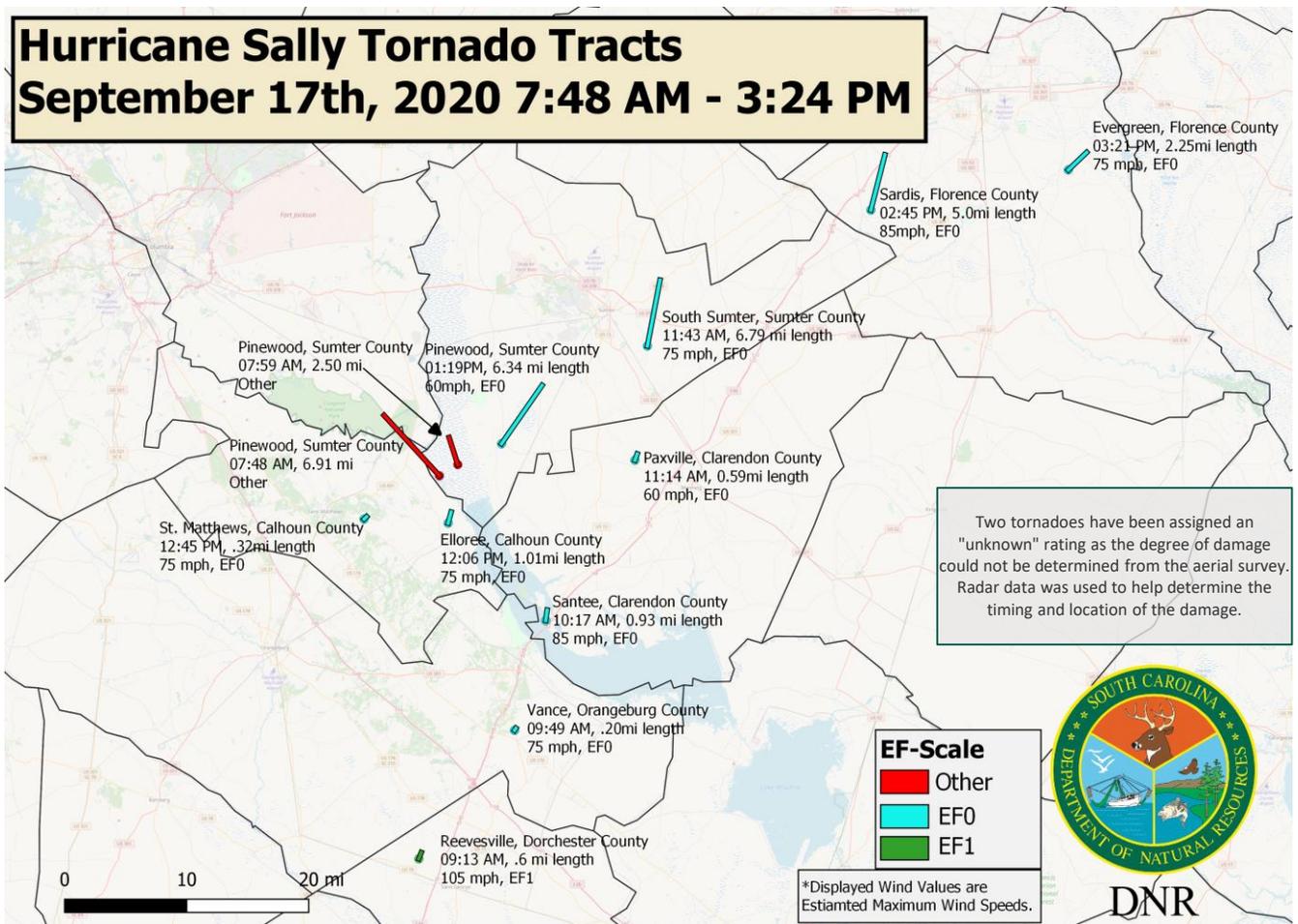
TORANDOES

The core of Tropical Storm Sally's strongest winds fell apart as the system moved across the Southeast. A NOAA offshore buoy reported a few wind gusts between 40 and 45 mph, but there were no significant gusts overland. However, Sally's remnants produced twelve tornadoes across the state, one in Dorchester County, two in Florence County, and nine in and around the northern extent of Lake Marion in the Midlands. The strongest tornado spawned by the storm was an EF1, with estimated maximum winds of 105 mph, which snapped and uprooted trees and caused minimal structural damage to a few homes near Reevesville.



Damage to trees near Reevesville, SC. Courtesy of NWS Charleston

Hurricane Sally Tornado Tracts September 17th, 2020 7:48 AM - 3:24 PM



RAINFALL TOTALS

The heaviest rain from Tropical Storm Sally was located on the eastern side of the center of circulation. As the center of the storm moved parallel to the Interstate 20 corridor, areas in the Midlands measured the highest rainfall totals. Portions of Orangeburg and Sumter counties recorded up to nine inches of rain, while the rest of the state reported at least two inches. Here are some of the preliminary totals recorded by the National Weather Service stations and CoCoRaHS observers in the areas that received the most rainfall from the storm.

Station	Station Type	Rainfall Total (in)
Sumter 0.2 NE	CoCoRaHS	8.80
Elloree 2.2 WSW	CoCoRaHS	8.53
Longs 1.3 NW	CoCoRaHS	7.92
Aiken 8.6 ESE	CoCoRaHS	7.28
Sumter	NWS	7.18
Darlington	NWS	6.74
Bamberg	NWS	6.01

Hurricane Sally, 3-day Precipitation Ending on 9/19/2020

