

TROPICAL STORM IDALIA

PRELIMINARY OPEN FILE REPORT

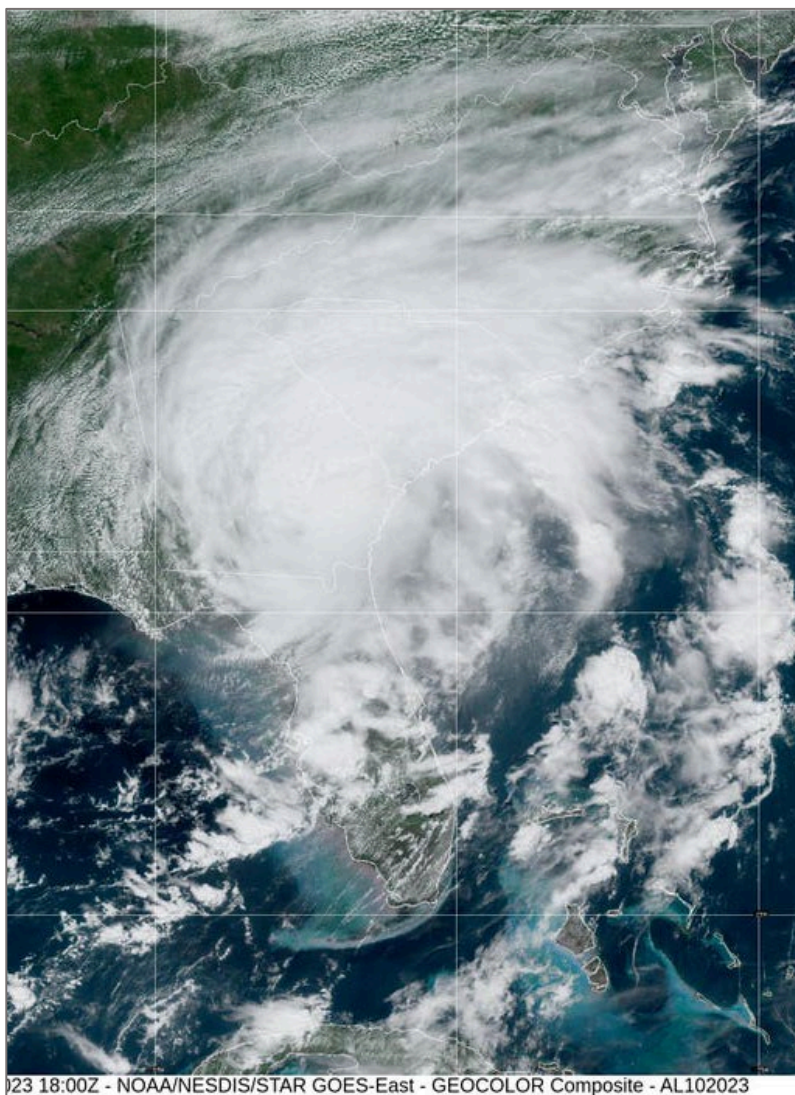
Prepared by the South Carolina State Climatology Office

Report Issued September 6, 2023

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

Storm History and Impacts Report

August 30 – 31, 2023



23 18:00Z - NOAA/NESDIS/STAR GOES-East - GEOCOLOR Composite - AL102023

A GeoColor visible satellite image of Idalia from around 1800 UTC (7:18 p.m. EDT) on August 30, 2023, as the storm was centered near Waycross, Georgia.

Table of Contents

Synoptic Summary	1
Storm Surge and Tides	4
Rainfall	5
River Crests	6
Tornadoes	7
Peak Wind Gusts	8
Impact Pictures	9

This report serves as a preliminary dissemination of information on the impacts of Hurricane Idalia across South Carolina. If you have any additional questions regarding the data provided in this document, please contact Hope Mizzell, Frank Strait, or Melissa Griffin at the State Climatology Office.

Hope P. Mizzell
South Carolina State Climatologist
MizzellH@dnr.sc.gov
803-734-9568

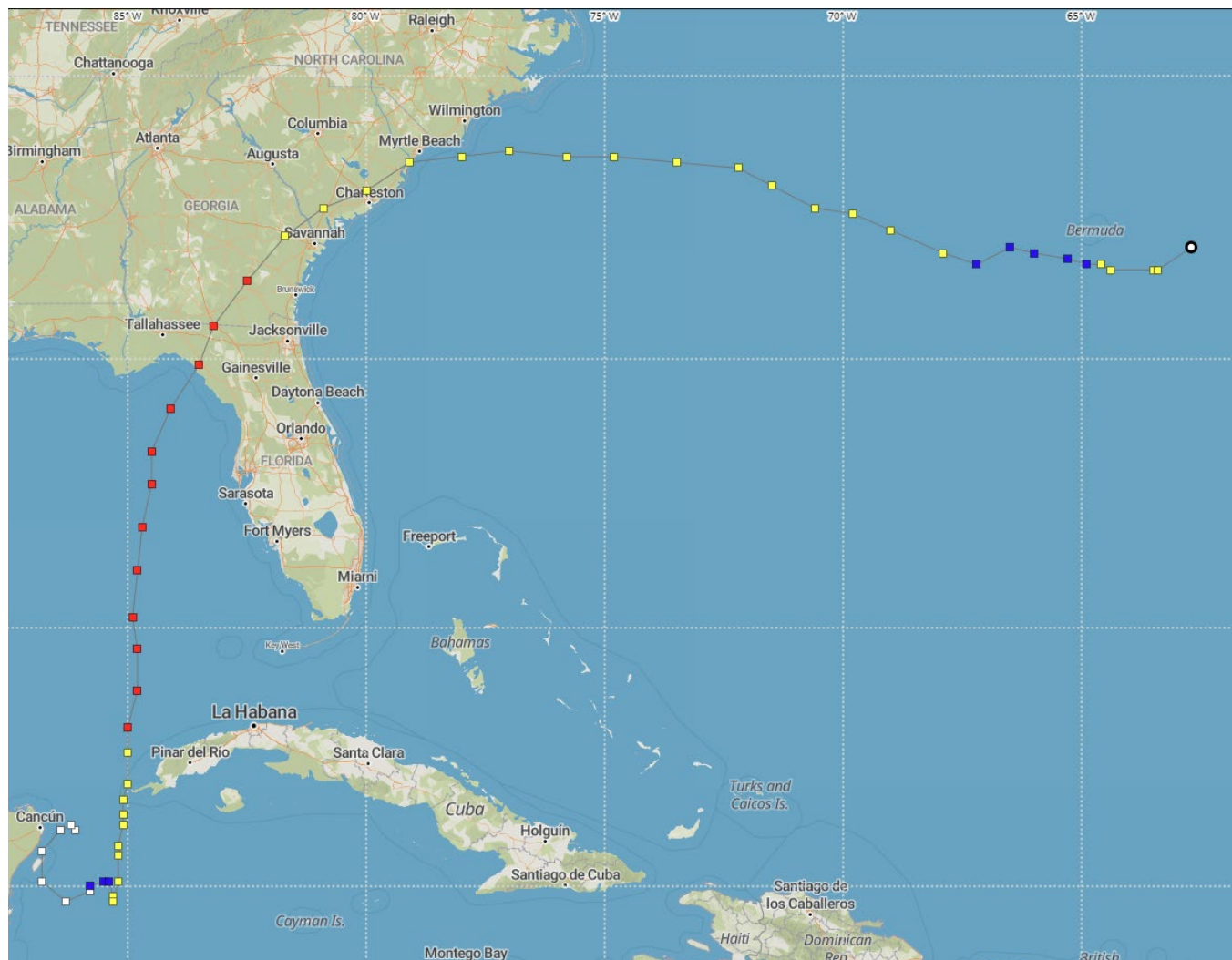
Frank Strait
Severe Weather Liaison
StraitF@dnr.sc.gov
803-734-0039

Melissa Griffin
Assistant State Climatologist
GriffinM@dnr.sc.gov
803-734-9091

South Carolina Department of Natural Resources
Land, Water, and Conservation Division
1000 Assembly Street, Columbia, SC 29201



Tropical Storm Idalia – Synoptic Summary



Sustained Wind Speed: ■ tropical storm $\geq 34\text{kt}/39\text{mph}$ ■ strong tropical storm $\geq 50\text{kt}/58\text{mph}$ ■ hurricane $\geq 64\text{kt}/74\text{mph}$

The historical track for Hurricane Idalia from its development as a tropical cyclone through Saturday, September 2, 2023, when it was an extratropical cyclone near Bermuda.

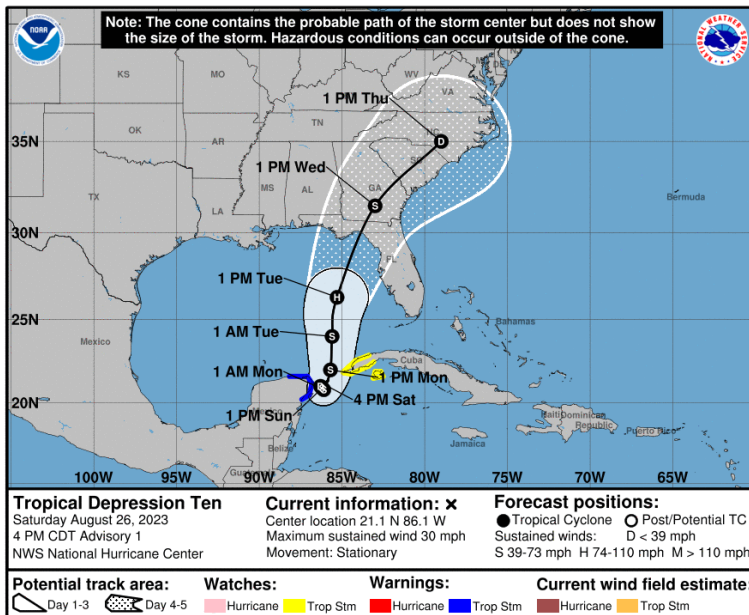
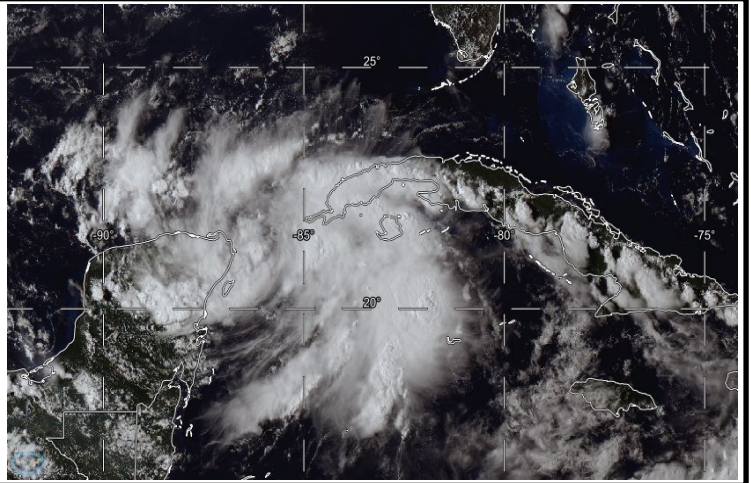
Source: HURREVAC

Tropical Storm Idalia – Synoptic Summary

Idalia began on August 23, 2023, as a tropical disturbance over the Pacific Ocean south of El Salvador, an unusual origin location for tropical cyclones that affect South Carolina. This disturbance tracked northward over Central America and over the western Caribbean Sea during the following two days. Upon reaching the area east of the Mexican state of Quintana Roo, it began to generate widespread thunderstorm activity. The disturbance's broad circulation became better defined over the next day as thunderstorms became more concentrated near the circulation center. The National Hurricane Center (NHC) found that the disturbance met the criteria to be declared a tropical cyclone at 5 p.m. EDT on August 26, 2023, and issued the first advisory on Tropical Depression Ten.

A true color visible satellite image of Tropical Depression Ten from around 2100 UTC (5 p.m. EDT) on August 26, 2023, when NHC issued the first advisory.

Source: University of Wisconsin RealEarth.

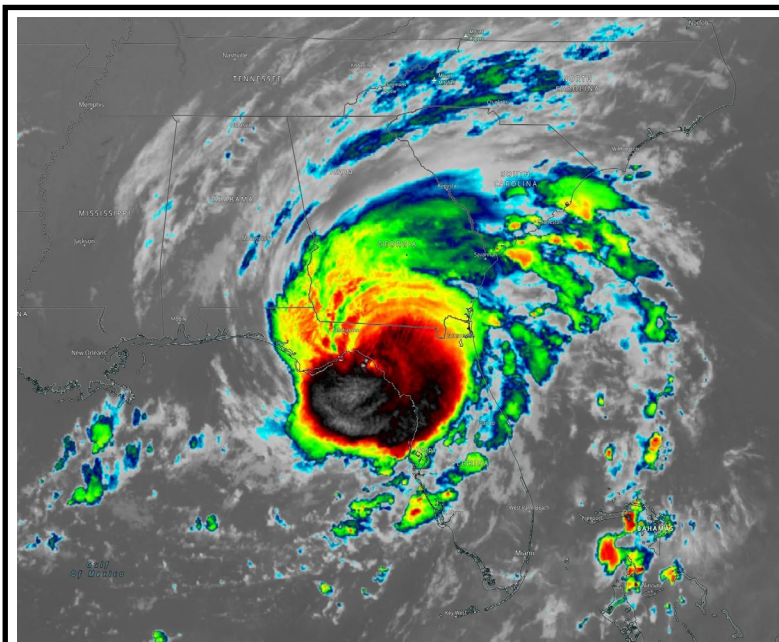


NHC's Advisory 1 on Tropical Depression Ten indicated a track leading to impacts in South Carolina.

Forecasts from NHC for Idalia's track proved to be accurate from the early stages. From the first advisory, it was forecast to be a hurricane at landfall in Florida and an impactful storm for South Carolina.

However, the early forecasts underestimated how intense Idalia would get while tracking over the unusually warm waters of the eastern Gulf of Mexico. It was thought that vertical shear would limit intensification, but this turned out not to be the case.

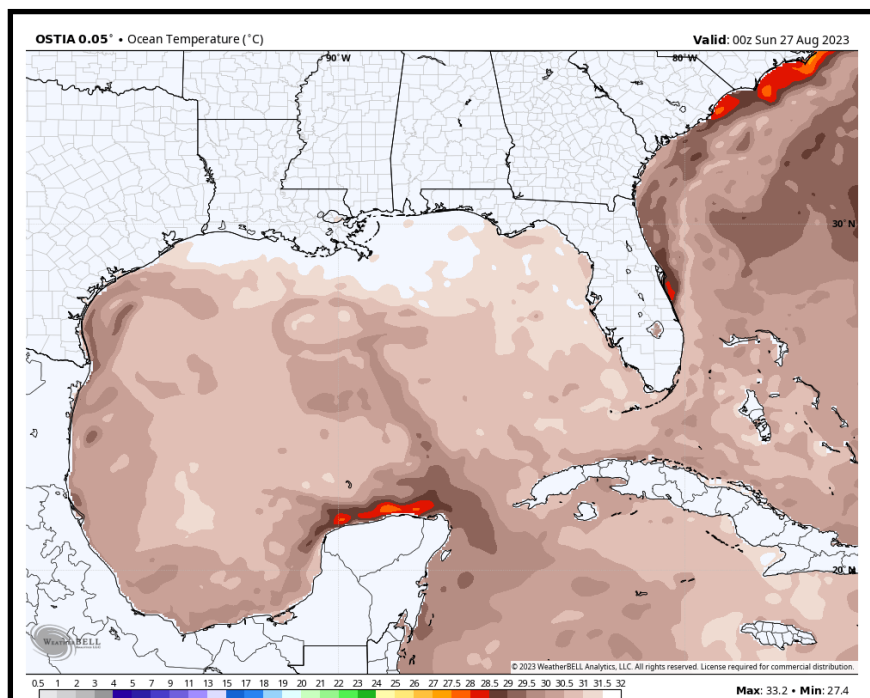
Tropical Storm Idalia – Synoptic Summary



An infrared satellite image showing Idalia near 1100 UTC (7:00 a.m. EDT) on August 30, 2023. This is just before landfall at Keaton Beach, Florida, at 7:45 a.m. EDT. Idalia was a Category 3 hurricane at the time, having peaked at Category 4 intensity hours before.

Image source: NASA Worldview

Idalia sat near the Yucatan Channel until August 28, then it moved northward and intensified. It became a hurricane early on August 29, then rapidly intensified into a Category 4 hurricane by the early morning of August 30.



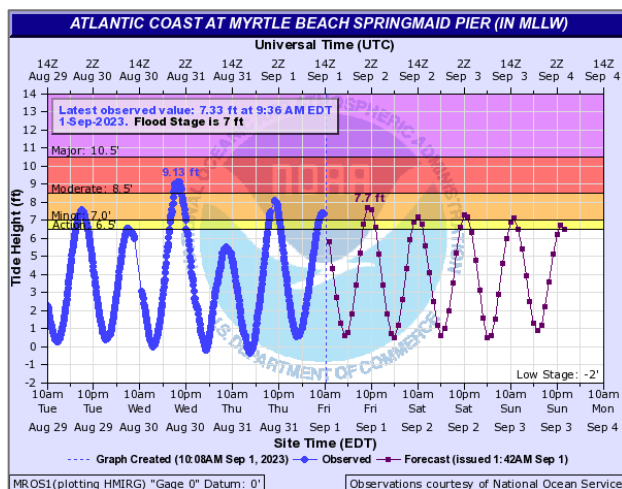
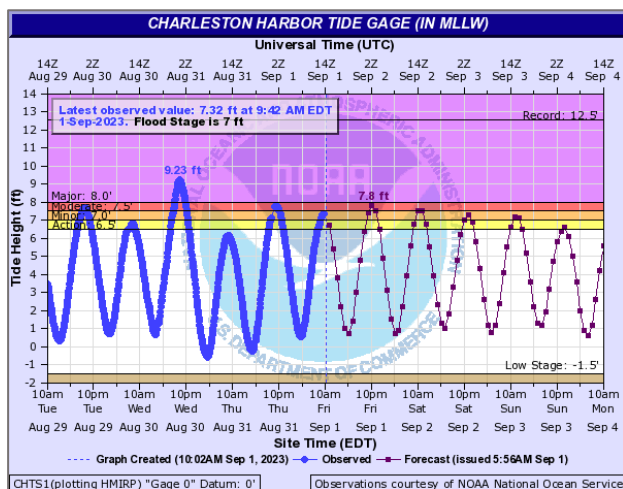
Sea surface temperatures from 0000 UTC August 27, 2023 (8 p.m. EDT August 26, 2023) showing temperatures of 29–32°C (84.2–89.6°F) along Idalia’s forecast track.

Image Source: WeatherBELL

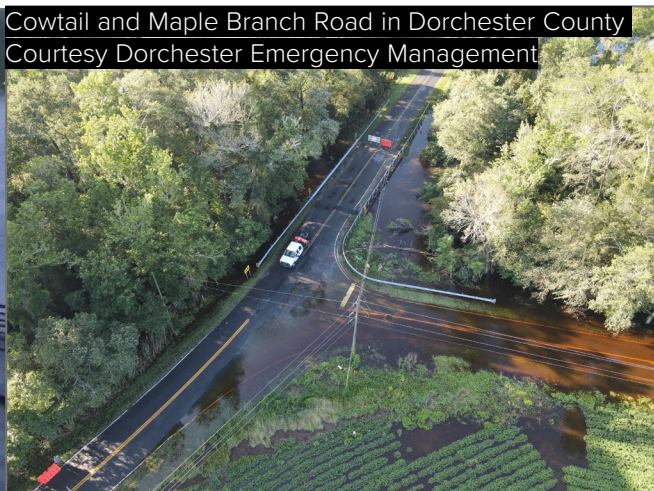
Idalia weakened slightly before landfall and was a Category 3 hurricane with 125 mph winds when it made landfall at Keaton Beach, Florida, at about 7:45 a.m. EDT on August 30. Idalia weakened steadily after landfall as it tracked across Florida and southern Georgia. It became a tropical storm at 5 p.m. on August 30, just before the center crossed into South Carolina. It then moved through coastal South Carolina, causing heavy rainfall, damaging winds, a storm surge, and tornadoes. It exited the state early on August 31 and moved over the Atlantic Ocean.

Tropical Storm Idalia – Storm Surge and Tides

Hurricane Idalia's landfall along the Florida Big Bend and northeasterly track across the Southeast placed most of the South Carolina Coast on the northern side of the circulation. On this side of the storm, the prevailing wind direction was mainly onshore, and these winds persisted for about two days before the storm's center moved through the state. This resulted in high water levels along the coastline for most of the day, with even low tides running one to two feet above predicted levels. Already elevated water levels, with the full moon and high tide cycle, the Charleston Harbor tidal gauge crested at 9.23 ft. (5th highest crest on record), and the gauge at the Springmaid Pier in Horry County crested at 9.13 ft. (6th highest crest on record). The preliminary estimates indicate a storm surge of 3.47 ft. at the Charleston Harbor and 3.53 ft. at the Springmaid Pier.



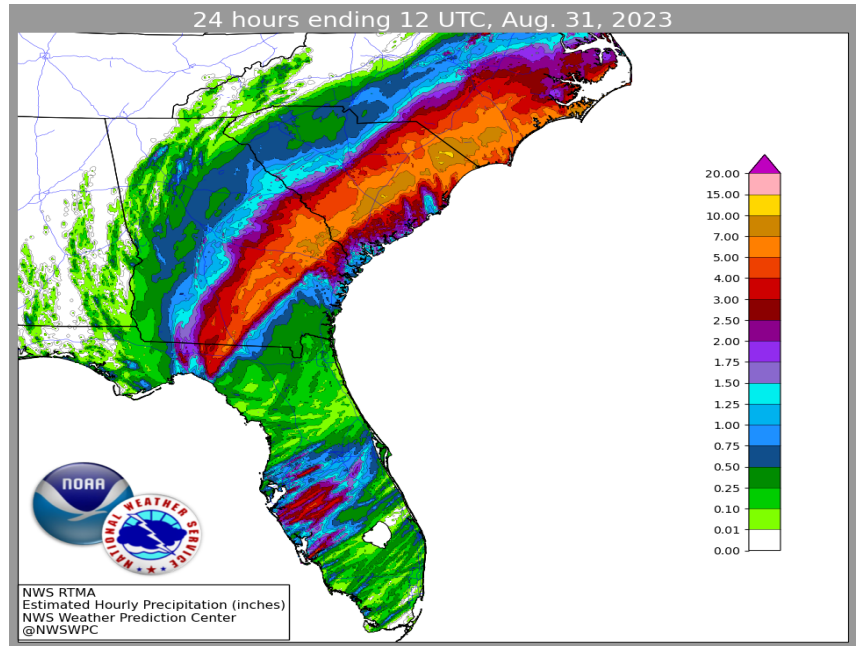
Initial coastal impacts reported along the coast include dune damage on Isle of Palms, sand on Palmetto Blvd on Edisto Island, and water over the Battery at high tide. The high-water mark team in the Charleston area measured 2-3 ft of surge along Shem Creek and 2-2.5 ft of surge at Isle of Palms.



As the storm moved across the state, the wind direction changed (offshore flow), and the water levels dropped below the predicted values as the wind pushed water away from the coast.

Tropical Storm Idalia – Rainfall

Idalia produced a wide swath of rainfall three to ten inches south and east of the Interstate 20 corridor. A National Weather Service station in Holly Hill (Orangeburg County) reported a 24-hour rainfall total of 13.55 inches, and a CoCoRaHS observer near Mullins (Marion County) measured a daily total of 10.70 inches. However, the Upstate recorded less than half an inch of rainfall from the storm.



Select Rainfall Reports from Hurricane Idalia

Station Name	County	Provider	Rainfall (Inches)	Annual Exceedance Probability
Holly Hill 1 SW	Orangeburg	NWS COOP	13.55	0.1%
Mullins	Marion	NWS COOP	11.57	0.2%
Mullins 4.9 ESE	Marion	CoCoRaHS	10.70	0.5%
Smoaks 1.0 ESE	Colleton	CoCoRaHS	9.05	1%
Marion	Marion	NWS COOP	8.96	1%
Lodge 3.4 SW	Colleton	CoCoRaHS	8.79	1%
Kingstree 7.9 NW	Williamsburg	CoCoRaHS	8.76	1%
Loris 1.4 ENE	Horry	CoCoRaHS	8.64	2%
Varnville 6.7 SW	Hampton	CoCoRaHS	8.53	1%
Longs 1.3 NW	Horry	CoCoRaHS	8.08	4%
Conway 9.2 NNE	Horry	CoCoRaHS	7.90	4%
Manning 7.1 S	Clarendon	CoCoRaHS	7.85	2%
Santee 2.0 ENE	Orangeburg	CoCoRaHS	7.76	2%
Florence 6.1 W	Florence	CoCoRaHS	7.60	2%

Annual Exceedance Probability (AEP): Percent chance that an event will happen in any given year.

Tropical Storm Idalia – River Crests

U.S. Drought Monitor South Carolina

August 29, 2023
(Released Thursday, Aug. 31, 2023)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	66.08	31.92	6.12	0.00	0.00	0.00
Last Week 08-22-2023	67.87	32.13	5.76	0.00	0.00	0.00
3 Months Ago 05-30-2023	93.82	6.18	0.00	0.00	0.00	0.00
Start of Calendar Year 01-01-2023	49.44	50.55	10.67	0.00	0.00	0.00
Start of Water Year 09-01-2022	63.65	36.35	4.72	0.00	0.00	0.00
One Year Ago 08-30-2022	83.11	16.89	4.37	0.00	0.00	0.00

Intensity

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

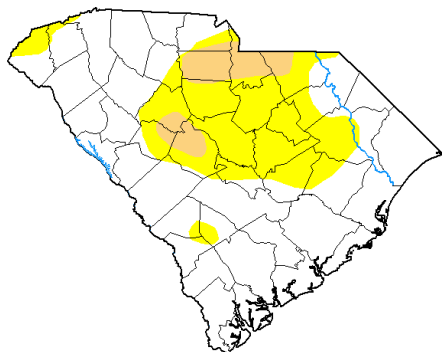
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

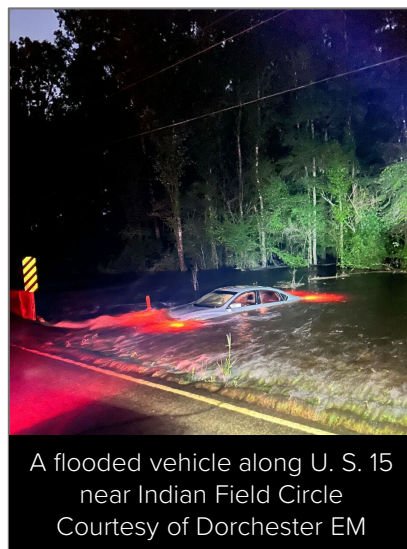
David Simera
Western Regional Climate Center



droughtmonitor.unl.edu



Before the landfall of Hurricane Idalia, the United States Drought Monitor indicated areas of dry (D0) and moderate drought conditions (D1) in much of the Pee Dee region, including Lancaster County and parts of Chester, Chesterfield, Fairfield, and Kershaw counties. Many streamflow gauges across the same area were reporting values below average.



A flooded vehicle along U. S. 15
near Indian Field Circle
Courtesy of Dorchester EM

Because of this, there was ample storage, even with the high rainfall AEPs in some locations, for the rivers to accept the precipitation. After the storm passed, streamflow values and river heights rose in areas impacted by the heaviest rainfall totals. While none of the crests broke record crests, the river height crests put some rivers in minor and moderate flood stages. Below is a table of some peak river height crest values for some areas impacted by the heavy rain.

Select River Crests

River Gauge	Idalia Peak Crest (ft.)	Record Crest (ft.)	Record Crest Date/Event
Little Pee Dee River near Galivants Ferry	11.17 ft.	17.21 ft.	09/21/2018
Black Creek near Quinby	10.63 ft.	17.36 ft.	09/18/2018
Black River at Kingstree	11.78 ft.	22.65 ft.	10/07/2015
Waccamaw River near Conway	<i>Still rising, forecasted crest of 12.5 ft on Sep. 11.</i>	21.16 ft.	09/26/2018
N. Fork Edisto at Orangeburg	7.84 ft.	14.70 ft.	09/01/1928
Edisto River near Givhans Ferry	14.26 ft.	17.50 ft.	02/01/1925
Savannah River near Clyo	12.21 ft.	29.70 ft.	10/06/1929

Tropical Storm Idalia –Tornadoes

Tropical Storm Idalia spawned four tornadoes in Charleston and Horry counties. Straight-line wind damage was confirmed near the Sampit area of Georgetown County.

Cherry Grove, Courtesy of WMBF-TV



Tornado #1 – Cherry Grove (Horry County)

- Rating: EF0 – 85 mph
- Date: 2023-08-30
- Narrative: Waterspout moved ashore near Ocean Blvd. and 56th Avenue North. It tracked north-northwest, causing sporadic damage to homes in the Cherry Grove area. It then crossed Williams Creek into the Tidewater Golf Club, downing a few trees and numerous large limbs. There were likely a few brief spin-ups near the waterspout as it came ashore.

Tornado #2 – Goose Creek (Charleston County)

- Rating: EF0 – 75 mph
- Date: 2023-08-30
- Narrative: A very brief, weak tornado touched down near the intersection of Camelot Dr. And S. Goose Creek Blvd. It flipped one car on S. Goose Creek Blvd during its brief touchdown. This tornado was within an outer rain band of Hurricane Idalia. A video was used to confirm the tornado.



Tornado #3 – N. Mount Pleasant (Charleston County)

- Rating: EF0 – 85 mph
- Date: 2023-08-30
- Narrative: A tornado began south of Highway 17 in Whitehall Terrace, causing minor roof damage and uprooting several trees. The tornado crossed the highway, periodically touching the ground as it crossed over Wando High School, causing no discernible damage. It continued into the Carolina Park Community, causing minor damage as it tracked south of the Wando River. More concentrated tree damage was in this area.

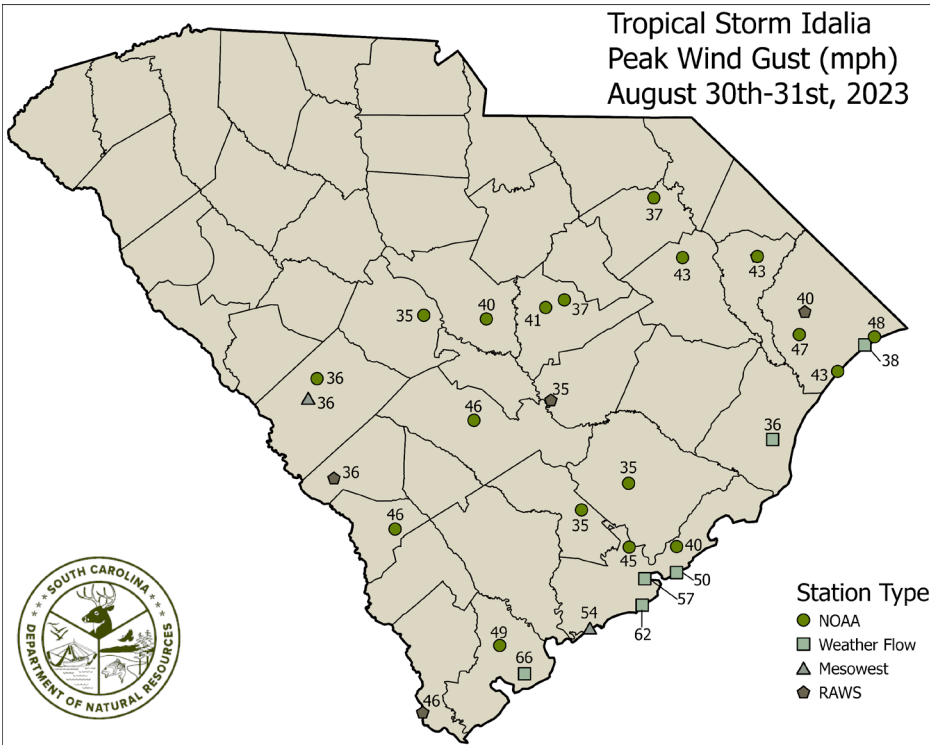
Tornado #4 – Turbeville (Clarendon County)

- Rating: EF1 – 90 mph
- Date: 2023-08-30
- Narrative: The tornado began just inside a field southwest of Graham Road, where several small oak trees snapped. The tornado moved quickly to the northwest before snapping and uprooting multiple trees along Olanta Highway. The tornado then moved across an open field and snapped several small trees along a wood line before dissipating.

Tornado #5 – Eccles Road/Huger (Berkeley County)

- Rating: EF1 – 95 mph
- Date: 2023-08-30
- Narrative: The touched down just south of Eccles Church Road, over Muddy Creek, and tracked north-northwest toward Irishtown Road. It snapped and uprooted several large hard and softwood trees along its two-mile-long path.

Tropical Storm Idalia – Wind Gusts



The core of the strongest winds from Idalia was about 40 miles from the center of the storm, while tropical-storm-force winds extended out about 90 miles on the landward side of the center and over 150 miles over the coastal waters. The highest wind gust recorded in the state was 66 mph, measured by a WeatherFlow station in Beaufort County. Stations within the Coastal Plain recorded wind gusts between 40 and 60 mph, while some gusts of 30 to 40 mph were observed in the Midlands and interior portions of the Pee Dee region.

Select Peak Wind Gusts over 45 mph from Hurricane Idalia

Location	County	Peak Gust (mph)	Time (EDT)	Provider
Beaufort	Beaufort	66	6:19 PM	WeatherFlow
Calibogue Sound	Beaufort	64	5:36 PM	WeatherFlow
Shutes Folly	Charleston	64	7:43 PM	Weatherflow
Folly Beach	Charleston	62	7:20 PM	WeatherFlow
Charleston Downtown	Charleston	55	7:36 PM	NOAA/NOS
Winyah Bay	Georgetown	55	10:06 PM	WeatherFlow
Botany Bay HP	Charleston	54	7:20 PM	Mesowest
North Myrtle Beach	Horry	48	4:61 PM (31)	NOAA
Marion Jetport	Marion	47	12:15 AM (31)	NOAA
Springmaid Pier	Horry	45	9:06 PM	NOAA/NOS
Orangeburg Airport	Orangeburg	46	9:42 PM	NOAA
Allendale Co AP	Allendale	46	7:35 PM	NOAA
Charleston Int'l AP	Charleston	45	4:18 PM	NOAA

Tropical Storm Idalia – Impacts



Tornado damage to dock on Wando River near Cat Island. Courtesy of Matthew France



Myrtle Beach near Springmaid Pier
Courtesy of Horry County Emergency Management



Tidal area near Botany Bay Heritage Preserve before Idalia on August 27 and during high tide on August 30. Courtesy SCDNR Botany Bay WeatherSTEM



Image of cars submerged to the top of wheel wells on Lockwood Avenue in Charleston on August 30.
Courtesy Charleston Weather/Jared Smith