



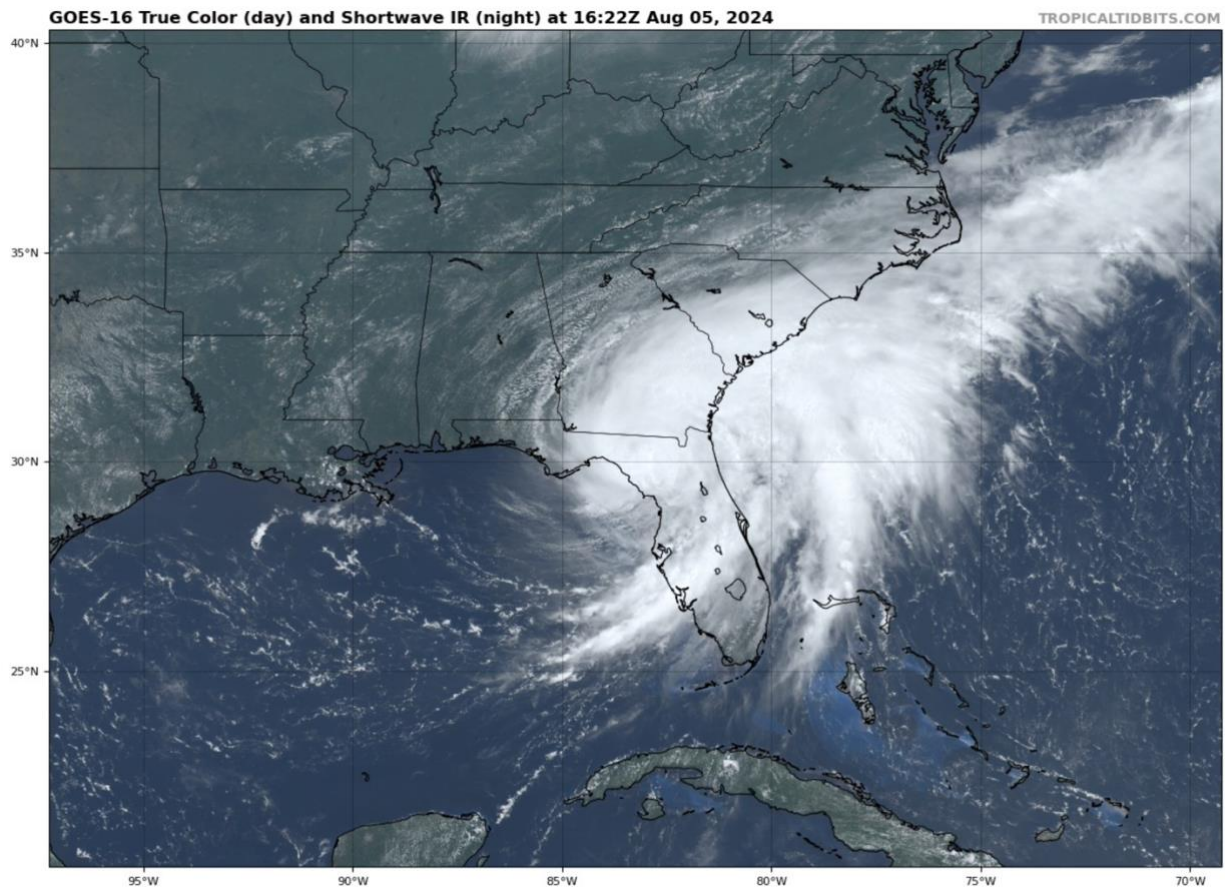
FloridaClimateCenter
Office of the State Climatologist

HURRICANE DEBBY

Post-Storm Summary Report

Prepared by Dr. Emily Powell, Florida Climate Center

14 August 2024



GOES-16 satellite image of Hurricane Debby on August 5, 2024 at 12:22pm ET following landfall in Florida's Big Bend region earlier that morning (source: Tropical Tidbits).

OVERVIEW

Tropical Depression Four formed along the southern coast of Cuba on August 2, 2024. The system moved into the southeastern Gulf of Mexico and strengthened into Tropical Storm Debby on August 3. Debby continued to organize as it moved northward. It strengthened into a hurricane on August 4 about 100 miles west-northwest of Tampa, becoming the second hurricane of the 2024 Atlantic hurricane season. Debby gradually moved north-northeast and made landfall near Steinhatchee, Florida in Taylor County as a Category 1 hurricane on the morning of August 5, 2024. Debby came almost one year after [Hurricane Idalia](#) made landfall in this same part of the coast as a Category 3 hurricane in August 2023.

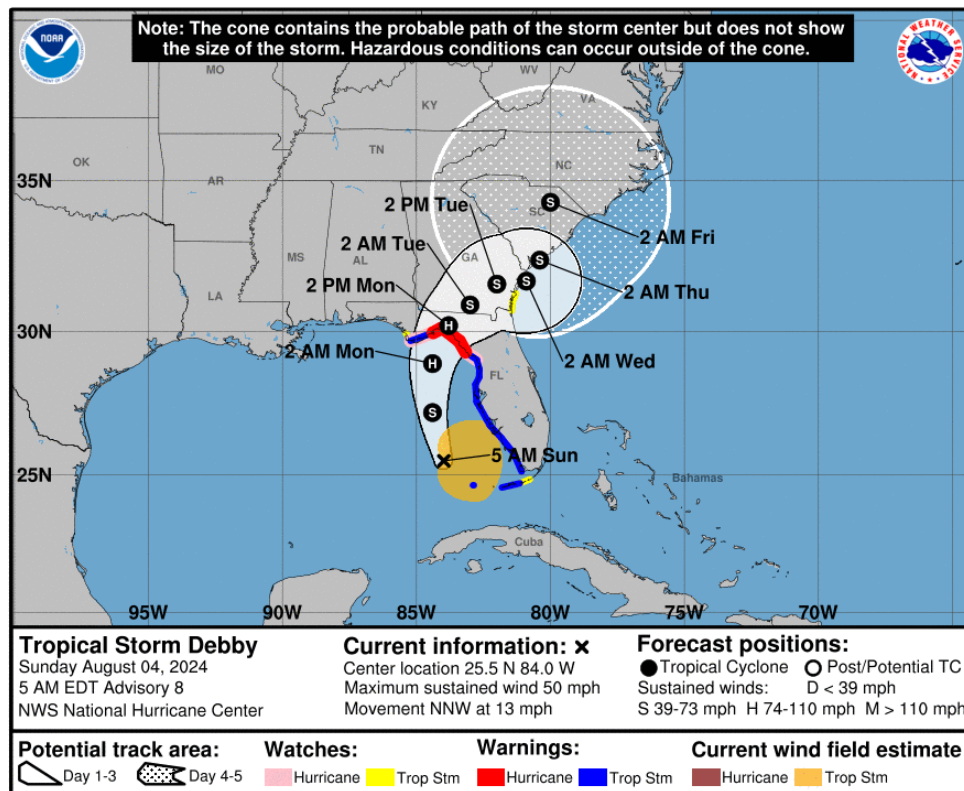


Figure 1. National Hurricane Center Advisory 8 for Debby, issued 5AM EDT August 4, 2024.

Debby's broad wind field and outer rain bands impacted nearly the entire west coast of Florida with storm surge flooding, strong wind gusts, and torrential rainfall. Peak rainfall was observed in Manatee and Sarasota Counties with storm total rainfall amounts reaching nearly 20 inches in some areas. The storm slowed down considerably after landfall as it moved across North Florida. Major impacts to the Big Bend coastal regions were from storm surge flooding and heavy rainfall, while areas further inland saw torrential rainfall and flash flooding. Eventually Debby moved back over the ocean off the coast of South Carolina and made a second landfall near Bulls Bay, SC on August 8 as a tropical storm. It transitioned to a post-tropical cyclone as it traveled northeastward and into Canada before dissipating. A total of 5 tornadoes were reported in Florida, including an EF1 tornado in Union County and an EF0 in Pinellas County, as well as tornadoes reported in Columbia, Polk, and Hardee Counties.

DEBBY'S PEAK WINDS

The highest recorded wind gusts on land generally ranged from 45 mph to around 70 mph, though higher wind gusts were reported in isolated locations. Table 1 provides select peak wind gusts observed throughout the state collected from National Weather Service reports.

Table 1. Select peak wind gusts in miles per hour (mph) observed in Florida.

Station Name	Peak Wind Gust
Chiefland 6 S	76
Dania Beach 2 E	73
Palmetto 7 NW	70
Pompano Beach High School	67
Cedar Key 1 SE	67
FAWN Suwannee Advent Christian Village	65
Anna Maria Island 6 NNW	64
Whitfield 1 S	64
Belleair 3 NNW	63
Sarasota-Bradenton Intl AP	63
Perry-Foley AP	62
Albert Whitted AP	62
Clearwater Beach	61
Palm River-Clair Mel 3 W	61
Mayport Naval Stn	60
St. Pete-Clearwater Intl AP	60
Juno Beach 1 N	59
Gainesville Regional AP	53
Mayport Pilot Stn	52
Jacksonville	51

DEBBY GENERATED TORRENTIAL RAINFALL

Debby produced widespread flash flooding and riverine flooding across Florida and the U.S. East Coast due to torrential rainfall. In Florida, Debby's rainfall caused street flooding, road closures, and water rescues from stranded vehicles, homes, and apartment buildings. The estimated 5-day rainfall totals show widespread heavy rainfall extending from Southwest to North Central Florida, ranging from 6 inches to over 18 inches (Figure 2). The Sarasota area reported the heaviest rainfall, with a secondary maximum in North-Central Florida near where the storm made landfall. Storm total rainfall peaked at 18.86 inches, observed in Parrish; 18.34 inches was recorded at the CoCoRaHS (the Community Collaborative Rain, Hail, and Snow Network) station Lakewood Ranch 3.5 E in Manatee County. Table 2 provides select storm total rainfall observations from various station networks, and Table 3 provides the highest 1-day rainfall totals culled from CoCoRaHS observers.



Floodwater and standing water in Sarasota County on Aug 6, 2024 from Hurricane Debby (credit: Sarasota County Government)

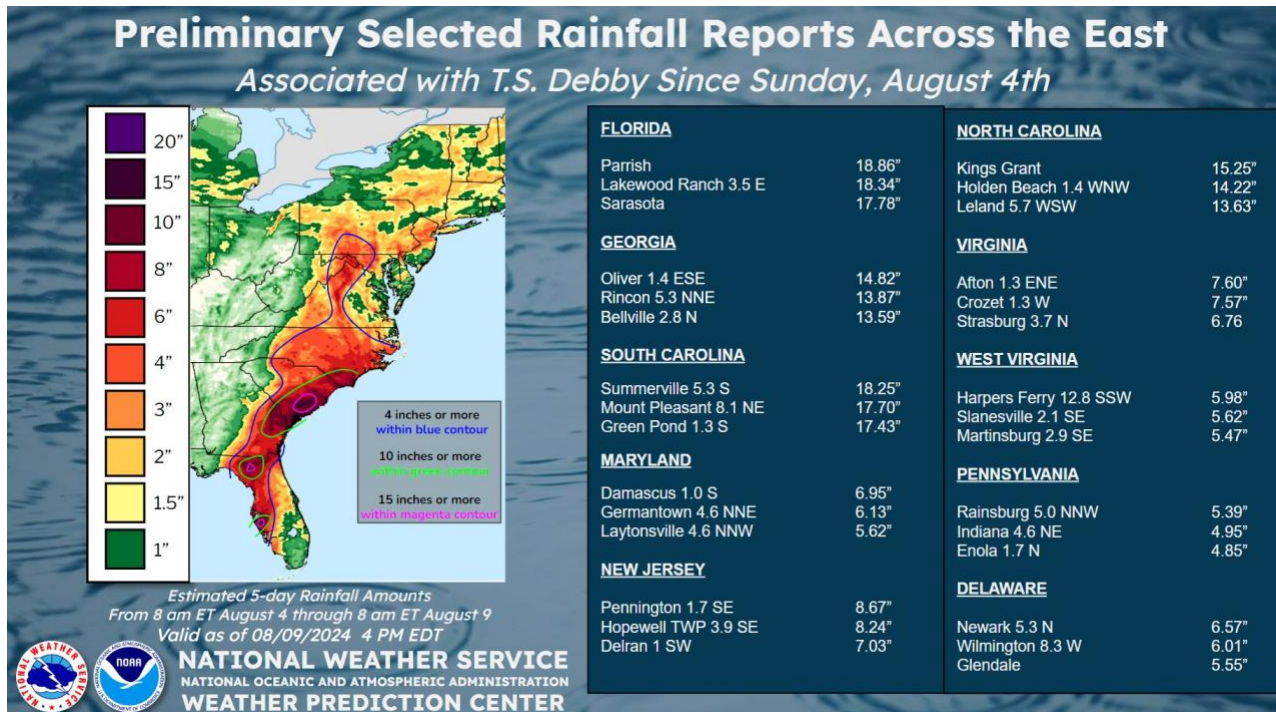


Figure 2. Preliminary rainfall totals from Debby as of August 7, 2024 (source: NOAA/NWS Weather Prediction Center).

Table 2. Preliminary select storm total rainfall, in inches, from various station networks as of August 10, 2024 (Sources: WPC and NWS Offices).

Station Name	Rainfall Total	Source
Parrish	18.86	COOP/Manatee County
Lakewood Ranch 3.5 E	18.34	CoCoRaHS
Sarasota	17.78	Weather Prediction Service
HUD-2 Arlington St.	16.98	Sarasota County
Manatee River at Rye FL	15.84	USGS
PH-14 BoB	15.09	Sarasota County
PH-1 Hidden Forest	14.91	Sarasota County
Lake Manatee at Verna Bethany Rd.	14.81	Manatee County
Holiday B	14.68	Sarasota County
Desoto Lakes 4.2 NNE	14.63	CoCoRaHS
Ellenton 6.6 E	14.60	CoCoRaHS
ROMP 20 Osprey	14.53	Southwest Florida WMD
Bradenton 10.8 SE	14.48	CoCoRaHS
Cooper Creek at University Pkwy	14.36	Manatee County
Sarasota Center	14.35	Southwest Florida WMD
Bradenton 5 ESE	14.20	COOP
Vamo 2.1 E	14.00	CoCoRaHS
The Meadows 6.2 NE	13.54	CoCoRaHS
Pinellas Park 1.7 ENE	13.53	CoCoRaHS
Old Town	12.70	Mesonet
Lake City 7.9 SSW	12.55	CoCoRaHS
Midway Tower	11.43	Suwannee River WMD
Sarasota Bradenton AP	11.06	GHCN/WBAN
Live Oak 6.4 NE	10.93	CoCoRaHS
Mayo	10.34	FAWN
5 W Newberry	10.32	CoCoRaHS
Mallory Tom Gunter Road	10.10	Suwannee River WMD
Glen St. Mary 4.4 SW	9.67	CoCoRaHS
Live Oak	9.27	FAWN

Table 3. Highest 1-day rainfall totals in Florida by county from Hurricane Debby from the CoCoRaHS network.

County	Rainfall Total (inches)	Station
Manatee	16.04	FL-MA-29
Sarasota	11.68	FL-SS-91
Pinellas	11.45	FL-PN-90
Hillsborough	10.67	FL-HB-33
Levy	9.50	FL-LV-15
Polk	9.50	FL-PK-93
Gilchrist	9.06	FL-GC-12
Hamilton	8.09	FL-HM-5
Citrus	7.60	FL-CT-37
Pasco	7.55	FL-PS-89
Alachua	7.17	FL-AL-102

County	Rainfall Total (inches)	Station
Taylor	6.84	FL-TY-8
Columbia	6.82	FL-CB-12
Marion	6.75	FL-MR-89
Hernando	6.58	FL-HN-39
Baker	6.46	FL-BK-5
Suwannee	6.32	FL-SW-16
Lake	6.21	FL-LK-28
Lee	6.18	FL-LE-78
Sumter	6.03	FL-ST-9
Duval	4.80	FL-DV-91

RIVERINE & COASTAL FLOODING

According to the Tampa Bay Weather Forecast Office, over 500 high-water rescues occurred due to flooding in the Pinecraft and Phillippi Creek neighborhoods and along the Myakka River. Swift water rescues also occurred in Suwannee County and across north-central Florida. Storm surge flooding impacted coastal areas across the western Peninsula of Florida. Storm surge based on NOAA tide gage observations ranged from 2.4 feet MHHW in Port Manatee to 4.65 feet MHHW in Cedar Key.



Storm surge in Horseshoe Beach, Florida, on August 5, 2024 (credit: Chris O'Meara/AP).

Many rivers in Debby's path swelled to major flood stage in the days following the storm's passing (Figure 3), with some rivers still running high or much above normal in the weeks after the storm. The storm brought [several Florida river and lake locations to record levels](#), according to the U.S. Geological Survey. The highest preliminary measurement occurred at Gamble Creek near Parrish, FL with a peak of 21.44 feet (Figure 4). Figure 5 shows peak river stages for locations along the Manatee and Myakka Rivers; [additional flood stage reports](#) from Debby in North and Northeast Florida are available from the National Weather Service office in Jacksonville.

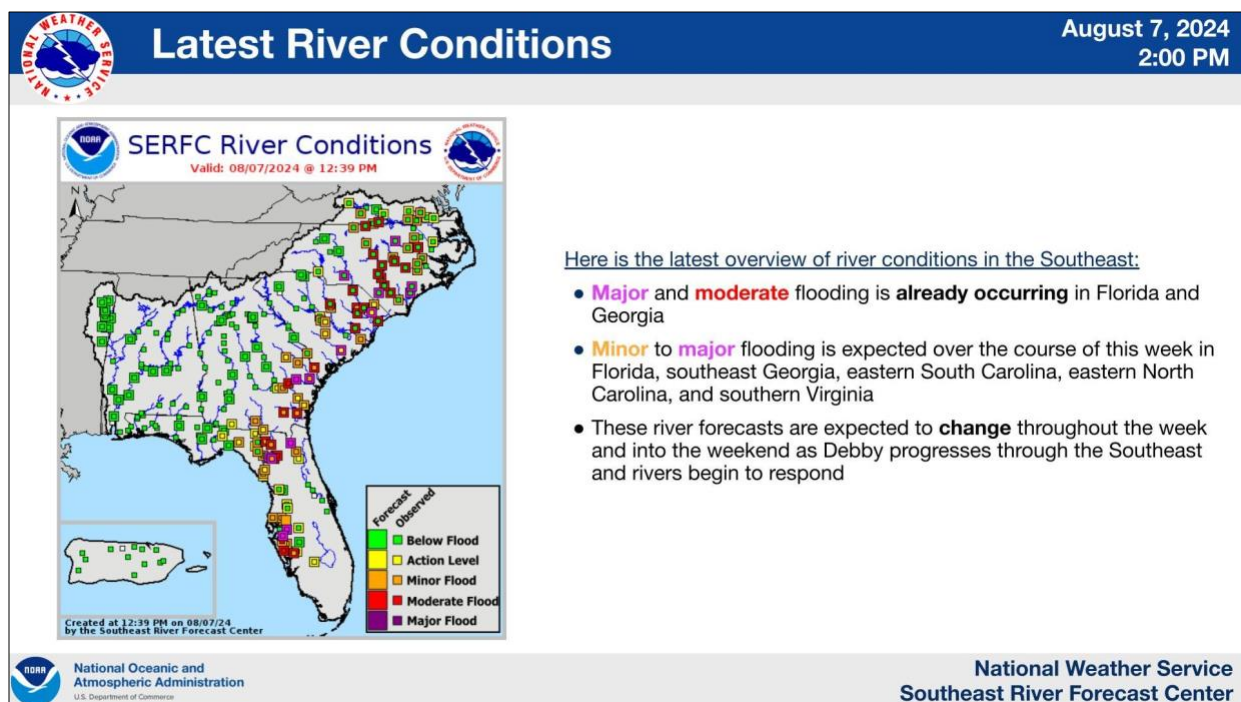


Figure 3. River conditions across the Southeast U.S. from Hurricane Debby as of August 7, 2024 from the Southeast River Forecast Center.

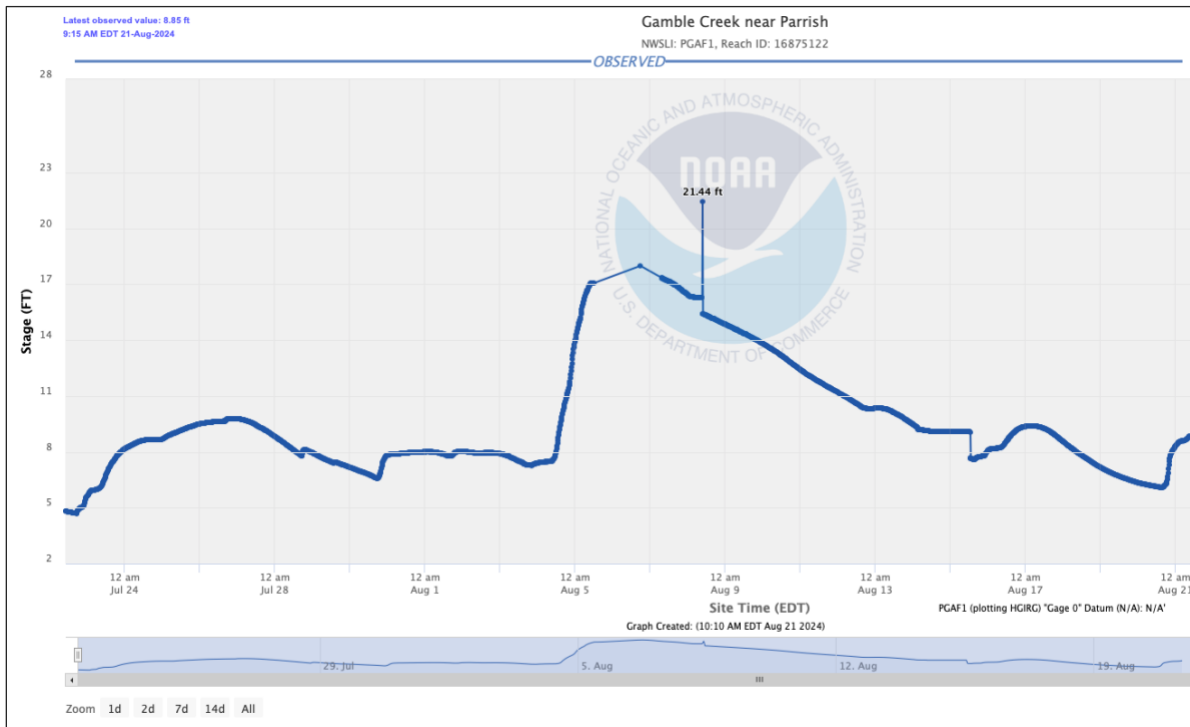


Figure 4. River flood stage, in feet, at the Gamble Creek location near Parrish, FL, from the NOAA National Water Prediction Service.

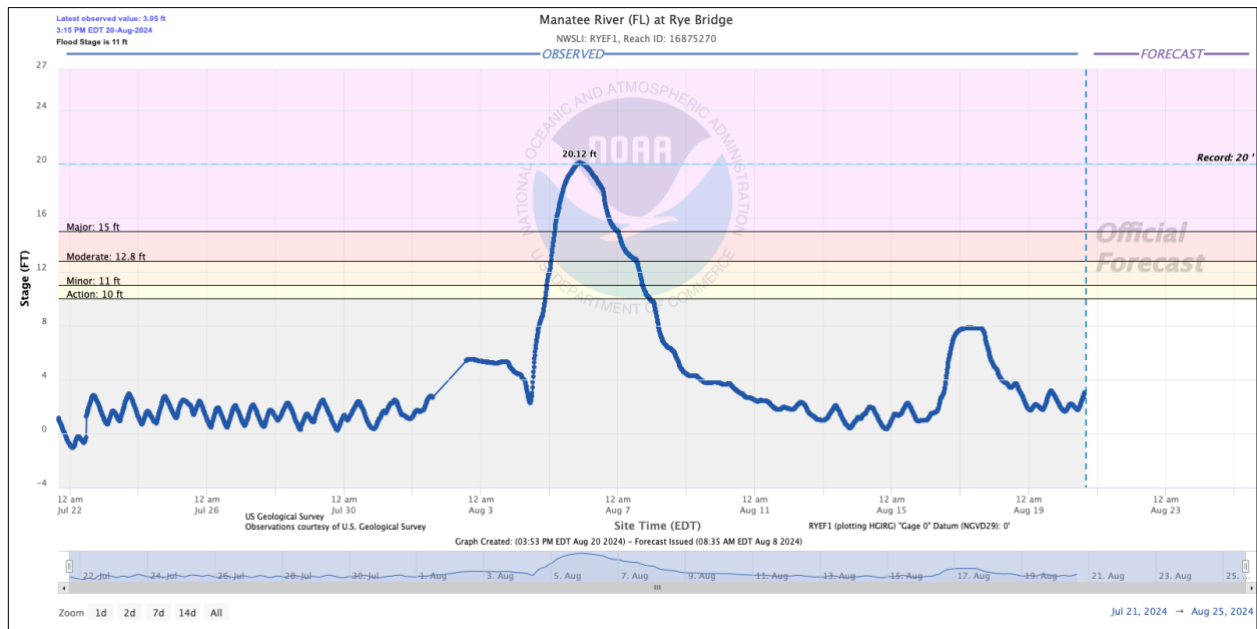


Figure 5. River flood stage, in feet, for the period June 22 to August 19, 2024 for the Manatee River at Rye Bridge, with a peak of 20.12 feet from Debby nearing the all-time record for this location.

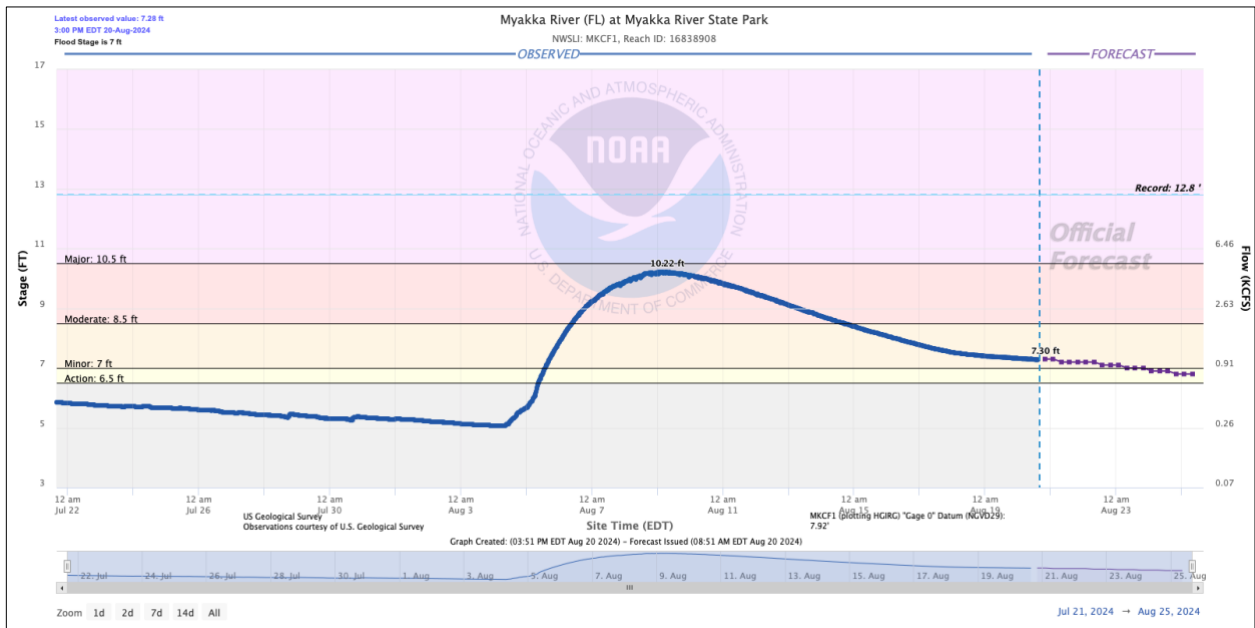


Figure 6. River flood stage, in feet, for the period June 22 to August 19, 2024 for the Myakka River at Myakka River State Park, with a peak of 10.22 feet as a result of Debby, which is just under major flood stage for this location.

Additional information:

- NWS Tallahassee: <https://www.weather.gov/tae/TropicalEventSummary>
- NWS Jacksonville: <https://www.weather.gov/jax/TropicalEventSummary>
- NWS Tampa Bay: <https://www.weather.gov/tbw/TropicalEventSummary>
- NWS Miami StoryMap: <https://storymaps.arcgis.com/stories/95a498c5fd8a4d6c859a0d01428c9ab1>