

Hurricane Debby

August 2024

USDA NASS Disaster Monitoring Team



Event Summary

- Hurricane Debby caused torrential rainfall and widespread flooding across the Southeastern U.S. in early August 2024.
- Made landfall near Steinhatchee, FL on August 5 as a Category 1 storm.
- Re-entered the Atlantic and made landfall in SC on August 8.

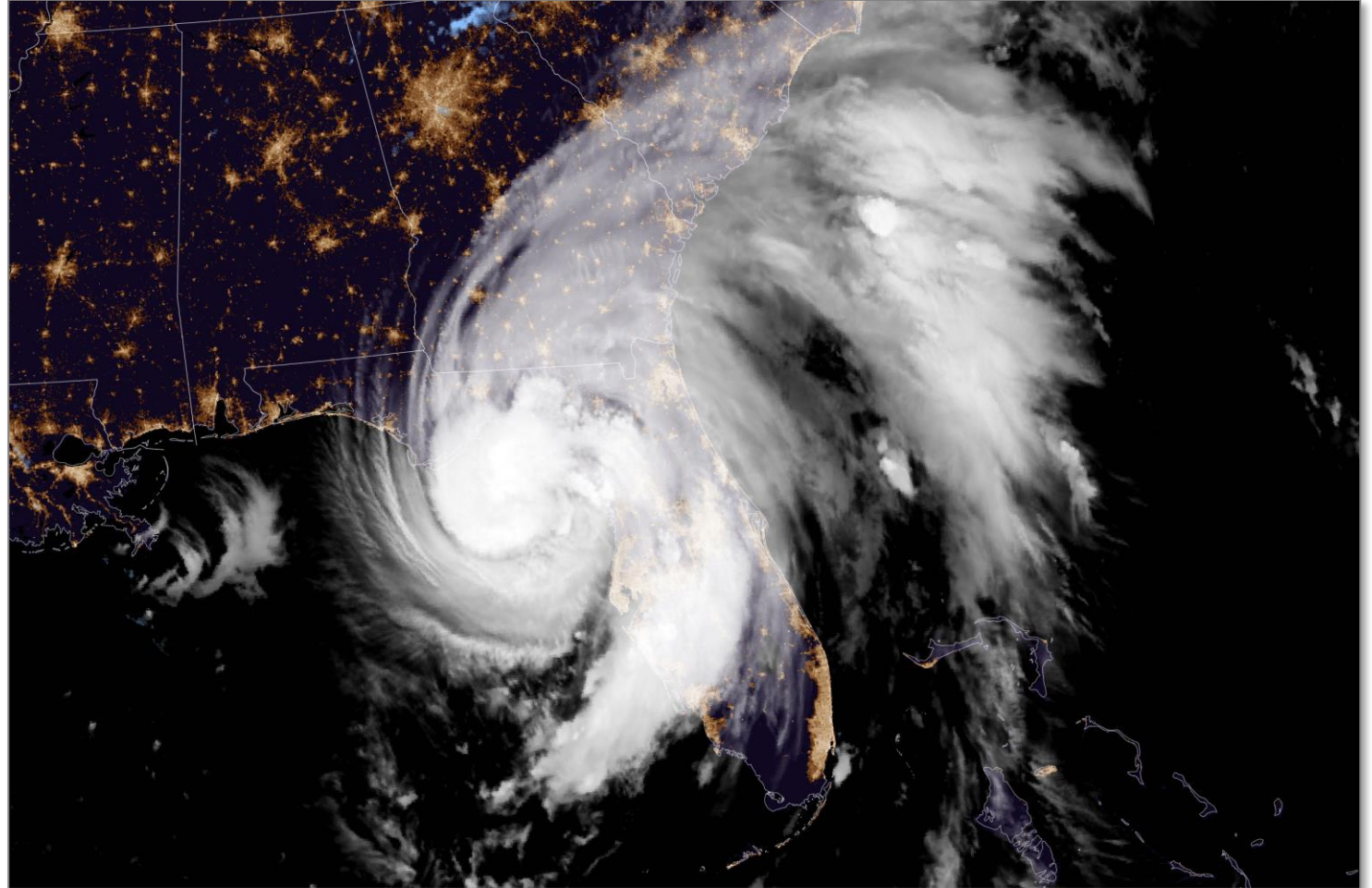
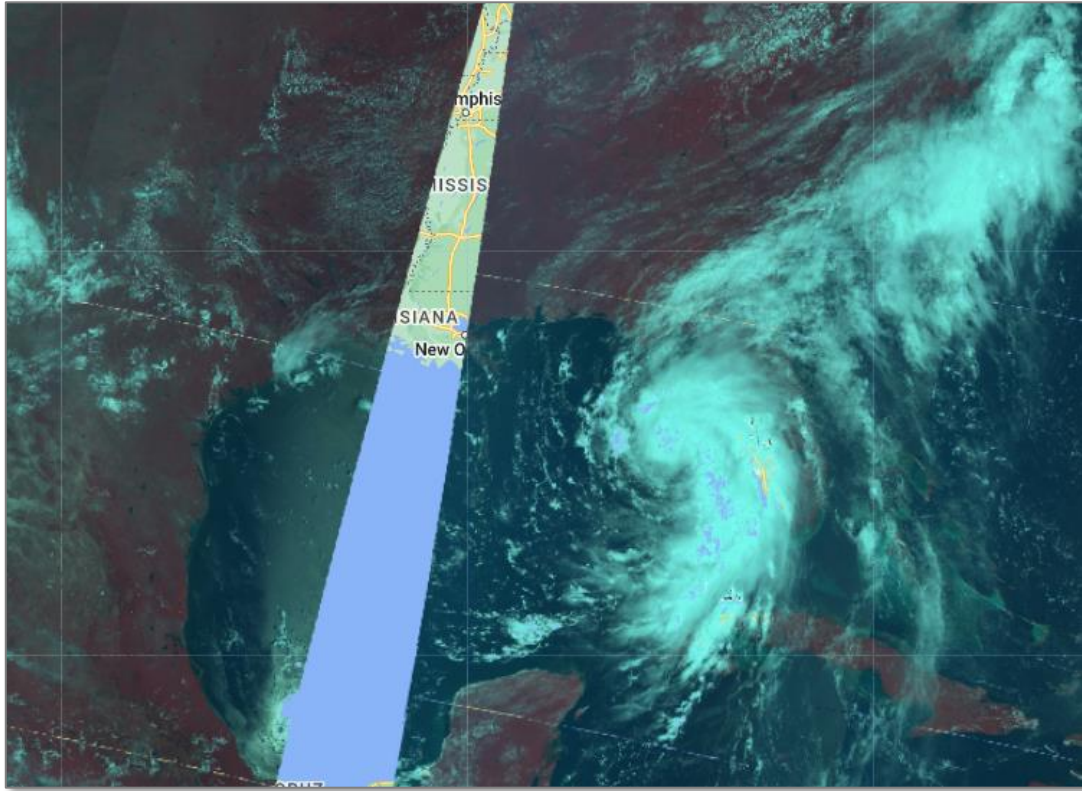
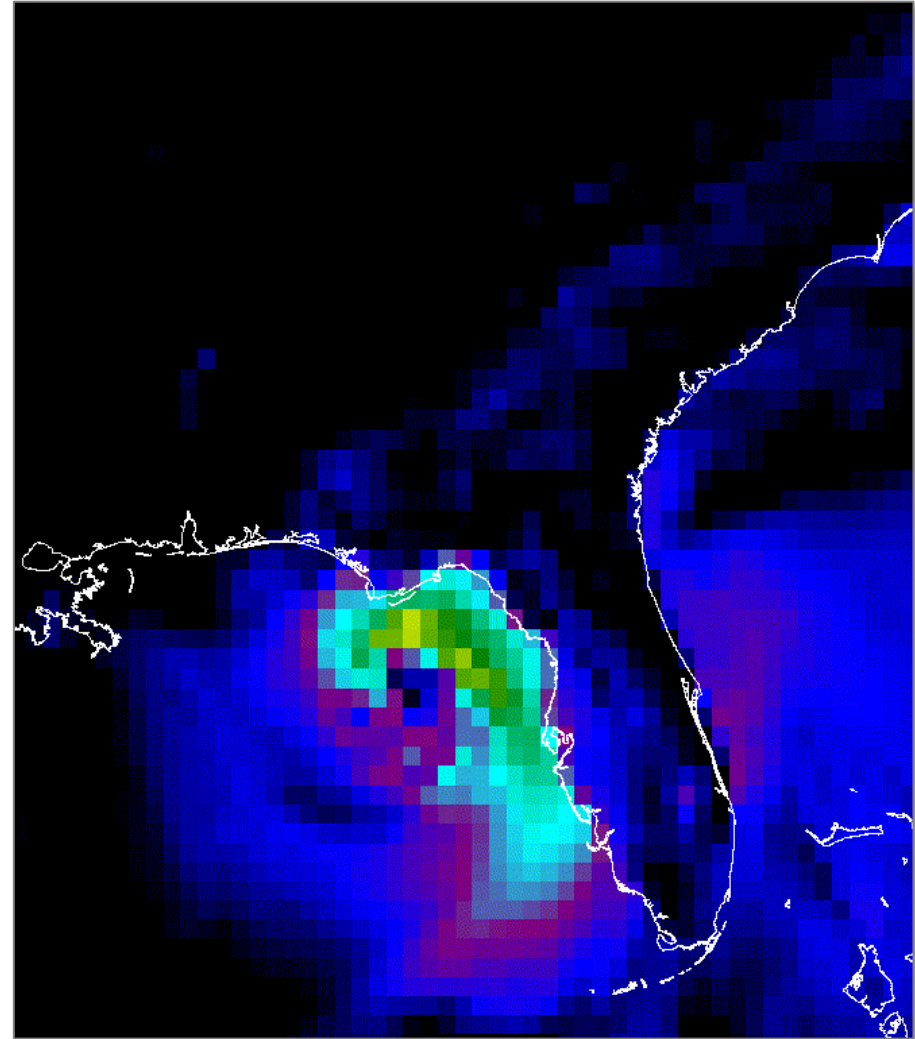


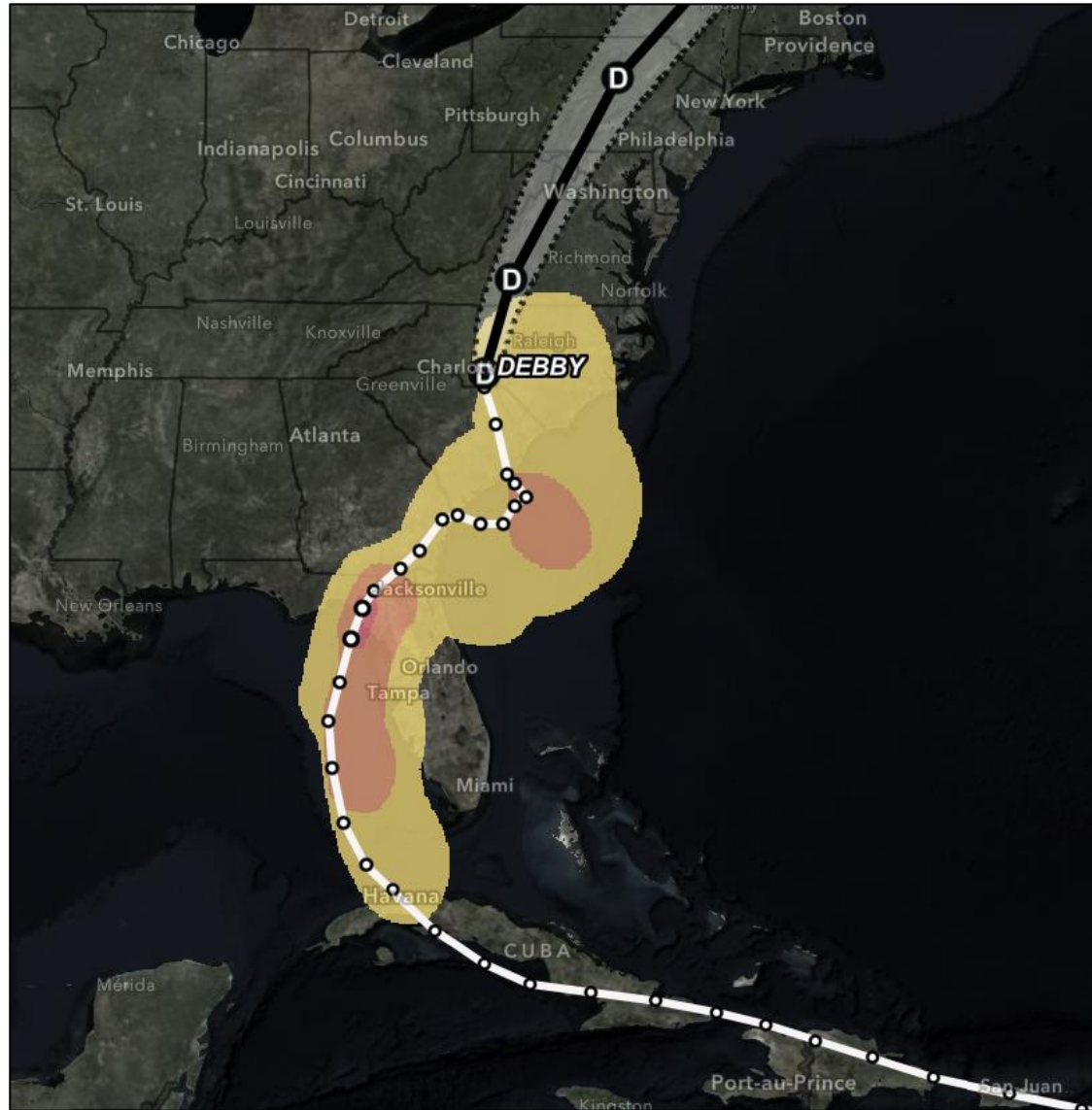
Image Source: NASA Earth Observatory, August 5, 2024
[Hurricane Debby Hits Florida, NASA Earth Observatory](#)



Hurricane Debby as seen from Sentinel-3
August 4-5, 2024



Global Forecast System (GFS) - 48 hours
max wind speed forecast starting from Aug
4, 2024, 17:00 EST showing Hurricane
Debby's moving path (Extracted from
Google Earth Engine)



Observed Storm Path as of August 8, 2024

Observed Position

Assign Storm Type (Saffir) by Intensity

- Category 5
- Category 4
- Category 3
- Category 2
- Category 1
- Tropical Storm
- Tropical Depression

Forecast Error Cone

- ⋯ 3 Day Cone
- ⋯ 5 Day Cone

Observed Track



Observed Wind Swath

- ▭ Tropical Storm Force (34kts)
- ▭ Strong Tropical Storm (50kts)
- ▭ Hurricane Force (64kts+)

Forecast Track



- ⓓ Tropical Depression

Image Source: NOAA National Hurricane Center (NHC),
[ESRI Disaster Response Portal](#)

Rainfall Totals August 3-7, 2024

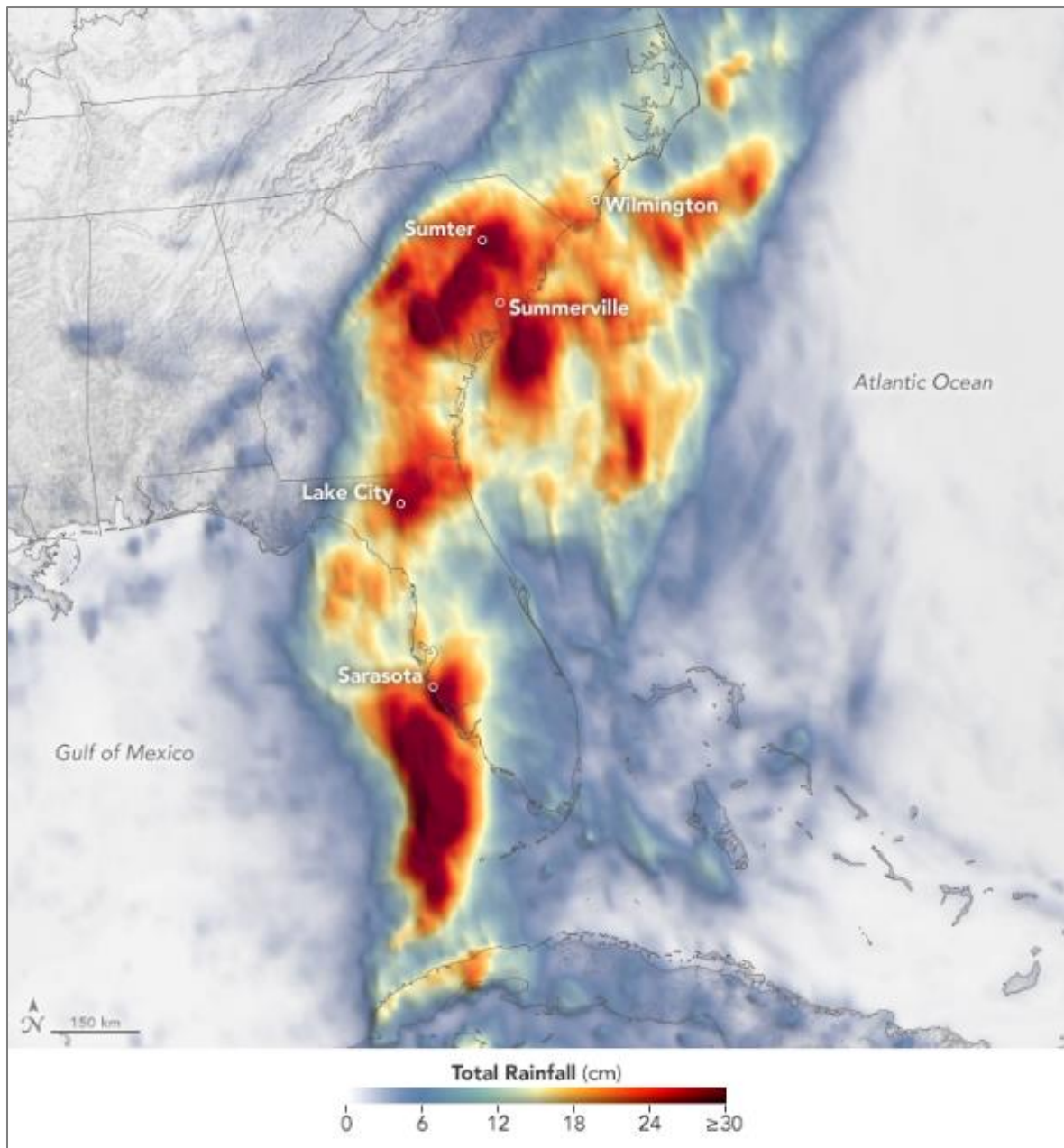


Image Source: NASA Earth Observatory, [Debby Soaks the Southeast](#)



Rainfall Totals August 8, 2024

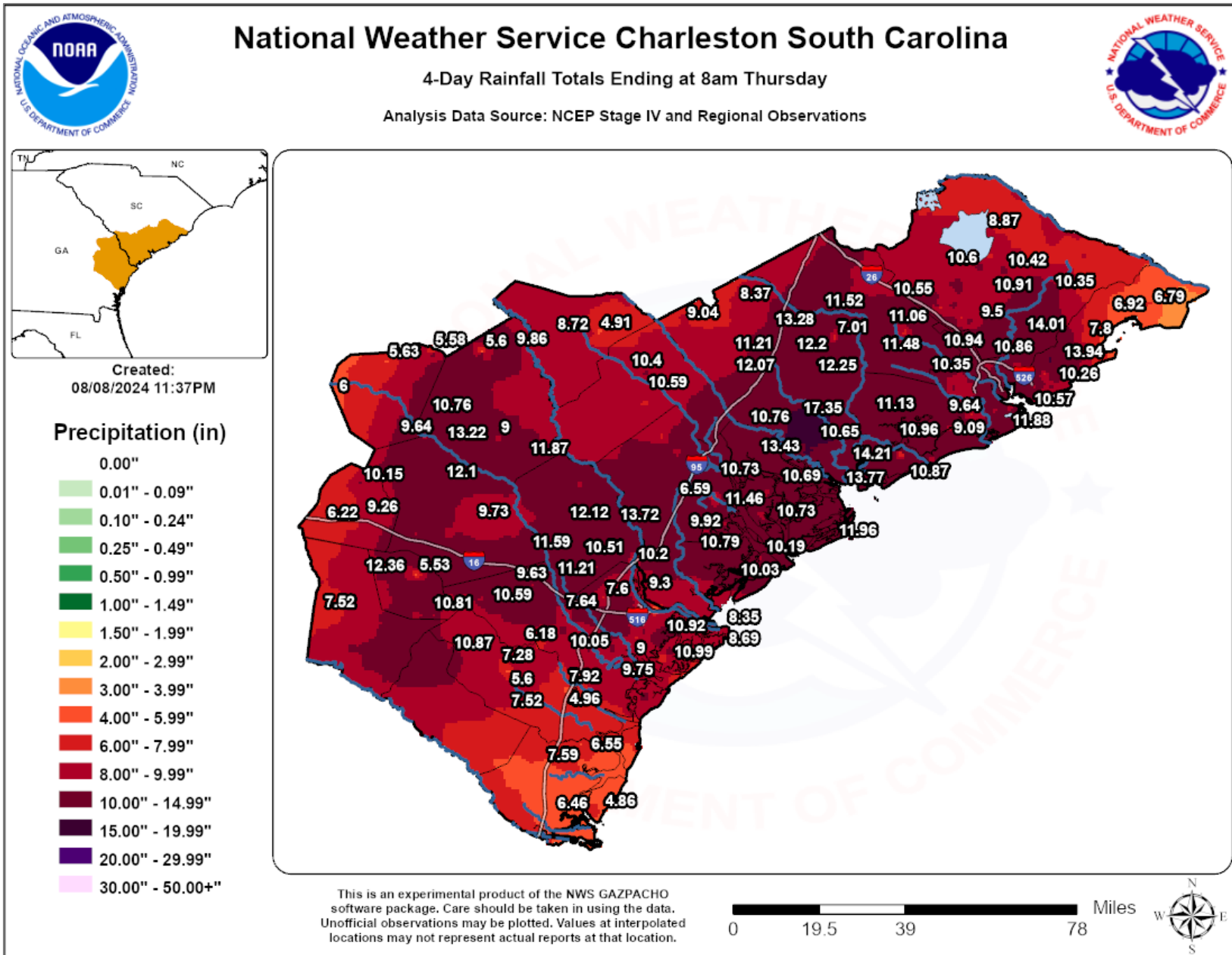


Image Source: [NOAA National Weather Service](#)



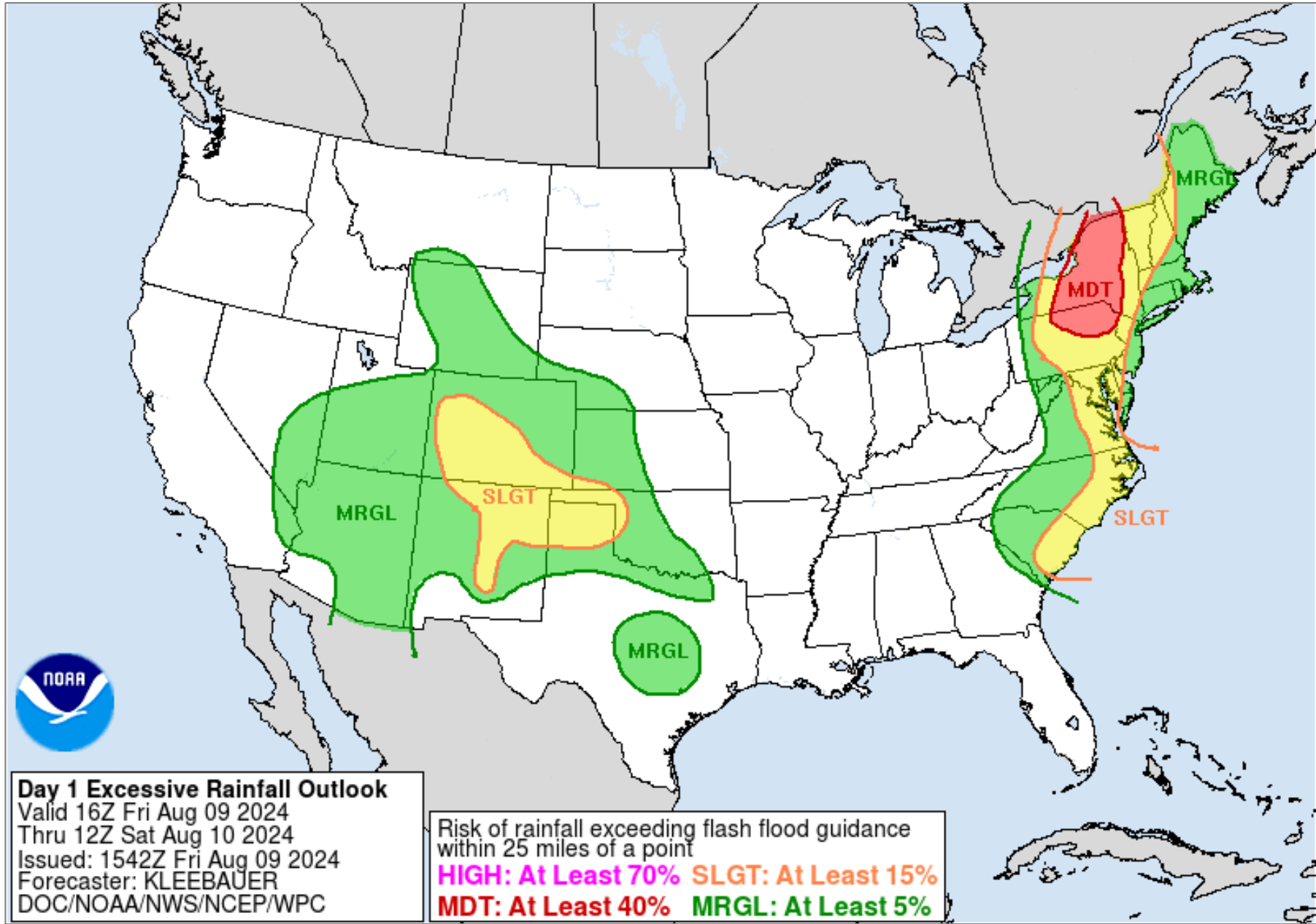


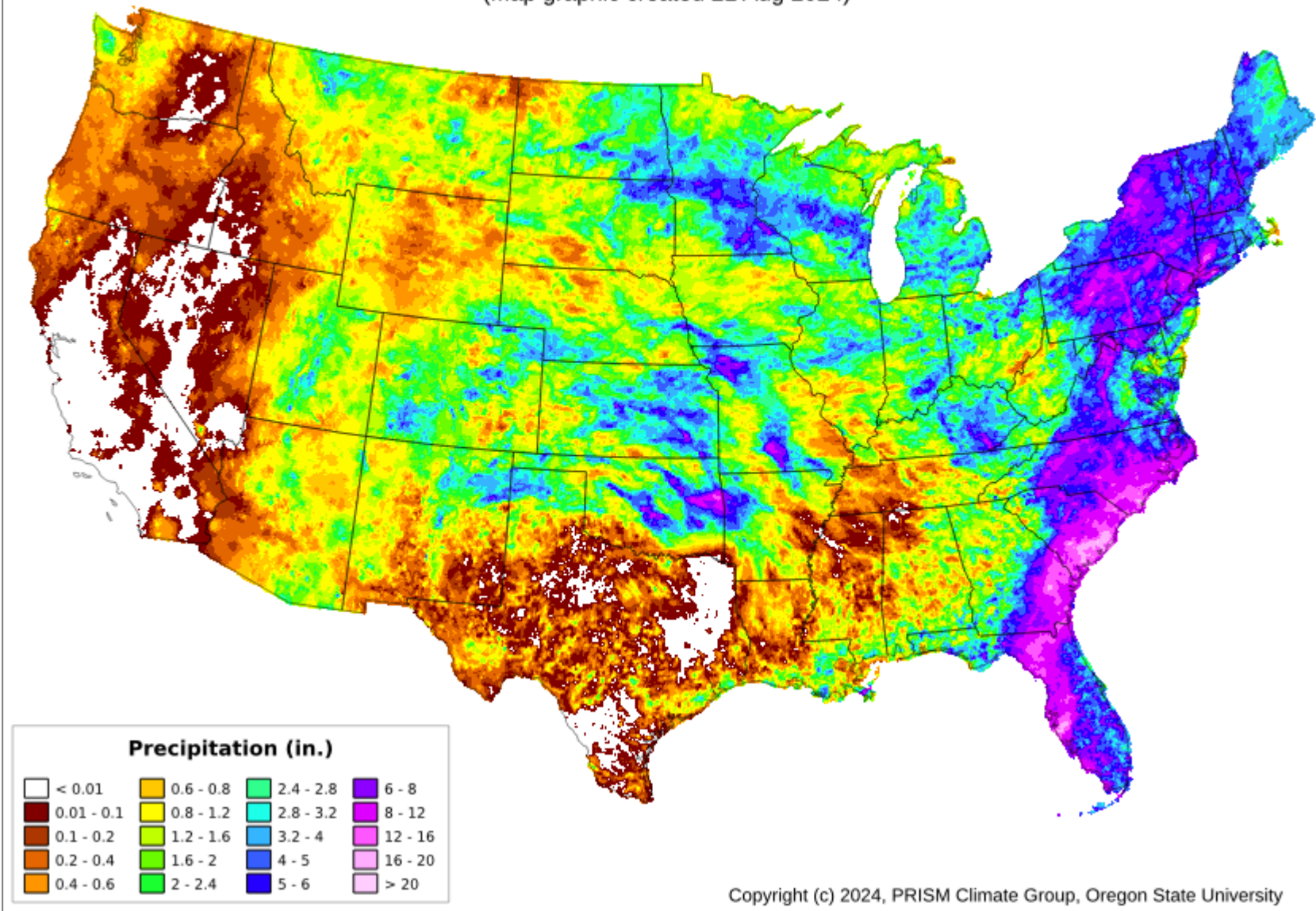
Image Source: NOAA National Weather Service Weather Prediction Center



Total Precipitation: 01 Aug 2024 - 20 Aug 2024

Period ending 7 AM EST 20 Aug 2024

(Map graphic created 21 Aug 2024)



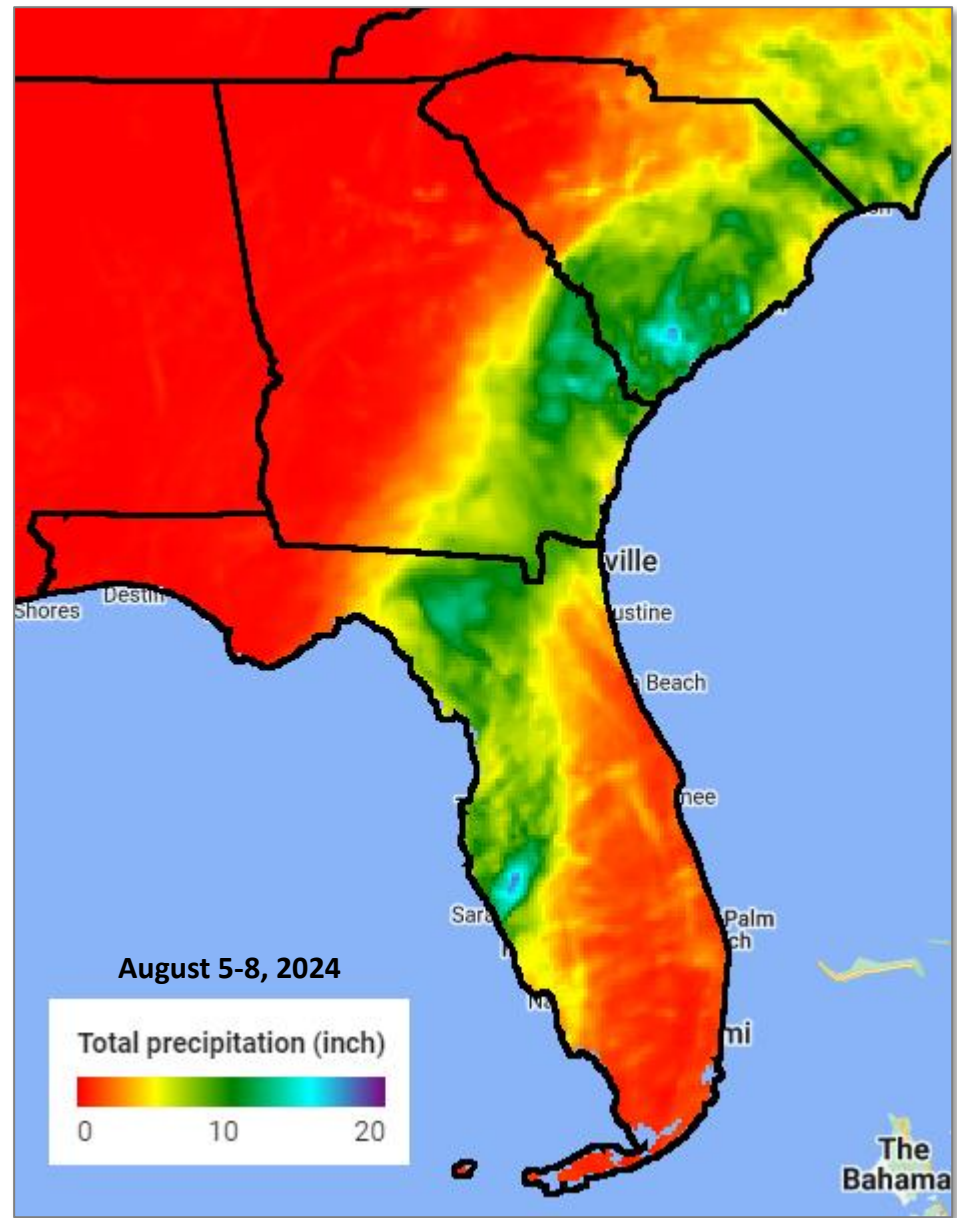
Copyright (c) 2024, PRISM Climate Group, Oregon State University



Image Source: [PRISM Climate Group at Oregon State University](#)



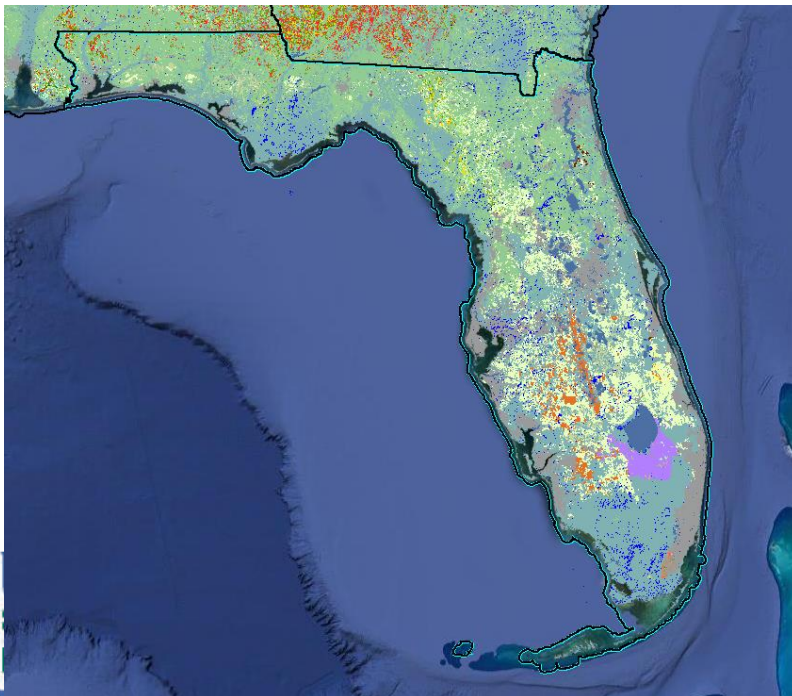
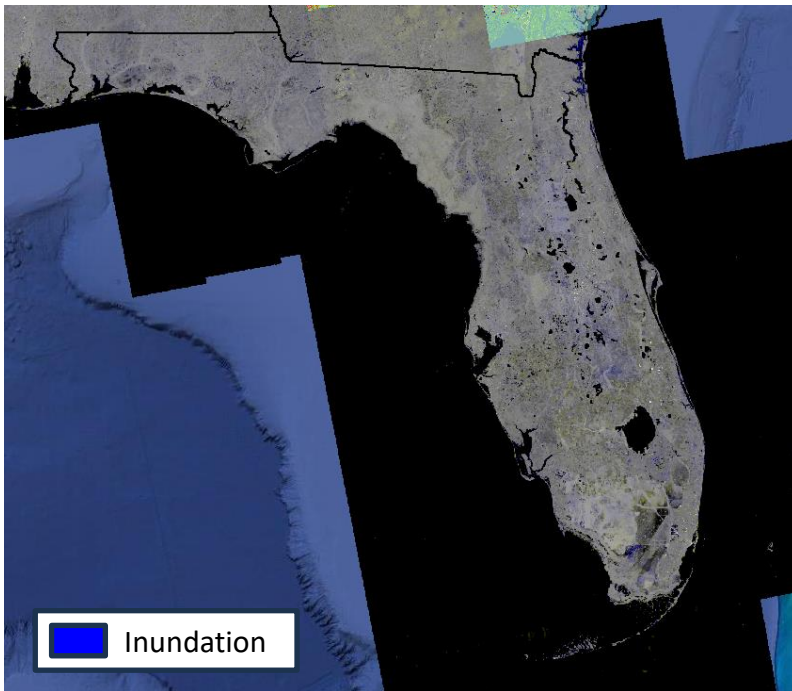
Rainfall Totals August 5-8, 2024



Data Source: [PRISM Climate Group at Oregon State University](#)



Percent of Crop Acres affected by Hurricane Debby, August 2024 Florida



Crop Type	Total Statewide Acres	Percent Impacted
Citrus (not including Oranges)****	20,100	0.69%
Corn*	90,000	0.40%
Cotton*	89,000	0.27%
Oranges***	278,300	1.54%
Peanuts*	160,000	0.39%
Strawberries*	14,200	1.93%
Sugarcane**	407,600	0.53%

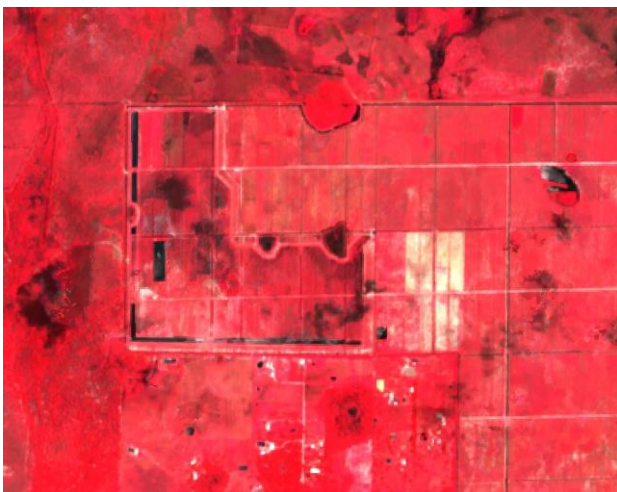
*Acres Planted, NASS 2023

**Acres Harvested, NASS 2023

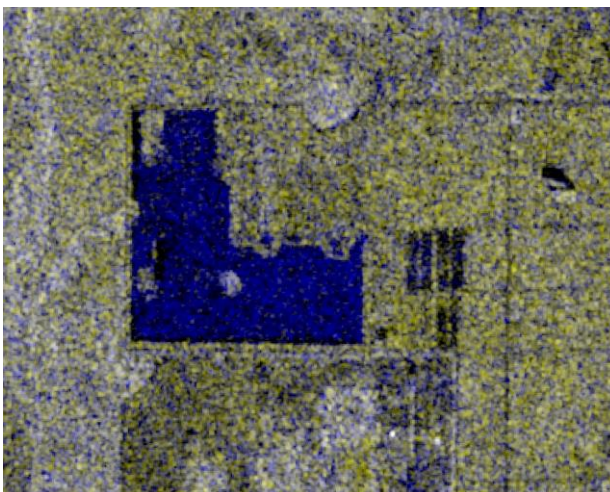
***Acres Bearing, NASS 2023

****Acres Bearing, not including oranges, NASS 2023

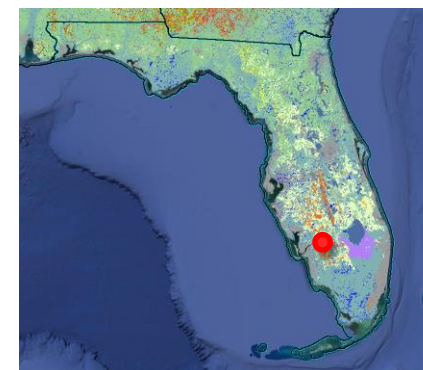
Percent based on raw pixel counts from the 2023 CDL and are not official NASS estimates.



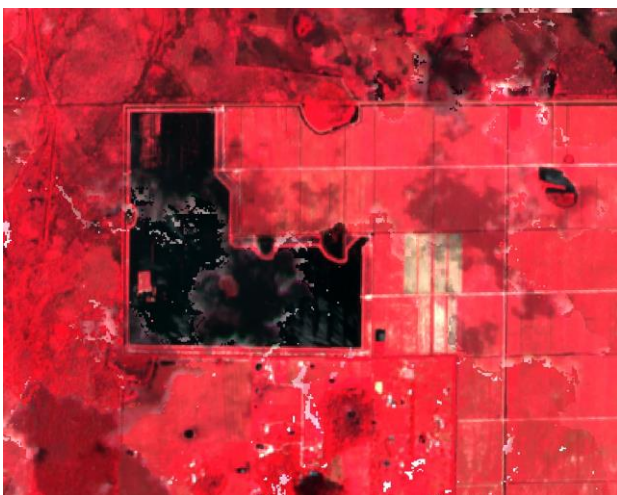
Median composite of Sentinel-2
Jun 15-Aug 1, 2024



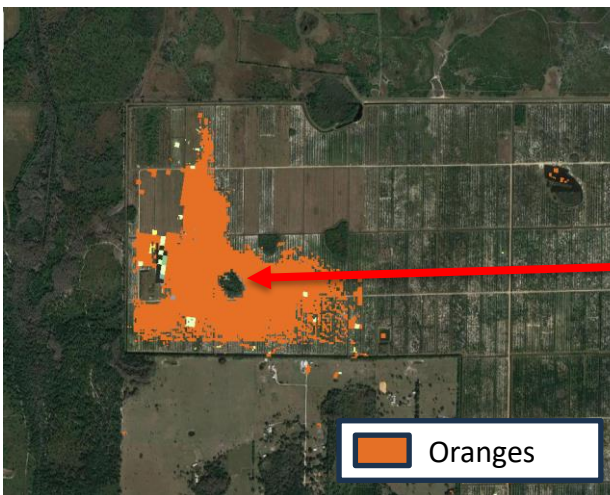
Anomaly detected from Sentinel-1A SAR imagery
Jun 15-Aug 1, 2024



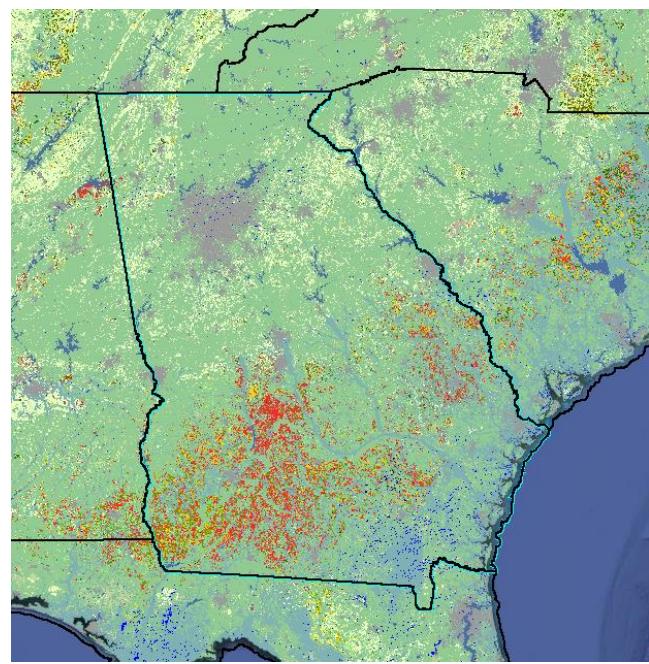
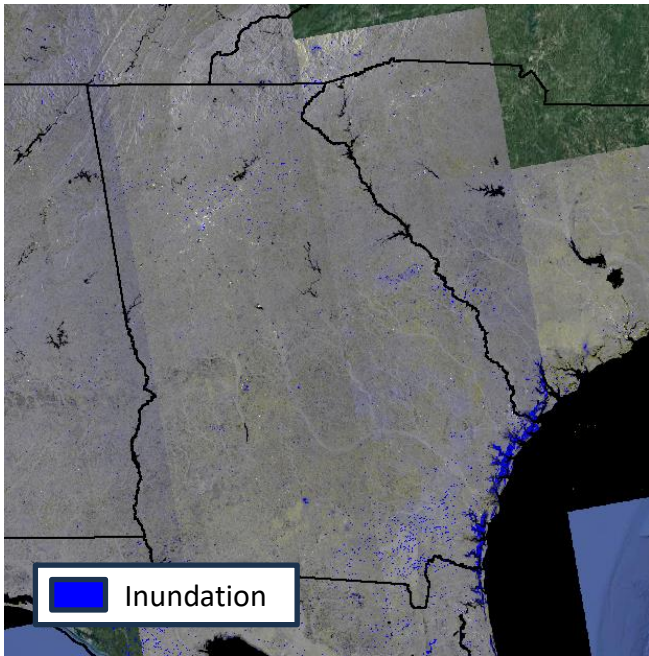
Lee County, FL Crops Affected: Oranges



Median composite of Sentinel-2
Aug 5-20, 2024



Lat: 26.76
 Lon: -81.61
 State: Florida
 County: Lee
 Elevation: 5.59 m
 Crop type in 2023: Oranges
 S2 post-event MNDWI (max): 0.56
 S2 pre-event MNDWI (median): -0.50
 L8/9 post-event MNDWI (max): N/A
 L8/9 pre-event MNDWI (median): -0.47
 Multi-sensor post-event MNDWI (max): 0.56
 Multi-sensor pre-event MNDWI (median): -0.50



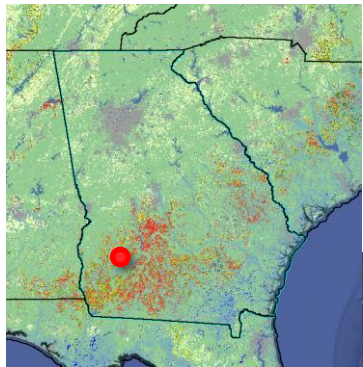
Percent of Crop Acres affected by Hurricane Debby, August 2024 Georgia

Crop Type	Total Statewide Acres	Percent Impacted
Blueberries**	21,400	0.65%
Corn*	485,000	0.16%
Cotton*	1,110,000	0.09%
Peaches***	7,700	0.10%
Peanuts*	775,000	0.10%
Pecans***	148,000	0.04%
Soybeans*	160,000	0.11%

*Acres Planted, NASS 2023
 **Acres Harvested, NASS 2023
 ***Acres Bearing, NASS 2023

Percent based on raw pixel counts from the 2023 CDL and are not official NASS estimates.





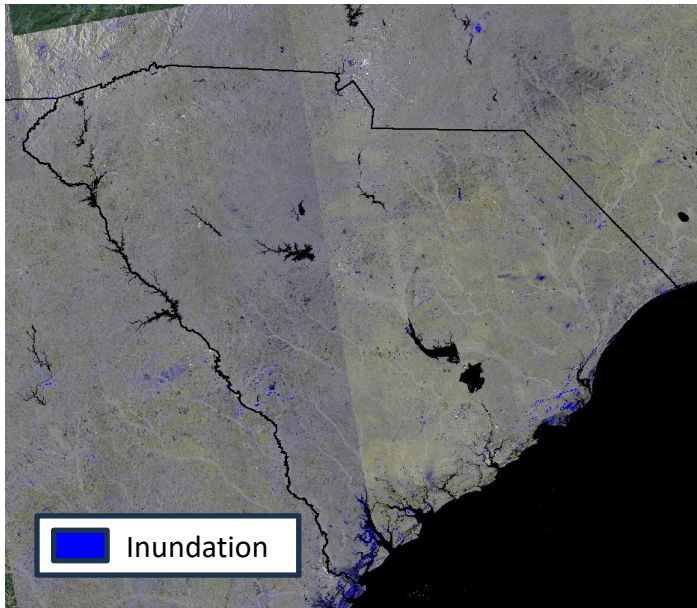
Randolph County, GA

Crops Affected: Cotton, Peanuts



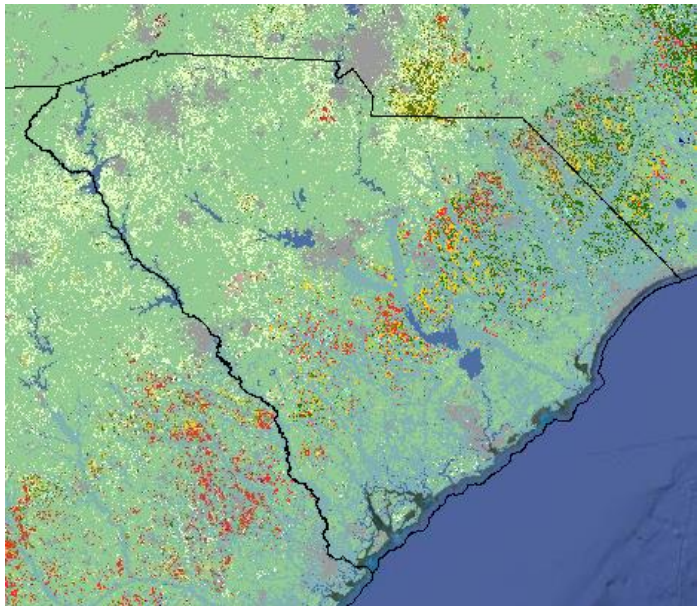
Lat: 31.70
 Lon: -84.56
 State: Georgia
 County: Randolph
 Elevation: 99.74 m
 Crop type in 2023: Cotton
 S2 post-event MNDWI (max): 0.16
 S2 pre-event MNDWI (median): -0.35
 L8/9 post-event MNDWI (max): -0.46
 L8/9 pre-event MNDWI (median): -0.42
 Multi-sensor post-event MNDWI (max): 0.16
 Multi-sensor pre-event MNDWI (median): -0.41

Lat: 31.69
 Lon: -84.56
 State: Georgia
 County: Randolph
 Elevation: 99.25 m
 Crop type in 2023: Peanuts
 S2 post-event MNDWI (max): 0.22
 S2 pre-event MNDWI (median): -0.24
 L8/9 post-event MNDWI (max): -0.45
 L8/9 pre-event MNDWI (median): -0.38
 Multi-sensor post-event MNDWI (max): 0.22
 Multi-sensor pre-event MNDWI (median): -0.36



Percent of Crop Acres affected by Hurricane Debby, August 2024 South Carolina

Crop Type	Total Statewide Acres	Percent Impacted
Corn*	365,000	0.46%
Cotton*	210,000	0.18%
Peaches***	15,500	0.02%
Peanuts*	77,000	0.14%
Soybeans*	395,000	0.36%



*Acres Planted, NASS 2023

***Acres Bearing, NASS 2023

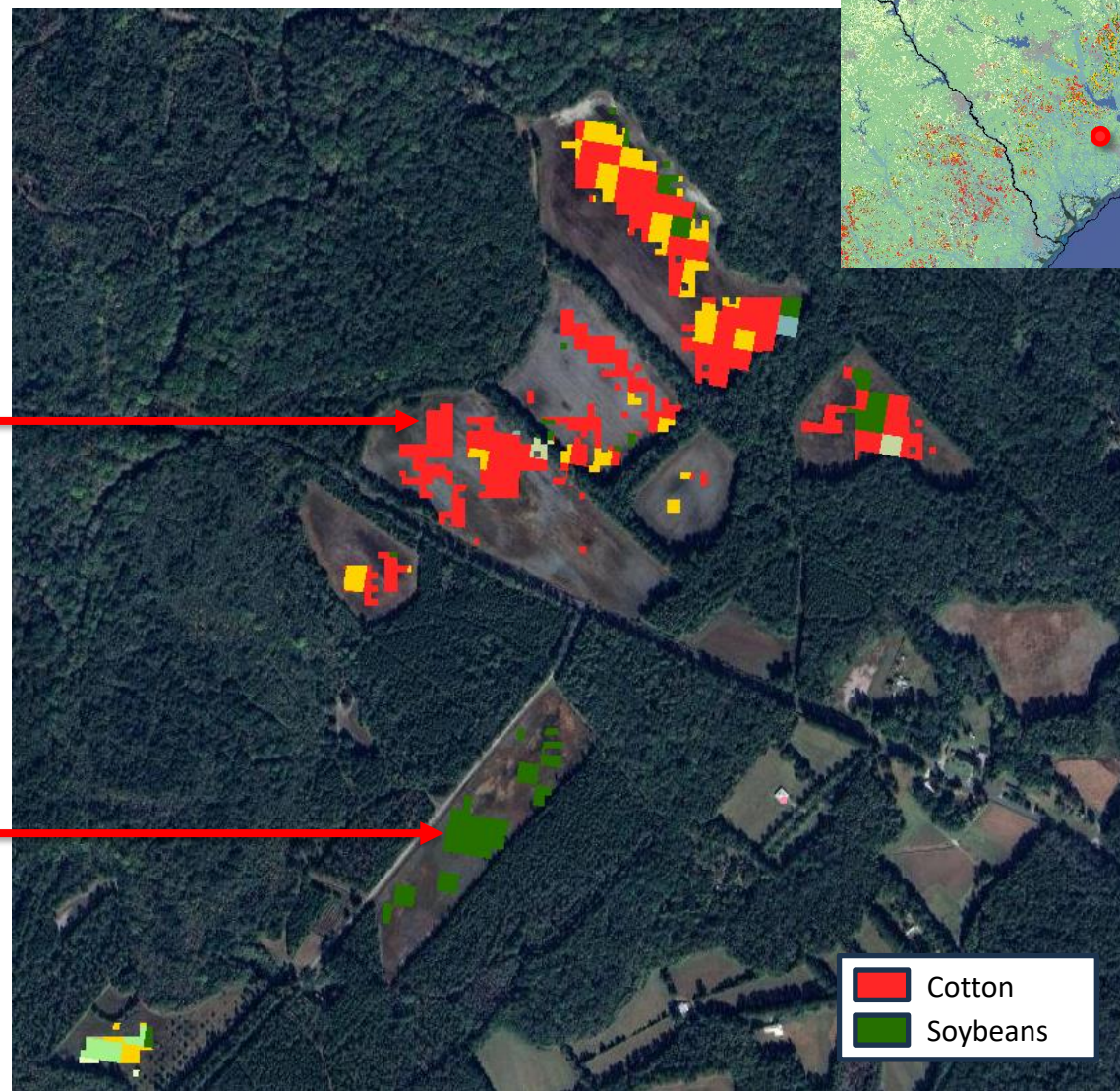
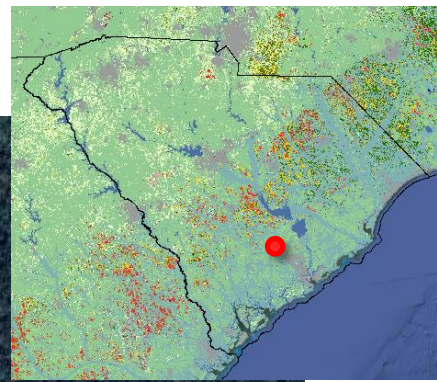
Percent based on raw pixel counts from the 2023 CDL and are not official NASS estimates.

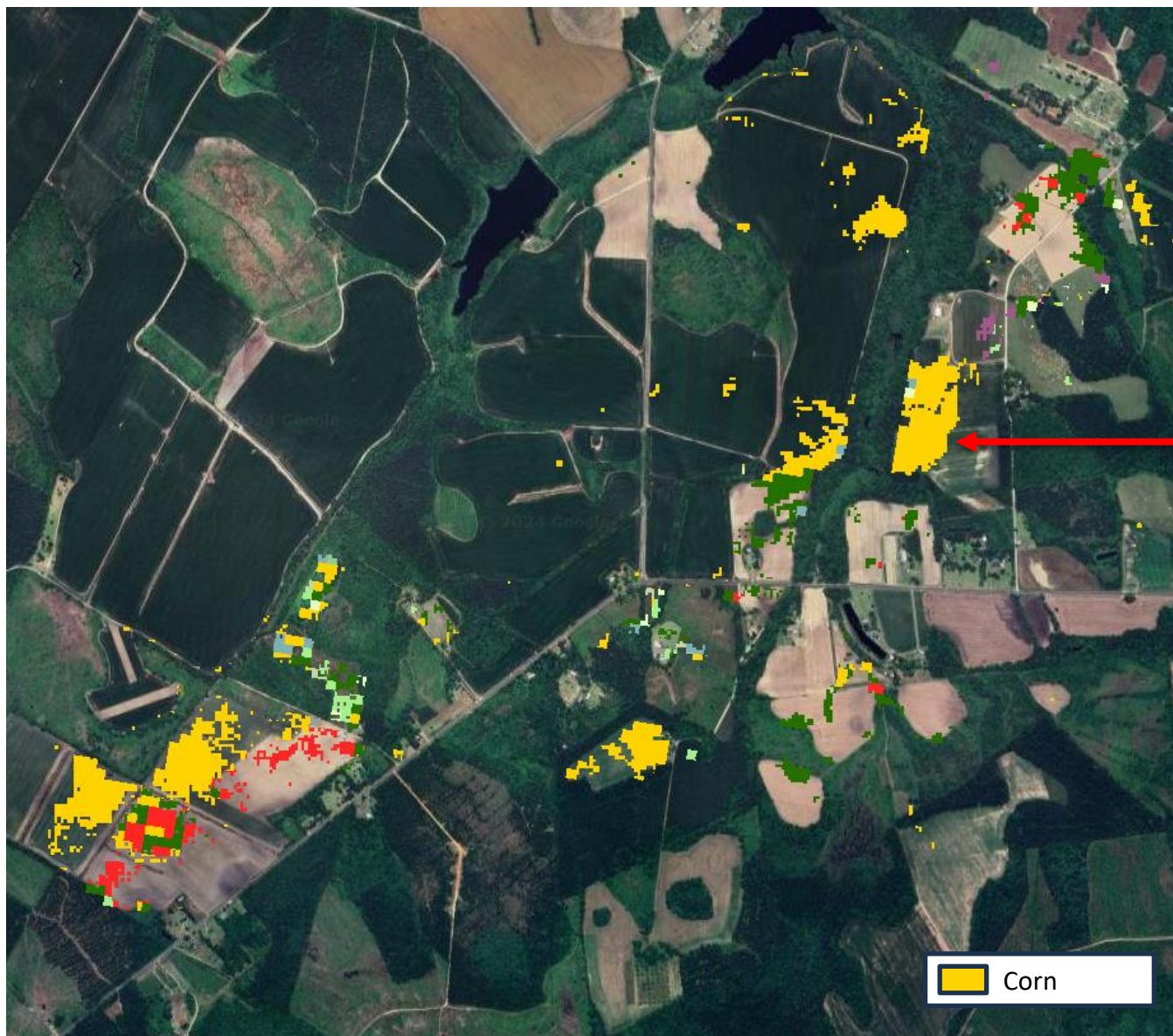
Dorchester County, SC

Crops Affected: Cotton, Soybeans

Lat: 33.09
Lon: -80.37
State: South Carolina
County: Dorchester
Elevation: 12.19 m
Crop type in 2023: Cotton
S2 post-event MNDWI (max): 0.27
S2 pre-event MNDWI (median): -0.54
L8/9 post-event MNDWI (max): N/A
L8/9 pre-event MNDWI (median): -0.52
Multi-sensor post-event MNDWI (max): 0.27
Multi-sensor pre-event MNDWI (median): -0.54

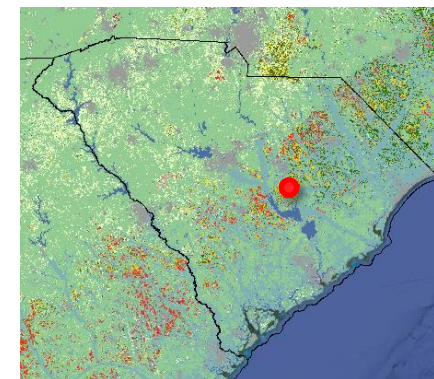
Lat: 33.08
Lon: -80.38
State: South Carolina
County: Dorchester
Elevation: 11.59 m
Crop type in 2023: Soybeans
S2 post-event MNDWI (max): 0.46
S2 pre-event MNDWI (median): -0.49
L8/9 post-event MNDWI (max): N/A
L8/9 pre-event MNDWI (median): -0.53
Multi-sensor post-event MNDWI (max): 0.46
Multi-sensor pre-event MNDWI (median): -0.52





Clarendon County, SC Crops Affected: Corn

Lat: 33.69
Lon: -80.28
State: South Carolina
County: Clarendon
Elevation: 46.22 m
Crop type in 2023: Corn
S2 post-event MNDWI (max): 0.50
S2 pre-event MNDWI (median): -0.56
L8/9 post-event MNDWI (max): N/A
L8/9 pre-event MNDWI (median): -0.56
Multi-sensor post-event MNDWI (max): 0.50
Multi-sensor pre-event MNDWI (median): -0.56

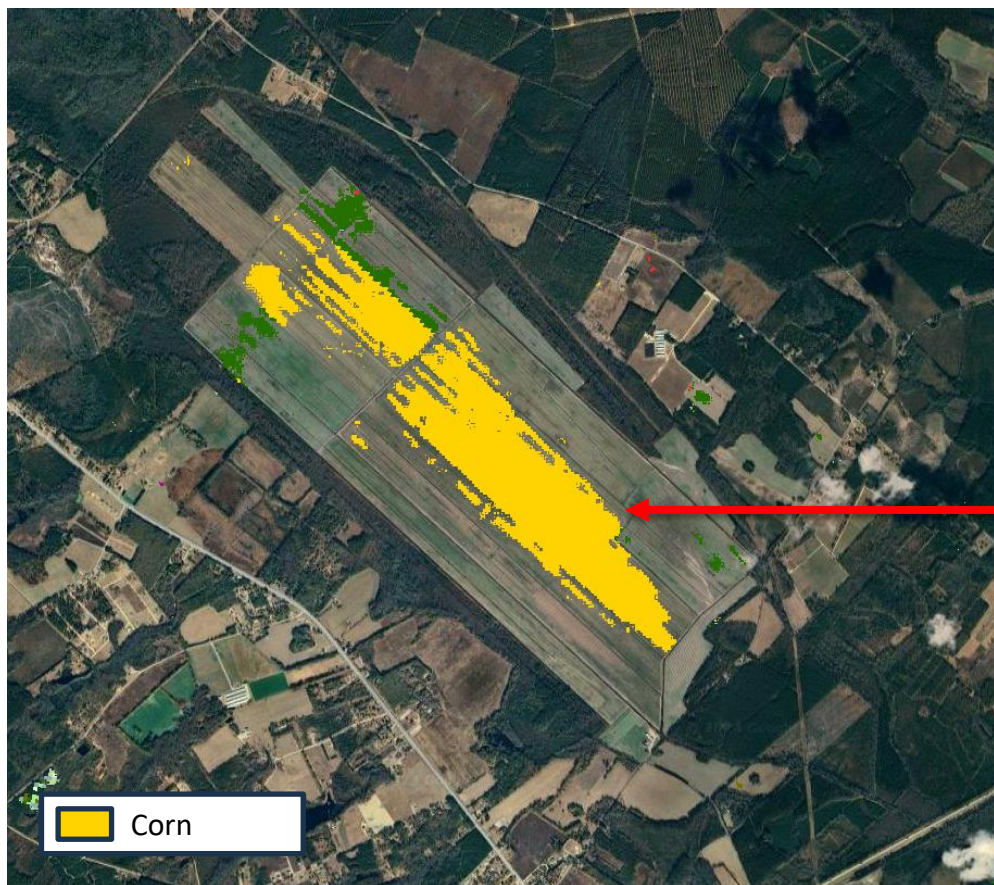




Median composite of Sentinel-2
Jun 15-Aug 1, 2024



Median composite of Sentinel-2
Aug 5-20, 2024



Dillon County, SC Crops Affected: Corn

Lat: 34.38
 Lon: -79.54 State:
 South Carolina
 County: Dillon
 Elevation: 34.07 m
 Crop type in 2023: Corn
 S2 post-event MNDWI (max): 0.75
 S2 pre-event MNDWI (median): -0.52
 L8/9 post-event MNDWI (max): N/A
 L8/9 pre-event MNDWI (median): -0.53
 Multi-sensor post-event MNDWI (max): 0.75
 Multi-sensor pre-event MNDWI (median): -0.53

