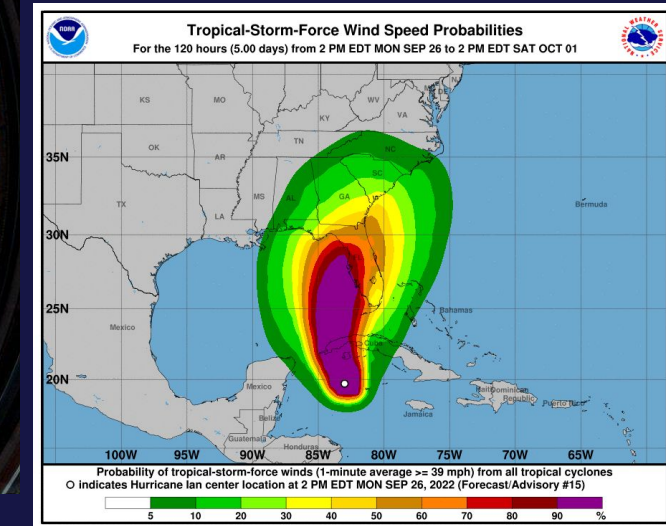
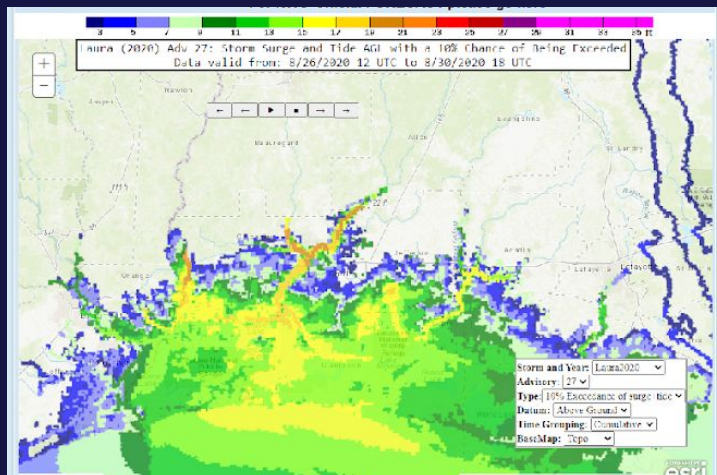


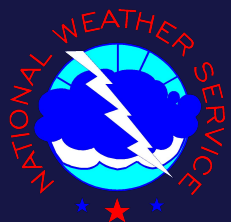
Hurricane Season 2024

April 16, 2024



Joe Rua, Lead Forecaster

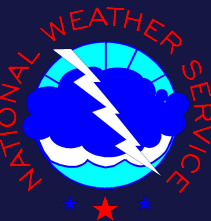
National Weather Service Lake Charles, Louisiana



2024 Hurricane Season Outlook

| <u>Source</u> | <u>Named Storms</u> | <u>Hurricanes</u> | <u>Major Hurricanes</u> |
|---------------------------|---------------------|-------------------|-------------------------|
| Colorado State University | 23 (14) | 11 (7) | 5 (3) |

*Climatological Average
1991-2020 in parenthesis ()



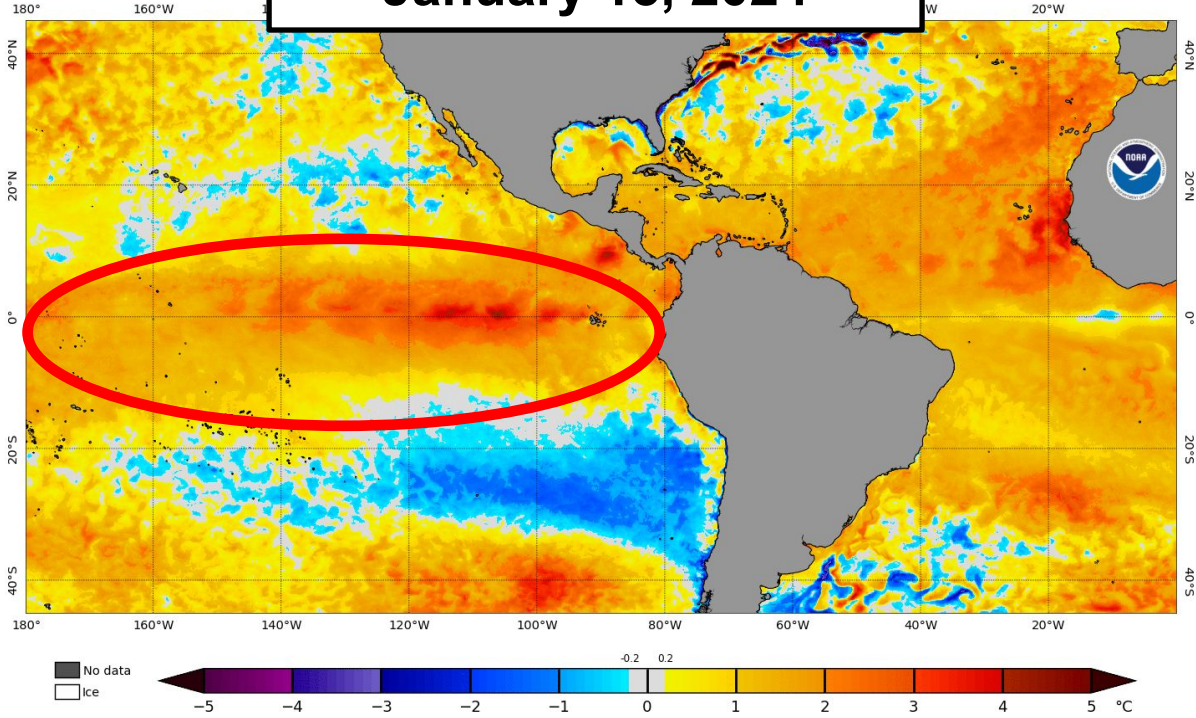
Why is Hurricane Season Expected to be More Active Than “Normal”?

- ENSO cycle currently El Nino is expected to transition to La Nina late in the summer/fall.
- Near record sea surface temperatures over central and eastern Atlantic are expected to stay above normal through the hurricane season.

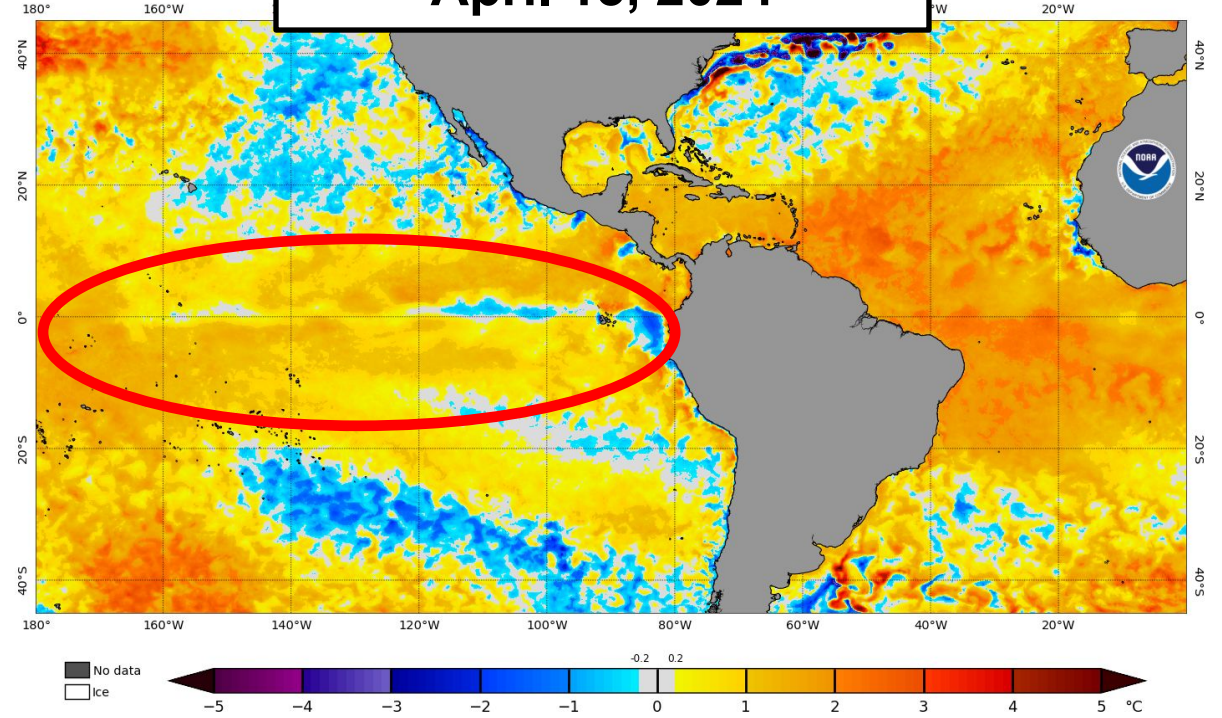


Sea Surface Temperatures

January 15, 2024

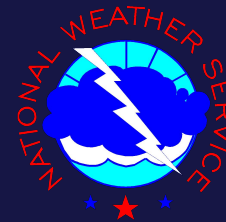


April 13, 2024



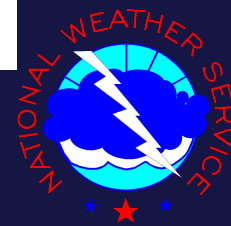
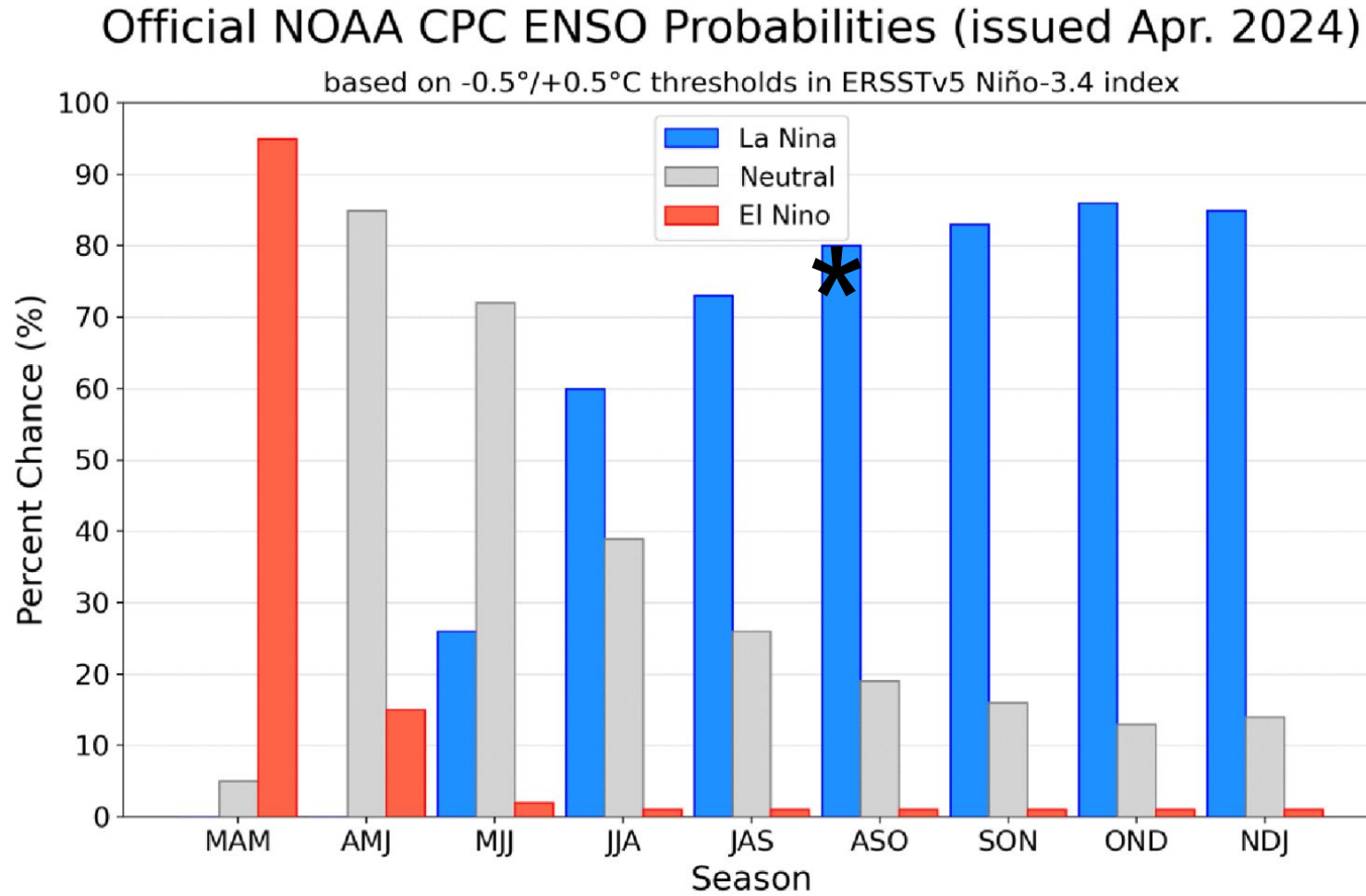
Started 2024 in El Nino...

Sea Surface Temperatures in the Tropical East Pacific
Have Been Cooling.



La Nina Watch Has Been Issued

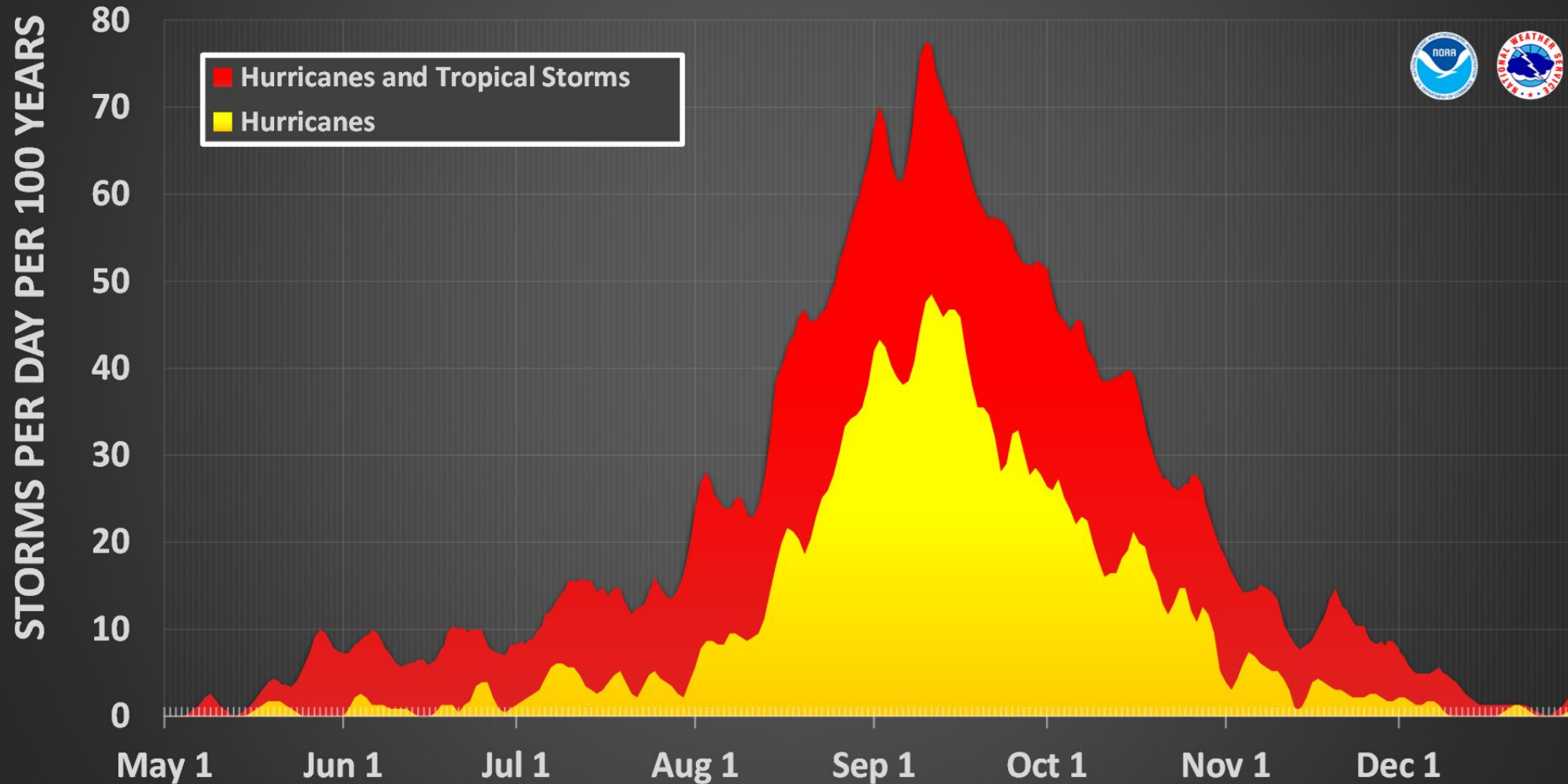
At least a 80% chance that La Nina develops by the end of July



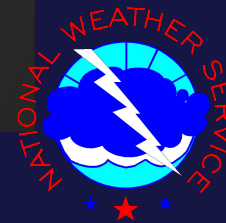
Tropical Cyclone Climatology

Atlantic Hurricane and Tropical Storm Activity

Based on Data from 1944 to 2020



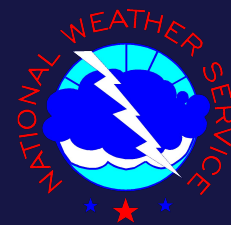
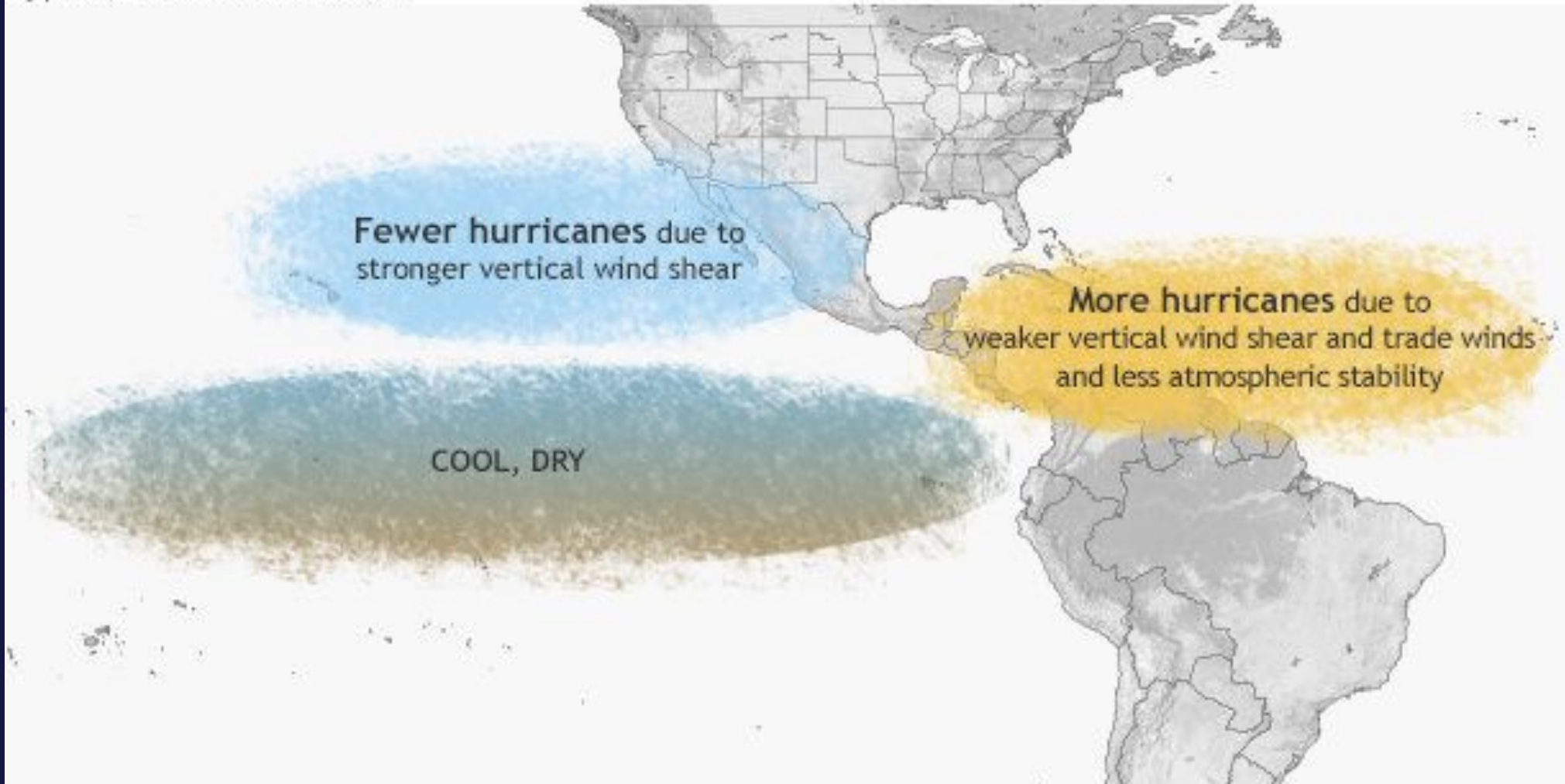
Data From National Hurricane Center



La Nina's Tropical Influence

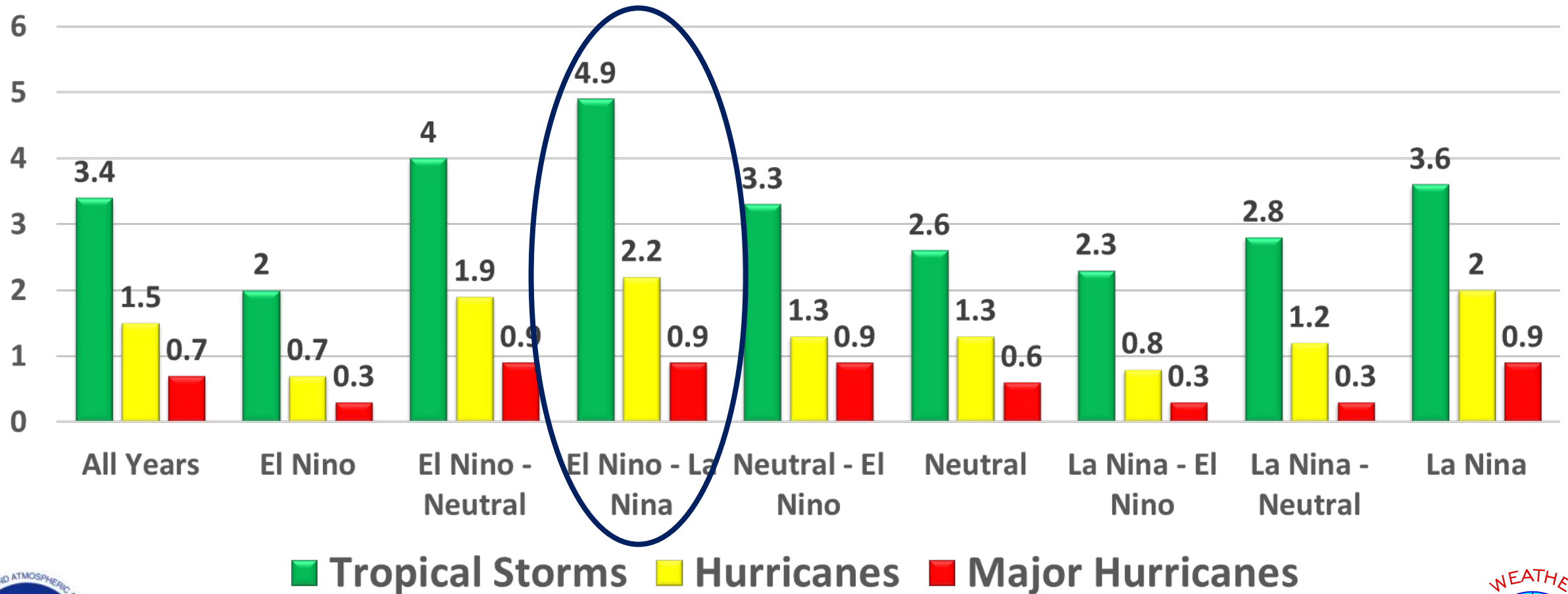
La Nina typically brings more hurricanes in the Atlantic Basin

Typical La Niña influence



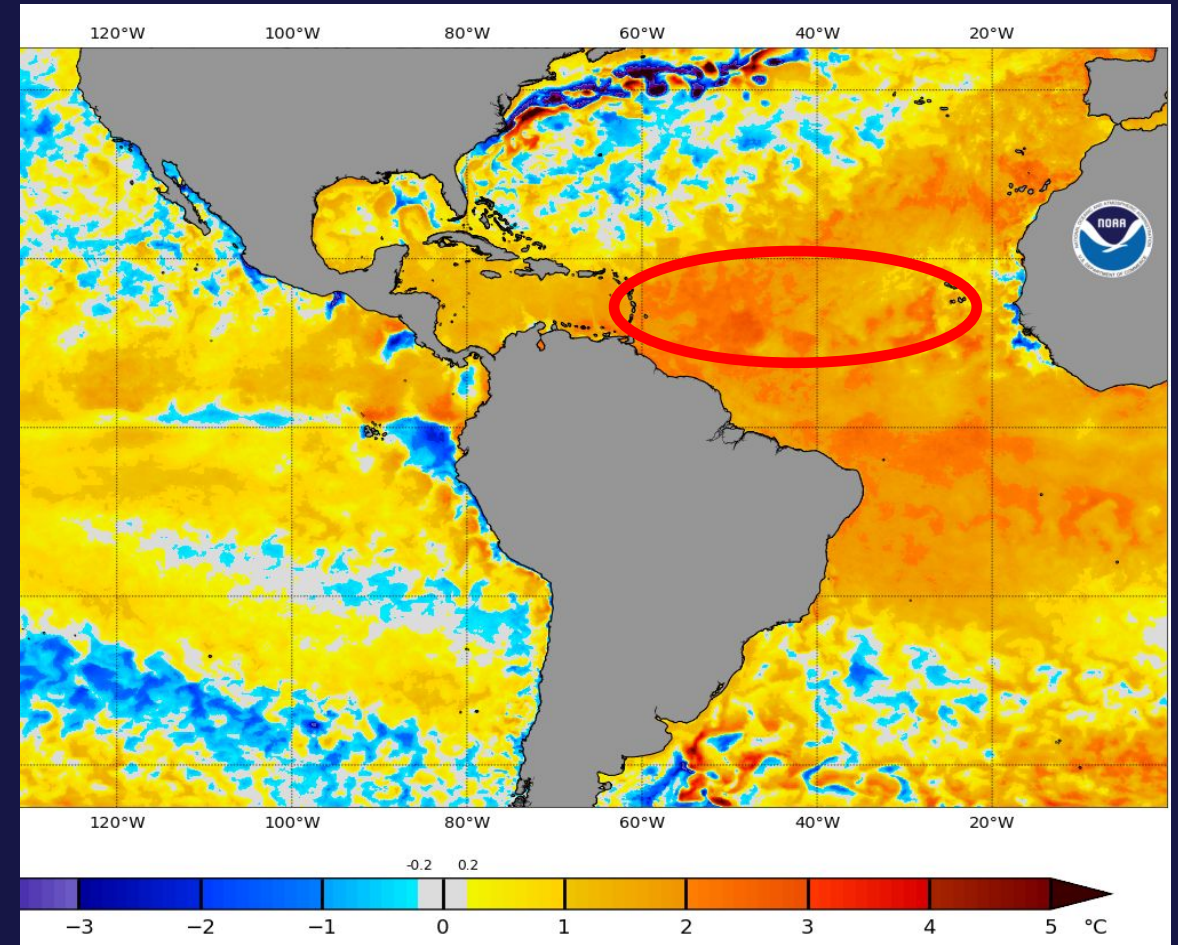
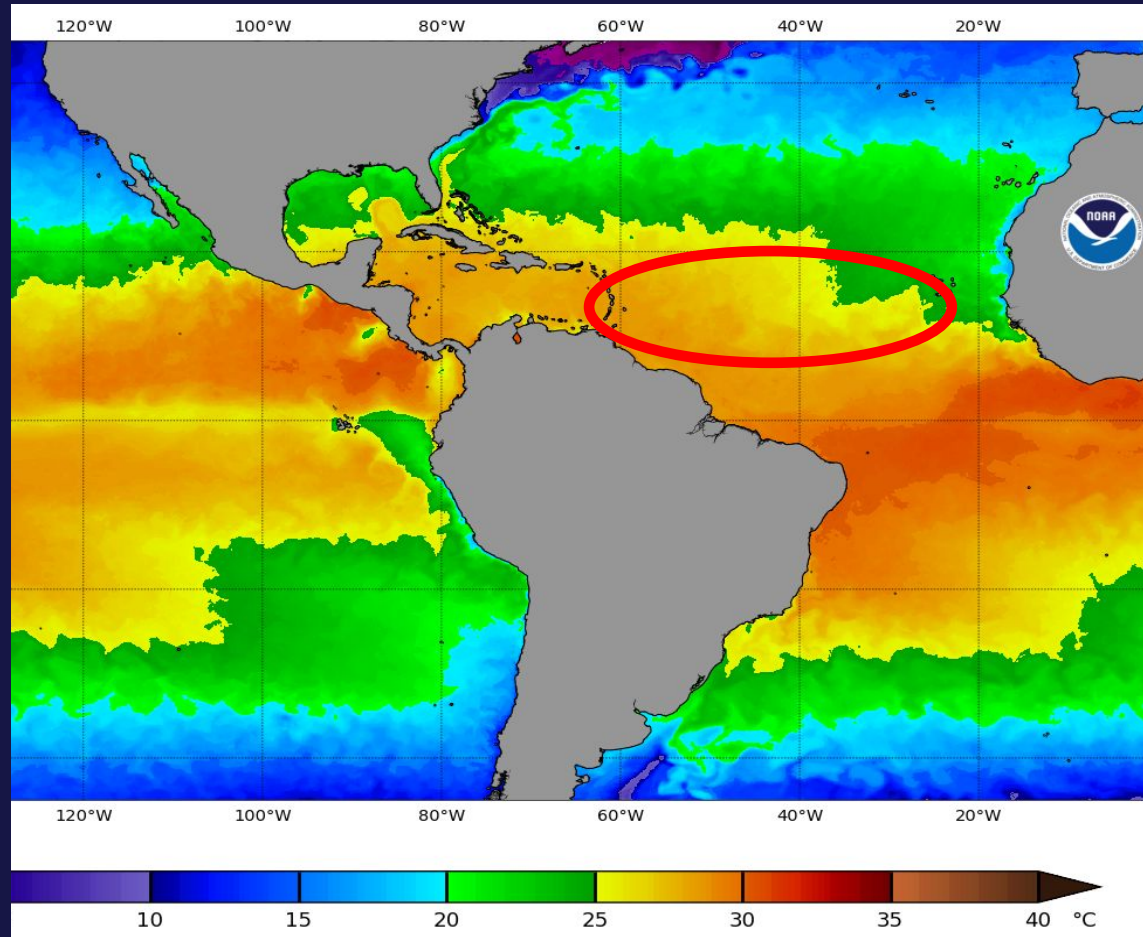
Seasonal Average Tropical Cyclones By ENSO Cycle

Number of Gulf of Mexico Tropical Systems 1950-2020

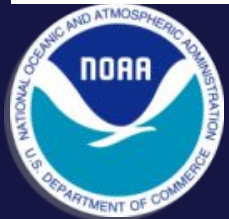


Current Sea Surface Temperatures and Anomalies

As of April 14, 2024



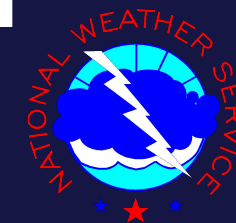
**Sea Surface Temperatures in the Tropical Origin Zone
Very Warm and Well Above Normal.**



2024 Hurricane Season Outlook

| <u>Source</u> | <u>Named Storms</u> | <u>Hurricanes</u> | <u>Major Hurricanes</u> |
|--|---------------------|-------------------|-------------------------|
| Colorado State University (April 2024) | 23 (14) | 11 (7) | 5 (3) |
| TSR (Tropical Cyclone Risk.com) (April 2024) | 23 (14) | 11 (7) | 5 (3) |
| ECMWF (April 2024) | 21 (14) | 11 (7) | |

*Climatological Average
1991-2020 in parenthesis ()



2024 Tropical Cyclone Impact Probabilities

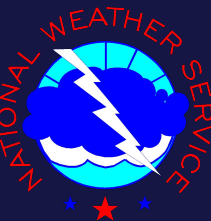
Defined as within 50 miles of a location

| <u>Location</u> | <u>Tropical Storm</u> | <u>Hurricane</u> | <u>Major Hurricane</u> |
|-----------------------------------|-----------------------|------------------|------------------------|
| Louisiana | 84% (66%) [68%] | 56% (38%) [40%] | 23% (14%) [15%] |
| Southwest/South Central Louisiana | 47% (31%) [33%] | 25% (16%) [16%] | 8% (5%) [5%] |

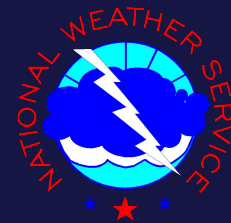
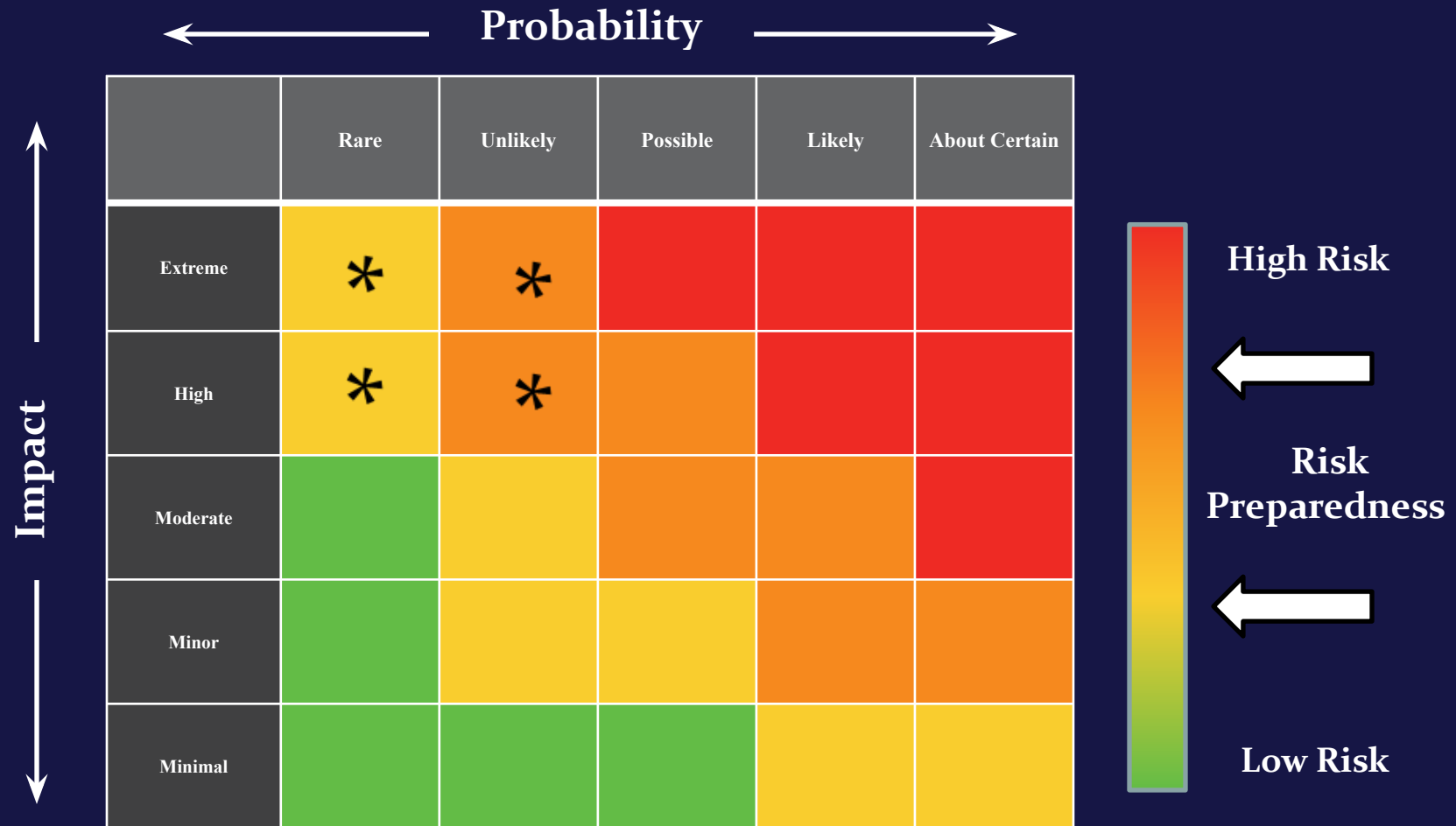
*Climatological Average in parenthesis ()

**Probability before 2023 season in brackets []

Data from Colorado State University



Low-Probability, High-IMPACT Events (why low probabilities matter)



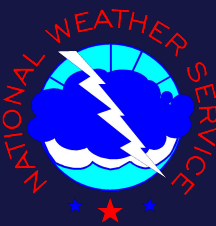
Why Low Probabilities Matter High Impact Event



20% Chance of Rain



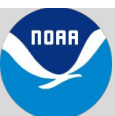
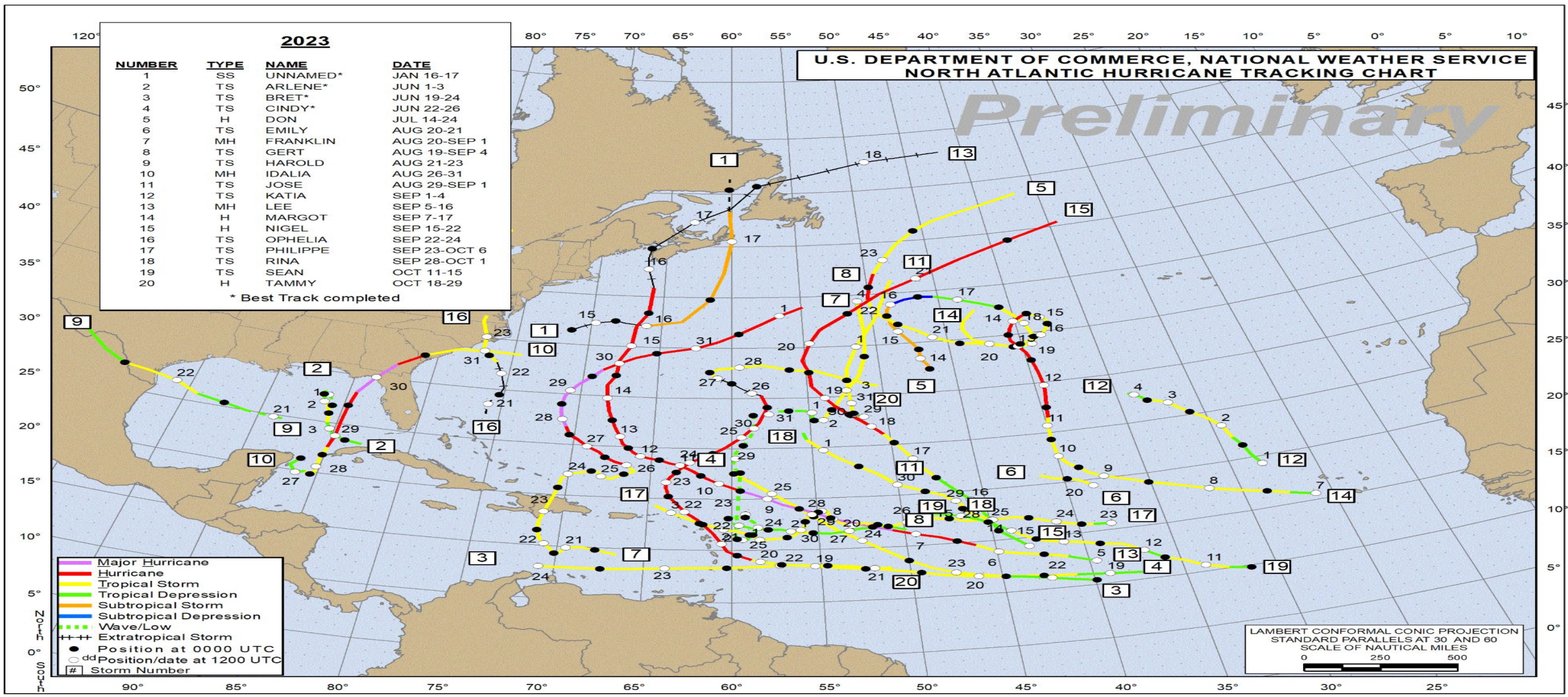
20% Chance of Hurricane Winds





2023 Season: What Happened

Quiet Year for Louisiana and SE Texas





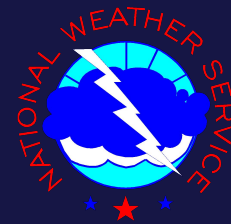
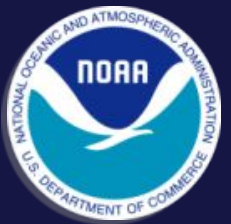
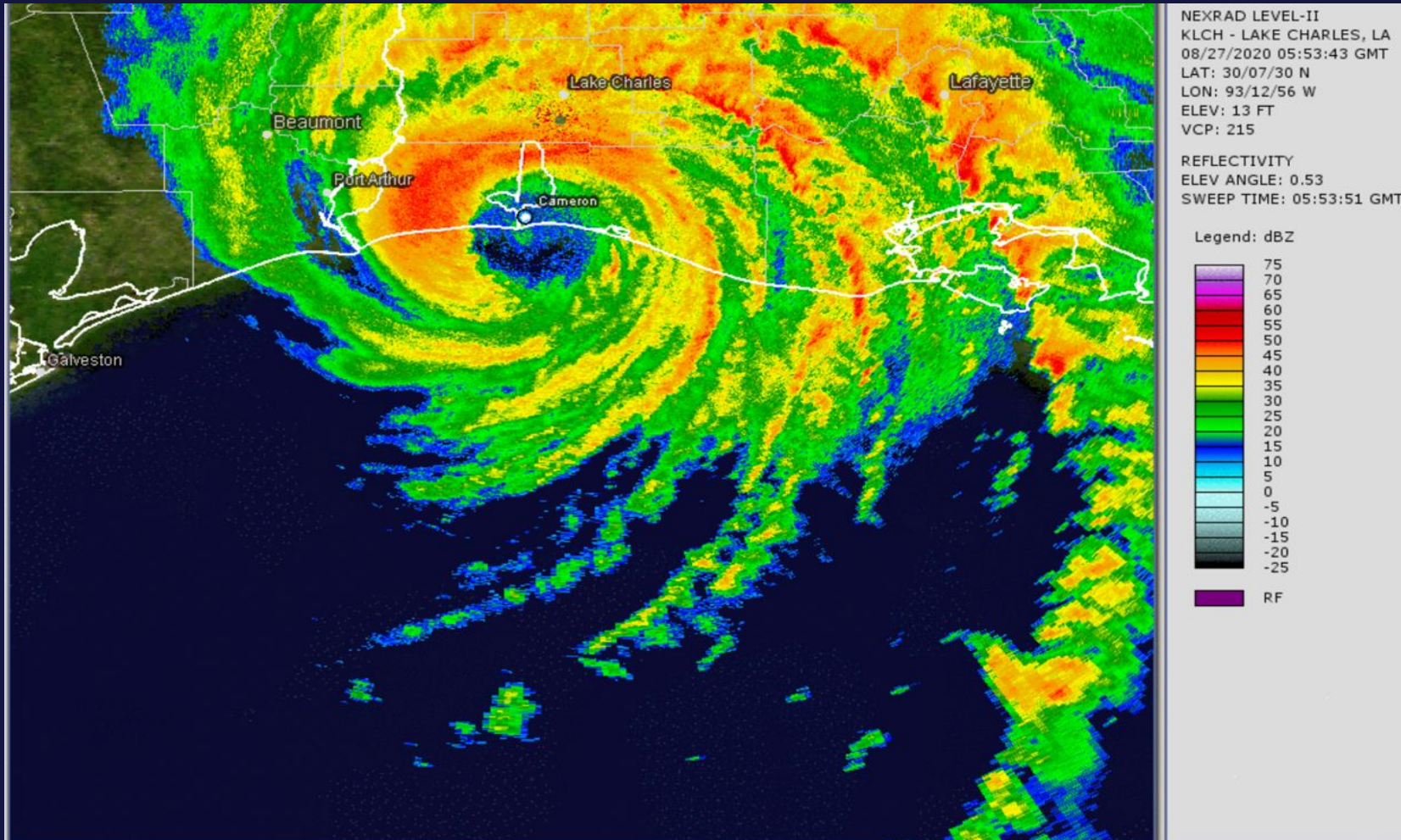
2024 Atlantic Tropical Cyclone Names

Hurricane Season Starts on June 1st ends November 30th

21 Names on the list, Forecasting 23 Named Storms

| | | |
|----------|--------|---------|
| Alberto | Helene | Oscar |
| Beryl | Isaac | Patty |
| Chris | Joyce | Rafael |
| Debby | Kirk | Sara |
| Emesto | Leslie | Tony |
| Francine | Milton | Valerie |
| Gordon | Nadine | William |

Other Hurricane Notes





NWS Products to Monitor

A product timeline from the National Weather Service

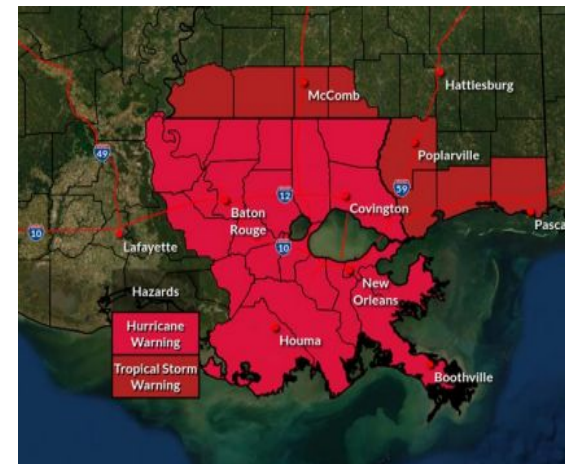
7 Days Out

- Tropical Weather Outlook



60 Hours Out*

- PSurge (for select, well-behaved storms)

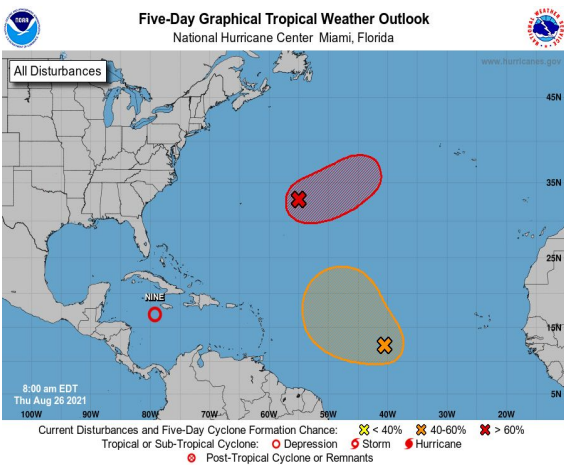


5 Days Out

- NHC Advisory Packages (cone, wind speed probabilities, TOA)
- SLOSH MOMs and MEOWs*

48 Hours Out

- Watch/Warning Products
- Hurricane Threats and Impacts Graphics
- PSurge/Inundation Forecasts

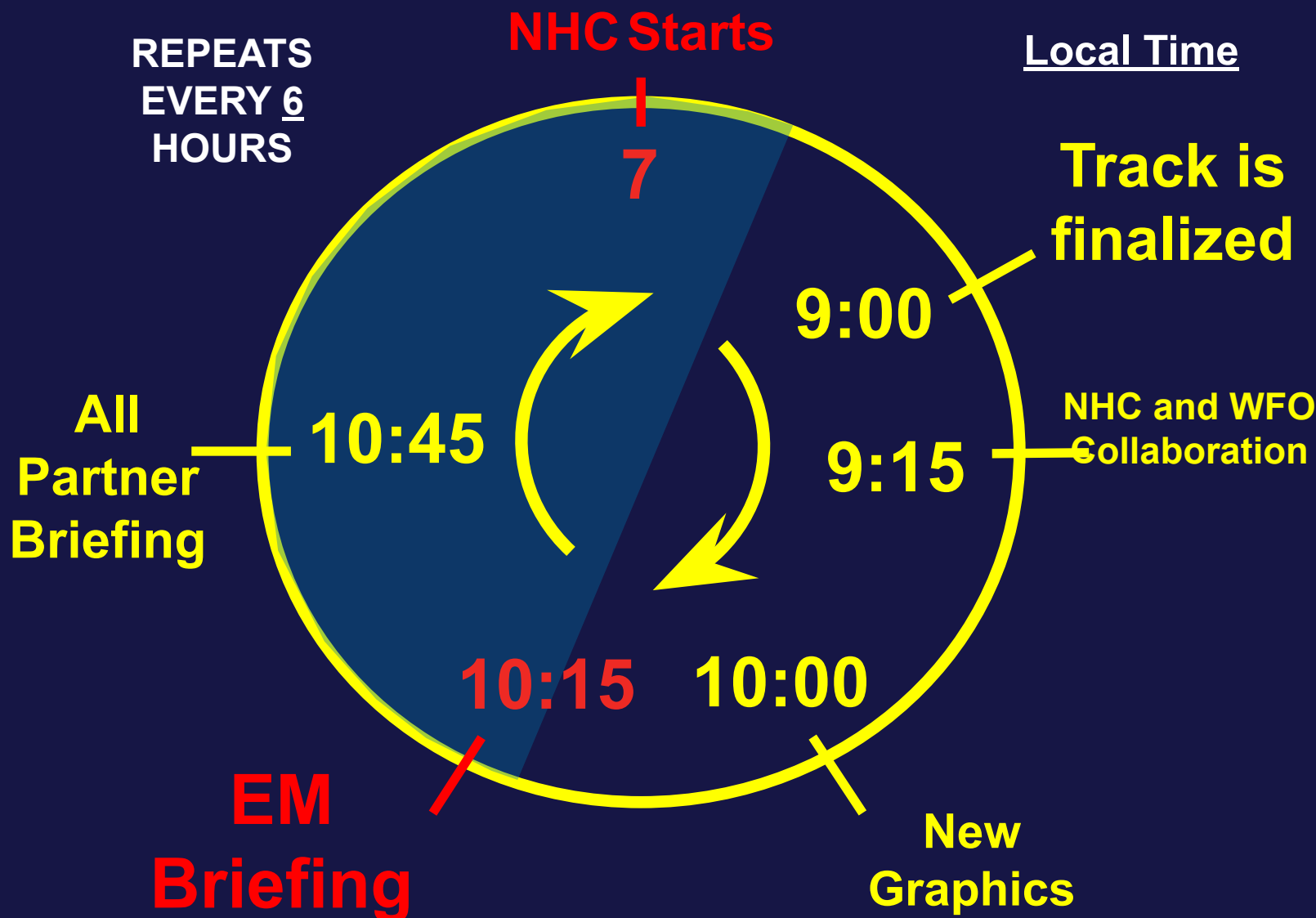




Forecast Cycle to Briefings

Timeline of Forecast Cycle and Updated Briefings

- 7am - Hurricane Forecaster Begins Observation Analysis
- 7:45 am - Once cyclone center, storm speed/direction, and intensity are determined, the hurricane models are then initiated.
- 9am Forecast Track is internally finalized.
- 9:15am Hurricane Center Collaborates with NWS Field Offices
- 9:30am to 10am Cone Forecast, Timing and Probability Products are Issued
- 10:15am NWS Lake Charles Brief Emergency Management Directors
- 10:45am NWS Lake Charles Brief all other Partner Groups



Effective Messaging:

Having the *RIGHT* people, take the *RIGHT* action(s), for the *RIGHT* outcome

Basically – Influencing the Outcome of the Event

(in the *POSITIVE!*)





Hurricane Fatalities

Multiple Hazards

Roughly 75% of hurricane fatalities are related to water

Half of all fatalities are due to storm surge

Fatalities

Tornado

3.0%

Wind

8.0%

Offshore

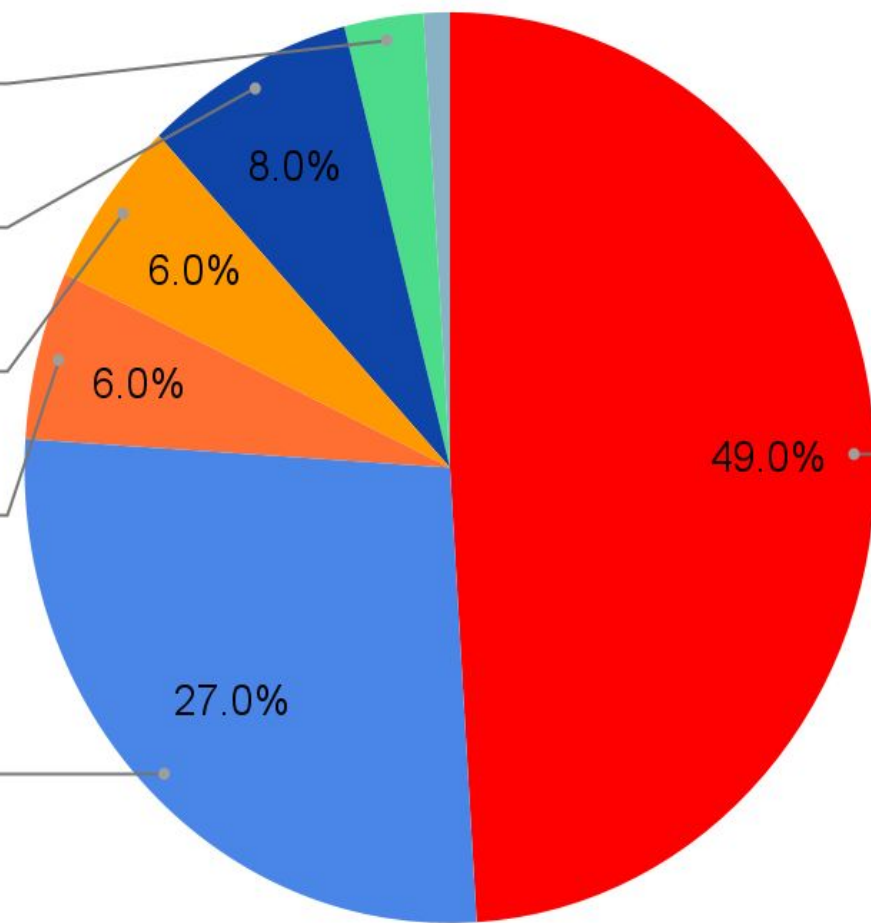
6.0%

High Surf

6.0%

Rain

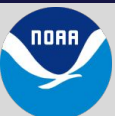
27.0%



Storm Surge

49.0%

49.0%



General Messaging Takeaways

- Focus on Hazards and Impacts **NOT** Track and Category!
- Every storm is different
- Remain focused on water & surge hazards when wind scale category decreases
- Significant impacts occur far from the center – outside the cone
- Bad Information from “Keyboard Meteorologists.” Encourage people to only share information from reliable sources.
- One Voice – EM/Govt./Media/NWS/NHC



Delivering the Right Message

WPN
Building a Weather-Ready Nation
by Improving Communication
of Hurricane Hazards

Emphasize the Dangers of Each Hazard
While wind makes headlines, nearly 90% of all deaths associated with hurricanes are from water -- storm surge, surf, inland flooding.

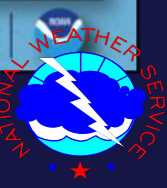
Focus on What's Important: Communicating Impacts
Focus on the area where impacts will be felt vs. the track. Hurricane impacts occur far from the eye. Avoid describing the storm as "weakening" while the danger from other hazards remains significant.

Use the Official National Hurricane Center Forecast
Direct attention to the official National Hurricane Center forecast vs. sharing outlier scenarios from one model run or spaghetti plots.

Only Share Reliable Sources
Avoid sources that try to create hype or make predictions beyond the limits of current science.

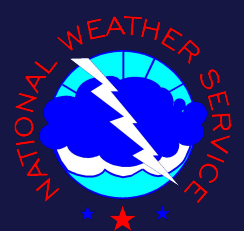
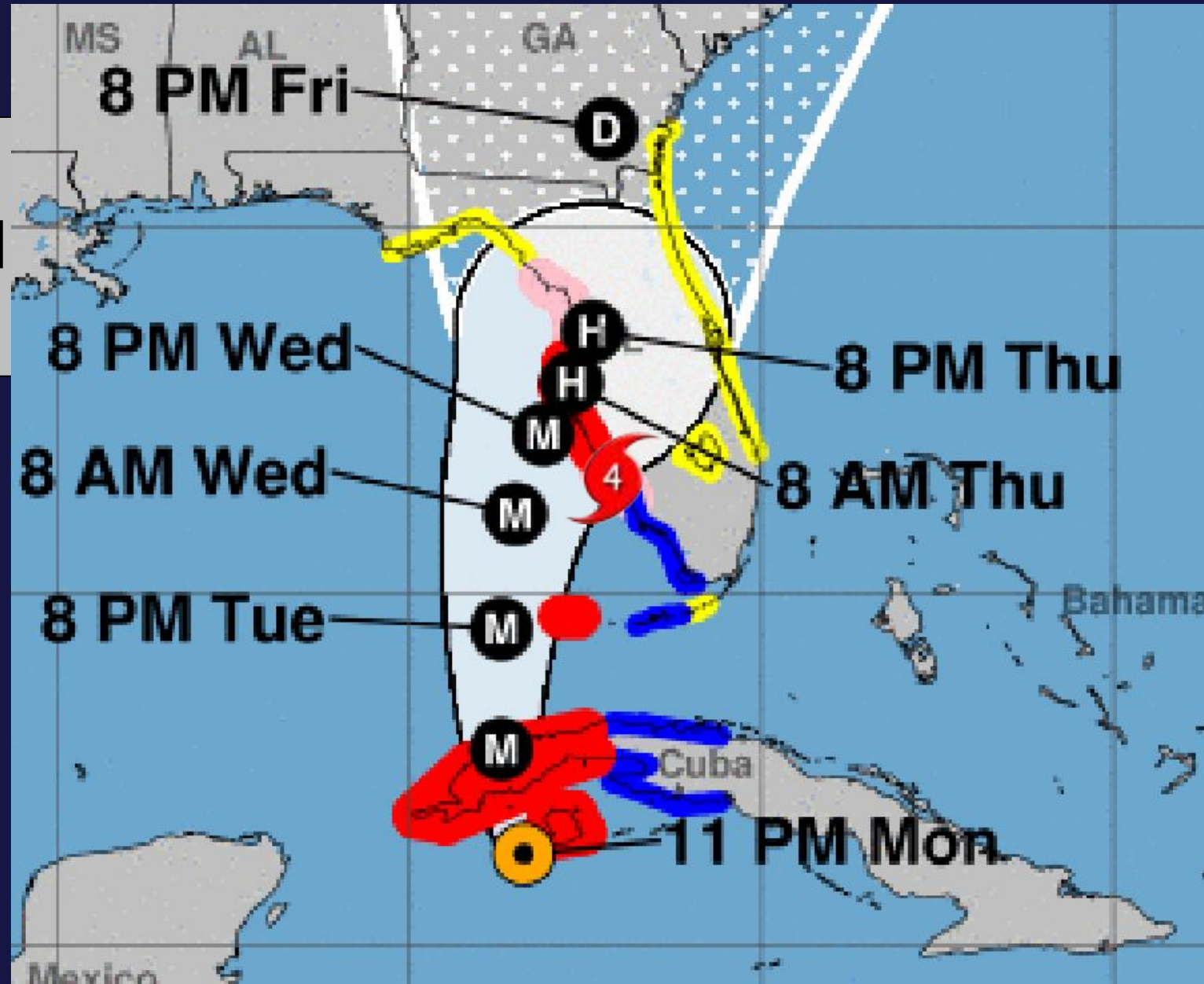
Highlight Hazards that Continue After a Storm Passes
Rip currents, flooding and heat remain dangerous long after the storm. Health risks associated with debris, downed power lines, and carbon monoxide poisoning are serious concerns during the storm clean-up.

weather.gov/safety/hurricane



Popular National Hurricane Center Cone Product

Hurricane Ian. Some major impacts occurred outside the cone.



Hurricane Threats and Impacts (HTI) Graphics

Forecast Wind Threat with Ida

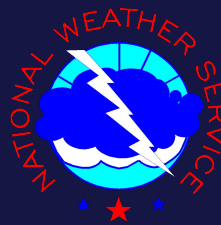
Prepare for These Conditions for Maximum Safety

Weather Forecast Office
Lake Charles, LA

Issued Aug 28, 2021 5:06 PM CDT



Potential Risk = Probability × Consequence × Vulnerability



Final Takeaway

It is all about...

IMPACTS



IMPACTS



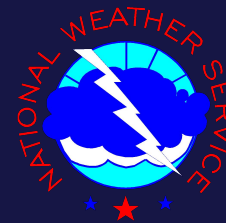
IMPACTS



IMPACTS



Pay attention to what the **IMPACTS**
from the Hurricane/Storm will be for your location.



NOAA/NWS Web Resources For Hurricane Season

| <u>Site</u> | <u>Description</u> |
|--|---|
| weather.gov/lch | NWS Lake Charles Homepage |
| Facebook | Search: US National Weather Service Lake Charles |
| nhc.noaa.gov | National Hurricane Center Homepage Hurricane Advisory/Track/Graphics |
| spc.noaa.gov | Storm Prediction Center Homepage Severe Weather Outlooks/Watches |
| wpc.ncep.noaa.gov | Weather Prediction Center Homepage Rainfall/Winter Weather Outlooks |
| tidesandcurrents.noaa.gov | NOS Tide Water Levels |
| water.noaa.gov/wfo/LCH | River Stages and Forecasts |
| | |

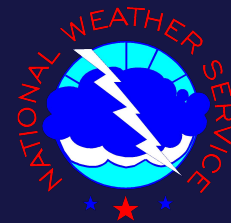
**Let's Be Prepared.
Hope Everyone Has A Good 2024 Hurricane Season.**



GOOD



BAD





That's all Folks!