



Peak of Hurricane Season is Here

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Outlook

Press release

www.noaa.gov/media-release/extremely-active-hurricane-season-possible-for-atlantic-basin

Technical write-up and analyses: www.cpc.ncep.noaa.gov/products/hurricane

Weekly update:

www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

Tutorial: www.cpc.ncep.noaa.gov/products/analysis_monitoring/ensocycle/enso_cycle.shtml

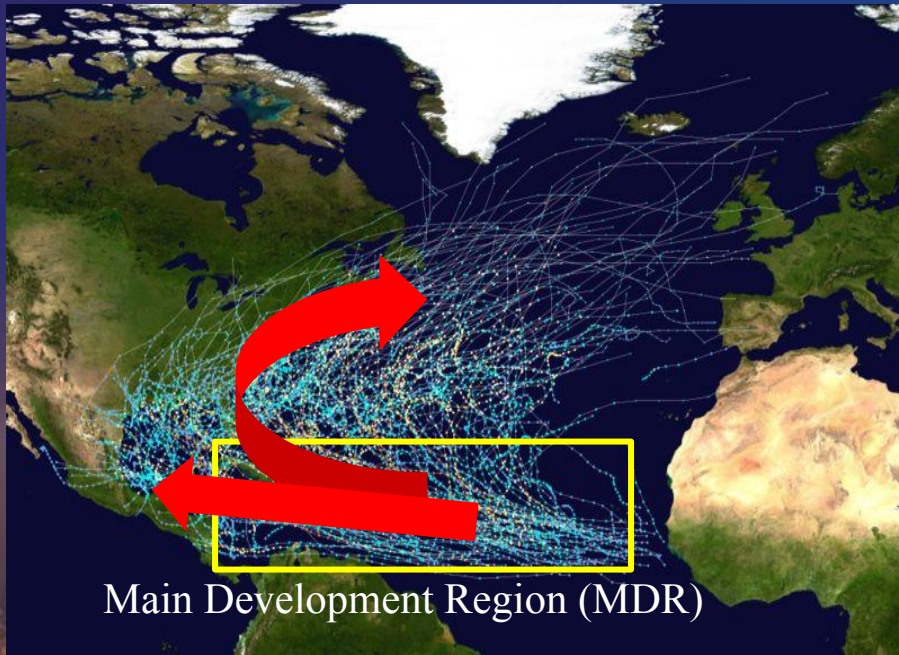
Monthly Forecast: www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/

El Niño/ La Niña
(ENSO)



Historical Atlantic Storm Tracks

Atlantic Basin Storm Tracks 1980-2005



Main Development Region (MDR)

Figure Courtesy of Wikipedia

The activity in the Main Development Region (MDR) determines the strength of the hurricane season.

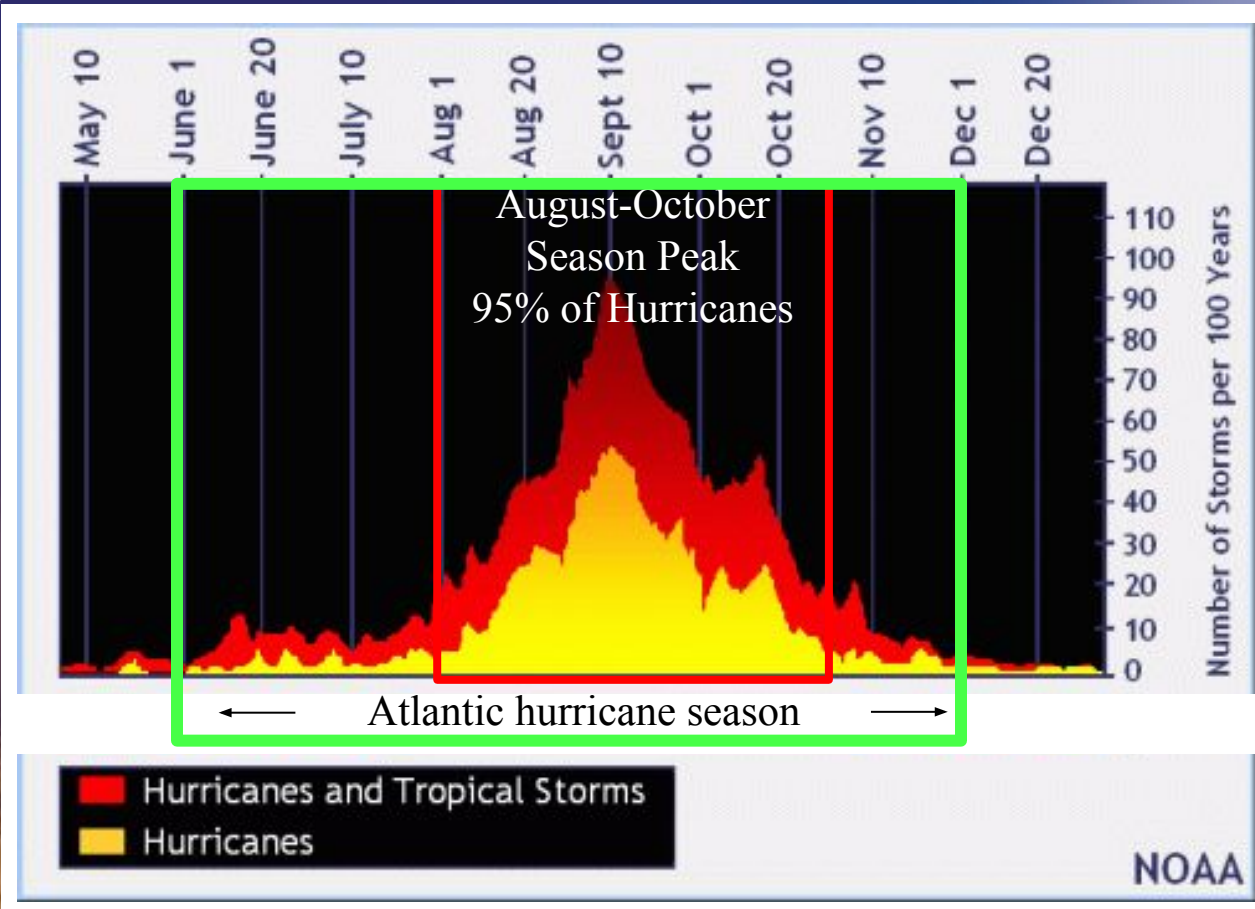
Determines 80-90% of seasonal ACE.

NOAA's seasonal outlooks are based on predicting conditions within the MDR.

During above-normal seasons, storms typically have longer westward storm tracks, which means an increased threat of landfall.



Historical Atlantic Storm Counts



Average Season:
12 Named Storms
6 Hurricanes
2-3 Major Hurricanes

NOAA updates its Atlantic hurricane season outlook in early August, to coincide with peak months (August-October) of the hurricane season.

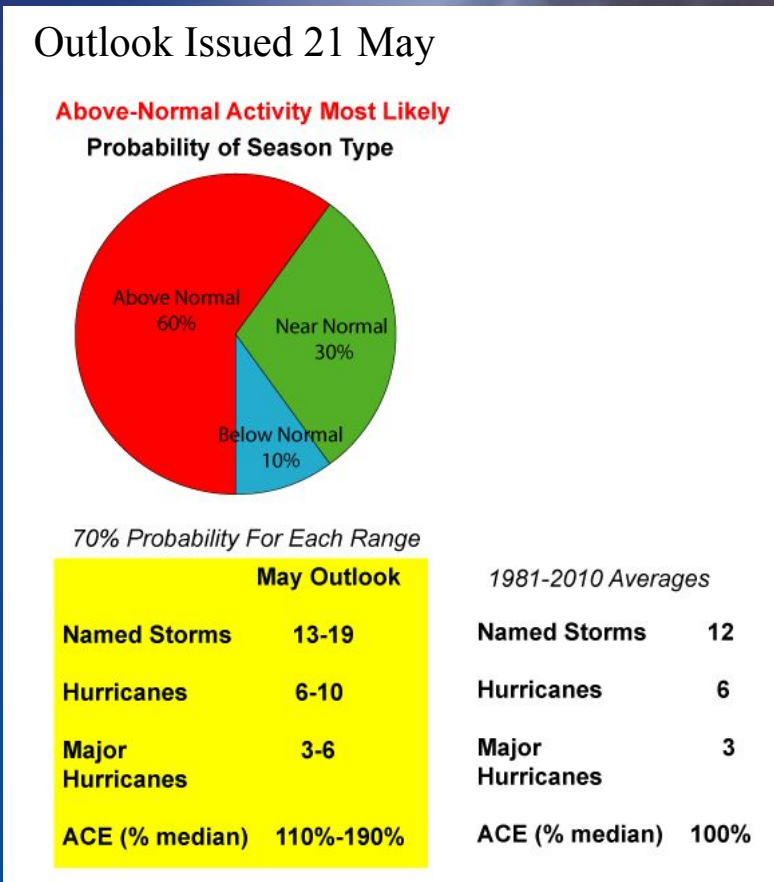
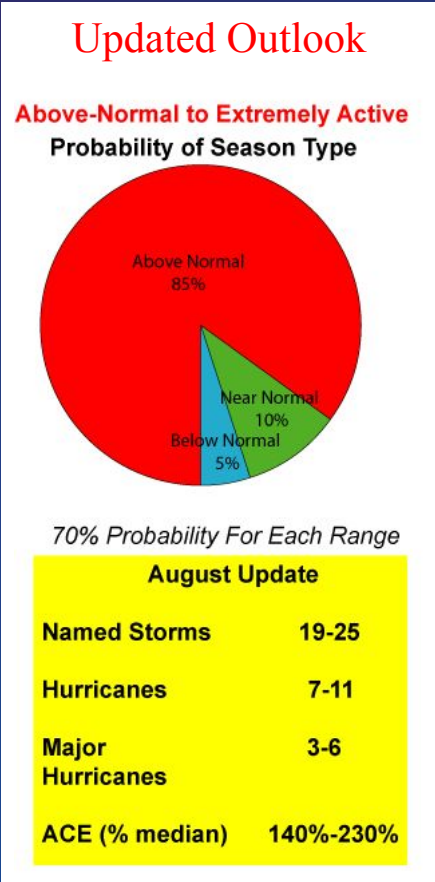


NOAA's Updated 2020 Atlantic Hurricane Season Outlook

Record five consecutive above-normal seasons.

Third extremely active season since 2005.

10th extremely active season since 1995



- An above-normal Atlantic hurricane season is now very likely (85% chance), with an increased potential for an extremely active season (ACE \geq 165% of median) compared to the May outlook (Right).
- Predicted ranges are now centered at 22 named storms, 9 hurricanes, and 4-5 major hurricanes, and remain well above the 1981-2010 seasonal averages of 12 NS, 6 H, and 3 MH.

The number of named storms is now well above that predicted in May.



2020 Atlantic Tropical Cyclone Names

~~Arthur~~
~~Bertha~~
~~Cristobal~~
~~Dolly~~
~~Edouard~~
~~Fay~~
~~Gonzalo~~

~~Hanna~~
~~Isaias~~
~~Josephine~~
~~Kyle~~
~~Laura~~
~~Marco~~
Nana

Omar
Paulette
Rene
Sally
Teddy
Vicky
Wilfred

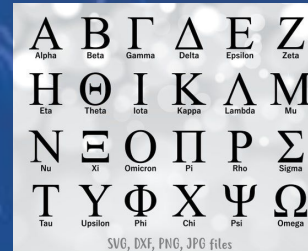
Names provided by the World Meteorological Organization. If there are more than 21 named storms names will be taken from the Greek alphabet.

Be prepared: Visit hurricanes.gov and follow @NWS and @NHC_Atlantic on Twitter.

August 6, 2020

Alpha
Beta
Gamma
Delta

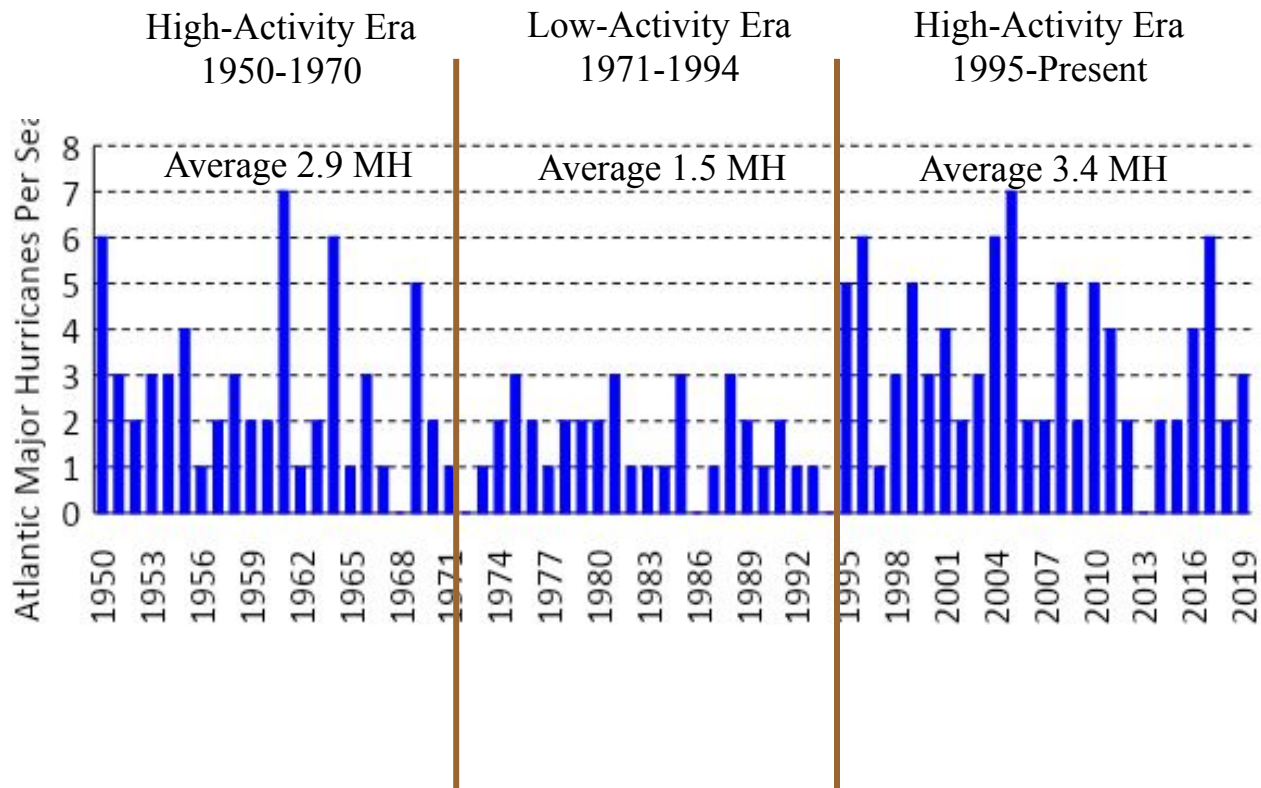
- 19-25 Named Storms Predicted
 - Vicky through Delta
- Already had 13 storms to date. Still have a long way to go with this hurricane season.



SVG, DXF, PNG, JPG files



25-40 Year Variations in Atlantic Major Hurricanes (MH)

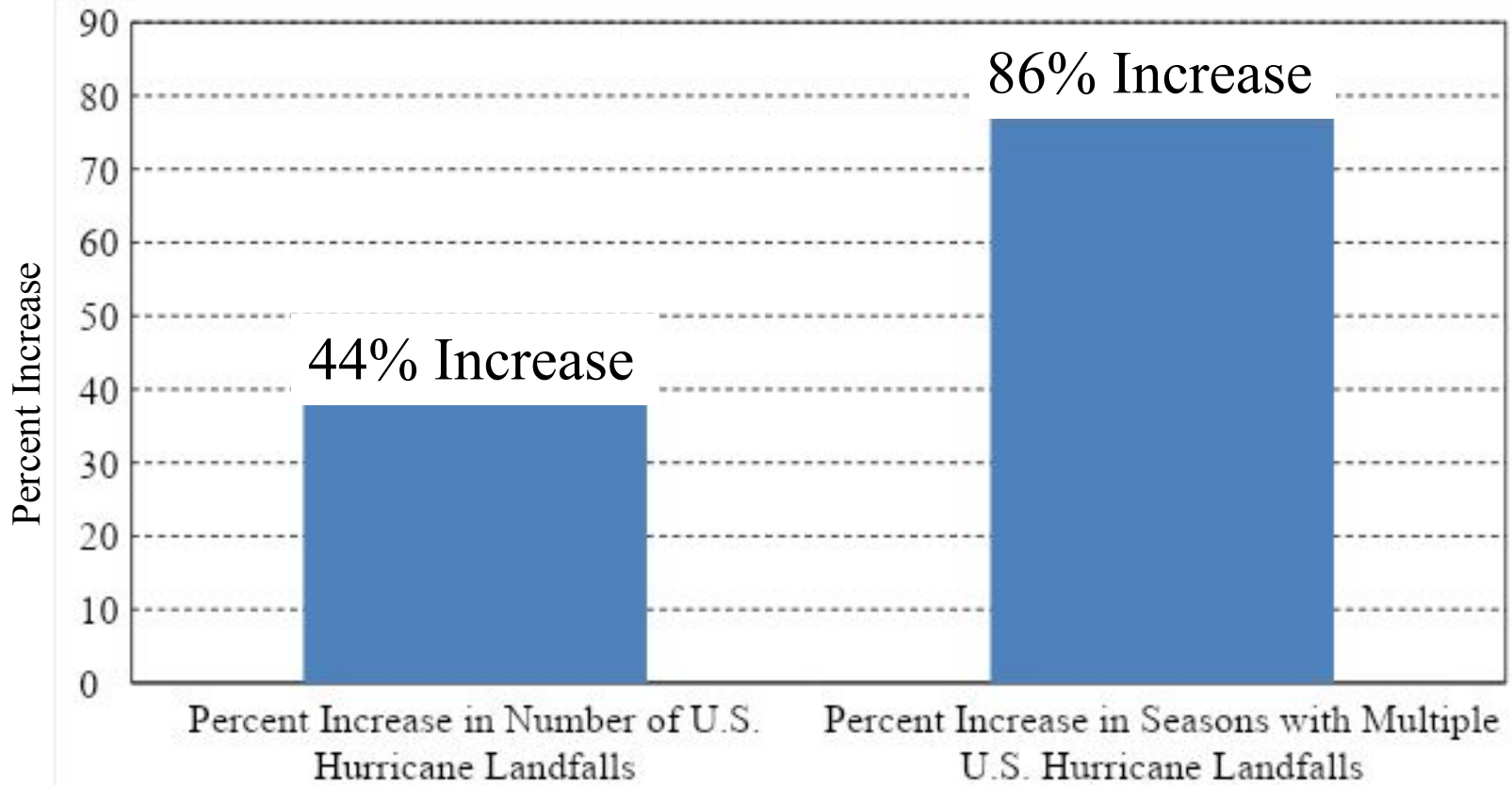


2020 Outlook

Double the number of major hurricanes during high activity eras.

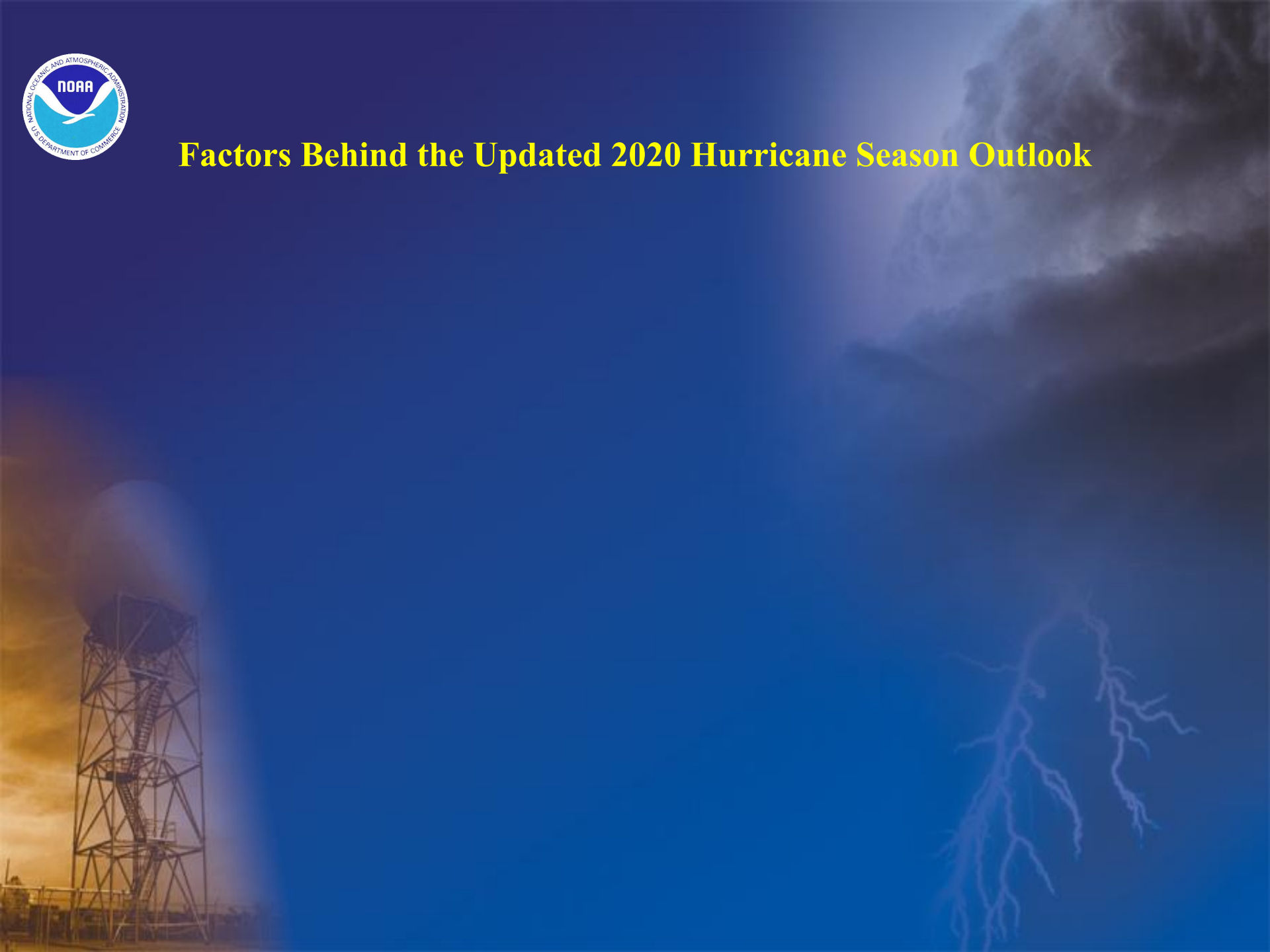


The U.S. Sees More Landfalling Hurricanes During High-Activity Eras





Factors Behind the Updated 2020 Hurricane Season Outlook





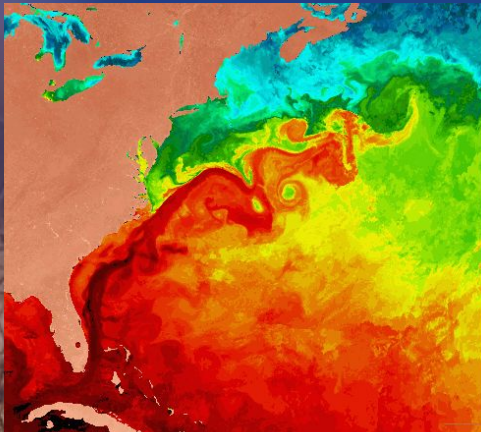
Underlying Concept behind Seasonal Hurricane Outlook

Hurricanes are ultimately a weather phenomena. Seasonal hurricane activity is generally not random.

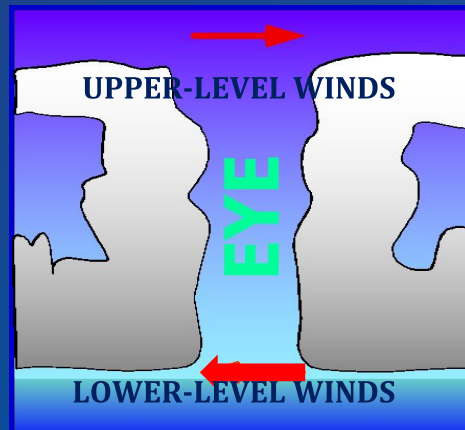
The regional conditions within the MDR (which largely control the number, strength, and duration of hurricanes) are often inter-related, often last for months or seasons, and often have strong climate links.

Some Regional Conditions That Influence Hurricanes

Atlantic and Pacific Ocean Temperatures



Wind Shear



African Easterly Waves Pre-Existing “Trigger”



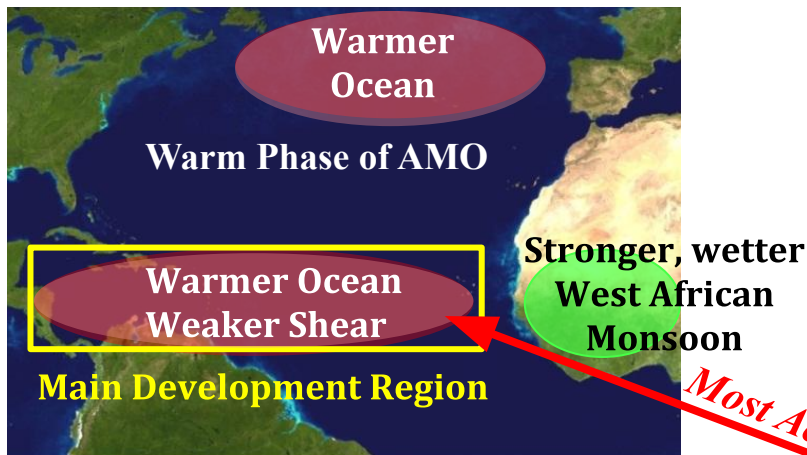
By predicting the key climate patterns and their combined impacts, we can often predict the strength of the hurricane season.



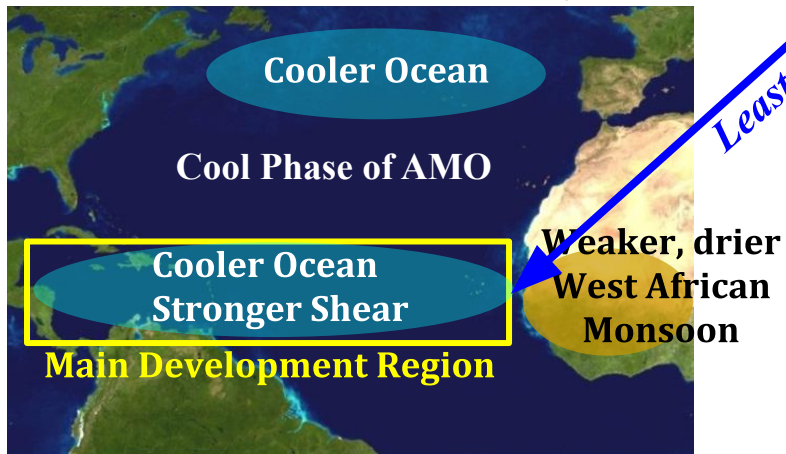
These Climate Patterns Strongly Influence Atlantic Hurricane Season

Atlantic Multi-Decadal Oscillation (AMO):
Multi-decadal cycles in Atlantic hurricanes

Climate Pattern for High-Activity Era

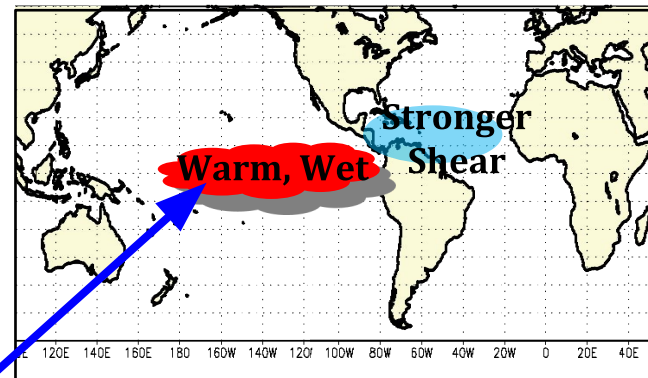


Climate Pattern for Low-Activity Era

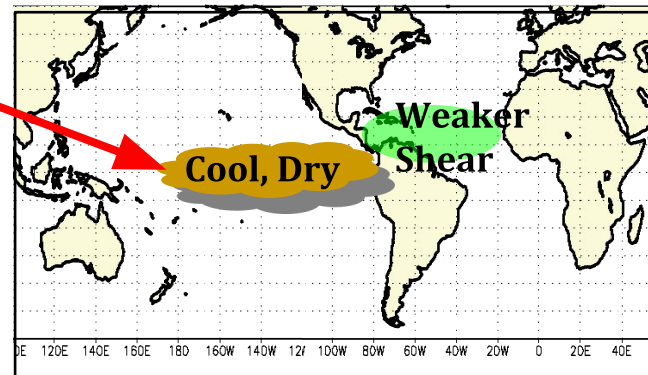


El Niño/ La Niña: Year-to-year changes in Atlantic hurricanes

El Niño: Fewer Hurricanes



La Niña: More Hurricanes



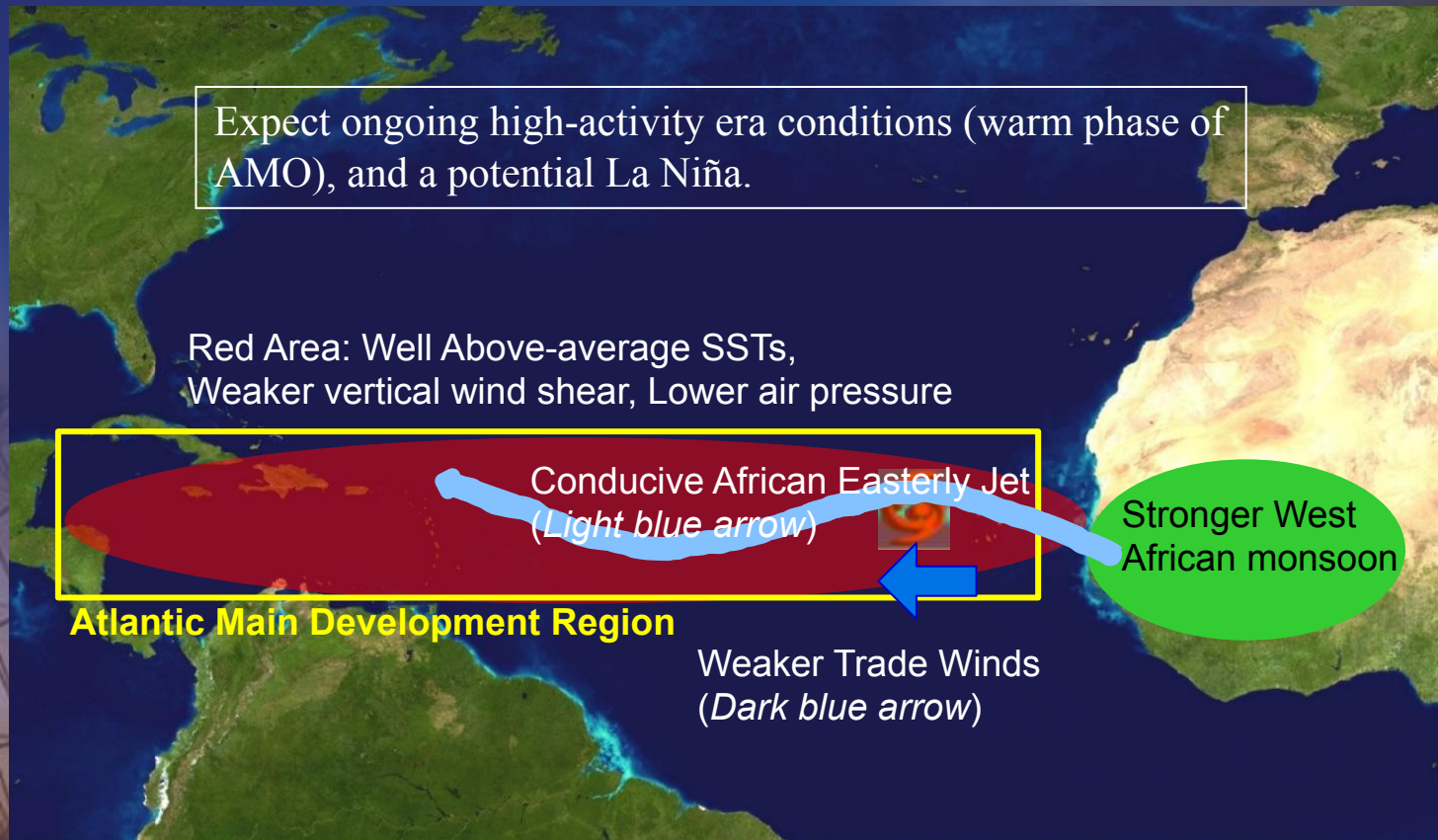
Most Active
Least Active

Predicting these climate patterns and their combined impacts is the basis for making NOAA's seasonal hurricane outlook.



Very Conducive Conditions Predicted For August-October 2020

1. High-activity era conditions are now very conducive and typify an extremely active season. These include well above-average SSTs in the Main Development Region, along with ...
2. Weaker trade winds, weaker vertical wind shear, and a stronger west African monsoon.
3. Potential La Niña. The combination of a warm AMO and La Niña sets the stage for a potentially extremely active season.





Hurricane Landfalls, Preparedness and Planning





Prepare for every hurricane season regardless of seasonal outlook

**Great web sites for
hurricane preparedness**

**Ready.gov
Hurricanes.gov**

You are your first line of defense if a hurricane strikes



Hurricanes are NOT just a coastal event.

*Your hurricane preparedness plans must reflect both **your personal situation** and the **storm conditions you might expect.***



BOLIVAR PENINSULA IN TEXAS AFTER HURRICANE IKE (2008)

Storm surge



Inland flooding

Devastating Winds



Tornadoes

Rip Currents

Downed Trees and Power Lines



Summary

2020 Updated Atlantic Outlook

Expect above-normal season, potentially extremely active.

19-25 Named Storms

7-11 Hurricanes

3-6 Major Hurricanes

Possible reinforcing factors: Warm AMO and potential La Niña

- High-activity era for Atlantic hurricanes continues—more hurricanes and more landfalling hurricanes
- Coastlines continue to build up—80+ million people have the potential to be impacted by a tropical storm or hurricane.

Remember...

It Only Takes One!

Be Ready! Take Action!



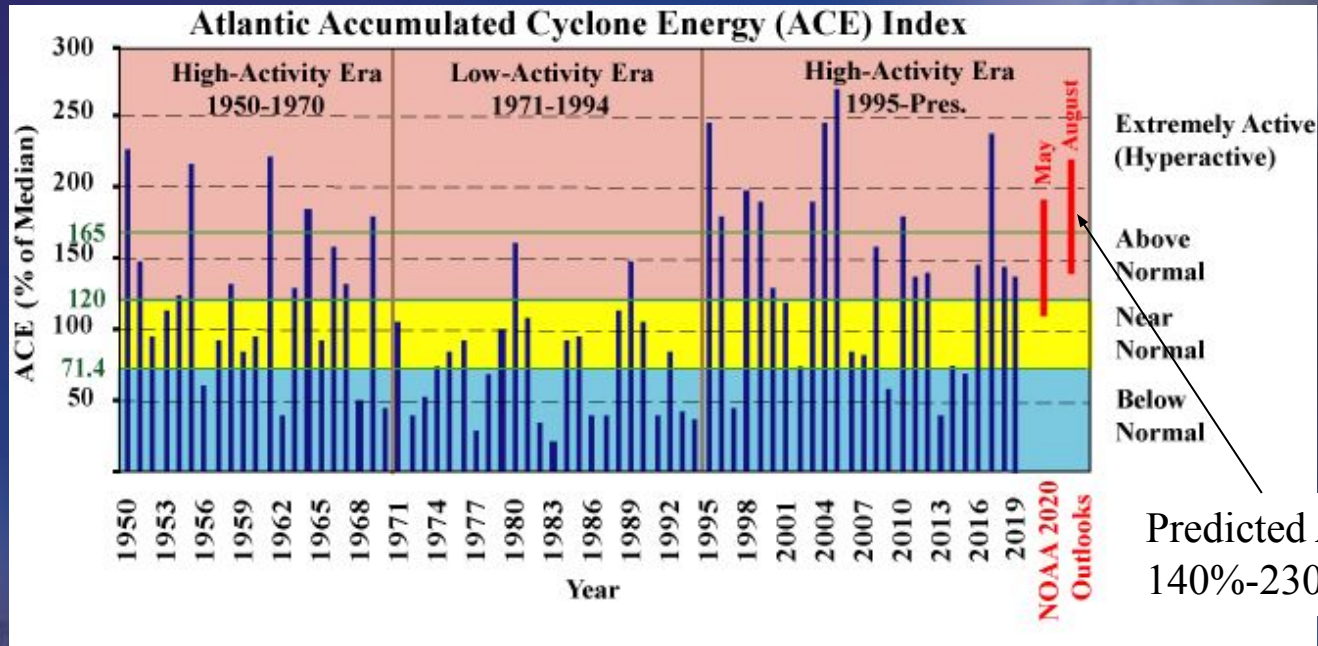
Supplemental: Atlantic Conditions for 2020





The 2020 Atlantic Outlook in a Historical Perspective

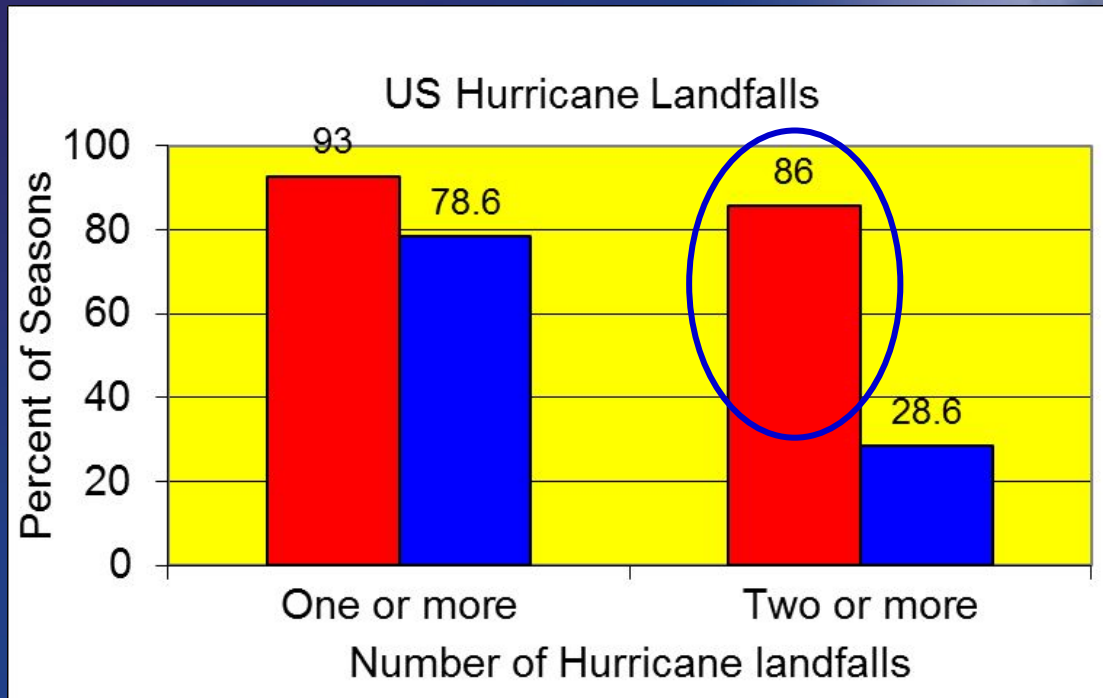
ACE index measures overall season activity by accounting for the combined intensity and duration of tropical storms and hurricanes.





Updated predicted ACE range is

- Entirely above NOAA's lower threshold (120% of median) for an above-normal season.
- Centered at 185% of median, above NOAA's lower threshold (165% of median) for an extremely active season.

U.S. Hurricane Landfalls During Above-Normal Seasons Extremely Active Versus Active



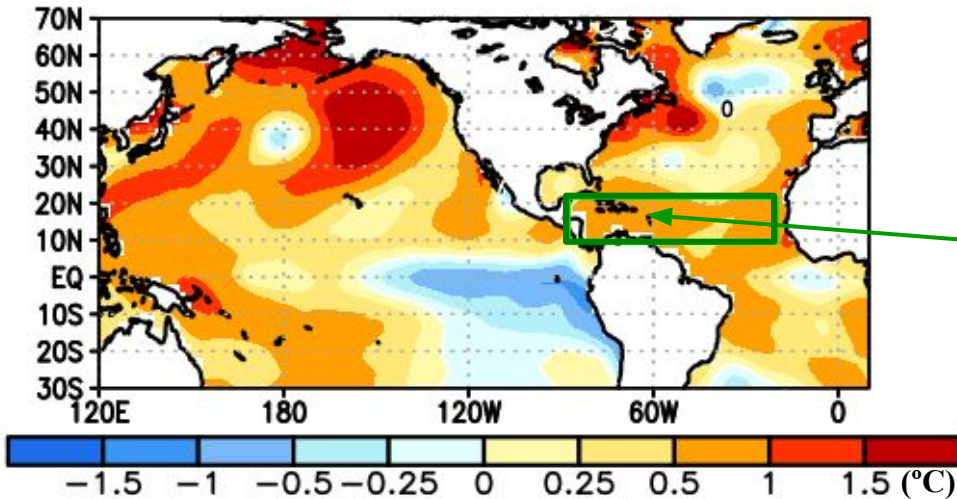
 Extremely active seasons
 Above normal, not extremely active

Having multiple U.S. landfalling hurricanes is almost three times more likely during extremely active seasons, compared to other above-normal seasons.



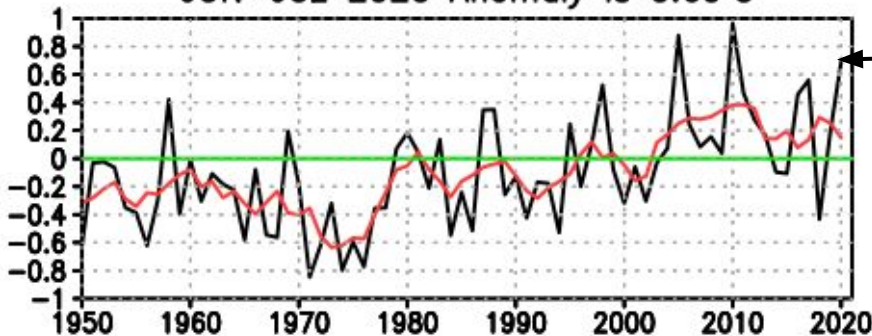
June-July SST Anomalies (°C)

June–July 2020
Sea Surface Temperature Departures (°C)



Well above-average SSTs in Main Development Region (MDR).

MDR Anomaly (°C)
JUN–JUL 2020 Anomaly is 0.69°C



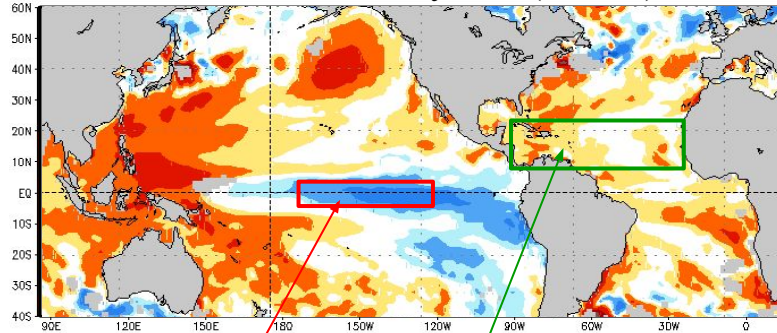
During June–July, SSTs in the MDR were 0.69°C above average. Third warmest on record.

Above-average SSTs are expected to persist through Aug.–Oct. in association with ongoing warm phase of AMO.

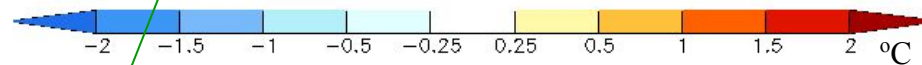
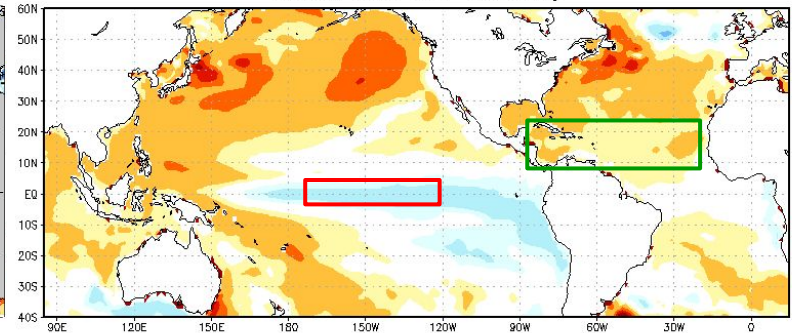


Model Predicted SST Anomalies for ASO 2020

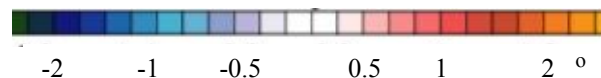
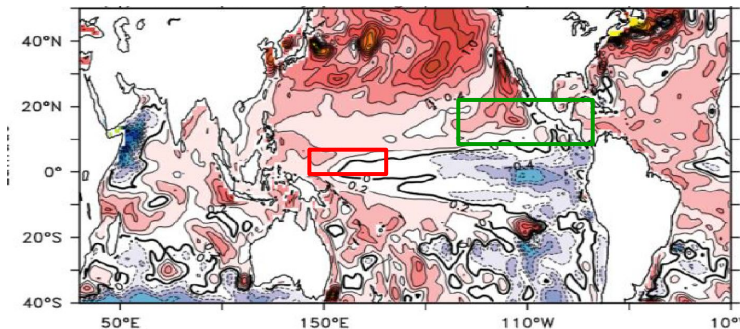
Climate Forecast System (CFSv2)



North American Multi-Model Ensemble (NMME)



GFDL FLOR Composite



La Niña

Above-average SSTs
in MDR

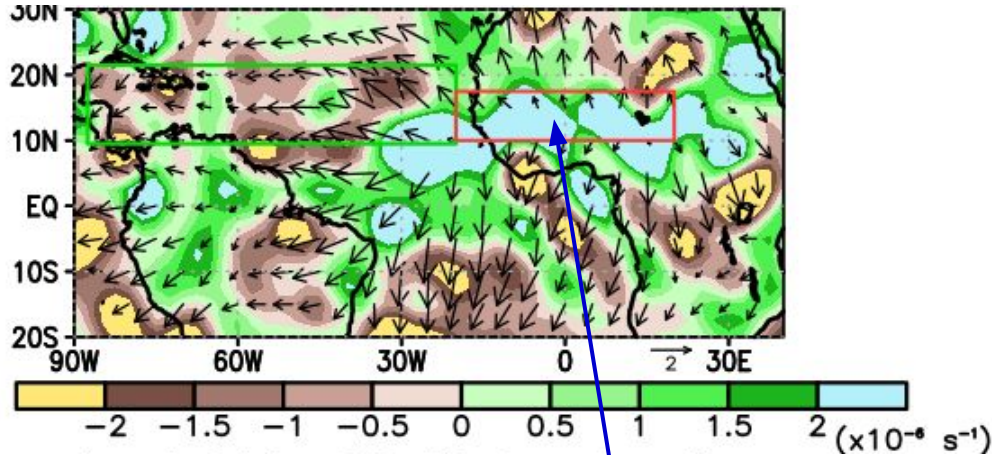
Models are predicting above-average SSTs in the Atlantic MDR (Green box), along with a potential La Niña as indicated by below-average SSTs in the Niño 3.4 region (Red box).



Enhanced West African Monsoon

July 2020

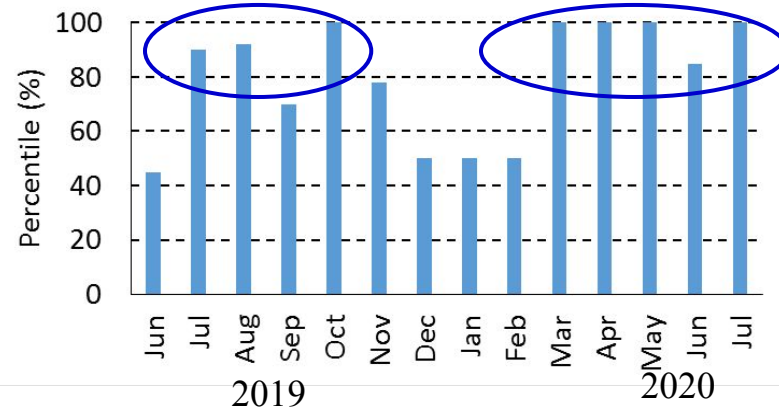
200-hPa: Anomalous Divergence and Divergent Wind Vectors



Core of anomalous upper-level divergence (Green/ Blue shading) highlights enhanced West African monsoon system.

A stronger West African monsoon is a key underlying feature of the ongoing Atlantic high-activity era that began in 1995, and produces the inter-related set of conducive atmospheric conditions now in place.

Observed Monthly Precipitation Percentiles for the African Sahel

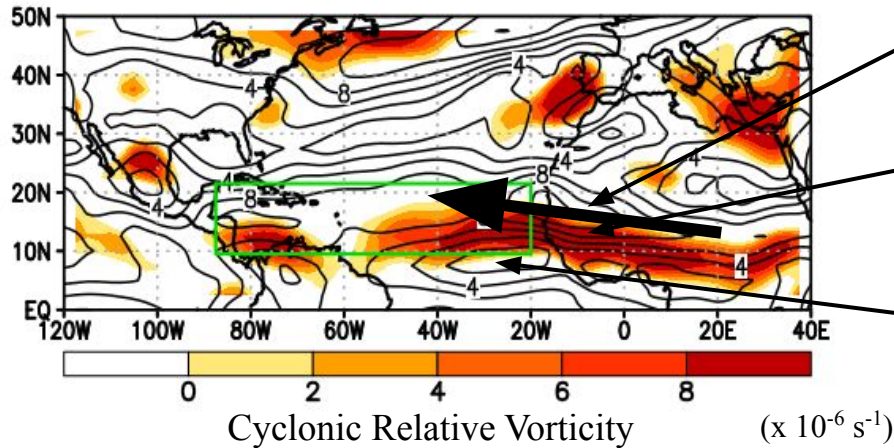


In the African Sahel (i.e., the West African monsoon region) rainfall has been well above average since March, with area-averaged totals well above the 80th percentile of occurrences. Peak monsoon season is July-September.



700-hPa Winds and Cyclonic Relative Vorticity Related to Enhanced West African Monsoon

Total (Wind speed is contoured)

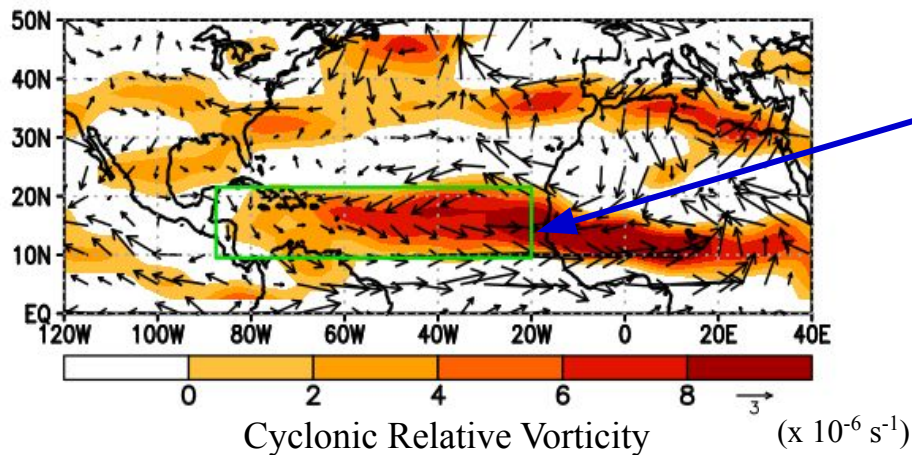


African Easterly Jet (AEJ) axis shifted north of normal.

Strong cyclonic shear (Red shading) south of AEJ axis due to ...

Very weak easterly winds r south of AEJ axis

Anomalies

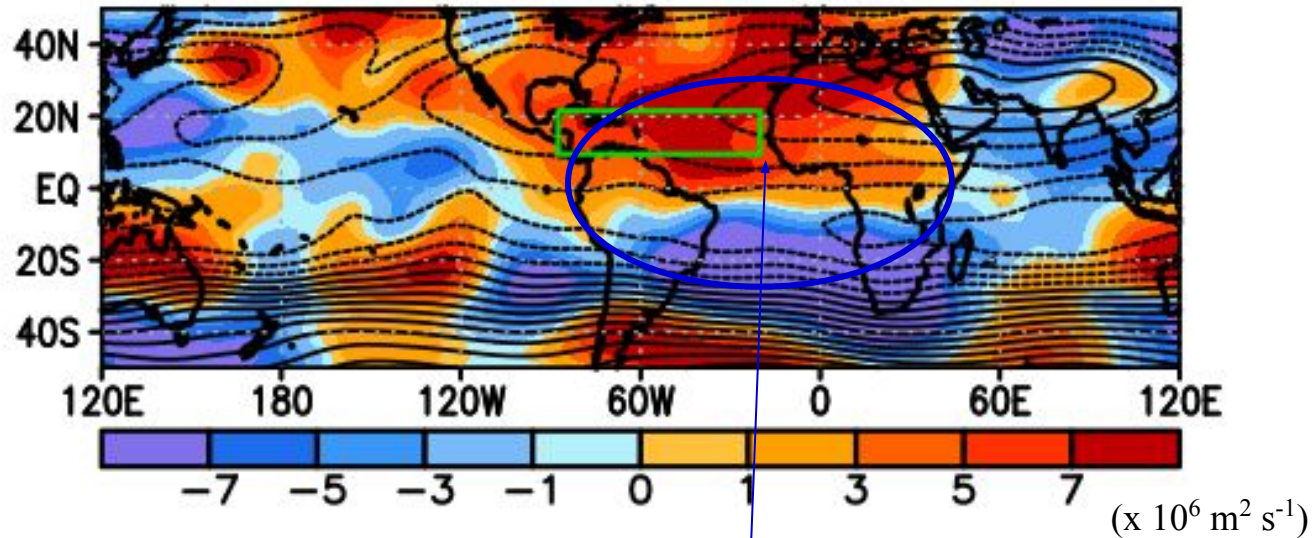


Westerly anomalies (weaker tropical easterlies) and enhanced cyclonic shear typify warm AMO phase and enhanced West African monsoon.



Observed 200-hPa Streamfunction and Anomalies

July 2020



Anticyclonic streamfunction anomalies in subtropics of both hemispheres.

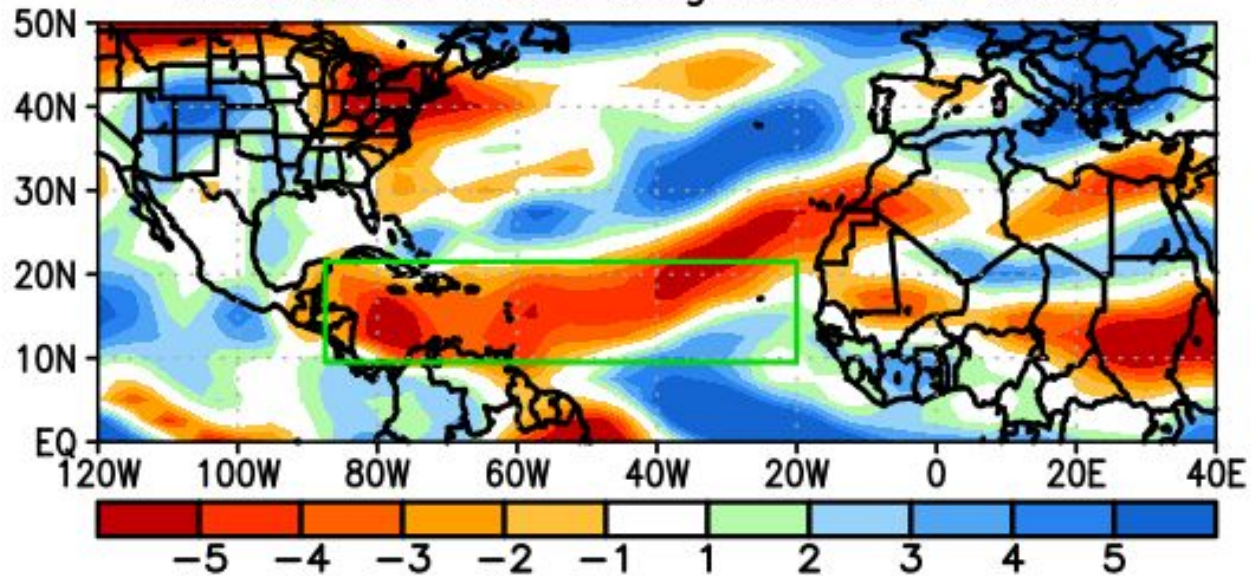
This pattern is consistent with an enhanced West African monsoon system and weaker vertical wind shear, and favors increased Atlantic hurricane activity.



Anomalous Magnitude and Vector of 200-850 hPa Vertical Wind Shear

July 2020

Anomalous Shear Magnitude and Vector

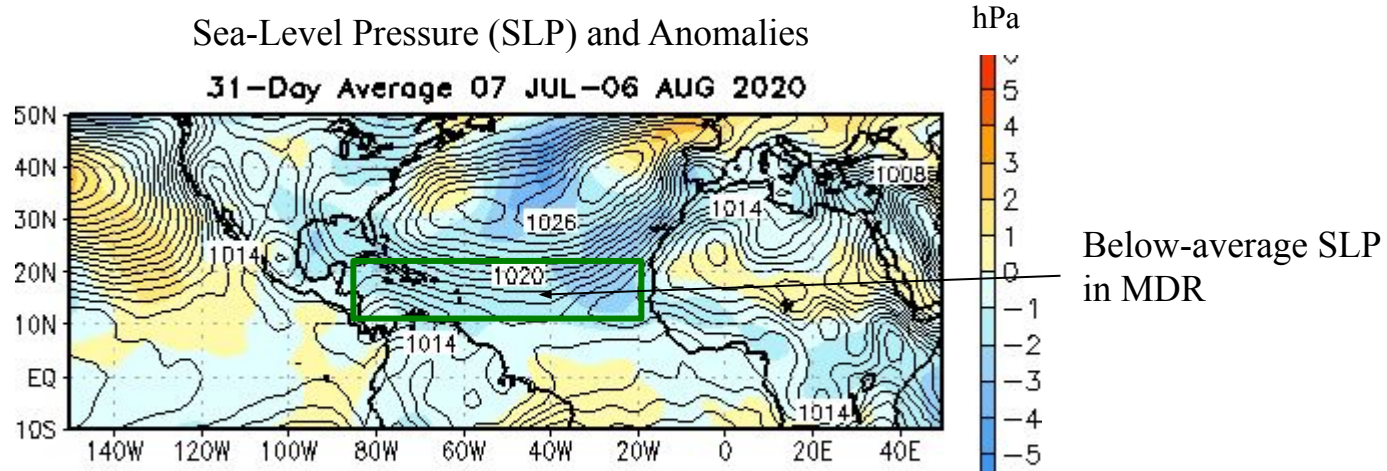


The vertical wind shear was much weaker than average (orange shading) over much of the MDR.

In the MDR, the area-averaged shear was comparable to the extremely active seasons of 1995, 2005, and 2010.



Recent Sea-Level Pressure (SLP)



SLP has been well below average across the MDR, with pressures comparable to the lowest in the 1950-present record.