



2021 Atlantic Hurricane Season Outlooks

ACTIVE SEASON

compiled by CIMH
Dr. Cedric Van Meerbeeck, Climatologist
& Kathy-Ann Caesar, Chief Meteorologist



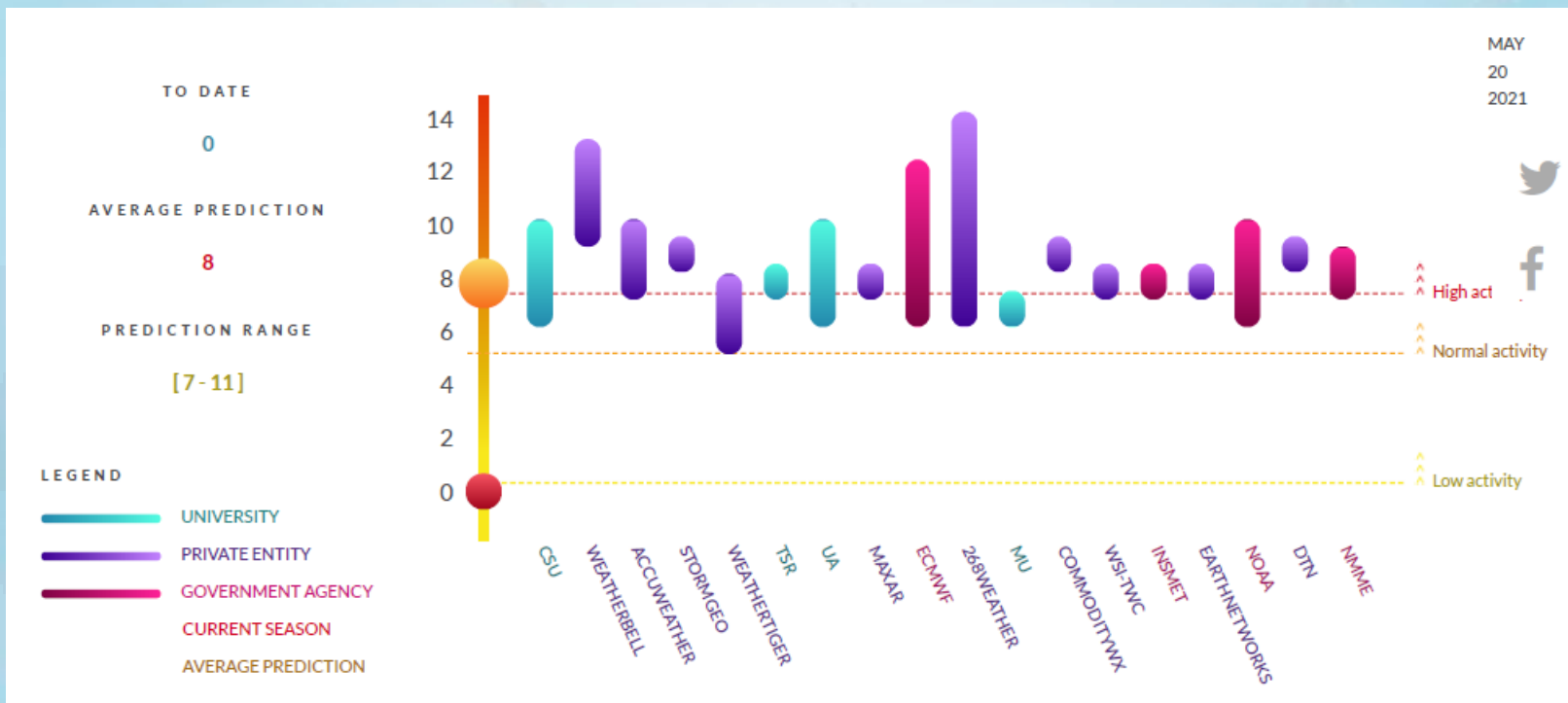
2021 Hurricane Season Forecasts

Forecast Parameter (1991-2020 Climatology in parentheses)	CSU 03 rd June 2021	Tropical Storm Risk 27 th May 2021	The Weather Company 16 th April 2020	NOAA Climate Prediction Center 70% confidence range 20 th May 2021	CIMH (70% confidence range) 20 th May 2021
Named Storms (NS) (14)	18	18	19	13-20	18 (14-22)
Hurricanes (H) (7)	8	9	8	6-10	-
Major Hurricanes (MH) (3)	4	4	4	3-5	-
Accumulated Cyclone Energy (ACE) (123)	150	140	-	110-190	155 (100-215)

Comparing 2021 CSU Atlantic Hurricane Season outlook to the hyperactive 2020 and 2017 seasons

Forecast Parameter and 1981–2010 Average* (in parentheses)	Issue Date 8 April 2021	2020 Obs.	2017 Obs.
Named Storms (NS) (12.1)	17	30	17
Named Storm Days (NSD) (59.4)	80	118	91.25
Hurricanes (H) (6.4)	8	13	10
Hurricane Days (HD) (24.2)	35	34.75	51.25
Major Hurricanes (MH) (2.7)	4	6	6
Major Hurricane Days (MHD) (6.2)	9	8.75	19.25
Accumulated Cyclone Energy (ACE) (106)	150	180	226
Net Tropical Cyclone Activity (NTC) (116%)	160	225	231

Overview of forecasted number of Atlantic Hurricanes in 2021 (as of 20 May 2021)



Caribbean Landfall probabilities

▶ CSU:

- ▶ **58% probability for at least one major hurricane** (Cat 3, 4 or 5), tracking into the Caribbean (10-20°N, 60-88°W).
1901-2000 average probability for major hurricanes is 42%.
- ▶ For **country-by-country forecasted probabilities** of named storms and hurricanes passing within 50 miles of the location, see <https://tropical.colostate.edu/resources.html> .

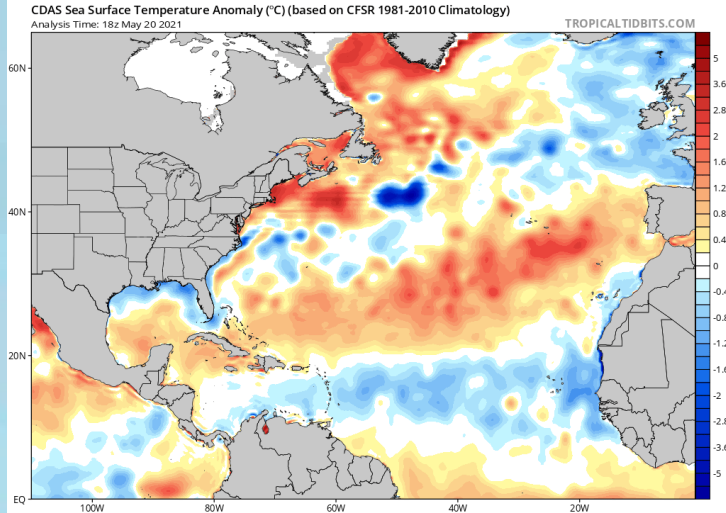
▶ TSR:

- ▶ Possibly 12 named storms, 6 hurricanes and **3 major hurricanes** tracking through the Tropical North Atlantic, Caribbean Sea and the Gulf of Mexico.

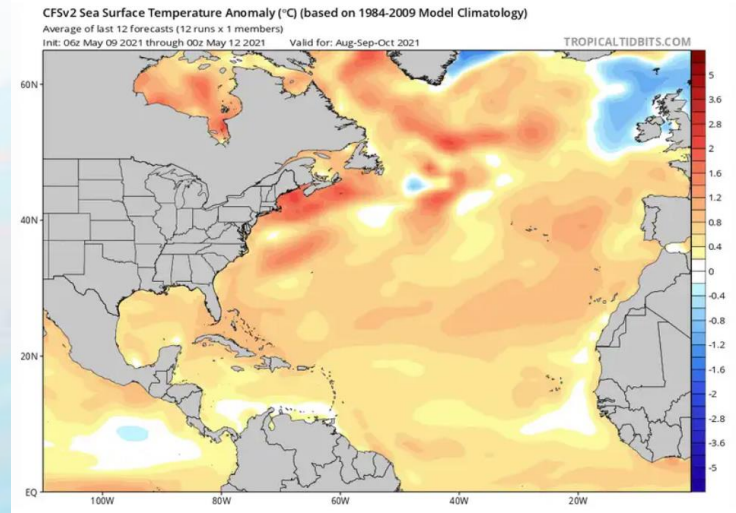
Slightly cool sea surface temperatures (SSTs) in the Main Development Region for hurricanes to **warm up**. Sub-tropics **very warm**.

→ *active season?*

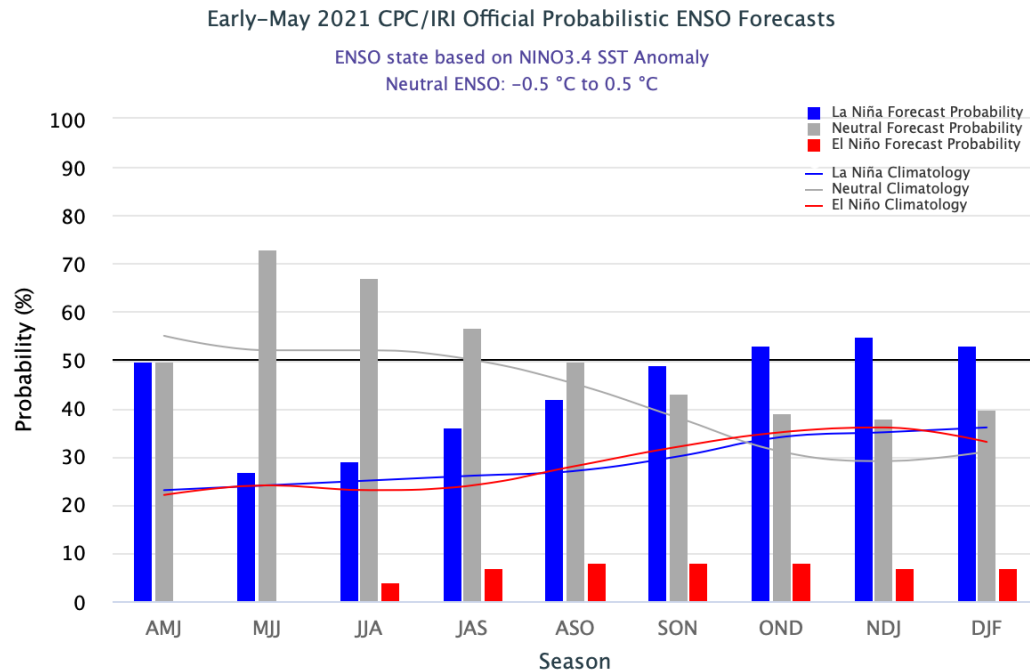
Observations of the latest SST anomalies (source: NOAA/NCEP)



Forecast SST Anomalies for August through October 2021 (source: NOAA/NCEP)



Possible **La Niña** conditions by October might boost Hurricane Season activity



Source: NOAA CPC / IRI – ENSO: Recent Evolution, Current Status and Predictions

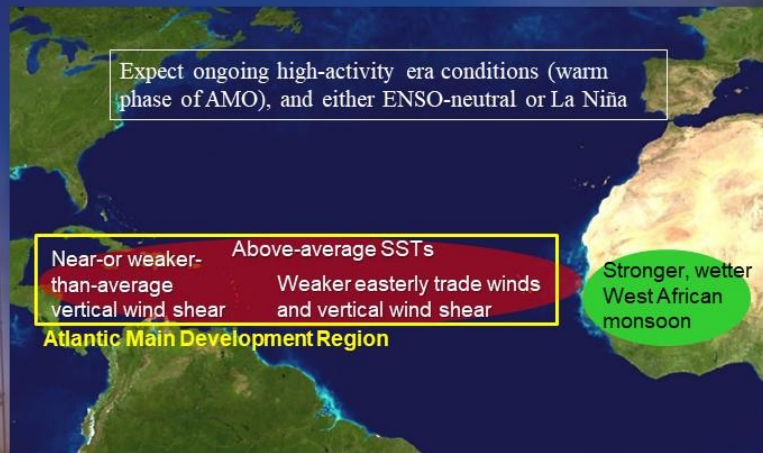
NOAA/CPC Outlook – drivers of hurricane season activity in 2020 (simplified)



Expected Atlantic Conditions

The 2021 Atlantic outlook reflects either non-competing or reinforcing factors:

1. High-activity era conditions favor more hurricane activity, and include above-average sea surface temperatures in the Main Development Region, along with
2. Weaker trade winds, weaker vertical wind shear, and a stronger, wetter west African monsoon.
3. ENSO-neutral favors near-average vertical wind shear over the Caribbean Sea, while La Niña favors weaker shear in that region. The combination of La Niña and high-activity era-conditions increases the likelihood of activity being near the upper ends of the predicted ranges.





2021 Atlantic Tropical Cyclone Names

~~Ana~~

~~Bill~~

~~Claudette~~

Danny

Elsa

Fred

Grace

Henri

Ida

Julian

Kate

Larry

Mindy

Nicholas

Odette

Peter

Rose

Sam

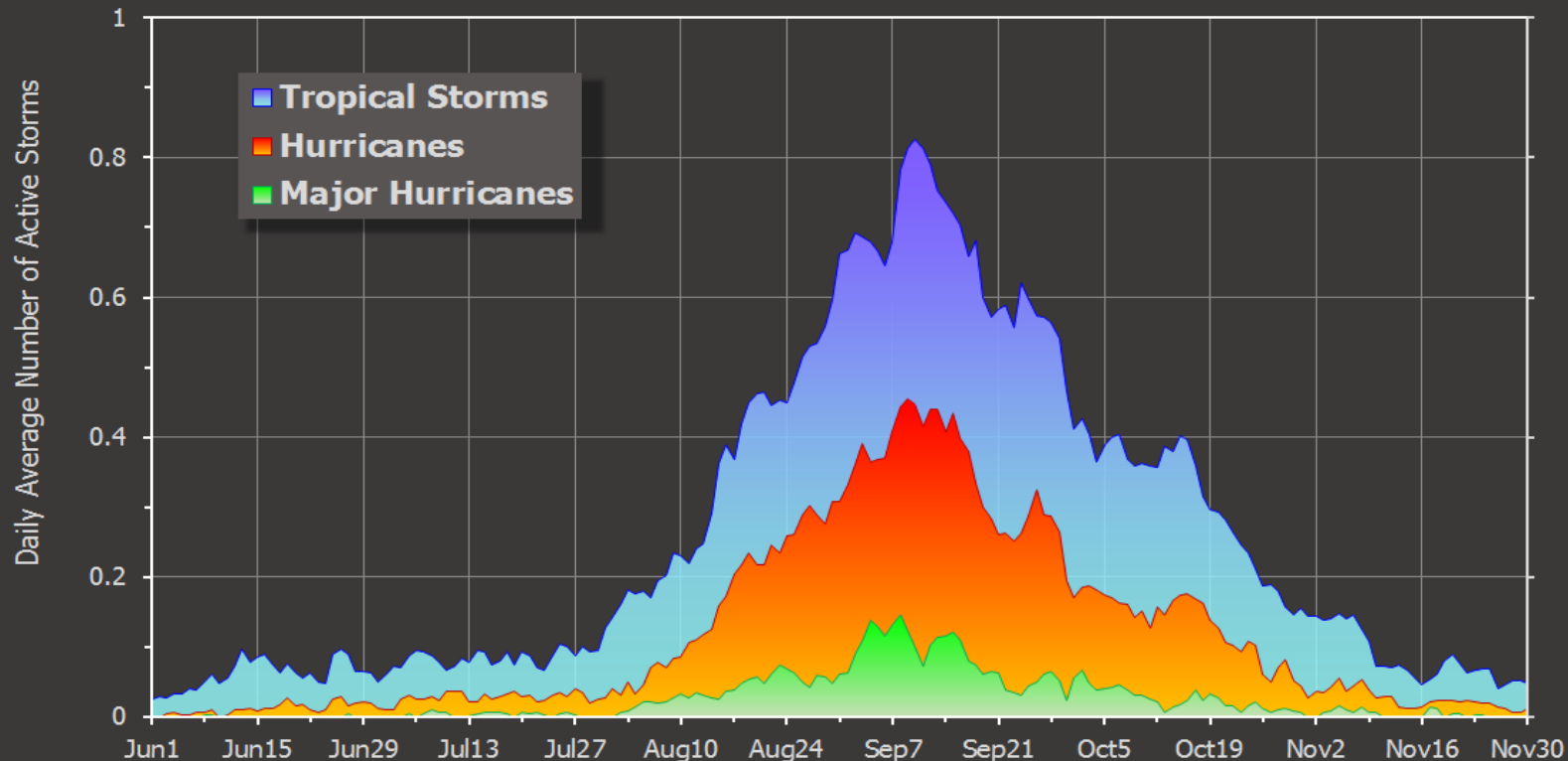
Teresa

Victor

Wanda

Names provided by the World Meteorological Organization

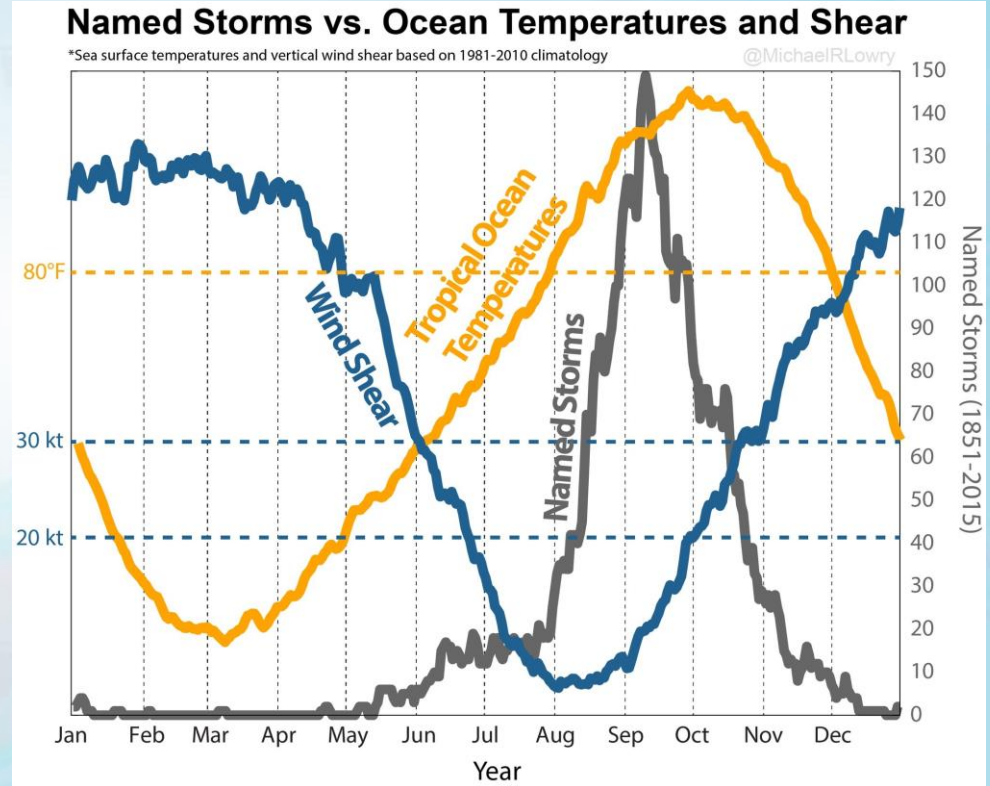
Atlantic Tropical Cyclone Climatology (1851-2013)



Basin-wide TC activity historically **peaks on 10 September**

Could we make useful predictions of parts of the season?

- ▶ The peak of the season is from August to October
➔ what will this period bring?
- ▶ CariCOF predicts 2 three-month periods each month
➔ What could June to August and September to November look like?



How good were the CIMH 2020 experimental forecasts?

Period	Observed	Late May 2020		Early August 2020	
		Forecast	Range*	Forecast	Range*
Number of Named Storms					
2020 (entire season)	30	18	14-22	24	17-26
Jun.-Aug. (1 st half)	10	7	2-10		
Aug.-Oct. (peak)	18	13	6-15		
Sep.-Nov. (2 nd half)	17	10	5-12		
Aug.-Dec.	21			15	8-17
Accumulated Cyclone Energy (ACE)					
2020 (entire season)	180.7	156	97-217		
Jun.-Aug. (1 st half)	36.7	37	9-65		
Aug.-Oct. (peak)	120.2	135	81-189		
Sep.-Nov. (2 nd half)	137.9	117	72-163		



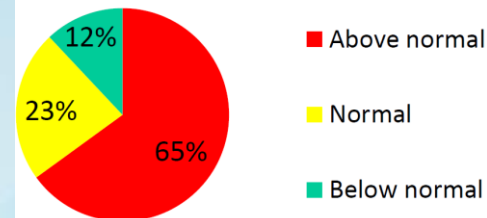
2021 Atlantic Hurricane Season Activity

CIMH forecasts

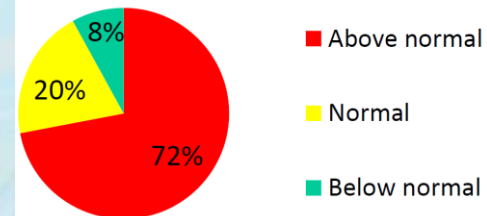
Period	1991-2020	Forecast	Range*	Confidence level
Number of Named Storms				
Entire season	14	18	14-22	High
First half (JJA)	5	7	4-10	Medium
Peak season (ASO)	11	13	10-17	High
Second half (SON)	7.8	10	7-13	Medium
Accumulated Cyclone Energy (ACE)				
Entire season	122	156	97-217	Medium
JJA 2020	29	37	9-65	Low
ASO 2020	114	135	81-189	Low to medium
SON 2020	87	117	72-163	Medium

*70% confidence range, i.e. the observed number has a 70% chance of falling in this range

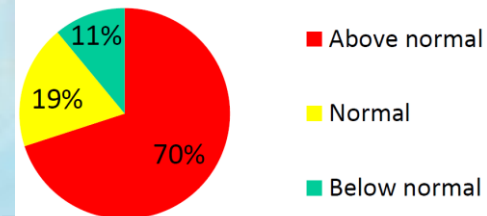
First half (June to August)



Peak (August to October)



Second half (September to October)



The new norm

'Average' Atlantic Hurricane Season * Effective 2021

1981-2010

12 Named Storms
6 Hurricanes
3 Major Hurricanes



1991-2020

14 Named Storms
7 Hurricanes
3 Major Hurricanes

* Numbers for an average season reflect the climate record for tropical storms and hurricanes and use the most recent 3 decades as the period of reference. More at: <http://bit.ly/NOAAHurricaneSeasonAverages>



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

Issued 4/9/21

IMPORTANT:

Number of major hurricanes up 14% from 2.8 to 3.2 /year

(and up by 60% compared to 1961-1990)

What changes to bear in mind?

- The WMO will **no longer use the Greek alphabet** as additional list of named storms in the Atlantic basin to avoid a few communication problems (see e.g. <https://yaleclimateconnections.org/2021/03/wmo-atlantic-hurricanes-no-longer-to-receive-names-from-greek-alphabet/>):
 - ➔ Eta and Iota retired -- alphabet with a decreasing number of letters?
 - ➔ Zeta, Eta, Theta too similar for successive storms
 - ➔ It was confusing people that some names (e.g. Zeta came so early on in the list)
- Instead, from this year (2021) onwards, the WMO will use a Supplemental list of tropical cyclone names in RAIV once the regular list is exhausted.
- Keep in mind that what determines an **active season** may have changed by using the new norms.
- NHC daily Tropical Weather Outlooks now starting 15 May.

NOTE

- ▶ Authorities and interests are advised to constantly monitor weather advisories issued by the National Meteorological Services.
- ▶ They should also constantly monitor other information provided by the Caribbean Disaster Emergency Management Agency (<http://cdema.org/>) and the US National Hurricane Center (<https://www.nhc.noaa.gov/>).
- ▶ All persons and entities should abide by any official advisories issued by the National Meteorological Service in their country.

DISCLAIMER

- ▶ CIMH is providing special weather interpretation of the current and forecasted tropical weather affecting the Caribbean region.
- ▶ CIMH is not an official forecasting authority.