2025 Atlantic Hurricane Season Outlooks

Potentially intense, but erratic season ahead

compiled by CIMH *(issued: 22.05.2024)*
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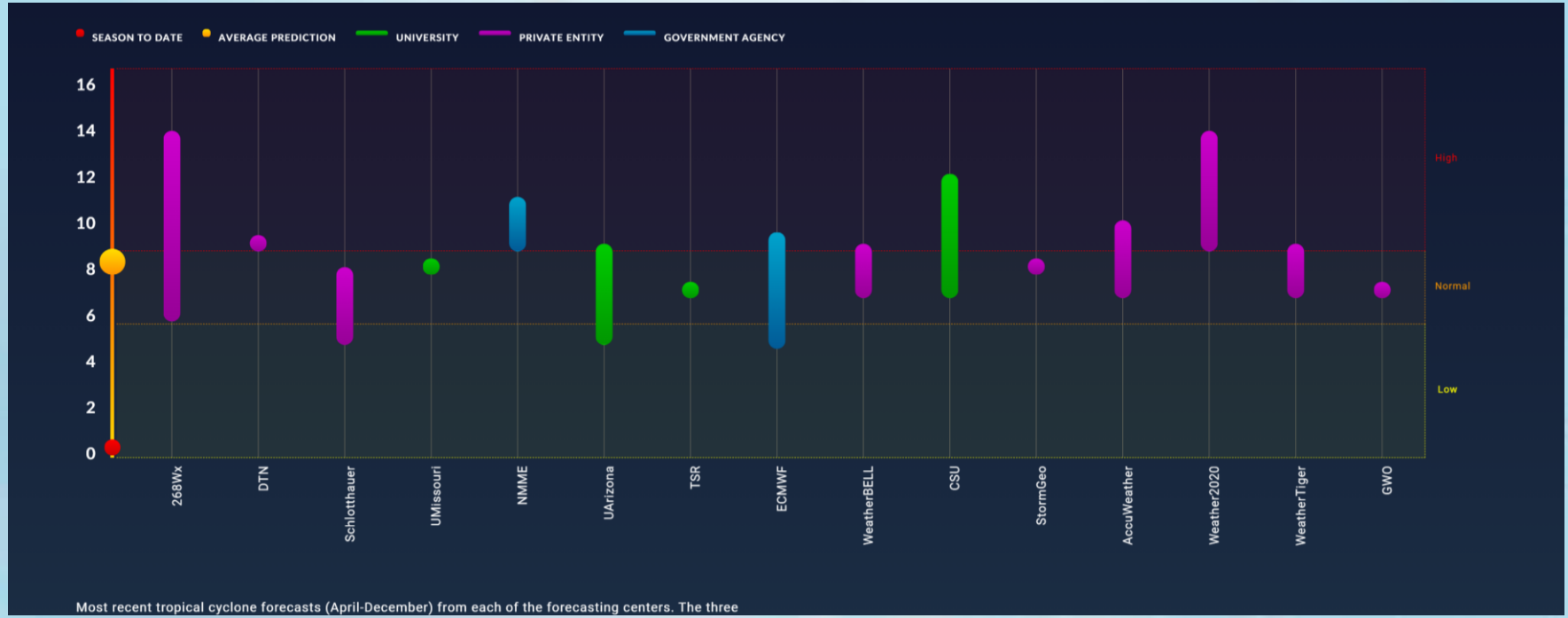
2025 Hurricane Season Forecasts – Potentially intense, but erratic season ahead

Forecast Parameter (1991-2020 average in parentheses)	CSU (70% confidence range) 3rd April 2025	Tropical Storm Risk 07th April 2025	Accu-Weather 26th March 2025	NOAA CPC (70% confidence range) 22 May 2025	CIMH (70% confidence range) 22 May 2025
Named Storms (NS) (**14**)	**17** (14-20)	**14**	**13-18**	-	**19** (13-25)
Hurricanes (H) (**7**)	**9** (7-12)	**7**	**7-10**	-	**9** (6-12)
Major Hurricanes (MH) (**3**)	**4** (2-6)	**3**	**3-5**	-	**4** (2-6)
Accumulated Cyclone Energy (ACE) (**123**)	**155** (102-215)	**120**	**125-175**	-	**125** (62-189)

Comparing 2025 CSU Atlantic Hurricane Season outlook to the hyperactive 2024, 2020 and 2017 seasons

Forecast Parameter and 1991–2020 Average (in parentheses)	Issue Date 3 April 2025	2024 Obs.	2020 Obs.	2017 Obs.
Named Storms (NS) (14.4)	17	18	30	17
Named Storm Days (NSD) (69.4)	85	77.25	118	91.25
Hurricanes (H) (7.2)	9	11	13	10
Hurricane Days (HD) (27.0)	35	37.5	34.75	51.25
Major Hurricanes (MH) (3.2)	4	5	6	6
Major Hurricane Days (MHD) (7.4)	9	11.5	8.75	19.25
Accumulated Cyclone Energy (ACE) (123)	155	162	180	226

Agencies predict about 8 or 9 Hurricanes in the Atlantic in 2025 (as of 11 May 2025)



seasonalhurricanepredictions.bsc.es

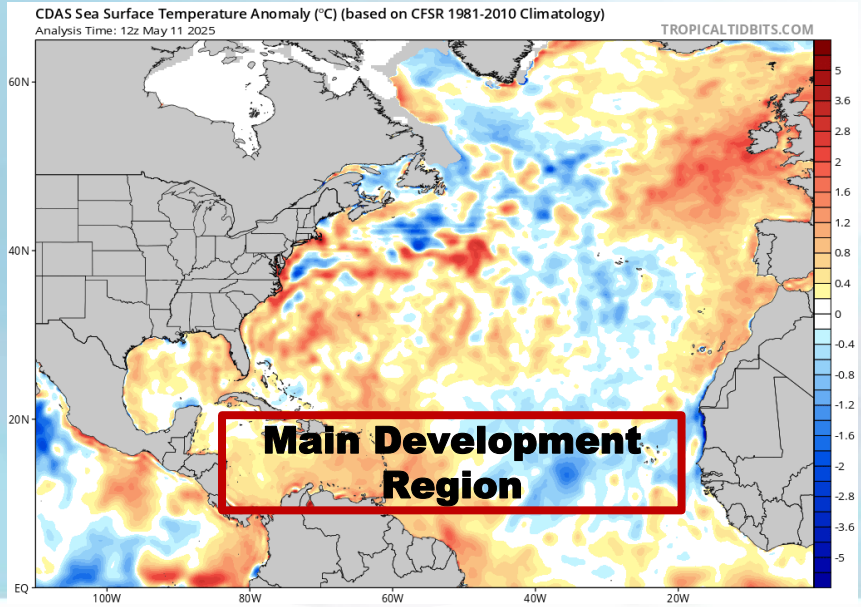
Caribbean Landfall probabilities

- CSU:
  - **56% probability for at least one major hurricane** (Cat 3, 4 or 5), tracking into the Caribbean (10-20°N, 60-88°W).
    1880-2000 average probability for major hurricanes is 47%.
  - For **country-by-country forecasted probabilities** of named storms and hurricanes passing within 50 miles of the location, see https://tropical.colostate.edu/TC_impact.html.

Drivers of hurricane season activity in 2025

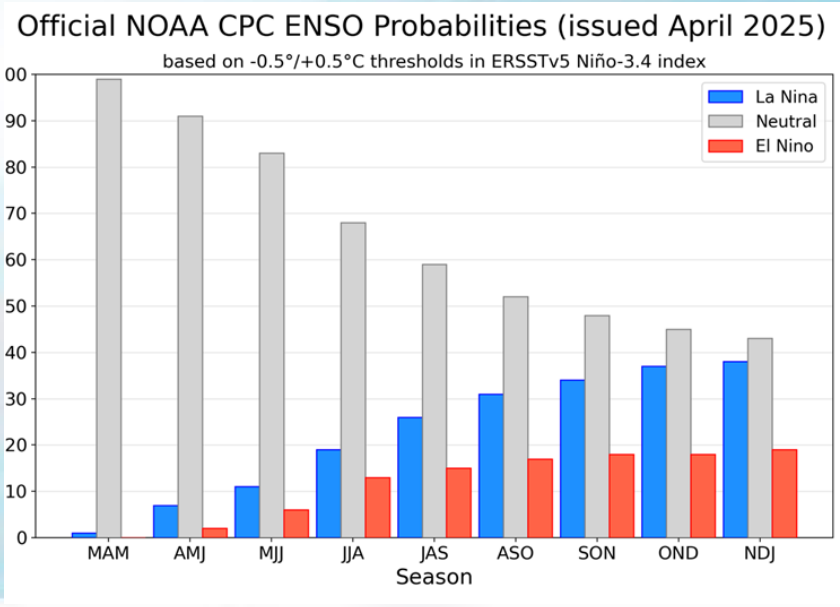
Main Development Region of tropical cyclones in the Atlantic: west and centre **unusually warm**, east **initially cooler**

➔ **boosts mid-to late hurricane season activity** (but less so than in 2024)



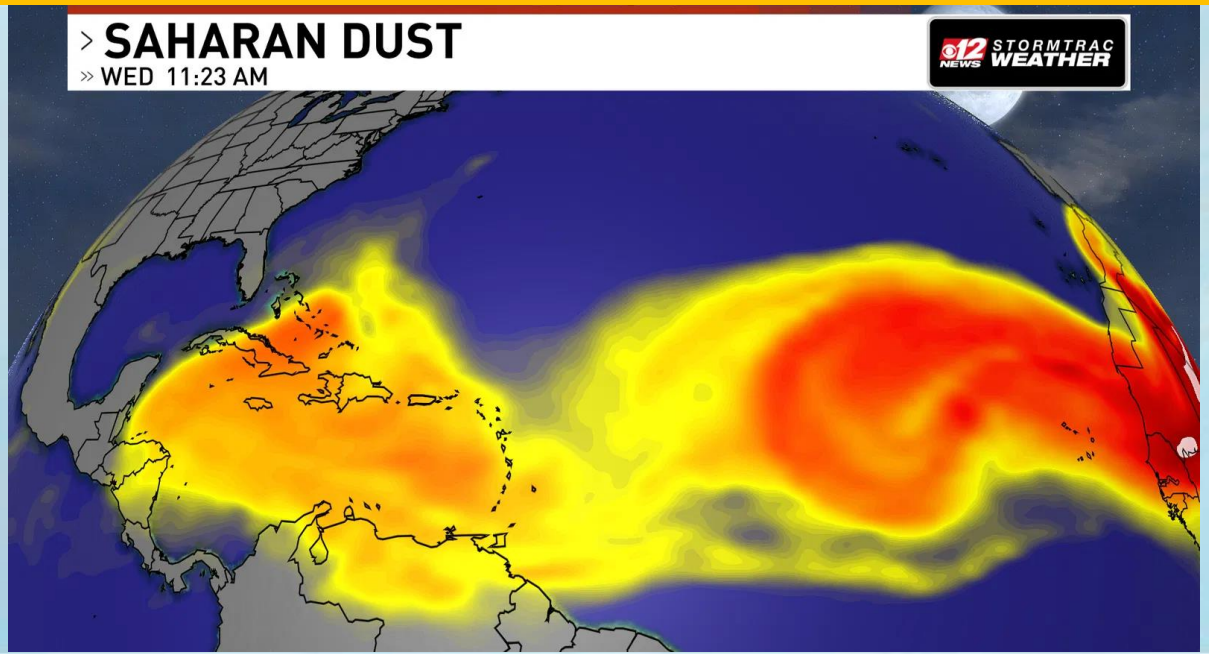
ENSO neutral conditions in the Pacific unlikely to develop into **El Niño**, but possibly into **La Niña**

➔ **ENSO neutral / La Niña to promote late-hurricane season activity**



Drivers of Hurricane Season activity in 2024
What we do not know yet…

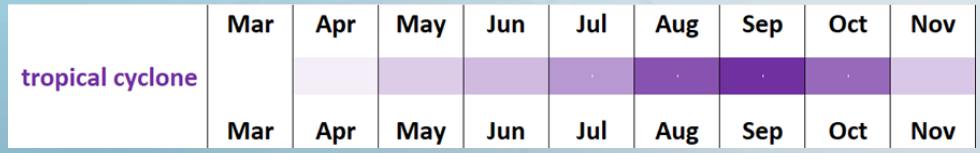
No predictions of **how often** intrusions of the dry (often dusty) Saharan Air Layer **(SAL)** will **stifle activity.**
Note: **Explosive activity** is possible between episodes of SAL intrusions.



Sahara Dust/SAL 2024

The possible effect of lower/higher frequency of dry, dusty Saharan air intrusions

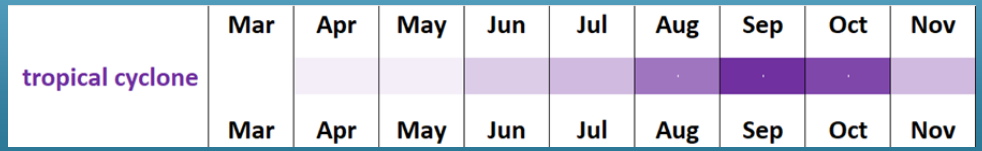
Scenario A: infrequent Saharan air intrusions into the Tropical North Atlantic



Active 2025 Atlantic Hurricane Season

- **historical average**: 14 tropical storms, 7 hurricanes, 3 major hurricanes
- **different this year**: unusually (but not record)-warm Atlantic providing additional fuel for storm activity
- **forecasts**: potentially intense season → increased storm frequency & intensity → higher chance of rapid intensification

Scenario B: very frequent Saharan air intrusions

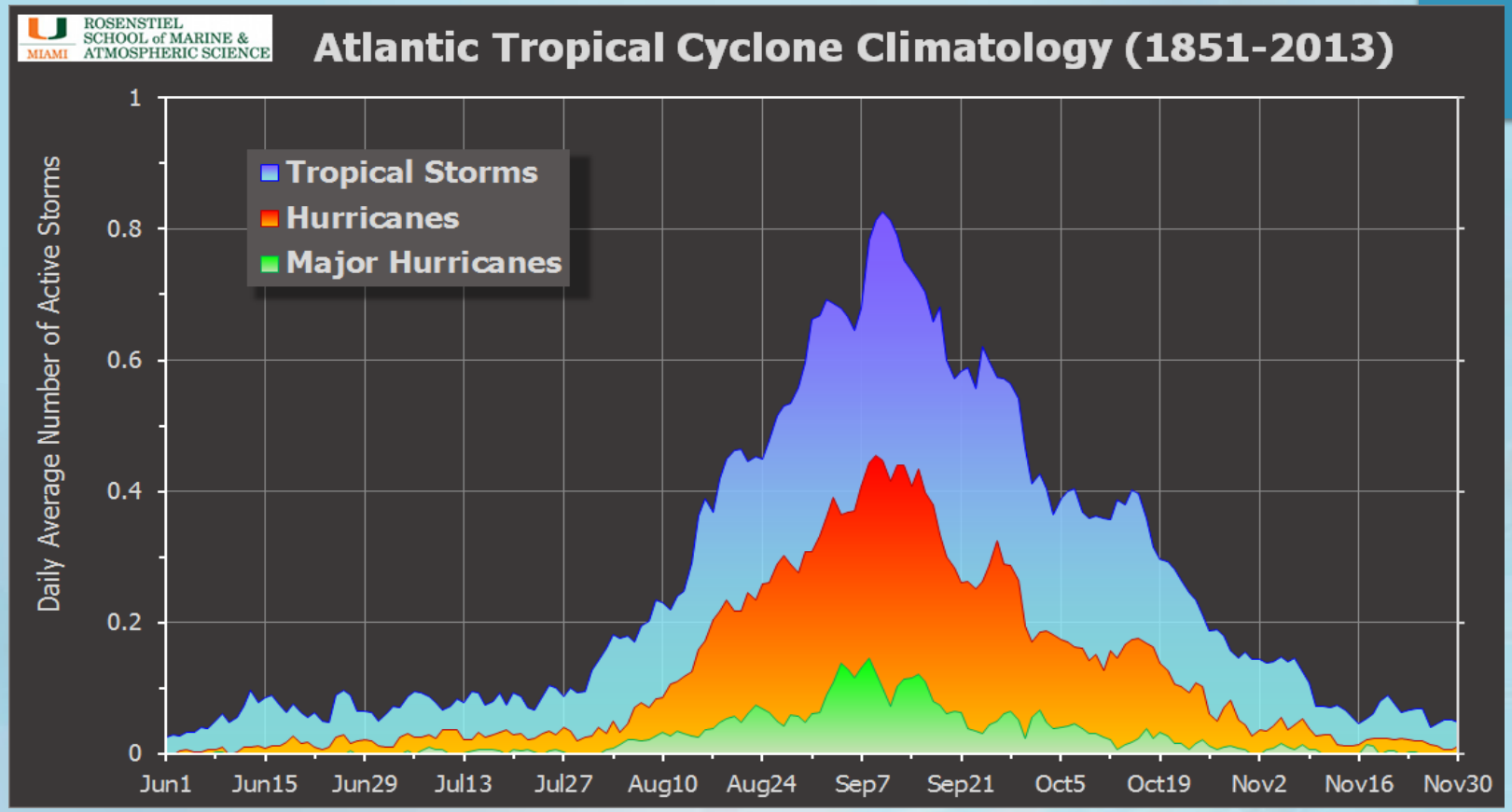


- **Erratic** tropical cyclone activity until mid-August.

2025 Atlantic tropical cyclone names

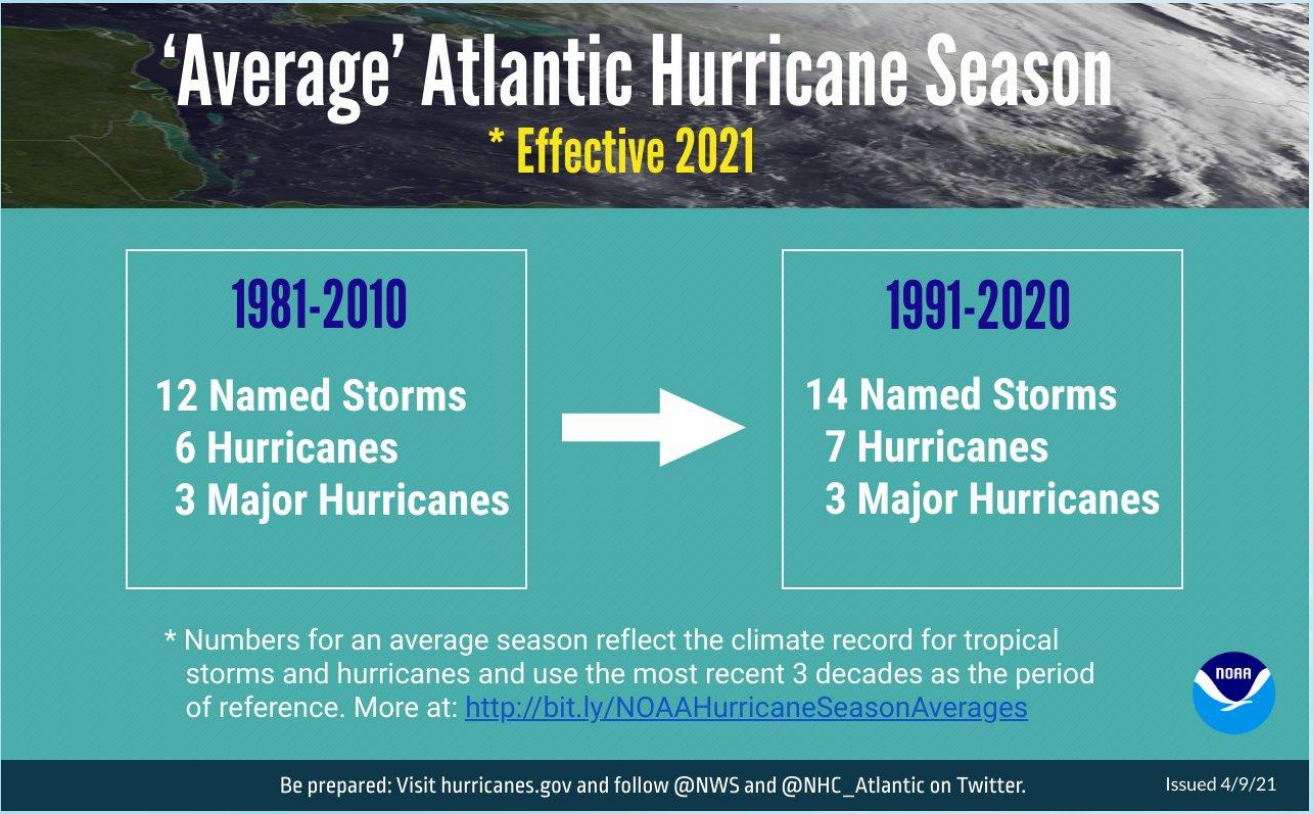
(source: World Meteorological Organization)

Andrea	Humberto	Olga
Barry	Imelda	Pablo
Chantal	Jerry	Rebekah
Dexter	Karen	Sebastien
Erin	Lorenzo	Tanya
Fernand	Melissa	Van
Gabrielle	Nestor	Wendy



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

The new norm



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 **no longer uses the Greek alphabet** as additional list of named storms in the Atlantic basin to avoid a few communication problems.

- Instead, from 2021 onwards, the WMO has started using a Supplemental list of tropical cyclone names in RA IV once the regular list is exhausted.

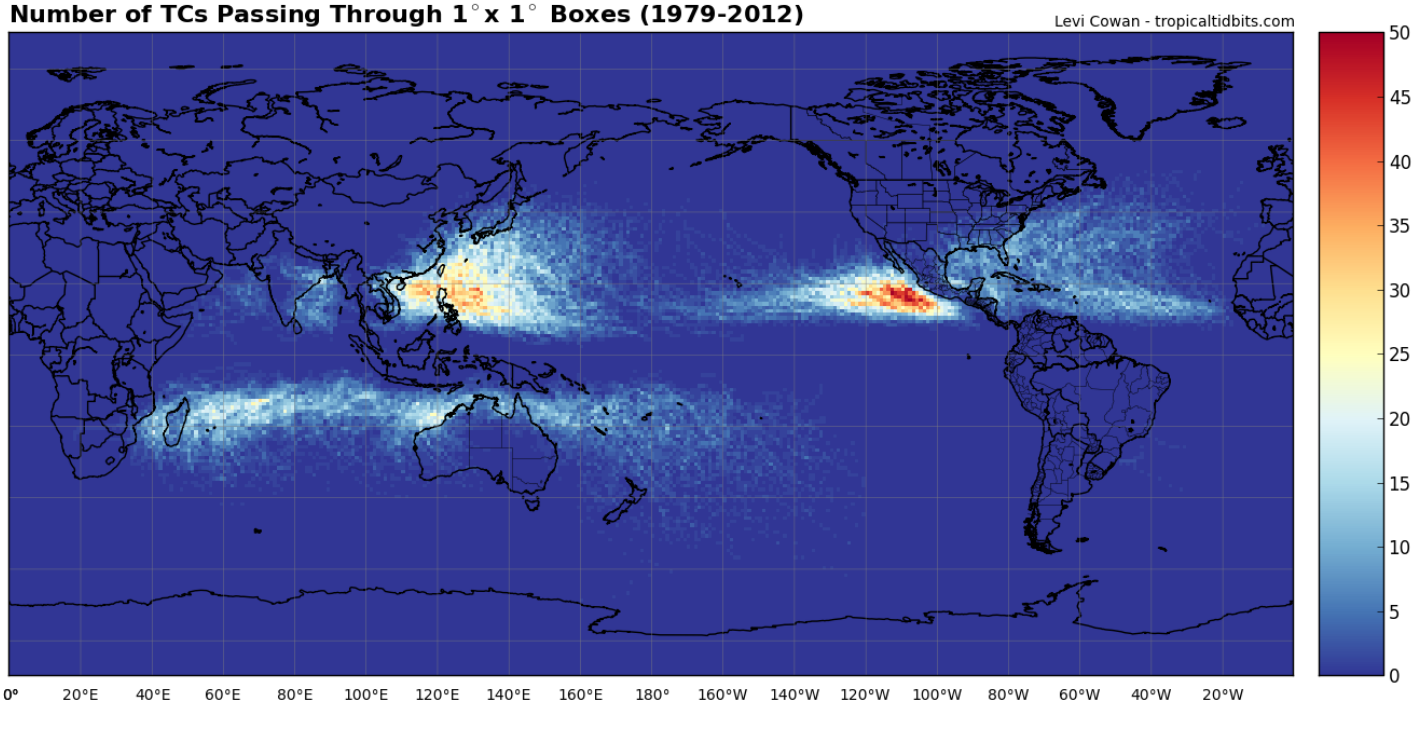
- Keep in mind that what determines an **active season** may have changed by using the new norms.

- NHC daily Tropical Weather Outlooks now starting 15 May.

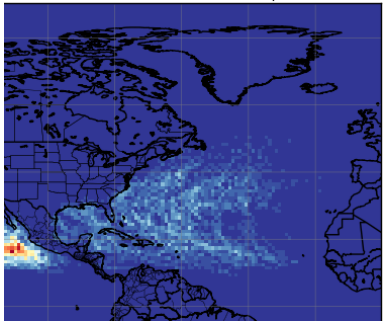
Two little known climatological facts that contribute to risk:

1/ The **Hurricane Belt is larger** than most people think (*see maps below*).

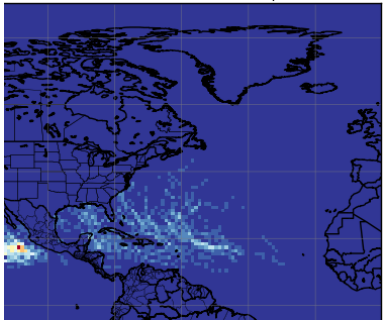
2/ Atlantic Hurricane Season **activity levels vary more** from year to year than in any other basin.



Number of hurricanes



Number of major hurricanes

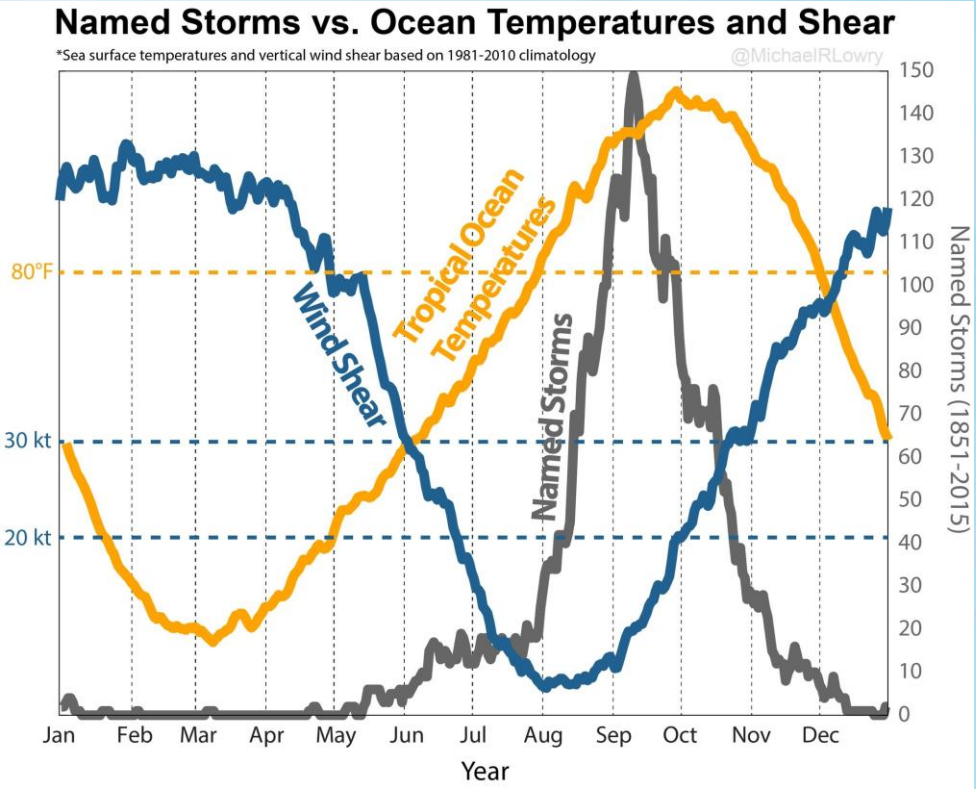


Could we make useful predictions of parts of the season?

- The **peak of the season** is from August to October

➔ what will this period bring?

➔ What could the **first half** (June to August) and **second half** (September to November) of the season look like?



Source: Michael Lowry/FEMA

How good were the CIMH 2024 forecasts?

Forecasts (i.e., Scenario A) **overestimated total activity as very frequent Saharan dust episodes** (i.e., Scenario B) **occurred through late-August**

Period	Observed	Mid-May 2024		Early August 2024	
		Forecast	Range	**Forecast**	Range
Number of Named Storms					
2024 (entire season)	**18**	**29**	24-35	**23**	19-27
Jun.-Aug. (1st half)	**5**	**11**	7-14		
Aug.-Oct. (peak)	**12**	**21**	17-25		
Sep.-Nov. (2nd half)	**13**	**16**	13-19		
Aug.-Dec.	**15**			**20**	16-25
Accumulated Cyclone Energy (ACE)					
2024 (entire season)	**162**	**211**	146-277		

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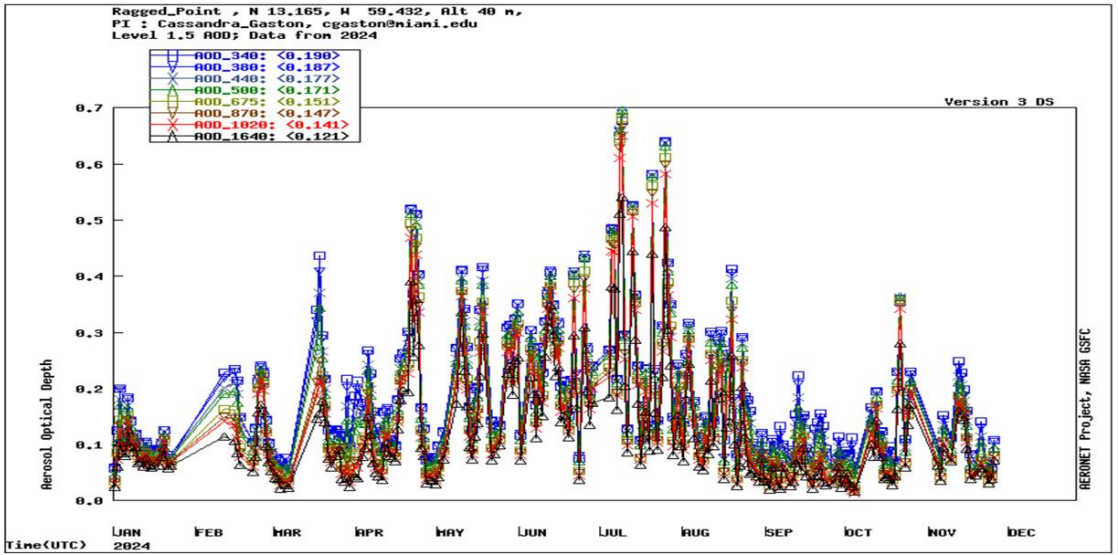
Forecasts (i.e., Scenario A) **overestimated total activity as very frequent Saharan dust episodes** (i.e., Scenario B) **occurred through late-August**

AERONET AOD 2024

- Most Saharan Dust in the Atlantic since 2022



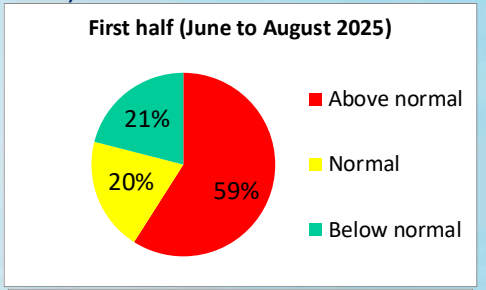
2025 Atlantic Hurricane Season Activity

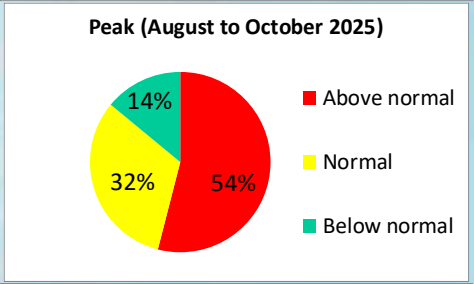
CIMH forecasts as of May 16th, 2025

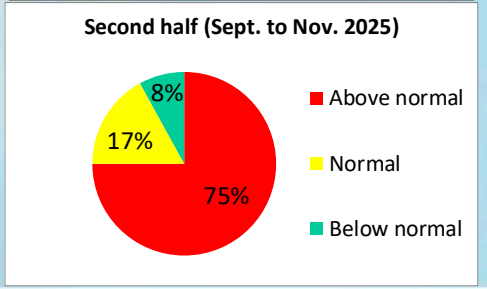
(Note: These forecasts of hurricane season activity are only driven by ocean temperatures)

Period		1991-2020	Forecast	Range*	Confidence level
Entire season					
Named storms		14	**19**	13-25	High
Hurricanes		7	**9**	6-12	Medium
Major Hurricanes		3.2	**4**	2-6	Medium
ACE		123	**145**	83-225	Medium
1st half (JJA), peak (ASO) & 2nd half (SON) of the season					
Named storms	1st half	5	**7**	3-10	Medium
	Peak	11	**12**	8-17	Medium
	2nd half	7.8	**10**	7-13	High
ACE	1st half	29	**30**	10-64	Low
	Peak	114	**121**	64-176	Low
	2nd half	87	**139**	100-204	Medium

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







NOTE

- Authorities and interests are advised to **constantly monitor and abide by official weather advisories** issued by the **National Meteorological Services and.**
- 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/).**

DISCLAIMER

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

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rcc.cimh.edu.bb

Additional early warning tools are found at

www.cimh.edu.bb

Thank you