

# 2024 Atlantic Hurricane Season Outlooks

**Hyperactive season ahead!!**

compiled by CIMH  
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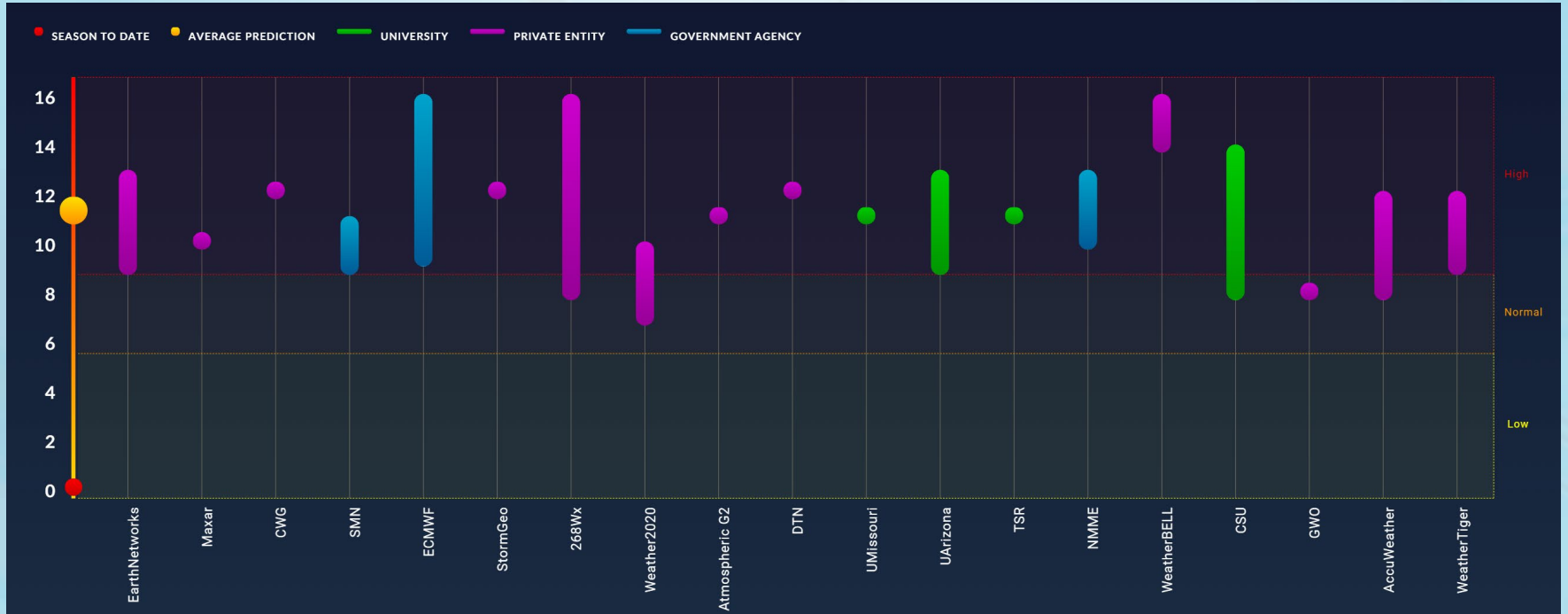
# 2024 Hurricane Season Forecasts – Likely hyperactive season ahead!!

| Forecast Parameter<br>(1991-2020 average<br>in parentheses) | CSU<br>4 <sup>th</sup> April<br>2024 | Tropical<br>Storm<br>Risk<br>08 <sup>th</sup> April<br>2024 | The<br>Weather<br>Co.<br>16 <sup>th</sup> May<br>2024 | NOAA CPC<br>(70%<br>confidence<br>range)<br>23 May 2024 | CIMH<br>(70%<br>confidence<br>range)<br>17 May 2024 |
|-------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------|
| <b>Named Storms (NS) (14)</b>                               | <b>23</b>                            | <b>23</b>                                                   | <b>25</b>                                             | <b>17-25</b>                                            | <b>29 (24-35)</b>                                   |
| <b>Hurricanes (H) (7)</b>                                   | <b>11</b>                            | <b>11</b>                                                   | <b>12</b>                                             | <b>8-13</b>                                             | <b>13 (10-16)</b>                                   |
| <b>Major Hurricanes (MH) (3)</b>                            | <b>5</b>                             | <b>5</b>                                                    | <b>6</b>                                              | <b>4-7</b>                                              | <b>7 (5-9)</b>                                      |
| <b>Accumulated Cyclone<br/>Energy (ACE) (123)</b>           | <b>210</b>                           | <b>217</b>                                                  | <b>-</b>                                              | <b>150-245</b>                                          | <b>211<br/>(146-277)</b>                            |

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

| Forecast Parameter and 1991–2020<br>Average (in parentheses) | Issue Date<br>4 April<br>2024 | 2020 Obs. | 2017 Obs. |
|--------------------------------------------------------------|-------------------------------|-----------|-----------|
| Named Storms (NS) (14.4)                                     | 23                            | 30        | 17        |
| Named Storm Days (NSD) (69.4)                                | 115                           | 118       | 91.25     |
| Hurricanes (H) (7.2)                                         | 11                            | 13        | 10        |
| Hurricane Days (HD) (27.0)                                   | 45                            | 34.75     | 51.25     |
| Major Hurricanes (MH) (3.2)                                  | 5                             | 6         | 6         |
| Major Hurricane Days (MHD) (7.4)                             | 13                            | 8.75      | 19.25     |
| Accumulated Cyclone Energy (ACE) (123)                       | 210                           | 180       | 226       |

# Agencies predict 11 Hurricanes in the Atlantic in 2024 (as of 17 May 2023)





# Caribbean Landfall probabilities

## ▶ CSU:

- ▶ **66% 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/resources.html> .

# Drivers of hurricane season activity in 2024

**(Near-)record warm** sea surface temperatures in the Tropical North Atlantic, including the Main Development Region where 70% of major hurricanes form.

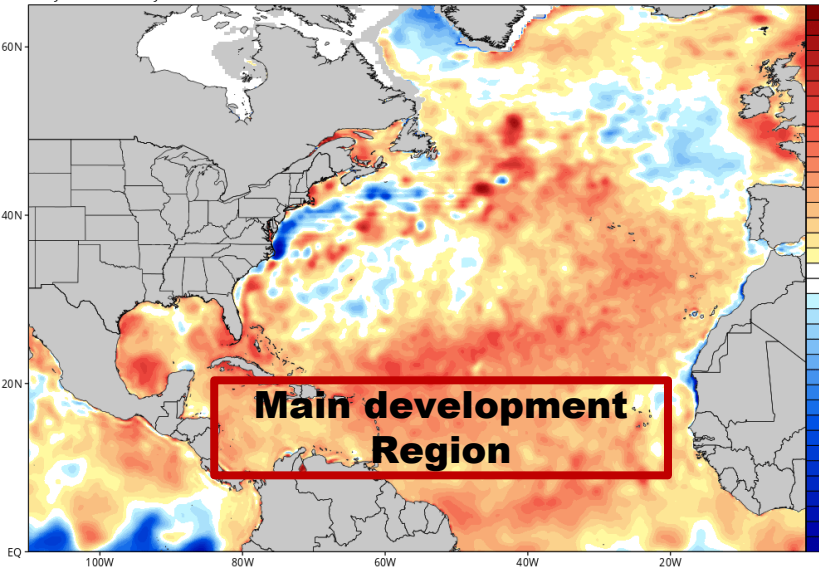
➔ **boosts hurricane season activity**

In the Pacific, **La Niña** will very likely develop in coming months.

➔ **boosts hurricane season activity, especially after August**

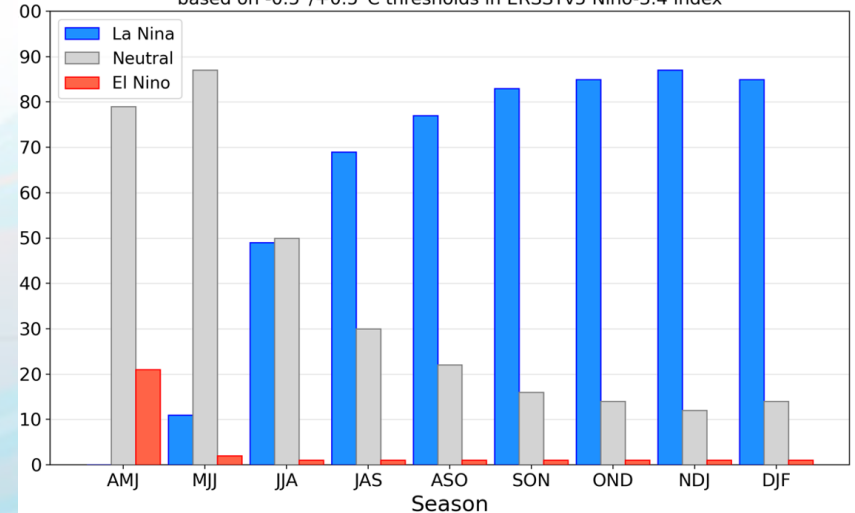
CDAS Sea Surface Temperature Anomaly (°C) (based on CFSR 1981-2010 Climatology)  
Analysis Time: 06z May 23 2024

TROPICALTIDBITS.COM



Official NOAA CPC ENSO Probabilities (issued May 2024)

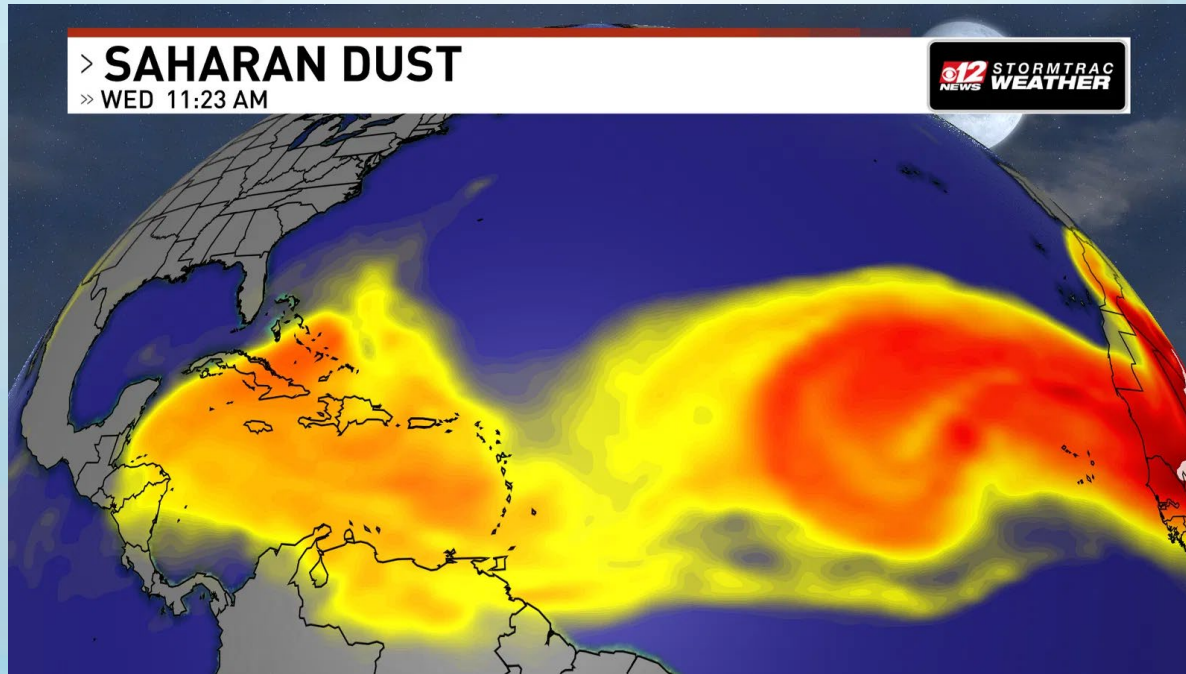
based on  $-0.5^{\circ}/+0.5^{\circ}\text{C}$  thresholds in ERSSTv5 Niño-3.4 index



# 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**



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

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

|                  | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| tropical cyclone |     |     |     |     |     |     |     |     |     |
|                  | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |

## Hyperactive 2024 Atlantic Hurricane Season

- historical activity in similar years (2010, 2013, 2020 & 2023): avg. of 22 tropical storms, 10 hurricanes, 4 major hurricanes
- tropical cyclone activity could start in May
- increased frequency & intensity of storms due to warm Atlantic
- likely increased peak and late season activity if La Niña develops.

## Scenario B: very frequent Saharan air intrusions

|                  | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| tropical cyclone |     |     |     |     |     |     |     |     |     |
|                  | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |

- muted/erratic tropical cyclone activity before mid-August.



# 2024 Atlantic Tropical Cyclone Names

**Alberto**

**Beryl**

**Chris**

**Debby**

**Ernesto**

**Francine**

**Gordon**

**Helene**

**Isaac**

**Joyce**

**Kirk**

**Leslie**

**Milton**

**Nadine**

**Oscar**

**Patty**

**Rafael**

**Sara**

**Tony**

**Valerie**

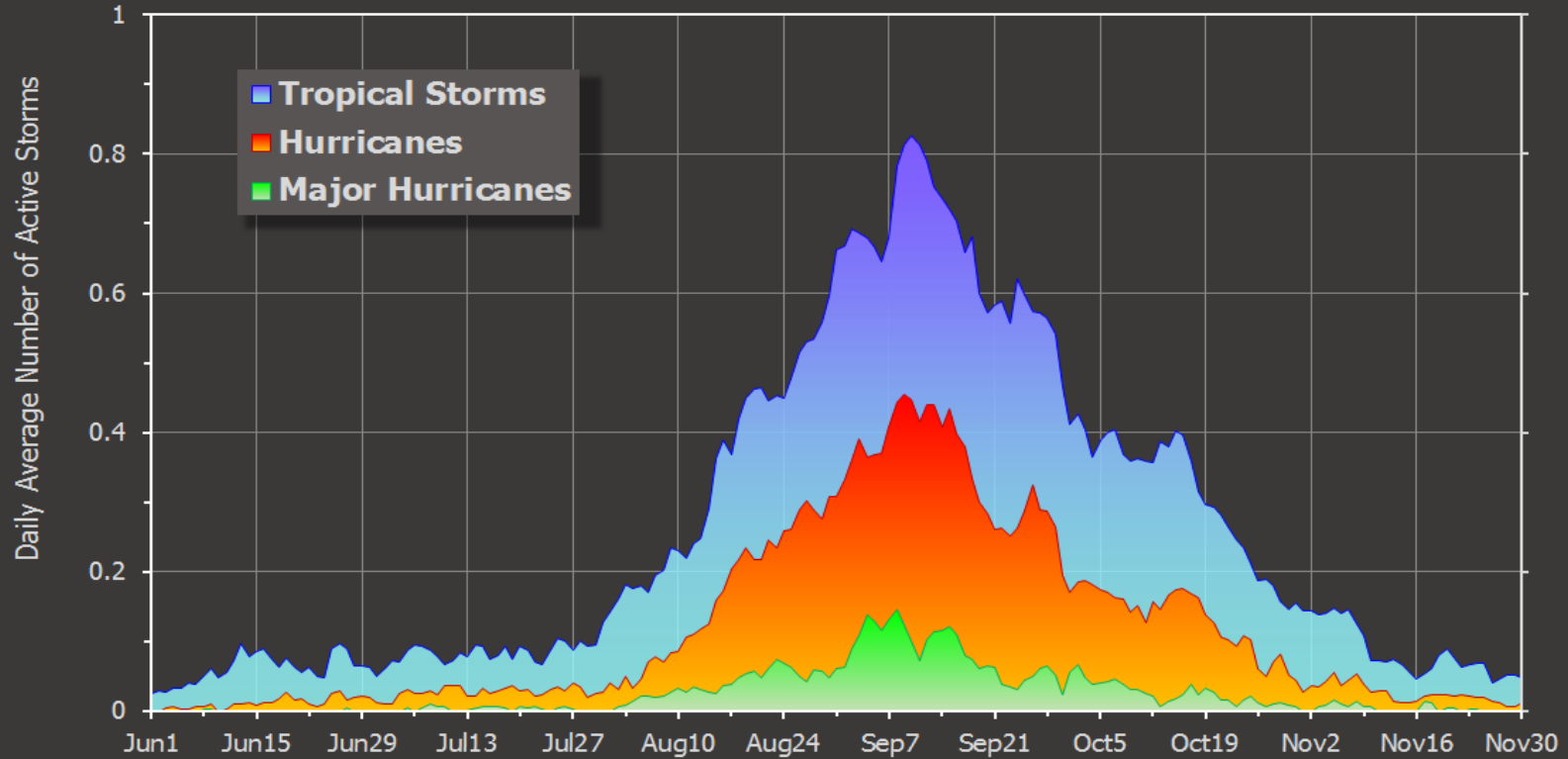
**William**

Names provided by the World Meteorological Organization

Be Prepared: Visit [hurricanes.gov](https://hurricanes.gov)



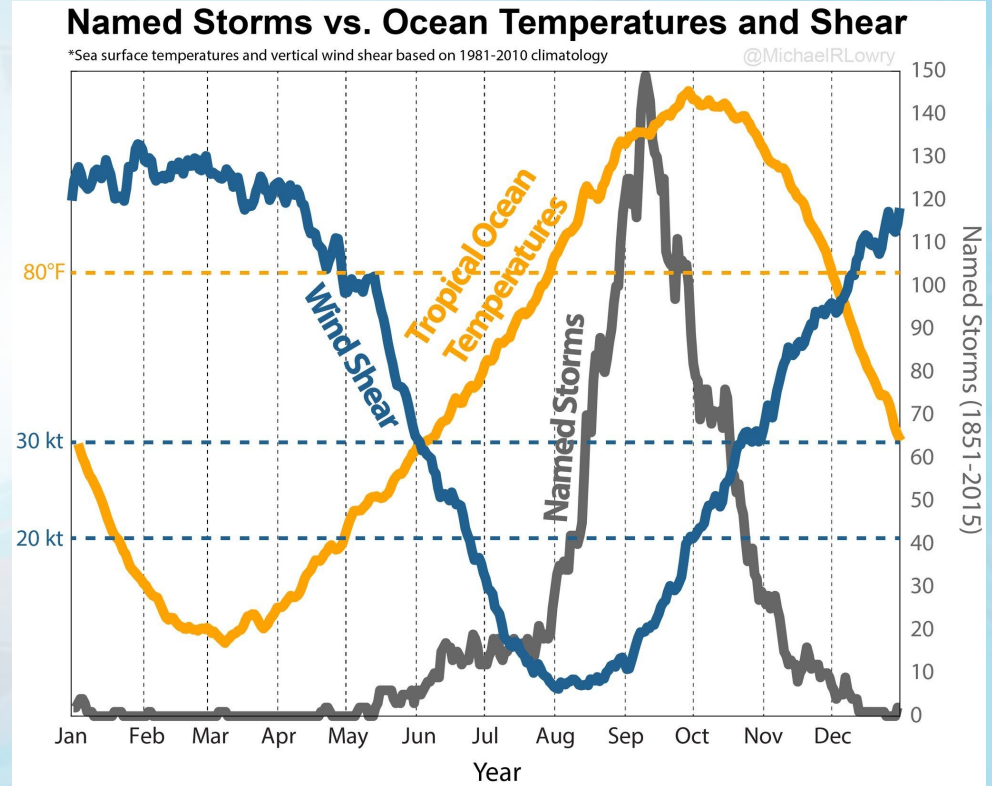
## Atlantic Tropical Cyclone Climatology (1851-2013)



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?
- ➔ 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 2023 forecasts?

| Period                                  | Observed   | Mid-May 2023 |        | Early August 2023 |        |
|-----------------------------------------|------------|--------------|--------|-------------------|--------|
|                                         |            | Forecast     | Range* | Forecast          | Range* |
| <b>Number of Named Storms</b>           |            |              |        |                   |        |
| <b>2023</b> (entire season)             | <b>20</b>  | <b>17</b>    | 12-22  | <b>21</b>         | 17-24  |
| <b>Jun.-Aug.</b> (1 <sup>st</sup> half) | <b>11</b>  | <b>8</b>     | 5-12   |                   |        |
| <b>Aug.-Oct.</b> (peak)                 | <b>15</b>  | <b>13</b>    | 9-17   |                   |        |
| <b>Sep.-Nov.</b> (2 <sup>nd</sup> half) | <b>8</b>   | <b>8</b>     | 5-11   |                   |        |
| <b>Aug.-Dec.</b>                        | <b>15</b>  |              |        | <b>16</b>         | 12-20  |
| <b>Accumulated Cyclone Energy (ACE)</b> |            |              |        |                   |        |
| <b>2023</b> (entire season)             | <b>146</b> | <b>120</b>   | 41-179 |                   |        |





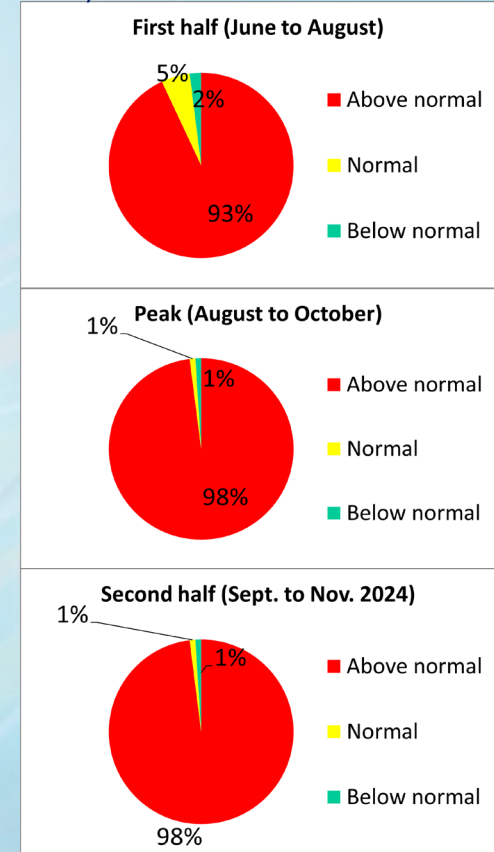
# 2024 Atlantic Hurricane Season Activity

## CIMH forecasts as of May 17<sup>th</sup>, 2024

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

| Period                                                                                     | 1991-2020                  | Forecast   | Range*     | Confidence level |        |
|--------------------------------------------------------------------------------------------|----------------------------|------------|------------|------------------|--------|
| <b>Entire season</b>                                                                       |                            |            |            |                  |        |
| <b>Named storms</b>                                                                        | 14                         | <b>29</b>  | 24-35      | High             |        |
| <b>Hurricanes</b>                                                                          | 7                          | <b>13</b>  | 10-16      | Medium           |        |
| <b>Major Hurricanes</b>                                                                    | 3.2                        | <b>7</b>   | 5-9        | Medium           |        |
| <b>ACE</b>                                                                                 | 123                        | <b>211</b> | 146-277    | Medium           |        |
| <b>1<sup>st</sup> half (JJA), peak (ASO) &amp; 2<sup>nd</sup> half (SON) of the season</b> |                            |            |            |                  |        |
| <b>Named storms</b>                                                                        | <b>1<sup>st</sup> half</b> | 5          | <b>11</b>  | 7-14             | Medium |
|                                                                                            | <b>Peak</b>                | 11         | <b>21</b>  | 17-25            | Medium |
|                                                                                            | <b>2<sup>nd</sup> half</b> | 7.8        | <b>16</b>  | 13-19            | High   |
| <b>ACE</b>                                                                                 | <b>1<sup>st</sup> half</b> | 29         | <b>52</b>  | 22-82            | Low    |
|                                                                                            | <b>Peak</b>                | 114        | <b>183</b> | 120-246          | Low    |
|                                                                                            | <b>2<sup>nd</sup> half</b> | 87         | <b>159</b> | 106-211          | Medium |

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



# 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](http://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 **no longer uses the Greek alphabet** as additional list of named storms in the Atlantic basin to avoid a few communication problems (see e.g.
- Instead, from last year (2021) onwards, the WMO uses 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.

## 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.