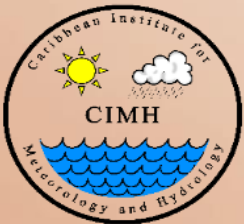


# Heat Outlook for June to November 2023

—  
**Excessive heat can be expected, especially in August and September**

## Participating countries and territories

Antigua & Barbuda, Aruba, Bahamas, Barbados, Belize, Cayman Islands, Cuba, Curaçao, Dominica, Dominican Republic, French Guiana, Grenada, Guadeloupe, Guyana, Haïti, Jamaica, Martinique, Puerto Rico, St. Barth's, St. Kitts & Nevis, St. Lucia, St. Maarten/St. Martin, St. Vincent & the Grenadines, Suriname, Trinidad & Tobago and the US Virgin Islands



[caricof@cimh.edu.bb](mailto:caricof@cimh.edu.bb)

**CARICOF**  
CARIBBEAN CLIMATE OUTLOOK FORUM

# Health: Greater frequency of mild heat symptoms due to excessive heat, particularly towards August & September

## Public health:

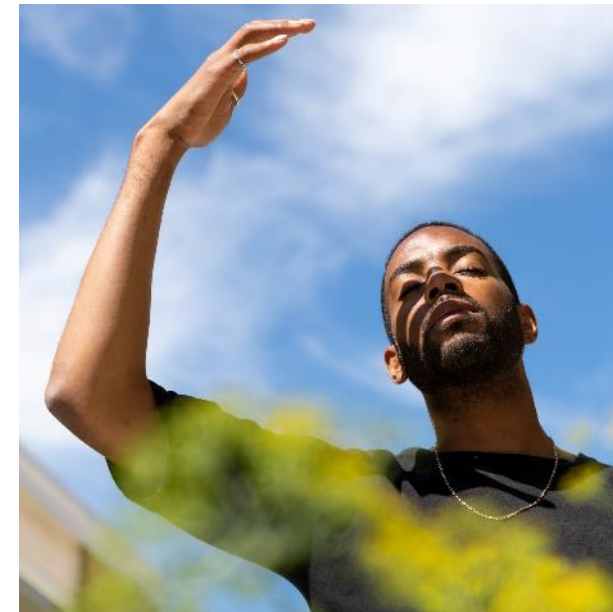
- *strong* increase in mild heat symptoms
- *notable* increase in heat illnesses, fainting episodes, hospitalisations, health services
- *likely* increase in biological risk (e.g. Aedes mosquito borne diseases, gastrointestinal disease)
- *exacerbation* of vulnerability in patients with chronic illness, children, pregnant women and the elderly

## Occupational health:

- *potential* increase in exhaustion during intense outdoor activity
- *significantly* reduced labour performance and productivity if unprotected

## Well-being:

- *significantly* increased sweating and water consumption
- snacking/binge eating leading to acute negative health impacts (hypertension, diabetes) and weight gain
- increased fatigue, irritability and aggression during prolonged heatwaves



# Agriculture:

Expect impacts from excessive heat from July to September

## Livestock:

- *increased* cooling and ventilation need to mitigate heat stress in small and large livestock
- stunted growth rate of broilers and egg production of layers
- *likely* reduced dairy production

## Crop agriculture:

- exacerbation of any evolving drought conditions leading to increased wilting
- *strongly* reduced productivity between 10 AM and 3 PM

## Fisheries:

- increased water temperatures potentially reducing catch of reef fish, die-off and migration of pelagic fish
- *significant* potential for coral reef bleaching

## Forestry:

- exacerbation of any evolving drought conditions
- increased wildfire potential if fuel stock is dry





# Tourism – Energy – Water:

Expect impacts from excessive heat, particularly in August & September

## Tourism:

- *Heat adaptation* – significantly increased demand for AC and refrigeration and associated costs in hotels
- *Diving operations* – significant potential coral reef bleaching, resulting in long-term reduction in demand

## Energy:

- *Production* – reduced efficiency of power generation; potential increase in interruptions as a result of spikes in cooling demand
- *Demand and consumption* – significantly increased cooling need in households, hotels, restaurants

## Water:

- *Quantity and quality* – water reservoir levels potentially decreasing due to increased evapotranspiration; potential increase in algal blooms
- *Consumption* – likely increase in households, hotels and power utilities



# DRM – Child Care & Education

Expect impacts from excessive heat, particularly in August & September



## DRM:

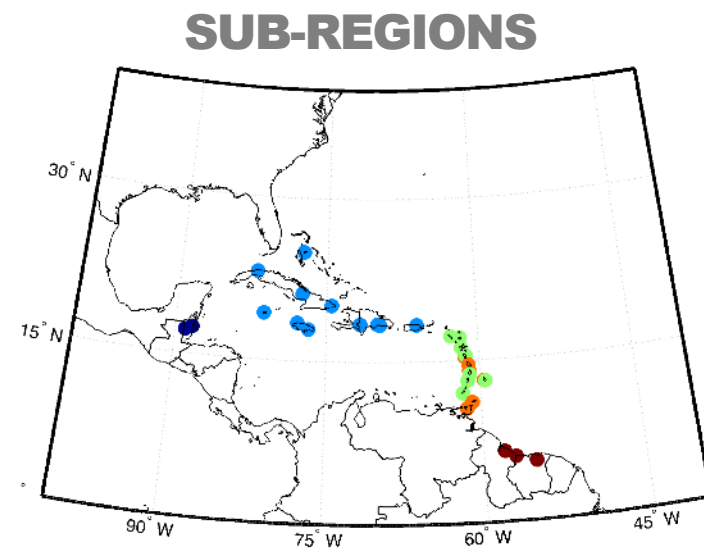
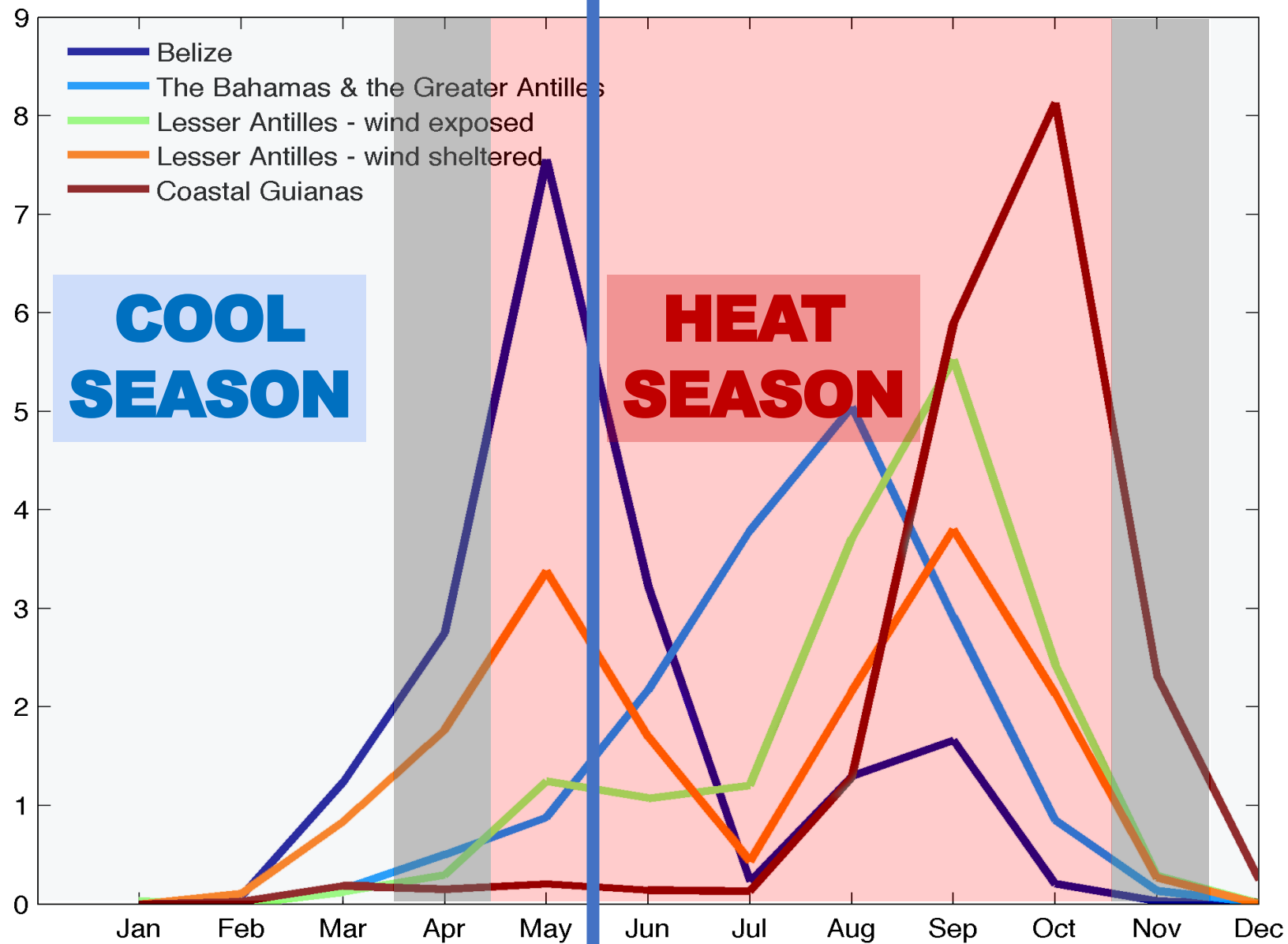
- *Risk:* potentially increased mortality and increased need for cooling strategies immediately post disaster (e.g. intense heat after passage of tropical cyclone); increased wildfire potential (if fuel stock is dry)
- *Operations:* likely reduced productivity of warehouse staff if unprotected



## Child care and education:

- *Learning:* significantly reduced productivity and reduced learning ability of students at the start of the 2023-2024 school year
- *Child Protection:* potential increase in aggression during prolonged heatwaves

Number of days per month  
spent in heatwaves

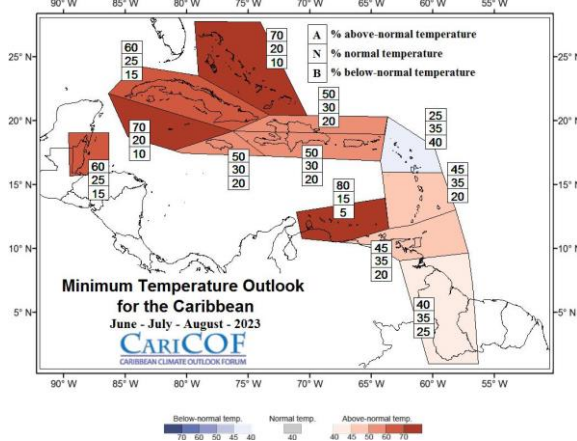




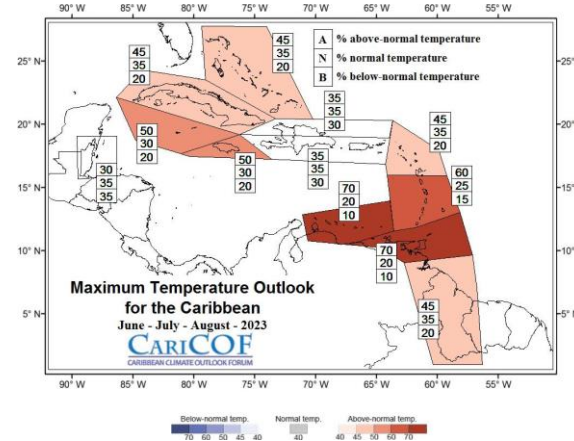
# Overall, how hot will the next three to six months be?

Jun-Jul-Aug 2023

## Night-time



## Daytime



Milder

Usual

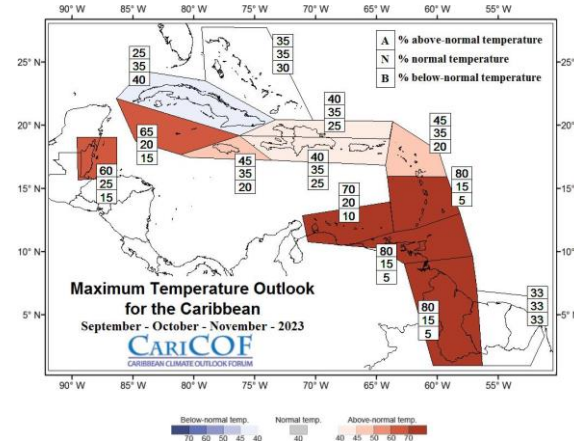
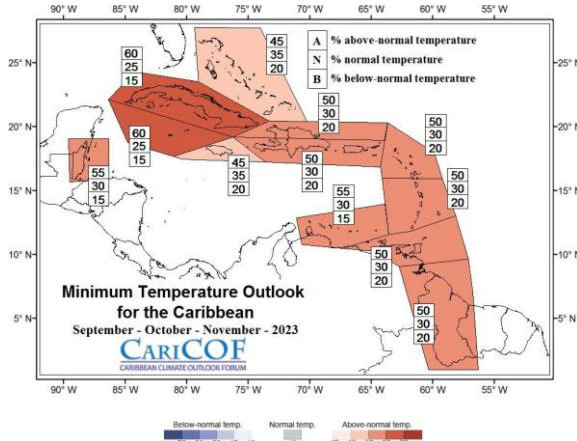
Hotter

Milder

Usual

Hotter

Sep-Oct-Nov 2023



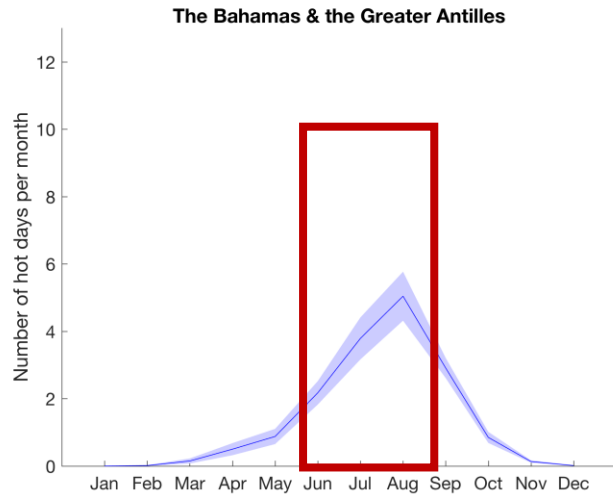
## FORECAST:

1. Daytime temperatures at least as warm as usual across most of the region.
2. Higher night-time temperatures for most through November.

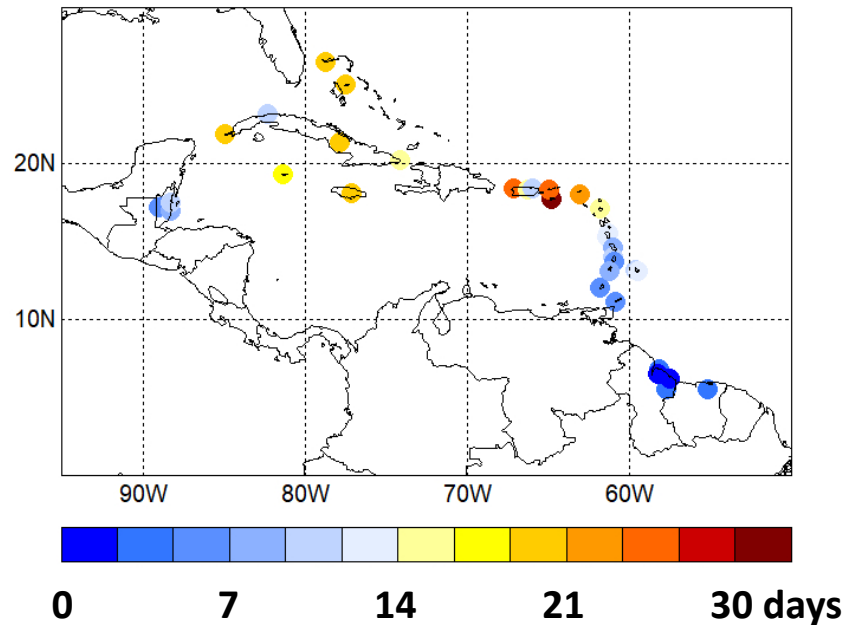
## IMPLICATIONS:

- Frequent and, possibly, intense episodes of **heat stress** in the vulnerable population & small livestock peaking
  - July to September in the Bahamas and Greater Antilles;
  - August to October in the Lesser Antilles;
  - September to November in the Guianas.
- Enhanced cooling need until **October**.

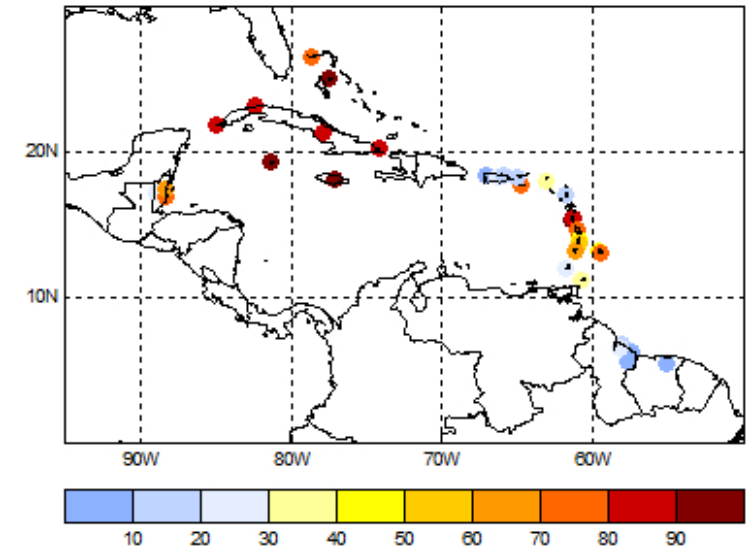
# How many heatwave days to expect for June to August 2023?



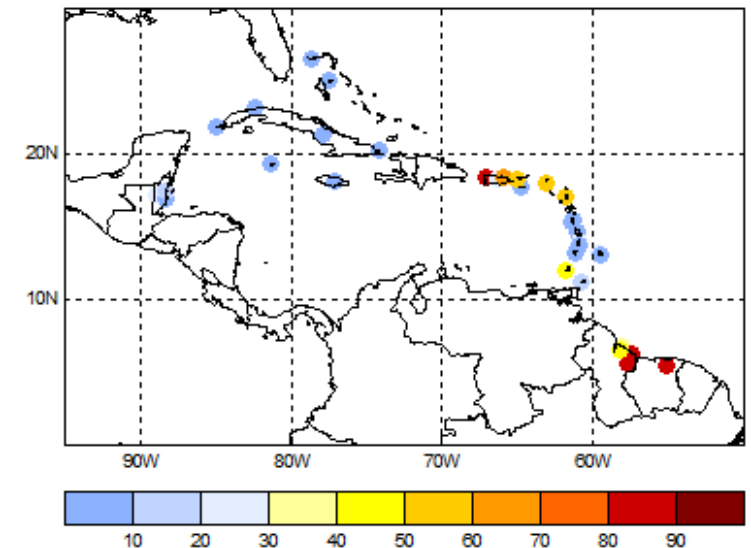
Heatwave days between Jun. & Aug. (1985-2016 avg.)



Prob. at least 15 heatwave days in JJA 2023



Prob. no more than 5 heatwave days in JJA 2023



**USUALLY:** 25-30 heatwave days in the USVI; 15-20 in The Bahamas, across the Greater Antilles; 5-10 in Belize, wind-sheltered areas of the Lesser Antilles; no more than 5 elsewhere.

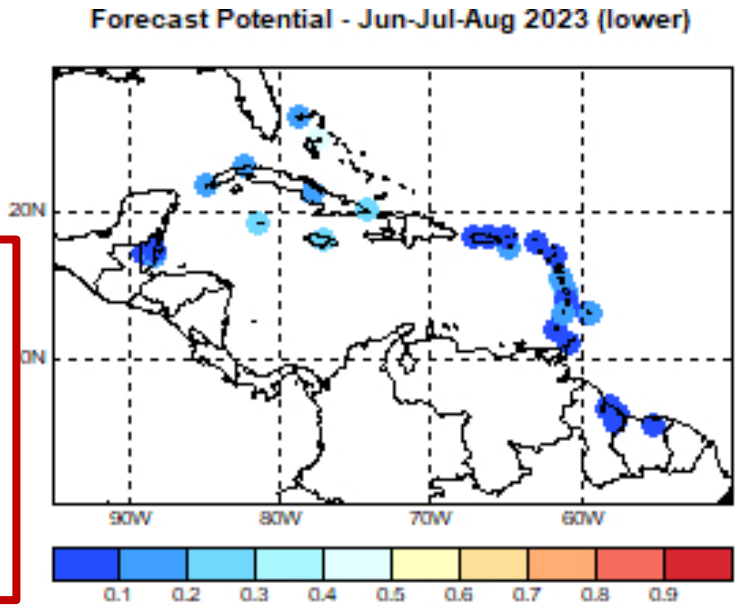
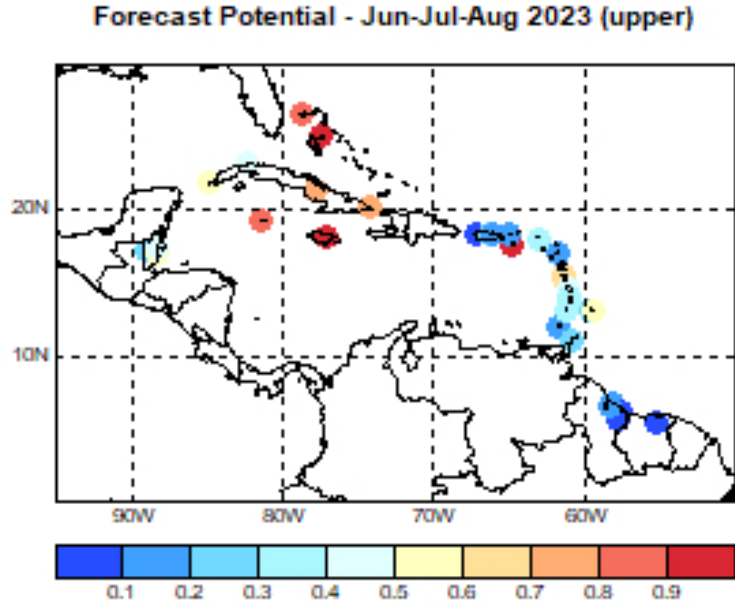
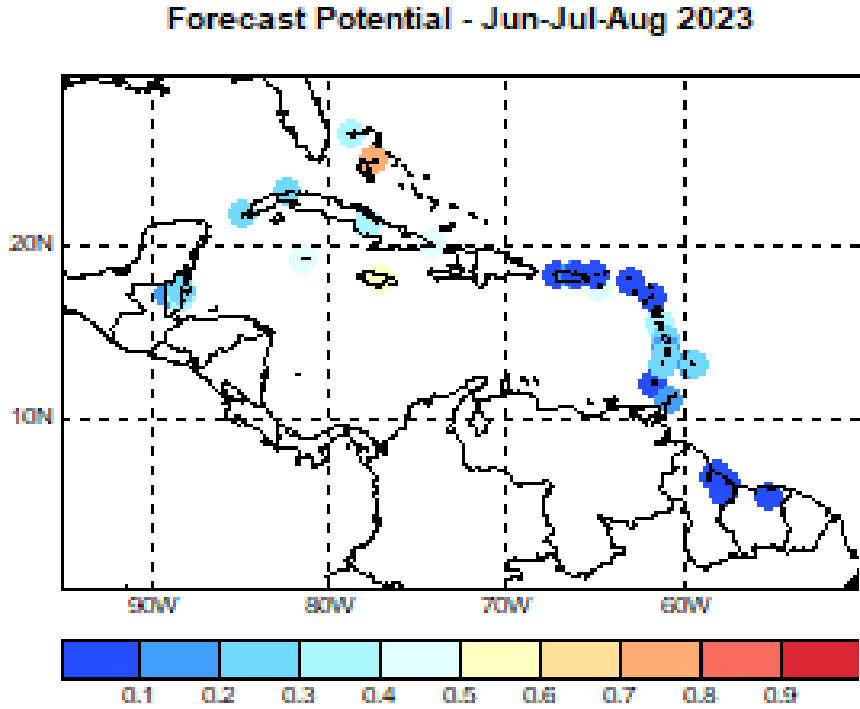
**FORECAST:** The usual number of heatwave days or more, particularly in the Lesser Antilles; **likely at least 15 heatwave days in Belize, The Bahamas, many locations across the Antilles.** Very few in the Guianas



# Heat impact potential during Jun-Jul-Aug 2023?

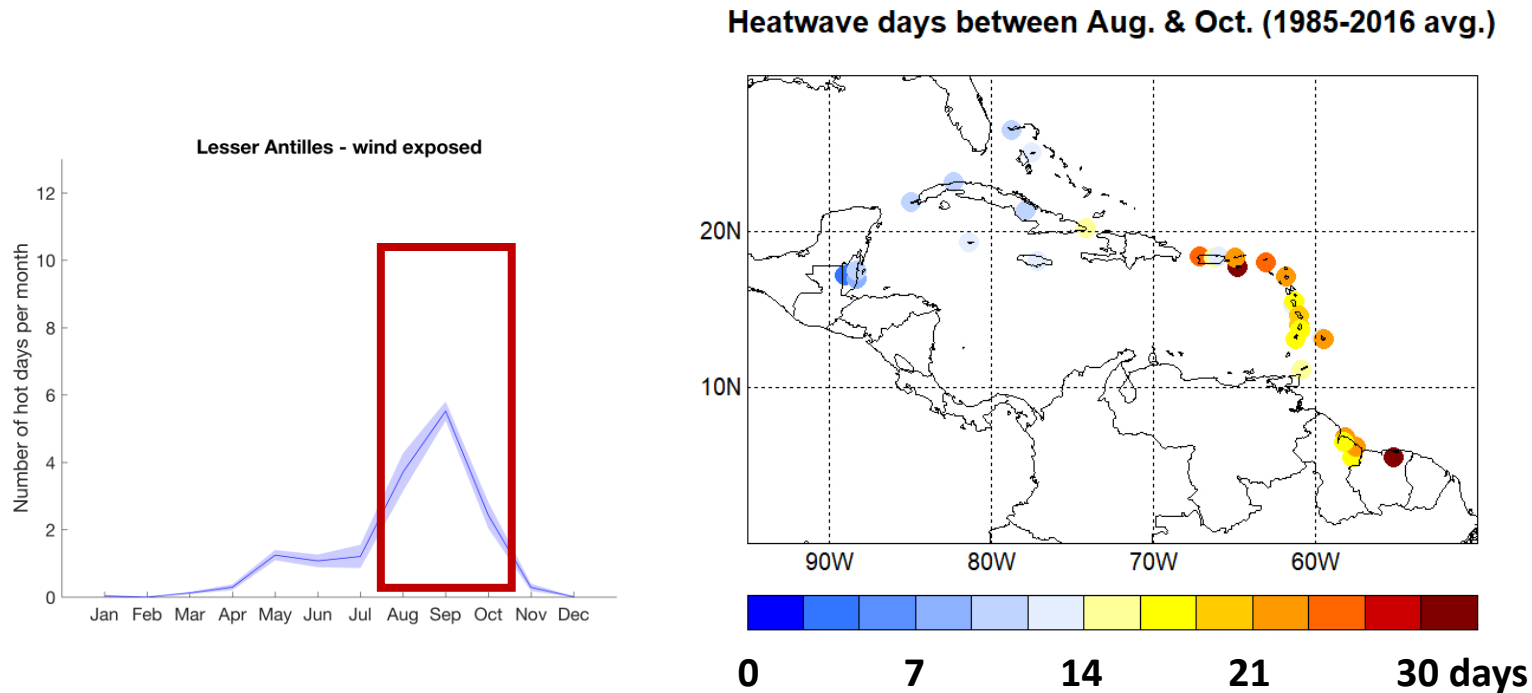
(i.e., percentage of time spent in heatwaves during JJA 2023)

Heat impact potential	Colour codes	Percentage of time spent in heatwaves
EXTREMELY HIGH	<div><div></div><div></div><div></div></div>	>80%
HIGH	<div><div></div><div></div><div></div></div>	50-80%
MODERATE	<div><div></div><div></div><div></div></div>	20-50%
SLIGHT	<div><div></div><div></div></div>	10-20%
MARGINAL	<div><div></div></div>	0-10%

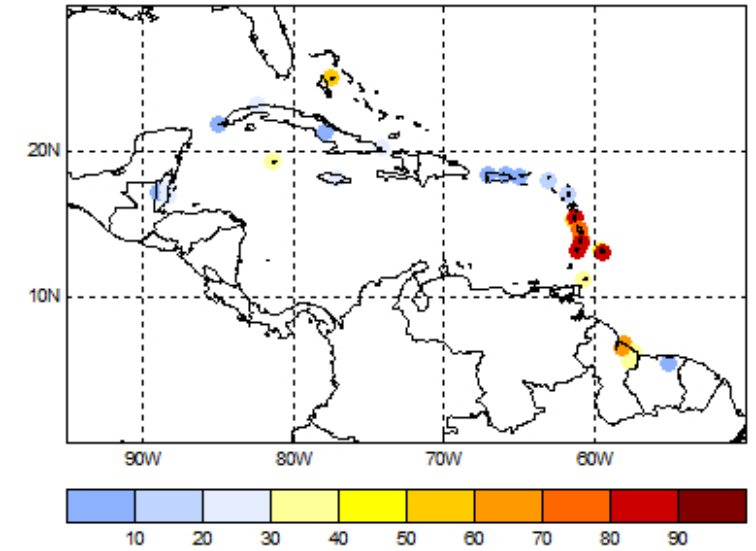


**FORECAST:** Moderate to high potential in The Bahamas and most of the Greater Antilles (except Puerto Rico); moderate potential in Barbados, Belize, and most of the Windward Islands (*left centre map*); **possibly extremely high potential in The Bahamas, Cayman Is., Jamaica and St. Croix** (*top right map*).

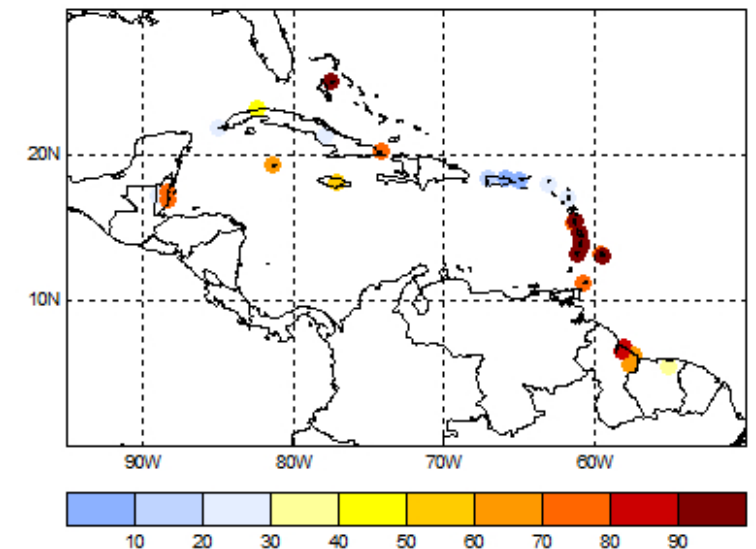
# How many heatwave days to expect for **August to October 2023**, i.e. the peak of the heat season in the **Lesser Antilles**?



Prob. at least 30 heatwave days in ASO 2023



Prob. at least 15 heatwave days in ASO 2023



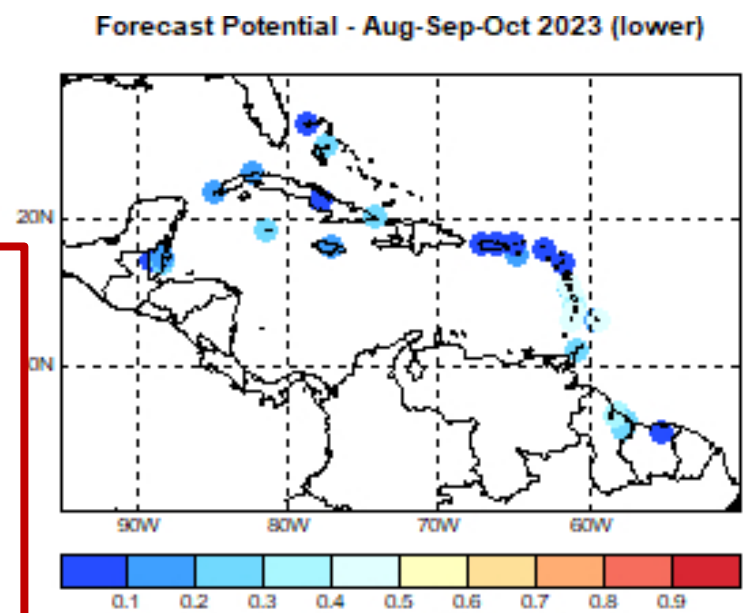
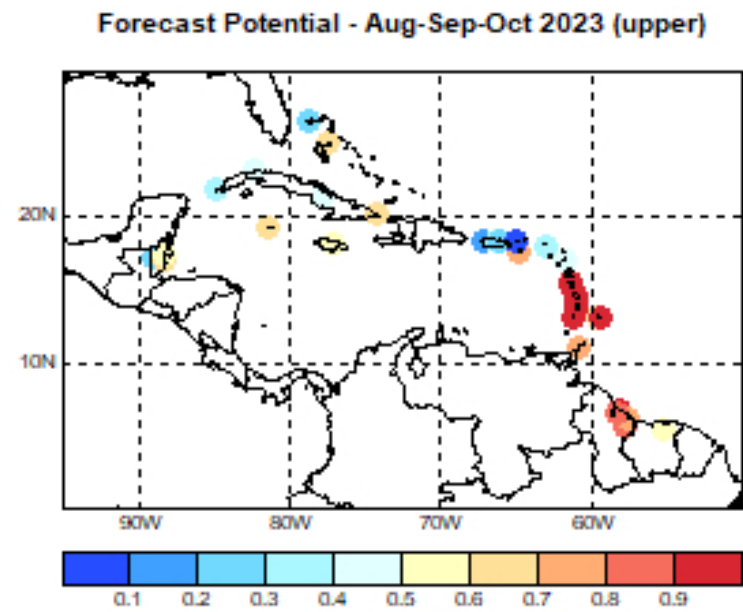
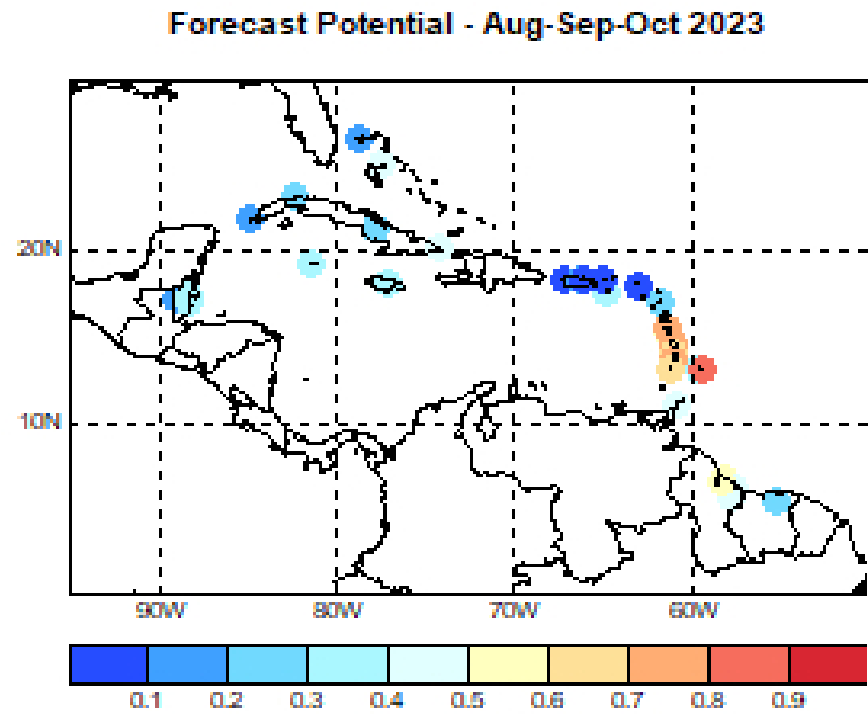
**USUALLY:** 15-30 heatwave days in Puerto Rico, the Guianas and the Lesser Antilles; 5-15 heatwave days elsewhere.

**FORECAST:** At least 15 heatwave days likely across the region, with the possible exception of Puerto Rico and the northern Leeward Islands; **likely at least 30 heatwave days in Barbados and the Windward Islands.**

# Heat impact potential during Aug-Sep-Oct 2023?

(i.e., percentage of time spent in heatwaves during ASO 2023)

Heat impact potential	Colour codes	Percentage of time spent in heatwaves
EXTREMELY HIGH	<div><div></div><div></div></div>	>80%
HIGH	<div><div></div><div></div></div>	50-80%
MODERATE	<div><div></div><div></div></div>	20-50%
SLIGHT	<div><div></div></div>	10-20%
MARGINAL	<div><div></div></div>	0-10%

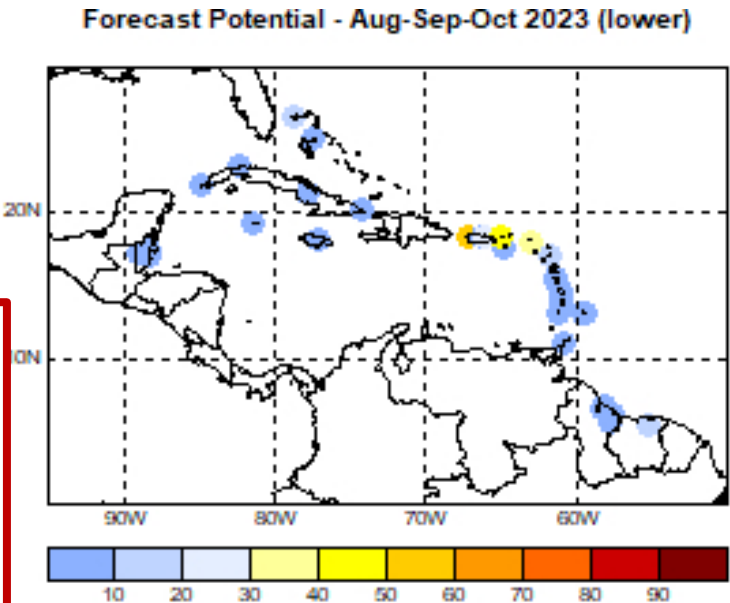
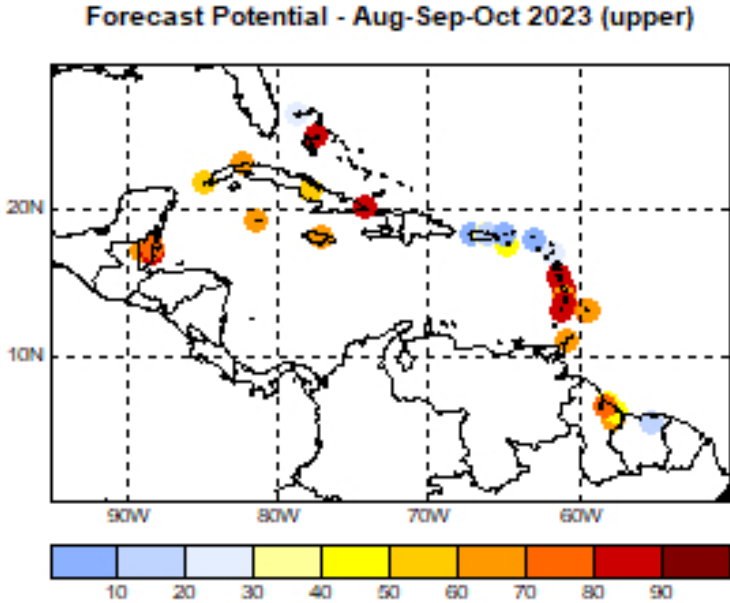
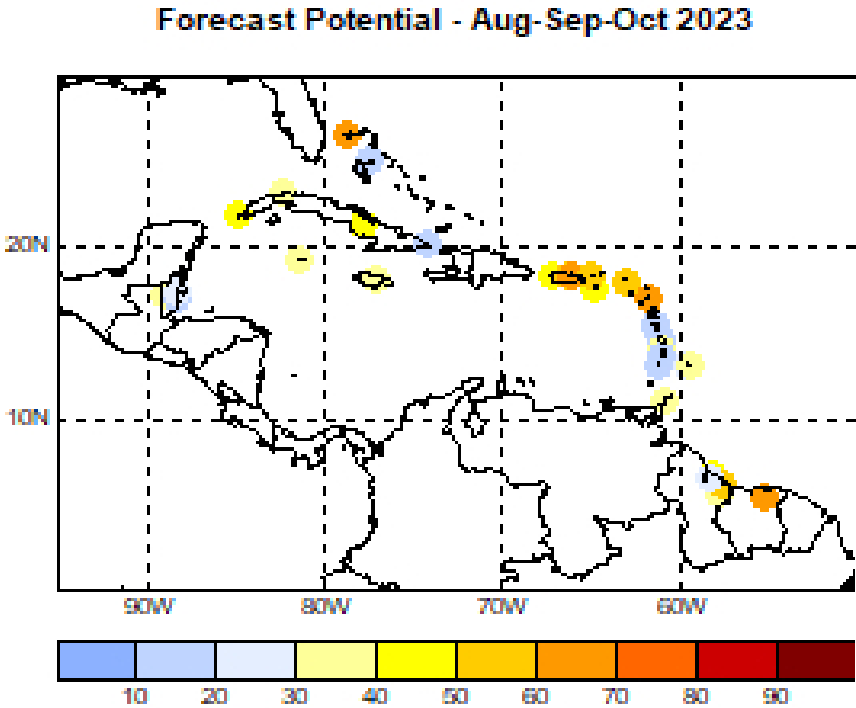


**FORECAST:** High potential in Barbados, parts of Guyana, and the Windward Islands; moderate potential in Antigua, The Bahamas, Belize, the Greater Antilles (except Puerto Rico), parts of Suriname and in St. Croix (*left centre map*); **possibly extr. high potential in Barbados, Guyana and the Windward Islands** (*top right map*).

# Heat impact potential during Aug-Sep-Oct 2023?

(i.e., percentage of time spent in heatwaves during ASO 2023)















Relative risk	Colour codes	Percentage of time spent in heatwaves
EXTREMELY HIGH	<div><div></div><div></div><div></div></div>	>80%
HIGH	<div><div></div><div></div><div></div></div>	50-80%
MODERATE	<div><div></div><div></div><div></div></div>	20-50%
SLIGHT	<div><div></div><div></div><div></div></div>	10-20%
MARGINAL	<div><div></div><div></div><div></div></div>	0-10%



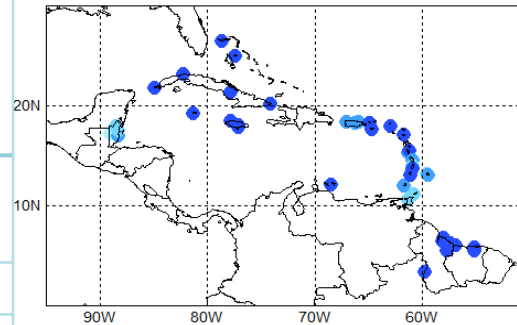
**FORECAST:** Moderate to high potential in Northwestern Bahamas, Central & Western Cuba, the Guianas, Jamaica, Puerto Rico and the Leeward Islands; slight to moderate potential elsewhere (*left centre map*); **possibly high potential in The Bahamas, Belize, across the Greater Antilles, in Guyana and in the Windward Islands** (*upper map*); slight to moderate potential in the Windward Islands (*lower map*).



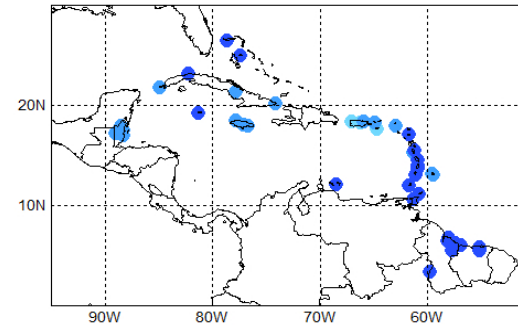
# Historical monthly heat impact potential due to heatwaves during the heat season

Relative risk	Colour codes	Percentage of time spent in heatwaves
EXTREMELY HIGH	 	>80%
HIGH	  	50-80%
MODERATE	  	20-50%
SLIGHT	  	10-20%
MARGINAL	  	0-10%

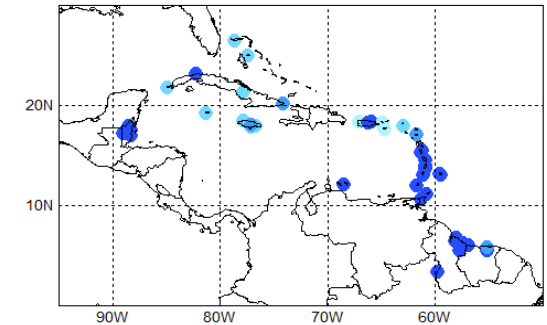
May



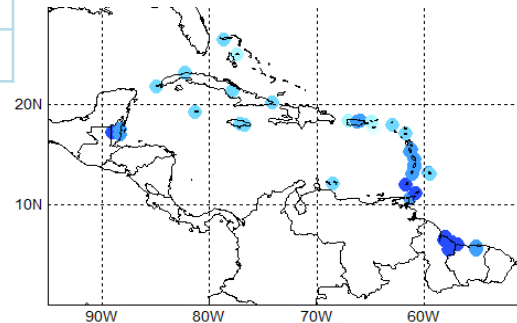
June



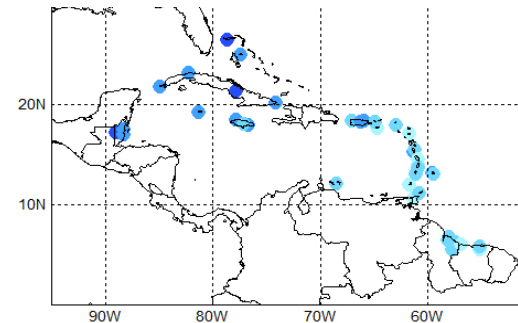
July



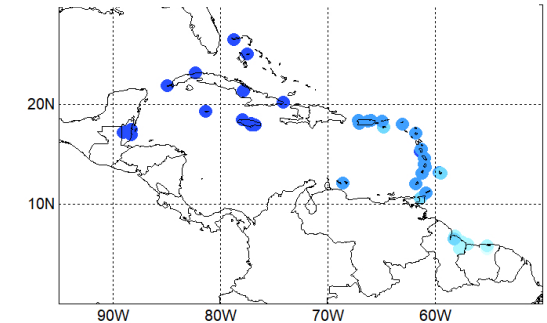
Aug



Sept



Oct



- May: Moderate potential in Belize; marginal to slight elsewhere.
- Jun.: Slight potential in Barbados and areas from St. Martin westwards; marginal elsewhere.
- Jul.: Slight to moderate potential in the Greater Antilles & Leeward Is.; marginal to slight elsewhere.
- Aug.: Moderate potential in Barbados & islands westwards of Guadeloupe; marginal elsewhere.
- Sep.: Moderate potential in the ABC Is., Lesser Antilles, Guianas; marginal to slight elsewhere.
- Oct.: Moderate potential in Barbados, the Guianas & St. Croix; marginal westwards of Hispaniola; slight elsewhere.



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Coordination: Caribbean Institute for Meteorology & Hydrology  
Contact: [caricof@cimh.edu.bb](mailto:caricof@cimh.edu.bb)  
Authors: Dr. Cédric J. Van Meerbeeck – *Climatologist* ([cmeerbeeck@cimh.edu.bb](mailto:cmeerbeeck@cimh.edu.bb))  
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of the American People through the USAID funded BRCCC Programme in 2017.

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