

Caribbean Health Climatic Bulletin

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This Bulletin is a joint effort between the Caribbean Public Health Agency (CARPHA), the Pan American/World Health Organization (PAHO/WHO) and the Caribbean Institute for Meteorology and Hydrology (CIMH). It aims to help health professionals identify and prepare health interventions for favorable or inclement climate conditions in the Caribbean. The period covered is June - August 2020. It is that health stakeholders should use the combination of monitoring (February - April 2020) and forecast (June - August 2020) climate information presented in this Bulletin in tandem with weather forecasts (1-7 days). This suite of information is intended to guide strategic and operational decisions related to health interventions and the management of health care systems.

What are the Key Climate Messages for June - August 2020?

- The **2020 Hurricane Season** officially starts on June 1st, but storms and hurricanes have occurred before the official start date (including 2 named Tropical Storms this year). There is a strong consensus that this year will bring an active season with around 16 named storms, of which there would be around 8 hurricanes. Severe weather systems, which can come with a range of hazards, including high winds, landslides, flash floods, among others, are expected to affect Caribbean territories.
- We expect wetter than usual conditions will bring progressive drought relief and keep daytime temperatures close to normal, though high humidity by the end of August will elevate daytime heat stress. However, nighttime heat stress, flood potential and tropical cyclone activity will be particularly elevated. That said, there is a **chance** that more heat stress and slower drought relief will take place than anticipated, wherever rainfall does not end up being very high.
- Climatically, June to August forms the **first half of the Caribbean Wet Season** with a fair number of wet days and longer wet spells. The intensity and frequency of heavy showers tend to be relatively high and clustered in wet spells and very wet spells throughout the period, particularly towards August.
- In addition, the forecasts suggest more **rainfall** to accumulate over the three month period than usual, with an increase in the number of wet spells and very wet spells in most areas (*medium confidence*). Consequently, there is growing potential for flooding throughout Belize and the Caribbean Islands (*high confidence*). In the coastal Guianas, flooding potential should start decreasing in August, with the return of their primary dry season (*high confidence*).
- Up to one or two **extreme wet spells** are expected during these three months (*high confidence*). Extreme wet spells may coincide with thunderstorms and high winds and may result in flash floods, land slippage, power outages and possible contamination of food and water supplies.
- During these months, a decreasing number of short **dry spells** can be expected, which can impact food production in Belize and the Caribbean islands throughout the period. By contrast, dry spells are expected to become more frequent in the Guianas from early August onwards.
- Ongoing severe **drought** is expected to progressively ease throughout the Caribbean, with significant short term drought relief expected by the end of July and long term drought relief mostly after August.
- By the end of August, impactful **short term drought** is likely to subside throughout the region, except in north-western and west-central Belize, where it is likely to remain, and in the ABC islands, eastern Belize, and Trinidad & Tobago, where it is less likely to remain. Short term drought may impact food production, potable water availability, as well as, water availability from small streams and small ponds. With the forecasted short term drought relief for most, the potential for bushfires should largely subside, reducing the occasional increases in smoke and soot concentrations in the air.
- **Long term drought**, which can affect water availability across a multitude of socio-economic sectors in a country, may possibly persist through the end of November in west-central Belize, northern French Guiana, Martinique, Saint Lucia, St. Vincent, and Trinidad.
- **Night-time and day-time temperatures** in the Caribbean are set to remain high throughout this portion of the Caribbean's annual heat season which starts in May and ends in October. The exception is the Guianas which tend to be slightly cooler during their primary wet season lasting through the end of July.
- At the same time, humidity and the associated **heat stress** will steadily increase through August and will peak during **heatwaves**. Note that the forecasts suggest warmer than usual temperatures during both day and night, except where rainfall totals will be significantly higher than usual. Consequently, there may be an increase in the frequency of heatwaves when compared to most years (*high confidence*).
- Episodes of **Saharan dust** incursions into the Caribbean tend to be most frequent during this period, particularly across the Lesser Antilles (access more detailed forecast information on dust and air quality in the Caribbean here: <http://dafc.cimh.edu.bb/>). In addition, with the ongoing drought, local dust levels could initially be on the high end.
- The **UV index** on sunny days will be extremely high (factor 12) around noontime (on a scale from 1 to 12. For more information see: <https://www.epa.gov/sunsafety/uv-index-scale-1>). UV exposure is set to be dangerously elevated if no protective measures are taken.

Disclaimer

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What are the Health Implications for June - August 2020?

Respiratory Illness



- Frequent episodes of Saharan dust incursions into the Caribbean in the coming season may increase the risk of exacerbations of **allergic rhinitis** and **asthma** in susceptible persons. The short term drought and associated increase in dust, as well as, potential soot and smoke from bushfires may contribute to higher concentrations of airborne particulate matter. This could result in an increase in acute respiratory illnesses, as well as ocular allergies.
- The increased humidity in Belize and the Caribbean Islands towards the end of August, as well as, towards the end of July in the coastal Guianas, may promote mold growth in damp and poorly ventilated buildings, leading to increased respiratory symptoms.



Gastrointestinal Illness



- Drought conditions may increase concentrations of water pollutants at least until the end of July for small reservoirs and tanks, or at least until September for very large reservoirs. Additionally, a reduction in water pressure in distribution systems may result in cross-contamination and use of alternative, unsafe sources, in turn potentially causing higher incidences of gastrointestinal illness.



- Where episodes of flooding may occur, cases of **gastroenteritis** may increase, where persons consume foods contaminated by these waters. Wading in flood waters could also result in an increase in skin infections due to contact with contaminated, stagnant and/or flood waters, especially in the coastal Guianas. This is increasingly the case across Belize and the Caribbean islands towards the end of August, although the likelihood decreases in the coastal Guianas after July.

Non-communicable Diseases



- **Morbidity from excessive heat** due to high temperatures and increasing humidity, especially during heat waves, is likely to increase across the region towards August. Throughout the three-month period, there will be an increased risk of heat stress which may present as a worsening in chronic conditions such as cardiovascular, respiratory, cerebrovascular disease and diabetes related conditions. Symptoms can include lethargy, general weakness, dizziness, fainting and, in extreme cases, kidney failure. More information may be found at: <https://www.ghin.org/heat-health-explained>



- If unprotected, dangerous UV radiation may lead to excessive UV exposure, which can cause **skin damage** across the population.

COVID-19 and Climate Impacts



- The ongoing drought conditions may impact on the **prevention strategies** to combat the COVID-19 pandemic, especially with regards to safe water availability for hygiene purposes. Special attention should be paid to communities with interrupted or limited access to safe water. More information may be found at <https://iris.paho.org/handle/10665.2/52185>



- When disasters have seasonal patterns, like hurricanes, floods and drought, **psychosocial** impacts such as anxiety among survivors may increase as alerts on isolated events arise. Health care professionals are therefore advised to be sensitive to these issues, as they interact with patients. Any disaster occurring will compound psychosocial impacts related to the COVID-19 pandemic.
- Extreme weather events or disasters may cause increased burden on already overburdened **healthcare services**.

Vector-Borne Illness



- Where there is ongoing drought and with recurrent dry spells during this period, there may be increased use of containers for storage, as well as water accumulating in any unattended, open containers. This may potentially create more breeding sites for mosquitoes, especially those associated with diseases, such as **Dengue**, **Chikungunya** and **Zika**. Proper management of water storage containers e.g., covering with protective mesh helps to reduce this risk. Access useful CARPHA materials on mosquito control measures here: <https://carpha.org/What-We-Do/Public-Health/Dengue>. Access useful PAHO materials on mosquito control measures here: https://www.paho.org/hq/index.php?option=com_content&view=article&id=12355:cdemosquito-awareness-week&Itemid=42087&lang=en
- Episodes of flooding may occur in any area of the Caribbean during this period. In such cases, there is increased risk of **Leptospirosis** due to displaced rodents that could contaminate flood waters, household items and food containers.
- The presence of stagnant water in the aftermath of a flood may promote the **breeding of mosquitoes**. However, note that in the case of flash floods, flood waters may sweep away mosquito eggs, larvae and pupae, potentially reducing mosquito populations in the short term.



Well-Being and Mental Health



- Severe weather systems, which can come with a range of hazards, including high winds, landslides, flash floods, among others, are expected to affect Caribbean territories. With the possibility of tropical cyclones, health practitioners and administrators should maintain a state of **readiness**.
- In drought-affected areas, **food insecurity** is a concern due to the potential for crop damage and loss or inability to have productive cropping resulting from ongoing drought, particularly early on during this period.
- During extreme weather events or disasters, **vulnerable populations** may have an increased need for medical care as they face a greater risk of poor health and even death. Health care providers and other stakeholders should clearly define various vulnerable populations and develop tailored strategies for assisting them.
- Increased heat stress associated with heatwaves, can increase **mood-affective** and **stress-related disorders**, as well as, other mental and behavioural disorders.



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For More Health Information:

CARPHA
<http://carpha.org>

PAHO
<http://www.paho.org>

For More Climate Information:

Caribbean Regional Climate Centre (RCC)
<http://rcc.cimh.edu.bb>

For a Glossary of Technical Climate Terms:

<https://rcc.cimh.edu.bb/glossary-of-terms/>

More on Climate

Looking Back: February - April 2020

Rainfall

- Due to **rainfall deficits** from February to April, short term drought has developed across central and southeastern parts of the Bahamas, in northern Belize, the Cayman Islands, Cuba, northern and western Guyana, Hispaniola, Martinique, southern Saint Lucia, southeastern Suriname and western Trinidad.
- Rainfall deficits during the 2019-2020 Dry Season, as well as, during the preceding 2019 Wet Season in many cases, resulted in long term drought in Aruba, northern and southeastern parts of the Bahamas, Barbados, Belize, the Cayman Islands, northern Cuba the Dominican Republic, northwestern French Guiana, Martinique, Saint Lucia, St. Vincent, Trinidad and St. Croix.

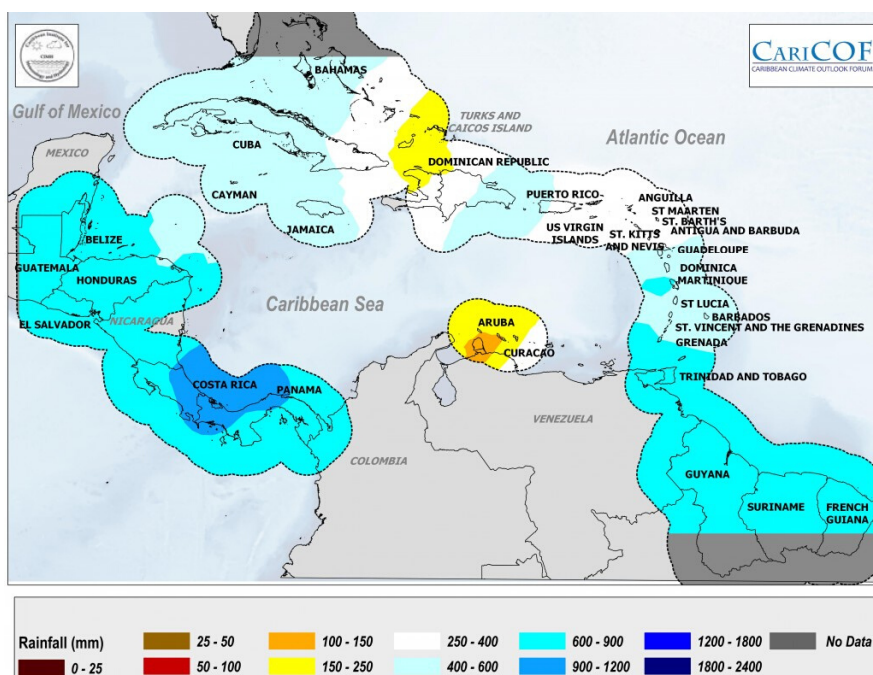
Temperature

- Averaged over February, March and April, **temperatures** were warmer than usual across virtually the entire Caribbean. Even so, comfortably cool conditions prevailed in February and March. By contrast, in April, temperatures and the accompanying heat sensation rose at a faster rate than usual. Record high temperatures in April were recorded in Belize, Saint Lucia, St. Kitts and Sint Maarten. Finally, for the second consecutive year, Cuba has recorded an all-time high temperature close to 40°C during the month of April.

What do we Usually Expect for June to August?

Rainfall

- This period typically marks the first half of the wet season in Belize and the Lesser Antilles, the centre of the wet season in The Bahamas and the Greater Antilles, the transition from the primary wet season to the dry season during August in the Guianas, and part of the long dry season in the ABC Islands. This is illustrated in the Figure below (Historical Average Rainfall Totals). Click on the image to see a larger map.



Temperature

- June to August forms part of the Caribbean heat season (which runs from May to October), with the annual peak in 'feels-like' temperatures usually starting in August. The likelihood and frequency of heatwaves throughout the region is relatively low in June and July, but high in August.

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