

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 favourable or inclement climate conditions in the Caribbean. The period covered is March-May 2023. It is recommended that health stakeholders should use the combination of monitoring (November 2022-January 2023) and forecast (March-May 2023) 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.

Key Climate Messages for March-May 2023





- What can we usually expect during this period?
 - Climatically, March to May forms the **late Dry Season** in Belize and the Caribbean Islands.
 - This season is characterised by relatively few wet days and a small number of **wet spells**, but many dry days and quite a few **dry spells**.
 - The resulting drier surface and foliage increase **wildfire potential** and the concentration of **airborne particulates**. **Local dust** levels should also be increasing during prolonged dry spells and towards the end of the dry season.
 - In the Guianas, the Greater Antilles and, in many years, the Leeward Islands, the **wet season** tends to start in May, with a return of heavy rainfall.
 - Coincidentally, largely fueled by drier soils, the **Caribbean Heat Season** – characterised by the recurrence of **heatwaves** – commences in April (in Belize, Cuba, Trinidad) or May (elsewhere except for the Guianas).
 - In addition, though the **2023 Hurricane Season** officially starts on 1 June, tropical cyclones have occurred and are increasingly common before that date.
 - The frequency of **Saharan dust** incursions into the Caribbean tends to increase during this period to peak starting in May. It should be noted that, in some years, significant Saharan dust episodes also occur in March and April. (Access more detailed forecast information on dust and air quality in the Caribbean may be found here: <http://dafc.cimh.edu.bb/>).
 - **UV exposure** is set to be dangerously elevated. On a scale from 1 to 12, the UV index on sunny days will be 8-10 (*very high*) to 11-12 (*extremely high*).
- What is different this year?
 - A moderate **La Niña** event in the Pacific Ocean had started in September 2020 and appears to be coming to an end this month.
 - The Pacific is transitioning into ENSO neutral. This means that both the Eastern Tropical Pacific Ocean and North Atlantic Ocean temperatures – and, thereby the Caribbean – are expected to be close to average.
 - This change makes it difficult to forecast unusual climate conditions in the Caribbean this late dry season.
 - However, in case the Pacific transitions into **El Niño** by May, then chances of drought, weaker tropical cyclone activity, but more frequent heatwaves increase.
- In light of this year's changing ocean conditions, the forecast for March to May 2023 suggests:
 - A faster depletion of water reservoirs than usual for the late dry season in Cuba in view of a reduced number of **wet spells**. Wildfire potential and local airborne dust will be increasing until heavy rains return in view of a low frequency of **wet days** (*medium confidence*).
 - **Flash flood** and **long-term flooding** potential arising from excessive rainfall will be *slight* (i.e., occurs once every 5-10 years) for most areas in March but -- with the exception of the ABC Islands -- will increase to *moderate* (i.e., occurs at least once every 5 years) or *high* (i.e., occurs at least once every other year) into May. Persons should keenly monitor weather advisories issued by the National Meteorological Services and other information provided by the Caribbean Disaster Emergency Management Agency (<http://cdema.org/>) and the US National Hurricane Center (<https://www.nhc.noaa.gov/>).
 - **Short-term drought** (on a 3-6 months timescale) concerns arise in the Northern Bahamas, Barbados, Western Cuba, Dominica, Dominican Republic, Martinique, Puerto Rico, St. Barts, Sint Maarten/St-Martin, St. Vincent, and the USVI, where drought is possible by the end of March (*medium confidence*).
 - **Long-term drought** (on a 12 months timescale), which may affect water availability across a multitude of socio-economic sectors in a country, is evolving in Central and Western Cuba (*high confidence*), and may possibly develop or continue in Eastern Cuba, southern Dominican Republic and St. Vincent (*medium confidence*).
 - **Heat discomfort** should not be a significant concern through March. However, heatwaves do occur in April, especially in Belize and Trinidad, and in areas in drought (Cuba), and in May across the Antilles (*high confidence*).

Disclaimer



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Health Implications



Respiratory Illness

-  The increasing dryness of soils into April may be compounded by short term drought in a number of locations across the region, especially in Cuba. The 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**.
-  There may be an increase in symptoms in persons with chronic respiratory conditions such as **asthma**, and in persons prone to **allergic rhinitis** due to more frequent episodes of Saharan dust incursions into the Caribbean, as well as due to local dust being suspended in the air when the ground surface is dry.
-  This may be offset by a decrease in allergic reactions to fungal spores from mold at least until the end of April. By contrast, increasing humidity across the region from May onwards could cause dampness in some poorly ventilated residences and offices resulting in the growth of mold. This could be particularly so in the Guianas. In the Caribbean islands, increased allergens in the atmosphere may occur from plant materials (e.g. pollen) driven by increased wind speeds and reduced washing out by rain. These factors may also trigger increased incidences of **upper respiratory tract symptoms**.
-  Where episodes of flooding may occur, there is an increased risk of **ear, nose, and throat infections** from contaminated water across the region, particularly in May.


Gastrointestinal Illness

-  Ongoing dryness and drought conditions may increase concentrations of water pollutants. Additionally, a drop in water pressure in the pipes of water supply systems may result in cross contamination and reduced access to water by consumers. Alternative use of unsafe sources of water, in turn may potentially contribute to higher incidences of **gastrointestinal illness**.
-  Cases of **gastroenteritis** may increase in frequency across the region from May, particularly in the Guianas, due to contamination of food and water supplies, and contact with flood waters.

Non-communicable Diseases (NCDs)

-  Higher temperatures and the occurrence of heat waves begin in April (for Belize, Cuba and Trinidad) or May (elsewhere in the islands). This can increase the risk of morbidity and hospitalisations from **heat related health effects**. Such effects include apathy, general weakness, dizziness, fainting, and exhaustion (heat strain). These effects may be exacerbated in persons with chronic illness, children, pregnant women and the elderly and, in extreme cases, lead to kidney failure. For information on heat and health see: https://www.who.int/health-topics/heatwaves#tab=tab_1 and <https://ghhn.org/>
-  During this period, excessive exposure due to dangerous UV radiation can cause **skin damage** in persons who spend extended periods outdoors, especially on sunny days (for more information, see: <https://www.epa.gov/sunsafety/uv-index-scale-0>). For simple action steps on sun protection




Non-communicable Diseases (NCDs) (continued)

- see: [https://www.who.int/news-room/questions-and-answers/item/radiation-the-ultraviolet-\(uv\)-index](https://www.who.int/news-room/questions-and-answers/item/radiation-the-ultraviolet-(uv)-index)
-  There is the increasing possibility of **skin infections** due to contact with contaminated stagnant and/or floodwaters in the region in May - particularly in the Guianas.

Vector-Borne Illness

-  Increased rainfall and the more frequent occurrence of stagnant water from flooding towards May, particularly in the Greater Antilles and the Guianas, may create additional breeding sites for the *Aedes aegypti* and *Aedes albopictus* mosquitoes which are the vectors of diseases such as **Dengue, Chikungunya, Zika and Yellow Fever**. These diseases remain a perennial concern for Caribbean territories.
-  With increasing dryness and recurrent dry spells across the region in this period, there may be increased use of containers for water storage. This may be further exacerbated in Cuba, where drought is evolving.
-  At the household level, careful attention should be given to the management of water storage containers. This includes mosquito proofing of water tanks, barrels, drums and buckets.
-  The focus should be on public education and awareness on source reduction and personal protection. If fogging operations are considered by the Ministry, advice from the local meteorological services on temperature, wind speed, humidity, etc. should be sought.
-  Access useful materials on mosquito control measures here: (<https://www.paho.org/en/campaigns/caribbean-mosquito-awareness-week-2020>); Join the fight against mosquito borne disease in the Caribbean: <https://carpha.org/What-We-Do/Public-Health/Dengue> and <http://missionmosquito.carpha.org/>
-  Flooding may increase the risk of **Leptospirosis** due to displacement of rodent vectors from their usual habitats into houses, increasing the risk of contamination of slow moving or stagnant waters, household surfaces and food-stores with rodent urine.

Well-Being and Mental Health

-  Severe weather systems, which can come with a range of hazards, including high winds, landslides, flash floods, among others, may possibly affect Caribbean territories. With the possibility of tropical cyclones before the official start of the 2023 Atlantic Hurricane Season, health practitioners and administrators should maintain a **state of readiness**.
-  **Food insecurity** and associated possible undernutrition would be a concern due to the potential for extensive crop damage and/or loss associated with frequent dry spells across the region. This may be exacerbated in Cuba where drought is evolving. A similar concern arises as a result of the high flood potential in the Guianas in May.
-  The occurrence of heatwaves in April or May may increase exhaustion during intense outdoor activity and tends to limit labour productivity. It can further increase sweating

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Health Implications (continued)

Well-Being and Mental Health (continued)



- and water consumption and, during prolonged heatwaves, lead to fatigue, irritability and aggression.
- Whereas extreme weather events are fairly rare in this part of the year, their occurrence, impacts and associated alerts may negatively affect mental health. Health Care Professionals are therefore advised to be aware of these issues, as they interact with patients.

COVID-19 and Climate Impacts



- Water quantity and quality is critical to support prevention strategies to combat the COVID-19 pandemic, especially with regards to safe water for hygiene purposes. Flooding and drought may affect continuous access to safe water. Therefore, special attention should be paid to impacted communities.



- Any disaster occurring will compound psychosocial impacts related to the COVID-19 pandemic, particularly disasters arising from extreme weather events. Health care professionals are therefore advised to be sensitive to these issues, as they interact with patients.



- Extreme weather events or disasters may cause an increased burden on already stressed healthcare services and the rollout of vaccination campaigns. Countries should factor this into their contingency plans and actions.

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Contact Information

For More Information Contact:

Dr. Laura-Lee Boodram
Email: boodral@carpha.org

Dr. Karen Polson-Edwards
Email: polsonkar@paho.org

Ms. Audreyanna Thomas
Email: thomasaud@paho.org

Mr. Wayne Depradine
Email: wdepradine@cimh.edu.bb

Dr. Roché Mahon
Email: rmahon@cimh.edu.bb

Dr. Cédric J. Van Meerbeeck
Email: cmeerbeeck@cimh.edu.bb

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:

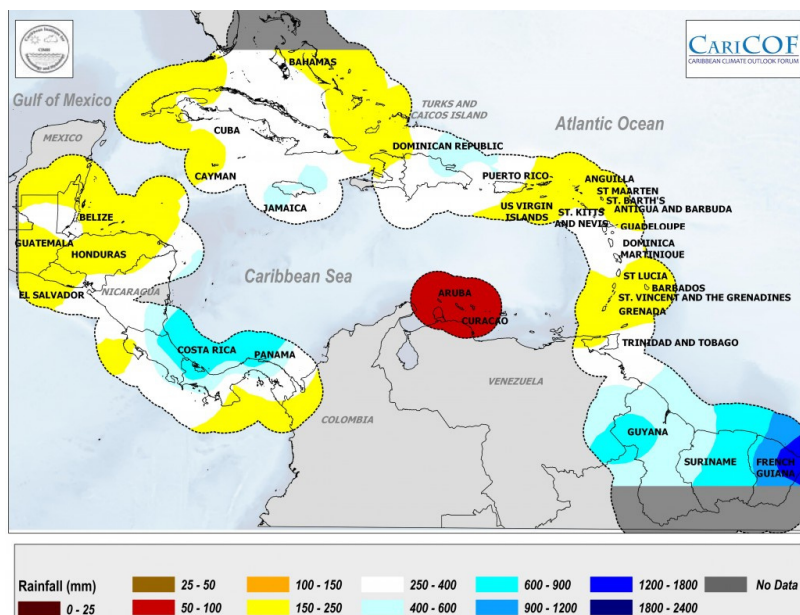
<https://rcc.cimh.edu.bb/glossary-of-terms/>

More on Climate...

What To Expect: Rainfall and Temperature Maps

Rainfall

- This period typically marks the late dry season in Belize and the Caribbean Islands, with May marking the onset of the early wet season in the Greater Antilles. March to April further marks the secondary dry season in the coastal Guianas, where the primary wet season starts in May. The March to May period is a 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

- March is the last month of the Cool Season. From April onwards, temperatures rise to become uncomfortable at times during May, which forms the first month of the Heat Season across the region. In Belize and Trinidad, a peak in the number of heatwaves typically occurs during May. That said, with the exception of the Guianas, air humidity is typically at its lowest during the late dry season, moderating 'feels-like' temperatures as compared to the second half of the Heat Season (i.e. August to October).

Looking Back: Nov 2022-Jan 2023

Let's revisit the last forecast period to explore actual rainfall and temperature occurrences. Here's what occurred:

Rainfall

- A long-lasting La Niña event is coming to an end. Characteristic of La Niña at this time of the year was that Cuba and Jamaica received less than the usual amount of rainfall, whereas the Guianas recorded far higher rainfall totals during their secondary wet season.

Temperature

- The period marked the transition into the Caribbean cool season.
- Curaçao, parts of the coastal Guianas, most of the Leeward Islands, Saint Lucia and St. Vincent were cooler than usual, while the Northwestern Bahamas and northern Belize were significantly warmer than usual.

Additional resources

For more on the impacts of climate change on health, see:

<https://www.paho.org/en/topics/climate-change-and-health>

<https://www.paho.org/en/documents/climate-change-health-professionals-pocket-book>

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