

Caribbean Health Climatic Bulletin

Vol 6 | Issue 4

December 2022

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 December 2022 - February 2023. It is recommended that health stakeholders should use the combination of monitoring (August - October 2022) and forecast (December 2022 - February 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.

What are the Key Climate Messages for December 2022 - February 2023?




- As of December 1st, the **2022 Hurricane Season** - which was about as busy as the historic average (1991-2020) with 14 named storms, including 2 major hurricanes -- has officially ended, but storms and hurricanes can occur and have occurred after the official end date.
- The historical record shows that the first half of the **Caribbean Dry Season** in the Bahamas, Belize, the Greater and Lesser Antilles is usually characterized by a steady decrease in the frequency of **wet days** and in the intensity of **heavy showers**. Conversely, the number of dry days and **dry spells** is high westwards of Puerto Rico throughout the period while, further east, their frequency increases towards the end of February. The resulting drier surface and foliage increase **wildfire potential** and the concentration of **airborne particulates**. By contrast, in the Guianas, the secondary wet season usually runs until early February, while in the ABC Islands, the wet season usually runs until January.
- A weak to moderate **La Niña event** has persisted in the Pacific Ocean throughout 2022, tilting the odds towards slightly cooler but wetter conditions. The potential for long-term flooding, **flash floods and cascading hazards** is therefore higher than usual. The exception is the Bahamas and Cuba, where La Niña tends to make the dry season even drier than usual, increasing chances of drought, the frequency of dry spells, wildfire potential and airborne particulates.
- The forecast for December 2022 to February 2023 therefore suggests:
 - A slower than usual decrease in **rainfall** and wet days towards the end of February predominantly along the southern and eastern parts of the region, resulting in a slower than usual decrease in surface and soil moisture (medium confidence).
 - **Flash flood and long-term flooding** potential arising from excessive rainfall decreases from *moderate* or *high* in December to *marginal* by February in the islands and Belize, but will be *high* or extremely *high* until early-February in the coastal Guianas. 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 at the end of February 2023 are few in the region. However, some concern arises in The Bahamas, parts of Belize, Central and Eastern Cuba, potentially impacting food production, water quality and quantity from small streams, small ponds and other surface sources (*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 not a major concern at this time (*high confidence*).
 - **Heat discomfort** during the core of the Caribbean **Cool Season** should not be of significant concern (*high confidence*).
- The frequency of **Saharan dust** incursions into the Caribbean tends to be low during this period. Though, in some years, significant episodes occur as early as February. (Access more detailed forecast information on dust and air quality in the Caribbean here: <http://dafc.cimh.edu.bb/>). Although initially low, **local dust** levels may increase towards February, particularly in areas under short-term drought.
- **UV exposure** is set to be dangerously elevated by February. On a scale from 1 to 12, the UV index on sunny days will be 6-7 (*high*) in the northern Bahamas and 8-10 (*very high*) elsewhere until January, and then increase to 8-10 and 11-12 (*extremely high*) by the end of February.

Disclaimer


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What are the Health Implications for December 2022-February 2023?





Respiratory Illness

-  Less frequent episodes of Saharan dust incursions into the Caribbean in the coming season may reduce risk of exacerbations of **allergic rhinitis** and **asthma** in susceptible persons. In The Bahamas and Central and Eastern Cuba, the drying of the surface and foliage is expected to increase the concentration of local dust, thereby increasing the risk of respiratory illness. This risk may be further exacerbated during wildfires.
-  Increased humidity in the coastal Guianas during the wet season may promote mould growth in damp and poorly ventilated buildings, leading to increased allergic reactions.
-  Where episodes of flooding occur, cases of **ear, nose, and throat infections** may increase, where persons come into contact with flood waters. This is particularly the case in the coastal Guianas, but also possible in Trinidad and Tobago, Barbados, the Windward Islands and the ABC Islands through the end of the year.





Gastrointestinal Illness

-  Cases of **gastroenteritis** may increase where the quality and quantity of water are compromised during episodes of flooding -- especially in the coastal Guianas throughout the period, as well as in Trinidad and Tobago, Barbados, the Windward Islands and the ABC Islands through the end of the year.



Non-communicable and Other Non-Infectious Diseases

-  There is a possibility of skin infections due to contact with contaminated, stagnant and/or floodwaters, particularly in the coastal Guianas.
-  UV radiation will be at its annual minimum in December and January, though still high and increasing to extremely high in February. Excessive UV exposure can cause skin damage across the population on sunny days if unprotected (for more information, see: <https://www.epa.gov/sunsafety/uv-index-scale-1>).
-  Morbidity from excessive heat due to high temperatures across the region should not be an issue in December-February.
-  **Mental health effects** may increase due to extreme weather events, their impacts and associated alerts. Health Care Professionals are therefore advised to be aware of these issues, as they interact with patients.

Vector-Borne Illness

-  Where episodes of flooding may occur – particularly in the coastal Guianas but, possibly, also in Trinidad and Tobago, Barbados, the Windward Islands and the ABC Islands through the end of the year –, there is increased risk of **Leptospirosis** due to displacement of vectors such as rodents into houses and premises, increasing the risk of contamination of household surfaces and food stores.
-  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.
-  In Central and Eastern Cuba, where shortages in water supply may be experienced by February due to drought, increased use of containers for water storage may potentially create more breeding sites for mosquitoes. Mosquito borne diseases, such as **Dengue, Chikungunya and Zika** are of great concern in these areas. Proper management of water storage containers e.g., covering with protective mesh, helps to reduce this risk.
-  Access useful 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)

Well-Being and Mental Health

-  Food insecurity would be a concern due to the potential for extensive crop damage and/or loss due to frequent dry spells in The Bahamas, Belize and the Greater Antilles. A similar concern arises as a result of the high flood potential in the coastal Guianas but, possibly, also in Trinidad and Tobago, Barbados, the Windward Islands and the ABC Islands through the end of the year.
-  Severe weather events, which can trigger a range of hazards, including high winds, landslides, flash floods, among others, may possibly affect Caribbean territories, particularly in the Guianas. Although the 2022 Hurricane Season has come to an end, health practitioners and administrators should still maintain a state of **readiness**.

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What are the Health Implications for December 2022-February 2023? (continued)

COVID-19 and Climate Impacts



- Water availability is critical to support prevention strategies to combat the COVID-19 virus or any other infectious diseases, especially with regards to safe water for hygiene purposes. Flooding after an extreme weather event may affect water quality. Special attention should be paid to communities with interrupted or limited access to safe water over the coming period. Further details on water, sanitation and hygiene practices related to the COVID-19 pandemic can be found here:
 - [https://www.carpha.org/Portals/0/Documents/Technical Guidance/Water Sanitation Hygiene and Waste Management during the COVID-19 Pandemic.pdf](https://www.carpha.org/Portals/0/Documents/Technical%20Guidance/Water%20Sanitation%20Hygiene%20and%20Waste%20Management%20during%20the%20COVID-19%20Pandemic.pdf)
 - <https://www.paho.org/en/documents/key-recommendations-water-sanitation-and-hygiene-covid-19>



- Any disaster occurring will compound **psychosocial impacts** related to the COVID-19 pandemic, particularly disasters arising from extreme weather events.



- Extreme weather events or disasters may cause an increased burden on already strained **healthcare services and the rollout of vaccination campaigns**. National health systems must factor the above issues into multi-hazard disaster response planning for December-February.



- Prior to or following an extreme weather event, displaced persons may require the use of an evacuation shelter. Shelter management is critical during the COVID-19 pandemic as additional measures must be taken to ensure maintenance of physical distancing, appropriate hygiene and respiratory protection. Further information on shelter management during the COVID-19 pandemic can be found here:
[https://www.carpha.org/Portals/0/Documents/Technical %20Guidance/Emergency%20Shelter%20Management% 20in%20the%20Caribbean%20during%20the%20COVID -19%20Pandemic.pdf](https://www.carpha.org/Portals/0/Documents/Technical%20Guidance/Emergency%20Shelter%20Management%20in%20the%20Caribbean%20during%20the%20COVID-19%20Pandemic.pdf)

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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: August-October 2022

Rainfall

- As is typical during a La Niña in the Pacific, Cuba received less than the usual amount of rainfall – even a record low in parts of Cuba –, while most other areas in the Caribbean recorded at least seasonably high rainfall totals or even much higher totals for this portion of the wet season. The latter even included record high amounts in some locations in Guyana, Dominica, and Puerto Rico.

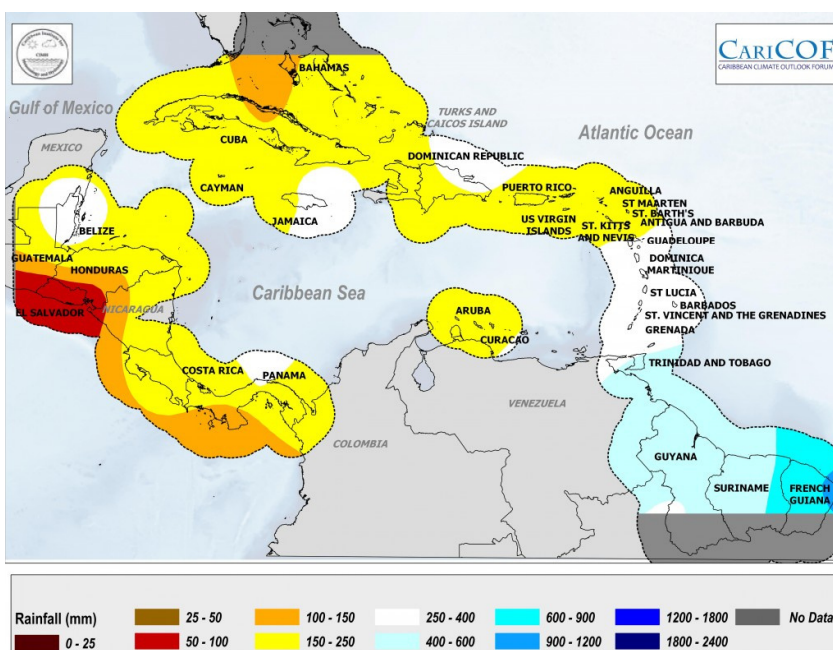
Temperature

- While heat waves were fewer than in recent hot years (e.g., 2020), high humidity led to a peak in heat stress in September.
- Near-average temperatures were observed in much of the Caribbean; but Antigua, parts of Barbados, northern Belize, and Curaçao were significantly cooler than usual, while French Guiana and parts of Suriname were significantly warmer than usual.

What do we Usually Expect for December to February?

Rainfall

- This period typically marks the early dry season in Belize and the Caribbean Islands, but the secondary wet season in the Guianas and the transition into 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

- December to February forms the coolest part of the year across the region, with generally comfortable 'feels-like' temperatures and the general absence of heat waves.

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