

Caribbean Health Climatic Bulletin

Vol 6 | Issue 3

September 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 September-November 2022. It is recommended that health stakeholders use the combination of monitoring (May-July 2022) and forecast (September-November 2022) 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 September - November 2022?

- Climatically, September to November forms the **second half of the wet season in the Caribbean Islands and in Belize**. During this period, many wet days and frequent wet spells occur. However, several short dry spells still can punctuate this season, particularly in the Greater Antilles. By contrast, the Guianas are in their **hot, dry season**, running into November in most areas, but continuing through April in far inland, southwestern parts of the region. Hence, frequent dry spells, but infrequent wet days and wet spells are the historical norm from September to November.
- This year, a long-lasting **La Niña event** in the Pacific is tilting the odds towards more frequent and more intense rainfall, a more active second half of the Hurricane Season and higher rainfall totals across the Caribbean (*medium confidence*).
- The **2022 Hurricane Season** officially lasts until November 30th, with the peak of tropical cyclone activity typically lasting until around mid-October, but storms and hurricanes have occurred after the official end date. This Season has produced only 3 named Tropical Storms, but no hurricanes as of 31 August 2022. An highly unusual, persistent inflow of dry air over the Tropical North Atlantic – originating from the Sahara* [1] – has impeded storm formation from July 3rd until August 31st. While the September to November second half of the Hurricane Season is still predicted to be more active than average, the 2022 Hurricane Season totals may end up closer to 9-15 named storms.
- **Severe weather events** are expected to affect Caribbean territories. Such events include but are not restricted to tropical cyclones and extreme wet spells. These can come with a range of hazards, including high winds, flash floods, land slippage or rockfall, power outages and possible contamination of food and water supplies. 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/>).
- The intense and frequent heavy showers clustered in **very wet spells** throughout the period result in a *high potential* (i.e., occurs once every other year or even more often) for **long-term flooding** in flood-prone areas of the Caribbean Islands and Belize. Similarly, up to two or three severe weather events that produce **extreme wet spells** can be expected during these three months in the Caribbean Islands and Belize, resulting in *high to extremely high* (i.e., occurs at least once in most years) potential for flash floods and cascading hazards. By contrast, in the coastal Guianas, apart from locations which are still flooded at the time of writing, flooding potential should be *limited* (i.e., occurs once or twice in 10 years) to *moderate* (i.e., occurs two to five times in 10 years) up until the onset of their secondary wet season in mid- to late-November.
- While there is no ongoing regional **drought**, pockets of the Caribbean have been affected by rainfall shortages in the past six months.
- As of August 1st, **short-term drought** (on a 3-6 months timescale) has developed in Guadeloupe, southwestern Hispaniola, southernmost Jamaica, St Barts, St Croix, Sint Maarten and in St Vincent. Short term drought is unlikely to be of significant concern by the end of November (*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, has developed in Antigua, Western Cuba, southwest Haiti, Guadeloupe, eastern Jamaica, Martinique, St Barts, St Croix, Sint Maarten, St Lucia, and St Vincent. However, though not a widespread concern, long term drought by the end of November might possibly develop in parts of Belize or continue in Martinique and St Vincent (*medium confidence*).
- Seasonal night-time and day-time **temperatures** are expected to cool by the end of the season, which coincides with the conclusion of the **Caribbean Heat Season**. Seasonal average daytime temperatures may be slightly cooler than usual in Cuba, Hispaniola, and the US Caribbean Territories. However, region-wide, recurrent **heatwaves** are still expected in September and, possibly, in October anywhere further south than the Leeward Islands (or even in early-November in the Guianas).
- Episodes of **Saharan dust** incursions into the Caribbean tend to decrease 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/>).
- The **UV index** around noon time on sunny days will progressively decrease from extremely high (UV index >10) to very high (UV index 8-10) on sunny days towards November (on a scale from 1 to 12. For more information see: <https://www.epa.gov/sunsafety/uv-index-scale-1>).


[1] Dry air high up in the atmosphere originating from the Sahara (i.e. Saharan Air Layer, the carrier of Saharan dust) often makes its way from Africa westward over the Tropical North Atlantic and the Caribbean. In July and August, the intrusion has been so persistent that it inhibited storm formation over the Atlantic and reduced rainfall amounts in the Leeward Islands. The persistence or the relative absence of the Saharan Air Layer above the Caribbean and the Tropical North Atlantic cannot as yet be accurately predicted at the seasonal timescale, leaving forecasters with some uncertainty, which is factored into the forecast confidence level (e.g. medium confidence - see the Glossary on the last page of this bulletin). Because of this uncertainty, the activity of the Atlantic Hurricane Season tends to be lower than forecasting agencies may have predicted at times when Saharan Air is particularly persistent (as has been the case in July and August 2022). Similarly, some countries in the Caribbean may see lower seasonal rainfall totals than forecasted in such a situation.

What are the Health Implications for September - November 2022?




Respiratory Illness

-  The incidence of **asthma** and **allergic rhinitis** is likely to be lower compared to the previous season (JJA) due to less frequent episodes of Saharan dust incursions and lower levels of local dust into the Caribbean in the coming season.
-  Increased humidity - at even higher levels than usual for this time of the year - in the Caribbean islands and Belize throughout the period may cause dampness in some poorly ventilated residences and offices resulting in the growth of mould and increased allergic reactions.
-  Where episodes of flooding may occur, particularly in the Caribbean islands and Belize, there is an increased risk of **ear, nose, and throat infections** from contact with contaminated water.



Gastrointestinal Illness

-  Where episodes of flooding may occur, cases of **gastroenteritis** may increase, where persons consume foods contaminated by these waters, especially in the Caribbean Islands and Belize.





Non-communicable Diseases and Vulnerable Populations

-  Excessive heat from high temperatures across the region (exacerbated by humid air across the Caribbean Islands) will first be of greater concern through the end of September before becoming less prevalent towards November. Moreover, especially during September and, possibly, in October anywhere further south than the Leeward Islands (or even in early-November in the Guianas), frequent heatwave days can increase the risk of morbidity from heat related illness in vulnerable persons, especially smaller children, the elderly, pregnant women and persons with NCDs. **Heat stress** 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 can be found at: <https://ghhin.org/in-the-body/>. For more information on what to do during heatwaves, see: https://www.paho.org/hq/index.php?option=com_content&view=article&id=15130:heatwave&Itemid=4206&lang=en
-  During the period, unprotected exposure to dangerous UV radiation may cause **skin damage** across the population (for more information, see: <https://www.epa.gov/sunsafety/uv-index-scale-1>).
-  There is a possibility of **skin infections** due to contact with contaminated, stagnant and/or floodwaters, especially in the Caribbean Islands and Belize.

Vector-Borne Illness

-  As the region enters the peak of the Wet Season, increased rainfall, stagnant water in the aftermath of a flood, as well as water accumulating and/or stored in open containers may also potentially create more breeding sites for mosquitoes. These situations would increase the risk of associated mosquito-borne diseases such as **Dengue, Chikungunya and Zika**. 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)
-  Episodes of flooding may occur in any flood-prone area of the Caribbean Islands or Belize during this period. In such cases, there is an increased risk of **Leptospirosis** due to displaced rodents that could contaminate floodwaters, household items and food containers.

Well-Being and Mental Health

-  With the possibility of tropical cyclones and other extreme weather events, health practitioners and administrators should maintain a state of **readiness**.
-  In areas where flooding damages or destroys food crops, **food insecurity** may be a concern.
-  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.
-  Heat stress associated with heatwaves, can increase **mood-affective and stress-related disorders**, as well as other mental and behavioural disorders. Persons taking medication for mental health disorders are at increased risk of heat-health effects.

Disclaimer

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What are the Health Implications for September - November 2022? (continued)

COVID-19 and Climate Impacts



- Water availability is critical to support prevention strategies to combat the COVID-19 pandemic, 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 stressed **healthcare services and the rollout of vaccination campaigns**. National health systems must factor the above issues into multi-hazard disaster response planning for the upcoming months.



- 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: May-June-July 2022

Rainfall

- The transition into the wet season was wetter than usual in the Bahamas (esp. in the northwest), northeast Belize, Cuba, far southern Guyana, and Suriname where disastrous floods occurred.
- Short-term drought developed in parts of the Dominican Republic, Haiti, Jamaica, the Leeward Islands and Puerto Rico.

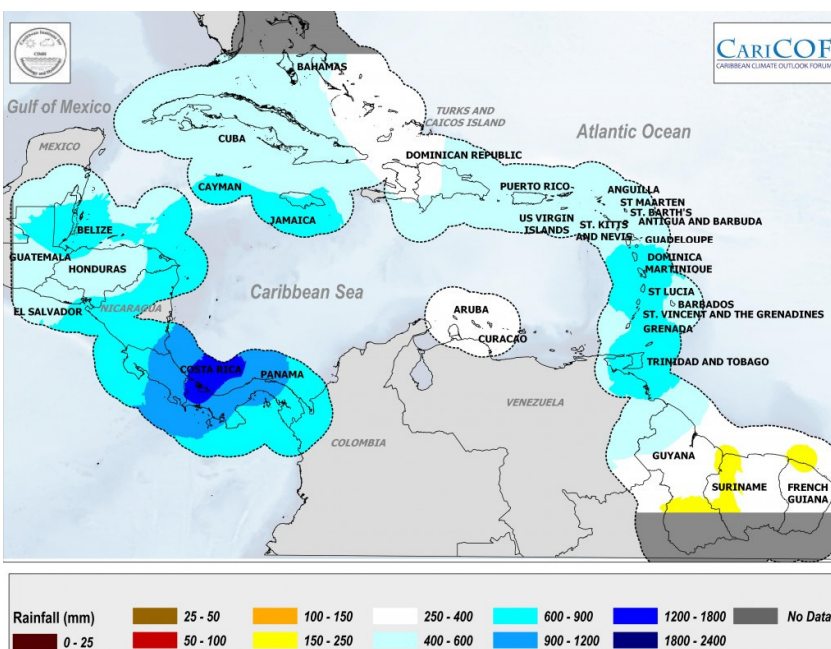
Temperature

- As May to July formed the first half of the 2022 Heat Season, temperatures were high and a few local heatwaves occurred. This period was warmer than usual in southern Puerto Rico, northern parts of The Bahamas, and parts of the Guianas.
- However, with an ongoing La Niña event suppressing excess heat in the Caribbean, temperatures ended up cooler than usual in northern Belize, Curaçao, Guadeloupe, and eastern Jamaica.

What do we Usually Expect for September-October-November?

Rainfall

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

- September to October form the tail end of the Caribbean Heat Season (which runs from April/May to October), with the annual peak in 'feels-like' temperatures usually ending in September.
- The likelihood and frequency of heatwaves throughout the region is relatively high in September (and October in Barbados, the Windward Islands, Trinidad & Tobago and the Guianas), but essentially decreases to nil afterwards.
- Air humidity tends to peak between September and November in the Caribbean Islands and Belize, while cooling breezes are often absent. This makes high 'feels-like' temperatures until October more impactful, especially to the vulnerable sections of the population.

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