

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 September-November 2021. It is recommended that health stakeholders should use the combination of monitoring (May - July 2021) and forecast (September-November 2021) 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 2021?

- The **2021 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. The 2021 Hurricane Season has already produced 12 named Tropical Storms, 5 hurricanes and 2 major hurricanes as of 2 September 2021. As of early-August, there remained a strong consensus that this year will bring an active season with a forecasted 2021 season total of between 15-21 tropical storms, of which there would be between 7-10 hurricanes (*high confidence*). Higher numbers are not precluded.
- **Severe weather events** are expected to affect Caribbean territories. Such systems include but are not restricted to tropical cyclones and 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/>).
- Climatically, September to November forms the **second half of the Caribbean Wet Season** with a large number of wet days and frequent wet spells, but at the same time, still a number of short dry spells, particularly in the Greater Antilles. This year, the possibility of another La Niña event in the Pacific (after the one that ended in April) slightly tilts the odds towards even more frequent and more intense rainfall, and higher rainfall totals across the Caribbean (*medium confidence*).
- The intense and frequent heavy showers clustered in **very wet spells** throughout the period results 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. By contrast, in the coastal Guianas, 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.
- Similarly, up to two or three severe weather systems 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, with usually up to 1 extreme wet spell at any given location in the coastal Guianas, there will only be *limited* flash flood potential there.
- As a result of the usual or significantly higher rainfall totals so far this year in most places, **drought** is currently not a widespread concern in the Caribbean.
- As of August 1st, **short term drought** (on a 3-6 months timescale) has developed in Antigua, the northwestern Bahamas and northwest Martinique. Short term drought is unlikely to be of significant concern by the end of November, with the possible exception of the northern Bahamas, southeast Belize, and Dominica (*medium confidence*).
- As of August 1st, **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 northwest Martinique and St. Croix. By the end of November, long term drought concern is expected to evolve in The Bahamas (*medium to high confidence*), and may possibly develop or persist in Dominica, coastal French Guiana, Martinique, St. Vincent and parts of Suriname (*medium confidence*).
- **Night-time and day-time temperatures** in the Caribbean are forecast to remain at least as high as usual for the remainder of the Caribbean Heat Season - which starts in April/May and typically ends in October, except in the Guianas, where it ends in November.
- **Heatwaves** (and heatwave days) are usually frequent in September in the Caribbean Islands and Belize, particularly in the ABC Islands and the Lesser Antilles, where there typically are between 7 and 15 heatwave days. By contrast, by October, there are usually no more heatwave days in the Bahamas, Belize and Greater Antilles but still around 6 to 12 heatwave days in the ABC Islands and the Lesser Antilles. In the coastal Guianas, the hot and dry season usually produces 20 to 30 heatwave days between September and November (*high confidence*).
- The September to November heat outlooks suggest that the number of heatwaves will not be excessively high this year, as opposed to the particularly hot year 2020 (*high confidence*). Nevertheless, in view of seasonably high temperatures, heatwaves, high air humidity, and the possible occurrence of short-lived dry spells - which increase the chance of heat waves - **heat exposure** is still expected to be a recurrent concern lasting through September or October (*medium confidence*).
- The frequency of **Saharan dust** incursions into the Caribbean tends to decrease during this period (access more detailed forecast information on dust and air quality in the Caribbean here: <http://dafc.cimh.edu.bb/>). Similarly, local dust levels should be on the low end throughout the remainder of the Wet Season.
- The **UV index** around noon time on sunny days will decrease from extremely high (11-12) to very high (8-10) towards November (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.

What are the Health Implications for September to November 2021?

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 (NCDs)



- Excessive heat from high temperatures across the region (exacerbated by humid air across the Caribbean Islands) will first be of greater concern through October before becoming less prevalent towards November. That said, especially during September (and October in Barbados, the Windward Islands, Trinidad & Tobago and 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 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 behavioral 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 to November 2021? (continued)

COVID-19 and Climate Impacts



- Considerations in managing potential **heat stress** during COVID-19 as the Heat Season peaks in September can be found at: <https://ghhin.org/resources/technical-brief-protecting-health-from-hot-weather-during-the-covid-19-pandemic/>; <https://www.euro.who.int/en/health-topics/environment-and-health/Climate-change/publications/2020/health-advice-for-hot-weather-during-the-covid-19-outbreak-produced-by-who-europe>
A useful planning checklist on managing heat risk during the COVID-19 pandemic can be found here: <http://www.ghhin.org/assets/Checklist-COVID-HEAT-final.pdf>



- Water availability is critical to support **prevention strategies** to combat the COVID-19 pandemic, especially with regards to safe water for hygiene purposes. Flooding may affect water quality and uninterrupted access to safe water.



- 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**.



- When an impending extreme weather event occurs, **shelters** will require reorganisation to accommodate COVID-19 prevention strategies. More information can be found at: <https://iris.paho.org/handle/10665.2/52170>



- Should a major disaster occur and foreign support be requested, there is potential to import cases and new strains of COVID-19.

Symbol Key



Container



Dry conditions



Extreme weather event



Flooding



Food availability



Medical care or medical condition



Rodents



Mosquitoes



Temperature-related



UV radiation

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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-July 2021

Rainfall

- This period stood out in terms of short term drought in northwestern parts of the Bahamas contrasted with record rainfall totals in large parts of the Guianas, triggering some of the worst flooding in recent history in Guyana. This pattern, along with the absence of unusual heat is partially explained by a faded La Niña.
- In addition, small pockets of short term drought occurred in Antigua and northwest Martinique and a few locations were extremely wet, e.g. western Puerto Rico and small portions of southern Cuba.

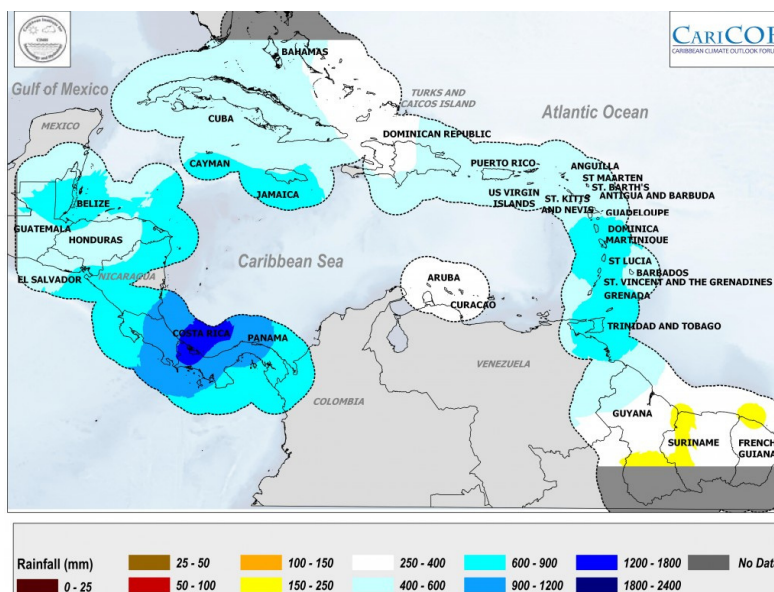
Temperature

- Despite that May to July marks the first half of the Caribbean heat season, heat discomfort was significantly lower than in 2020, thanks to near average temperatures in much of the Caribbean and even a number of locations being significantly cooler than usual (i.e. southeast Guadeloupe and southeast Jamaica). One exception was coastal Belize, which was around 1°C warmer than usual.

What do we Usually Expect for September-November?

Rainfall

- This period typically marks the late wet season in Belize and the Caribbean Islands, 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 heat waves 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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