

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 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 to November 2019. It is recommended that health stakeholders should use the combination of monitoring (May - July 2019) and forecast (September - November 2019) 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 to November 2019?

- The **2019 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. Severe weather systems, which can come with a range of hazards, including high winds, landslides, flash floods, coastal flooding, among others, are expected to affect Caribbean territories.
- Night-time and day-time **temperatures** in the Caribbean are forecast to remain at least as high as usual for the **heat season** - which starts in May, peaks in September and ends in October. A number of **heat waves** are expected to occur in most locations in September. In addition, in Barbados, the Windward Islands, Trinidad and Tobago and the Guianas, heat waves are also possible through October. In view of high temperature, high air humidity, the ongoing drought and short-lived dry spells - which increase the chance of heat waves - **excessive heat exposure is expected to be a greater concern than in 2017 and 2018 (medium to high confidence)** and last through October across the entire region.
- 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.
- Regionally, **rainfall totals** from September to November are forecast to be less than the usual or, at best, the usual across Barbados, Belize, eastern Guianas, Trinidad & Tobago and the Windward Islands, but are likely to be at least as wet as usual in Cayman Islands (*medium confidence*).
- **Short term drought** (on a 3-6 months timescale) has developed in the ABC Islands, Belize, parts of Hispaniola, Trinidad, Turks & Caicos. At the same time, Aruba, southern Belize, easternmost Cuba, southern- and easternmost Dominican Republic, parts of French Guiana, Haiti, the northern Leewards, Martinique, northern Trinidad, and the US Caribbean Territories are in **long term drought** (on a 12 months timescale).
- The main driver of this drought was a weak **El Niño event** that lasted until July and has now dissipated.
- **Short term drought** will possibly continue in much of Belize and Trinidad, and might develop in Dominica, Martinique and Suriname (*medium confidence*). Short term drought may impact food production, potable water availability, as well as, water availability from small streams and small ponds. However, such drought impacts are not expected to be widespread or pronounced at this time.
- **Long term drought**, which may affect water availability across a multitude of socio-economic sectors in a country, is evolving in Belize, Dominica, French Guiana, Martinique, St. Kitts, Saint Lucia, St. Vincent, and Suriname (*medium to high confidence*), and may possibly persist in the ABC Islands, Antigua, Barbados, the Dominican Republic, Grenada, Guyana, Trinidad & Tobago (*medium confidence*).
- The intensity and frequency of heavy showers tend to be high and clustered in **wet spells** and **very wet spells** throughout the period. Consequently, there is potential for flooding throughout Belize and the Islands (*high confidence*), although slightly reduced compared to 2017 and 2018. In the coastal Guianas, flooding potential should be relatively low up until the onset of their secondary wet season in mid- to late-November (*high confidence*).
- **Extreme wet spells**, of which usually up to two occur during these three months (up to one in the coastal Guianas), may coincide with thunderstorms and high winds, and often result in **flash floods**, land slippage, power outages and possible contamination of food and water supplies. It should be emphasized that, while tropical cyclones typically produce extreme wet spells, a majority of extreme wet spells occurs during the passage of other weather systems.
- 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** on sunny days will decrease from extremely high (11-12) to very high (8-10) around noon time 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.

Disclaimer

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What are the Health Implications for September to November 2019?

Respiratory Illness

-  The incidence of **asthma** and **allergic rhinitis** is likely to be lower compared to the previous season due to less frequent episodes of Saharan dust incursions into the Caribbean in the coming season.
-  Increased humidity in Belize and the Caribbean islands throughout the period may cause dampness in some poorly ventilated residences and offices resulting in the growth of mold and increased **allergic reactions**.
-  Where episodes of flooding may occur, particularly in the Guianas, there is increased risk of **Leptospirosis** and **ENT** from contact with contaminated water.

Gastrointestinal Illness

-  Where episodes of flooding may occur, cases of **gastroenteritis** may increase, where persons wade in flood waters (which could also inflict skin-disease), or consume foods contaminated by these waters. This is the case in any area across Belize and the Caribbean islands.

Non-communicable Diseases

-  Excessive heat from high temperatures across the region (exacerbated by humid air across Belize and 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), **heat waves** can increase the risk of morbidity from **heat stress** in vulnerable persons, especially smaller children, the elderly, pregnant women and persons with NCDs such as diabetes and hypertension. 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
-  Particularly in September (and October in the Guianas), there will be an increased risk of **dehydration**, which may present an associated increase in its symptoms such as apathy, general weakness, dizziness, fainting, and, in extreme cases, kidney failure. This risk decreases as we approach November.
-  During the period, excessive exposure due to dangerous UV radiation can cause **skin damage** across the population on sunny days (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 flood waters.

Vector-Borne Illness

-  As the region enters the peak of the Wet Season, increased rainfall may create more breeding places for mosquitoes, but it may not be to the same extent as in years with extremely high rainfall in the Wet Season.
-  The presence of stagnant water in the aftermath of a flood may promote the **breeding of mosquitoes**. Irrespective of the presence of floods, water accumulating in any unattended, open containers may also potentially create more breeding sites for mosquitoes. Both situations would increase the risk of associated mosquito borne diseases such as **Dengue**, **Chikungunya** and **Zika**. However, note that in the case of flash floods, flood waters may sweep away mosquito eggs, larvae and pupae, potentially reducing mosquito populations. Access useful materials on mosquito control measures here: (https://www.paho.org/hq/index.php?option=com_content&view=article&id=12355:cde-mosquito-awareness-week&Itemid=42087&lang=en)
-  Episodes of flooding may occur in any area of the Caribbean Islands or Belize 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.

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 in the coming period. Given the possibility of severe weather events including tropical cyclones, health practitioners and administrators are urged to maintain a heightened state of **readiness** throughout the remainder of the 2019 Atlantic Hurricane Season.
-  **Food insecurity** could become a concern in the event of widespread crop damage resulting from extreme weather events that may occur during this period.
-  **Psychosocial impacts** are still being felt in the countries affected by the 2017 Hurricanes Irma and Maria. 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.
-  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.

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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 to July 2019

Rainfall

- The ABC Islands, Belize, parts of Hispaniola, Trinidad, and the Turks & Caicos Islands observed rainfall totals well below average, whereas the northwestern Bahamas and western Guyana have been very wet.

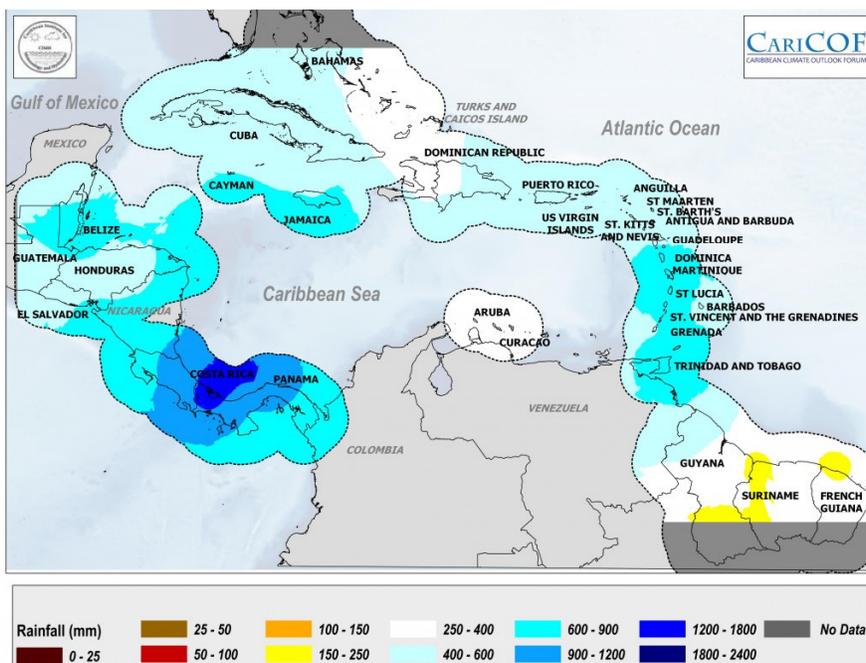
Temperature

- With the period forming the first half of the Caribbean heat season, temperatures have remained high. The Bahamas, Belize, Cayman, western & central Cuba, western Jamaica, Martinique and Trinidad were significantly warmer than average, with all-time high temperature records broken in June in Cuba and Jamaica, each nearing 40°C. By contrast, Antigua, parts of Dominica and Guadeloupe were significantly cooler than average.

What do we Usually Expect for September to 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 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 decreasing to nil afterwards.

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