



This Bulletin provides climate monitoring information for *April 2024*, as well as climate forecast information for *May to July 2024* for Grenada. Most historical observations were recorded at MBIA, Point Salines, St. George, with additional rainfall data throughout the State recorded by the NAWASA and Ministry of Agriculture. The forecast information is drawn from the Caribbean Climate Outlook Forum (CariCOF) climate outlooks (<http://rcc.cimh.edu.bb/climate-outlooks/>). Other inputs were made by the Land Use Division of the Ministry of Agriculture. For more information, contact: fe frank@gaa.gd, gtamar@gaa.gd, niones@gaa.gd, kjohnson@gaa.gd, kclarke@gaa.gd and/or tmiller@gaa.gd.

- HIGHLIGHTS**
- [Drought watch continues for the State of Grenada at least up to the end of May 2024.](#)
 - [Above-normal temperatures expected to persist, with imminent heatwaves during the Heat Season.](#)
 - [Extremely active Atlantic Hurricane Season forecast for 2024.](#)

Getting Acclimatized: Preparing for the heat

Heat exhaustion is a heat-related illness that can occur after you have been exposed to high temperatures, and it often is accompanied by dehydration. Two types of heat exhaustion:

1. **Water depletion.** Signs include excessive thirst, weakness, headache, and loss of consciousness.
2. **Salt depletion.** Signs include nausea and vomiting, muscle cramps, and dizziness.

<https://www.webmd.com/fitness-exercise/heat-exhaustion>

Looking Back: Feb. - Apr. 2024 Climate Outlook Verification

	Outlook	Normal Range	Observation
Rainfall (mm)	Above-normal	64 - 105	39.1
Wet Days	Normal	11 - 24	9
7-Day Wet Spell	Normal to above-normal	0 - 1.8	0
Tmax (°C)	Above-normal	29.9 - 30.3	31.2
Tmin (°C)	Above-normal	23.6 - 24.4	26.0

MONITORING INFORMATION

Rainfall: April's low rainfall across the State of Grenada exacerbated the dry conditions that started in February. Point Salines was among the driest locations with a mere 5.7 mm of rainfall recorded throughout the month. This was far lower than April's average rainfall of 36.4 mm at the southernmost end of the mainland. The highest total was recorded at Spring Garden, Birchgrove, an indication of the influence of topography on Grenada's rainfall distribution. Nonetheless, all rainfall recording stations measured below-average precipitation for the month. This deficit in rainfall has led to water shortage and value regulation by NAWASA. Figure 1 shows a mobile water storage tank parked in one of the hardest hit areas in St. George. The aim was to give consumers easy access to potable water while their pipes remained dry at home. To conserve water, the government

and several stakeholders have implemented stringent measures such as no washing of vehicles or wetting of gardens with hoses.



Figure 1: NAWASA's Mobile Water Storage Tank

While April is historically among the driest months of the year, the moderately dry conditions experienced since February made the situation "on the ground" quite challenging. The prolonged episode of widespread Saharan dust across the region added to adversity by drying the atmosphere and lowering the chance of rainfall.

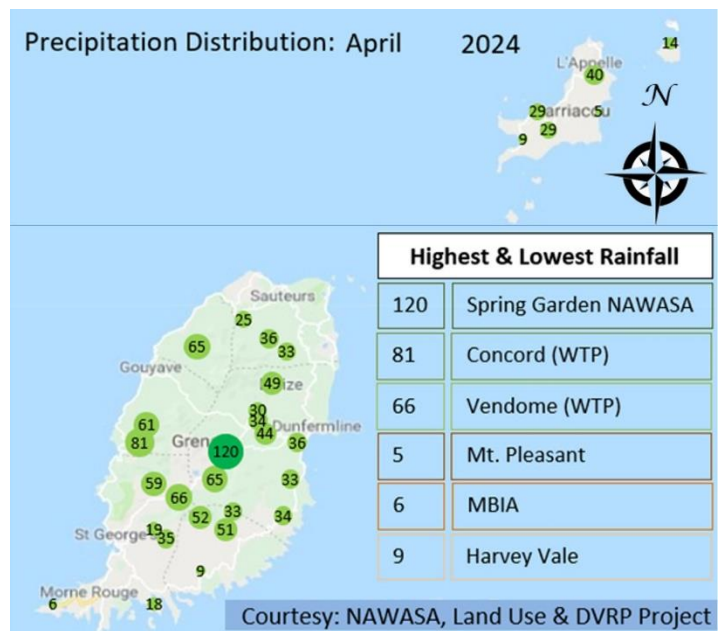


Figure 2: Grenada's Rainfall Distribution April 2024

The following graph shows the current Water Year's cumulative rainfall, 1,098 mm, until the end of April at Point Salines being almost equal to the historical average.

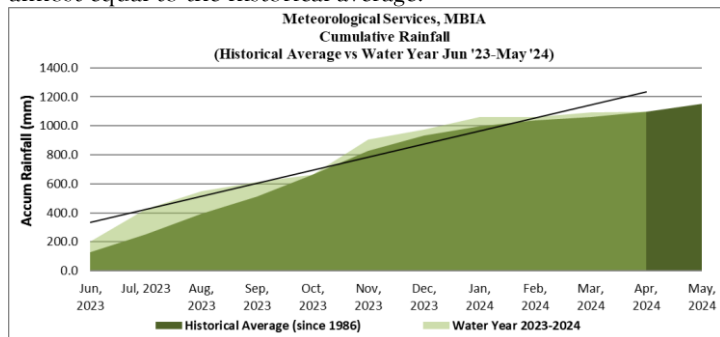


Figure 3: Point Salines Cumulative Rainfall (up to Apr. 2024) vs Historical Average

Drought: April's Standardized Precipitation Index (SPI) indicated *moderately dry* conditions at Point Salines. As noted above, February to April were moderately dry at the airport. Analysis of meteorological data showed that the potential evapotranspiration (PET) was approximately 5.6 mm/day which means that the atmosphere (over Point Salines) demanded 29.6 times more water than supplied.

Period	Rainfall deficit/excess
April 2024	Moderately dry
Feb. – April 2024	Moderately dry
Nov. 2023 – April 2024	Normal
May 2023 – April. 2024	Normal

Table 1: Rainfall deficit/excess at Point Salines based on Standardized Precipitation Index (SPI)

Temperature: At Point Salines, 26 of the 30 days of April were extremely hot. A maximum temperature of 32.7 °C was recorded on the 1st and 5th, making them the hottest days. The long-term maximum temperature at Point Salines is 30.4 °C. The coolest night was the 14th with a minimum temperature of 24.1 °C but most nights were hot and uncomfortable. The average minimum temperature for April is 24.8 °C. Globally, April 2024 was the warmest April on record according to Copernicus Climate Change Service. This marks eleven consecutive months of record heating based on its dataset. As the region enters its Heat Season, elevated temperatures are expected to continue.

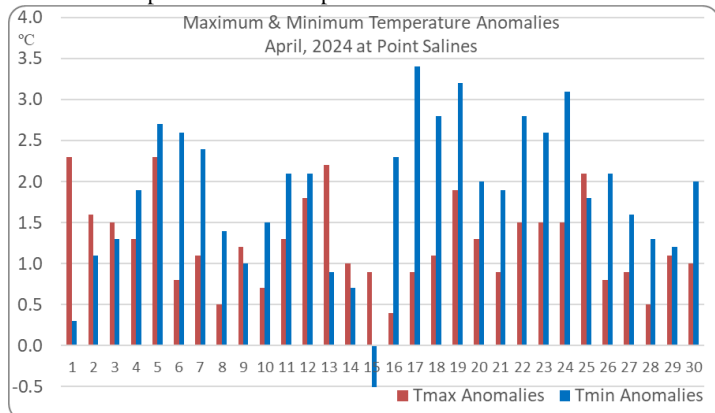


Figure 4: Maximum and Minimum Temperature Anomalies as recorded at Point Salines.

QUICK STATS: Atlantic Hurricane Season

On average, 1991 – 2020 data, the Atlantic Hurricane Season which runs from June 1 to November 1 brings fifteen named storms, seven hurricanes, and three major hurricanes (category 3 and greater).

FORECAST INFORMATION (May – Jul. 2024)

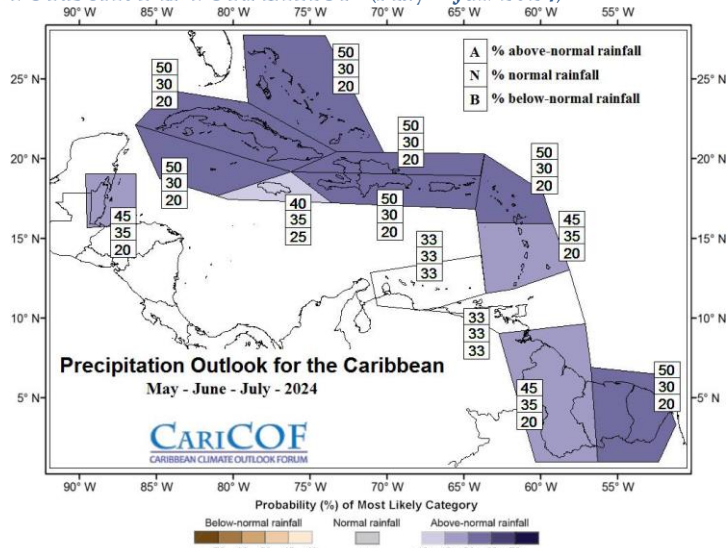


Figure 5: Precipitation Outlook for the Caribbean

Precipitation: Above-normal to normal rainfall is expected across most of the Caribbean. For Grenada and the rest of the Windward Islands, there is a higher chance for wetter than normal conditions until the end of July. This is depicted above, in Figure 5. The normal rainfall range for this period at Point Salines is 255 – 365 mm. Record-warm SSTs around 1.0°C to 2.0°C above average have been observed in the Caribbean Sea and the Tropical North Atlantic (TNA) since the summer of 2023. Models are confidently forecasting increasingly warm SST anomalies of 1.0°C to 2.0°C (or more) around the Caribbean and the TNA. Warm SSTs in and around the Caribbean tend to contribute to higher air temperatures with above-average humidity, seasonal rainfall totals, an increased frequency of extreme rainfall, and increased tropical cyclone activity throughout the Atlantic hurricane season.

Frequency of wet days (≥ 1 mm): There are likely to be normal to above-normal wet days over the next three months. Between May and July 34 to 56 wet days are forecast, whereas normally there are 30 to 48.

Frequency of 7-day wet spells: Usually, there are two to five 7-day wet spells between May to July. This year, the forecast is for three to nine 7-day wet spells.

Frequency of extreme (top 1%) 3-day wet spells: Climatologically, May to July has up to one extreme 3-day wet spell. The latest forecast indicates up to two extreme 3-wet spells this year.

Drought: There is still ongoing concern for drought conditions up to the end of May for the State of Grenada. However, there is no concern for June and July.

Dry Spells: There is a 40% probability for at least three 7-day dry spells, which is normal, and a maximum of five to six 7-day dry spells for May to July.

Daytime Maximum Temperature: Above-normal daytime maximum temperatures are expected for the next three months. This is indicated by an outlook of 60% probability for above-normal. Historically, the normal daytime maximum temperature range at Point Salines is 30.5°C-30.9°C for this period.

Nighttime Minimum Temperature: Like the daytime maximum temperature, above-normal nighttime minimum temperatures are also expected for the next three months. Similarly, there is 60% probability for above-normal nighttime minimum temperatures. Historically, the normal nighttime minimum temperature range at Point Salines is 24.9 °C-25.5 °C for this period.

GENERAL IMPLICATIONS

The transition from dry to wet season will be welcomed by most if not all as Grenada has been experiencing drier than normal conditions since February. In addition to the anticipated increase in rainfall, Grenada and the region have started the 2024 Heat Season. As the coming months are forecast to bring above-normal day and nighttime temperatures, citizens can expect warm, humid conditions which are synonymous with heat waves and significant rainfall events which can result in flood and landslides. It is important to note that extreme rainfall events may be accompanied by high winds, adding to the potential for hazardous conditions, damage to property and threat to lives and livelihoods.

WHAT DOES THAT MEAN FOR SECTORS?

Water: Despite a forecast for above-normal to normal rainfall between May and July, the government and relevant authorities have enforced much-needed water conservation measures. That is because Grenada is experiencing drought conditions which may continue until last May. These measures include “**limitations on irrigation and watering of gardens, lawns, and grounds; restrictions on washing roadways, pavements, paths, garages, out-rooms, or vehicles employing hoses.**” Additionally, citizens are prohibited from the “**filling of swimming pools, ponds and any other activities deemed by the authority to necessitate a significant or excessive quantity of water.**” Nonetheless, citizens are encouraged to properly store up to three (3) days of potable water and monitor the usage of water by children. All relevant stakeholders including the Met Office, NAWASA, NaDMA, and the government of Grenada are monitoring the water situation and engaging in regular discussions.



Health: There is a serious concern about heat-related illnesses during the next six months. The region is entering an intense heat season, with recurrent heatwaves. People are urged to avoid outdoor activity between 10:00 am and 4:00 pm. While outdoors, be advised to stay hydrated and apply sunscreen. Provisions should be made for the elderly and young children to keep them cool and hydrated. There will be a need for increased artificial cooling devices, such as fans and air conditioning units. Vector-borne diseases will also be a concern during this period, therefore, it will be wise to cover stored water to avoid mosquito breeding and install mosquito nets and meshes in homes where possible. The frequency of Saharan dust plumes in the Caribbean region is unpredictable at this time. Persons with respiratory illness are to pay attention to the weather forecast concerning dust incursions.



Agriculture: Alternative practices to watering gardens with hoses must be adopted along with increased mulching for the conservation of soil moisture. This may be crucial for farmers in the extreme north and south of the state where orographic rainfall is not expected. In addition, farmers may have to consider reducing the size of plot under cultivation to limit the demand for water. As temperatures are expected to be above-normal, farmers should ensure water management plans are in place, taking into consideration water for livestock as well as crops. By planting non-traditional crops that demand less water, farms can help to prevent stress on the system. With the onset of the rainfall by June, these measures can be loosened or even reversed to manage the excess water.



Tourism: With a forecast for above-normal to normal rainfall it indicates that the potential for disruption for outdoor activity will increase in the coming weeks. However, it may take a few weeks of significant rainfall before outdoor activities such as river tubing can resume. The forecast for above-normal day and nighttime temperatures indicates that there will be an increase in the demand for cooling. Apart from the heat, visitors are advised to protect themselves during episodes of significant dust haze.



Disaster Risk Management: Early predictions from Colorado State University forecasters signal an ‘extremely active’ Atlantic Hurricane Season. This year, experts are forecasting twenty-three named storms, eleven hurricanes, and five major hurricanes. While an extremely active season does not necessarily mean Grenada will be impacted by a tropical cyclone making landfall, there may be indirect impacts from nearby tropical cyclones, as well as other weather phenomena typical of this season, such as tropical wave and troughs which can be hazardous at this time of year. These systems can also result in intense rainfall events, which cause floodings, landslides and destructive winds. Considering the above, everyone is advised of the need to keep drains clean from debris, and trim tree branches near buildings to minimize the impact of such events.

