Grenada National Climate Bulletin
Vol 3 / Issue 07
July 2020

This Bulletin provides climate monitoring information for *June 2020,* as well as climate forecast information for *July to September 2020* 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 NaDMA. For more information, contact: fefrank@mbiagrenada.com, gtamar@mbiagrenada.com, njones@mbiagrenada.com and/or tmiller@mbiagrenada.com .

HIGHLIGHTS

- Historic Saharan dust plume blankets Grenada and other Caribbean islands.
- Gust fronts affect southern portion of Grenada.
- Slight increase in Colorado State University's forecast for this hurricane season.

Getting acclimatized

Gust front: A boundary that separates a cold downdraft of a thunderstorm from warm, humid air at the surface. When the cold downdraft reaches the earth's surface, it pushes out in all directions, producing strong, gusty winds, occasionally exceeding 55 knots. Ref. Meteorology Today

Tropical Cyclone Heat Potential: An index used to quantify the upper ocean heat content, and represents a robust measure of how much energy is available in the ocean to sustain or modify the intensity of a tropical cyclone. Ref. Meteorology Today

MONITORING INFORMATION

Rainfall: Rainfall in early June, attributed to propagating tropical waves, brought a significant and much needed surge in conditions across the state. Several stations reported their highest 24–hour rainfall between the 5th and 7th of the month. For instance, the Automatic Weather Station (AWS) in Clozier measured 43.4 mm between the 6th and 7th while the AWS in Laura and Lauriston measured roughly 30 mm and 38 mm respectively between the 5th and 6th. At Point Salines, the month's total climbed to 132 mm, slightly above the long–term average. Had it not been for the dense plume of Saharan dust that placed a damper on the rainfall in the latter half of the month, rainfall totals would have been far greater. Yet, NAWASA's water treatment plant in Vendome recorded an impressive 303.5 mm, an indication of the replenishment of the commission's water supply. Figure 1 displays June's rainfall totals across the state. On 27th June, ***gust fronts*** associated with an intense rainfall event over Trinidad produced squally activity over the southern portion of Grenada; however, only 5.7 mm of rainfall was recorded at Point Salines on that day.

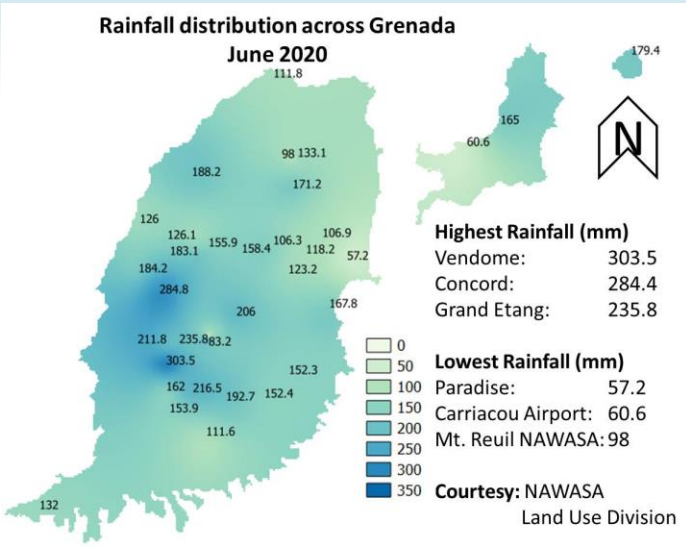


Figure 1: Grenada's Rainfall Distribution June 2020

June brought a noticeable start to the new water year (June–May) and made a considerable contribution to rainfall totals for the year so far. The graph in Figure 2 below shows rainfall totals for the first half of this year surpassed the first half of 2019 at most stations.

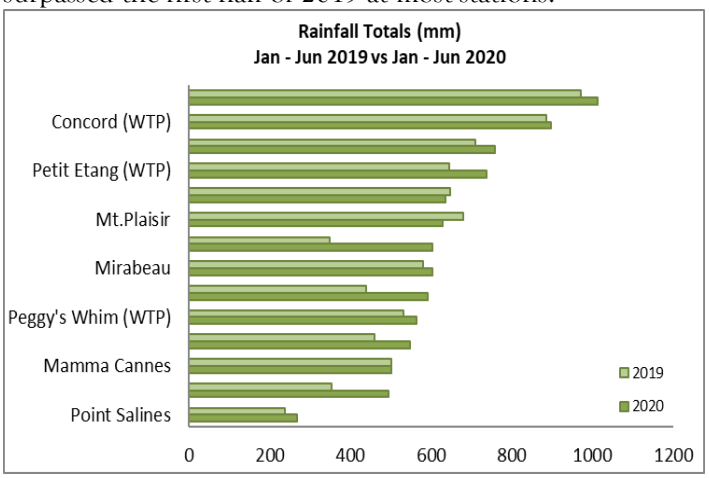


Figure 2: Point Salines Rainfall Jan – Jun 2019 vs Jan – Jun 2020.

Drought: Table 1 shows that the rainfall total for June was normal; whereas, the previous 3 months at Point Salines were abnormally dry. Conditions at Point Salines led to a Grass Reference Evaporation rate of 5.4 mm/day. Hence, the atmosphere's demand for water was slightly above that

which was received. As mentioned above, the Saharan dust which was most dense between 20th and 22nd limited the excessive rainfall and was reported to be the worst in the last 10 years.

Period	Rainfall deficit/excess
June, 2020	Normal
Apr. 2020 – Jun. 2020	Abnormally dry
Jan. 2020 – Jun. 2020	Normal
May 2019 – Jun. 2020	Normal

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

Temperature: 2020 is the second warmest year on record, so far (Jan – Jun), according to Scientists at the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information. The record high was set in 2016 and this year to date, the average global temperature was 1.07°C, which is only 0.05°C cooler than that of 2016. At Point Salines, the average daytime maximum temperature recorded for June 2020 was 30.7°C, which is on par with the long-term average of 30.6°C. The highest daytime maximum temperature was 31.7°C, while the coolest night recorded a minimum temperature of 23.4°C. The average nighttime minimum temperature was 26.0°C, which is above the long-term average of 25.1°C as has been the case for the last few months. Figure 3 below shows that most nights were warmer than average throughout June. Between the 21st and 26th June, a warm-spell was recorded at Point Salines with both average daytime maximum and average nighttime minimum temperatures above the days' 90th percentile.

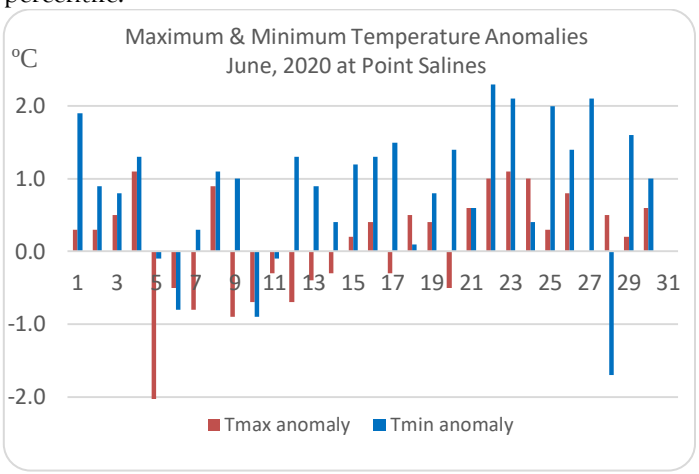
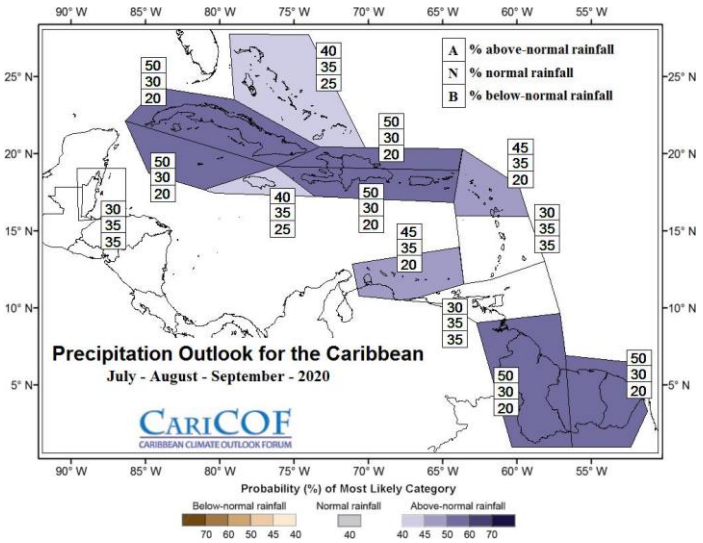


Figure 3: Maximum and Minimum Temperature Anomalies as recorded at Point Salines

QUICK STATS: Will 2020 continue to break records?

The 2005 Atlantic hurricane season was the most active season in recorded history. The season maxed out the assigned storm names with Grenada being impacted by Emily in mid-July. In the end, 31 storms were formed with 6 developing into hurricanes.



FORECAST INFORMATION (Jul. 2020 – Sept. 2020)

Figure 4: Precipitation Outlook for the Caribbean

Precipitation: Uncertainty in the rainfall predictions for the Windward Islands and Trinidad and Tobago continues; hence, Figure 4 depicts this with 30% above-normal, 35% normal and 35% below-normal. The normal range for this period at Point Salines is 387–457 mm. Borderline La Niña conditions are now in place, which increases the chances of more rainfall and stronger hurricane activity. Models continue to favour either El Niño Southern Oscillation (ENSO) neutral or a transition to La Niña up to September and even through October to December. As mentioned in previous editions, ENSO neutral conditions offer little contribution to seasonal rainfall prediction in the Caribbean.

Frequency of wet days: Wet days are days on which at least 1.0 mm of rainfall is recorded. This year 36 to 50 wet days are forecast from July to September. On average, there are 39 to 48 wet days during this period.

Frequency of 7-day wet spells: During the next three months, there are usually four to six 7-day wet spells. The forecast is for three to six 7-day wet spells.

Frequency of extreme (top 1%) 3-day wet spells: The forecast is for two extreme rainfall events, which is typical of this period.

Drought: There is no concern for short-term (up to the end of September) or long-term (up to the end of November) drought for Grenada and most of the other islands of the Lesser Antilles.

Dry Spells: Up to three 7-day dry spells are normal for July to September. The latest forecast indicates one to four 7-day dry spells. There is usually a maximum of one 10-day dry spell during the next three months. This year the forecast is for the norm.

Daytime Maximum Temperature: The forecast for above normal temperatures continues for this period, with 70% confidence. Historically, the normal daytime maximum temperature range at Point Salines is 30.7°C – 31.0°C for this period.

Nighttime Minimum Temperature: Like the daytime maximum temperature, the forecast for the nighttime minimum temperature is also for above normal, with 50% confidence. The normal range at Point Salines is 24.8 °C – 25.2 °C for July to September.

GENERAL IMPLICATIONS

The rainy season started off notably well, with rainfall quantities on par, or exceeding long–term averages for the month June. Despite the rainfall prediction offering little guidance, propagating tropical waves as well as a migratory Intertropical Convergence Zone (ITCZ) can generate significant amounts of rainfall. Sea surface temperatures (SSTs) in the Tropical North Atlantic and the eastern Caribbean Sea remained around 1°C above normal. Prolonged warm SSTs tend to contribute to above–normal humidity, frequent wet spells and an increase in the ***Tropical Cyclone Heat Potential***, which can increase Atlantic Hurricane Season activity. It is no surprise that Colorado State University has since increased its forecast for the season, moving from 19 to 20 named storms. In addition, with a persistent forecast of above–normal daytime and nighttime temperatures, the probability of heat stress remains high. This may occur at any time of day, especially if rainfall does not increase.

WHAT DOES THAT MEAN FOR SECTORS?

Water: Despite an admirable start to the rainy season, the National Water and Sewerage Authority (NAWASA) continues to have challenges with supplying water to consumers in some areas. As the season progresses; however, some easement should come as more catchments are replenished. Notwithstanding the need for rain, the forecast of two extreme events can damage water mains and cut off water supply in affected areas. Hence, the Authority continues to urge consumers to have a plan. At least 35 gallons of water per person should be stored, per day, for at least three days; for drinking and sanitation. However, be mindful that individual needs may vary depending on age, health, physical condition, activity, and diet. NAWASA therefore reminds the public to consider the needs of every member of the household when storing water, including pets.

Health: As stated above, the probability of heat stress remains high, and July to September will take the region into the heart of its Heat Season (May to October). There are several illnesses such as heat strokes, heat exhaustion, heat cramps, etc. that are associated with heat stress. Knowing their symptoms is important for early detection and response. For more information, visit https://www.cdc.gov/niosh/topics/heatstress/default.html. These illnesses can coincide with surges in Saharan dust across the region; hence, persons with allergic rhinitis and asthma should take precautions against these eventualities.

Disaster Risk Management: This is expected to be a unique year for Disaster Management, as key sectors will need to review their hurricane plan congruent with the COVID–19 regulations which currently exists. With an above average hurricane season forecast during this pandemic, the National Disaster Management Agency (NaDMA) reminds the population to always be prepared, as it will be detrimental to become complacent during this season. With most people still working from home, the Agency urges all to set aside some time to ensure all gutters are cleared, drains are open, emergency supply kits are restocked, and the need to revisit family emergency plans will all family members. NaDMA also implores the public to practice the principles of comprehensive Disaster Management; be prepared for all hazards and implement all phases of disaster management – Prepare, Prevent, Respond and Recover.

Tourism: Until the complete reopening of the nation's borders, staycations are encouraged and promoted to increase occupancy at hotels and guesthouses. However, hoteliers and vacationers alike must be mindful of the forecast for above–normal daytime and nighttime temperatures. This may increase the need for fans and air conditioning units, causing heightened energy consumption. Also, guests may be urged to consume more drinks to stay hydrated and cool.

Agriculture: There is no concern for neither short–term nor long–term drought for Grenada and its dependencies. However, with an uncertain rainfall forecast, farmers should continue to pay attention to rainfall totals and available soil moisture. Crop should be carefully selected, as rainfall is never evenly distributed across the country and days and weeks. Serious consideration must be given to the crops' growth period; water demand, resilience to heat, etc. Livestock farmers should ensure that they and their animals remain hydrated. It is advisable that farmers limit their time in the heat, take breaks in the cool, increase the labour force where possible and dress appropriately.

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