



ANNOUNCEMENTS

ENSO neutral conditions, or at best a weak La Niña, are likely during the September to November period. However, rainfall amounts are still expected to increase approaching the latter part of the wet season into the 2017 dry season. This would continue to alleviate drought conditions across the Caribbean. **Though parts of the eastern Caribbean are likely to have normal to below normal rainfall until November, it is expected that there will still be enough rainfall (in total) that would satisfy rainfed agriculture, and particularly available water for irrigation. The north and western Caribbean, in particular should take care in mitigating waterlogging at this time.** Heat stress, particularly during dry spells may at times cause concerns about plant, animal and human health.

REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR AUGUST 2016

Mixed conditions were experienced across the eastern Caribbean and Guyana for the month. Trinidad and Antigua were normal; Tobago severely dry; Grenada slightly dry; St. Vincent and Barbados exceptionally dry; St. Lucia slightly wet; Dominica moderately dry; and northern Guyana from moderately wet in the north to normal further south. In Jamaica, the west was exceptionally wet and ranging to slightly dry in the east, while Belize ranged from exceptionally dry in the south to moderately wet in the north.

Most annual cropping takes place over a period of about three months. For the three month period, Trinidad was normal to slightly dry; Tobago extremely dry; Grenada, Dominica and Antigua normal; Barbados and St. Vincent moderately dry; St. Lucia moderately wet; and northern Guyana ranging from very wet in the north to normal in the east. In Jamaica conditions ranged from very wet in central areas to slightly dry in the east, while Belize ranged from normal in the south to moderately wet in the north.

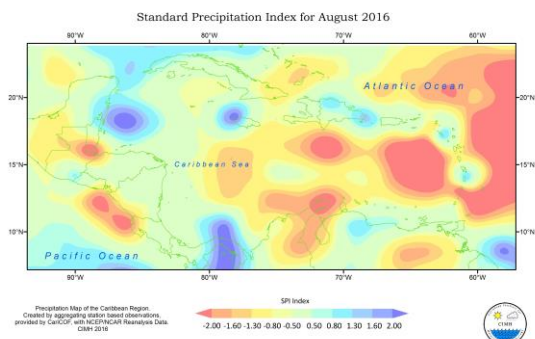


Figure 1. SPI for the Caribbean for August 2016. More information on the SPI can be viewed at <http://rcc.cimh.edu.bb/climate-monitoring/spi-monitor/>.

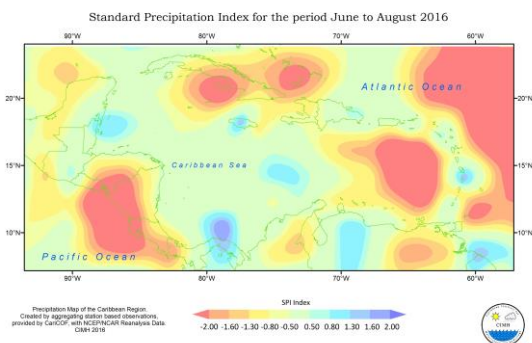


Figure 2. SPI for the Caribbean for June to August 2016. More information on the SPI can be viewed at <http://rcc.cimh.edu.bb/climate-monitoring/spi-monitor/>.

The dominant feature throughout the month was the Bermuda/Azores High pressure system. There were however a number of tropical waves that influenced the weather. A strong tropical wave which moved across the Lesser Antilles towards the end of July became Tropical Storm 'Earl' on August 2nd as it moved into the far western Caribbean Sea. In contrast with the first half of August, four tropical

cyclones developed between the middle and latter half of the month. Both ‘Fiona’ and ‘Gaston’ formed near the Cape Verde Islands and tracked north-westward into the central Atlantic and away from the eastern Caribbean. Tropical Depression #8 formed just east of South Carolina while Tropical Depression #9 became Tropical Storm ‘Hermine’ in the north-eastern Gulf of Mexico. ‘Hermine’ eventually tracked north-eastward across the Florida Panhandle.

Temperatures were normal to above normal over most of the Caribbean.

NATIONAL OVERVIEWS

Barbados

Average wind-speeds of just 14mph and an average air temperature of 31.9°C contributed to the warm and humid conditions which were experienced across Barbados throughout the month of August. Only on the 12th did the daily maximum temperature equal the long-term average (1981-2010) of 30.9°C. On all other days, maximum temperatures ranged between 31.1 and 32.7°C; on twenty of these days, the maximum temperature exceeded 32°C.

Over the southern section of the island, August rainfall totals ranged from 42.8mm at Union Hall, St. Philip to 121.3mm at Drax Hall, St. George. Rainfall totals were more significant over the northern and higher elevations of the island and ranged between 116.3mm and 226.5 mostly over St. Andrew.

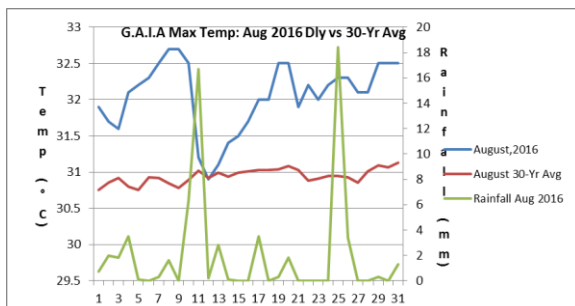


Figure 3 August 2016 daily rainfall as well as daily maximum temperature compared with the 30 year average at Grantley Adams International Airport, Barbados.

At the Grantley Adams Airport, there were only two significant rainfall events during August. These

events occurred on the 11th and 25th, and produced 16.7mm and 25mm of rainfall respectively. As a result, the rainfall total for the month of August at the airport was 65.3mm, or 46% of the long-term average for August of 141.9mm.

Dominica

Below normal rainfall totals were recorded in Dominica. Occasionally there were gusty winds and haze observed.

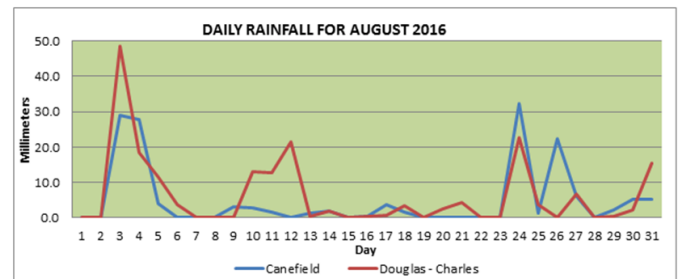


Figure 4 Daily rainfall at Canefield and Douglas-Charles Airports, Dominica during August 2016.

Below normal rainfall of 152.2mm was recorded at the Canefield Airport. This total represents about 62% of the 30 year average. A tropical wave on the 24th produced the month’s maximum 24 hour total of 32.3mm. There were 17 rainfall days (3 days below average). There was a 5-day dry spell during the second half of the month. The average air temperature was 29.5°C (above average). The highest temperature recorded was 34.6°C on the 8th and the lowest 23.1°C on the 10th. The average wind direction was south south east at 7km/h. The Atlantic High Pressure System generated the highest gust of 43km/h on the 30th.

Below normal rainfall was also recorded at the Douglas-Charles Airport. A total of 194.3mm was recorded, 76% of the 30 year average. Overnight showers on the 3rd due to the passage of a tropical wave resulted in the month’s highest 24 hour total of 48.4mm. There were 16 rainfall days (6 days below average). The average air temperature was 29.2°C (near average). The highest temperature recorded was 32.3°C on the 23rd and the lowest 23.0°C on the 22nd. The average wind direction was east south east at 13km/h. The highest gust of 44km/h was recorded during the passage of a tropical wave on the 4th.

Grenada

Tropical waves produced some rainfall, especially on the 1st, 4th, 10th and 14th with the ones on the 4th and 14th producing 24 hour periods of rainfall of 30.9mm and 15.0mm respectively. The waves on the 1st and the 10th produced 10.1mm and 10.3mm respectively, but there were eleven days with little or no rainfall at all. The total rainfall for the month of August was 115.3mm which was 22% or 32.5mm below the 30-year average of 147.8mm.

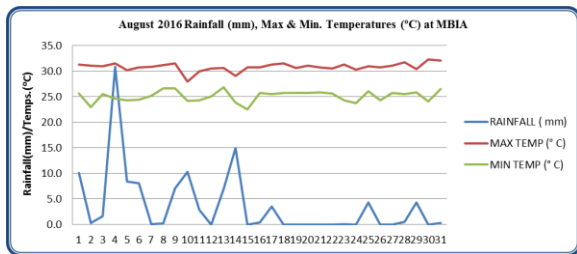


Figure 5 August 2016 daily rainfall, as well as daily maximum and minimum temperature at Maurice Bishop International Airport.

Temperatures for the month were mostly lower than August 2015 and the 30-year average. The daily mean temperature of 28.0°C was 0.1°C lower than 2015. The mean monthly minimum temperature of 25.1°C was 0.4°C lower than 2015. The lowest minimum temperature of 22.5°C which occurred on the 15th was 1.4°C and 0.3°C lower than 2015 and the 30-year average. The highest monthly maximum temperature of 32.3°C which occurred on the 30th was 0.2°C lower than 2015. The mean monthly maximum temperature of 30.8°C was the same as 2015, but however, was lower by 0.1°C than the 30-year average.

The Bermuda/Azores High peaked at 1037mb on the 10th and was at least 1025mb for more than half the month. This resulted in strong winds with gusts that peaked at 81.5km/h on the 14th and moderate to rough seas. As a result, marine advisories were issued on the 14th and 29th of the month.

With the moderate to rough seas, fisher folk did not venture too far from shore and had moderate catches of black and yellow fin tuna and some Marlin on the East Coast. There were also a few catches in dolphin, red hind and Snapper.

Even though rainfall was 22% or 32.5mm below the 30-year average of 147.8mm, it was 17.87% or

20.6mm more than August 2015. This continued increase of rainfall meant that farmers continued to have good production in Beans, Pumpkins, Plantains, Watermelons, Okra, Cabbages and Cantaloupes.

Guyana

Guyana had a monthly average of 175.4 mm of rainfall with 13 rain days. The highest total for the month was at Kaieteur with 387.3mm and 18 rain days. The highest 24 hour total was recorded in Region 9 at Parishara Rupununi with 108.6mm on the 23rd. Most of the stations recorded above normal to near normal rainfall.

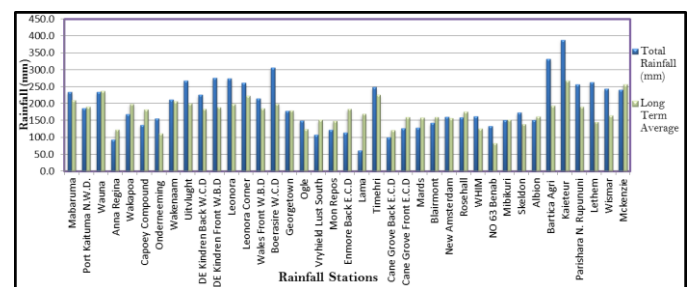


Figure 6 Rainfall totals for August 2016 compared with August averages at select stations in Guyana.

The highest 24 hour temperature was recorded at Timehri with 35.5°C on the 15th. Timehri also recorded the highest mean maximum temperature of 33.0°C. The highest mean minimum temperature was recorded at New Amsterdam Region 6 with a value of 24.3°C. Ogle in Region 4, recorded the highest 24 hour minimum temperature of 26.2°C on the 22nd.

Timehri recorded the highest average daily potential evapotranspiration of 3.7mm along with the highest 24 hour total of 5.1mm on the 27th. Lethem recorded the lowest daily average potential evapotranspiration of 2.9mm and the lowest 24 hour total of 1.5mm on the 4th.

Moderately dry to moderately wet conditions were experienced across the country in August. The secondary dry season commenced in the month of August. During the month it was reported that farmers in Region 10 planted crops such as eddoes, pineapples, corn and peanuts. The peanut crop was mostly being affected by the presence of nematodes found in the soil which causes the plant to decay. Diseases were also found on the pepper and pea

plant. There were no reports of significant effects of the weather on agricultural production.

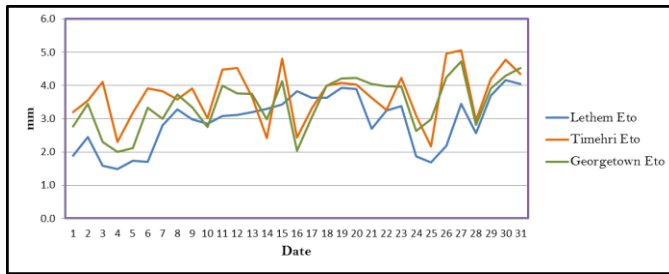


Figure 7 Reference Crop Evapotranspiration for select stations in Guyana, for August, 2016.

St. Lucia

Saint Lucia experienced normal to below normal rainfall for the month of August. At Hewanorra Airport, the rainfall was 191.7mm, 25.4mm above average. The monthly rainfall total at GFL Charles was 74.9mm below average, with a total of 146.1mm. There were 9 rainy days with two dry spells lasting 5 days each. At GFL Charles there were 11 rainy days with two dry spells; the longer lasting 6 days. Saint Lucia also experienced above normal maximum and minimum temperatures for the month of August.

September – October is the peak of the rainy season in Saint Lucia. The mean rainfall for September at Hewanorra is 181.8mm and 215.3mm for GFL Charles Airport. The precipitation at this time of year can be attributed mainly to the passage of tropical waves/disturbances and isolated convective rainfall activity. The seasonal outlook for the September, October and November (SON) period indicate a possibility of **below normal** rainfall or to range from 281 mm to 507 mm at Hewanorra and from 256 mm to 610 mm at GFL Charles. The extended precipitation outlook favours an elevated chance for wetter conditions in the early months of the dry season (December, January and February (DJF)). Rainfall in the Vieux-Fort area could range from 271 mm to 400 mm and in the Castries area to range from 362 mm to 780 mm.

As we approach the peak of the rainy season, there is no concern with regard to drought, however farmers should take the necessary measures to reduce the chances of flooding since there could be some isolated periods of heavy precipitation.

Table 1 August 2016 monthly averages at Hewanorra Airport, St. Lucia.

Cloud Cover (oktas)	Wind Dir (° from N)	Wind Speed (kt)	Air Temp. (°C)	Rainfall Mean (mm)	Rainfall Total (mm)
4	100	12	28.8	166.3	191.7
RH (%)	Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)
78	31.7	26.8	10.0	8.4	28.3

Table 2 August 2016 monthly averages at George Charles Airport, St. Lucia.

Cloud Cover (oktas)	Wind Dir (° from N)	Wind Speed (kt)	Air Temp. (°C)	Rainfall Mean (mm)	Rainfall Total (mm)
4	90	7	29.2	221.1	146.2
RH (%)	Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)
76	31.6	25.3			

St. Vincent and the Grenadines

August was mostly dry and hot with light winds offering little support to alleviate the discomfort. Total rainfall recorded at the E.T Joshua Airport was 90.8mm, 146.2mm less than the average. There were 12 rain-days (days with ≥1mm), with the highest 24 hour rainfall (24.5mm) being recorded on the 14th. There was a significant decrease in the number of rain days. Tropical waves moved across the islands occasionally. Thunderstorms were reported on a few occasions. Highest total recorded rainfall was in the South Rivers area, in the north of the island. The first dekad (ten-day period) had ~13.8% of the month’s rainfall, the second dekad 62.3%, and the third dekad 23.9%.

The highest wind gust recorded at the E.T. Joshua Airport –55 km/h on the 14th. Sea swells were light to moderate in open waters.

The average maximum temperature was 31.7°C, and the average minimum temperature was 25.8°C. The extreme maximum temperature recorded was 32.2°C, 0.3°C higher than the 30-year average. The extreme minimum was 24.2; 1.3°C higher than the 30-year average. The mean relative humidity was 76%.

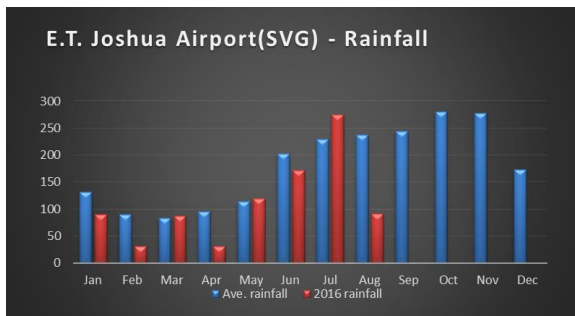


Figure 8 Average monthly rainfall compared with the January to August 2016 rainfall totals at E. T. Joshua Airport St. Vincent and the Grenadines.

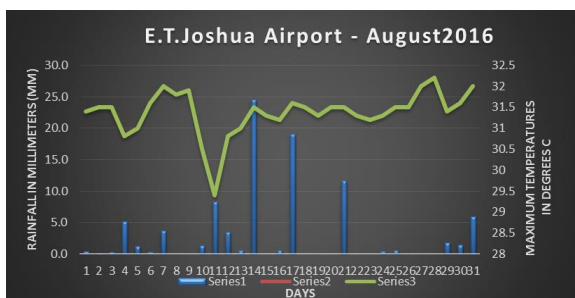


Figure 9 Daily rainfall and minimum temperature for August 2016 at E. T. Joshua St. Vincent.

Trinidad and Tobago

August’s rainfall total at Piarco, Trinidad was 225.3mm or 85.2% of the 1981-2010 average. At Crown Point, Tobago, rainfall total was 94.7mm or 57.5% of the 1981-2010 average.

In the first dekad, rainfall totalled 108.7mm at Piarco but in areas in the eastern half of the island, the totals would have been greater. Excessively wet conditions on the 5th resulted in flooding in some areas, which would have also affected some agriculture fields. Drier conditions continued in Tobago with significant rainfall occurring on the 4th, 9th and 10th. The ten-day rainfall totalled 48.6mm at Crown Point and this would have been similar in other areas. Daily maximum temperatures soared above 33.5°C on each day at Piarco, to average 34.0°C, while peaking at 34.9°C on the 4th. Tobago also experienced very warm conditions with maximum temperatures climbing above 32.0°C on six of the ten days, to average 32.0 °C during the period and peaking at 32.9°C on the 3rd. Accompanying the warm days were warm nights with minimum temperatures above 24.0°C on six nights at Piarco and above 25.5°C on seven of the ten nights at Crown Point.

During the second dekad at Piarco, moderate to heavy rainfall on five days of the period accounted for most of the rainfall of 51.0mm. In Tobago, the weather remained mostly unfavourable for agriculture as drier conditions continued although scanty to moderate rainfall occurred on seven of the ten days at Crown Point. The total at Crown Point was 19.2mm. Daily maximum temperatures were above 33.5°C on seven days at Piarco, to average 33.5°C while peaking at 34.7°C. In Tobago, the pattern was similar, with maximum temperatures climbing above 32.0°C on six days, to average 32.0°C during the period and peak at a warm 33.1°C. Accompanying the warm days were warm nights with minimum temperatures remaining above 24.0°C on four nights at Piarco and above 25.5°C on seven nights at Crown Point.

A ridge of high pressure extended over Trinidad and Tobago during the first four days of the last dekad, bringing mostly hot and dry air, which suppressed rainfall in most areas. Localized afternoon showers on the 23rd produced heavy rainfall totalling 17.6mm at Piarco. Ten-day rainfall totals between 30.0mm and 62.1mm were recorded across most areas of Trinidad. Low rainfall totals persisted in Tobago with a total of 26.9mm in southwest areas of the island. Both islands produced extremely high temperatures during the 22nd to 25th, with maximum temperatures soaring to 35.3°C in Trinidad and to 32.2°C in Tobago.

Overall, the conditions in Trinidad were adequate for agricultural activity. However the drier conditions in Tobago would have increased evapo-transpiration rates and the need for irrigation.

REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECASTS

The **ENSO** is currently in **neutral phase**, but with sea-surface temperatures (SSTs) in equatorial eastern Pacific (NINO3.4) at to 0.5°C below-average, which equates to borderline La Niña conditions. The majority of models suggests ENSO neutral conditions, or at best a weak La Niña, during the September to November period. A slight shift towards above- to normal rainfall is noted for much

of the Caribbean due to slightly reduced winds in the upper atmosphere, which allows for stronger, local showers to develop. Greater convection and a higher frequency of tropical cyclones may be more likely should a La Niña develop. La Niña is also likely to enhance rainfall activity into the 2017 dry season.

Caribbean Sea Surface Temperatures (SST) SSTs are presently 0.5-1°C above-average within the Caribbean and north Atlantic. These positive anomalies are expected to continue into the early months of 2017, and can result in rainfall increases across the Caribbean. Influxes of Saharan dust and dry air are currently high and likely to continue until the end of September, possibly negating somewhat any positive anomalies in rainfall.

September 2016 to February 2017

The southern portion of the eastern chain and portions of the Guianas are likely to experience normal to below normal rainfall totals during September to November. On the other hand, the Greater Antilles, including The Belize and The Bahamas, are expected to experience normal to above normal rainfall for the same period. There is much greater uncertainty elsewhere (i.e. in the Leeward Islands, Guyana and the ABC islands).

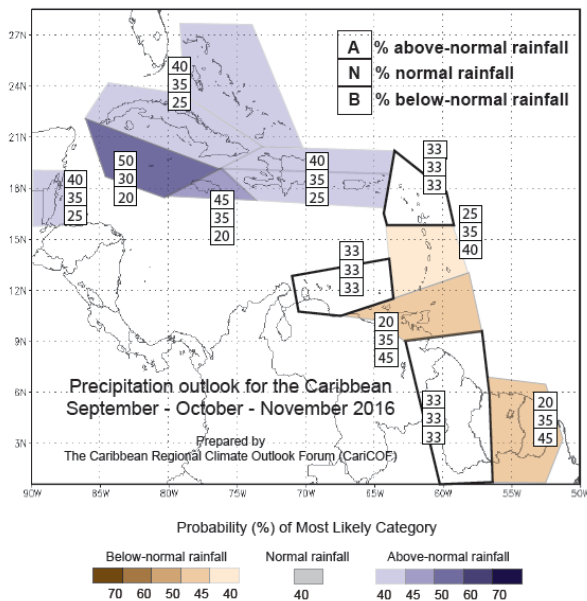


Figure 10 The September to November 2016 rainfall forecast

During December into February 2016, from the Guianas in the south across the island chain to Jamaica, as well as Belize, should expect normal to above normal rainfall. However, the northwestern

Caribbean, including Cuba, the Cayman Islands and The Bahamas should expect normal to below normal rainfall during this period.

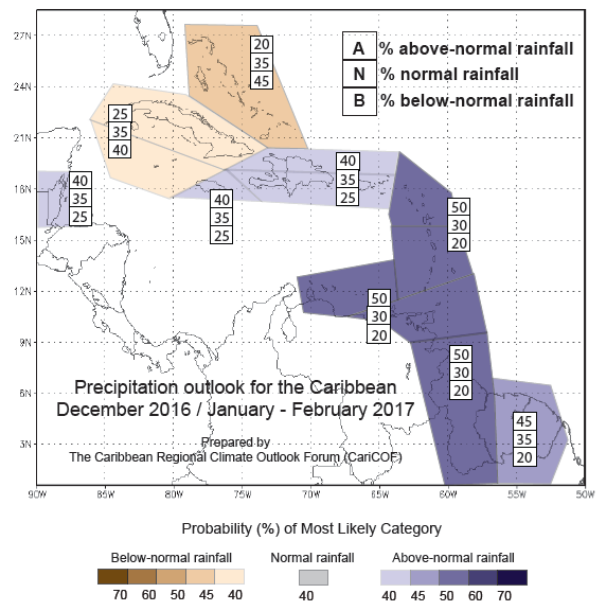


Figure 11 The December 2016 to February 2017 rainfall forecast

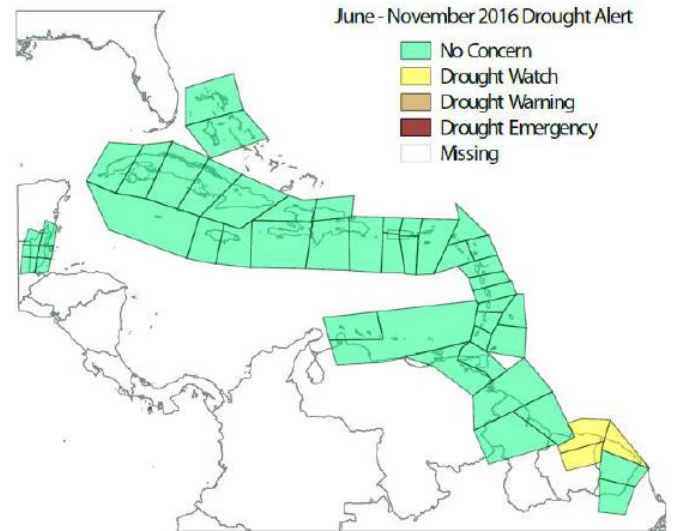


Figure 12 Drought Alert map (based on the SPI) for the end of November 2016, based on actual and forecasted rainfall for the period June to November 2016.

During the September to November period, there are likely to be more dry days with longer spells, with significant rainfall likely in more extreme events. Temperatures will likely be normal to above normal, with particularly high probability for above normal during the September to November period. Temperatures may well be higher during dry spells.

Forecast Implications for Agriculture

Drought alleviation continued in some countries while in some others, particularly in the southern portion of the eastern chain, concerns were again raised due to exceptionally low August rainfall. Despite this there are few concerns over agricultural (short term) drought until November 2016. Though parts of the eastern Caribbean are likely to have normal to below normal rainfall until November, it is expected that there will still be enough rainfall (in total) that would satisfy rainfed agriculture, and particularly available water for irrigation. What is likely to happen, particularly in the eastern Caribbean, is for rain to occur in more intense events, with longer dry spells between events. This would suggest greater vigilance and mitigation against waterlogging and erosion. Post November 2016 and into the first half of the dry season, the eastern Caribbean (apart from in the northwest, is likely to experience above normal rainfall, allowing rainfed growing at least until the end of the year. This would be in contrast with the 2015 dry season, when severe drought was the experience in most of the Caribbean.

Temperatures are likely to be above normal over much of the Caribbean, particularly until November. During dry spells, in particular, heat stress could be a concern for plant, animal and farmer health.

Prepared by

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