



**ANNOUNCEMENTS**

Dry season conditions were experienced over much of the Caribbean in January, except for in the northwest. With the eastern Caribbean and Belize in the west receiving below normal rainfall, and with these conditions forecasted to continue at least until April, cropping in these regions would become difficult without irrigation. **Rainfall harvesting, storage and soil water conservation techniques will become increasingly important over the next two to three months.** Conditions are like to see a reversal to excess water post May 2016.

**REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR JANUARY 2016**

Normal to below normal rainfall was experienced in the eastern Caribbean and northern Guyana in January. Trinidad, Grenada, St. Vincent, St. Lucia and Antigua were moderately dry; Tobago and Barbados normal; Dominica extremely dry; and northern Guyana slightly dry in the north to extremely dry in the southeast. Jamaica was slightly dry in the south and normal in the east, while conditions in Belize ranged from extremely dry in the south to slightly dry in the north.

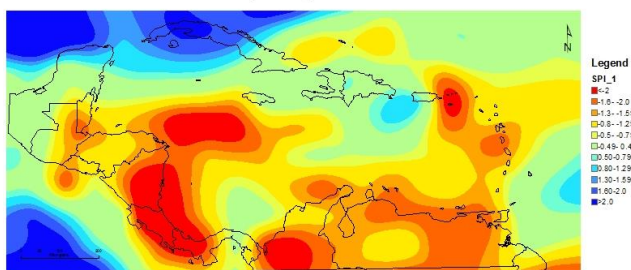


Figure 1. SPI for the Caribbean for January 2016. More information on the SPI can be viewed at <http://rcc.cimh.edu.bb/climate-monitoring/spi-monitor/>.

Most annual cropping takes place over a period of about three months. For the three month period, apart from St. Kitts and Grenada that were moderately wet, the eastern Caribbean and northern Guyana were normal to below normal. Trinidad,

Tobago and Barbados were normal; St. Vincent and St. Lucia slightly dry; Dominica and Antigua moderately dry; and northern Guyana normal in the west to moderately dry in the east. Jamaica was slightly dry, but conditions in Belize ranged from extremely wet in the west to slightly wet in the north.

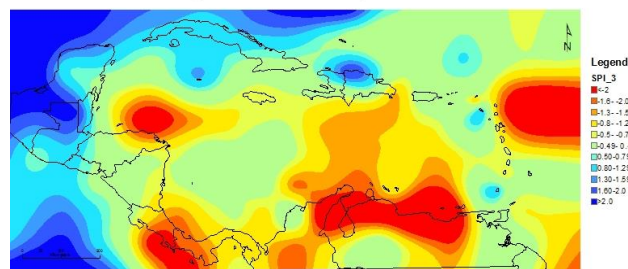


Figure 2. SPI for the Caribbean for November 2015 to January 2016. More information on the SPI can be viewed at <http://rcc.cimh.edu.bb/climate-monitoring/spi-monitor/>.

In the eastern Caribbean rainfall events, which produced normal to below normal rainfall totals, were associated with a series of trough features which lingered over the chain and provided weak enhancement of westward-moving cloud patches on the Trade winds. These resulted in light and moderate showers during the month. In the northwest, particularly over the The Bahamas and Cuba, frontal troughs were responsible for above normal rainfall. A mid latitude cyclone spawned an out-of-season hurricane I the subtropical Atlantic on the 14<sup>th</sup> January, which produced wind up to 85mph.

## NATIONAL OVERVIEWS

### Antigua and Barbuda

January finished with an above normal number of warm nights – five, at the V. C. Bird International Airport (VCBIA). Additionally, the mean daily minimum temperature, an indicator of night-time temperature, was above normal, tying with January 1986 for the ninth highest in a series dating back to 1969. Overall, the mean temperature for the month was near normal 25.4 °C.

Rainfall on average across the island for the month was below normal; island-average was 45.7mm. This January was drier than the previous one and the seventh sub-fifty mm January in the last 16 years. The number of wet days (days with at least one mm) and heavy rainfall days (days with at least 10mm) recorded at the VCBIA were near normal and below normal respectively. The drought remains at serious levels. Hence, surface catchments remain dry or below extraction levels. Over 90% of the country's potable water continues to come from desalination with the remaining coming from groundwater.

Land preparation activities are expected to culminate around the middle of February, according to the chief extension officer attached to the Ministry of Agriculture. Farmers are working with this deadline, so that crops can be available for the country's upcoming Carnival celebrations in summer.

According to the Plant Protection division, there are now two new infestation sites of the Giant Africa Snail, bringing the total number of areas impacted to 18. There has been a noted increase in the creature's population as there is little being done to curb or eradicate them. The livestock division has stated that animals are still in good condition. However, culling is still being considered. Many ponds are still dry; thus, producers have been relying on government supplied water to maintain herds.

### Barbados

Thirteen rain days ( $\geq 1$ mm of rainfall) in January contributed to a rainfall amount of 58.2mm of rainfall or 83% of the long-term (1981 to 2010)

average. The Airport recorded 24mm of rainfall between 5<sup>th</sup> and 8<sup>th</sup> January, another 10.8mm between 16<sup>th</sup> and 18<sup>th</sup> and 9mm between the 22<sup>nd</sup> and 24<sup>th</sup> of the month. These events were all associated with a series of trough features which lingered over the chain and provided weak enhancement of westward-moving cloud patches. Rainfall amounts across the remainder of the island ranged from a low of 36mm at Retreat, St. Lucy to a high of 115.2 at Springvale, St. Andrew. Bowmanston, St. John recorded 100.4mm.

The remainder of the month was dominated by a strong Bermuda/Azores high pressure system which generated moderate to strong surface to low –level winds ranging between 35 and 45km/hr.

The lowest minimum temperature was 19.2°C while the highest maximum temperatures was 30.2°C. These occurred on the 3<sup>rd</sup> and 6<sup>th</sup> January, respectively.

### Belize

The year began with a few showers along the coast and in the south. These showers continued on the 2<sup>nd</sup> and became isolated on the 3<sup>rd</sup>. The first cold front for the month crossed the country on the 4<sup>th</sup>. The only indication of its passage was light showers moving from west to east. Showers were observed over and near Belize through to the sixth.

The country experienced little rainfall activity during the next three days, as the frontal system moved out of the area. On the 10<sup>th</sup>, another cold front crossed the country. The front moved just off shore and dissipated, supporting showers inland and over the south during the next four days. On the 15<sup>th</sup> and 16<sup>th</sup>, it was sunny, with no rainfall. No rainfall was observed on the 17<sup>th</sup> when yet another cold front crossed the country, but resulted in cool and dry weather on the 18<sup>th</sup> and 19<sup>th</sup>. The front became stationary just offshore until the 21<sup>st</sup>, resulting in light showers, mostly over central and northern areas.

On the afternoon of the 22<sup>nd</sup>, a few light showers were observed over inland areas as yet another cold front approached the country. It crossed later that night with very little rainfall. It moved very quickly east and south of the country bringing cool and dry

conditions behind it for the following four days. On the 27<sup>th</sup>, another cold front approached the country. Pre-frontal activity was evident as isolated showers, including an isolated thunderstorm over the Maya Mountains, were experienced. On the 28<sup>th</sup> evening, light showers and strong, gusty winds were experienced over some parts of the north. The remaining 3 days of the month were uneventful, as cool and dry conditions prevailed.

In summary, five cold fronts crossed Belize in January. Low temperatures were recorded, but they were well within the normal range. All of the cold fronts were relatively dry, and that rainfall for the month was well below the average.

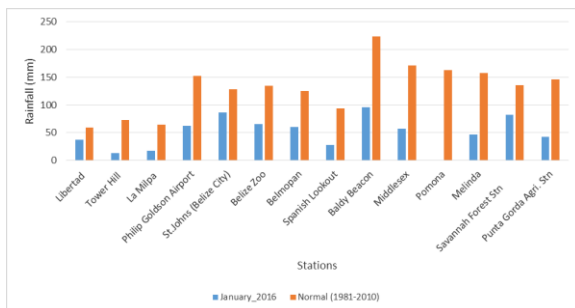


Figure 3 January 2016 rainfall totals for select stations in Belize compared with the average.

### Dominica

Weak unstable conditions generated by a trough system during the first week of the month and a southward-dipping frontal boundary during mid-month, contributed to the month’s rainfall totals..

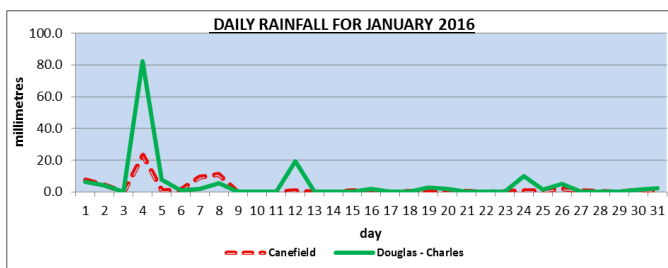


Figure 4 Daily rainfall at Canefield and Douglas-Charles Airports, Dominica during January 2016.

Below normal rainfall totals were recorded at the Canefield Airport. A total of 66.4mm was recorded, approximately 61% of the monthly mean. The highest daily rainfall total of 22.9mm was recorded on the 4<sup>th</sup>. There were 9 rainfall days, 7 days below the average. A 17 days dry spell occurred during the second and third dekads. The average air

temperature was near-average at 26.5°C. The highest temperature recorded was 32.0°C on the 17<sup>th</sup> and the lowest 19.7°C on the 11<sup>th</sup>. The average wind direction was south easterly at 7km/hr. The highest gust of 57km/hr was recorded on the 26<sup>th</sup>.

A trough system on the 4<sup>th</sup> produced the highest daily total of 82.4mm, which lead to above normal rainfall total at the Douglas-Charles Airport. A total of 155.2mm was recorded for the month - 1.3mm above the average. Fifteen rainfall days were recorded and that is 4 days below average. The average air temperature of 26.1°C was around the long term average. The highest temperature recorded was 29.3°C on the 1<sup>st</sup>, 9<sup>th</sup> and 25<sup>th</sup> and the lowest was 19.5°C recorded on the 11<sup>th</sup>. The average wind direction was also south easterly at 11km/hr. The highest wind gust recorded was 46km/hr on both the 6<sup>th</sup> and 27<sup>th</sup>.

The weather conditions varied from wet to dry days and relatively cool to warm; along with windy conditions. The wet days were more predominant in the higher elevated agro-ecological areas than the low lying coastal areas. Farmers continued to establish potatoes, yams and other root crops. Ginger, vegetables and other root crops are being harvested. Vegetative growth suggests positive signs of good crop development. Citrus crops have begun flowering. Favourable weather conditions resulted in an increase in the population of Giant African Snails. Baiting activity as a control measure is ongoing. The Black Sigatoka infestation levels are above the recommended threshold in farming communities with high moisture.

### Grenada

A total of 24.1mm of rainfall was recorded, which is the fifth lowest January total since 1985. The long term average is 63.7mm.

A shear line resulting from a cold front, generated cold temperatures of 21.1 °C and 20.9 °C on the 12<sup>th</sup> and 13<sup>th</sup> of the month respectively. These low temperatures were the lowest in the last two years, and below the long term average. Despite these occurrences, January’s mean minimum temperature was 24°C, which is still above the long term average of 23.20°C. The cool conditions resulted in the average maximum temperature for the month being

29.1°C, which is below the long term average of 29.6°C. The highest temperature of 30.2°C was recorded on the 11<sup>th</sup>; which is also below the mean highest maximum temperature.

The Bermuda Azores High pressure peaked at 1042mb, supporting windy conditions throughout most of the month. Gusts over 55km/hr were recorded several times. Due to these high winds the Met Office issued marine advisories from the 1<sup>st</sup> to 6<sup>th</sup>, 12<sup>th</sup> to 16<sup>th</sup> and 26<sup>th</sup> to 28<sup>th</sup>.

The fishing sector suffered as the rough seas kept boats at bay. Minimal catch was realized. Tunas together with the smaller species of Round-Robin, Jacks and Hinds were available in reduced quantities. Although we are experiencing. Despite the month's low rainfall, citrus, pepper, cucumbers, plantains, pumpkins and sweet potatoes flourished on the market.

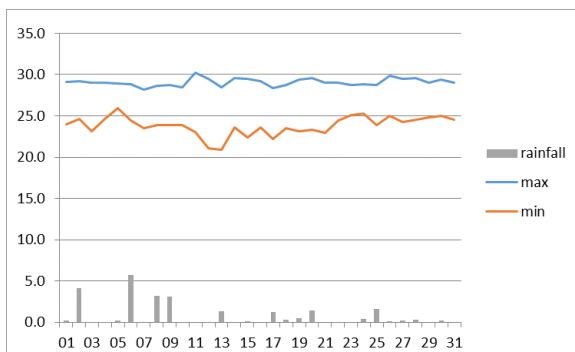


Figure 5 The daily rainfall, and maximum and minimum temperatures for January 2016 at Maurice Bishop International Airport (MBIA)..

**Guyana**

Due to the current El Niño phenomenon rainfall totals have greatly decreased in January, resulting in all stations recording below average rainfall totals. Kaieteur in Region #8 recorded the highest rainfall for the month of 100.4mm. The lowest average rainfall total was recorded in Region #9 with 0.8mm and no rain days.

For the month of January, the highest mean maximum temperature of 33.9°C was recorded at Lethem, while the lowest maximum temperature of 27.4°C was recorded at Georgetown. Timehri, Region #4, recorded the lowest minimum of 15.7°C, while the highest minimum temperature of 21.0°C was recorded at New Amsterdam.

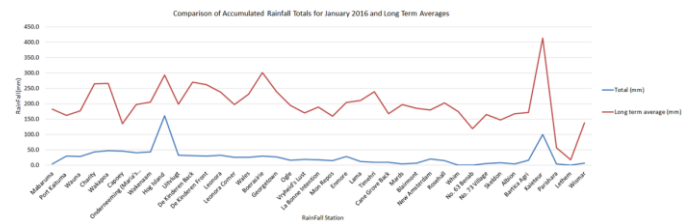


Figure 6 January 2016 rainfall compared with the long term average for select stations in Guyana.

The prevailing weather condition has had severe effects on agricultural production throughout the country. Some farmers are being forced to take on the responsibility of pumping water from the canals to their fields because of the low levels of the water conservancies. It is understood that while some farmers have taken on this additional cost, others are waiting in the hope that there will be rainfall. During the month, Agromet staff of the Met Office visited the Buxton/Friendship farming community and Ebini in Region #10. It was observed that many crops are being affected by the ongoing dry weather conditions; crops are withered and stunted due to insufficient water.

**St. Lucia**

Saint Lucia experienced normal to below normal rainfall for the month, and this has been the general pattern for the past six months with November being an exception. At Hewanorra Airport, the rainfall amount was 40.9 mm which is (48%) less than the average and at George Charles Airport it was slightly below the average with a total of 93.2mm. There were 13 rainy days at Hewanorra, which is the expected number of rainy days for the month. At GFL Charles, there were 16 rainy days which is near the average number of rainy days for January. There were only 2 dry spells at Hewanorra, with the longer one occurring at the end of the month and lasting only 5 days. At GFL Charles there was 1 dry spell, lasting 4 days on the last days of the month.

February is the driest month of the year in Saint Lucia. The climatological mean rainfall for February at Hewanorra is 52.4 mm and 76.2 mm for GFL Charles Airport. The ongoing El Nino event is expected to suppress shower activity. As a result, the outlook for the February to April suggests the likelihood for rainfall to be below normal category or



to range from 47 mm to 121 mm at Hewanorra and from 40 mm to 181 mm at George Charles.

Table 1 January 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)
5	90	15	26.5	79.4	40.9
RH (%)	Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)
75	29.5	24.3	8.4	6.8	25.6

Table 2 January 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	100	8	26.4	110.9	93.2
RH (%)	Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)
74	28.7	23.0			

**REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECASTS**

The **El Niño** is still one of the strongest on record though reaching its peak strength at the end of 2015. Sea-Surface Temperatures (SSTs) are 2.5 to 3°C above average in equatorial eastern Pacific. Though expected to commence weakening, the El Niño event is highly likely to last throughout the dry season, i.e. at least until May 2016. The event is expected to continue to limit rainfall in the eastern Caribbean and the Guianas, at least until April 2016. For the longer term, models are suggesting a possible shift to a La Nina during the wet/hurricane season, which may imply enhanced rainfall activity.

**Caribbean Sea Surface Temperatures (SST)** SSTs are currently about 0-1°C above-average north of Caribbean. **Trade winds** speeds are stronger than average, and upper level winds stronger than usual in the south, but weaker in the north. SST anomalies are expected to warm up towards the east; but the strength of trade winds are hardly predictable. High SST anomalies are linked with enhanced rainfall, but

strong upper level winds would be expected to reduce convective cloud development.

**February to July 2016**

There is a clear distinction between the forecast for the south and east and that for the northwest of the Caribbean for the period February 2016. Normal to below normal rainfall is most likely in the Leeward, Windward and ABC Islands and the Guianas, with a high confidence for below normal in the Windward and ABC islands, Trinidad and Tobago and Guyana. Belize and the Cayman Islands to the west are also likely to be normal to below normal. Contrastingly, normal to above normal rainfall is suggested for The Bahamas and Cuba (with high confidence for above normal for both), Hispaniola and Puerto Rico. However, for the May to July 2016 period, apart Belize, Jamaica and Suriname where there is no clear signal, the Caribbean is likely to experience normal to above normal conditions, with the highest confidence for above normal in the islands of the eastern Caribbean, Guyana and the Cayman Islands.

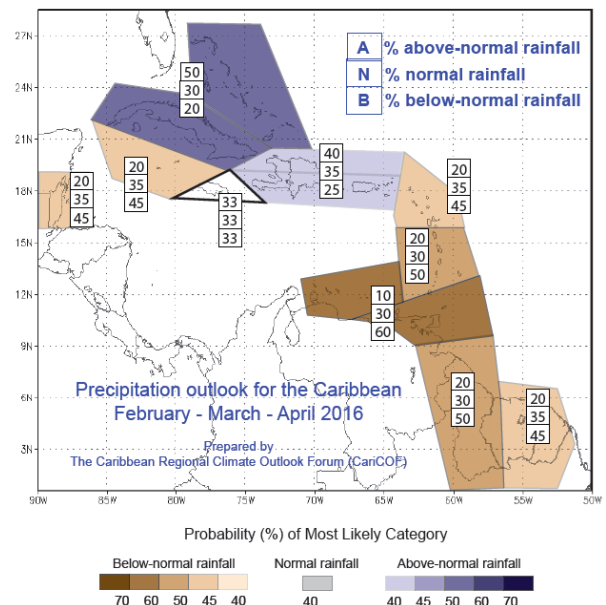


Figure 7 The February to April 2016 rainfall forecast

**Forecast Implications for Agriculture**

The dry conditions that re-emerged in December 2015, putting an end to a very short 2015 wet season over the eastern Caribbean, continued in January 2016, expanding further south to Guyana, and Belize in the west.

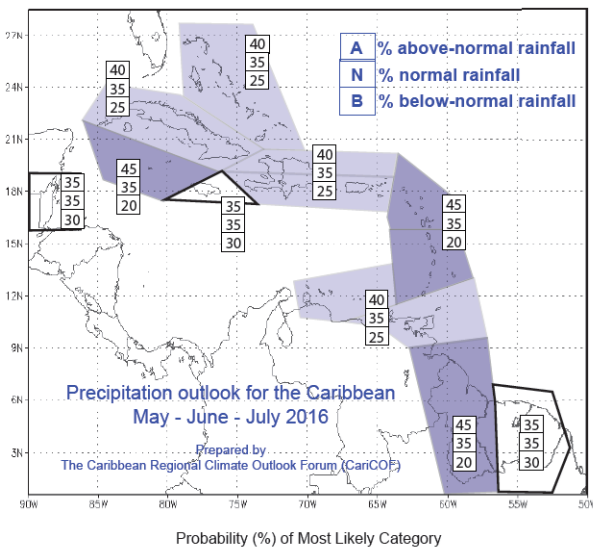


Figure 8 The May to July 2016 rainfall forecast

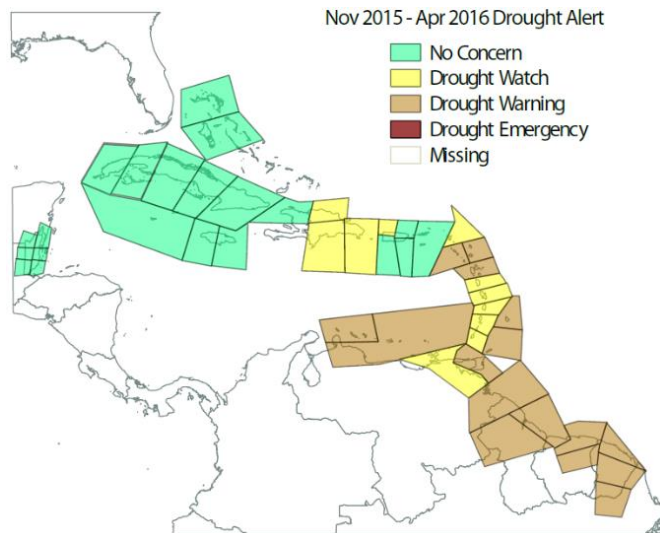


Figure 9 Drought Alert map (based on the SPI forecast) for the end of April 2016, based on actual and forecasted rainfall for the period November to April 2016.

Farmers in the eastern Caribbean, including the Guianas should continue to plan for below normal rainfall until April/May 2016. These conditions are quite likely to be accompanied by higher than normal temperatures, enhancing evaporative loss and low water availability. In these parts of the region, irrigation within the three month period (February to April 2016) would be necessary, as the rains are highly unlikely to satisfy crop demand. In cases

where there is some irrigation, farmers would have to decide on the area to be farmed, such that the more limiting water can satisfy some cropping. Rainwater Harvesting and storage of water where feasible would enhance irrigation supplies. Other soil water conservation methods such as mulching and flat beds (instead of raised ones) would help in such conditions. Though rainfall for the period May to July 2016 is likely to be above normal, it is important to note that May represent the end dry season, so above normal rainfall for this months (i.e. wetter than average dry) may not necessarily be enough to satisfy plant water requirements.

On the other hand, post May, rainfall will naturally increase as the 2016 wet season begins. The increase is likely to produce more water than is at times preferred. This period is one where the riddance of excess water from fields is desired. As usual, an update on these conditions will be provided.

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