



Volume 46 Issue 1

July 2015

ANNOUNCEMENTS

Below normal rainfall conditions in July extended the drought impacts, particularly over the northern Windward and Leeward islands. Though rainfall quantities will increase, below normal rainfall is highly likely to continue, with the dry season beginning earlier than average and causing much concern for water availability later in the year and into the early months of 2016. Drought warnings are recommended for much of the northern Windward and Leeward Islands and parts of Jamaica and Belize as the end of the wet season approaches, to facilitate preparations; and watches for the remainder of the Caribbean.

REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR JULY 2015

Normal to below normal rainfall was experienced for the month in the islands of the eastern Caribbean. Trinidad, Grenada, St. Vincent and St. Lucia were normal; Tobago and Barbados severely dry; Dominica and Antigua exceptionally dry. Guyana was exceptionally wet. Conditions in Jamaica ranged from slightly wet in north-central areas to slightly dry to the east and moderately dry to the west. In Belize conditions ranged from slightly dry in the south to exceptionally dry to the north.

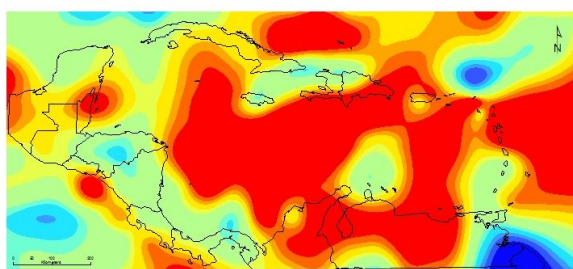


Figure 1. SPI for the Caribbean for July 2015. More information on the SPI can be viewed at <http://rcc.cimh.edu.bb/climate-monitoring/spi-monitor/>.

Most annual cropping takes place over a period of about three months. For the three month period, the

islands of the eastern Caribbean experienced normal to below normal rainfall. Trinidad was normal to slightly dry; Tobago and St. Vincent moderately dry; Barbados, Dominica and Antigua exceptionally dry; and St. Kitts severely dry. Guyana was exceptionally wet. In Jamaica, central areas were normal varying to extremely dry to the east and west, while Belize was normal in the south and slightly dry in the north.

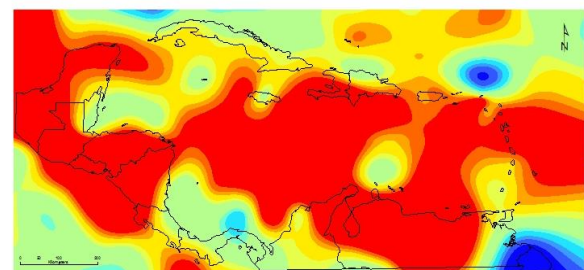


Figure 2. SPI for the Caribbean for May to July 2015. More information on the SPI can be viewed at <http://rcc.cimh.edu.bb/climate-monitoring/spi-monitor/>.

The Atlantic Hurricane Season remained relatively quiet during July, with only one tropical Storm, Claudette that formed just off the eastern sea-board of the U.S.A before quickly dissipating. The eastern Caribbean was dominated by strong surface to low-level easterly winds and Saharan dust that inhibited the significant development of tropical waves. Apart Guyana that experienced exceptionally high rainfall, Caribbean conditions were predominantly normal to below normal.

NATIONAL OVERVIEWS

Antigua and Barbuda

Warm nights and dry weather prevailed through July. The month had a total of 33.3 mm; the fifth lowest on record dating back to 1928. At the V. C. Bird International Airport (VCBIA), the number of wet days (rainfall ≥ 1 mm) was seven, which is below normal and tied with 2014, 2008, 1998 and 1991 for second fewest on record. There was no heavy rainfall day (rainfall ≥ 10 mm), for the third consecutive month for the year and the third July in a row. The maximum 24-hour total was 7.0 mm. The mean minimum (night-time) temperature was above normal and the highest since 2010 and the 11th highest on record at VCBIA. It's the first time since 1983 there were no cold nights at VCBIA and the third time on record. Although cooler than normal, the mean temperature, 27.9 °C, was the second highest since 2010. The absolute maximum and minimum temperatures were 31.3 °C and 23.3 °C respectively.

With the very low rainfall for the month, the drought continued at severe levels, for the third month running. The water authority has indicated that Antigua has depleted all of its surface water, with all reservoirs either dry or below extraction levels. Potable water from desalination is up to around 84% and necessarily rising. The deficit in potable water is currently 0.5 to 2.5 million gallons per day and rising. The government has purchase a new desalination plant, which is scheduled to start operating later this year, and this should make up the deficit later. Predictably, the number of farmers unable to produce is increasing; however, for those with access to the more expensive pipe-borne water, production continues but at a lot higher cost.

Barbados

Winds varied between 35 and 50 km/hr; and was accompanied by an abundance of Saharan dust.

Although rainfall events were evenly distributed throughout the month, the final July rainfall total of 73.9mm at Grantley Adams Airport was only 56% of the long-term (1981-2010) average of 132.9mm. The

most significant of these events produced 18.9mm, 11.9mm and 19.0mm on the 1st, 10th and 30th respectively. The total of 10 rain days (days with rainfall ≥ 1 mm) was also below the July average of 15 rain days. The cumulative total rainfall of 382.7 mm at the end of July (January to July) was 73% of the cumulative average of 526.5mm.

Maximum temperatures were greater than the long-term average (30.7°C) for 21 days in July, ranging between 30.8° and 31.6°C; maximum temperatures on the remaining days ranged between 29.9° and 30.7°C. The highest maximum of 31.6°C was reached on two occasions (22nd, 23rd) while the lowest minimum of 23.9°C was recorded on 3rd. The average day-time air temperature was 28.8° C while the average night-time air temperature was 26.6°C.

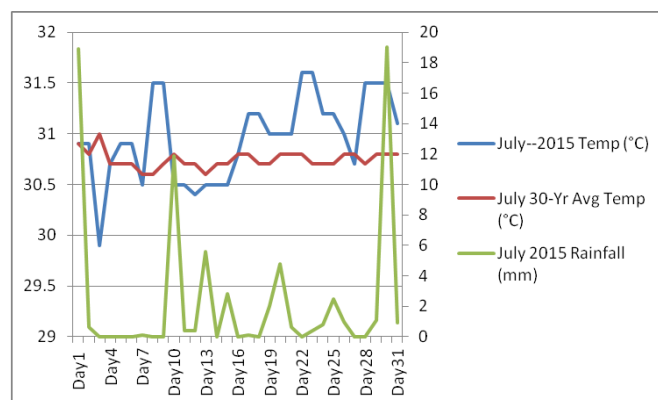


Figure 3 Daily maximum temperature vs the 30-year average, along with daily rainfall during July 2015 at Grantley Adams International Airport.

Dominica

The island of Dominica continued to receive way below normal rainfall totals for the month of July. This downward trend in rainfall amounts has created in some areas exceptionally dry weather conditions. Tropical waves traversing the region produced some scattered showers across the island. Breezy and hazy conditions were also observed throughout the month.

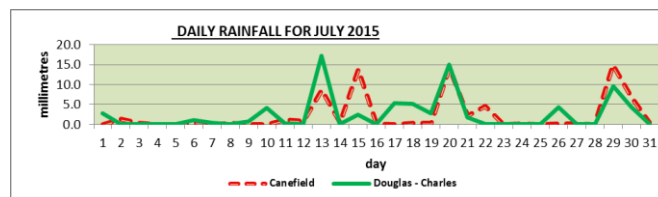


Figure 4 Daily rainfall at Canefield and Douglas-Charles Airports, Dominica during July 2015.

Exceptionally dry conditions were observed at the Canefield Airport. The total rainfall recorded for the month was 72.0mm and this represent just about 29% of the monthly mean. The highest daily rainfall total was 14.9mm on the 29th. There were 9 rainfall days for the month with the longest dry spell length of 8 days observed during the first half of the month. The average air temperature was 29.4°C and this average is 0.5° above the mean. The maximum daily temperature recorded was 33.6°C on the 26th with the minimum of 22.9°C recorded on the 19th. The average wind direction was east south easterly at 11km/hr. The Atlantic high pressure system continued to generate brisk wind flow from time to time. The highest gust recorded was 72km/hr on the 4th.

Extremely dry conditions were observed at the Douglas-Charles Airport. Rainfall total amounted to 77.6mm, representing about 33% of the monthly mean. There were 13 rainfall days with dry spell length of 4 days during the first and fourth weeks of the month. Air temperature averaged 28.4°C, which is 0.5° below the mean. The maximum temperature recorded was 30.8°C on the 28th and the lowest recorded was 23.0°C on the 18th. The average wind direction was easterly at 17km/hr. The highest wind gust recorded was 59km/hr on the 15th.

Farmers, particularly in the west regions, are being affected by the inadequate rainfall amounts. Those in the interior have fared better with rainfall hindering land preparation activities such as tilling and ploughing. No significant crop losses were reported, which may be due to adaptation measures employed. There was an infestation of snails and slugs in the north east due to favorable weather conditions and bad farm practices. Dry conditions have inhibited fungal problems, but Powdery mildew was observed in cucurbitaceous crops in the higher elevations as a result of warm and humid conditions there. An increase of *Black Sigatoka* and white flies in the central region was also noticed. Proper housing provided livestock some relief from the hot and dry conditions at the Government Livestock Farm, pasture grasses and forage had to be collected from other areas to provide feed for them.

Grenada

For the third consecutive month, below normal rainfall was experienced here at MBIA. A total of 110.1mm of rainfall was recorded for July 2015 which was 79.21% of the 30year average of 139.0mm. The passage of tropical waves on the 13th and 21st resulted in two significant 24hour periods of rain measuring 26.1mm and 44.5mm respectively.

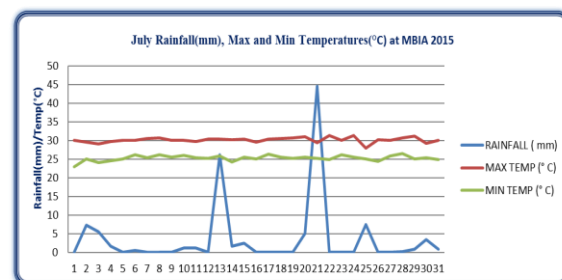


Figure 5 Daily maximum and minimum temperature, along with daily rainfall during July 2015 at Maurice Bishop

Mean daily temperature for the month was higher than last years' by an average 0.2°C reaching a mean of 27.7°C. The mean maximum temperature was 0.2°C lower than that of July 2014 reading 30.1°C and 0.5°C lower than the 30-year average of 30.6°C. The mean minimum temperature was 25.3°C which was 0.7°C higher than 2014 and 0.6°C higher than the average. The highest maximum temperature recorded was 31.4°C on the 22nd, compared with 32.1°C for 2014 and 31.8°C for the average. The lowest minimum was 23.0°C recorded on the 1st, compared with 21.6°C for 2014 and 22.4°C for the average.

The Bermuda/Azores High generated strong winds and moderate to rough seas. As a result marine advisories were issued on the 1st, 2nd and 4th-6th. Although fishing would have been challenging, fishermen were able to enjoy catches in Black and Yellow fin Tuna, Dolphin, Parrot fish, Ocean Gar, Red Hind and Snapper.

Even though July's rainfall was 20.79% below the average, there was a 15.62% increase over that of last years'. With that increased rainfall, farmers benefited greatly and had good production in crops like Plantains, Pineapples, Melons, Tomatoes, Mangoes and Cucumbers, all kinds of Herbs, Fat Pork, Sweet and Seasoning Peppers.

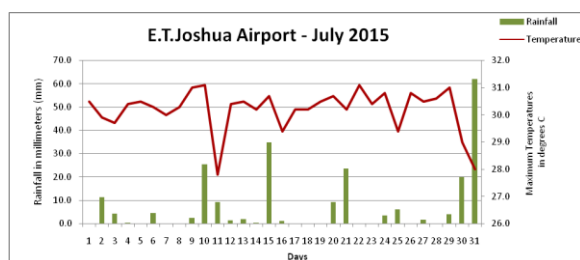


Figure 8 July 2015 rainfall and maximum temperature at E.T. Joshua Airport, St. Vincent and the Grenadines.

Temperatures across the island ranged from a high of 31°C to a low of 22°C. The average maximum temperature recorded at this station was 30.2°C, while the average minimum temperature was 25.5°C. Extreme maximum temperature was 31.1°C; this was 0.4°C lower than the average (1981 – 2010), and the extreme minimum temperature was 23.4°C, 0.4°C lower the average for E.T. Joshua Airport. Mean relative humidity was 71.1 %, 7.2% lower than the average.

Trinidad and Tobago

July's rainfall total at Piarco, Trinidad was near normal with 229.5mm or 92.1% of the 1981-2010 average. At Crown Point in Tobago, rainfall was however, below normal, with 70.7mm or 41.7% of the average.

During the first seven days of the first dekad (ten day period). Rainfall varied from moderate to very heavy, with the 4th recording 90.9mm at Piarco. In Tobago, scanty to moderate rainfall occurred throughout the first dekad with the 6th recording 8.7 mm at Crown Point. Maximum temperatures peaked at 33.1 °C at Piarco and at 31.8 °C at Crown Point.

Scanty to heavy rainfall occurred over Trinidad during the second dekad, while scanty to moderate rainfall occurred over Tobago. In Trinidad, the 16th and 17th experienced heavy rainfall. The average maximum and minimum temperatures decreased slightly in Trinidad. In Tobago, maximum and minimum temperatures increased slightly. Maximum temperatures peaked at 32.7°C at Piarco and at 31.8°C at Crown Point.

Scanty to heavy rainfall occurred over Trinidad and Tobago during the third dekad of July. Total rainfall in both islands was moderate the 21st and 25th in Trinidad and 21, 25th and 26th in Tobago

experiencing heavy rainfall. The average maximum and minimum temperatures increased slightly in Trinidad. In Tobago, maximum and minimum temperatures decreased slightly. Maximum temperatures peaked at 33.4°C at Piarco and at 32.3°C at Crown Point. Rainfall during the period would have slightly improved the agriculture water shortage in Tobago.

In Trinidad, rainfall was adequate to meet the demands of the agriculture. The absence of sufficient rainfall amounts in Tobago during the month continues to negatively affect rainfed agriculture.

REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECASTS

El Niño conditions persists and are highly likely to continue into the early months of 2016. The El Niño is also highly likely to continue to strengthen through the 2015 wet/hurricane season. It is increasingly likely that the rainy season will continue to produce less than normal rainfall with higher temperatures south of 20°N, particularly if the El Niño continues to strengthen.

Caribbean Sea Surface Temperatures (SST) are 0.5-1°C above-average north of the Caribbean, and 1°C below to average further east. SSTs are expected to get closer to normal. **The Trade Winds** are near to below average at this time, and though the predictability is low, could get stronger during the forecasting period, particularly in the vicinity of the southern Caribbean. Predicted cooler Atlantic waters are likely to reduce convective potential and therefore rainfall.

August 2015 to January 2016

Apart from in The Bahamas where there is much uncertainty, normal to below normal conditions are expected for the Caribbean for August to October. The confidence for this is particularly high over the Leeward and Windward Islands and the ABC Islands. The Bahamas and Belize are expected to have normal to above normal rainfall during the November 2015 to January 2016 period. The Cayman Islands, along with the islands of the southern Caribbean and the Guianas are likely to

experience normal to below normal rainfall, with high confidence in the vicinity of Trinidad and Tobago. There is greater uncertainty in the rainfall in the remainder of the Caribbean at this time.

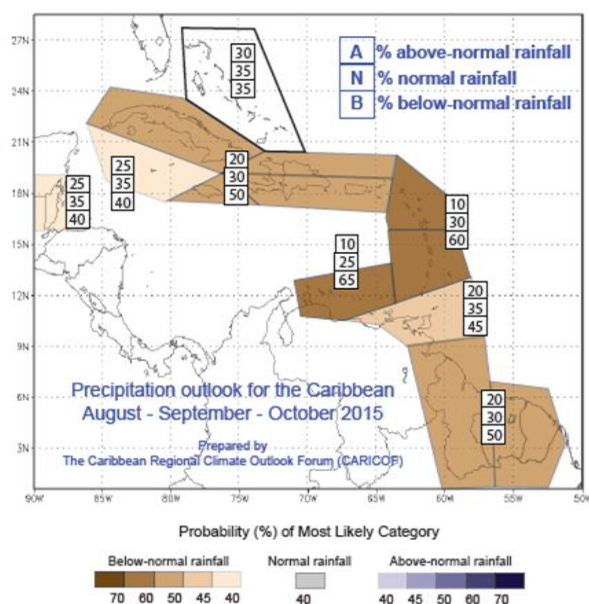


Figure 9 The August to October 2015 rainfall forecast

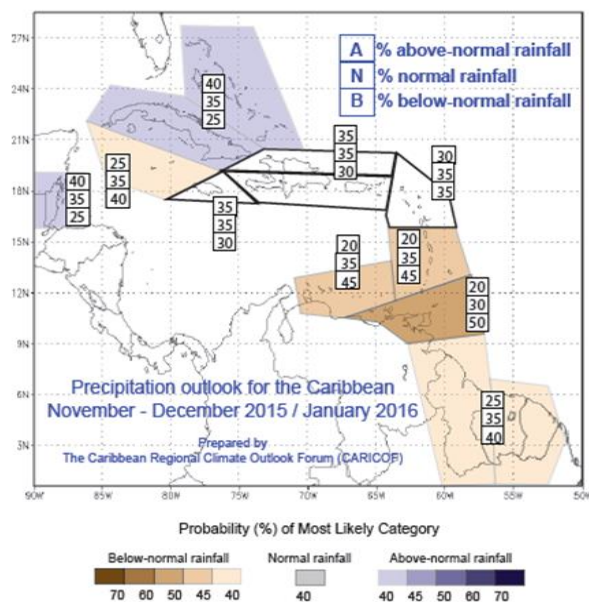


Figure 10 The November 2015 to January 2016 rainfall forecast

The remainder of wet season is highly likely to produce less rainfall than normal, with fewer than normal hurricanes and other extreme rainfall events that would cause flooding and landslides. There should still be enough rainfall to reverse the impacts from the harsh dry conditions that plague many parts of the Caribbean. However, with the current El Niño being maintained and strengthening, the wet

season could end earlier (as early as October/November in some parts) than normal. With a normal to below normal 2016 dry season likely following this, water reserves approaching the end of 2015 into 2016 could be worryingly low. Conditions will be monitored throughout the coming months, with a recommendation that some parts of the Caribbean be placed under warning to mobilise resources in preparation for any inevitability.

It is expected that drought impacts would be alleviated over most of the Caribbean by the end of September. However, drought impacts are highly likely to re-commence by October/November as an early end to the wet season is anticipated in many parts of the region; particularly in the Leeward and Windward Islands, Jamaica and Belize. Such a scenario would likely take drought impacts well into the 2016 dry season.

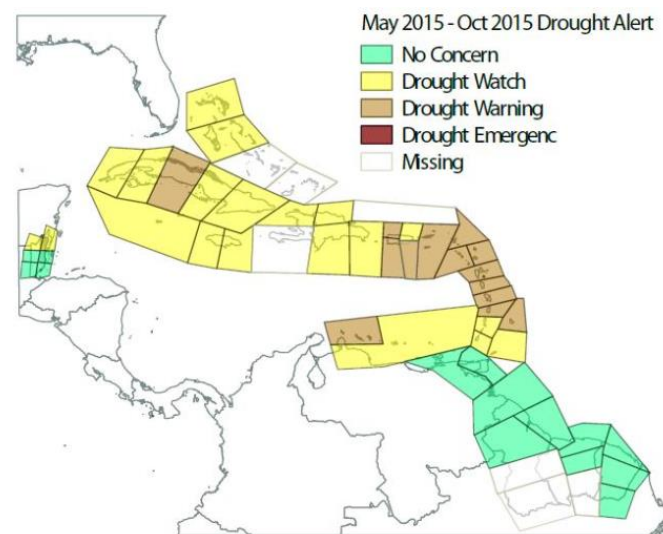


Figure 11 Drought Alert map (based on the SPI forecast) at the end of October 2015 and based on actual and forecasted rainfall for the period May to October 2015.

Forecast Implications for Agriculture

With many of the eastern Caribbean islands (except Trinidad) experiencing below normal conditions for the past four to five months at least, cropping would have been significantly affected by limited water availability or by high irrigation use, increasing the cost of production. Though rainfall increased in July and will likely continue to increase into September/October, and though the next 3 months are increasingly likely to be below normal (and recognizing that below normal rainfall during the wet

season will still realise adequate rainfall for agricultural production - at least in the peak months of August to October), the region's agriculture should see increasing and more satisfactory levels of water and production. This may not be the case in Guyana however, as it approaches the second of its two dry seasons (August to October), with the highly confident forecast for below normal to below normal rainfall. This would suggest the need for irrigation water, with the hope that high conservancy levels achieved from high rainfall amounts during recent months will take the demands for irrigation water through this period. Some countries, particularly those in the Leeward Islands, may continue to be impacted during August, with inadequate soil moisture unless supplemented by irrigation. These countries will continue to have either lower than normal levels of production or production will be costlier, likely increasing prices of commodities. Further, there is the likelihood for fewer extreme rainfall events that could trigger flooding and landslides, at least until September.

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Jamaica, St Lucia, St Vincent and the Grenadines and Trinidad and Tobago**

***CAMI is funded by the European Union in partnership with the institutions that have prepared this bulletin, along
with the Caribbean Agricultural Research and Development Institute and the World Meteorological Organization***