



Volume 26 Issue 1

November 2013

ANNOUNCEMENTS

The hurricane season ended, being much less active than earlier predicted, highlighting the uncertainty inherent in forecasts. Apart from Belize and the eastern Guianas that are predicted to be normal to above normal, predictability for the December 2013 to February 2014 was fairly low in the Caribbean. Temperatures are likely to be normal to above normal across most of the Caribbean through May 2014.

REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR NOVEMBER 2013

In the eastern Caribbean and Guyana, the southern portion was above normal while the remainder of the chain was normal to below normal. Trinidad was moderate to very wet; Tobago, Barbados, St. Vincent, St. Lucia, and Antigua normal; Grenada severely dry; Dominica moderately dry; and Guyana moderately wet. Jamaica was normal, while Belize was moderately wet in the west and abnormally wet in the east.

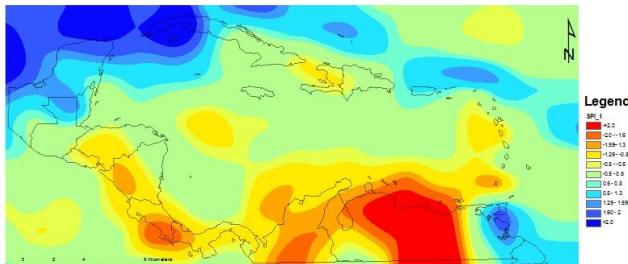


Figure 1. SPI for the Caribbean for November 2013. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>.

Most annual cropping takes place over a period of about three months. The southern portion of the eastern Caribbean and Guyana was above normal while the remainder of the chain was normal to below normal. Trinidad was predominantly very wet; Tobago abnormally wet; Grenada extremely dry; Barbados and St. Vincent normal; St. Lucia, Dominica and Antigua abnormally dry; and Guyana

ranging from normal in the west to moderately wet in the east. Jamaica was moderately dry in the west and abnormally dry in the east, while conditions in Belize ranged from very wet in the west to abnormally wet in the east.

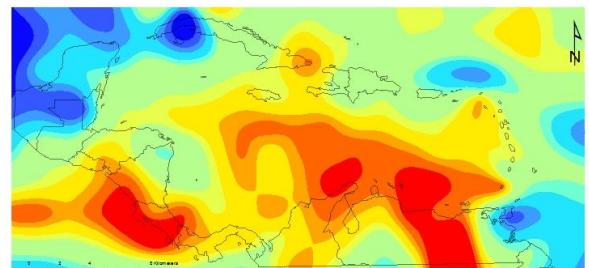


Figure 2. SPI for the Caribbean for September to November 2013. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>

Only one tropical storm, Melissa, formed in November to bring an end to the 2013 Atlantic Hurricane Season. As a result, the Season concluded with a total of thirteen named storms and only two of these reached the minimum Category 1 hurricane status. This brought to an end a season when the number of tropical cyclones (particularly hurricanes and major hurricanes) and Accumulated Cyclone Energy (ACE) were far less than forecasted, highlighting the uncertainty inherent in forecasts. The 2013 season was actually one of the quietest in the past 20 years with the lowest ACE in 30 years, according to scientists Klotzbach and Gray of Colorado State University. The inactive season was associated with dry air and subsidence at mid-levels in the atmosphere along with anomalously strong trade winds.

NATIONAL OVERVIEWS

Antigua

The rainfall amount recorded at the V.C Bird Int'l Airport was 130.30 mm, which was nearly double the amount of the 2012 November value of 64.77 mm, but below the month's average of 139.95 mm. The highest 24hr rainfall recorded on the 2nd with 33.9mm. Although the month was fairly wet, the majority of the recorded rainfall (73.3%) resulted from two significant rainfall events. The first which occurred from the 1st – 4th associated with an upper level trough, enhanced by an increase in moisture associated with a weak tropical wave and resulting in 82.3 mm of rainfall. On the 30th, the presence of a trough along with shallow low level moisture resulted in 13.0 mm of rainfall.

The month's average air temperature recorded at the V.C Bird Int'l Airport was 26.6°C, which was slightly lower than 2012 November of 27.0°C. The highest maximum of 30.4°C was recorded on the 8th while the lowest minimum temperature of 21.5°C was recorded on the 17th and 18th respectively.

Table 1 Weather Summary for November at V.C Bird Int'l Airport

Temperature	
Absolute Maximum	30.4°C
Mean Daily Maximum	29.4°C
Mean Daily	26.6°C
Mean Daily Minimum	24.1°C
Absolute Minimum	21.5°C
Warmest Day	28.0°C
Coolest Day	24.8°C
Rainfall	
Total	130.30 mm
Wettest Day	33.90 mm
Measurable Rainfall Day (rainfall ≥ 0.1 mm)	22
Days ≥ 1.0 mm	17
Days ≥ 10.0 mm	4
Days ≥ 20.0 mm	2

According to the Ministry of Agriculture, conditions were quite favourable for Agriculture this month due to the much needed rainfall that was received. Some farmers commenced land preparation activities, while others began planting crops such as carrots, onions, okras, tomatoes and sweet peppers, sweet potato, corn and celery. Harvested crops for the month included pumpkin, egg plants, cucumbers, sorrel, yam and cassava. However, due to the

increased moisture levels, farmers were fighting weeds, pests and bacterial growth especially on sweet peppers and tomatoes.

Barbados

Grantley Adams Airport recorded a total of just 96.2mm for November or 56% of the long-term normal of 171.4mm over a period of ten rain days (rainfall ≥ 1 mm). Golden Ridge in St. George experienced slightly better with a total of 128.2mm over sixteen rain days. There were, however, four significant rain-events when rain days were over 10mm. These occurred 1st, 4th, 20th and 24th November.

Meanwhile, Barbados' cumulative rainfall total up to the end November at the Airport reached 1108.9mm (24.0mm more when compared with the same period in 2012). In comparison, the 1981-2010 average cumulative total up to the end of November is 1180.59mm (46.48inches) of rainfall.

The high pressure ridge was particularly dominant over two 5 to 6-day spells when wind-speeds varied between 28 to 37 km/hr; from 9th to 13th and again between 24th and 30th November.

There were fifteen days on which the maximum temperature exceeded the long-term average (1981 to 2010) maximum temperature of 30.2°C. (These findings are represented in the graph below). The lowest minimum of 22.2°C was recorded on November 20th.

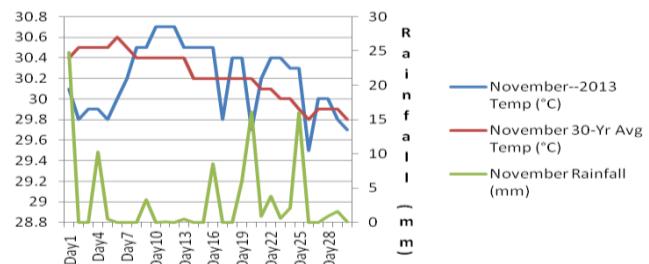


Figure 3 November rainfall and daily maximum temperature as compared with the average in Barbados.

Belize

On the morning of the 3rd, a cold front resulted in showers and thunderstorms over northern Belize. The front crossed Belize during the early afternoon of that day. After that, until 5th, pleasant weather was experienced in Belize.

Skies turned cloudy to overcast on the morning of the 8th. Showers and rain occurred over the sea and along the coast with a few embedded thunderstorms. The weather pattern remained relatively unchanged during the weekend (9th and 10th). As a result, there were several extended periods of showers occurring mainly over southern and central Belize. Middlesex in the Stann Creek district recorded 60.6 mm followed by Baldy Beacon with 55.1 mm on 9th. On the 10th, Barton Creek recorded 95mm, followed by Punta Gorda in the south with 56.4mm.

On the 11th, most showers and rain occurred along coastal areas. Hershey, in the foot hills of the Maya Mountains, recorded 29.4mm. The weather on the 12th was a mixture of cloudy skies and sunshine. The showers remained concentrated largely along coastal Belize. Savannah in southern Stann Creek district measured the highest rainfall-40.5mm. On 13th there was a bank of showers and thunderstorms along the entire coastline. Later in the day the showers and thunderstorms occurred inland. Baldy Beacon recorded the most rainfall with 42.3mm, followed by Barton Creek with 37mm. Though the cloudy and rainy weather persisted the following day, the majority of the rainfall was offshore. There were media reports of flooding in western and northern parts of the country, with bridges being washed away, flooded portions of major road arteries and Galen University having to cancel classes because of mud filled class rooms and library. There was similar rainy weather the next day over parts of Belize. The weekend (16th and 17th) was dry.

The dry weather continued into the following week until the morning of the 22nd, as showers occurred with much more frequency, and continued until the following evening

Showers and thunderstorms, accompanied by gusty surface winds, developed along southern and some coastal areas on the afternoon of the 26th due to a cold front. The following day was windy but mostly dry. Most parts of the country experienced their coolest temperatures for the month on the 28th. Cloudy skies, punctuated by periods of light rain, characterised weather conditions for the final day of November.

Table 2 Rainfall and Temperature Summary for November 2013 for stations in Belize

Station	Liber tad	Zoo	PGIA	Belmopan	Central Farm	Savannah
Elevation (m)	12	30	5	90	90	13
Rainfall (mm)	263.7	205.6	239.7	217.4	351.1	192.4
Mean.	82.2	190.5	194.5	196.2	171.1	214
Max	115.0	62.5	44.8	38.6	190.5	68.2
Rain days	12	14	18	18	16	13
Temp (°C)						
Mean Min.	21.9	20.5	22.9	22.2	22.1	22.6
Mean	19.2	20.3	21.3	20.1	20.1	21.7
Lowest Min.	15.1	17.0	17.5	16.9	17.3	18.2
Mean Max.	29.3	29.9	28.4	29.1	29.2	30.1
Mean	29.7	29.0	29.1	29.3	29.6	29.3
Highest Max.	33.8	33.5	31.8	32.9	33.2	33.0

Rainfall values in Green represent amounts above the monthly average; Temperature values in Red represent means above the monthly average; Temperature values in Blue represent means below the monthly average

Guyana

Guyana averaged 11 raindays for November. The Botanical Gardens Synoptic Station registered a total of 128.9 mm, within a twenty four hours period on the 26th of November, this value was the 5th highest one day value for the month of November and the 30th highest one day total ever recorded for that station when data was analysed from 1892 to present. Due to the intensity of the rains, flooding occurred in most areas of Georgetown and other low lying areas. Notwithstanding, Region 2 recorded the highest average rainfall total of 316 mm with an average of 18 rain days. Mc Nabb in Region 2 recorded the highest monthly rainfall total with 455.9mm. Data collected thus far has indicated that most stations recorded values above their long term averages.

The highest mean maximum temperature for the month of November was recorded at Lethem in Region 9 with 34.6°C. Lethem also recorded the highest one day temperature of 35.6°C on November 1st, 2013. The lowest mean minimum temperature was recorded at Timehri with 21.8°C. Mabaruma, on the 23rd of November, recorded the lowest minimum temperature for the month with 20°C.

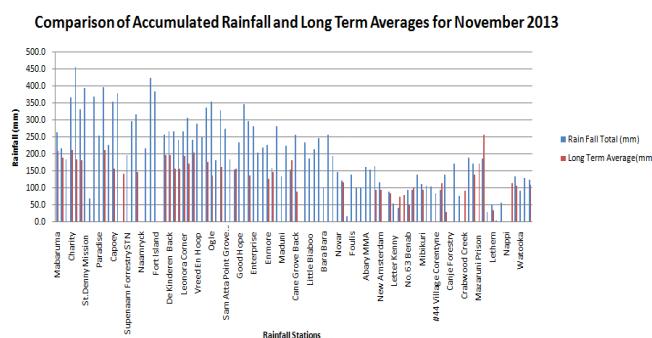


Figure 4 Showing November 2013 and long-term average rainfall at a number of stations in Guyana.

Jamaica

In a month when the number of rainfall days had decreased by half compared to the average, surface to low level troughs continued to be the dominant weather feature that affected the island. Preliminary figures indicate that the rainfall amount for the month of November remained near normal, with Sangster International airport (Sangster) in the northwest recording 95% of its 30 year monthly mean while Norman Manley International airport (Norman Manley) in the southeast received 87% of its 30 year mean rainfall. During the month, Sangster recorded 97.3 mm of rainfall, while Norman Manley recorded 74.1 mm. There were seven rainfall days reported for Sangster, while Norman Manley had two rainfall days during the month.

Sangster Airport recorded 33.3°C (12th November), while 34.4°C (11th November) was reported for Norman Manley Airport.

Table 3 Climatological Statistics for Manley and Sangster Airports for November 2013

Monthly Averages	Norman Manley	Sangster
Extreme Maximum Temperature	34.4 °C (33.9 °C)	33.3 °C (32.8 °C)
Lowest Minimum Temperature	23.8 °C (22.3 °C)	22.8 °C (22.0 °C)
Rainfall Total	74.1 mm (85.0)	97.3 mm (102.0)
Rainfall days ($\geq 1\text{mm}$)	2 days (5.7)	7 days (15.1)

Values in red indicate the 1992-2010(19-year) averages.
30-year (values in green) mean (1971-2000) is used for Rainfall.

Saint Lucia

Rainfall in Saint Lucia for the month of November was again below average and was particularly low at the George F.L. Charles Met. office where a drought event has started.

Table 4 November 2013 monthly averages at Hewanorra Airport

AVERAGE MONTHLY DATA FOR HEWANORRA					
Cloud Cover (oktas)	Wind Dir (o from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
4	80	12	27.6	78	151.4
Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
30.4	25.0	9.2	6.5	28.6	

Table 5 November 2013 monthly averages at George Charles Airport

AVERAGE MONTHLY DATA FOR HEWANORRA					
Cloud Cover (oktas)	Wind Dir (o from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
4	90	07	27.7	78	117.3
Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
30.2	24.0				

In Saint Lucia, December is the transition month between the wet and dry season and the month tends to be either wet or dry. Rainfall figures for December range from 31.6 mm to 270.5 mm in Hewanorra and from 36.1 mm to 271.2 mm in George F.L.Charles.

The mean maximum temperature for Hewanorra for December is 29.5°C and ranges from 28.0°C to 31.0°C, while the minimum temperature ranges from 22.0 °C to 25.3 °C.

This year the seasonal precipitation outlook for the December, January and February period indicate equal chances for rainfall to be in the above normal, normal or below category or to range from 106.5 mm to 400.2 mm in Vieux-Fort and from 109.6 mm to 592.7 mm in Castries

St Vincent and the Grenadines

A few trough systems spread showers and rain across St. Vincent and the Grenadines on a few occasions. From third week into the start of the last week in November, periods of continuous rainfall resulted in saturated soils and a few landslides. Some road networks were disrupted by fallen trees, and a few rock falls were reported in some areas.

At the E.T. Joshua Airport-Arnos Vale, the rainfall total was less than average, but the number of rain-days was more than the 30-year average; the total rainfall was 207.4 mm.

The highest daily rainfall (51.9 mm) was recorded on the 21st. The rainfall distribution showed the first dekad (ten-day period) had ~ 26%, the second dekad had 11%, and the third dekad had 63% of the month's total rainfall.

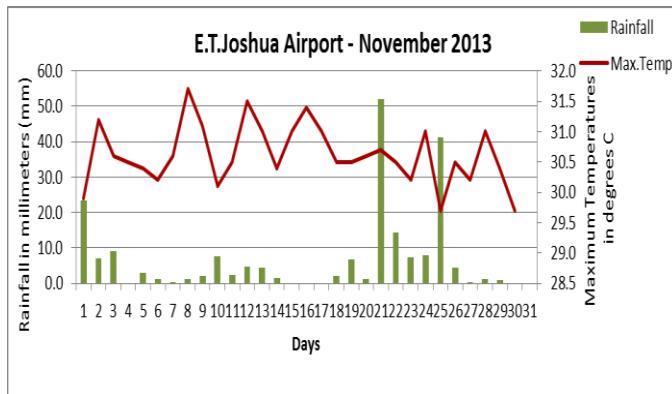


Figure 5 Rainfall and temperature at E.T. Joshua Airport during November 2013

The average maximum temperature was 30.6°C, and the average minimum temperature was 24.4°C. The extreme maximum temperature recorded was 31.7 °C while the extreme minimum temperature was 22.9°C.

REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECAST

December 2013 to February 2014

Rainfall for the period December 2013 to February 2014 appears hardly predictable at this time. With the exception of a small shift to above normal in Belize and the eastern Guianas, no marked shift in rainfall probabilities is seen.

In Belize and the eastern Guianas, there is a good chance that rainfall for the period will be normal to above normal, particularly above normal. In the southern portion of the eastern Caribbean chain and much of the Greater Antilles that includes Jamaica, there is only slightly better than average chance for normal to above normal rainfall. Over the northwest Caribbean, the Dutch Antilles and Guyana there is

only slightly better than average chance for normal to below normal rainfall. Over the Windward and leeward Islands there was no predictability.

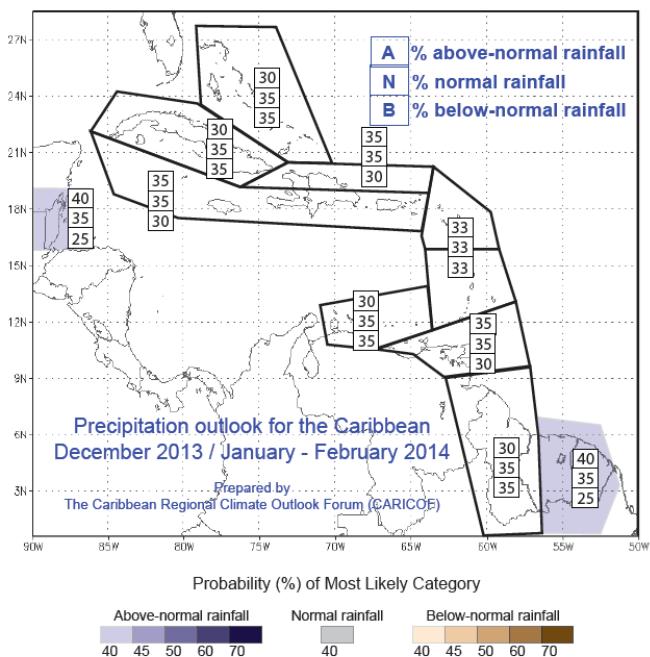


Figure 6 The December 2013 to February 2014 rainfall forecast

ENSO Conditions

Eastern Pacific equatorial Sea Surface Temperature (SST) anomalies have recently hovered just below average (i.e. deviation of 0°C to -0.5°C). There is a high likelihood that these ENSO neutral conditions will last until February 2014, with the likelihood decreasing after this into May 2014, but still suggesting the persistence of the condition.

Little impact is expected on Caribbean rainfall and temperatures from ENSO.

Conditions in the Tropical North Atlantic and Caribbean

Recent conditions in this region were of SSTs about 0.5-1°C above average, with stronger than average trade winds and high pressure system and a drier than average atmosphere, which is a continuation from earlier in the season. Above average SSTs are forecasted to continue, but decrease into May.

The Trade Wind conditions are expected to be dominant over the higher than normal SSTs in the region. Above average trade winds (stronger high pressure) would lead to a typical to drier than normal dry season. However, weakened Trade Winds and

high pressure could lead to normal to above normal dry season rainfall.

March to May 2014

There is a good chance that rainfall for the period will be normal to above normal, particularly above normal, eastern Guianas. In the Windward Islands and a section of the Greater Antilles that includes Jamaica, there is better than average chance of above normal rainfall. For the remainder of the Caribbean, there is not much clear predictability. In the Southern Caribbean (including Guyana), the Leeward Islands and western Caribbean (including Belize) there is only slightly better than average chance for normal to above normal rainfall. Whereas, in the vicinity of the ABC Dutch islands, and the northwest Caribbean, there is only slightly better than average chance for normal to below normal rainfall.

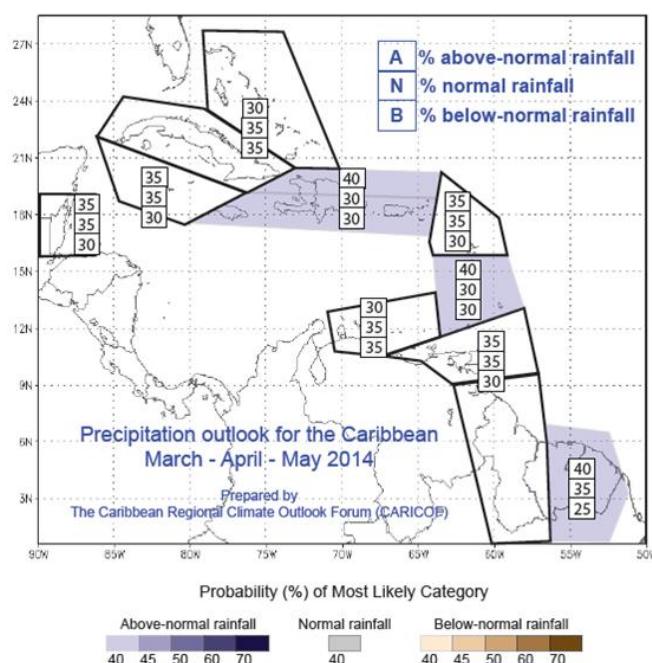


Figure 7 The March to May 2014 rainfall forecast

TEMPERATURE

Temperatures are expected to be normal to above normal over most of the Caribbean at least until May 2014.

Prepared by

**Caribbean Institute for Meteorology and Hydrology (CIMH) and the National Meteorological Services of
Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana,
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**