



ANNOUNCEMENTS

Christmas Eve 2013 reminded Caribbean people of the great variability in Caribbean rainfall, as an event more familiar during the peak of the Caribbean rainy season manifested itself and caused great damage and distress at a time more familiar with festivity, and after a very quiet hurricane/wet season.. This is a part of, and not apart from, Caribbean climate. Our thoughts and prayers go out to the People of St. Vincent and the Grenadines, Saint Lucia and Dominica.

REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR DECEMBER 2013

Normal to above normal conditions were experienced in the eastern Caribbean and Guyana. Trinidad, Dominica and Antigua were abnormally wet; Tobago and Barbados normal; Grenada exceptionally wet; St. Vincent moderate to very wet; St. Lucia extremely wet; and Guyana moderately wet in the west to normal in the east. Jamaica was normal, while conditions in Belize ranged from abnormally wet in the south to extremely wet in the north.

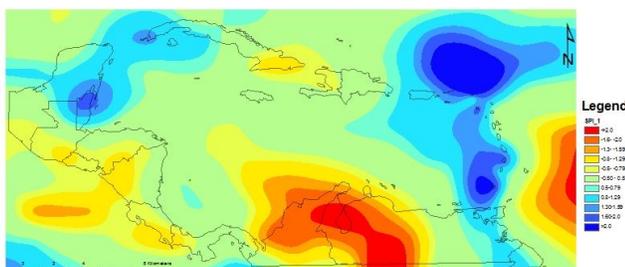


Figure 1. SPI for the Caribbean for December 2013. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>.

Most annual cropping takes place over a period of about three months. The eastern Caribbean and Guyana were predominantly normal to above normal for the three month period. Trinidad was very to extremely wet; Tobago, Grenada, St. Lucia

abnormally wet; Barbados, Dominica, Antigua normal; St Vincent moderately wet; and Guyana moderately wet in the west and abnormally wet in the east. Jamaica was moderately dry in the west and abnormally dry in the east, while conditions in Belize ranged from exceptionally wet in the west to very wet in the north, south and east.

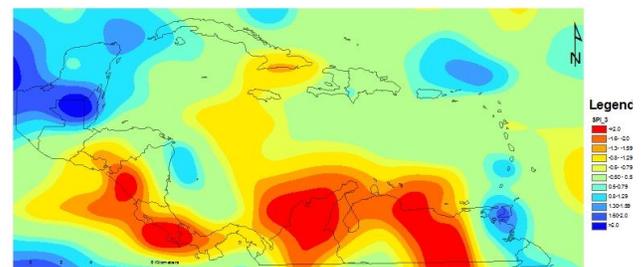


Figure 2. SPI for the Caribbean for October to December 2013. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>

NATIONAL OVERVIEWS

Belize

A surface trough approached Belize on 2nd, with most of the accompanying rain just off the coast, however. The coastal showers dissipated by the next day, with good weather persisting for much of the week. However, on the 8th, showers occurred over southern coastal Belize during the early morning.

Showers occurred mainly during the morning associated with an approaching surface trough. On 11th evening the trough produced cloudy skies with a barrage of rain showers. By the 12th morning many Belize City streets were inundated from the continuous rain. Virtually all city schools remained closed for the day. The International Airport recorded 71.1mm of rainfall. Chaa Creek in the Cayo district recorded the most rainfall-133mm. Barton Creek measured 100 mm, while Baldy Beacon in the Mountain Pine Ridge followed closely with 99.1mm. The rainy weather persisted on 13th, especially during the morning. Skies remained cloudy with sporadic outbreaks of showers. Weather conditions improved generally on the 14th.

Table 1 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	20
Rainfall (mm)	85.6	171.9	331.5	216.6	271.9	158.1
Mean.	72.9	106.6	151.8	158.3	134.5	180.4
Max	18.1	62.4	71.1	67.1	144.7	30.0
Rain days	11	10	18	15	11	14
Temp (°C)						
Mean	21.1	21.4	22.9	21.3	21.5	17.5
Min.						
Mean	18.4	18.8	20.6	19.0	18.9	n/a
Lowest	15.5	19.0	20.1	14.0	19.1	13.2
Min.						
Mean	28.8	28.3	27.8	28.5	28.6	29.0
Max.						
Mean	29.1	27.7	28.1	28.2	28.6	n/a
Highest	33.5	32.3	31.7	33.2	33.0	33.5
Max.						

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

On 15th evening, a cold front produced showers over the sea and coastal areas into the 16th morning, with extensive rain showers spreading inland over southern, central and coastal Belize during the afternoon. Baldy Beacon recorded the highest rainfall with 55.9mm, followed by Barton Creek with 30mm. On the 18th, there were cloudy skies and many low clouds with showers occurring over the sea and the cayes in the afternoon. By nightfall, the rain showers were occurring over northern, central and coastal Belize. The rainy weather continued into the night and into the next (19th) morning, particularly over coastal and central areas. These showers headed inland (mainly north) while dissipating. On the 20th, the showers occurred

sporadically around midday and in the evening. The weekend’s weather turned out quite sunny and was especially windy on 22nd.

The windy southeasterly prevailed into 23rd. A stationary cold front produced cloudy skies on 26th and 27th, with periodic bouts of showers along coastal and central Belize. Cloudy and cool weather, with very little rain, was the order of things for the final weekend in December.

Dominica

Moisture and instability associated with trough systems accounted for above normal rainfall totals. These systems continued to show their dominance by producing heavy rainfall which dampened the Christmas spirit on the 24th. There was the flooding of the Picard River in the north on the 8th (Figure 3a) and extensive flooding in the southern communities on the 24th (Figure 3b) leaving behind extensive damage to properties.

December 2013 is recorded as the wettest December for over 30 years. It was also the 3rd wettest month for 2013 at the Canefield Airport. A total of 294.2mm was recorded and that is almost 3 times more than average. The highest daily total recorded was 79.7mm on the 23rd. There were 20 rainfall days and that is 5 days above the normal. There was a 4 day dry spell at the start of month. The average air temperature recorded was 26.7°C and this is 0.2°C below normal. The highest daily temperature recorded was 32.0°C on the 5th with the lowest being 19.0°C recorded on the 22nd and 24th. The average wind direction was east south easterly (110°) at an average speed of 6km/hr. The highest wind gust of 46km/hr was experienced twice during the month - on the 9th due to the presence of a high pressure system and again on the 25th when the island was impacted by a trough system.

Melville Hall Airport also experienced wet conditions with rainfall total being 30% above average. A total of 284.3mm was recorded. The highest daily total recorded was 59.7mm on the 8th. Twenty-six (26) rainfall days were recorded and that is 6 days above normal. There were no significant dry spells. The average air temperature recorded was

26.4°C and that is 0.2°C below average. The highest temperature recorded was 30.6°C on the 2nd and the lowest recorded was 21°C on the 7th. Melville Hall also experienced winds from the east south east (110°) at an average speed of 17km/h. The highest wind gust recorded was 74km/h on the 16th. Gust was associated with brisk trade wind flow generated by a high pressure system.



Figure 3 Flood scenes in a) the north on the 8th and b) the south of Dominica on the 24th.

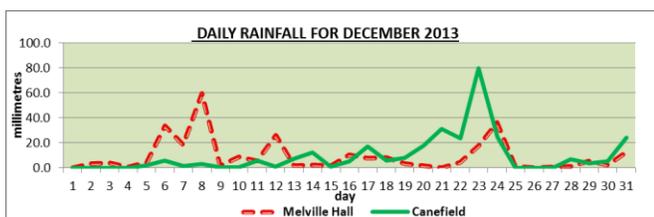


Figure 4 December 2013 daily rainfall at Melville Hall and Caanefield.

Grenada

The rainfall total for the month was 167.4mm, 65.2mm above the average making December the wettest month of the year. Despite this high December total, 2013 was the 4th driest year on record with only 927.1mm. The highest 24hr rainfall period was on the 24th, as an upper level cyclone together with a surface trough combined to dump 74.3mm. Other significant rainfall days were on the 1st when 13.0mm was recorded and the 12th 18.8mm was measured due to an upper level trough. Strong

advection from the South American continent produced 10.9mm on the 9th. There were only 5 days of no or insignificant rainfall occurring this month.

The month's temperatures were fairly constant, with the highest maximum of 30.7°C on the 5th, the average being 29.7°C. Meanwhile the lowest minimum temperature reached 21.8°C on the 23rd with the mean being 23.7°C.

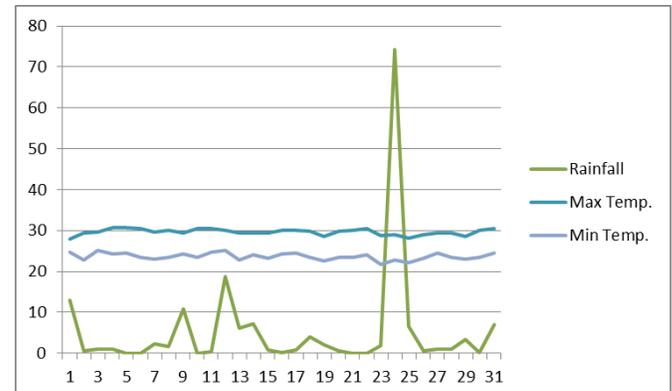


Figure 5 Daily rainfall and maximum and minimum temperature at Maurice Bishop International Airport during December 2013.

The Bermuda/Azores High was probably the most influential feature on the region's weather in the month under review. For more than half the month it measures over 1030mb peaking at 1035mb on the 25th. This resulted in the formation and maintenance of a steep pressure gradient across the Atlantic into the Caribbean Sea. The region was fed with moderate to strong trades which was partly responsible for the moderate temperatures. As a result of these strong trades the meteorological office at the Maurice Bishop Int'l Airport issued marine advisories for the tri island state of Grenada Carriacou and Petite Martinique from the 9th to the 22nd as above normal seas were experienced. Sea bathers and mariners found the coastal and open waters a bit more challenging to negotiate. This also negatively affected the fishing industry as fishermen did not venture out as customary. Even though the month's catch was low it was rather interesting to note the abundance of small fish species and the absence on the larger species.

With conditions that prevailed in December some crops flourished. Some citrus, for example mandarins were in large supply. Sorrel had good

numbers also just in time for the festive season. Pigeon peas did not reach their full potential yield as much of the crop suffered flower drop due to the constant rain.

Jamaica

During the month of December the island’s main weather features were surface to low level troughs. These troughs dominated the weather conditions across island with a bias towards the northern parishes. Preliminary figures indicate that the rainfall amount for the month of December remained near normal, with Sangster International airport (Sangster) in the northwest recording 86% of its 30 year monthly. Norman Manley International airport (Norman Manley) in the southeast equalled the 30-year mean rainfall amount of 29.9mm while Sangster recorded 81.4 mm of rainfall. There were seven rainfall days reported for Sangster, while Norman Manley had two rainfall days during the month.

Sangster Airport recorded a maximum temperature of 32.1°C (15th December), while 33.4°C (16th December) was reported for Norman Manley Airport.

Table 2 Climatological Statistics for Manley and Sangster Airports for December 2013

Monthly Averages	Norman Manley	Sangster
Extreme Maximum Temperature	33.4 °C (33.1 °C)	32.1 °C (31.8 °C)
Lowest Minimum Temperature	22.4 °C (21.5 °C)	22.0 °C (20.3 °C)
Rainfall Total	29.9 mm (30.0)	81.4 mm (95.0)
Rainfall days (≥1mm)	2 days (4.2)	7 days (13.4)

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

St Vincent and the Grenadines

A couple trough systems and shear lines affected St. Vincent and the Grenadines. On the 24th through to the 25th, a trough system affected the islands that resulted in torrential rain and thunderstorm activities that caused flash flooding and saturated soils resulting in landslides. Lives were lost, properties were destroyed. Some road networks were disrupted;

water, electricity and telephone networks were also disrupted. Hail was even reported.

Sea-swells were generally moderate in open waters. A ridge of high pressure produced brisk winds occasionally. Maximum winds recorded were 55km/hr in the Arnos vale area.

At the E.T Joshua Airport, the total monthly rainfall for December (267.1 mm) and the number of rain days (28) exceeded the average rainfall for the thirty year period (173.0) and the number of rain days (18). The highest rainfall (82.8 mm) was recorded on the 24th.

The extreme maximum temperature recorded was 0.2 lower than the 30 year average of 30.9 ° C while the extreme minimum temperature was 0.2 lower than the 30 year average of 21.3°C. The mean relative humidity was 4.0% higher than the 30 year average of 75.0%. 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

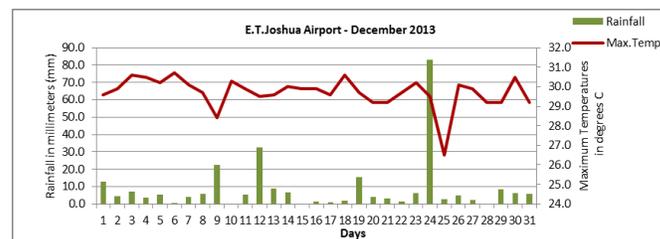


Figure 6 Daily rainfall and maximum temperature at E.T. Joshua Airport during December 2013.

Trinidad and Tobago

For December 2013, rainfall was more frequent and widespread in Trinidad than in Tobago. Whenever rainfall occurred it was most often moderate to heavy resulting in above normal rainfall in Trinidad and near-normal rainfall in Tobago. At Piarco in Trinidad the rainfall amounted to 195.5 mm or 128.6 % of the long term average (1981-2010); while at ANR Robinson airport in Tobago it totaled 127.5 mm or par average with the long term average (1981-2010).

Mostly dry weather covered Trinidad and Tobago during the first ten days of December apart from

rainfall across most districts of Trinidad on days' one and three of the period, when as much as 58.0 mm were recorded on day one, the wettest day, in Trinidad, causing many saturated fields, delaying agricultural fieldwork, but providing adequate water conditions afterward for crop development, maturity, crop germination, and healthy livestock feeding fields. There would also have been some pests and diseases concerns. In Tobago, conditions were significantly drier with the wettest day producing only 6.3 mm. Ten-day rainfall totals recorded at Piarco amounted to 64.3 mm compared to 15.9 mm recorded at Crown Point.

The second ten days of December produced relatively wet conditions in Trinidad, which contrasted with overall drier conditions in Tobago. Rainfall across most areas of Trinidad was mostly moderate to heavy, with three of the ten days considered as wet days. These days produced rainfall in excess of 20.0 mm; while there were 6 days overall with rainfall greater than 5.0 mm. Rainfall measured on the wettest day at Piarco totaled 27.9 mm; overall, 10-day rainfall total reached 90.7 mm at Piarco. Rainfall likely delayed filed work but reduced the demand for irrigation. At most, rainfall was moderate in Tobago, with only one day producing rainfall in excess of 10.0 mm of 13.5 mm, to produce total rainfall of 23.4 mm over the ten-day period. Accompanying the dry conditions in Tobago were relatively warm temperatures, with 10-day mean maximum temperatures of 30.8°C as against 30.7 °C in Trinidad where temperatures are usually much higher. Overall, wind speeds were mostly moderate in strength in both islands. The drier conditions in Tobago would have reduced soil moisture contents, while increasing irrigation demands and water related heat stresses, especially in newly planted, germinating, and younger crops. However, conditions were not harsh enough to significantly impact the recent green-up in pastures.

In Trinidad, mild, mixed weather prevailed during the last 10 days. At some locations, including Piarco, there were as many as 7 rain days. There was only one wet day and this produced 19.8 mm of rainfall. At Piarco, 10-day rainfall totaled 35.1 mm, but this may have been greater at other locations. The mixed conditions were accompanied by mild maximum temperatures which only reached 32 °C on two

occasions and light to moderate wind speeds. At Crown Point in Tobago, mostly dry weather continued, but the harshness of the dry days were buffered by moderate to heavy rain days. Of the four rain days, 2 were wet days with one being extremely wet, as very heavy rainfall produced 56.5 mm of rainfall at Crown Point, where the 10-day rainfall total rainfall amounted to 84.1 mm. Mild maximum temperatures also accompanied dry conditions as daily maximum temperatures reached 31°C only once. The rainfall would have also caused soggy fields and slowed fieldworks, especially in Tobago; at the same time crops and pastures would have maintained good conditions. The mixed conditions in Trinidad would have favored fieldworks but would have provided conditions for crops diseases and pest to thrive.

REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECAST

January to March 2014

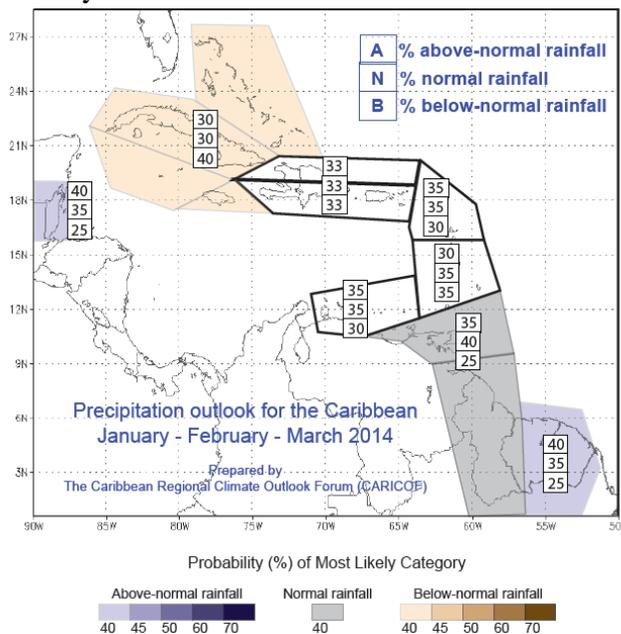


Figure 7 The January to March 2014 rainfall forecast

Over the Guianas, Trinidad and Tobago and Belize, normal to above normal conditions should prevail, with a slightly better chance of above normal over Suriname, French Guyana and Belize and a slightly better than normal chance of being normal over Guyana and Trinidad and Tobago. There is a better than normal chance of below normal conditions in

the northwest Caribbean. There is much more uncertainty over the remainder of the region, with only a slight possibility of normal to above normal over the Leeward Islands and normal to below normal in the vicinity of the Windward Islands.

ENSO Conditions

Conditions continue to be ENSO neutral, and will most likely continue to be up until June, hovering only from negative neutral to positive neutral values – but still neutral. So ENSO is not expected to influence rainfall and temperature.

Conditions in the Tropical North Atlantic and Caribbean

Sea Surface Temperatures (SSTs) continue to hover about 0.5°C above average, but trade winds and atmospheric moisture are around average. The above normal SSTs are expected to continue, with moisture levels being typically dry for this period. The impacts on rainfall and temperature will likely be influenced mainly by a the relative strength of the subtropical high and trade winds, which are not showing any clear signals at this time.

April to June 2014

The clearest signals come in the region of the Greater Antilles and Belize. There is expected to be normal to below normal conditions for the three month period, but with a greater chance of being below normal. On the other hand, Belize, Jamaica and Hispaniola will most like see above normal rainfall totals for the period. The eastern Caribbean and the Guianas have only slightly better than average chance of normal to above normal.

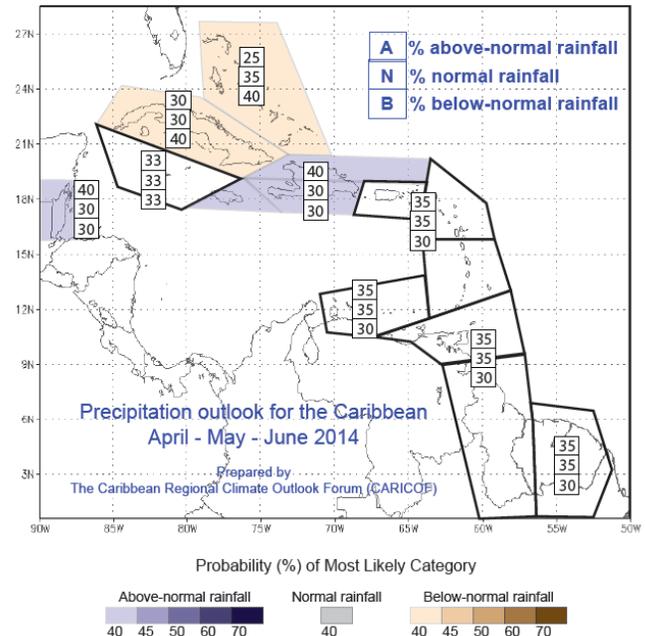


Figure 8 The April to June 2014 rainfall forecast

Temperature

Temperatures are expected to be normal to above normal over most of the Caribbean at least until June 2014, with greatest certainty of this in the northwest Caribbean.

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