



ANNOUNCEMENTS

In September much of the Caribbean turned out to be dryer than forecasted, with some conditions not suitable for convective development and by extension, tropical cyclone activity. Temperatures are likely to be normal to above normal across most of the Caribbean by up to 0.5 °C at least until November.

REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR SEPTEMBER 2013

Normal to below normal conditions existed in the islands of the eastern Caribbean for September. Trinidad, Tobago, Barbados, Dominica and Antigua were normal; Grenada moderately dry; St. Vincent and St. Lucia abnormally dry. Guyana was normal in the west and abnormally wet in the east. Jamaica was normal and apart from the extreme west that was abnormally wet, Belize rainfall was normal.

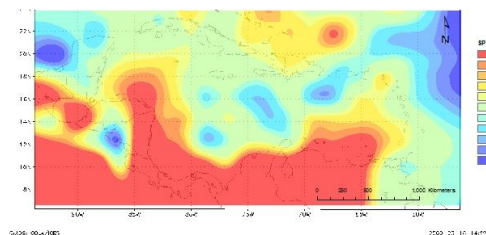


Figure 1. SPI for the Caribbean for September 2013. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>.

Most annual cropping takes place over a period of about three months. Normal to below normal rainfall was experienced in the islands of the eastern Caribbean for the three month period. Trinidad, Tobago and Antigua were moderately dry; Grenada and St. Vincent exceptionally dry; Barbados, St. Lucia and Dominica normal.. Conditions in Guyana ranged from normal in the west to extremely wet in the east. Jamaica was normal in the west and

abnormally wet in the east, while conditions in Belize ranged from moderately dry in the south to moderately wet in the north.

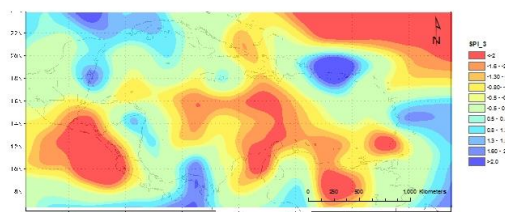


Figure 2. SPI for the Caribbean for July to September 2013. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>

The normal to below normal conditions were influenced by high pressure in combination with dry intruding air and shearing upper level winds that reduced convective activity, and by extension tropical cyclone formation. The occasional wave and upper-level trough, and the Inter-tropical Convergence Zone further south (in the vicinity of Guyana and Trinidad and Tobago), were responsible for the rainfall experienced.

September 2013 turned out to be another mild one in terms of tropical storm formation when compared with September 2012. Five tropical cyclones developed during the month. Tropical Storm Gabrielle developed to the south of Puerto Rico on the 4th. It quickly weakened back to a depression before moving to the north over the Atlantic where it regenerated to a tropical storm before dissipating on the 13th. Tropical Depression #8 formed just off the gulf coast of Mexico on the 6th and dissipated the

following day after making landfall. Hurricane Humberto was the first hurricane for the season and formed on the 8th and dissipated on the 19th. Hurricane Ingrid, the second hurricane of the season, formed over the southern Gulf of Mexico on 12th eventually making landfall along northeastern Mexico before dissipating on 17th. Tropical Storm Jerry developed over the central Atlantic on September 29th.

NATIONAL OVERVIEWS

Antigua

Apparent convective activity seemed to be restricted by the low moisture levels in the lower atmosphere. Tropical waves both at the start and the end of the month were largely responsible for most of the rainfall that was recorded at the V.C Bird Int'l airport. The rainfall total of 102.6 mm was significantly higher than 2012 September value of 33.5 millimeters but was still below the month's average of 129.0 mm. The majority of the month's rainfall occurred from the 2nd to the 5th, accounting for approximately 68% of the total. The winds were on an average variable at 11.3 km/hr with sea conditions slight for the most part with wave heights not exceeding 1.2m.

Table 1 Summary conditions at VC Bird, Airport for September 2013

WX:	PARTLY CLOUDY
WINDS:	VRB AT 11.3 km/hr
MAX 10-MIN WIND:	29.6 km/hr DATE: 01/09/2013 AT 15:00
SEA LEVEL PRESS:	1013.6 mb NORMAL
TOTAL RAINFALL:	102.6 mm MAX 24-HOUR 31.3 mm DATE: 3/09/2013
MAX 6-HR RAIN:	27.2 mm DATE: 03/09/2013 AT 24:00
RAINFALL STATUS:	BELOW NORMAL
AVG MAX TEMP:	31.2 °C MAX: 32.6 °C DATE: 20/09/2013 AT 18:00
AVG MIN TEMP:	25.1 °C MIN: 23.3 °C DATE: 29/09/2013 AT 12:00
AVG TEMP:	28.0 °C WARMEST DAY: 28.8 DATE: 29/09/2013 COOLEST DAY: 26.0 DATE: 05/09/2013
AVG REL HUM:	76.8 % MOST HUMID-DAY: 90.0 % DATE: 03/09/2013 LEAST HUMID-DAY: 68.0 % DATE: 23/09/2013

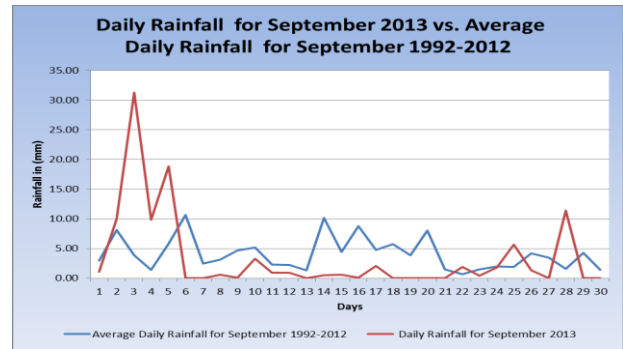


Figure 3 September 2013 vs average September rainfall at VC Bird International Airport.

Barbados

Wind speeds were modest through most of the month, averaging about 18.5 km/hr, with only a brief period between the 15th and 17th and again between the 29th and 30th where speeds averaged as high as 31.5 km/hr. With the modest wind speeds, the maximum air temperatures reached 31°C or greater on 12 occasions, and only 3 occasions during the month when it was less than 30.0°C. The highest maximum of 31.9°C was observed on the 30th. The lowest minimum temperature of 22.9°C was recorded on 13th. The average day-time temperature was 29.1° C while the average night-time temperature was 26.9°C.

Despite the fact that there were 10 rain-days (> or =1.0 mm) during the month, only two major rainfall events actually occurred at Grantley Adams International Airport (GAIA). The first was associated with the passage of a tropical wave between the 2nd and the 3rd that provided 19.4mm on the 2nd, and another 14.9mm on the 3rd. The other major event resulted in 15.8mm of rainfall on the 12th when a low level trough moved across the region. Lingering instability associated with this system contributed to much smaller rainfall totals on the 13th, 14th and 15th. In addition to the above mentioned events, the passage of some other weak tropical waves and troughs, along with an element of localized convection due to the daytime heating contributed to the final rainfall total of 80.2 mm recorded at the G.A.I.A. This figure was just about half the long term (1981-2010) average of 157.6mm. The cumulative total of 829.8mm for the year so far up to the end of September is on par with the long term average of 826mm.

October Outlook - For Grantley Adams Airport, the normal rainfall range would occur between 356.7 and 533.3mm. Above normal rainfall values would exceed 533.3mm.

Belize

The first two days in September were rainy as a tropical wave moved across the country, with most showers occurring over central and northern Belize. Showers decreased on the 3rd. Mostly sunny weather prevailed until 6th. Showers on the 7th, associated with a tropical wave, were experienced mainly in the north and coastal areas. The next day, 8th, turned out generally cloudy with showers, some along coastal and some over inland areas.

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

Station	Liber tad	Zoo	PGIA	Belmopan	Central Farm	Savannah
Elevation (m)	12	30	5	90	90	13
Rainfall (mm)	354	461	236	270	206	230
Mean.	193	186	268	246	175	360
Max	69.3	182.3	49.4	67.1	49.3	41.4
Rain days	18	12	12	16	13	15
Temp (°C)						
Mean Min.	24.3	23.7	25.2	23.8	23.6	24.6
Mean	22.6	23.0	24.3	22.5	22.5	23.9
Lowest Min.	20.4	22.6	23.3	22.4	22.0	22.9
Mean Max.	32.4	31.5	30.8	31.5	32.2	32.3
Mean	33.0	33.0	31.4	32.1	32.3	31.3
Highest Max.	35.0	33.9	33.1	33.6	34.0	35.0

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

Weather on 9th turned out quite sunny. Skies were very cloudy on 10th with only light showers and rain occurring during the day, but showers and rain increased during the night resulting in localized flooding in Belize. The highest rainfall occurred in the Corozal district with Libertad measuring 57mm. Rainy weather was the norm for the following two days (11th and 12th). On 13th, showers developed mostly over northern Belize, with some showers continuing until 15th

On 16th, skies continued cloudy. Showers and rain increased gradually over northern coastal areas then spread to other parts of the country later in the day. The rainy weather along coastal, northern and central

Belize continued unrelentlessly into 17th, as a 1005hPa low pressure system was centred over northern Belize. Showers and thunderstorms continued to occur over northern and coastal areas. The weather was a little less rainy on 19th. However, showers and thunderstorms continued to develop inland as the environment remained moist and unstable. Showers continued to occur sporadically in the south during the late night/early morning hours then inland and in the north during the daytime.

During the final full week a spell of mostly dry and hot weather was experienced. A slack pressure gradient contributed to light surface winds. The month ended with mostly good weather prevailing.

Dominica

A broad area of low pressure associated with a tropical wave produced the month's highest daily rainfall totals during the first week with drier conditions persisting through to the end of the month.

Rainfall total of 133.7mm recorded at the Canefield Airport was 47% below the month's average. The highest daily total recorded was 34.6mm on the 2nd. Twelve (12) rainfall days were recorded and that is 5 days below the normal. There was a dry spell length of 13 days occurring during the second half of the month. The average air temperature recorded was 29.0°C and this is 0.3°C above normal. The highest daily temperature recorded was 34.3°C on the 28th with the lowest being 22.2° recorded on the 22nd. The average wind direction was southerly (180°) at an average speed of 7km/h. The highest wind gust of 41km/hr recorded on the 29th was associated with a high pressure ridge.

At the Melville Hall Airport, rainfall total recorded was 326.5mm and that is 2% above the normal. The highest daily total of 89.6mm was recorded on the 2nd. Nineteen (19) rainfall days were recorded and that is normal for September. Dry spells recorded for the month was insignificant. The average air temperature of 28.6°C recorded at Melville Hall was normal. The highest temperature recorded was 32.1°C on the 29th and the lowest recorded was 22.9°C on the 21st. The average wind

direction was east south easterly (120°) at an average speed of 11km/hr. Melville Hall's highest wind gust of 50km/hr recorded on the 16th was also associated with a strong high pressure ridge.

The relatively dry conditions experienced across parts of the island limited major new crop establishments in some of the agricultural regions. Root crop establishment took place in all regions with passion fruit and plantain establishments mainly in the north region and vegetables and flowers in the south region. The Black Sigatoka Disease continued spreading in new areas. There were no reports of further spreading of the Citrus Greening Disease.

Pesticide Awareness Week ran from the 23rd to 27th under the theme Store Wise Save Lives. Various activities took place including training sessions for farmers, stakeholders and schools. The Disaster Risk Mitigation Project underwent training for farmers teaching techniques to help improve local farms and combat resilience of natural disasters on agricultural products. There was also a training session on crop and livestock production.

Grenada

A relatively stable month resulted in a mere 78.1mm of rainfall making September 2013 one of the driest on record. There were thirteen (13) days of no or insignificant rainfall. The highest 24hr rainfall was on the 21st - 13.9mm. The only significant rainfall event of the month occurred from the 13th to 15th. A mid-level trough and the Inter tropical convergence Zone combined to produce 13mm on the 13th and 13.5mm on the 15th. These cloudy to overcast conditions produced numerous thunderstorms, with one death due to a lightning strike being recorded.

Winds were light and constantly between 10 to 20mph, resulting in fairly high temperatures. The month's highest maximum temperature was 32.6°C, recorded on the 30th. Many nights were warm with an average minimum temperature of 25.4°C. The highest minimum temperature recorded for the month was 28.3°C on the 23rd, while the lowest of 23.7°C was read on the night of the 14th.

Also noticeable during September were the flat seas. September was the first month that the

meteorological office did not have to issue any marine advisories. Good seas and good weather saw an increase in fish production when compared to August which is traditionally a slow month. "Small jacks" (*secqrumenonophamus*) are still in abundance but more so are the larger fish eg King Fish and Tuna.

With the less than average rainfall came the sudden disappearance of watermelon and a very noticeable reduction in many citrus products. On the other hand sugar apple and chennip are still available in large quantities. Ground provisions production are also still encouraging.

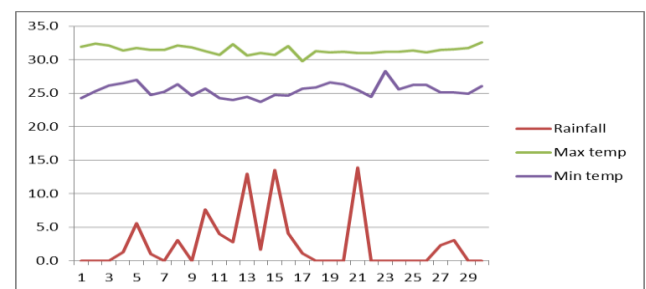


Figure 4 Maximum and minimum temperature and rainfall for September 2013 at Maurice Bishop International Airport

Guyana

In the month of September Guyana continued to transition into its secondary dry season of 2013. The weather conditions throughout the month varied from fair and sunny to occasional showers and scattered thundershowers across Guyana.

Region Three (3) recorded the highest average rainfall total of 199.2 mm with an average of 9 rain days. The highest one day total rainfall total was recorded in Region 2 at Paradise with 181.5 mm on the 29th. This station also recorded the highest monthly of 314.8 mm.

The highest Mean maximum temperature and highest one day temperature were recorded at Lethem in Region 9 with 33.7 °C and 35.5 °C (on 12th), respectively. The lowest mean minimum and minimum temperatures were recorded at Kaieteur in Region 8 with 20.0 °C and 18.9 °C, respectively.

Georgetown and Timehri recorded a mean bright sunshine hour higher than their Climatological average, with the exception of Lethem. The highest

one day total was recorded at Georgetown on September 27, 2013 with 11.0 hours.

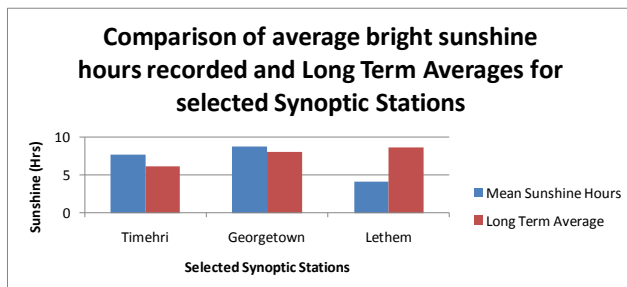
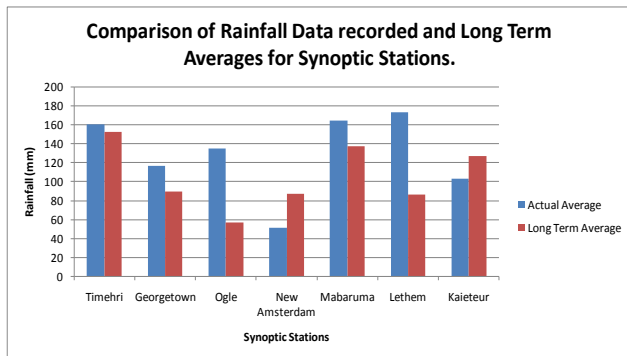


Figure 5 (a) Showing September 2013 and longterm average rainfall at a number of stations, and (b) showing September 2013 and longterm average sunshine hours at three stations in Guyana.

Jamaica

Throughout the month the island’s weather was predominantly affected by surface to low level troughs with occasional high pressure ridges accompanied by a few brief dry periods. The systems that impacted on the island’s weather brought well needed rainfall to most areas that were experiencing longer than normal dryness.

Preliminary figures indicate that the rainfall amount for the month of September remained near normal with Sangster International airport (Sangster) in the northwest recording 97% of its 30 year monthly mean, while Norman Manley International airport (Norman Manley) in the southeast received 78% of its 30 year mean rainfall. During the month, Sangster recorded 128.2 mm of rainfall, while Norman Manley recorded 111.9 mm. There were thirteen rainfall days reported for Sangster, while Norman Manley had six rainfall days during the month.

Sangster Airport recorded 34.5°C (11th), which exceeded the extreme maximum temperature 20 year mean for that station, while 33.9°C (17th) was reported for Norman Manley Airport.

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

Monthly Averages	Norman Manley	Sangster
Extreme Maximum Temperature	33.9 °C (34.5 °C)	34.5 °C (34.3 °C)
Lowest Minimum Temperature	23.4 °C (23.4 °C)	22.0 °C (22.0 °C)
Rainfall Total	111.9 mm (143.0)	128.2 mm (132.0)
Rainfall days (≥1mm)	6 days (8.9)	13 days (16.3)

Values in red indicate the 1992-2010(19-year) averages.

St Lucia

Rainfall for September in Saint Lucia this year was reminiscent of that recorded for September 2009 during the most recent drought. Both Hewanorra and George Charles recorded rainfall figures well below the long term means of 167.0 mm and 227.0 mm respectively. Hewanorra recorded 18 rainy days while George Charles recorded 24.

October is one of the wettest and most humid months in Saint Lucia. The mean maximum temperature for Hewanorra for October is 30.9°C and ranges from 29.0°C to 31.8°C. The seasonal precipitation outlook for the October, November and December period indicate likelihood for rainfall to be in the above normal category or to range from 520 mm to 1143 mm in Vieux-Fort and from 639 mm to 1336 mm in Castries.

Table 4 September 2013 monthly averages at Hewanorra Airport

AVERAGE MONTHLY DATA FOR HEWANORRA					
Cloud Cover (oktas)	Wind Dir (° from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
5	90	10	28.5	80	121.9
Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
31.5	25.9	8.6	6.9	29.8	

Table 5 September 2013 monthly averages at George Charles Airport

AVERAGE MONTHLY DATA FOR HEWANORRA					
Cloud Cover (oktas)	Wind Dir (° from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
5	90	05	28.8	78	122.8
Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
31.5	25.0				

Farmers should ensure that there is adequate drainage in their fields and carefully plan their activities to minimise losses associated with heavy rains.

St Vincent and the Grenadines

The highest daily rainfall (62.5mm) was recorded on the 12th in the Spring Village area. The highest 'total rainfall' (393mm) was recorded in the area of Convent. The maximum temperature (33.7 °C) was recorded on the 7th in Rabbacca area. The minimum temperature was recorded on the 29th, in the Belle Isle area. Night-time temperatures were relatively high across SVG, and light variable/calm winds did not ease the ambient temperatures. Night-time maximum temperatures recorded ranged between 28 and 30 °C, with minimum temperatures ranging between 23.6 and 27.4 °C.

During the last week, Saharan dust haze reduced visibility across the islands. Sea-swells were generally slight to moderate in open waters. A few funnel clouds were also reported along the coasts.

At the E.T. Joshua Airport-Arnos Vale, the total rain-days were more than the 30- year average; however the total rainfall (178.3 mm) was 65.6mm less than the 30 year average (using 1981-2010 as the 30- year average). The highest daily rainfall (37.5 mm) was recorded on the 18th. The rainfall distribution showed the first dekad (ten-day period) had ~11%, the second dekad had 62%, and the third dekad had 27% of the month's total rainfall.

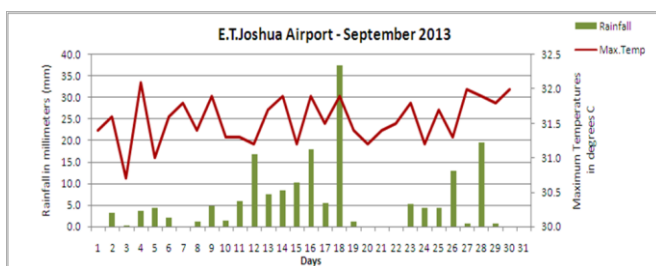


Figure 6 Maximum temperature and rainfall for E. T. Joshua, St. Vincent and the Grenadines.

The average maximum temperature was 31.6oC, and the average minimum temperature 25.6oC. The extreme maximum temperature recorded was 0.2 oC lower than the 30 year average of 32.3 oC, while the extreme minimum temperature was 0.6 higher than the 30 year average of 23.0oC. The mean relative

humidity was 0.9% higher than the 30 year average of 78.1%.

Trinidad and Tobago

During the first 10 days, tropical waves brought unstable weather conditions to Trinidad and Tobago with significant rainfall which left most of the country wet. During the period, 10-day rainfall totalled 50 mm or averaged 5.0 mm per day in some locations; on the wettest day at Piarco, Trinidad, rainfall totalled 37.3 mm while at ANR Robinson Airport, Tobago, it totalled 6.4 mm. Even so, maximum temperatures still reached or exceeded 33°C on 6 of the 10 days at Piarco, while cooling during the night was limited as night time minimum temperatures fell below 23°C on only 3 occasions. At the ANR Robinson Airport, maximum temperatures reached or exceeded 32°C on 7 of the 10 days, while there was little relief during the night as night time minimum temperatures stayed well above 24.5°C.

The second 10-day period was even wetter due largely to interplay between the Inter-Tropical Convergence Zone (ITCZ) and localized Sea-Breeze conditions which produced a number of moderate to heavy rainfall episodes resulting in flooding of several locations in Trinidad and Tobago. The wettest five-day rainfall total ranged from about 50.8mm in most areas to as much as 127.0mm, based on reports from a few areas of the country. At Piarco, 10-day rainfall averaged about 9.0 mm per day, while the ANR Robinson airport experienced higher daily averages, at 12.0mm per day. The wettest day at Piarco produced 31.8 mm while at ANR Robinson airport it was 48.8mm. The heavy rainfall episodes resulted in soggy and flooded agriculture crop fields and pastures. In line with the wet weather regime, daily maximum temperatures exceeded 33.0°C on two days while nights were relatively warm as night-time minimum temperatures fell below 24.0°C on two occasions, owing to extensive nighttime cloud cover. At ANR Robinson airport, similar conditions were observed with daily maximum temperatures topping at 32.0 °C on only one day while nights remained relatively warm with minimum temperatures falling below 24.0°C on one occasion.

In comparison to the first 20 days, the last ten days of the month were considered to be relatively dry.

The wettest days at Piarco and ANR Robinson airport was 24.2 mm and 10.7 mm respectively and occurred on the last and second to last days of the period respectively after several relatively dry days. Ten-day rainfall totalled 42.0 mm at Piarco and 23.0 mm at ANR Robinson airport. Notwithstanding the relatively dry period, daily maximum temperatures exceeded 33.0 °C only on two days at Piarco while nights were relatively warm as night-time minimum temperatures fell below 24.0 °C only on two occasions. At Crown Point in Tobago, similar conditions were observed with daily maximum temperatures topping at 32.0 °C on only one day while nights remained relatively warm with minimum temperatures falling below 24.0°C on only one occasion. Overall, the monthly rainfall total recorded at Piarco was 175.5 mm, while at ANR Robinson it was 144.9 mm both of which were near normal.

On the other hand, the northern portion of the Greater Antilles and Bahamas are expected to be normal to below normal.

The Eastern Caribbean and the Guianas are expected to be normal to above normal, with other areas such as in the vicinity of Belize and Jamaica having lesser chance of above normal temperatures. The northern portion of the region is expected to experience normal to below normal temperatures.

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 December 2013. The likelihood of ENSO neutral conditions decreases between January and March.

Little impact is expected on Caribbean rainfall from ENSO with slight increase in rainfall in the Eastern Caribbean, mild temperatures and slight decrease in rainfall in the NW Caribbean, if [the expected ENSO conditions are] accompanied by above-average Tropical North Atlantic and Caribbean SSTs.

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 a drier than average atmosphere, which is a continuation from earlier in the season. The above average SSTs are forecasted to last into March, with below average SSTs forecasted around the Bahamas into February.

Apart from the northwest portions of the region that should continue to be relatively dry, the atmosphere is expected to be much more moist through to November period, inducing more rainfall.

January to March 2014

As in any long-lead forecast, there is considerable uncertainty as to the development of rainfall activity beyond December 2013. Currently, for the period January to March 2014, the islands of the eastern Caribbean are expected to be normal to above normal with a slightly higher chance of above normal. The Guianas are also expected to be normal

REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECAST

October to December 2013

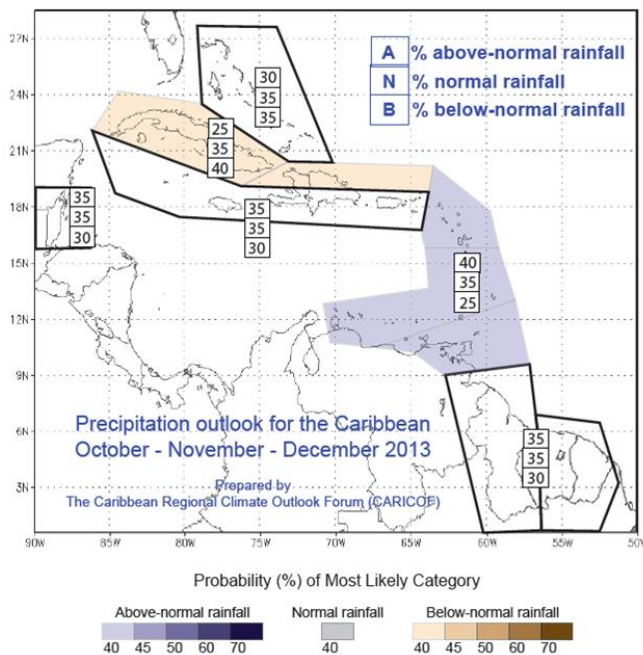


Figure 7 The October to December 2013 Rainfall Forecast

Normal to above normal conditions are expected over Barbados, Leeward Islands, Windward Islands, with less likelihood of above in Belize, the southern Greater Antilles including Jamaica, and the Guianas.

to above normal, but with a higher chance of normal. On the other hand, the north/northwestern Caribbean (including Jamaica) is expected to experience normal to below normal rainfall. The remainder of the Caribbean (including Belize in the west) has a slightly better than normal chance of being normal to above normal.

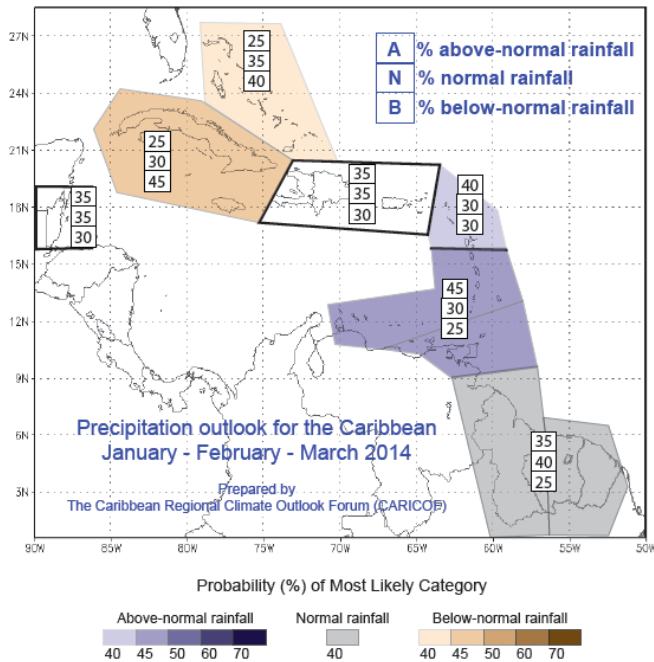


Figure 8 The January to March 2014 Rainfall Forecast

Air temperatures are very likely to be normal to below normal in the northwest around Cuba. Elsewhere should be normal to above normal.

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