



**ANNOUNCEMENTS**

The entire Caribbean should continue to monitor for low water availability over the coming months as the majority of the region draws closer to its climatological dry season, particularly with an El Nino watch still in place, and with many parts of the region experiencing less than average rainfall for the wet season thus far.

**REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR SEPTEMBER 2014**

Apart from Grenada that was moderately wet, the islands of the eastern Caribbean experienced normal to below normal rainfall. Trinidad was normal to abnormally dry; Tobago, Dominica and Antigua abnormally dry; and Barbados, St. Vincent and St. Lucia normal. Conditions in Guyana ranged from normal in the west to severely dry in the east. Jamaica ranged from normal in the west to severely dry in the east, but Belize from abnormally wet in the south to very wet in the north.

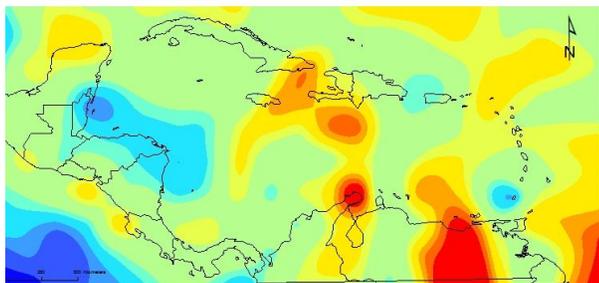


Figure 1. SPI for the Caribbean for September 2014. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>.

Most annual cropping takes place over a period of about three months. For the period July to September, rainfall in the islands of the eastern Caribbean was normal to below normal. Trinidad, Tobago, Grenada and St. Vincent were normal;

Barbados and Antigua moderately dry; and Dominica abnormally dry. Rainfall in Guyana ranged from moderately wet in the west to moderately dry in the east. Conditions in Jamaica ranged from normal in the west to moderately dry in the east, but Belize from severely dry in the south to normal in the north.

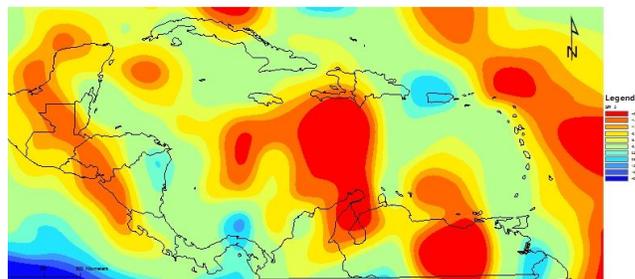


Figure 2. SPI for the Caribbean for July to September 2014. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>

The passage of a number of tropical waves along with the development of a series of trough systems along the southern side of the ridge contributed to a pattern of intermittent showers across the region. Further, two tropical cyclones, Dolly and Eduardo, developed during the month of September. However, neither of them threatened or directly affected landmasses in the Caribbean. Dolly developed in the Gulf of Mexico on 1<sup>st</sup> September while Edouard formed west of the Cape Verde Island before tracking northwestward and recurving over the central north Atlantic.

## NATIONAL OVERVIEWS

### Antigua and Barbuda

Near-average rainfall and temperature were observed during September. The rainfall and temperature were 93.0 mm and 27.9°C respectively. For the month, at the V. C. Bird International Airport, the number of wet days ( $\geq 1$  mm) and heavy rainfall days ( $\geq 10$  mm) were near average with 11 and 2 days respectively. A tropical upper level trough system dumped very heavy rain (30.4 mm) on the island on September 26, resulting in this day being the wettest, not only for the month but also for the year thus far; 26.6 mm of which fell in an hour and a half. Regarding daily extreme temperatures, the mean daily minimum was 25.4°C, tying 2009 for the second warmest since 2003. Meanwhile, the mean monthly maximum temperature was 30.8°C – near average.

Notwithstanding consecutive months of near or above average rainfall, water remains a premium commodity as the drought continues for the 13<sup>th</sup> month. The deficit from the start of the drought is now 417.6 mm. Not enough has fallen to recharge surface catchments and aquifers. Hence, farming remains a serious challenge with loss of earnings by farmers mounting into the hundreds of thousands of dollars due to the inability of the current dry climate to adequately support most crops.

### Barbados

Over Barbados, the Atlantic High pressure ridge generated average wind-speeds of 27.8 km/hr during the first half of the month but these weakened to average about 22.2 km/hr during the latter half of September.

During the first half of the month, mostly spotty showers of between 0.1 and 4.2 were observed at the Grantley Adams Airport. A similar trend was noted during the last dekad (ten day period) of the month. However, more significant rainfall totaling 86.6mm occurred between days 17 and 21 as a trough system interacted with a tropical wave over the island chain. The September rainfall total of 112.9mm occurred over 13 rain-days ( $>$  or  $=1.0$  mm) This figure was

72% of the long term (1981-2010) average of 157.6mm while the cumulative total of 593.4mm for the year so far up to the end of September was, similarly, 72% of the long-term average of 826mm.

Maximum daily air temperatures equaled or exceeded the long-term monthly average of 31°C on 14 occasions while varying between 30.0° and 30.9°C on the remaining days. The highest maximum of 31.4°C was observed on the 18<sup>th</sup> while the lowest minimum temperature of 23.0°C was recorded on the 20<sup>th</sup>. The average day-time temperature was 28.9°C, while the average night-time temperature was 26.8°C.

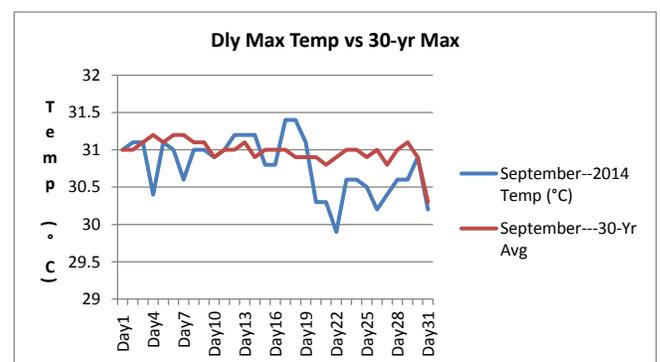


Figure 3 Maximum temperature for September 2014 compared with the long term average at Grantley Adams Airport..

### Belize

On the 3<sup>rd</sup> apart from early morning showers in the south, the weather was generally sunny as the day before. However, the 5<sup>th</sup> started out cloudy with showers and thunderstorms developing in the south of the country, but decreased in coverage in the afternoon. On the 6<sup>th</sup>, more showers popped up during the evening along the coast from southern to central Belize, up until the following day.

On the 8<sup>th</sup> there were again showers in the south of the country, with some inland showers by afternoon. The following day saw isolated showers along the coast that eventually drifted inland. A tropical wave resulted in showers and thunderstorms primarily in the south. On the 10<sup>th</sup> the wave caused coastal showers and thunderstorms that eventually moved inland and dissipated during the afternoon. Cloudy conditions continued into the next day, as showers and thunderstorms occurred over northern, central and coastal areas until evening. But by the 12<sup>th</sup> were only experienced over coastal areas. Another wave

caused showers and thunderstorms on the 14<sup>th</sup> in the south, eventually affecting much of the country.

On the 15<sup>th</sup> there were more showers, especially in the north. Libertad in the Corozal district measured 46.3mm. Much better weather prevailed across the country on the 16<sup>th</sup> and for much of the remainder of the week. On the 21<sup>st</sup>, however, skies turned cloudy as a few showers and thunderstorms developed over central Belize before heading inland where most showers occurred.

More showers and thunderstorms developed in the north and west of the country again during afternoon of the 22<sup>nd</sup>, with southern districts and northern coastal Belize having similar experiences late in the night and into early next morning. As evening of the 23<sup>rd</sup> approached, a tropical wave crossed Belize bringing rainy weather during the night and into the next two days over most areas. Weather on the 26<sup>th</sup> offered no change to incessant rainfall which occurred over central and coastal areas, but with a steady decrease in showers and rain across the country by afternoon. By the 27<sup>th</sup>, conditions showed a marked improvement as showers remained generally isolated, and much better weather prevailed by the remainder of that weekend. On the 30<sup>th</sup>, a tropical wave produced showers and thunderstorms mainly inland over western and northern Belize.

Table 1 Rainfall and Temperature Summary for September 2014 for stations in Belize

Station	Libertad	Zoo	PGIA	Belmopan	Savannah
Elevation (m)	12	30	5	90	13
<b>Rainfall (mm)</b>	<b>233.5</b>	<b>233.6</b>	<b>387.8</b>	<b>288.3</b>	<b>571.7</b>
Mean.	207.1	219.1	254.4	246.3	351.2
Max	46.3	119.3	108.6	58.1	111.6
Rain days	13	17	18	14	18
<b>Temp (°C)</b>					
Mean	<b>23.7</b>	<b>23.8</b>	<b>25.2</b>	<b>23.5</b>	<b>24.2</b>
Min.	22.8	23.1	24.3	22.5	24.2
Lowest	20.6	21.8	21.9	19.4	22.2
Max.	<b>31.4</b>	<b>31.8</b>	<b>30.8</b>	<b>31.7</b>	<b>32.1</b>
Mean	33.0	33.0	31.4	32.1	31.3
Highest	33.7	33.9	32.2	34.9	33.8

n/a-not available; 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;\*-station data incomplete.

### Dominica

Below average rainfall amounts were recorded at the Canefield and Melville Hall Airports for the month. At the Canefield Airport a total of 187.6mm of rainfall was recorded, which is 74% of the mean. The highest daily total recorded was 38.1mm on the 21<sup>st</sup>, as a tropical wave affected the area. There were 17 rainfall days, which is normal and a 6-day dry spell from the 6<sup>th</sup> to 11<sup>th</sup>. Melville Hall Airport recorded a monthly rainfall total of 225.0mm which is 71% of the mean. The highest daily total recorded was 33.0mm on the 19<sup>th</sup> due to the passage of a trough system. There were 21 rainfall days with no significant dry spells. The highest wind gust recorded was 65km/hr on the 13<sup>th</sup> and 20<sup>th</sup>.

While the eastern and western regions reported drier than normal conditions, farming practices were not impacted and fertilizing, harvesting and land preparations went on as planned. In the southern region however, warm temperatures and increased rainfall resulted in considerable reduction in vegetables yields (tomatoes, carrots, lettuce). Losses in cabbage as a result of rot were experienced. Meanwhile, ground provisions, sorrel and culinary herbs are in good supply.

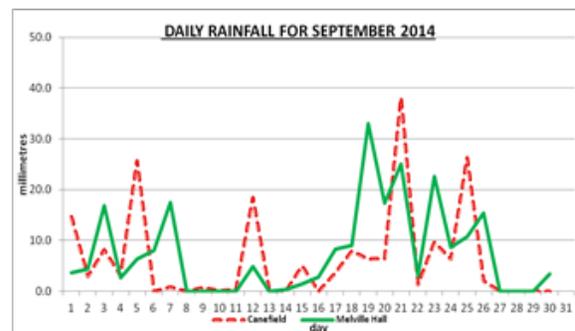


Figure 4 Daily rainfall at Canefield and Melville Hall Airports during September 2014.

### Grenada

September, 2014 had 193.5mm of rainfall and is the fifth highest September total on record. It was also 247.75% more than that of 2013's (78.1mm) and 45.38% or 60.4mm more than the long term average of 133.1mm. A total of 134.6mm of rainfall fell between the 18<sup>th</sup> and 23<sup>rd</sup> of the month. This was as a result of a combination of tropical waves and trough systems, producing scattered to widespread showers and thundershowers. Very significant 24-hour rainfall amounts of 28.6mm, 35.3mm, 14.3mm,

55.0mm and 30.0mm were recorded on the 10<sup>th</sup>, 18<sup>th</sup>, 19<sup>th</sup>, 21<sup>st</sup> and 23<sup>rd</sup> respectively, resulting in flooding and rock falls (Figure 5). These events contributed greatly to flooding and even landslides in many parts of the country. There were 5 days with rainfall more than 10.0mm, 3 days with rainfall more than 5.0mm but less than 10.0mm, 3 days with rainfall more than 1.0mm but less than 5.0mm, 10 days with rainfall less than 1.0mm and 8 days with no rainfall.



Figure 5 a) Fallen rock blocking Sendal Tunnel exit and b) flooding at T.A Marrayshow Community College (Compliments Meteorological Service Mauric Bishop Internation Airport).

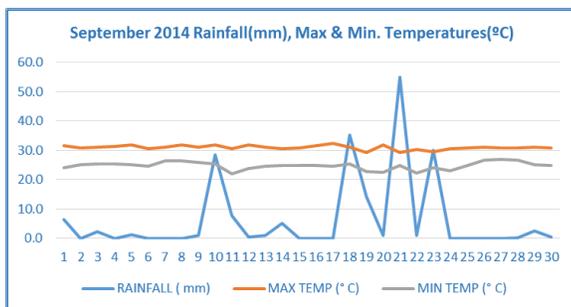


Figure 6 Daily rainfall and maximum and minimum temperatures at Maurice Bishop International Airport for September 2014.

Mean daily temperatures for the month was lower than that of last year by an average of 0.5 °C, reaching a mean of 27.9 °C; while the mean maximum and minimum temperatures were 31.0°C and 24.8°C respectively. The highest maximum temperature recorded was 32.3°C and occurred on the 17<sup>th</sup>, compared with 32.6°C for 2013 and an average of 32.5°C; while the lowest minimum was 21.9°C and occurred on the 11<sup>th</sup> of the month compared with 23.7°C for 2013 and 22.9°C for the average.

Winds were average and marine advisories were only issued on the 11<sup>th</sup> and 12<sup>th</sup> of the month; thus enabling Fishermen to venture out to sea. Despite this, fish catch was not so great during the month with the exception of some Jacks, Ocean Gar,

Snappers, Bonito, Conch (Lambie) and some Lobsters.

The month of September saw Farmers continuing to have some very good production in Water Melon, Pumpkin, Eggplants, Cabbages, Avocado and Seasoning Peppers.

### Jamaica

The island continued to experience a reduction in rainfall activity especially over eastern parishes when compared to the average. However, western parishes experienced about average rainfall, due mainly to tropical waves as well as occasional low level troughs.

During the month, Sangster in the northwest recorded 138.7 mm of rainfall, while Norman Manley in the southeast received 10.6 mm of rainfall. There were nine rainfall days reported for Sangster, while Norman Manley International airports recorded two rainfall days. Manley received about 7% of the 30-year average rainfall during the period, while Sangster recorded 5% above average (1971-2000 mean).

The highest maximum temperature recorded for Sangster Airport was 34.2°C (19<sup>th</sup>). Meanwhile 34.1°C (14<sup>th</sup>) was reported for Norman Manley Airport.

Table 2 Climatological Statistics for Manley and Sangster Airports for September 2014.

Monthly Averages	Norman Manley	Sangster
Extreme Maximum Temperature	34.1 °C <b>(34.5 °C)</b>	34.2 °C <b>(34.3 °C)</b>
Lowest Minimum Temperature	25.0 °C <b>(23.4 °C)</b>	23.3°C <b>(22.0 °C)</b>
Rainfall Total	10.6 mm <b>(143.0)</b>	138.7 mm <b>(132.0)</b>
Rainfall days (≥1mm)	2 days <b>(8.9)</b>	9 days <b>(16.3)</b>

Values in red indicate the 1992-2011 (20-year) averages. Values in orange represent 1971-2000 mean.

### St. Lucia

September brought a significant amount of rainfall to Saint Lucia particularly in the north of the island which was experiencing drought conditions. Rainfall at George Charles Airport exceeded the monthly

average of 217.2 mm in that part of the island and ended the drought event. At Hewanorra in the south of the island, the monthly rainfall total fell short of the mean of 182.7 mm.

Table 3 September 2014 monthly averages at Hewanorra Airport

Cloud Cover (oktas)	Wind Dir (o from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
5	90	12	28.3	79	169.7
Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
31.1	26.0	8.8	7.5	29.4	

Table 4 September 2014 monthly averages at George Charles Airport

Cloud Cover (oktas)	Wind Dir (o from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
5	90	06	28.6	77	232.1
Max Temp (°C)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
31.2	24.7				

### St Vincent and the Grenadines

From the 5<sup>th</sup> to the 7<sup>th</sup>, a trough system affected the island. Heavy rainfall on the 6<sup>th</sup> caused flooding in various parts of the island (including the E.T. Joshua Airport), with landslides being reported in several areas resulting in roads being blocked. There were also several days that had thunderstorm activity, which were associated with weak unstable conditions and the passage of tropical waves and other weak trough systems. The highest winds gusted to near 42.6 km/hr at the E.T. Joshua Airport on the 2<sup>nd</sup> and 3<sup>rd</sup> September. Sea-swells were mainly light to moderate in open water, with only a few cautions being issued.

Total rainfall at the E.T. Joshua Airport for the month was 228.0mm. This was 15.9 mm lower than the average (1981-2010) for September. There were 20 rain-days, two (2) more than the average for this station. The highest 24-hour rainfall at the E.T. Joshua Airport (83.7 mm) was recorded on the 6<sup>th</sup>. There were (2) two periods which had (3) three consecutive days with rainfall less than 1mm (7<sup>th</sup>-9<sup>th</sup> and the 25<sup>th</sup>-27<sup>th</sup>). In the first dekad (ten-day period),

59% of the month's total rainfall occurred; the second dekad had 26%, and the third 15%.

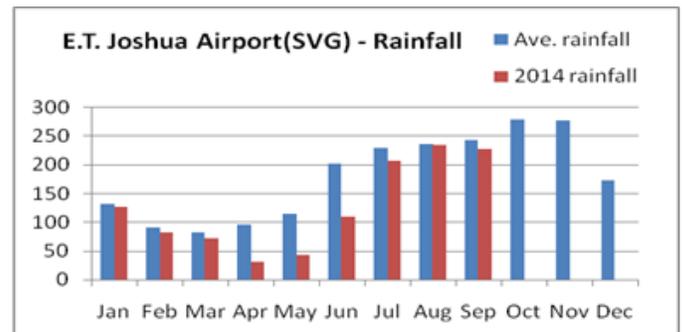


Figure 7 Monthly rainfall at E.T. Joshua Airport for 2014 (up until September) compared to the averages for each month.

Night-time temperatures were relatively high across SVG, with maximum temperatures ranging from 28°C to 32 °C, and minimum temperatures ranging from 23.5°C to 27.8 °C. Average maximum temperature was 30.5°C, and the average minimum temperature was 25.3°C. The extreme maximum temperature was 31.7°C, this was 0.6°C less than average, while the extreme minimum temperature of 23.5°C was 0.5°C higher than average. Mean relative humidity was 77.5%, 0.6% lower than average.

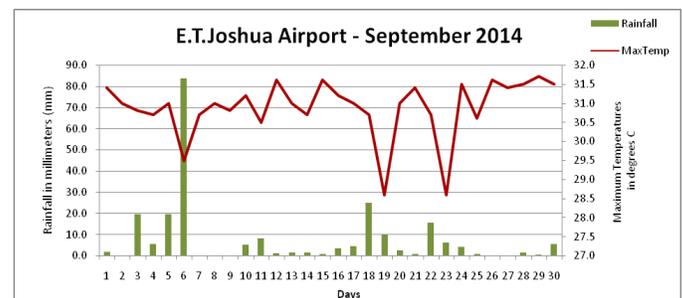


Figure 8 September 2014 daily rainfall and temperature at ET Joshua Airport.

### Trinidad and Tobago

At Piarco in Trinidad the total rainfall for the month was 121.9 mm, making September 2014 drier than average, representing 65% of the 1981-2010 average. Rainfall at Crown Point in Tobago was similar with 99.3 mm of rainfall, which represented 64% of the 1981-2010 normal. Accompanying the drier than average conditions were higher than average temperatures, as the mean maximum, minimum and daily temperatures were 32.8°C, 26.2°C, 27.6°C respectively at Piarco, while at Crown Point they were 31.3°C, 25.7°C and 28.0°C.

Rainfall during the first half of the first dekad was wet in contrast to the second half that was dry. At Piarco in Trinidad, ten-day rainfall amounted to 78.7mm with the 5<sup>th</sup> being the wettest with 22.2mm. At Crown Point in Tobago, the ten-day rainfall total was considerably less, yielding only 29.1mm with the bulk of the rainfall occurring on the 1<sup>st</sup> and 2<sup>nd</sup> when 15.1mm and 11.6 mm were recorded respectively. During the period, temperatures were considerably high as daily temperatures and maximum temperatures averaged 28.7<sup>0</sup>C and 32.8<sup>0</sup>C respectively while the maximum temperatures soared to a high of 34.3<sup>0</sup>C on day four at Piarco. At Crown Point, daily maximum temperatures reached a high of 32.8<sup>0</sup> C on the 8<sup>th</sup> but averaged 31.4<sup>0</sup> C over the period, while minimum temperatures remained above 24.5<sup>0</sup> C and averaged 25.5<sup>0</sup> C over the period.

Rainfall was very much reduced during the second dekad of September but was especially heavy on the 7<sup>th</sup> in Trinidad and on the 8<sup>th</sup> in Tobago. Overall across the country, there were five relative dry days. Ten-day rainfall total was 41.5 mm at Piarco while at Crown Point it was 45.0 mm. The wettest two days at Piarco were 1<sup>st</sup> and 7<sup>th</sup>, which produced 23.4mm and 11.7 mm respectively while the bulk of the rainfall at Crown Point occurred on the 8<sup>th</sup> when 33.5 mm was recorded. Ten-day mean maximum temperature at Piarco was 33.0<sup>0</sup> C with the highest maximum and minimum temperatures being 34.1<sup>0</sup>C and 25.1<sup>0</sup>C respectively; while the mean daily temperature was 28.6<sup>0</sup>C. At Crown Point, the ten-day mean maximum and daily temperatures were 31.6<sup>0</sup> C and 28.5<sup>0</sup> C respectively with highest maximum and minimum temperatures being 32.7<sup>0</sup> C and 26.1<sup>0</sup> C respectively.

During the last ten days rainfall accumulations were at Piarco was only 17.0mm. Most of this rainfall occurred on the first three days. At Crown Point, the rainfall was similar with a total of 21.8 mm, about half of the rainfall during the second dekad. The accumulation of rainfall came from the first four days.

The rainfall received during the month would have benefitted agriculture in general and would have been sufficient to buffer the drier conditions which interspersed the wet conditions. In addition, the

rainfall would have boosted topsoil moisture content to levels that were sufficient to limit irrigation needs on the hot and drier days. At the same time, it would have maintained to some degree the improved water availability for agricultural purposes gained during the previous seven weeks. The combination of rainfall followed by high temperatures would have provided favourable conditions for agricultural insect pests, fungal spores and diseases in general to thrive.

### REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECAST

**ENSO** conditions have been looming for some time now, but still ENSO-neutral conditions persist with Eastern Pacific equatorial Sea Surface Temperatures (SSTs) at near 0.5<sup>0</sup>C above average. Most models indicate a continued upward trend to about 0.5-1.5<sup>0</sup>C above average during the next few months and up until March 2015, initiating a weak to moderate event. This is a development the region should continue to monitor closely, as it may have implications for rainfall for the remainder of the wet season and into the 2015 dry season. There is a real chance for below-normal rainfall and above normal temperatures south of 20<sup>0</sup>N through March 2015.

**Caribbean SSTs** are near to below average, and this is predicted to remain throughout the forecasting period with only a slight probability of any change occurring north of the Greater Antilles. **The Trade Winds** are hardly predictable at this time but could get stronger during the forecasting period, particularly in the southern Caribbean around the ABC Islands. Below average temperatures and stronger trade winds slow down strong convection, thus potentially reducing precipitation and stormy events throughout the remainder of the wet season, especially in the Eastern Caribbean.

#### **October to December 2014**

Normal to below normal rainfall, with greatest likelihood of below normal, is expected across the majority of the Caribbean with highest certainty over the Windward Islands. The exceptions are in the southern Caribbean in the vicinity of Trinidad and Tobago, parts of the Guianas, and northern Cuba where there is only slightly better than average chance of normal to below normal rainfall.

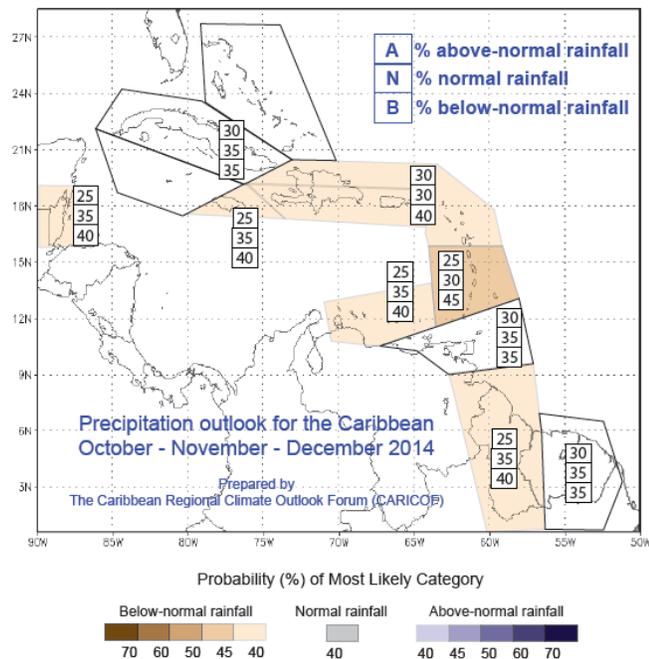


Figure 9 The October to December 2014 rainfall forecast

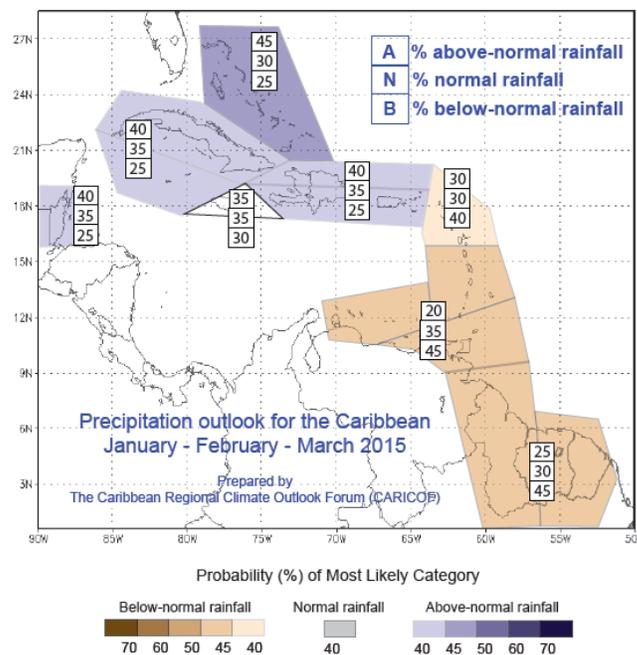


Figure 10 The January to March 2015 rainfall forecast

### January to March 2015

Normal to below normal conditions, are forecasted for the eastern Caribbean from the Windward Islands southward to the Guianas, with greatest certainty for below normal. The Leeward Islands are also most likely to experience below normal rainfall. Contrastingly, normal to above normal rainfall, with highest likelihood for above normal, is expected in the northern Caribbean, with greatest certainty of above normal in the vicinity of The Bahamas. Jamaica has only slightly better than average chance for normal to above normal conditions.

**Prepared by**  
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