



**ANNOUNCEMENTS**

Normal to below normal rainfall likely for the next three months in the Lesser Antilles and Guyana. Normal to above normal elsewhere. All dependent on the persistence and strength of the El Niño developing in the Pacific. **Temperatures are likely to continue to be above normal by up to 0.5 °C for at least the next three months.** The formation of National Tri-partite committees to sustain the activity and output of CAMI has begun. **CAMI farmers' forums have begun, and continue through to October.**

**REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR AUGUST 2012**

In the eastern Caribbean and Guyana, there was a distinction between the normal to below normal north and the normal to above normal south. Trinidad and St. Lucia were abnormally wet; Tobago moderately wet; Barbados very wet; Grenada, St. Vincent, and Dominica normal; Antigua abnormally dry; and, apart from the northern extremes that were abnormally wet, Guyana was normal. Conditions in Jamaica ranged from normal in the western half to moderately wet in the east, but Belize ranged from severely dry in the west to normal in the north.

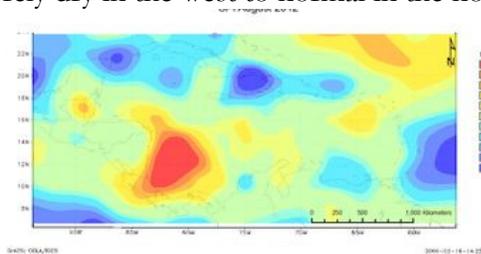


Figure 1. SPI for the Caribbean for August 2012. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmm/spimonitor.html>.

Most annual cropping takes place over a period of about three months or just over. The rainfall over the Eastern Caribbean and Guyana was very diverse. Trinidad was moderately wet; Tobago, Barbados,

St. Lucia, Dominica, and Guyana normal; Grenada and Antigua moderately dry; and St. Vincent severely dry. Jamaica was normal in the west and abnormally wet in the east while Belize ranged from moderately dry in the west to extremely wet in the north. See Figure 2.

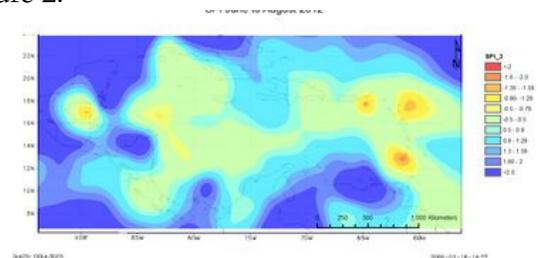


Figure 2. SPI for the Caribbean for June to August 2012 more information on the SPI can be viewed at <http://63.175.159.26/~cdpmm/spimonitor.html>

**NATIONAL OVERVIEWS**

**Barbados**

In keeping with climatology, tropical storm activity peaked in August with the development of eight named systems in the Atlantic Basin. Three of these systems moved through the northern Lesser Antilles generating significant rainfall in the process. Severe flooding and land-slides were also reported in Dominica and as far south as Trinidad and Tobago. Tropical Storm (TS) Ernesto passed between St. Vincent and St. Lucia on August 3<sup>rd</sup> and while not

very well organized at the time, a feeder band from this system generated showers, thunderstorms and gusty winds over Barbados. Grantley Adams Airport recorded 53.8mm of rainfall as the center of 'Ernesto' passed about 30 miles north of the island. A peak wind of 37 knots with gust to 47 knots was observed on August 3<sup>rd</sup> at 1100Z. The lowest station pressure was 1001mb.

Tropical Depression #7 weakened to an open Low between St. Lucia and Martinique on August 11<sup>th</sup>. Rain-bands associated with this Depression produced another 17.3mm of rainfall at the Grantley Adams' Airport. The center of T.S 'Isaac' tracked westward between Dominica and Guadeloupe on August 22<sup>nd</sup>; a trailing feeder band triggered 74.6mm of rainfall at the Barbados' Airport; above-normal swells also impacted the southern and western coastlines of Barbados. There were local media reports of damaged boats.

The resulting rainfall total of 237.0mm for August was well above the 30-year normal of 141.9mm. It also represents the highest August rainfall total since 2000; the previous highest in the same period occurred in 2007 (236.1mm). The cumulative total rainfall at the end of August was 831.7mm which was 25% above the 30-year (1981-2010) cumulative average. There were 20 rain days (days with rainfall  $\geq 1$ mm) which were five more than the long-term normal.

While the highest maximum temperature recorded was 32.1°C on August 11<sup>th</sup> and the lowest minimum was 19.1°C recorded on August 4<sup>th</sup>, there were 12 days on which the maximum temperature was 31.0°C or higher; the 30-year normal for August is 30.9°C. The average day-time air temperature was 28.3° C while the average night-time air temperature was 26.4°C.

### **Belize**

On 3<sup>rd</sup> and 4<sup>th</sup> August a tropical wave produced rainfall over southern Belize. Big Falls Plantation recorded two successive days of rainfall over 100mm. The rest of the country enjoyed sunny, warm and dry weather produced by a southeasterly flow.

On the 6<sup>th</sup> showers occurred over northern Belize in the morning as tropical storm Ernesto skirted the northeast corner of Honduras. On the morning of the 7<sup>th</sup> the storm continued to head west northwest for the Yucatan Peninsula. During the evening and night winds increased steadily over the northern districts of Corozal and Orange Walk. Intense rainfall caused flooding in several villages in the Corozal district. Libertad in Corozal recorded 112mm followed by Tower hill in the Orange Walk district with 82mm. Most serious damage occurred in the agriculture industry (as indicated by the television articles on the links below): <http://edition.channel5belize.com/archives/74269> <http://edition.channel5belize.com/archives/74335>.

A trough produced unstable conditions over Belize on 11<sup>th</sup> as showers and thunderstorms developed along the coast and over inland areas. During the following day, some showers occurred mainly over northern Belize. On 14<sup>th</sup> another wave reached the vicinity, bringing showers over several portions of coastal Belize late that day. The next day continued generally cloudy as showers occurred periodically. Weather conditions during the night continued quite rainy with moderate to heavy showers over the northern districts (Corozal especially). The intense and continuous rain produced flooding in Corozal and across the Mexican border town of Chetumal. Libertad recorded 131mm, while Tower hill, also in the north, measured 59mm. During 17<sup>th</sup> evening more showers and thunderstorms invaded the country from the south before spreading north. The International Airport recorded 44.1mm, while Libertad in the north registered 52.5mm.

Diurnal heating and light winds supported shower development over mainland Belize on 25<sup>th</sup>. Late that day, showers and thunderstorms occurred over central Belize including Belize City. The International Airport recorded 17mm. For the final days in August a trend of late night showers over some areas existed as Hurricane Isaac influenced the weather.

Table 1 Rainfall and Temperature Summary for August 2012 for stations in Belize

Station	Liber-tad	Zoo	PGIA	Belmo-pan	Central Farm	Savannah
Elevation (m)	12	30	5	90	90	13
<b>Rainfall (mm)</b>	<b>377</b>	<b>206</b>	<b>151</b>	<b>303</b>	<b>63</b>	<b>268</b>
Mean.	189	270	221	238	169	371
Max	131	128	47	167	17	45
Rain days	14	10	12	15	12	16
<b>Temp (°C)</b>						
Mean	<b>24.3</b>	<b>23.3</b>	<b>24.6</b>	<b>23.7</b>	<b>23.4</b>	<b>24.2</b>
Min.						
Mean	23.1	22.7	24.6	22.4	22.4	24.0
Lowest	20.9	22.5	21.4	21.6	20.2	21.8
Min.						
Mean	<b>33.9</b>	<b>32.3</b>	<b>31.6</b>	<b>32.3</b>	<b>33.0</b>	<b>32.4</b>
Max.						
Mean	12	30	5	90	90	13
Highest	<b>377</b>	<b>206</b>	<b>151</b>	<b>303</b>	<b>63</b>	<b>268</b>
Max.						

### Dominica

During the month of August there was an increase in tropical cyclone activity which affected the island producing above normal monthly rainfall totals in Dominica.

At the Canefield Airport 426.0mm of rainfall was accumulated, which was approximately 74% above the monthly mean. A maximum daily total of 109.0mm was recorded on the 11<sup>th</sup>. Eighteen rainfall days were recorded with no significant dry spell. Five thunderstorm days were recorded. The average air temperature was 28.8°C, which is 0.1°C below the normal.

At the Melville Hall Airport 290.1mm of rainfall was recorded which was approximately 14% above the monthly mean. The maximum daily total was 54.5mm recorded on the 3<sup>rd</sup>. There were 17 rainfall days and a 5 day dry spell during the last week of the month. Three thunderstorm days were recorded. The averaged air temperature was 28.4°C which is 0.4°C below the normal.

The fight against black sigatoka remained the predominant activity among the farming community this month. The spraying and treatment of the disease was disrupted with the passage of the tropical cyclones which affected the island. Some farmers also sustained damages to their bananas and plantain plants as well as the loss of livestock, farms and access roads.

### Grenada

Of the eight Tropical Storms that developed during the month, Grenada was quite fortunate to have escaped much of the direct fury but nevertheless experienced indirect effects from two of the storms. By the 2<sup>nd</sup> August, Grenada was placed under TS watch due to Ernesto, which was discontinued on the 3<sup>rd</sup>. Only 14.0 mm was recorded at Maurice Bishop International Airport (MBIA) on the 3<sup>rd</sup> due to feeder bands. Very windy conditions prevailed as T.S. Isaac (22<sup>nd</sup> – 23<sup>rd</sup>) moved into the Caribbean Sea. Gale-force winds and above normal swells (especially on the western side of the island) were experienced, with 54.5 mm being recorded at MBIA on 23<sup>rd</sup>.

On the 6<sup>th</sup>, 21.8 mm was recorded as a tropical wave embedded in the ITCZ passed across the Windward Islands. On the 25<sup>th</sup>, as South Easterlies carried low to mid level moisture, 13.3 mm was recorded at MBIA, but far more fell over the western half of the island. Although only 8.1 mm were recorded at MBIA on the 27<sup>th</sup>, thunderstorm cells brought about 4 hours of heavy thunder storms and torrential rain which caused major landslides over the Northern sector of Grenada particularly in St. Patricks and Carriacou. Significant damage was caused to the NAWASA transmission pipelines along the St. Patricks River which service the Cha Cha and Zulu dams. Many residents were left without pipe borne water.

Rainfall recorded at the MBIA totalled 158.4mm. This figure is representative of just 8.1mm above the average of 150.3mm. The highest recorded August total during the period 1986- present was 278.7mm recorded in 2007. Data analysis of rainfall collected by the NAWASA technicians have revealed that the largest volume of 465mm were measured at Tufton Hall in St. Marks on the Western side of the island. The next highest was 437mm recorded at Concord also on the Western side of the island. Several agro-met stations on the western, northern and north eastern side of the island registered in excess of 300mm.

The mean maximum recorded air temperature for this month was 30.4 °C and the maximum thermometer reading of 32.3°C on the 2<sup>nd</sup> day of August was the highest for the month. The mean

minimum temperature and lowest monthly temperature were 24.5 °C and 22.1 °C respectively. The lowest temperature was recorded the 27<sup>th</sup>.

### Guyana

Based on rainfall from across its ten administrative regions, Guyana experienced an average of 187.9 mm of rainfall with an average of 13 rainfall days. Climatological average for August is 217.4mm with 21 rainfall days. Rainfall values recorded for August implied that Guyana was below its normal climatological average. Watooka in Region 10 (Upper Demerara Upper Berbice) recorded the highest monthly rainfall with 446.0mm. The highest one day rainfall total was recorded at Letter Kenny in Region 6 with a total of 161.5mm on 2<sup>nd</sup> August; Bush Lot in Region 5 also recorded on the 02<sup>nd</sup> a total of 160.5mm of rainfall. Twenty five (25) rainfall stations across Guyana recorded rainfall values above their climatological average, while seventeen (17) stations recorded below their average. Regional Classification of the rainfall data for August indicated that Region 10 (Upper Demerara Upper Berbice) recorded the highest monthly average with 229.7mm.

August was warmer than normal, average Maximum temperature for the Month was 31.9°C when compared to the climatological maximum expected of 30.8°C. Ebini (Region10) and Mabaruma (Region 1) recorded the highest average monthly Maximum temperature of 32.9°C; also Ebini also on the 25<sup>th</sup> reported the highest one day maximum temperature with 35.1°C.

### Jamaica

Throughout the month, the island experienced an increase in rainfall activity especially over eastern parishes. One major rainfall event was reported between 25-27<sup>th</sup>, which resulted in flash flooding over some eastern and central parishes. Tropical Waves and Surface Troughs were associated with the increase in rainfall activity across the island during the month of August. The island was placed under tropical storm watch twice during the month, due to the close proximity of TS Ernesto and Isaac to Jamaica.

During the month, Sangster in the northwest recorded 66.3 mm of rainfall, while Norman Manley in the southeast recorded 189.1 mm. There were

eight and ten rainfall days reported for Sangster and Norman Manley International airports respectively. Sangster recorded below average rainfall or approximately 75% of the 1971-2000 average, while Norman Manley recorded 177% of the 1971-2000 mean.

The highest maximum temperatures recorded for Sangster Airport was 34.5°C (30<sup>th</sup> August) while 34.2°C (24<sup>th</sup> August) was reported for Norman Manley Airport.

**Table.2 Climatological Statistics for Manley and Sangster Airports for August 2012**

Monthly Averages	Norman Manley	Sangster
Extreme Maximum Temperature	34.2 °C (34.9°C)	34.5 °C (34.6°C)
Lowest Minimum Temperature	22.4 °C (23.5°C)	22.8 °C (22.6°C)
Rainfall Total	189.1 mm	66.3 mm
Rainfall days (≥1mm)	10 days (7.3)	8 days (14.2)

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

### St Lucia

Rainfall for August at Hewanorra exceeded the average. A total of 196.0 mm was recorded and this represents about 117.4% of the long term mean. There were 19 rainfall days with 8 days producing more than 10 mm and 2 days with rainfall greater than 20 mm. George Charles was much wetter than Hewanorra and had a total of 303.7 mm from 23 rainfall days with 11 days with rainfall greater than 10 mm and 5 days with rainfall greater than 20 mm.

September is one of the wettest and most humid months of the year and has rainfall figures ranging from 52 to 609 mm and in Vieux-Fort and from 53 mm to 532 mm at George Charles. Most of the rains originate from tropical weather systems (waves and cyclones) and showers are sometimes very heavy. At Hewanorra, the mean maximum temperature is 31.1°C and range from 30.0 °C to 32.4 °C while the mean minimum temperature is 25.0 °C and range from 24.0 °C to 27.1 °C.

Farmers should continue to employ best agricultural practice on their farms including proper drainage in

their fields to avoid problems associated with excess soil moisture and high humidity.

The seasonal precipitation outlook for the September, October and November period indicate the likelihood for rainfall to be below normal or to range from about 281 mm to 507 mm in Vieux-Fort and from 256 mm to 625 mm in Castries.

St Lucia will issue its first national agrometeorological bulletin during this month.

Table 3 August monthly averages at Hewanorra

AVERAGE MONTHLY DATA FOR HEWANORRA					
Cloud Cover (oktas)	Wind Dir (o from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
5	90	13	28.1	80	196.0
Temp (oC)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
30.7	25.5	7.3	6.8	29.4	

### St Vincent and the Grenadines

Total rainfall recorded at E.T. Joshua Airport-Arnos Vale for August 2012 was 242.2mm; 5.2 mm more than the long-term average of 237.0mm. The highest daily rainfall recorded was 45.9mm on the 6th. There were 8 days with rainfall less than 1.0mm. On the 3rd August TS Ernesto passed North of St. Vincent and the Grenadines and on 22<sup>nd</sup>, TS Isaac passed North-North East of the islands, both produced cloudy skies, thunderstorms, occasional gusty winds and periods of continuous light showers which contributed to significant amounts of rainfall. (14.9 mm and 28.7mm respectively). Maximum and Minimum temperatures recorded for August were higher than the 30-year averages by 0.4°C and 0.6°C respectively.

### Trinidad and Tobago

In August, rainfall recorded at the Observing station in Piarco International Airport, Trinidad was 204.7 mm. This amount was 20% below the long-term average (1971 to 2000). Rainfall at the A.N.R. International Airport, Crown Point, Tobago was 225.5 mm, 39% above the long-term average. There were no dry spells for the month of July.

Although rainfall for Trinidad was below normal on 11<sup>th</sup>, there was severe flooding, infrastructural

damages, landslides, damages to private and state property in the North West and Southern parts of Trinidad. The rainfall was caused by remnants of Tropical Depression #7 and totalled 29.3 mm in Piarco, Trinidad and 24.2 mm in Crown Point, Tobago. Damages in some parts of Northwest Trinidad were estimated to be more than one hundred million Trinidad and Tobago Dollars (~US \$16.7 million). Northwest Trinidad and parts of Tobago once again experienced severe flooding, infrastructural damages and landslides on 23<sup>rd</sup> associated with the passage of Tropical Storm Isaac. Rainfall measured on 23<sup>rd</sup> was 18.0 mm at Piarco, Trinidad and 53.2 mm at Crown Point, Tobago.

No reports of damages to the Agricultural community were received.

### REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECAST

Rainfall in the Caribbean during September to November will likely become generally consistent with typical El Niño conditions. This means an increased likelihood of normal to above normal rainfall over the Bahamas, Belize and some portions of the Greater Antilles whereas normal to below normal rainfall may occur in most parts of the Lesser Antilles and the Guianas. The largest uncertainties at this point are the persistence and strength of the El Niño conditions, which now are still relatively weak, and how far atmospheric conditions will become consistent with typical El Niño conditions. All other things left unchanged, slightly above normal Caribbean SSTs currently somewhat increase chances of above normal rainfall over the Antilles. Therefore, the counteracting effect of an El Niño will either dominate (below normal rainfall) or not (normal rainfall).

As in any six month forecast, there is considerable uncertainty as to the development of rainfall activity in the region, although forecasting confidence is improving as the Caribbean is approaching the late rainfall season. With weak El Niño conditions in the Pacific and slightly below average to average SSTs over the equatorial Atlantic, but above SSTs being forecasted in the Caribbean and North Atlantic, it is

likely that rainfall in the south-eastern half of the Caribbean will generally be below normal. Much of the forecasted trend will depend, however, how much the tropical atmospheric circulation takes on a typical pattern associated with El Niño, which thus far has not been the case over much of the Pacific and Atlantic. Furthermore, though models predict a weak to moderate El Niño by the end of the year, most predict its disappearance early in the next year. Consequently, there is only relatively little certainty that the start of the dry season (December/January) should remain dryer than average.

Currently, Caribbean SSTs hover around 0.5°C above average, which is more than 1°C cooler than over the last two years.

Air temperatures over the Antilles are expected to be lower this year, though still likely above average. In comparison, warmer than average air temperatures are also expected over the Guianas. In terms of air temperatures, a fairly probable pattern of warmer than average Caribbean emerges from climate models for the 6 months.

**ENSO Conditions:**

Now that equatorial sea surface temperatures (SSTs) have been more than 0.5°C for three months, El Niño is in place. For the late rainy season starting in September across most of the Caribbean, El Niño conditions are associated with reduced convergence of trade winds in the so-called Intertropical Convergence Zone (ITCZ). A weaker ITCZ will produce less convection which, consequently, should suppress rainfall over much of the region. In addition, El Niño tends to strengthen westerly winds aloft, which tends to weaken storms, thus reducing the potential of tropical storms. Since climate models are predicting mostly weak El Niño conditions in the next months, this scenario will likely manifest to a modest degree.

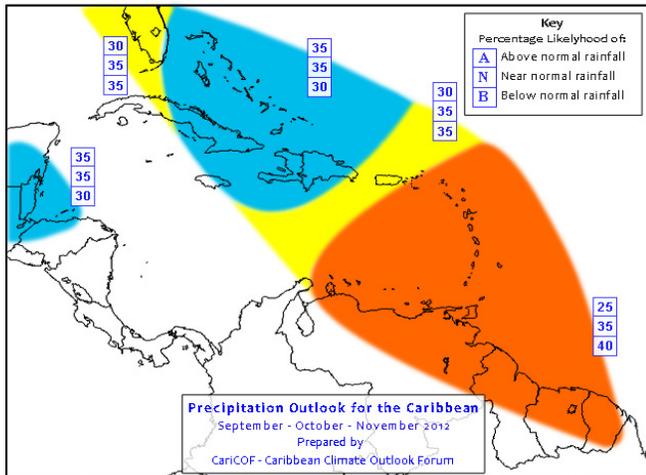


Figure 4 The September to November 2012 Rainfall Forecast

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