



**ANNOUNCEMENTS**

The Caribbean Drought and Precipitation Monitoring Network has intensified its concern with respect to drought in parts of the western Caribbean and parts of eastern Caribbean chain that can impact on farming in these areas. Temperatures are likely to continue to be above normal across most of the Caribbean by up to 0.5 °C at least until April/May 2013. The CAMI project is now financially completed but its output and activity continues.

**REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR FEBRUARY 2013**

Conditions in the eastern Caribbean and Guyana were normal to below normal. Trinidad was severely dry; Tobago abnormally dry; Grenada, St. Lucia and Guyana normal; Barbados and St. Vincent, moderately dry; Dominica extremely dry; and Antigua exceptionally dry. Jamaica was normal in the west and abnormally dry in the east. While Belize was normal.

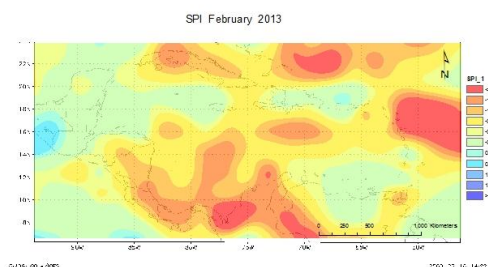


Figure 1. SPI for the Caribbean for February 2013. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>.

Most annual cropping takes place over a period of about three months. Trinidad and St. Lucia were abnormally wet; Tobago and Grenada moderately wet; Barbados, St. Vincent and Guyana normal; Dominica moderately dry; and Antigua severely dry. Apart from the western extremity that was abnormally dry, Jamaica was moderately dry. Belize

was abnormally dry in the south and normal in the north. See Figure 2.

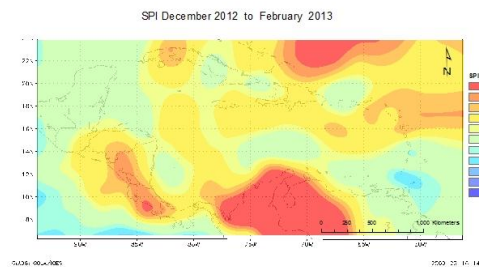


Figure 2. SPI for the Caribbean for December 2012 to February 2013. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>

Concern about agricultural drought in the western Caribbean, including Jamaica and Belize, continues. The area of concern in the northern Caribbean has extended south along the eastern chain to Grenada. With normal dry season conditions expected to persist for march and into May water availability levels must be closely monitored. Some countries may have to issue drought and water watches or alerts.

Temperatures for the month were generally normal to above normal in the region.

**NATIONAL OVERVIEWS**

**Antigua**

The island had the lowest rainfall for February in a generation; in some locals, it has been the driest

February in over two generations. The island average for the month was 10.7 mm – the driest since 1983 and the second driest on record (1928 – 2013). Meanwhile, November to February is the third driest on record and the driest since 1968, for the given period. The rainfall deficit for November to February is 172.2 mm, which is considered severe; hence, the drought continues. The impacts of the drought, particularly to agriculture, continue to be masked by the irrigation potential of many farmers. For February, at the airport, there were only three wet days ( $\geq 1$  mm); this tied with February 2010 for the second lowest on record. The wettest day only had 2.2 mm. The mean temperature of 25.2°C was near normal. Meanwhile, the mean daily minimum temperature tied February 2007 for the highest on record; on the other hand, the mean daily maximum temperature was near normal.

The outlooks call for below normal rainfall and near normal temperature for March. Further, below normal rainfall and above normal temperature are forecast for the period March to May (MAM). Based on the outlooks and the existing rainfall deficits, the drought is expected to continue through March and likely through May. This was yet another good month for field preparation and harvesting by farmers. However, field preparation is a wise investment for only those farmers with irrigation systems.

### Barbados

The Bermuda/Azores high pressure system maintained its dominance across the eastern Caribbean during the month of February pumping moderate to fresh east to east north-easterly trade-winds across Barbados and the rest of the region. The low-level convergence of trade-winds contributed to mostly overnight and early morning showers over Barbados and these generated near normal rainfall levels at the Airport of 39.4 mm which was just 1.9mm shy of the long-term total for February of 41.3mm. Meanwhile, Golden Ridge in St. George recorded a rainfall total for February of 22.1mm and experienced 7 rain days (rain day  $\geq 1$ mm of rainfall). This equaled the number of rain days which occurred at the Airport.

There were only two occurrences on which the daily maximum temperature was below the long-term average of 29.2°C and one day on which it was

equaled. In all other instances, the long-term average was exceeded by between 0.1° and 0.6°C.

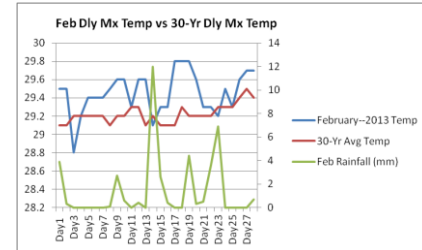


Figure 3. Temperature and rainfall at Grantley Adams for February 2013.

### March Forecast

Based on long-term averages, March is usually the driest month of the year for Barbados. The average rainfall March total is 37.4mm occurring over an average of eight rain days (rain day  $\geq 1$  mm).

Occasional temporary weakening of the Atlantic high pressure ridge is likely but in general brisk easterly trade-winds are anticipated over the Lesser Antilles during March.

### Belize

The month started with cloudy skies, showers and rain occurring mainly over central and northern Belize. Skies cleared up some on 3rd as a surface high influenced the weather. Generally dry weather prevailed across the country for several days after Tuesday 5th. On 14th a cold induced isolated thunderstorms over inland Belize. During the same evening skies turned increasingly cloudy and showers and thunderstorms developed over northern and central Belize. This gave way the next day to mainly sunny skies with cloudy periods. The front followed by a secondary one crossed Belize on the morning of the 16<sup>th</sup> and 17<sup>th</sup> producing windy and cool weather across much of the country. Rainfall associated with the secondary front was very minimal. Weather improved steadily between 19<sup>th</sup> and 22<sup>nd</sup> but with some gusty winds on 21<sup>st</sup> and 22<sup>nd</sup>.

The final week in February continued to be dry for the most part. Sunny weather with warm daytime temperatures were experienced on the 26th. The International Airport recorded 33.8°C. The Belize Zoo, Belmopan and Central Farm recorded 34°C while Pomona in the Stann Creek district measured 34.5°C. On 28<sup>th</sup>, a front induced afternoon showers and thunderstorms over northern and western

Belize. The showers, organized in lines drifted towards the Belize district before dissipating.

Table 1 Rainfall and Temperature Summary for February 2013 for stations in Belize

Station	Liber tad	Zoo	PGIA	Belmopan	Central Farm	Savannah
Elevation (m)	12	30	5	90	90	13
<b>Rainfall (mm)</b>	<b>41.6</b>	<b>70.6</b>	<b>67.8</b>	<b>84.8</b>	<b>37.0</b>	<b>37.2</b>
Mean.	29.9	60.6	68.4	63.5	66.8	81.5
Max	16.3	66.7	39.3	58.7	25.2	12.0
Rain days	5	3	6	4	4	5
<b>Temp (°C)</b>						
Mean Min.	<b>20.3</b>	<b>20.6</b>	<b>22.7</b>	<b>20.5</b>	<b>20.4</b>	<b>21.5</b>
Mean	18.6	18.5	20.7	18.2	18.2	20.7
Lowest Min.	14.3	15.0	16.7	15.3	14.5	18.3
Mean Max.	<b>30.7</b>	<b>31.3</b>	<b>29.3</b>	<b>30.4</b>	<b>31.0</b>	<b>30.7</b>
Mean	29.5	29.7	28.5	29.3	29.7	28.7
Highest Max.	34.0	34.0	33.8	34.0	34.0	34.3

### Dominica

The Atlantic High pressure persisted throughout the month bringing in some dry and breezy conditions. The dry season became evident when only 28.0mm of rainfall was recorded at the Canefield Airport and this represent about 45% of the monthly mean. The highest daily total of 6.4mm was recorded on the 11th. The number of dry days was above normal this month with 20 days being recorded. Dry spells occurred during the earlier and latter parts of the month with spells lengths of 7 and 9 days respectively. An average air temperature of 26.6°C was recorded for the month, which is just 0.2°C above the monthly mean. The maximum temperature recorded was 31.7°C on the 27th while the minimum of 19.0°C was recorded on the 04th. The winds maintained an east south easterly direction as from the previous month at an average speed of 11km/h. The highest gust for the month was 56km/h recorded on the 19th.

At Melville Hall, the second consecutive month of below normal rainfall was realized. 37.8mm was recorded during February which is about 39% of the monthly mean. The highest daily total was 7.4mm which was recorded on the 11th. There were 19 dry days which is above normal with the maximum dry spell of 7 days occurring during the last dekad of the month. The average air temperature was 26.3°C which is 0.4°C above the mean. The maximum

temperature recorded was 30.7°C on the 7th while the minimum of 19.0°C was recorded on the 3rd. Winds were generally from the east at 19km/h. The highest wind gust for the month was 63km/h recorded on the 17th.

While field preparation was able to be undertaken, the extended dry condition in most parts of the island has largely prevented farmers from establishing new crops this month. Strictly rain-fed farms in particular are suffering from the rainfall deficit.

### Grenada

During the month of February Grenada experienced mostly fair conditions with only about three 12-24hr periods of cloudiness. This was as a result of firstly, well developed mid-level anticyclones and a strong Bermuda/Azores High (that also resulted in brisk winds). As a result the month's rainfall was a mere 23.3mm, which is below the February mean of 35.4mm. The highest rain day values were 7.2mm, measured on the 2nd and 5.0mm on the 21st.

At Maurice Bishop International Airport (MBIA), the mean maximum temperature for February was 30.1°C, (0.7°C below mean), with the highest being 31.9 on the 20th. On the other hand the month's mean minimum was 23.2°C, two degrees higher than the February mean.

Swells from some frontal systems together with wind waves generated from the Atlantic High battered the coastlines. Two metre (2m) swells and higher were regular marine features during the month prompting the Meteorological office at MBIA to issue two sets marine advisories, on the 13th and from the 18th - 21st. The afore-mentions conditions negatively impacted the fisheries sector. On many occasions, fishermen found conditions too hazardous to operate, and therefore their month's catch were significantly diminished.

Although the rainfall was below average, February still saw very good production of some crops. Sweet potatoes, pumpkins, cantaloupes and tomatoes were in good supply for local consumption and export.

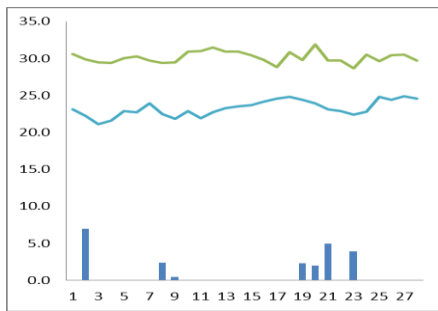


Figure 4 Daily maximum and minimum temperature, and rainfall (bars) for February at Maurice Bishop Airport, Grenada.

**Guyana**

February 2013, based on the rainfall data collected from the ten (10) administrative Regions can be classified as above normal. Guyana had an average of 164.6mm of rainfall with an average of 14 rainfall days. The rainfall average for February is 75.3mm with 10 rainfall days. Rainfall values recorded for February implied that Guyana was well above its Climatological average. Fort Island in Region 3 recorded the highest rainfall total with 391.8mm. The highest one day rainfall total was also recorded at Naamryck in Region 3 with a total of 109.6mm on February 13th, 2013. Region 10 recorded the highest average monthly total of 229.3mm with 16 raindays. A total of thirty seven rainfall stations across Guyana recorded rainfall values above normal, while five stations recorded below average.

From Figure 5, it is notable that, with the exception of Mabaruma, all stations were above their Climatological average.

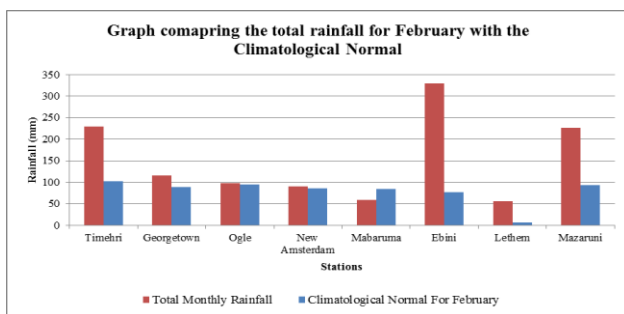


Figure 5 Comparison February 2013 rainfall with Climatological average at select stations in Guyana.

February was warmer than normal, average maximum temperature for the month was 30.9°C when compared to the Climatological average of 29.8°C. Mazaruni (Region 7) recorded the highest average monthly maximum temperature of 32.7°C;

Lethem on the 10th reported the highest one day maximum temperature with 34.5°C.

**Jamaica**

High pressure ridges dominated weather conditions across the region during the month of February. This resulted in a significant reduction in the levels of rainfall measured across most areas. Both Sangster International airport (Sangster) in the northwest and Norman Manley International airport (Norman Manley) in the southeast recorded below average rainfall.

During the month, Sangster recorded 51.4 mm of rainfall, while Norman Manley recorded 3.6 mm. There were six rainfall days reported for Sangster, while Norman Manley had only one rainfall day during the month. Sangster recorded approximately 81% of the 1971-2000 mean while Norman Manley recorded 17% of the 1971-2000 mean.

The lowest minimum temperature recorded for Sangster Airport was 20.5°C (18th) while 21.9°C (1st February) was reported for Norman Manley Airport.

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

Monthly Averages	Norman Manley	Sangster
Extreme Maximum Temperature	33.8 °C <b>(32.6 °C)</b>	32.6 °C <b>(31.6 °C)</b>
Lowest Minimum Temperature	21.9 °C <b>(21.0 °C)</b>	20.5 °C <b>(19.7 °C)</b>
Rainfall Total	3.6 mm	51.4 mm
Rainfall days (≥1mm)	1 day <b>(3.6)</b>	6 days <b>(9.2)</b>

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

**St Lucia**

Saint Lucia experienced below normal rainfall for February this year. Hewanorra recorded only 41.0 mm of rainfall which represents 78 per cent of the long term mean of 52.3 mm. Rainfall was poorly distributed throughout the month. There were 14 rainy days and the highest daily rainfall was 25.0 mm on the 1st. Hewanorra also experienced a 7 day dry spell (from 8th to 14th) and a 6 day dry spell (from 22nd to 27th).

The total rainfall recorded at George Charles was also below the mean of 72 mm with 57 mm. There were 8 rainy days with 1 of those days producing 10 mm or more. The highest daily rainfall was 31.6 mm



on the 18th. There was also a 5 day dry spell (from 3rd to 7th) and a 6 day dry spell (23rd to 28th). Drought conditions continue in the north of the island and appear to be spreading to the south.

Table 3 February 2013 monthly averages at Hewanorra Airport

AVERAGE MONTHLY DATA FOR HEWANORRA					
Cloud Cover (oktas)	Wind Dir (o from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
3	80	16	26.5	72	41.0
Temp (oC)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
29.3	24.0	9.9	7.8	27.1	

Table 4 February 2013 monthly averages at George Charles Airport

AVERAGE MONTHLY DATA FOR HEWANORRA					
Cloud Cover (oktas)	Wind Dir (o from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
4	90	09	26.5	71	57.0
Temp (oC)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
28.9	23.1				

March is one of the driest months in Saint Lucia and monthly rainfall totals are expected to decrease as the dry season peaks. Monthly rainfall figures for March range from 8.8 mm to 271.3 mm at Vieux-Fort and from 12.3 mm to 169.4 mm at George Charles.

The seasonal precipitation outlook for the March, April and May period indicate a likelihood for rainfall to be in the below normal to normal categories or to range from 45.3 mm to 241.0 mm in Vieux-Fort and from 96.8 mm to 317.5 mm in Castries. Farmers should continue their water conservation practices and prepare for low rainfall amounts in the other months of the dry season.

**St Vincent and the Grenadines**

Dry conditions prevailed, with only weak low level troughs moving across St. Vincent and the Grenadines (SVG) bringing occasional shallow low level cloud patches, and light sprinkles. Brisk wind speeds increased the occurrences of scattered showers mainly on the north-west of St.Vincent. Rainfall totals and rain- days were below average, with the

highest daily occurring on the 14th (17.7mm at Richmond). The last week of the month was generally dry across SVG.

On the last day of the month, partly cloudy skies turned cloudy as a funnel cloud moved between St. Vincent and Bequia. The feature disappeared in light showers.

**Trinidad and Tobago**

February in Trinidad and Tobago was below normal. Rainfall recorded at the Observing Station in Piarco International Airport, Trinidad showed February 2013 as the 3rd driest on record for Trinidad (6.1 mm), surpassed only by February 2010 (2.1 mm) and February 1960 (4.9 mm). February 2013 was 14% of the long-term average (1971 to 2000) for Piarco. Rainfall at the A.N.R. International Airport, Crown Point, Tobago was 16.4 mm, 34% of the long-term average.

There were no reports of damages to the Agricultural community.

**REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECAST**

**Three month Outlook**

Rainfall in the Caribbean during March to May shows nearly equal chances of being above normal, normal or below normal in most places (indicating great uncertainty), with the possible exception of the northeastern Antilles where rainfall may lean towards below normal to normal and Belize trending between normal to above normal rainfall. The limited predictability is mainly due to very weak signal in its drivers. Notably, ENSO conditions are neutral and Atlantic SSTs are close to average, except for being slightly above average north of the Guianas. Besides the NE Antilles and Belize, there is a slight tendency to normal or above normal over the southeastern islands and the southern two-thirds of the Greater Antilles.

Note that, in territories where below normal three-monthly rainfall sums have been commonly registered in the past half year, the resulting below normal soil moisture may reduce local air humidity. These include the hot spot areas in the western and

northeast Caribbean and eastern Caribbean chain. Lower humidity may somewhat inhibit strong shower activity, thus explaining the higher probability of below normal compared to above normal seasonal rainfall there.

***The uncertainties in the current seasonal forecast make the week by week (regular weather forecasts) and month by month updates even more important.***

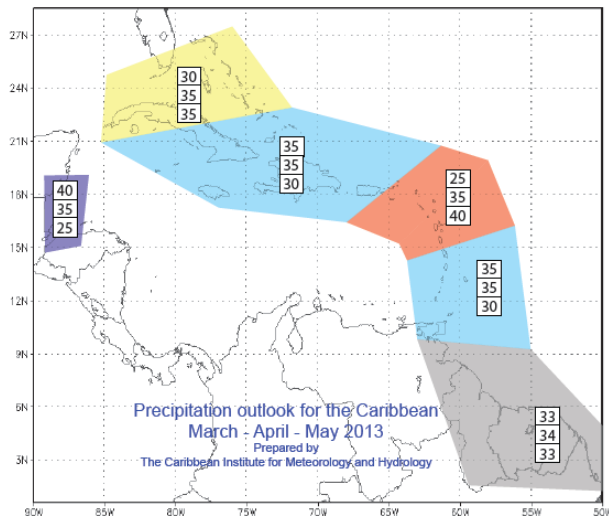


Figure 6 The March to May 2013 Rainfall Forecast

Currently, just off the Guianas' coasts show SSTs of 0.5-1°C above average, while most other areas are very close to average, if slightly above. Such conditions are expected to last into May. Consequently, it is expected that, unless rainfall greatly exceeds normal values, the forecast period will very likely see slightly above normal air temperatures across the Lesser Antilles and the Guianas. Moving to the northwest, the chances of above normal air temperatures decrease, though still higher than the probability of below normal air temperatures.

### ENSO Conditions

Eastern equatorial Pacific SSTs are now slightly below average (about -0.5°C). Though such value, if persistent for three consecutive months, would

equate to a borderline La Niña, most models tend to revert the anomalies back up (close to 0°C) in the coming months. This evolution limits the predictability of rainfall and temperatures in the Caribbean. There is limited chance that eastern equatorial Pacific SSTs will remain at their current level, ushering in a borderline La Niña within 2-3 months, but this will be monitored. It should be noted, though, that the late dry season period is the time of the year during which quick reversals and a possible evolution to either El Niño or La Niña conditions may evolve, leaving us with considerable uncertainty beyond this period. In conclusion, if the current neutral ENSO conditions prevail, as forecasted by most models, we do not expect a large effect on Caribbean rainfall in this season, if any, possibly suggesting a normal second half of the dry season – which is relatively dry!

### Six month outlook

As in any six month forecast, there is considerable uncertainty as to the development of rainfall activity in the region. Moreover, as the Caribbean enters the latter part of the dry and, subsequently the early wet season, climate conditions driving rainfall across the Caribbean on seasonal to half-year basis are showing very weak signal. With anticipated neutral ENSO conditions in the Pacific, below average SSTs over the western tropical South Atlantic, but slightly above average SSTs being forecasted in the Caribbean, it is (at best) somewhat likely that rainfall in the south-eastern Caribbean may generally be normal, whereas eastern portions may experience normal to above normal rainfall. There is little confidence in the forecast for the early wet season (June to August).

Finally, in terms of air temperatures, a highly probable pattern of warmer than average Caribbean region emerges from climate models for the next 6 months. The northwestern part may be subject to air temperatures close to average at first, with a probably trend to normal to above normal between May and August.

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