CAMI MONTHLY BULLETIN
Caribbean Agro-Meteorological Initiative
Enhancing Farming through Weather and Climate Information

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ANNOUNCEMENTS

The eastern Caribbean has entered a period of normal to below normal rainfall. However, whether normal or below normal dominates depend on the 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 o six months. The formation of National Tri-partite committees to sustain the activity and output of CAMI has begun. CAMI farmers' forums begin this month and continues through September and October.

REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR JULY 2012

The islands of the eastern Caribbean varied from below normal (particularly in the south) to above normal (particularly in the north). Trinidad was abnormally dry; Tobago moderately dry; St. Vincent severely dry; Grenada, Barbados, St. Lucia and Antigua normal; and Dominica abnormally wet. Rainfall in Guyana ranged from normal in the west to moderately wet in the east. Conditions in Jamaica ranged from abnormally dry in the west to abnormally wet in the east, while Belize ranged from moderately dry in the south to normal in the north. These can be seen in the Standardised Precipitation Index (SPI) map in Figure 1.

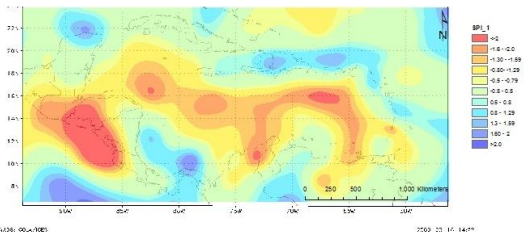

Figure 1. SPI for the Caribbean for July 2012. More information on the SPI can be viewed at http://63.175.159.26/~cdpmn/spimonitor.html.

Most annual cropping takes place over a period of about three months or just over. In the eastern Caribbean and Guyana, rainfall was normal to above normal. Trinidad and Barbados were moderately wet; Tobago, St. Vincent, St. Lucia, Dominica and Antigua normal; and conditions in Guyana ranged from moderately wet in the west to normal in the east. Jamaica was predominantly normal apart from in the northwest that was abnormally dry while in Belize the range was from normal in the southwest to exceptionally wet in the north. See Figure 2.

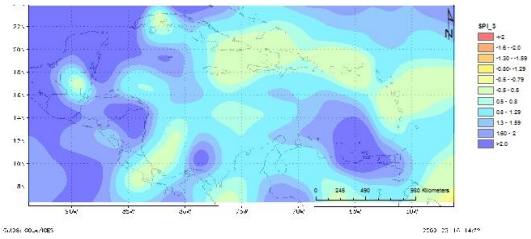

Figure 2. SPI for the Caribbean for May to July 2012 more information on the SPI can be viewed at http://63.175.159.26/~cdpmn/spimonitor.html

NATIONAL OVERVIEWS

Antigua and Barbuda

Antigua experienced near normal rainfall during July. The average total for the month was 93.5 mm; this was 93% of the average total (1981 – 2010). Tropical waves and low level trough systems were responsible for over 60% of the rainfall. At the airport, the 12

rainy days (>= 1 mm) were near normal but the lowest since 2008; further, there were two heavy rainfall days (>= 10 mm), which is near normal. The mean temperature of 28.0°C was near normal but the second lowest since 2006. Further, the mean daily maximum and minimum temperatures were near normal. The outlooks call for above normal rainfall and temperature for August. Further, for the period August to October, below normal rainfall and above normal temperature are most likely. There is a slight meteorological drought, which started in February; it continues to cause great concern for farmers. Already, some produces are going scarce. The slight drought has made it conducive for land preparation; however, many farmers are looking forward for the rainy season to start to plant in earnest. Although the next three months are expected to have below normal rainfall, August should bring some relief.

Barbados

No tropical storms developed in the Atlantic Basin during the month of July but a number of tropical waves moved across the eastern Caribbean and these provided Barbados with near normal rainfall amounts. The July rainfall total of 112.7mm was just 22.2mm below the long-term (1981-2010) average. Nevertheless, the cumulative total of 594.7mm at the end of July was above the 30-year cumulative average of 524.5mm.

Rainfall was evenly distributed during the month but there were four significant rainfall events; the first event occurred on July 3rd when the Airport recorded 13.4mm of rainfall. On the 15th , 19th and 23rd the Airport observed rainfall amounts of 23.8mm, 21.5mm and 14mm respectively. Each event was associated with the passage of a tropical wave. In all there were 12 rain days (days with rainfall >=1mm).

The highest maximum temperature recorded was 32.3°C on July 14th and 15th and the lowest minimum was 22.6°C recorded on 20th. . More importantly there were 14 days on which the maximum temperature reached 31.5°C or higher; the normal for July being 30.7°C. The average day-time air temperature was 28.8° C while average night-time air temperature was 26.7°C.

Belize

A tropical wave approached and crossed Belize on the evening of July 4th with several showers and thunderstorms in its wake. The International Airport recorded 10.4mm of rainfall, while Libertad in the north recorded 23mm. Several showers and thunderstorms occurred over northern, central and coastal Belize on July 7th as another wave neared the Belize coastline. The wave axis crossed the country during that evening/night. Satellite imagery showed extensive cloudiness and showers covering the southwest and northwest Caribbean. An upper level ridge situated over the western Caribbean provided support of the extensive coverage of convective cloudiness which poured much rain over the country on 8th. The International Airport recorded 29.3mm of rainfall. Libertad, in the north, measured 75mm.Belize radar indicated most showers were concentrated over northern, central and coastal Belize. Most of the showers headed rapidly northwest as the wave axis headed inland over the Yucatan Peninsula and portions of Central America.

A tropical wave crossed Belize on July 21st producing much rainfall along coastal Belize. The International Airport measured 26mm.

Weather conditions during the final full week of July started out mostly sunny, though some strong showers and thunderstorms did occur over northern and coastal Belize early morning and in the early afternoon of 24th. A tropical reached the coastal waters of Belize on the afternoon 26th with several line clusters of showers reaching the coast during the early afternoon as the wave closed in on Belize. Weather conditions improved the following day. The weekend's weather commenced in much the same vein until 29th when several coastal showers occurred. Skies remained cloudy for most parts of the country into the evening.

During 30th, showers and a few isolated thunderstorms developed across the country especially in the afternoon and evening. A tropical wave crossed the country late that night without significant rainfall to credit.

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

Station	Liber-tad	Zoo	PGIA	Belmo-pan	Central Farm	Savannah
Elevation (m)	12	30	5	90	90	13
Rainfall (mm)	169	**236**	**145**	**134**	**169**	**224**
Mean.	146	236	221	274	224	324
Max	75	58	29	25	34	50
Rain days	14	13	17	12	15	19
Temp (°C)						
Mean Min.	23.4	23.5	25.0	23.3	23.1	24.7
Mean	23.1	23.0	24.7	22.4	22.4	24.3
Lowest Min.	20.4	21.5	21.5	21.4	21.0	22.5
Mean Max.	33.7	31.9	31.1	31.6	31.9	32.1
Mean	33.1	32.8	31.2	31.8	32.3	31.1
Highest Max.	35.4	33.2	32.3	33.5	34.0	33.1

Dominica

A few tropical waves traversed the region during the month of July, thereby bringing much needed moisture to the island after an unusually dry June. 220.1mm of rainfall was recorded at the Canefield Airport on the south-west coast of the island which represents about 88% of the monthly mean. The maximum daily total was 49.5mm recorded on the 3rd. There were 17 rainfall days and a 6 days dry spell from the end of the first week into the second. The average air temperature was 29.2°C which is 0.3° greater than the monthly mean. The maximum temperature was 32.9°C on the 2nd and 16th while the minimum temperature was 22.9°C on the 13th.

At the Melville Hall Airport on the north-east coast, 271.3mm of rainfall was recorded which was approximately 14% above the monthly mean. The maximum daily total was 84.4mm recorded on the 18th. 19 days of rainfall were recorded with no significant dry spells. The averaged air temperature was 29.0°C which is 0.4° above the mean. Maximum temperature was 32.4°C recorded on the 3rd, 4th and 7th while the minimum temperature was 23.1°C recorded on the 27th.

The maximum gust recorded was 74km/h on the 3rd at Melville Hall and 56km/h on the 6th at Canefield. Four thunderstorm days were reported at Canefield while 2 days were reported at Melville Hall. Haze was also recorded at both stations throughout the month.

For the past month, the Ministry of Agriculture has stepped up the fight against the *black sigatoka* fungus that is affecting banana and plantation crop by implementing additional safety practices on farms and supplying farmers who comply with the new measures with insecticides and fungicides.

Grenada

The month of July, the second month of the Atlantic Hurricane season, also exhibited similar trends to the month of June with regards to the monthly rainfall total. Ironically these two wet season months have recorded below average rainfall as compared to the five (5) dry season months which were all characterized by above average rainfall.

Rainfall recorded at the Maurice Bishop International Airport during this month, totalled 109.0 mm which is 33.1mm less than the 27 year mean of 142.1mm.The highest daily rainfall was 29.6mm, recorded on the July 23rd, and equates to 27% of the monthly total. This rainfall was greatly influenced by the Inter- Tropical Convergence Zone. A tropical wave brought increased showery activity and 13.6mm on the 14th coupled with 12.1mm on the 15th. The final day of significant rainfall for this month was the 29th. Precipitation was mainly influenced by a surface low embedded in a wave which developed by the end of the month into Tropical depression #5. Climatological analysis has indicated the highest rainfall total for the month of July was 304.3 and occurred in 2005.

Rainfall amounts measured in the following treatment plants of the National Water and Sewerage Authority (NAWASA) were as follows: Kublal-210.mm,Grand Etang-224.2mm,Vendome-223.4mm, Annandale- 233.1mm , Tufton Hall-273.0mm, Peggy's Whim-208.0mm , Pomme rose and Les Avocai-165.8 mm and 274.9mm respectively.

Two thunderstorm days were noted at the M.B.I.A Met Station. The highest maximum and lowest minimum temperatures during this month were 32.1 ºC and 21.9ºC respectively recorded on the 14th and 24th.

Farmers have continued to enjoy bumper harvests during this month; attributable to the wetter planting

season earlier in this year. Avocadoes, breadfruits and most vegetables have yielded a great crop. On the contrary, nutmegs, mangoes and citrus especially oranges and grapefruits have rendered fruits of diminished quality and volume.

Fishermen have also experienced good catches of deep water fishes. Mostly moderate seas prevailed. According to statistics from the Fisheries Department within the Ministry of Agriculture, 2 million lbs of fish valued at 15millon EC$ have been captured to date and 1/2 million exported which generated foreign revenue to the tune of 5.5 million EC$

Guyana

Guyana for July 2012, based on the rainfall data collected from across the ten (10) administrative Regions can be classified as Very Wet. Guyana had an average of 319.3 mm of rainfall with an average of 20 rainfall days. Climatologically, July is expected to have an average of 306.2mm with 22 rainfall days. Rainfall values indicate that Guyana was above its climatological average. St. Denny Mission in Region 2 (Pomeroon Supernaam) recorded the highest rainfall for the month with 630.6mm; also Mc Naab in Region 2 (Pomeroon Supernaam) recorded a monthly total of 603.5mm. The highest one day rainfall total was recorded at De Kinderen Back in Region 3 with a total of 171.1mm on the July 31st. Thirty Four (34) rainfall stations across Guyana recorded rainfall values above their climatological average, while eight (8) stations recorded below. Regional Classification of the rainfall data for July indicated that Region 2 (Pomeroon Supernaam) recorded the highest monthly average with 423.3mm.

July was warmer than normal, average Maximum temperature for the Month was 31.3˚C when compared to the climatological maximum expected of 30.0˚C. Ebini (Region10) and Mabaruma (Region 1) recorded the highest average monthly maximum temperature of 32.0˚C; also Lethem reported the highest one day maximum temperature on the July 24th with 34.2˚C.

Jamaica

Although the island observed no major rainfall events during the month of July, Jamaica recorded lower than expected rainfall amounts across the western parts of the island while above average rainfall was measured over the eastern end of the island. Throughout the month, the island was affected mainly by **High Pressure Ridges** and **Troughs**.

Sangster recorded below average rainfall or approximately 51% of the 1971-2000 meanwhile, Norman Manley recorded 66% above the 30 year mean.

During the month, Sangster in the northwest recorded 26.7mm of rainfall, while Norman Manley in the southeast recorded 49.7m. There were four days of rain for both International airports.

The highest maximum temperatures recorded for Sangster Airport was 34.5°C (July 7th) while 34.1°C (17th) was reported for Norman Manley Airport.

Table.2 Climatological Statistics for Manley and Sangster Airports for July 2012

Monthly Averages	Norman Manley	Sangster
Extreme Maximum Temperature	34.1 °C (34.7°C)	34.5 °C (34.6°C)
Lowest Minimum Temperature	22.1 °C (23.8°C)	23.3 °C (22.4°C)
Rainfall Total	49.7 mm	26.7 mm
Rainfall days (≥1mm)	4 days (5.4)	4 days (12.1)

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

St Lucia

Rainfall for July at Hewanorra was near average. A total of 145.8 mm was recorded and this represents about 96 % of the long term mean. The rainfall was poorly distributed with more than half of the rainfall occurring during the third week of the month. There were 18 rainfall days and 2 days with rainfall greater than 20 mm. George Charles in contrast was drier and had a total of 127.5 mm from 18 rainfall days with 1 day with rainfall greater than 20 mm.

August is usually very wet and humid and has rainfall figures ranging from 65 to 346 mm and in Vieux-Fort and from 60 mm to 421 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 30.9 ºC and range from 30.0 ºC to 32.0 ºC while the mean minimum temperature is 25.2 ºC and range from 23.0 ºC to 26.3 ºC.

Farmers are advised to ensure proper drainage in their fields to avoid problems associated with excess soil moisture and high humidity.

The seasonal precipitation outlook for the August, September and October period indicate the likelihood for rainfall to be near normal to below normal or to range from about 196 mm to 514 mm in Vieux-Fort and from 290 mm to 620 mm in Castries.

The CAMI tri-partite committee in Saint Lucia was established in July and Saint Lucia is planning to produce its first national agrometeorological bulletin in September 2012.

Table 3 July 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	15	28.3	78	145.8
Temp (oC)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
31.0	26.0	9.1	8.0	29.4	

St Vincent and the Grenadines

Total rainfall recorded for July 2012, at E.T. Joshua Airport-Arnos Valewas 143.0mm. This was less than the July average of 229.8mm.

Tropical waves alternated with layers of Sarahan dust during the month of July. There were eighteen rain-days; the highest was 32.4mm on the 23rd. Although total rainfall was less than average; there were no significant dry spells, the longest dry spell being three days (10th to 12th).

The average maximum temperature was 31.0 °C while the average minimum temperature was 25.5 °C. The maximum and minimum temperatures recorded for July were both 0.5°C higher than the 30-year averages.

Extremes for June, 2012 (date of occurrences): Barometric Pressure – highest 1017.9 mb (22nd, 25th), lowest 1011.6 mb (29th); Air Temperature – highest 32.0°C (31st), lowest 23.5 °C (4th); Relative Humidity – highest 92% (4th, 23rd), lowest 62% (27th).

Trinidad and Tobago

In July 2012, the six months of above average rainfall ended for Trinidad. Rainfall recorded at the Observing station in Piarco International Airport, Trinidad was 132.4 mm. This amount was 48% below the long-term average (1971 to 2000). Rainfall at the A.N.R. International Airport, Crown Point, Tobago was 102.9 mm, 39% below the long-term average. There were no significant dry spells for the month of July.

There were no reports of damages to the Agricultural community.

REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECAST

Rainfall in the Caribbean during August-September-October 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 (possibly) some portions of the Greater Antilles whereas normal to below normal rainfall may occur in most parts of the Antilles and the Guianas, especially from the onset of the late rainy season in September. The largest uncertainty at this point is the persistence and strength of the El Niño conditions, which now are still relatively weak. As slightly above normal Caribbean Sea Surface Temperatures (SST) currently somewhat increase chances of above normal rainfall over the Antilles, the counteracting effect an El Niño will either

dominate (below normal rainfall) or not (normal rainfall).

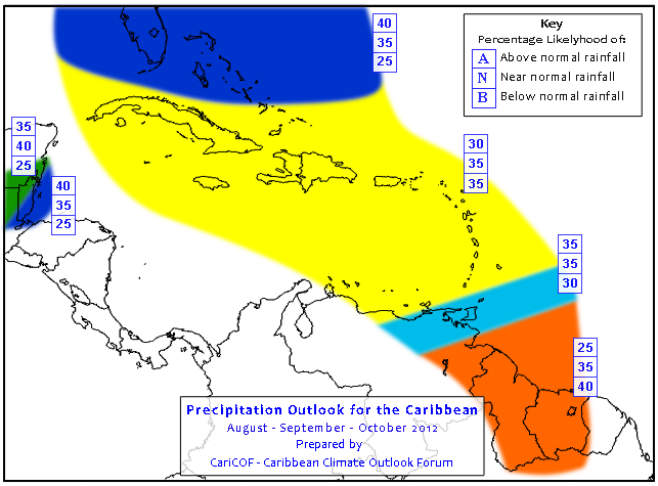

Figure 4 The August to October 2012 Rainfall Forecast

Rainfall conditions until the end of the year are very much dependent on the persistence and strength of the El Niño. With very likely El Niño conditions in the Pacific and slightly below average to average SSTs over the equatorial Atlantic, but slightly above SSTs being forecasted in the Caribbean, it is likely that rainfall in the south-eastern half of the Caribbean will generally be below normal during the late rainy season, i.e. September to November. This is generally consistent with regional data suggesting that the Antillean territories appear to have entered a normal to below normal regime since June and may prevail in coming months. However, towards the end of the forecast period, persisting, strengthening or weakening El Niño conditions as well as changing tropical Atlantic SST patterns could develop. Consequently, there is only little certainty that the end of the rainy (November) and start of the dry seasons (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:

It is very likely that El Niño will manifest by the end of August. For the late rainy season starting in September across most of the Caribbean, El Niño conditions are associated with a weaker ITCZ in August to October, which will produce less convection and suppress rainfall over much of the region. The potential for tropical storms should also be reduced. But as climate models have some difficulty predicting just how strong the El Niño event will be in the next months, this scenario will manifest to a lesser or greater degree.

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