Issue: 44
September, 2016

This bulletin is prepared by the Hydrometeorological Service of Guyana. We welcome feedback, suggestions and comments on this bulletin. Correspondences should be directed to: The Chief Hydrometeorological Officer (Ag), and the Agronomist.

GUYANA
1966 - 2016
GOLDEN JUBILEE
OF INDEPENDENCE

Hydrometeorological Service of Guyana

Farmer's Monthly Weather Bulletin

HIGHLIGHTS

- Guyana was classified as Moderately Wet (MW) for the month of August, 2016.
- The highest one day rainfall total was recorded in Region 9 at Parishara Rupununi with 108.6 mm of rainfall on August 23, 2016.
- Regional Classification showed that Region 3 recorded the highest mean rainfall total of 243.9 mm with 16 rain days.
- Timehri, Region 4 recorded the highest daily temperature of 35.5 ^{0}C on August 15, 2016.
- Georgetown, Region4 recorded the lowest daily temperature of 20.1^{0}C on August 2, 2016.
- Near normal rainfall conditions predicted for September through November.
- Above normal temperature conditions predicted for September through November.
- La Niña is favoured to develop in the coming months.




Rainfall Overview for August, 2016

Guyana was classified as moderately wet (MW) for the month of August, with a monthly average of 175.4 mm of rainfall with 13 rain days. The highest monthly rainfall total was recorded at Kaieteur with 387.3 mm of rainfall and 18 rain days. The highest one day total was recorded in Region 9 at Parishara Rupununi with 108.6 mm on August 23rd, 2016. Most of the stations recorded normal to near normal rainfall totals.

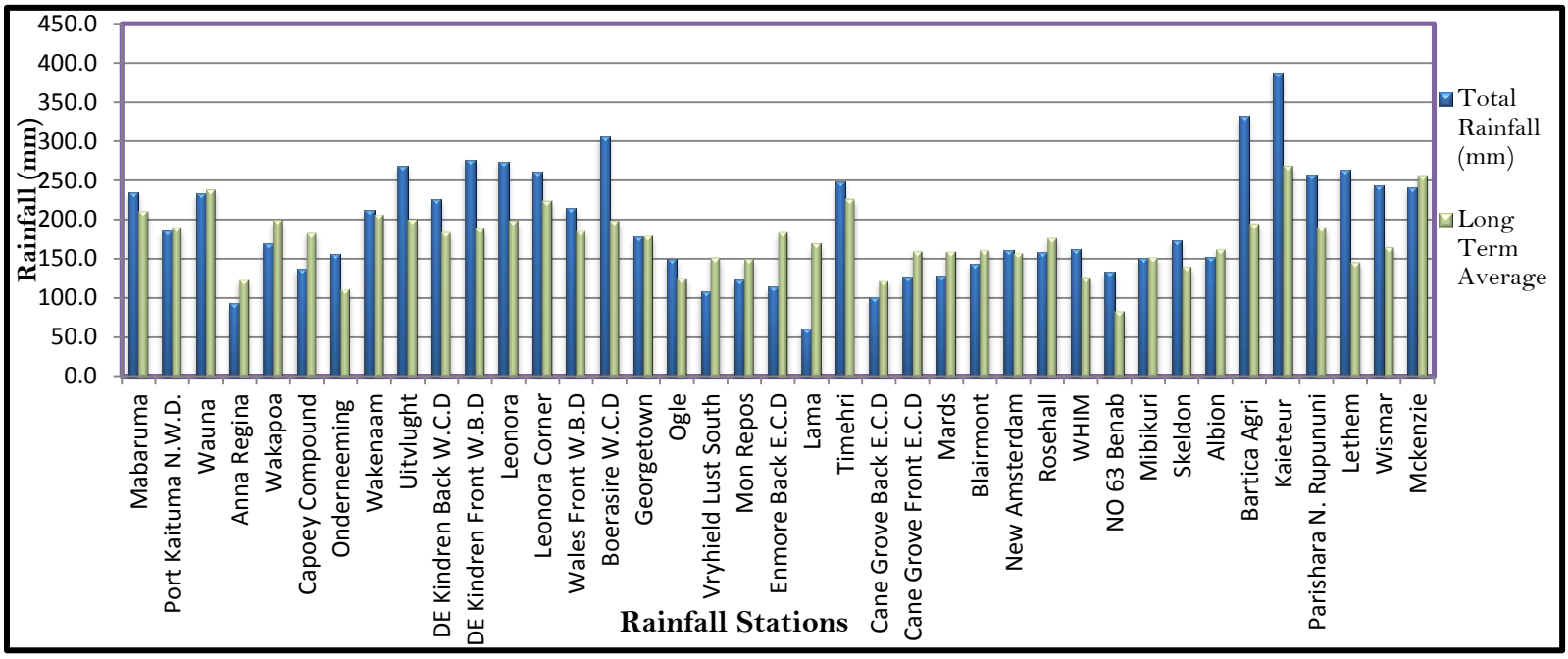

Figure1: Comparison of the Accumulated Rainfall and the Long-term Averages of selected stations for August, 2016.

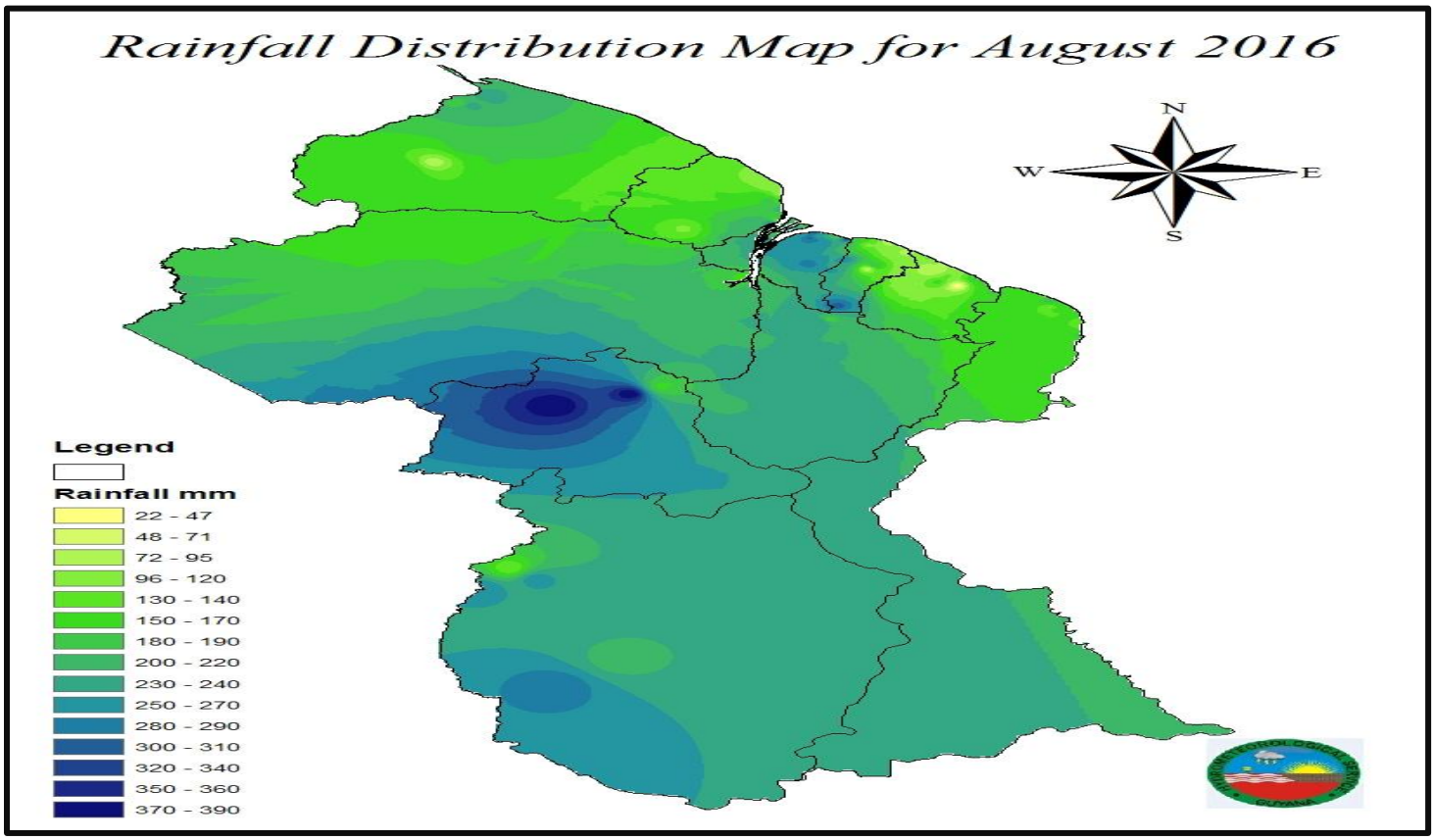

Figure 2: Rainfall Distribution for August, 2016.

Table 1: Classification of Regional Rainfall Data for August, 2016

Regions	Average Rainfall (mm)	Average Rain days	Classification	Remarks
1	185.6	16 days	Moderately Wet (MW)	Wauna recorded 233.3 mm of rainfall with 14 rain days.
2	148.4	13 days	Moderately Dry (MD)	Anna Regina recorded 93.1 mm of rainfall with 8 rain days.
3	243.9	16 days	Wet (W)	Leguan recorded 248.4 mm of rainfall with 20 rain days.
4	147.1	13 days	Moderately Dry (MD)	Friendship E.B.D recorded 256.3 mm of rainfall with 15 rain days.
5	125.7	12 days	Moderately Dry (MD)	MARDS recorded 128.3 mm of rainfall with 7 rain days.
6	147.9	10 days	Moderately Dry (MD)	Whim recorded 161.2 mm of rainfall with 10 rain days.
7	Bartica Forestry recorded 371.7 mm rainfall with 28 rain days.		Very Wet (VW)	
8	237.1	17 days	Wet (W)	Kaieteur recorded 387.3 mm rainfall with 18 rain days.
9	225.6	12 days	Wet (W)	Lethem recorded 263.7 mm of rainfall with 17 rain days.
10	209.5	15 days	Moderately Wet (MW)	Wismar recorded 244.0 mm of rainfall with 18 rain days.

Sunshine Hours Summary for August, 2016

Lethem Region 9 recorded the highest monthly mean sunshine hours with a total of 8.2 hours along with the highest one day total of 11.6 sunshine hours which was recorded on August 20th. Timehri recorded the lowest mean sunshine hours with a total of 6.6 hours.

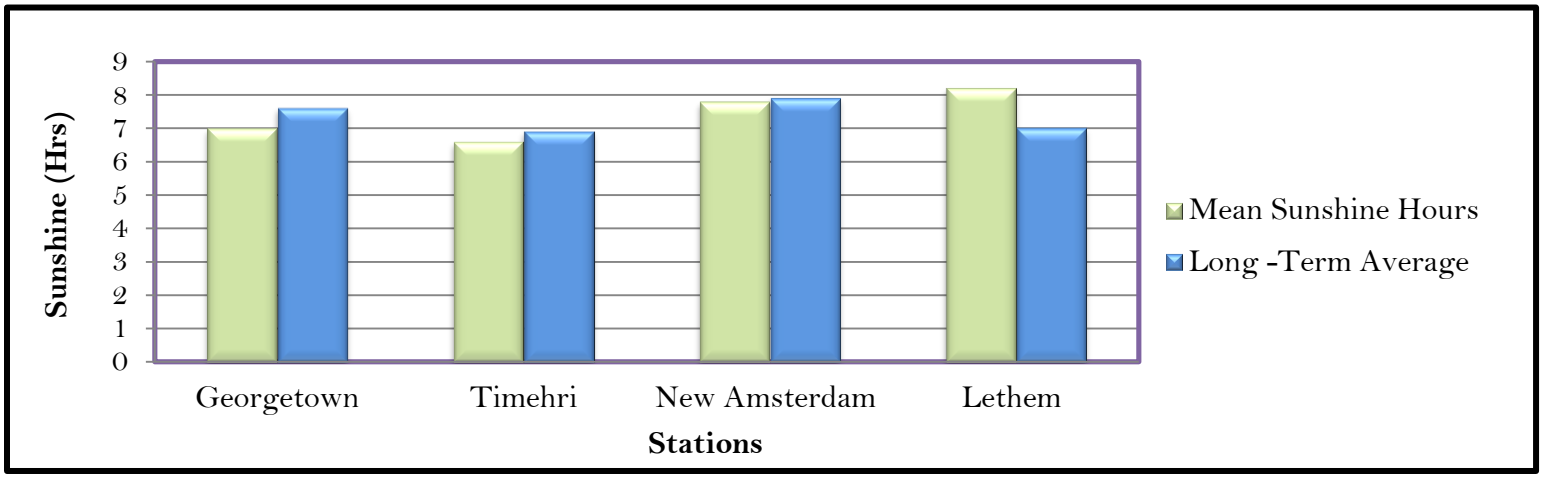

Figure 3: Comparison of the Mean Sunshine hours and the Long-term Averages of selected stations for August, 2016.

Temperature Overview for August, 2016

For the month of August, the highest one day temperature was recorded at Timehri with 35.5^{0}C on August 15th. Timehri also recorded the highest mean maximum temperature of 33.0^{0}C. The highest mean minimum temperature was recorded at New Amsterdam Region 6 with a value of 24.3^{0}C. Ogle Region 4, recorded the highest one day minimum temperature of 26.2^{0}C on August 22, 2016.

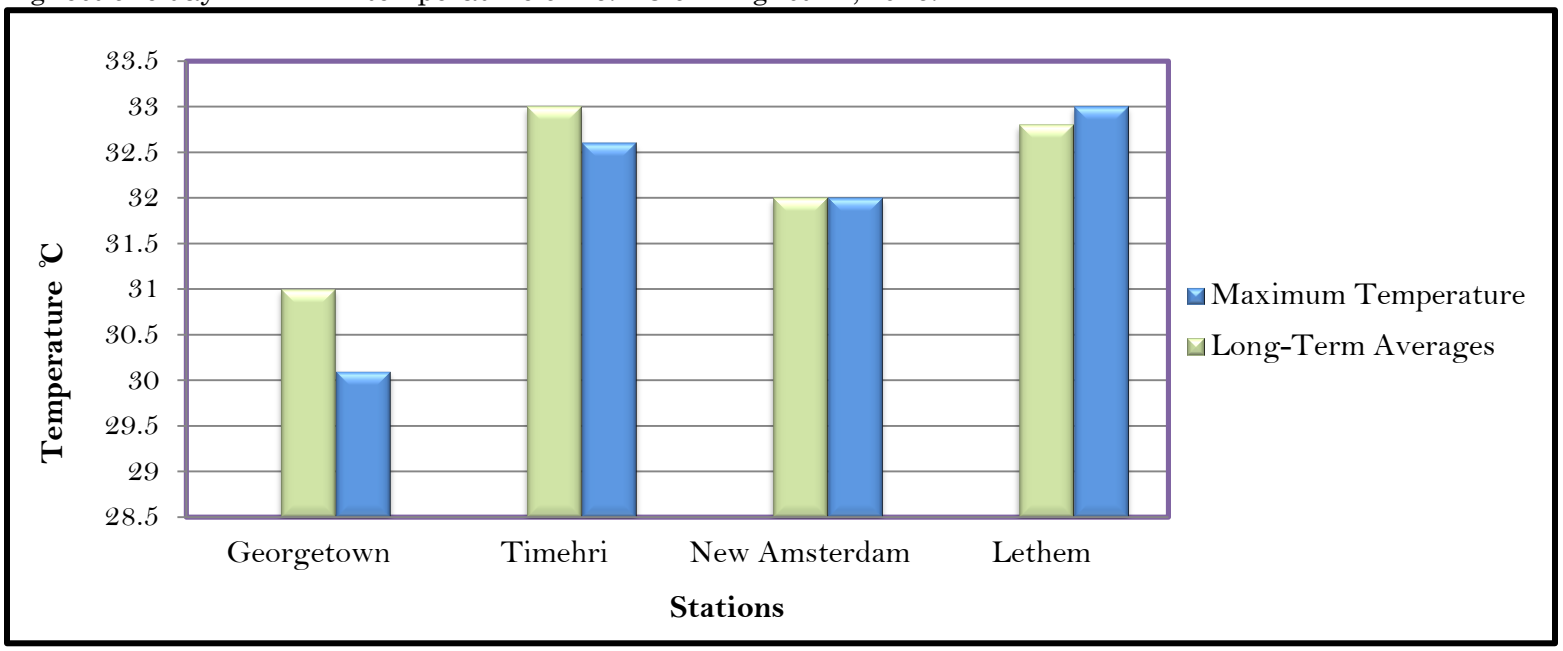

Figure 4: Comparison of the Long-Term Averages and Maximum temperatures of selected stations for August, 2016.

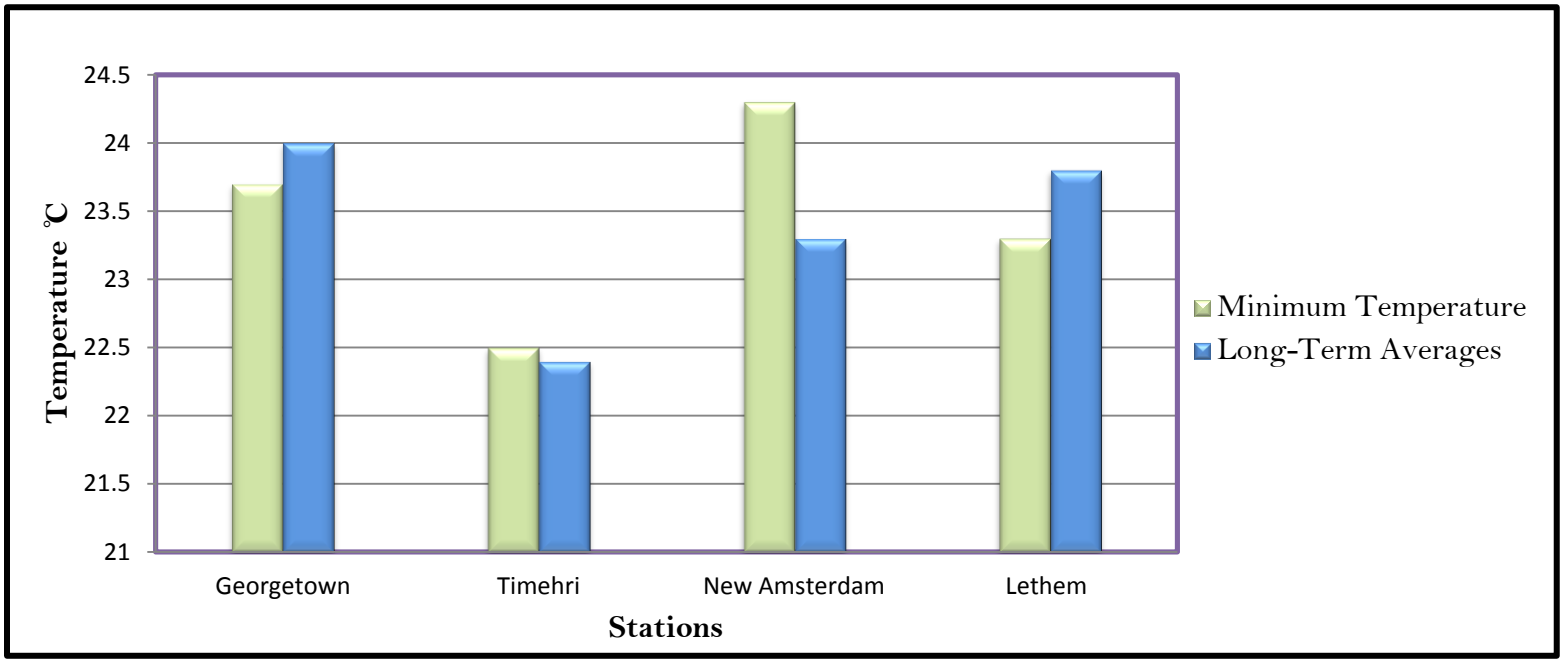

Figure 5: Comparison of the Long-Term Averages and Minimum temperatures of selected stations for August, 2016.

Comparison of Evapotranspiration (ET_O) Totals for selected stations, August 2016

Timehri recorded the highest average daily evapotranspiration with a total of 3.7 mm along with the highest one day evapotranspiration total of 5.1 mm on the August 27th. Lethem recorded the lowest daily average evapotranspiration with a total of 2.9 mm and the lowest one day evapotranspiration total of 1.5 mm on August 4th. A comparison can be seen in figure 6 below.

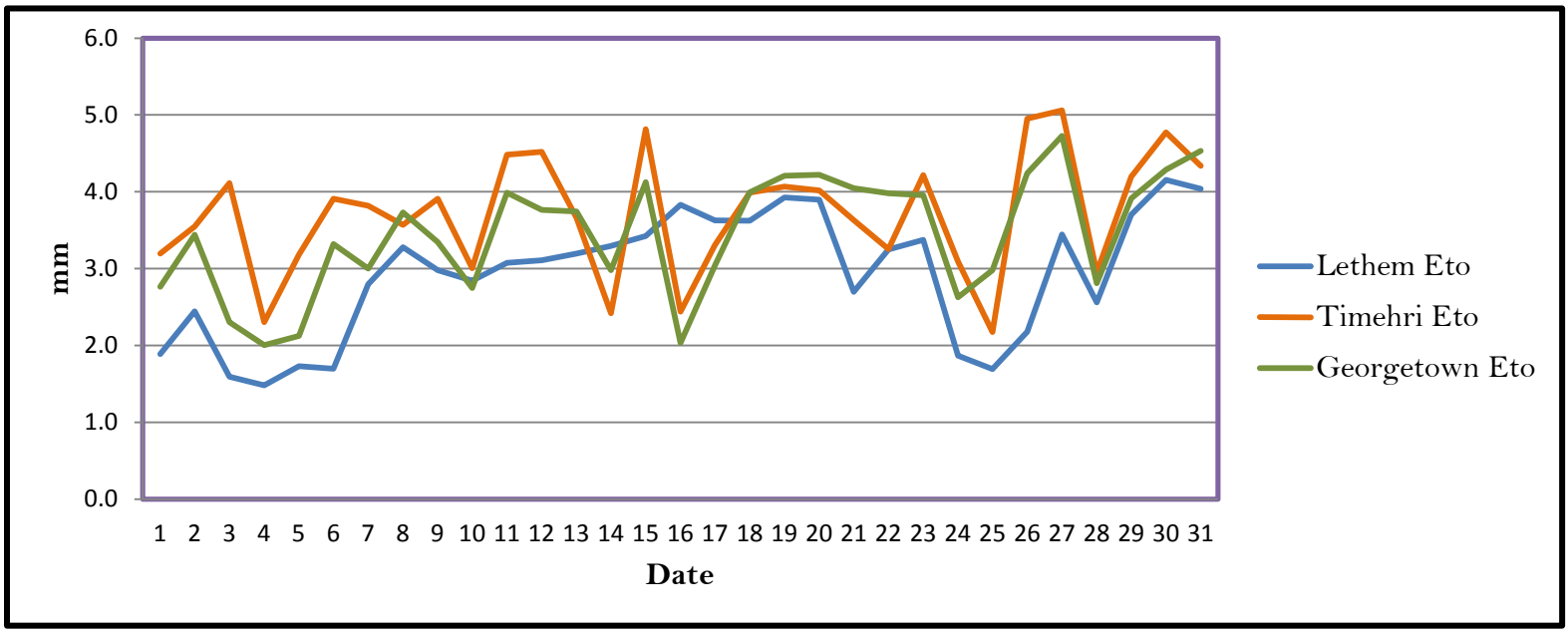

Figure 6: Comparison of the Reference Evapotranspiration of selected stations for August, 2016.

Note: The calculated reference evapotranspiration method of Penman - Monteith, which assumes an unlimited water supply, depends on temperature, relative humidity, wind, and generally provides a better representation of crop-water losses and requirements.

The Standardized Precipitation Index

The Standardized Precipitation Index (SPI), developed by T.B. McKee, N.J. Doesken, and J. Kleist in 1993, is based only on precipitation. One unique feature is that the SPI can be used to monitor conditions on a variety of time scales namely 1- month, 3-month, 6-month, 9-month and 12-month periods. This temporal flexibility allows the SPI to be useful in both short-term agricultural and long-term hydrological applications. Tables 2 and 3 below show the 3-month generated SPI values and Categories for stations along the Coastal Plain of Guyana. An interpolated map of these SPI values can be seen in Fig. 7 below. The SPI is based entirely on monthly precipitation accumulations and its values can be compared across different climatic and geographic regions. A drought event is defined when the SPI is continuously negative and reaches a value of -1.0 or less, and continues until the SPI becomes positive.

Table 2: The Standardized Precipitation Index for selected stations

Station Name	SPI Value(3 Month)
Georgetown	-0.66
Uitvlugt	0.22
Wales	0.97
Enmore	0.02
Timehri	1.09
Blairmont	0.52
Rose Hall	0.85
Albion	0.66
Skeldon	1.54

Table 3: The Standardized Precipitation Index Classification Categories

SPI Values	Categories
0 to -0.4	Near Normal
-0.5 to -0.7	Abnormally Dry
-0.8 to -1.2	Moderately Dry
-1.3 to -1.5	Severely Dry
-1.6 to -1.9	Extremely Dry
-2.0 or less	Exceptionally Dry
0 to 0.4	Near Normal
0.5 to 0.7	Abnormally Wet
0.8 to 1.2	Moderately Wet
1.3 to 1.5	Severely Wet
1.6 to 1.9	Extremely Wet
2.0 or more	Exceptionally Wet

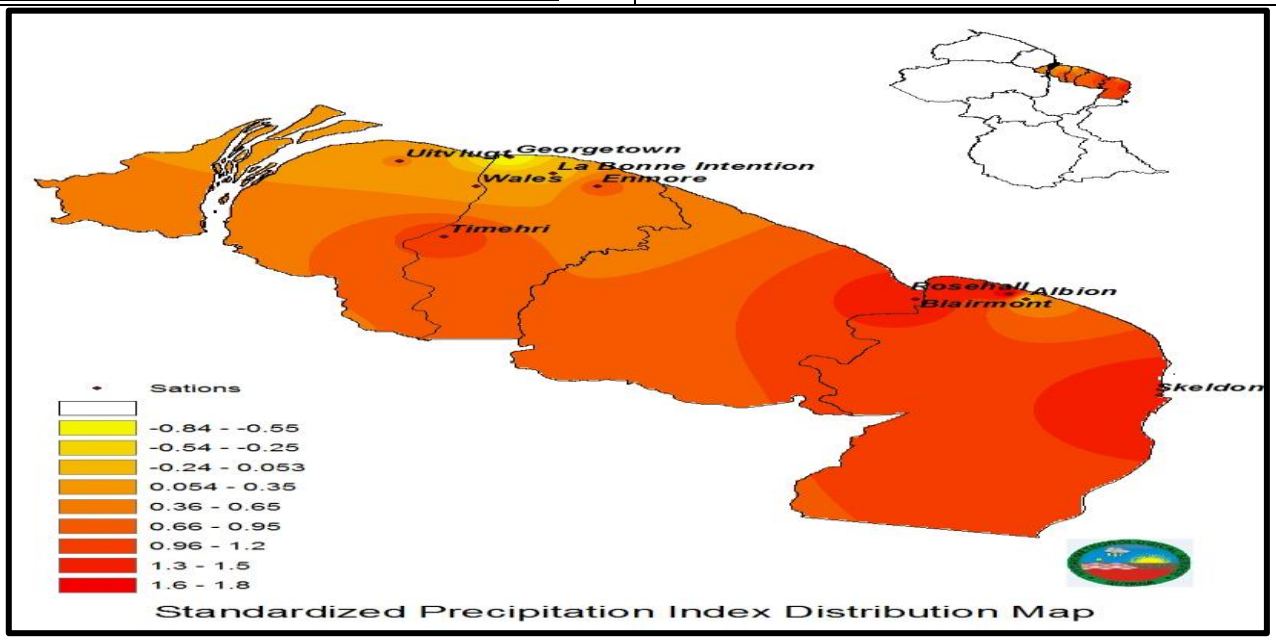

Figure 7: The Standardized Precipitation Index for selected stations for August, 2016.

Seasonal Forecast for Guyana and the Caribbean for September – November, 2016

Guyana is currently in its secondary dry season of 2016. The recent statistical and forecast models are indicating a high probability of near normal rainfall conditions for the forecast period September to November. With this Guyana will continue to see generally dry conditions over most parts of the country with above normal temperatures. However, there are still indications that some downpours will be observed.

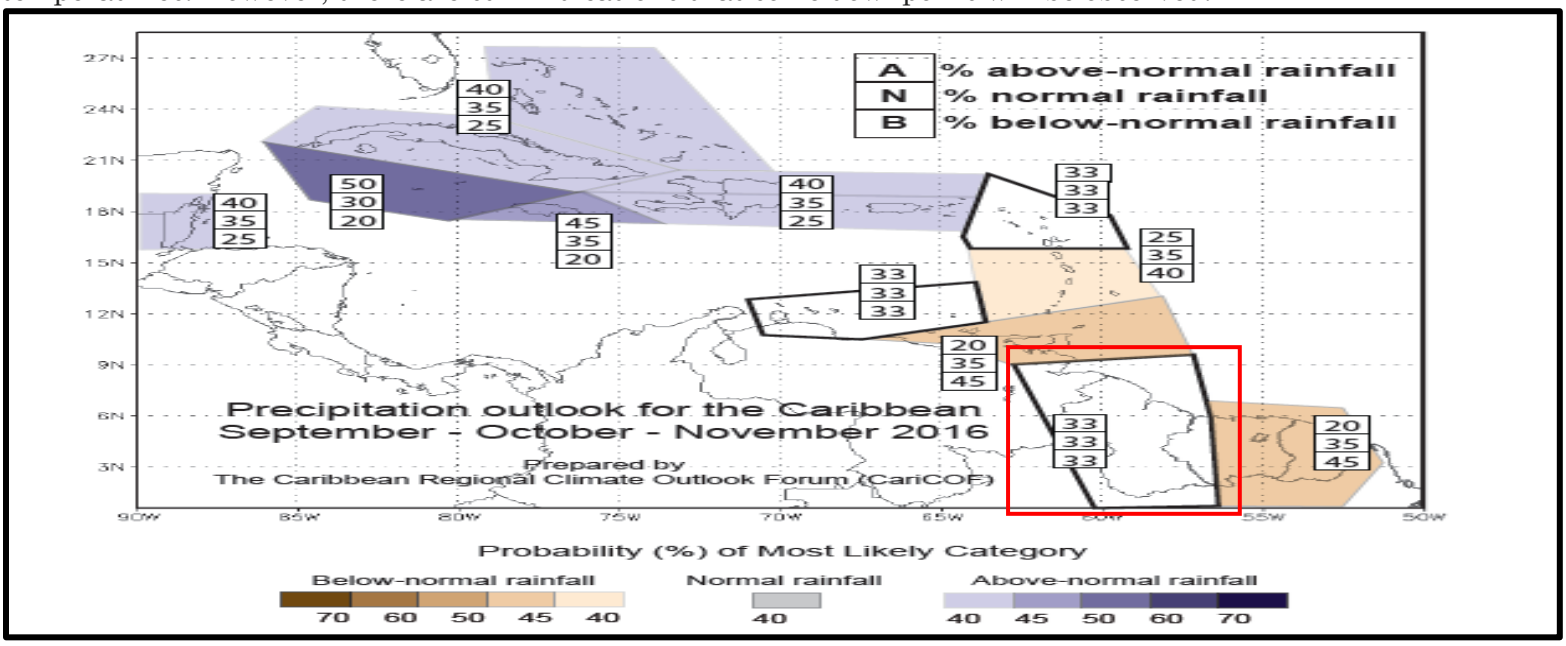

Figure 8: Diagram showing the Percentages of above Normal (A), Normal (N) and Below Normal (B) rainfall conditions for Guyana and the Caribbean.

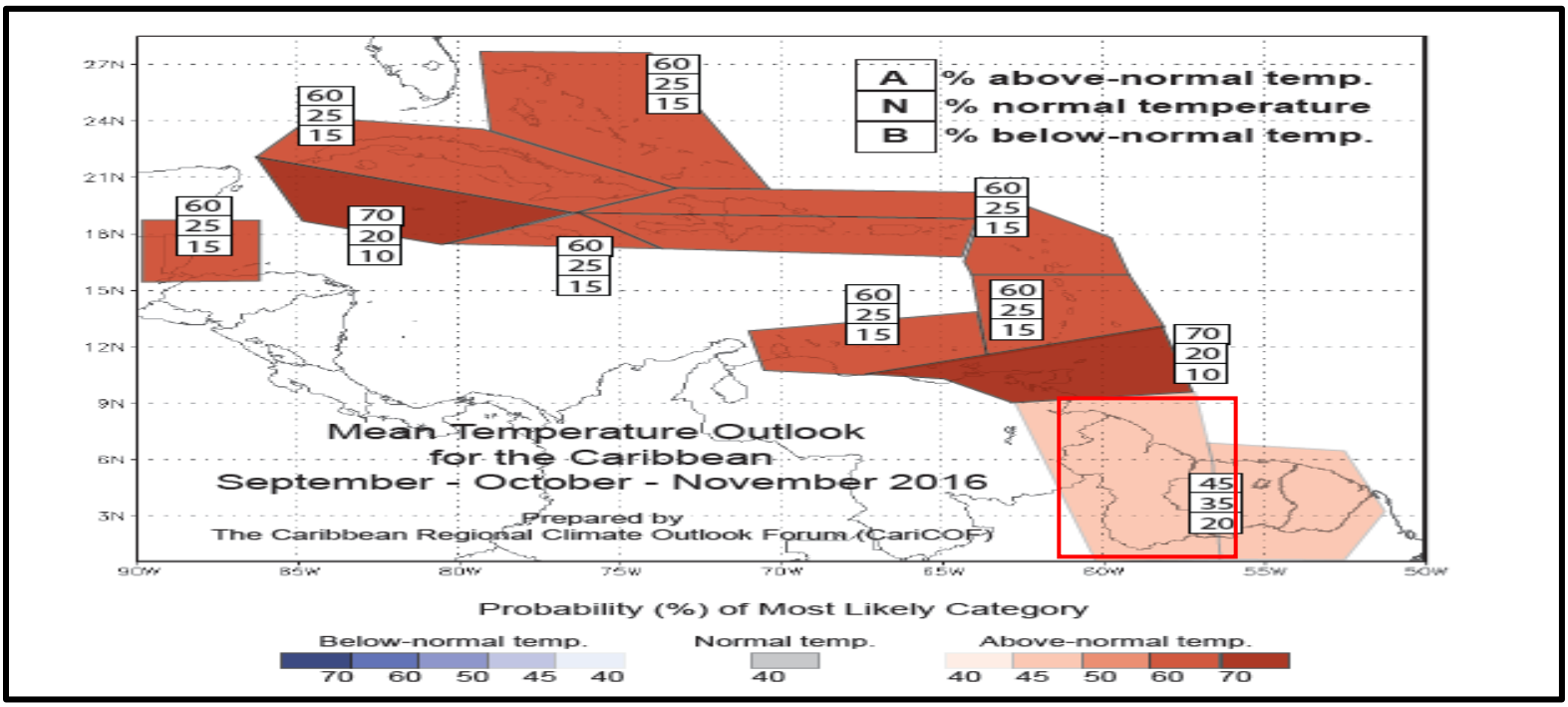

Figure 9: Diagram showing the Percentages of above Normal (A), Normal (N) and Below Normal (B) temperature conditions for Guyana and the Caribbean.

Table 4: Rainfall Normals and Averages of selected rainfall stations

Regions	Station Names	September	October	November	Regions	Station Names	September	October	November
1	MABARUMA *	137.8	****	210.2	5	BLAIRMONT	80.1	54.8	97.8
	WAUNA	185.8	207.0	212.0		MARDS	73.6	24.8	116.1
	PORT KAITUMA	173.5	160.7	190.4	6	ALBION	74.7	67.4	29.2
2	ANNA REGINA*	86.7	110.7	182.3		SKELDON	105	83.8	114.7
	CHARITY	102.2	101.3	212.6		CRABWOOD CREEK*	46.2	53.3	92.3
	Mc NABB	98.3	123.9	185.0		ROSE HALL	80.2	57.4	84.2
	WAKAPOW	136.9	120.7	212.8		NIGG 58	74.6	75.7	84.9
	ONDERNEEMING	80.0	85.0	141.5		ALBION 33	60.2	51.2	60.4
3	BOERSARIE	121.5	139.9	205.2		#73 VILLAGE	58.5	78.9	101.7
	DeKENDEREN B	110	132.3	197.9		# 54 VILLAGE*	45.8	40.2	79.4
	DeKENDEREN F	93.2	127.1	158		ANKERVILLE	57.7	65.6	77.4
	LEONORA F	90	117.9	156.3		MIBIKURI	73.3	26.5	95.4
	LEONORA B	112.7	125	163		MARA LAND DEV. SCHEME*	85.6	59.3	95.1
	WALES	125.2	125.3	171.7		NEW AMSTERDAM	86.9	59.6	94.7
	UITVLUGT B	102.3	113.6	143.9	7	APAIKWA	124.3	118.1	190.9
	La BAGATELLE LEGUAN*	62.1	88.3	113.2		MAZARUNI	147.9	147.7	171.7
4	BOTANIC GARDENS	89.9	89.4	175.9		BARTICA DEM. STATION*	174.3	182.2	139.8
	TIMEHRI	152.5	132.6	181.6		JAWALLA	106.6	107.8	175.7
	CANE GROVE B	52.8	62.6	90.8	8	KAIETEUR FALLS *	127.6	109.0	123.9
	CANE GROVE F	52.3	65.3	120	9	LETHEM	86.3	54.6	33.8
	L.B.I FRONT	62.1	73.8	140.5		KARASABAI	26.3	21.6	9
	OGLE FRONT	56.8	64.6	136.7		DADANAWA	83.5	45.5	57.5
	ENMORE FRONT	72.8	78	127.8	10	GREAT FALLS	126.9	110.3	152.5
	KAIRUNI*	109.3	84.4	130.7		WISMAR*	106.8	97.5	107.3

NOTE = The normals for various stations were calculated by the use of rainfall data from the year 1981- 2010 (30 years).
Rainfall Averages= less than 30 years of data.

Table 5: Average rain days for the months September- November for selected stations

Station Name	September	October	November
Georgetown Botanical Gardens	7 days	8 days	12 days
Timehri Meteorological Station	12 days	11 days	14 days
Ogle	6 days	6 days	11 days
Lethem	8 days	5 days	3 days
Anna Regina	6 days	6 days	10 days
New Amsterdam	6 days	6 days	9 days

NOTE: Rain day = More than 1 mm of rainfall within a 24 hrs period

Table 6: SPRING TIDE TABLE FOR SEPTEMBER, 2016

Date	HIGH WATER ≥ 2.74(m)	
	Time	Height(m)
2016/09/01	03:36	3.01
	16:27	3.00
2016/09/02	04:13	3.03
	17:00	3.00
2016/09/03	04:48	3.01
	17:30	2.95
2016/09/04	05:22	2.96
	17:57	2.88
2016/09/05	05:56	2.86
	18:25	2.77
2016/09/06	06:31	2.74
2016/09/14	01:58	2.85
	14:27	2.80
2016/09/15	02:43	3.02
	15:06	3.00
2016/09/16	03:28	3.16
	15:45	3.16
2016/09/17	04:12	3.24
	16:24	3.27
2016/09/18	04:57	3.25
	17:03	3.30
2016/09/19	05:43	3.19
	17:44	3.25
2016/09/20	06:31	3.05
	18:27	3.13
2016/09/21	07:22	2.85
	19:13	2.94
2016/09/22	20:10	2.74
2016/09/27	14:12	2.79
2016/09/28	01:59	2.79
	14:52	2.90
2016/09/29	02:40	2.87
	15:27	2.97
2016/09/30	03:18	2.92
	16:00	3.00

Spring Tides Tables are provided by the Maritime Administration Department

 New moon 1st/30th 05:03/20:11  First quarter 09th 07:48  Full moon 16th 15:05  Last Quarter 23rd 05:56

LUNAR CALENDAR FOR SEPTEMBER, 2016

Agricultural Review for August, 2016

Regionally, Moderately Dry (MD) to Moderately Wet (MW) conditions was experienced for the month of August. Climatologically the primary rainy season ended in July and the secondary dry season commenced in the month of August. During the month it was reported that farmers in the Region 10 area were planting crops such as eddoes, pineapples, corn and peanuts. The peanut crop was mostly being affected by the presence of nematodes found in the soil which feeds on the root tissue, nourishing itself, and causing decay in the plant. Diseases were also found on the pepper and pea plant. There were no reports of significant effects of the weather on Agricultural production.

(a)   (b)

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Figure 10: Above shows pepper (a) and (b) peanuts plants which are currently affected with leaf spot.

Farmer's Note for September, 2016

Guyana is currently in its secondary dry season of 2016. Seasonal forecasts are indicating the probability of near normal rainfall for the period September through November. In addition, above normal temperatures is also forecasted for most parts of the country, hence farmers are encouraged to take heed to the advisories of their regional agriculturists or extension officers, and to be vigilant and follow the Hydromet's daily and three day forecast via the radio on 56.0 AM and on our website at www.hydromet.gov.gy . Farmers are also advised to:

- Practice techniques such as mulching to reduce soil water evaporation.
- Implement proper drainage systems, so as to avoid waterlogging.
- Livestock should be provided with sufficient amounts of water to prevent dehydration and some form of shelter during very warm days.
- Store Fertilizers 2-3ft above ground in a proper ventilated area.

Crop Of The Month: Star Apple | September, 2016

Common Name: Star Apple

Scientific Name: Chrysophyllum cainito

Temperature: 19.22° C - 27.56° C

Soil pH: 4.4 -7.5

Introduction

The star apple tree is erect, 25 to 100ft tall, with a short trunk to 3ft, and a dense, broad crown, brown hairy branchlets, and white, gummy latex. The alternate, nearly evergreen, leaves are elliptic or oblong-elliptic, 2 to 6 inch long, slightly leathery, rich green and glossy on the upper surface, coated with silky, golden brown pubescence beneath when mature, though silvery when young. Small, simple flowers, clustered in the leaf axils, are greenish yellow or purplish white tubular, with 5-lobed corolla and 5 or 6 sepals. The fruit, round, oblate, ellipsoid or somewhat pear shaped, 2 to 4 inches in diameter, may be red purple, dark purple or pale green. It feels in the hand like a rubber ball. The glossy, smooth, thin, leathery skin adheres tightly to the inner rind which, in purple fruits, is dark purple and 1/4 to 1/2 inch thick; in green fruits, white and 1/8 to 3/16 inches in thickness. Resulting in the familiar frond look.

Rainfall Requirements

In Guyana there are locations where the water table is unknown and so it is not surprising to experience occasional flooding after heavy rainfall events. To improve plant survival, consider planting fruit trees on a 1 ft. high by 4- to 10-ft-diameter mound of native soil After the mound is made, dig a hole 3 to 4 times the diameter and 3 times as deep as the container the tree came in. In areas where the bedrock nearly comes to the surface (rocky land soil), follow the recommendations for the previous section.

Planting

For planting the Star apple trees are most widely grown from seeds which retain viability for several months and germinate readily. The seedlings bear in 5 to 10 years. Vegetative propagation hastens production and should be more commonly practiced. Cuttings of mature wood root well. Air layers can be produced in 4 to 7 months and bear early. Budded or grafted trees have been known to fruit one year after being set in the ground. In India, the star apple is sometimes inarched on star apple seedlings.

Health Benefits of Star Apple

- The average star apple has around 64 kilocalories, and average 100 grams.
- It is also good for the bones and teeth from its rich level of calcium.
- The star apple fruit is a good remedy for diarrhea as eating too much may cause constipatition.
- Star apples also have a high level of antioxidants.

Insect pests and diseases of Star Apple

- *Stem and limb die back*
- *The fungi Phyllosticta sp (dry root)*
- *Bacterial wilt*
- *Caterpillars*

Recommended Varieties

- Purple
- Greenish yellow peel
- Haitian Star
- Blanco Star

Harvesting/Storage

The fruits do not fall when ripe and therefore must be harvested by hand when fully mature. Fruits should be clipped from the stem because pulling the fruit off by hand may damage the peel next to the fruit stem which may lead to fruit rot. The fruits are fully mature when the skin color turns a dull color (purple or green) and is slightly wrinkled and soft. Immature fruit will be astringent and inedible due to the gummy latex found in the flesh. The peel and rind of ripe caimito are inedible. Cutting the fruit gently separating the two halves is an easy way to open the fruit. The pulp then may be spooned out, leaving the inedible rubbery seed cells, seeds, and core. Once mature fruit are picked, they may be allowed to fully ripen at room temperature. Once ripe, fruit may be stored in a plastic bag in the refrigerator until consumed.

Fun Facts About Star Apple

- In Jamaica, the flesh is often eaten with sour orange juice, a combination called "matrimony"
- The wax from the fruit was formerly proposed as a substitute for wax on the shelves of wardrobes and closets.
- In Brazil, the latex of the tree is applied on abscesses and, when dried and powdered, is given as a potent vermifuge.

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El Niño and La Niña Update

ENSO Alert System Status: La Niña Advisory

- ENSO-neutral conditions are present.*
- Equatorial sea surface temperatures (SST) are near or below average in the east-central and eastern Pacific Ocean.
- La Niña is slightly favored to develop during August-October (ASO)2016, with about a 55-60% chance of La Niña during September – December and December – March 2016-17.*

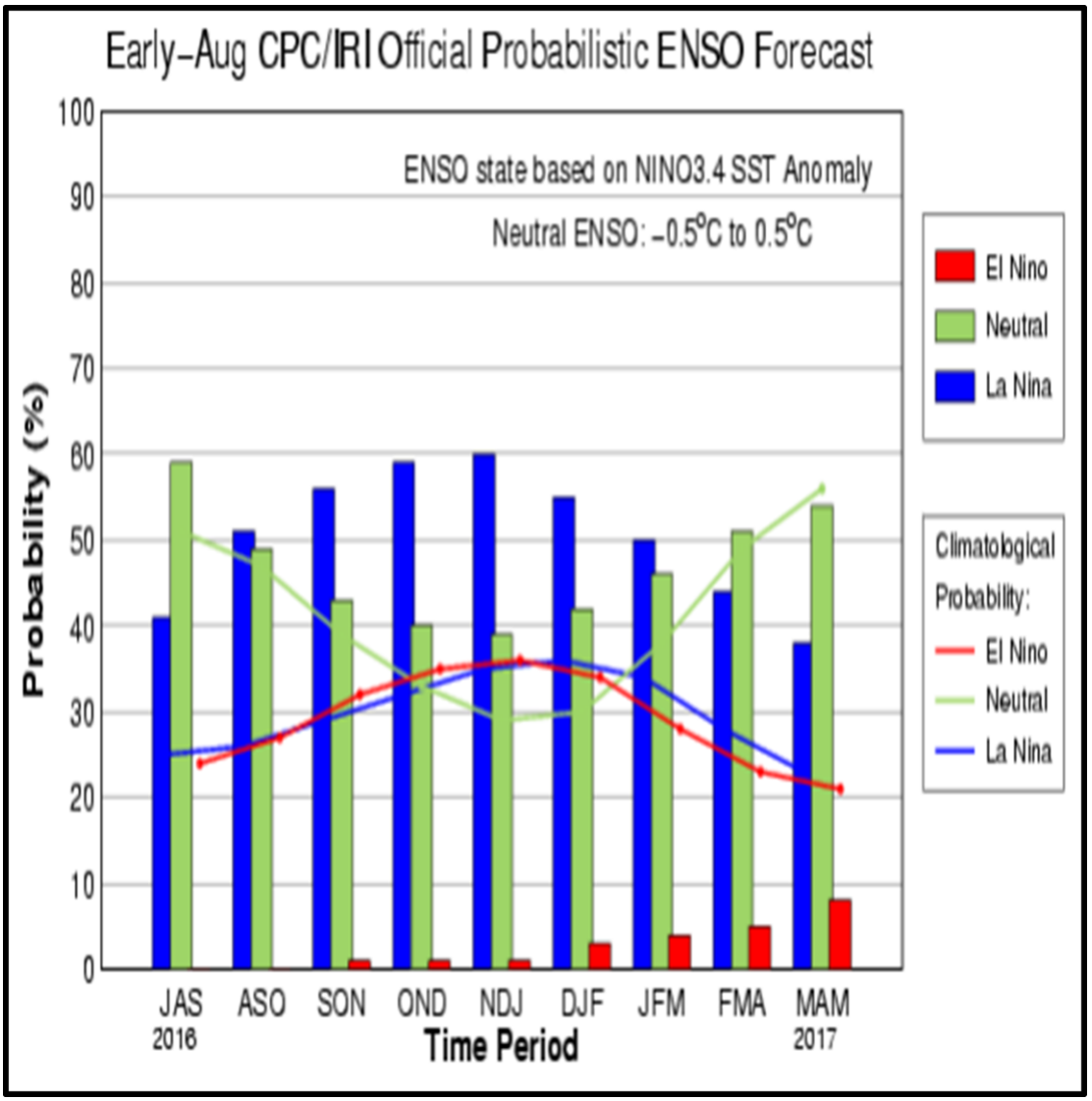

Figure 11: CPC/IRI Early-Month Consensus ENSO Forecast Probabilities