

# **Monthly Bulletin**

## **Ministry of Agriculture**

### **Hydrometeorological Service**

**May 2017**



*"To observe, archive and understand Guyana's weather and climate and provide meteorological, hydrological and oceanographic services in support of the Guyana needs and national and international obligations."*

# HYDROMETEOROLOGICAL BULLETIN

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## Highlights for May 2017

- ❖ Guyana classified as Dry for April 2017
- ❖ More than 80 % of stations recorded below normal rainfall.
- ❖ Warmer than average conditions dominated across much of the Earth's surface: Fourth highest April temperature recorded in 138 years.
- ❖ Chance for extremely wet weather condition for May – July 2017 is low, but still a bit higher than usual.
- ❖ ENSO-neutral and El Niño are *nearly equally* favored.

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**Below:** Well Registration exercise being conducted at Region 9 by Staff of the Hydrometeorological Service.



## Review of Seasonal Outlook provided in March.

Below is a brief review of the Seasonal Outlook for Guyana which was provided by the Hydrometeorological Service earlier in March 2017.

**Precipitation:** Northern Region 1 along with Western Region 7 and 8 should have expected below-normal rainfall, while Southern Region 6 and 9 should have expected above-normal rainfall. All other Regions should have expected near-normal rainfall for the period March to May 2017 as shown in Figure 1 below. Based on the seasonal rainfall outlook, a projected accumulated rainfall for the outlook period is shown in Figure 2. The irregular rainfall being experienced in southern and

central Guyana during February was expected to continue into the wet season.

**Temperature:** Region 4 expected warmer temperatures than normal (27.2 °C) while all other locations expected near-normal temperatures.

**Drought:** This was not a concern during the validity of the outlook period. Usually during this time, Coastal Guyana and the Intermediate Savannas would have been in their secondary dry season. Those irregular showers experienced during February would have been expected to continue through March and April, therefore extreme temperatures was not a concern.

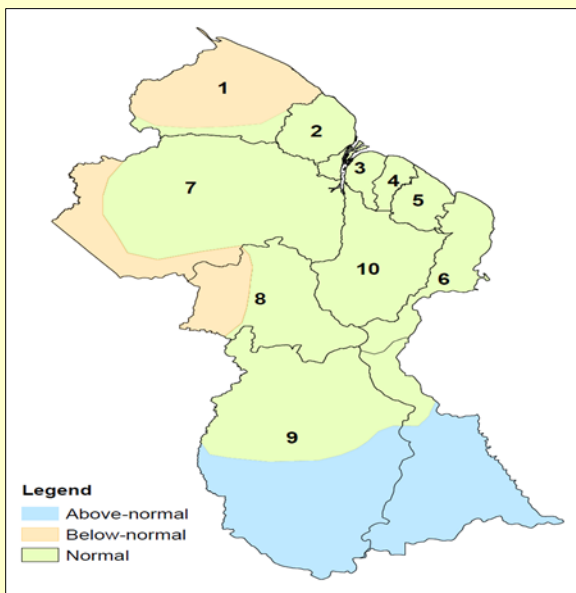


Figure 1 Map of Guyana showing probabilistic forecast of rainfall amounts for period March to May 2017.

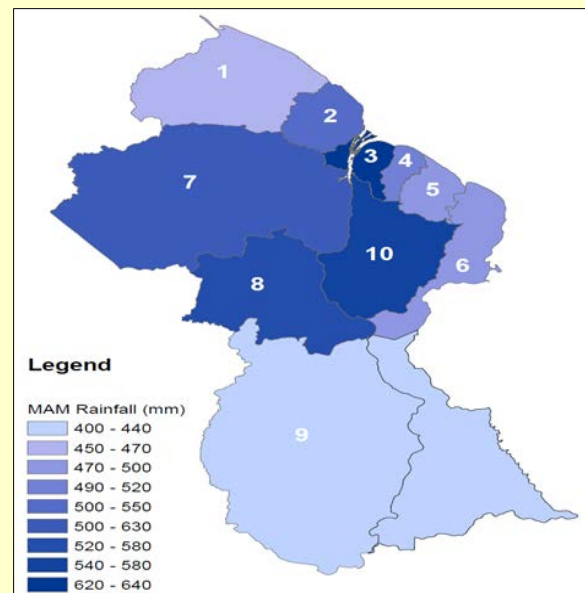


Figure 2 Map of Guyana showing projection of Seasonal Accumulation of rainfall for period March to May 2017.

The forecast and projection above was prepared taking into account the usual Climatological trends along with current dynamical models and Climate Prediction Tools (CPT). The figures below shows the Seasonal Climatological trends for several location across Guyana.

## Rainfall Analysis and Classification

### Climatological Trend

Variation in the seasonal rainfall pattern for several Regions across Guyana are shown in Figures 3 to 7 below. The expected Bi-modal rainfall pattern can be seen in figures for Coastal and Near Inland location, representing the Primary and Secondary

Wet and Dry seasons, while figure(s) for Inland and Interior locations shows a single extended Wet season and one Dry season. This Seasonal variation is caused primarily due to the movement of the Inter Tropical Convergency Zone (ITCZ).

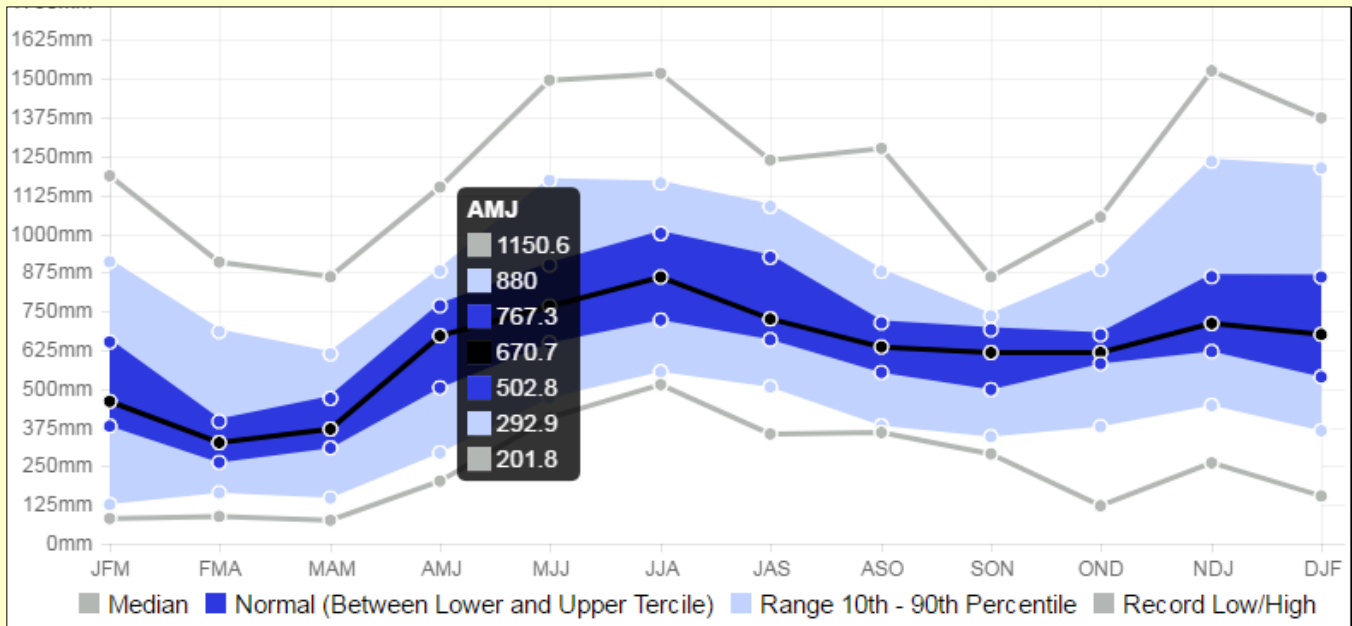


Figure 3 Seasonal rainfall variation for Region 1 at Mabaruma

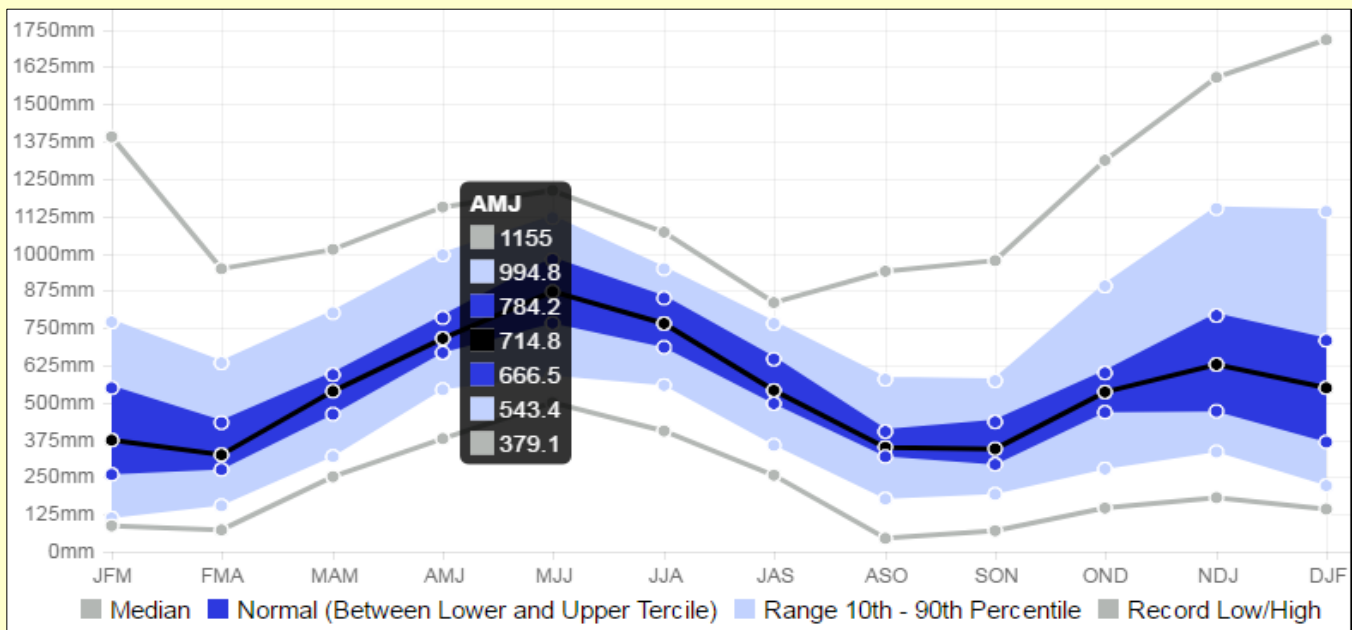


Figure 4 Seasonal rainfall variation for Region 4 at Georgetown

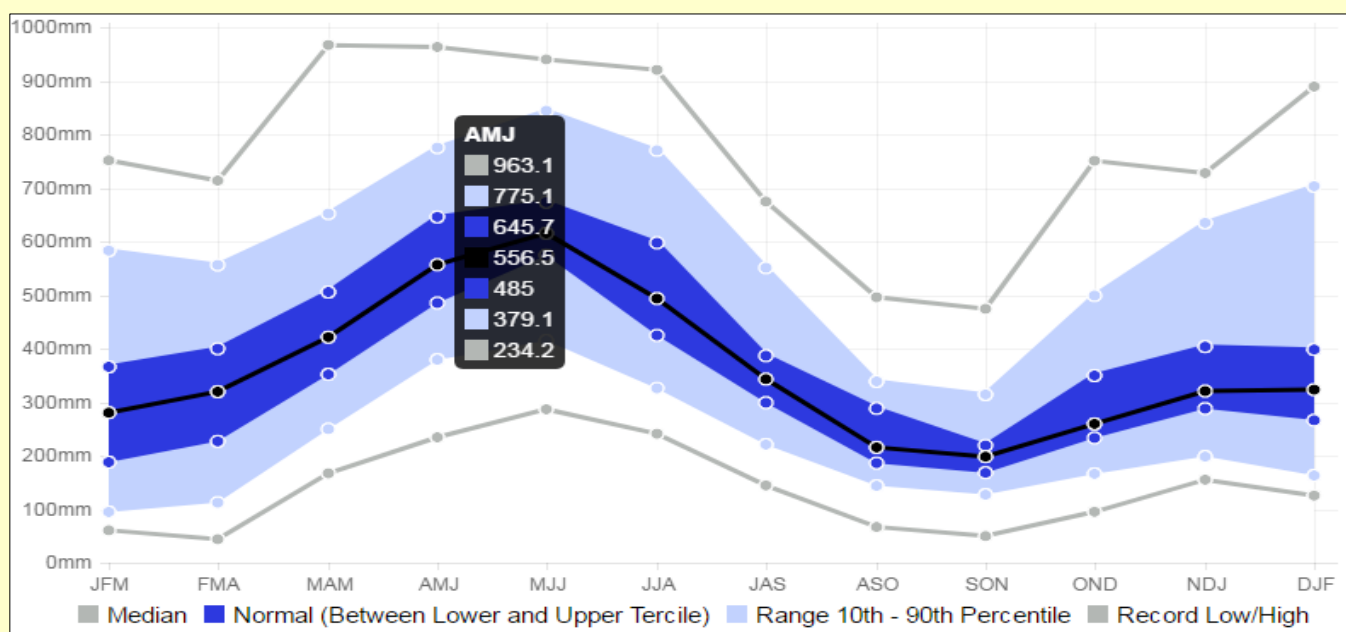


Figure 5 Seasonal rainfall variation for Region 6 at Skeldon

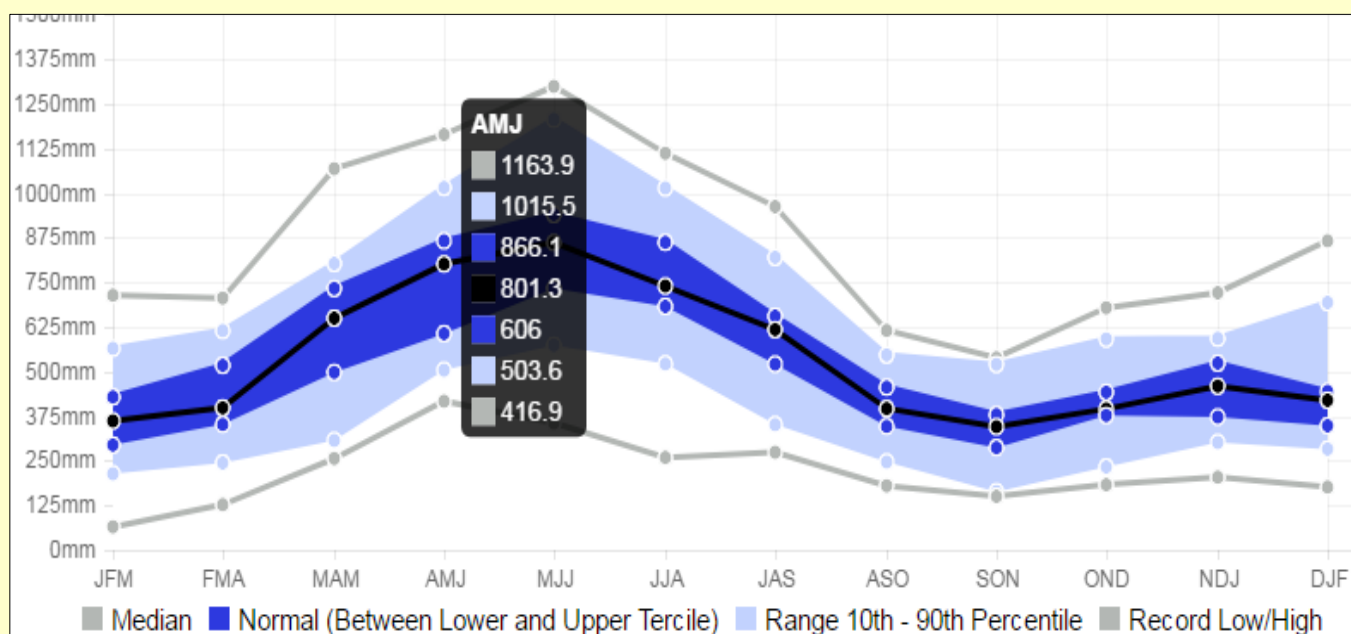


Figure 6 Seasonal Rainfall Variation for Region 10 at Ebini

Trends in the seasonal variation of the rainfall corresponds to the oscillation in the axis of the ITCZ. Its southward migration contributes to the secondary wet season during December - January

period along Coastal and Near-Inland location, while its northward movement is the main system responsible for the primary wet season during the May - June period.



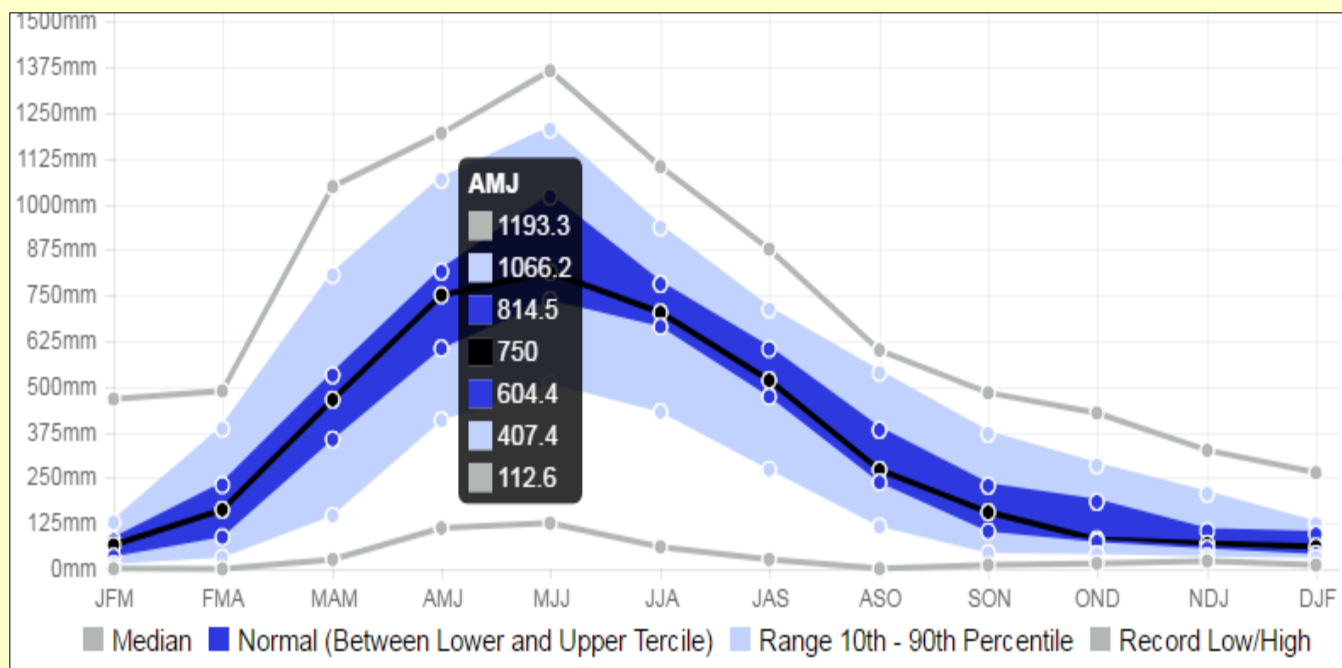


Figure 7 Seasonal Rainfall Variation for Region 9 at Lethem

In addition to the aforementioned oscillation of the ITCZ, it lingers to the south of Guyana after its southwards migration during the December-January period. This accounts for the single extended rainfall over Southern Guyana and Region 9 as shown in Figure 7 above. In conclusion, according to the trends displayed

above, the period May – June – July is usually the rainy seasons throughout Guyana, and April approaches the transition from Wet to Dry for Coastal and Near Inland location, while slowly approaches the extended Wet season for Interior locations.

### Climatological Trends compared with Year to date Rainfall.

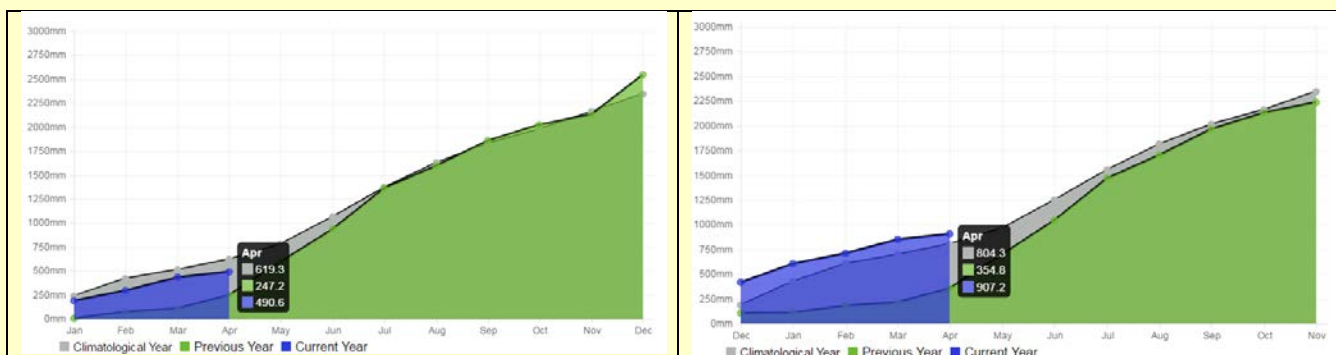


Figure 8 Graph showing Accumulated Rainfall (up until April 2017) for (a) Calendar Year and (b) December to November Year and comparison with Climatological and Previous year for Region 1 at Mabaruma

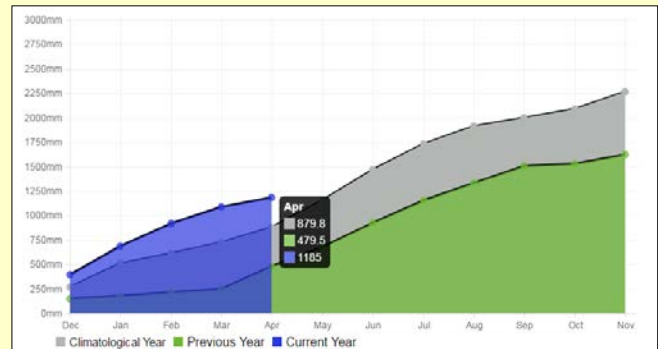
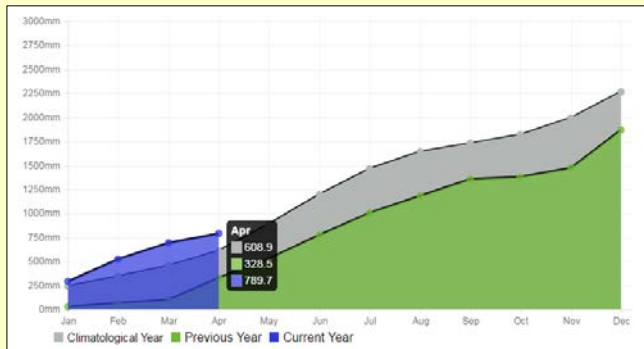


Figure 9 Graph showing Accumulated Rainfall (up until April 2017) for (a) Calendar Year and (b) December to November Year and comparison with Climatological and Previous year for Region 4 at Georgetown

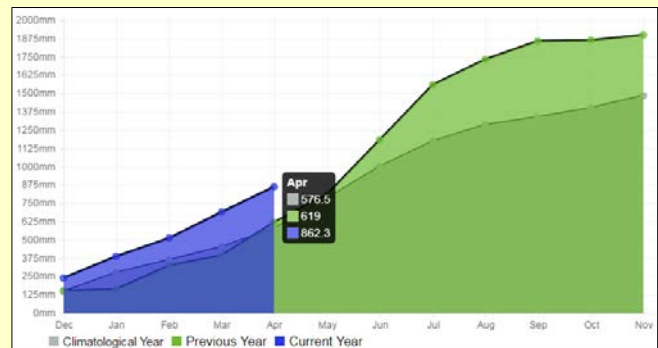
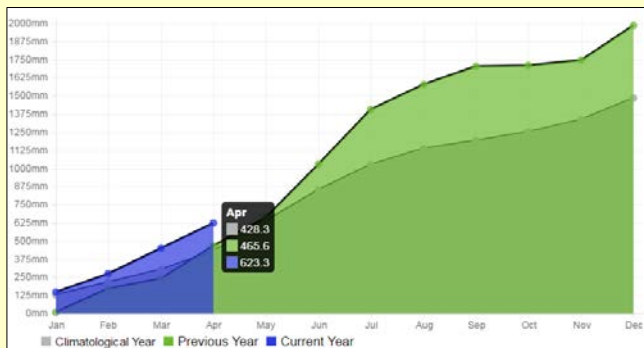


Figure 10 Graph showing Accumulated Rainfall (up until April 2017) for (a) Calendar Year and (b) December to November Year and comparison with Climatological and Previous year for Region 6 at Skeldon

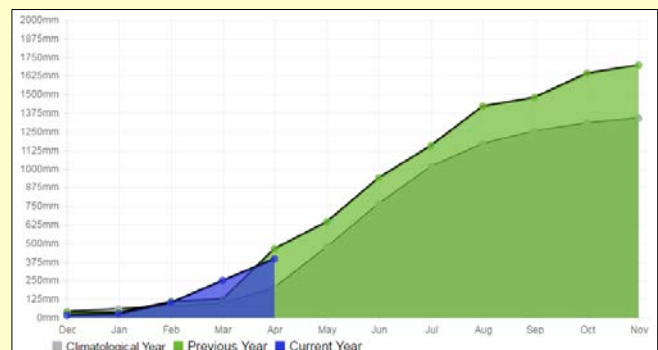
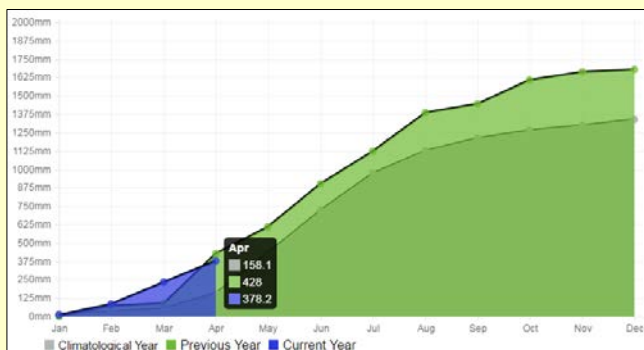


Figure 11 Graph showing Accumulated Rainfall (up until April 2017) for (a) Calendar Year and (b) December to November Year and comparison with Climatological and Previous year for Region 9 at Lethem

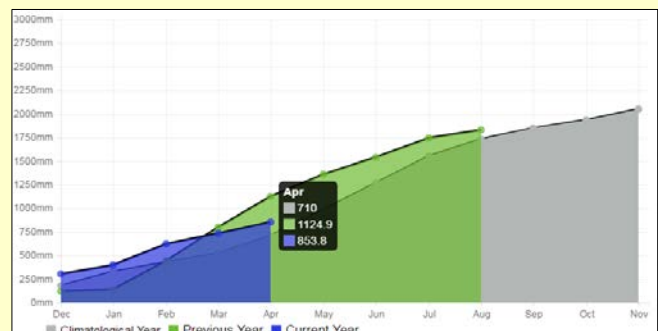
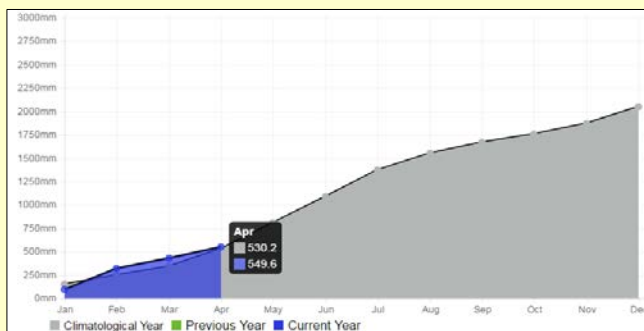


Figure 12 Graph showing Accumulated Rainfall (up until April 2017) for (a) Calendar Year and (b) December to November Year and comparison with Climatological and Previous year for Region 10 at Ebini

## April 2017 Rainfall Analysis

Guyana was classified as Dry (D) for the month of April, with a nationwide average rainfall of 116.8 mm distributed over 7 rain days. A detailed

comparison of the April 2017 rainfall with the historical average for selected stations can be seen in Figure 13 below.

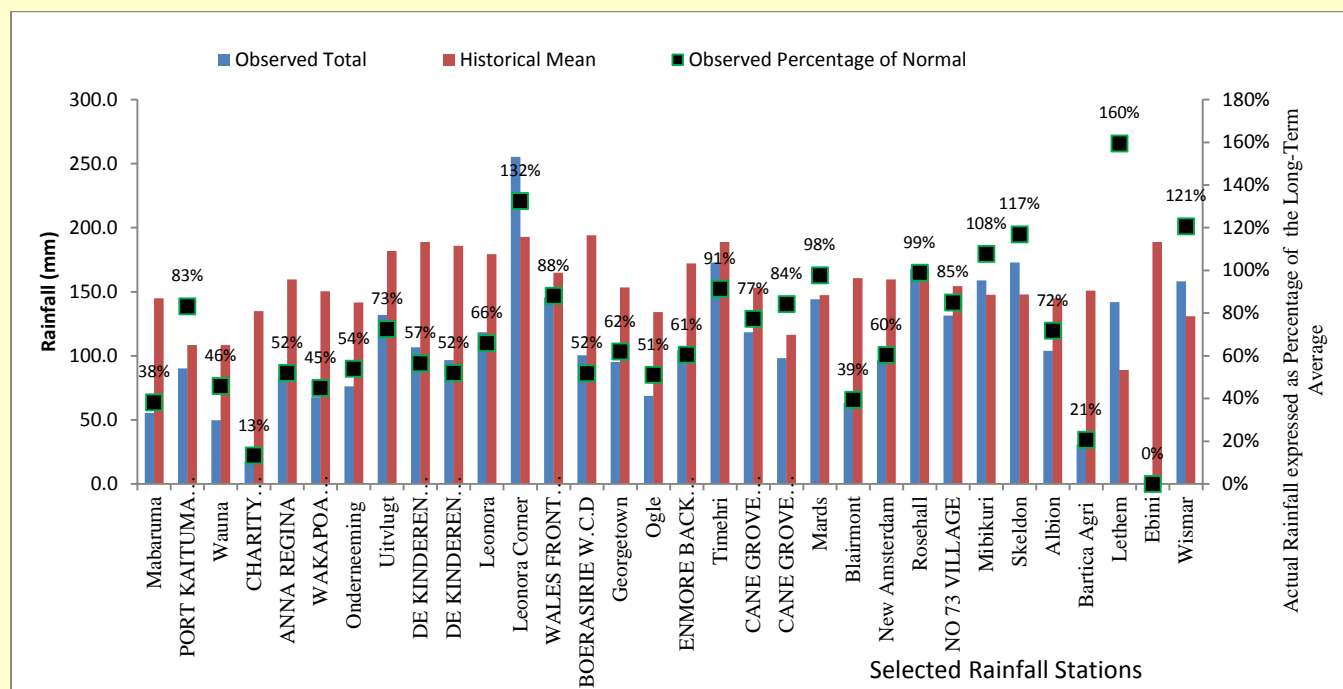


Figure 13 Comparison of the accumulated observed Rainfall for April 2017 expressed as a percentage of the Historical mean

According to the records collected and processed by the Hydromet Service, it can be seen that a majority of the locations recorded rainfall amounts below their historical averages. With the exception of Lenora Corner in Region 3, all stations along Coastal Regions 1 – 5 recorded rainfall amounts significantly less than their long term averages. Charity in Region 2 recorded 18.0 mm of rainfall – the most significant amount below *normal* rainfall at a mere 13% of its historical average for April month. On the other hand, Leonora Corner recorded 255.4mm of rainfall, a value that is 32% in excess of its historical average. In addition, Region 9 at Lethem recorded above normal rainfall as was forecasted for April (see Figure 1 above). Details of the temporal distribution of daily rainfall for several locations are shown in Figure 14 to the left which provides a fair indication for the outliers.

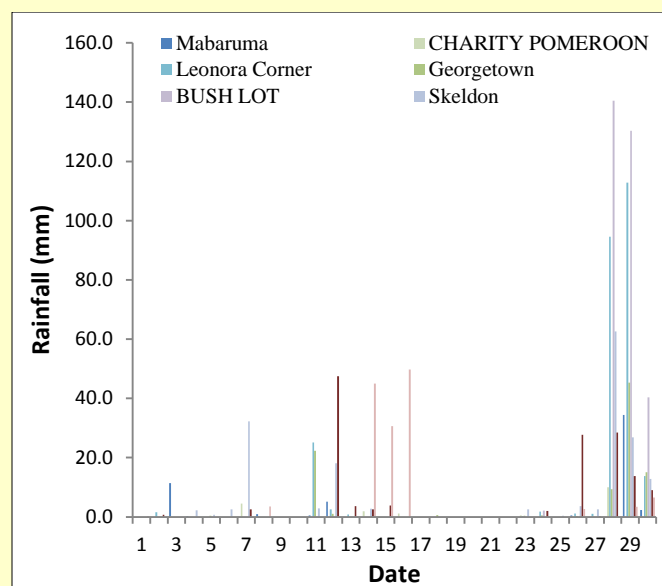


Figure 14 Temporal distribution of daily rainfall for April 2017 for selected stations throughout Guyana



Further analysis of the rainfall amount represented in Figure 13 above was done and the results presented in Figure 15 below as a histogram. The horizontal axis shows April 2017 accumulated rainfall expressed as a Percentage difference of the long-term average, with -ve values indicating rainfall amounts below the historical averages,

while +ve values represent rainfall amounts greater than the historical average. The figure confirms the aforementioned statement, since more than 80% of the locations recorded rainfall amounts below their historical averages, further, the figure also shows that more than 30% of the location recorded less than half the normal for the month.

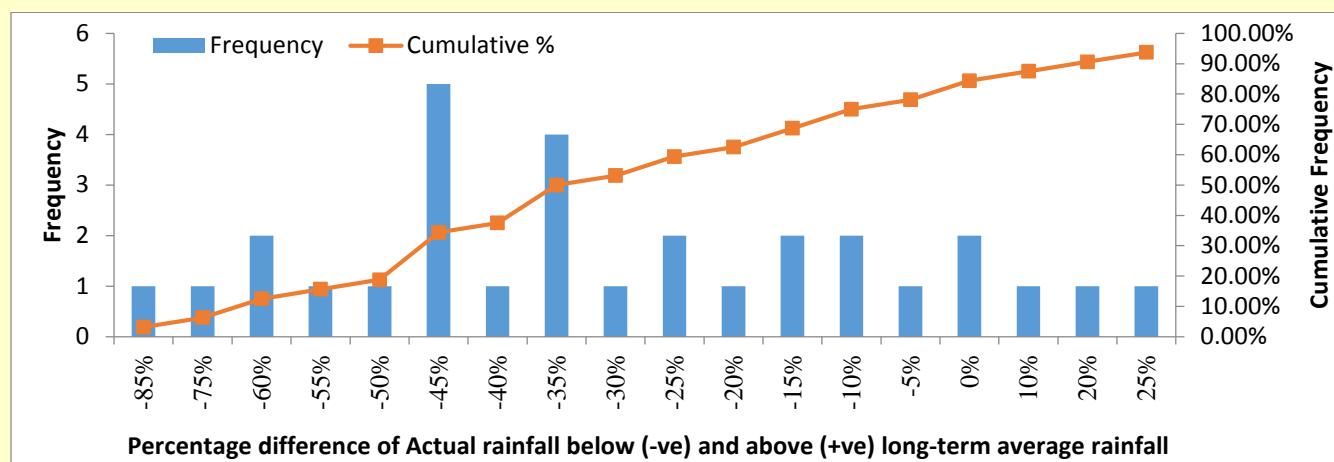


Figure 15 Histogram of April 2017 rainfall as percentage difference of Long term average rainfall

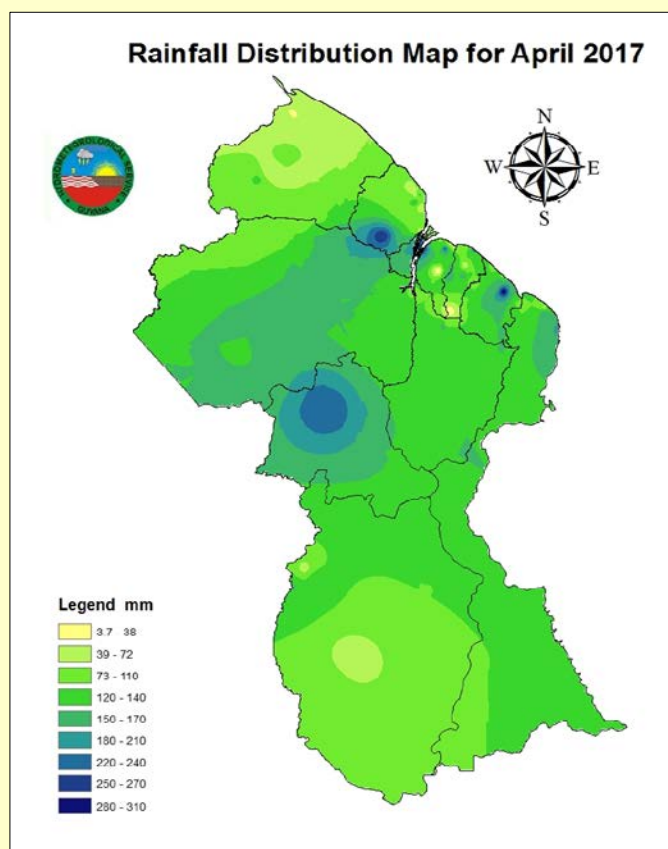


Figure 16 shows a spatial representation of the rainfall distribution across Guyana. Region 5 at Bush Lot recoded the highest accumulated rainfall for April 2017 at 313.2 mm in 4 rain days – this is shown in the dark blue spot along coastal Region 5 in the map to the left. Additionally, Region 3 at Hog Island recorded the highest one – day amount for the month and also setting the record for the maximum one – day rainfall on record for this location since the establishment of the station. Table 1 below shows classification of rainfall by administrative regions across Guyana.

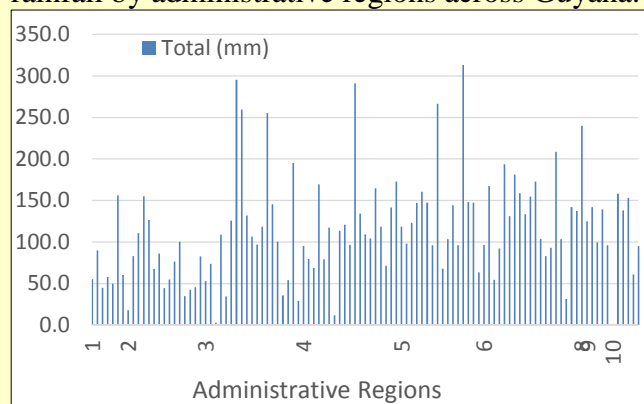


Figure 16 (a)Map and (b) Graph showing Spatial Interpolation (IDW) and distribution of rainfall amounts across Guyana.

Only Region 8 classified as *Wet*, all other region was classified as *Dry* or *Moderately Dry*

Table 1 Classification of Regional rainfall throughout Guyana for April 2017.

| <i>Region</i> | <b>Average Rainfall (mm)</b> | <b>Average Rain days</b> | <b>Classification</b> | <b>Station with the highest total</b>  |
|---------------|------------------------------|--------------------------|-----------------------|--|
| 1             | 73.5                         | 6                        | Dry (D)               | Arakaka recorded 156.1 mm of rainfall with 9 rain days.                      |
| 2             | 73.9                         | 7                        | Dry (D)               | Kabakaburi recorded 154.9 mm of rainfall with 6 rain days.                   |
| 3             | 120.6                        | 8                        | Moderately Dry (MD)   | Fort Island Essequibo River recorded 295.4 mm of rainfall with 14 rain days. |
| 4             | 121.6                        | 7                        | Moderately Dry (MD)   | Enterprise E.C.D recorded 291.0 mm of rainfall with 10 rain days.            |
| 5             | 142.7                        | 6                        | Moderately Dry (MD)   | Bush Lot recorded 313.2 mm of rainfall with 4 rain days.                     |
| 6             | 137.8                        | 8                        | Moderately Dry (MD)   | Springland Forestry recorded 208.5 mm of rainfall with 12 rain days.         |
| 7             | 103.5                        | 7                        | Dry (D)               | Kamarang recorded 141.9 mm of rainfall with 10 rain days.                    |
| 8             | 239.7                        | 19                       | Wet (W)               | Kaieteur recorded 239.7 mm rainfall with 19 rain days.                       |
| 9             | 127.9                        | 9                        | Moderately Dry (MD)   | Awarewaunau Rupununi recorded 213.7 mm rainfall with 15 rain days.           |
| 10            | 121.9                        | 10                       | Moderately Dry (MD)   | Wismar 158.1 recorded mm of rainfall with 11 rain days.                      |

## Climatological Summary for April 2017

Table 2 Summary of Observed data and Historical averages for Synoptic stations across Guyan during April 2017

| <b>STATION</b>     | <b>RAINFALL (mm)</b> |                          | <b>MAX. TEMP (°C)</b> |                          | <b>MIN. TEMP (°C)</b> |                          | <b>SUNSHINE HOURS</b> |                          |
|--------------------|----------------------|--------------------------|-----------------------|--------------------------|-----------------------|--------------------------|-----------------------|--------------------------|
|                    | <b>TOTAL</b>         | <b>LONG TERM AVERAGE</b> | <b>MEAN</b>           | <b>LONG TERM AVERAGE</b> | <b>MEAN</b>           | <b>LONG TERM AVERAGE</b> | <b>MEAN</b>           | <b>LONG TERM AVERAGE</b> |
| <i>MABARUMA</i>    | 56.9                 | 144.9                    | 31.7                  | *                        | 22.6                  | *                        | *                     | *                        |
| <i>GEORGETOWN</i>  | 96.6                 | 153.4                    | 30.6                  | 30                       | 25.4                  | 24.4                     | 8.2                   | 6.7                      |
| <i>TIMEHRI</i>     | 172.8                | 188.9                    | 32.5                  | 31.3                     | 21.4                  | 22.3                     | 7.5                   | *                        |
| <i>OGLE</i>        | 86.6                 | 134.2                    | 30.5                  | *                        | 25.1                  | *                        | 8.1                   | *                        |
| <i>N/AMSTERDAM</i> | 96.4                 | 159.7                    | 31.5                  | 31.1                     | 24.6                  | 23.6                     | 6.8                   | 6.2                      |
| <i>KAIETEUR</i>    | 241.7                | *                        | 29.3                  | *                        | 21.4                  | *                        | 6.3                   | *                        |
| <i>LETHEM</i>      | 144                  | 89                       | 33.1                  | 33.1                     | 23.3                  | 24.3                     | 7.0                   | 5.7                      |
| <i>KAMARANG</i>    | 141.9                | 138.4                    | 30.4                  | *                        | 20.3                  | *                        | 6.8                   | *                        |

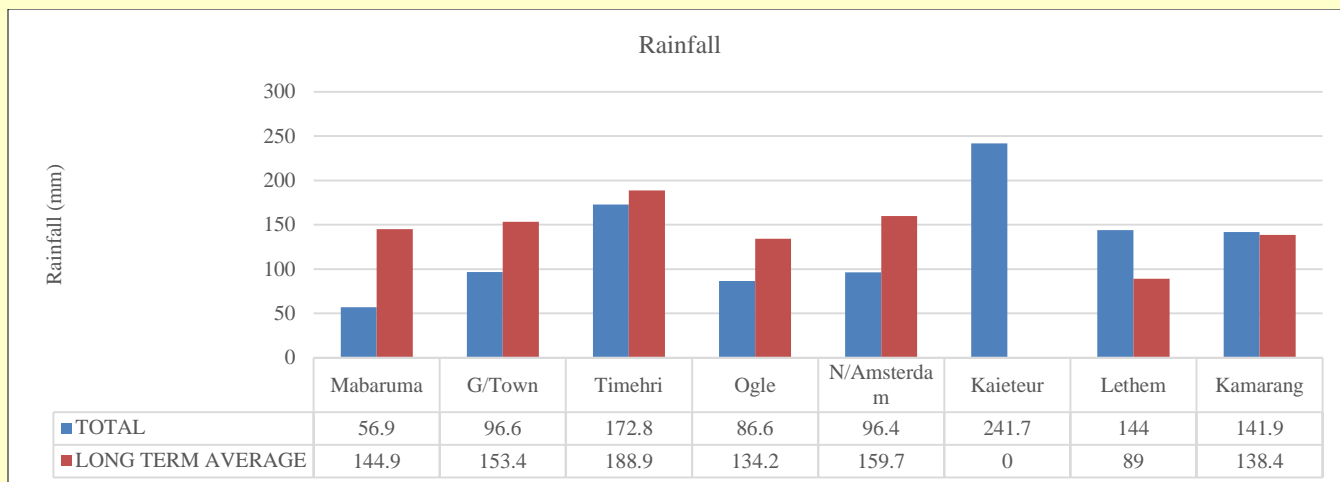


Figure 17 Comparison of April 2017 observed rainfall with its historical average for Synoptic Weather Stations across Guyana.

Figure 17 shows a comparison of April 2017 actual accumulated rainfall with the historical average for the Synoptic weather stations across Guyana. As already pointed out above, most stations across Coastal Guyana recorded rainfall amounts significantly below their long-term averages. On

the other hand a few stations throughout inland and interior locations recorded above their long-term averages, however, it is worthwhile to mention that Region 8 was the only region classified as Wet, notwithstanding, Region 9 at Lethem exceeded its historical average by more than half..

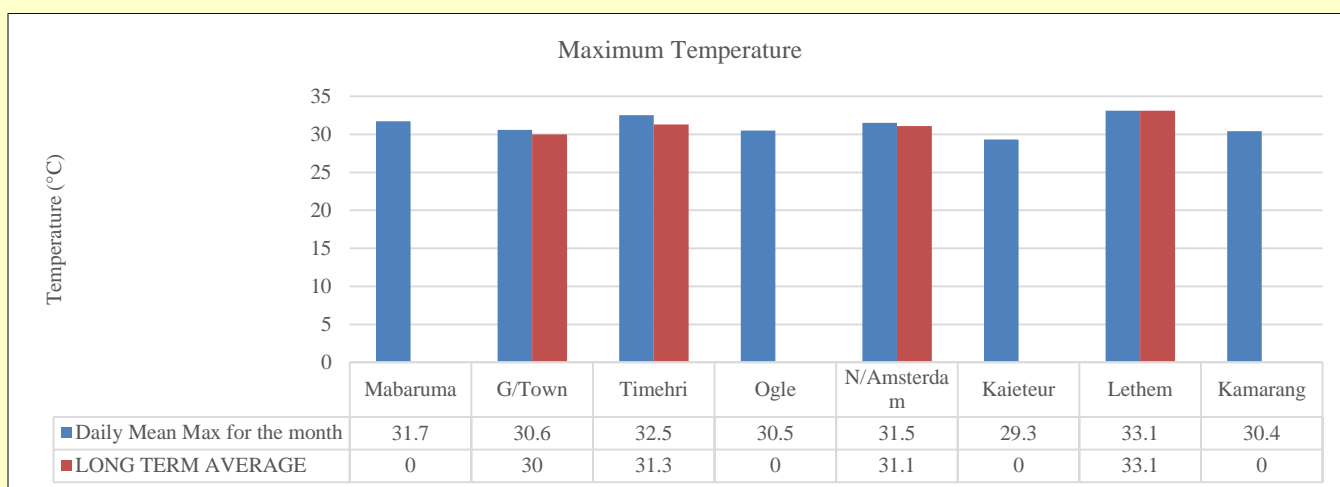


Figure 18 Comparison of April 2017 actual mean monthly Maximum Temperature with mean monthly historical average for April for Synoptic Weather Stations across Guyana

For April 2017 all Synoptic stations recorded maximum and minimum temperatures with only a slight variation from their long-term averages. According to the data available, most stations, with the exception of Lethem recorded Maximum temperatures slightly above their long-term average, however, for minimum temperature, few station recorded below *normal* while others

recorded above. For April 2017, the highest mean maximum temperature of 33.1 °C was recorded in Region 9 at Lethem. In addition, the highest Max Temperature of 34.8°C was recorded on April 26, and 28 also at this location. Region 7 at Kamarang recorded the lowest mean Minimum temperature of 20.3°C while also recording the lowest daily minimum temperature of 18.2°C on April 10.

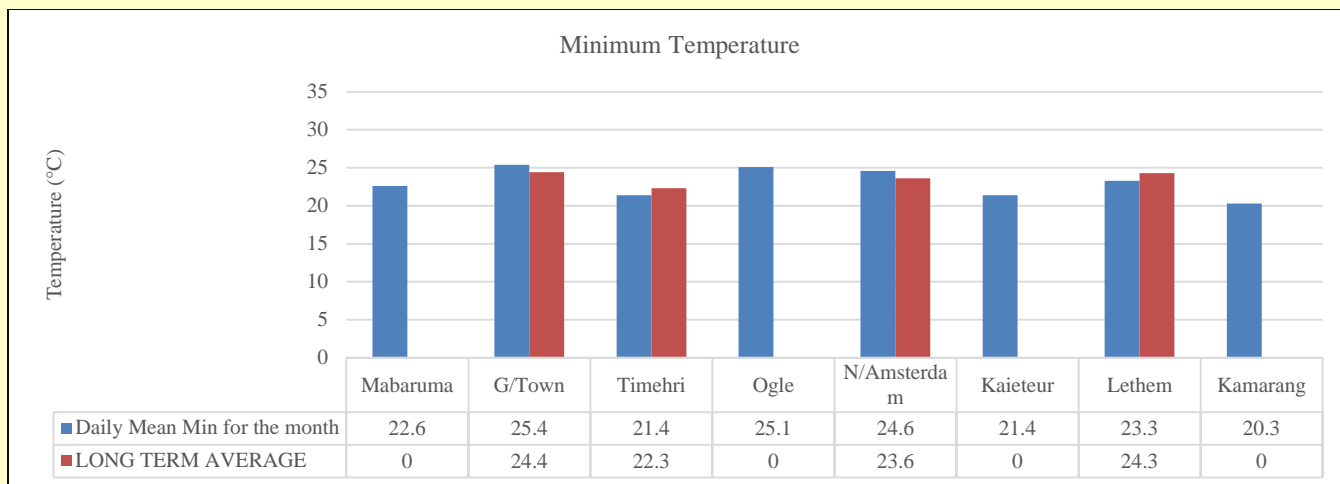


Figure 19 Comparison of April 2017 actual mean monthly Minimum Temperature with mean monthly historical average for April for Synoptic Weather Stations across Guyana

According to the data available within the Hydromet Service records, all stations recorded Bright Sunshine Hours in excess of their historical averages. This observation is consistent with the observation made for rainfall amounts recorded throughout Guyana, since most stations recorded below normal rainfall – this inverse relationship between Sunshine Hours and rainfall needs no additional explanation. The highest daily mean

sunshine hours of 8.2 hours/day was recorded in Region 4 at Georgetown, additionally, the highest one – day total of 11.3 hours was recorded at Ogle on April 23. Region 8 at Kaieteur recorded the lowest mean Bright Sunshine Hours for April 2017 at 6.2 hours/day, however, this is not surprising once again since Region 8 was the only region across the Country which was classified as Wet for April 2017.

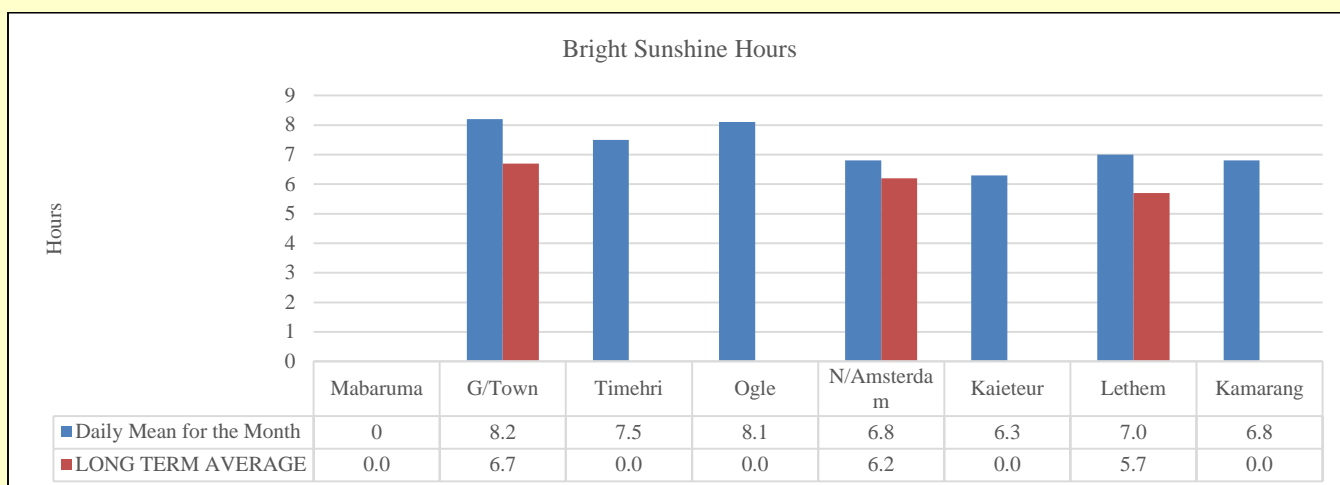


Figure 20 Comparison of April 2017 actual daily mean Bright Sunshine Hours with historical average for April for Synoptic Weather Stations across Guyana

## Global Analysis

The combined global average temperature over the land and ocean surfaces for April 2017 was 0.90°C (1.62°F) above the 20th century average of 13.7°C (56.7°F)—the second highest April temperature since global records began in 1880, trailing 2016 by 0.17°C (0.31°F) and ahead of 2010 by 0.07°C (0.13°F) – see Figure 21 (b) below April 2017 also marks the 388th consecutive month that the

globally-averaged temperature across the world's land and ocean surfaces was nominally above the 20th century average.

April 2017 tied with March 2015, August 2016, and January 2017 as the 12th highest monthly global land and ocean temperature departure from average on record (1,648 monthly records).

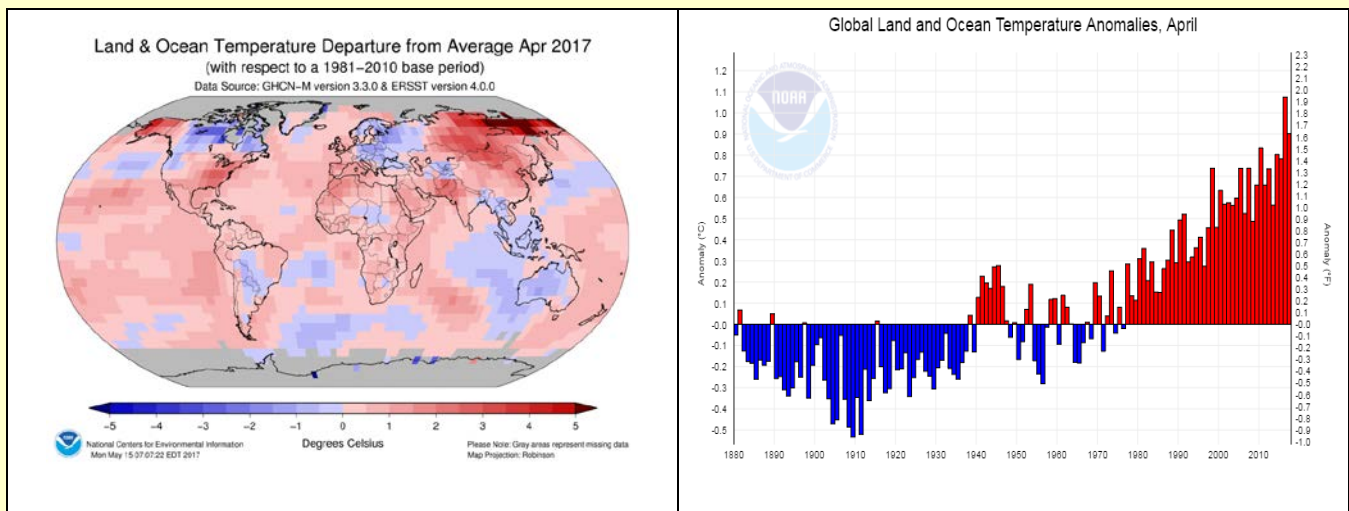


Figure 21(a) Global departure of April 2017 Land and Ocean Temperatures from the Historical averages taken for period 1981 - 2010. Compliments of NOAA<sup>1</sup>. (b) Global Land and Ocean Temperature Anomalies for the month of April from 1880 to 2017<sup>2</sup>

Warmer-than-average temperatures during the month were observed across much of the world's land surfaces. The average global temperatures across land surfaces was 1.37°C (2.47°F) above the 20th century average of 8.1°C (46.5°F)—tying with April 2000 and April 2010 as the fourth highest April temperature in the 138-year record, behind April 2016 (1.87°C / 3.37°F), April 2007 (1.52°C / 2.74°F), and April 2012 (1.50°C / 2.70°F). Additionally, much of the world's oceans also had warmer- to much-warmer-than-average

conditions during April 2017, with several locations across the Pacific, Indian and Atlantic Oceans experiencing record warm temperatures. Record cold April temperatures was not reported for any ocean areas. Overall, the global sea surface temperature for April 2017 was 0.73°C (1.31°F) above the 20th century average of 16.0°C (60.9°F) and the second highest April temperature since records began in 1880. This value is 0.05°C (0.09°F) less than the record year set in 2016, but 0.07°C (0.13°F) higher than 2015.

<sup>1</sup> <http://www.ncdc.noaa.gov/sotc/service/global/map-blended-mntp/201704.gif>

<sup>2</sup> [http://www.ncdc.noaa.gov/cag/time-series/global/globe/land\\_ocean/1/12/1880-2017](http://www.ncdc.noaa.gov/cag/time-series/global/globe/land_ocean/1/12/1880-2017)



## Climatological Outlook for the next few Weeks

### CariCOF Precipitation and Temperature Outlook for May to July 2017

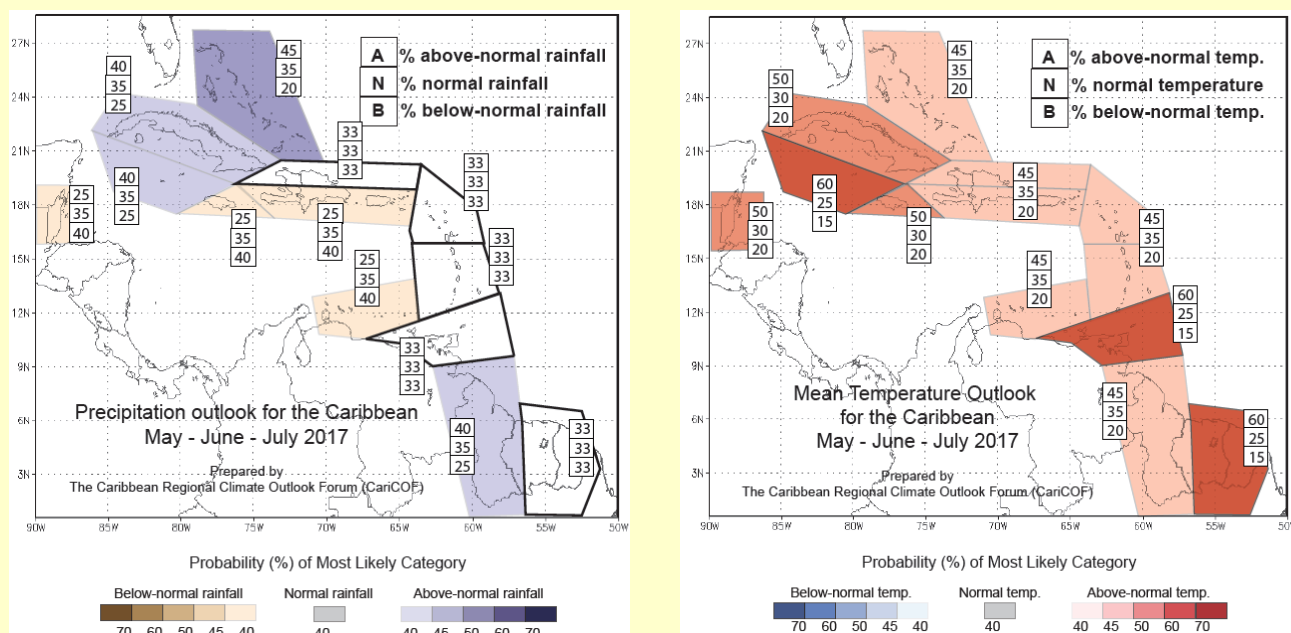


Figure 22 CariCOF (a) Precipitation and (b) Temperature outlook for the Caribbean for the period valid May - July, 2017 showing 75% confidence for *Above Normal to Normal* rainfall and 80% confidence for *Above Normal to Normal* Temperature for Guyana

From the Outlook provided by CariCOF for the period May to July 2017 in Figure 22(a) above, Expect wetter to pretty much like usual for this period with a confidence of 75%. The chance for extremely wet weather conditions are low, notwithstanding this is the Primary wet season, as a result, chances of extreme wet are still a bit higher

than usual. Additionally, according to the Temperature Outlook in Figure 22(b) above, warmer than to pretty much like usual can be expected for this period with a confidence level of 80 %. There is a reasonable chance of extreme warm conditions, however, since this will be the wet season, extreme temperatures will not be a concern.

### CariCOF Wet Days and Wet Spells Outlook for May to July 2017.

Table 3 Climatological Normals and Forecasted Number of *Wet Days* and various categories of *Wet Spells* for selected locations across Guyana for the period May to July, 2017

| May to July 2017       | No. of wet days |          | No. of 7-day wet spells (20% wettest) |          | No. of 7-day very wet spells (10% wettest) |          | No. of 3-day extremely wet spells (1% wettest) |          |
|------------------------|-----------------|----------|---------------------------------------|----------|--|----------|--|----------|
|                        | Climatology     | Forecast | Climatology                           | Forecast | Climatology                                | Forecast | Climatology                                    | Forecast |
| Guyana_73              | 30-42           | 30-44    | 3.9-6.9                               | 3.8-7.2  | 1.7-3.4                                    | 1.3-4.4  | 0-1  | 0-1.7    |
| Guyana (Albion)        | 44-57           | 45-61    | 3.9-7.2                               | 3.4-7.6  | 2.1-3.9                                    | 1.7-4.4  | 0-1  | 0-1.8    |
| Guyana (Blairmont)     | 50-67           | 49-67    | 3.4-7.3                               | 4-8.3    | 1.3-4.7                                    | 1.7-5    | 0-2  | 0-2.1    |
| Guyana (Charity)       | 40-64           | 36-71    | 3.9-6.8                               | 2.6-8.9  | 1.3-4                                      | 1.3-4.1  | 0-1  | 0-0.2    |
| Guyana (Enmore)        | 48-63           | 46-65    | 3.4-6.9                               | 2.9-8    | 0.9-4.3                                    | 1-4.5    | 0-1.1  | 0-1.5    |
| Guyana (Georgetown)    | 55-68           | 52-69    | 3.4-7.3                               | 4-8.3    | 1.3-3.9                                    | 1.5-4.7  | 0-1  | 0-1.3    |
| Guyana (New Amsterdam) | 50-65           | 48-65    | 3.9-7.3                               | 4-8.3    | 1.7-4.7                                    | 1.8-4.5  | 0-1.5  | 0-1.6    |
| Guyana (Skeldon)       | 49-62           | 47-64    | 3.9-7.3                               | 3.6-7.2  | 1.7-4.3                                    | 1.5-4.6  | 0-2  | 0-1.5    |
| Guyana (Timehri)       | 56-71           | 55-73    | 3.9-7.3                               | 3.9-7.6  | 1.7-4.3                                    | 1.5-4.6  | 0-2  | 0-2.2    |
| Guyana (Wales)         | 56-68           | 54-70    | 3.9-7.3                               | 4-9.1    | 0.9-4.3                                    | 1.3-5.2  | 0-2.1  | 0-2.3    |

**Wet Days:** Usually, during May-June-July, 45 to 70 of the 92 days are Wet Days along Coastal Guyana as shown in Table 3 above. For May – July 2017, rainfall is likely to be above to normal for Guyana, as a result, slightly less or the usual amount of Wet Days is expected across the Country

**7 – Days Wet Spells:** Usually, Coastal Guyana experiences 4 to 7 *Seven – Days Wet Spell*, with 1 to 5 of them being Very Wet for the period May – July. For May – July 2017, according to the aforementioned rainfall forecast, either the usual or slightly more Wet and Very Wet spells are expected.

## IRI-ENSO Forecast

**Synopsis:** ENSO-neutral and El Niño are nearly equally favored during the Northern Hemisphere summer and fall 2017.

ENSO-neutral persisted during April, with near-average sea surface temperatures (SSTs) observed across the central equatorial Pacific and above-average SSTs in the eastern Pacific. The latest weekly Niño index values were +0.5°C in the Niño-3 and Niño-3.4 regions, and +0.3 and +0.8°C in the Niño-4 and Niño-1+2 regions, respectively. The upper-ocean heat content anomaly was slightly positive during April, reflecting the strengthening

of above-average temperatures at depth around the Date Line. Atmospheric convection anomalies were weak over the central tropical Pacific and Maritime Continent, while the lower-level and upper-level winds were near average over most of the tropical Pacific. Overall, the ocean and atmosphere system remains consistent with ENSO-neutral.

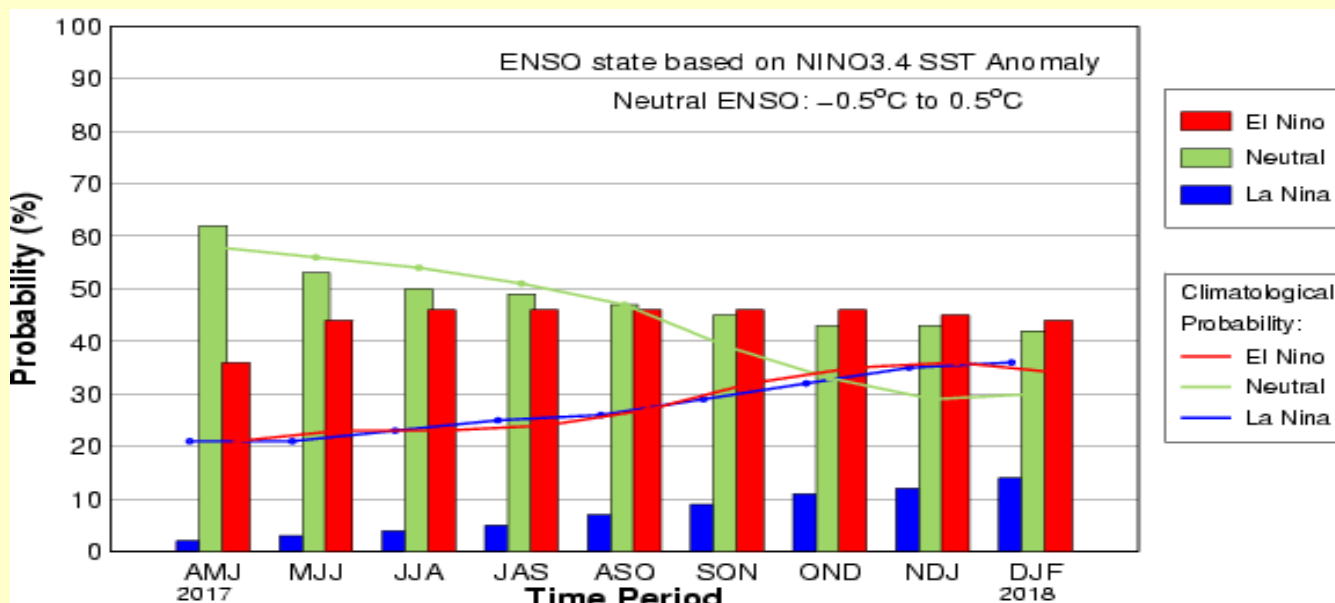


Figure 23 May 2017 CPC/IRI Official Probabilistic ENSO Forecast

## Recent and Current Conditions

In mid-May 2017, the NINO3.4 SST anomaly hovered near the borderline of a weak El Niño level. For April the SST anomaly was 0.32 C, and for Feb-Apr it was 0.20 C, both in the ENSO-neutral range. The IRI's definition of El Niño, like

NOAA/Climate Prediction Center requires that the SST anomaly in the Nino3.4 region (5S-5N; 170W-120W) exceed 0.5 C. Similarly, for La Niña, the anomaly must be -0.5 C or less. As of mid-April, 32% of the dynamical or statistical models

predicts neutral ENSO conditions for the initial May-Jul 2017 season, while 68% predicts El Niño conditions and 0% predicts La Niña conditions. The climatological probabilities for La Niña, neutral, and El Niño conditions vary seasonally, and are shown in Table 4 below for each 3-month season. The most recent weekly anomaly in the Nino3.4 region was 0.5, around the borderline of weak El Niño. The SST further east has been at above-average levels for several months, and far above average during February and March. Most

of the pertinent atmospheric variables, including the upper and lower level zonal wind anomalies, have been showing mainly neutral patterns. However, the Southern Oscillation Index (SOI) has recently been somewhat below average, indicating an El Niño tendency. Subsurface temperature anomalies across the eastern equatorial Pacific have become just slightly above average. Overall, given the SST and the atmospheric conditions, an ENSO-neutral diagnosis remains appropriate, with a tilt toward warm conditions.

### Expected Conditions

The most recent official diagnosis and outlook from the NOAA/Climate Prediction Center ENSO Diagnostic Discussion, produced jointly by CPC and IRI suggests that ENSO-neutral and El Niño have approximately equal chances during northern summer and fall, with just slightly higher chances for ENSO-neutral. The latest set of model ENSO

predictions, from mid-May, now available in the IRI/CPC ENSO prediction plume is shown in Figure 24 below. Those predictions suggest that the SST has equal chances of being in the ENSO-neutral or the weak El Niño range for May-Jul but show a slightly increased likelihood for El Niño development from summer onward.

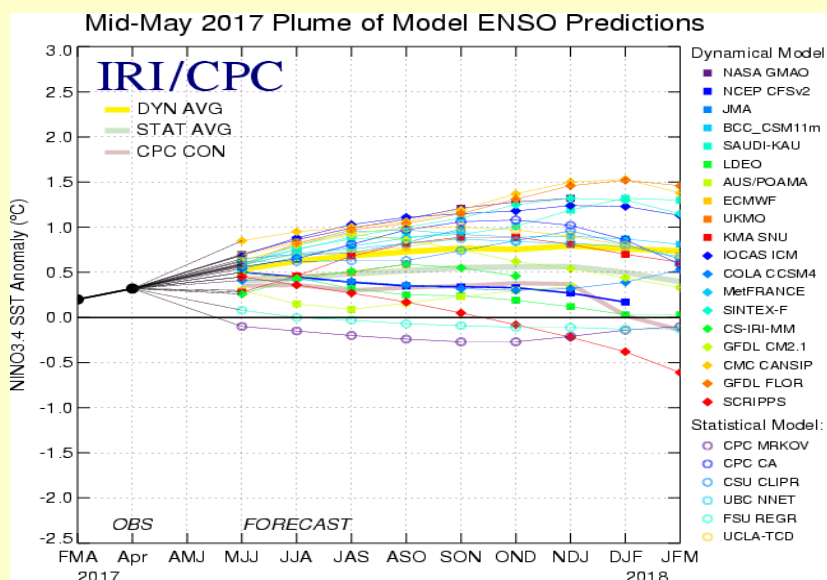


Figure 24 May 2017 Plume of Model ENSO Predictions

In summary, the probabilities derived from the models on the IRI/CPC plume describe, on average, an even chance for ENSO neutral or minimal El Niño for May-Jul, followed by chances for El Niño rising to near 60% during late summer

and fall. While chances for ENSO-neutral are not small for any of the seasons throughout the forecast period, chances for La Niña are very low throughout.

Table 4 Showing variation in seasonal climatological probabilities for La Niña, neutral, and El Niño conditions for each 3-month season.

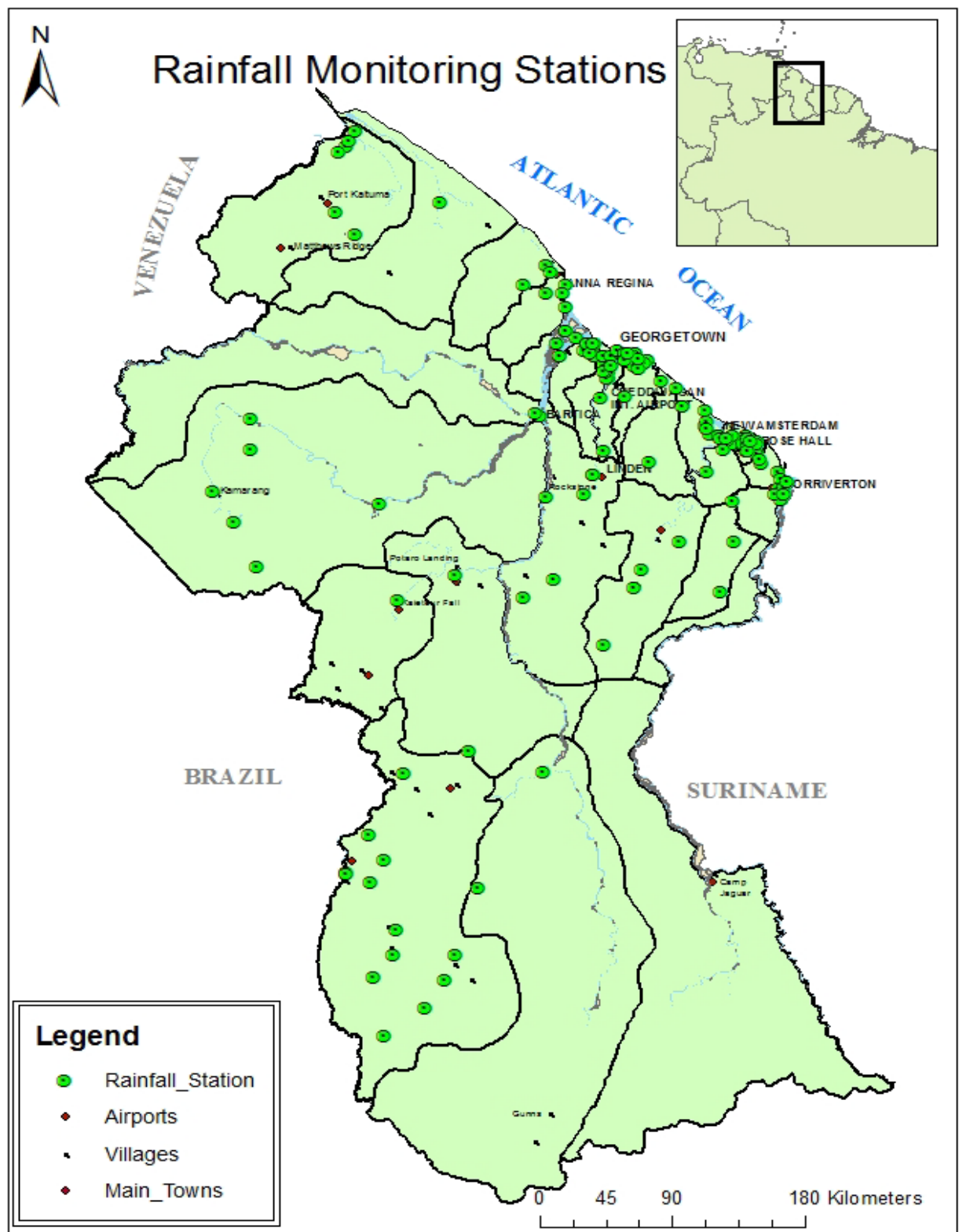
| Season | La Niña | Neutral | El Niño |
|--------|---------|---------|---------|
| DJF    | 36%     | 30%     | 34%     |
| JFM    | 34%     | 38%     | 28%     |
| FMA    | 28%     | 49%     | 23%     |
| MAM    | 23%     | 56%     | 21%     |
| AMJ    | 21%     | 58%     | 21%     |
| MJJ    | 21%     | 56%     | 23%     |
| JJA    | 23%     | 54%     | 23%     |
| JAS    | 25%     | 51%     | 24%     |
| ASO    | 26%     | 47%     | 27%     |
| SON    | 29%     | 39%     | 32%     |
| OND    | 32%     | 33%     | 35%     |
| NDJ    | 35%     | 29%     | 36%     |

## Annex I

### Glossary of Terms

- **CariCOF** - Caribbean Climate Outlook Forum
- **CPC** – Climate Prediction Center
- **ENSO** - *El Niño–Southern Oscillation* is an irregularly periodical variation in winds and sea surface temperatures over the tropical eastern Pacific Ocean, affecting much of the tropics and subtropics.
- **Historical Mean** - Arithmetical mean computed using all the available Historical data from time of commencement of data collection.
- **IRI** – International Research Institute
- **ITCZ** - *The Inter Tropical Convergence Zone* is a belt of low pressure which circles the Earth generally near the equator where the trade winds of the Northern and Southern Hemispheres come together.
- **Long Term Average** - Same as Historical Mean
- **NOAA** - National Oceanic and Atmospheric Administration
- **Normal** - An Arithmetical mean taken over a Thirty (30) years period defined by WMO - currently 1981-2010.
- **Primary Dry Season** - The Major Dry Season in Guyana Occurring during the period August to mid-November
- **Primary Wet Season** - A period of heavy rainfall in Guyana occurring during the period Mid-April to Mid-July as a result of the northward movement of the ITCZ
- **Secondary Dry Season**
- **Secondary Wet Season** - A rainfall season in Guyana occurring during the period mid-November to January as a result of the Southward movement of the ITCZ
- **SST** - Sea Surface Temperature
- **WMO** - World Meteorological Organization

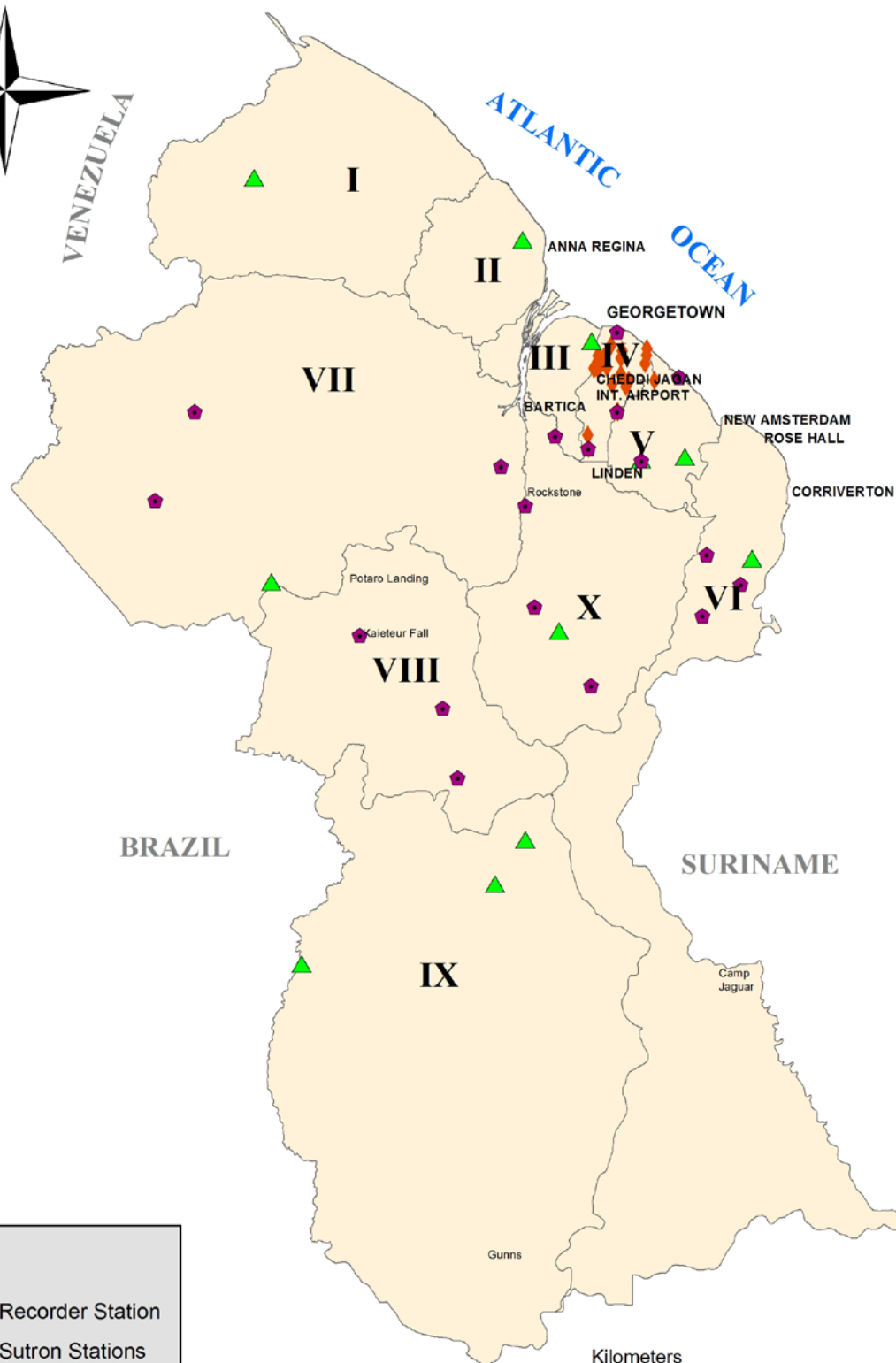
## Annex II







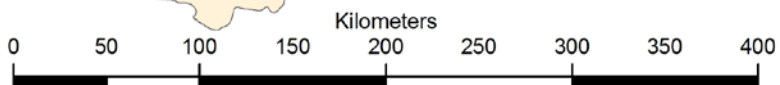


## *Administrative Distribution of Hydrological Stations*



### KEY

-  Recorder Station
-  Sutron Stations
-  EDWC Stations



**Annex III****Classification of Precipitation Values**

| DESCRIPTION     | ABBREVIATION | RAINDAYS               | RAINFALL (mm)                       |
|-----------------|--------------|------------------------|-------------------------------------|
| Very Dry        | VD           | 0-10<br>11-20          | 0-59.9<br>11-29.9                   |
| Dry             | D            | 1-10<br>11-20<br>21-31 | 60-119.9<br>30-89.9<br>21-59.9      |
| Moderately Dry  | MD           | 1-10<br>11-20<br>21-31 | 120-179.9<br>90-149.9<br>60-119.9   |
| Moderately Wet  | MW           | 1-10<br>11-20<br>21-31 | 180-239.9<br>150-209.9<br>120-179.9 |
| Wet             | W            | 1-10<br>11-20<br>21-31 | 240-329.9<br>210-269.9<br>180-239.9 |
| Very Wet        | VW           | 1-10<br>11-20<br>21-31 | 330-449.9<br>270-389.9<br>240-329.9 |
| Exceedingly Wet | EeW          | 1-10<br>11-20<br>21-31 | 450-569.9<br>390-509.9<br>330-449.9 |
| Excessively Wet | EsW          | 1-10<br>11-20<br>21-31 | >570<br>510-629.9<br>450-569.9      |
| Extremely Wet   | EtW          | 11-20<br>21-31         | >630<br>>570                        |

## Sources

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