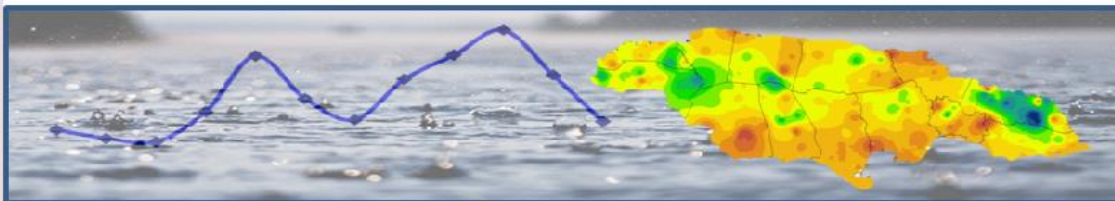




# Monthly Rainfall Summary



November 2017

## Introduction

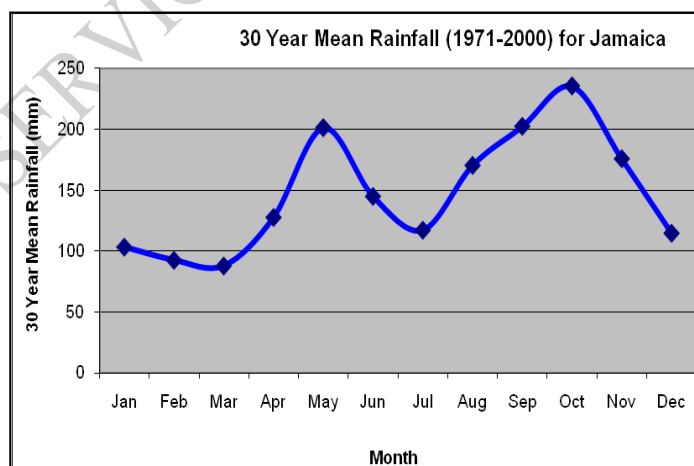
This rainfall summary is prepared by the Climate Branch of the Meteorological Service, Jamaica. The Meteorological Service maintains a network of approximately one hundred and seventy (170) rainfall stations located across the island. Rainfall is usually read at 7:00 a.m. and reported for the previous 24 hours. These readings are done by a cadre of paid but mainly voluntary dedicated observers.

## General

Jamaica's bimodal rainfall pattern consists of two peak periods with higher values of rainfall and corresponding periods of lower rainfall. The primary peak occurs in October and the secondary in May. The lowest amounts are at a minimum during the period February to March and the month of July. This is based on long-term reports but deviations from this pattern do occur year to year.

A comparison of the old 30-year mean (1951-1980) with the 1971-2000 mean by the Meteorological Service has shown that the island's rainfall patterns and values have not changed significantly for the current thirty-year (1971-2000) period. The main

changes noted are that of wetter dry periods and drier wet periods. This has however not affected the overall rainfall pattern for the island as seen in Figure 1 below.



**Figure 1: Precipitation Pattern from 1971-2000 for Jamaica.**

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### HIGHLIGHTS FOR NOVEMBER

- Eleven of thirteen parishes received above-normal rainfall.
- Some areas still experiencing dry conditions.
- Near-normal to above-normal rainfall is forecast for December to February.

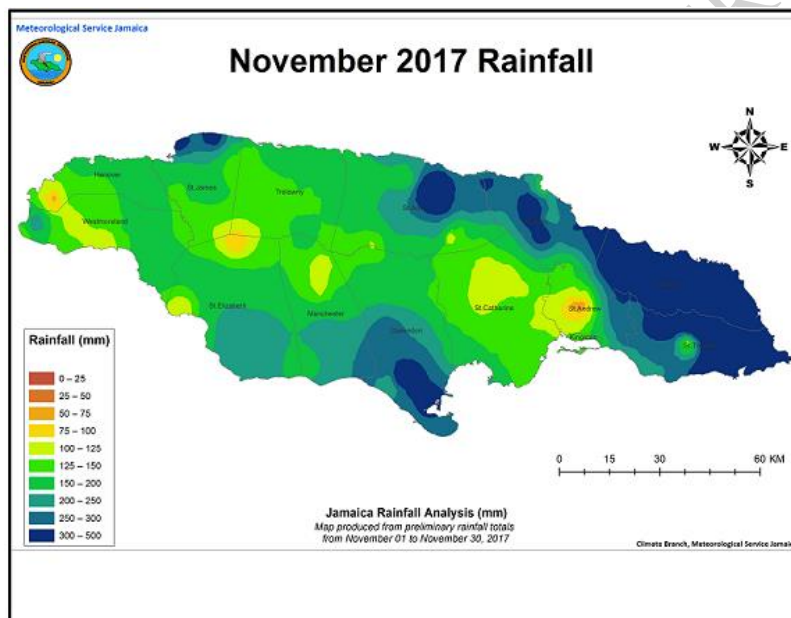
Parish Mean Rainfall and Comparison with 30-YR Averages							
Parishes	KEY	NOV	NOV	NOV	% OF 30 YR NORMAL		
		2017	2016	30 YR NORMAL (1971-2000)	2017	2017	2017
					SEP	OCT	NOV
Hanover	HAN	151	28	141	73	71	107
Westmoreland	WES	145	20	136	62	88	106
Manchester	MAN	137	63	141	149	73	97
St. Elizabeth	STE	174	77	124	90	92	140
Clarendon	CLA	249	71	111	137	136	224
St. Catherine	STC	133	127	115	147	155	115
Trelawny	TRE	137	77	121	153	69	113
St. James	STJ	211	79	114	97	93	185
St. Ann	STA	230	231	168	130	91	137
St. Mary	STM	296	302	260	83	71	114
Portland	POR	685	808	475	122	112	144
St. Thomas	STT	357	207	217	133	129	164
Kgn. & St. And.	KSA	136	222	160	127	75	85
Jamaica	JAM	234	178	176	112	97	133

Table 1: Parish Mean Rainfall and Comparison with 30-YR Averages



### Rainfall Assessment

For November 2017, eleven (11) of thirteen (13) parishes<sup>1</sup> recorded above-normal rainfall, one (1) parish recorded near-normal rainfall and the other parish recorded below-normal rainfall. Overall, the island's average rainfall for November was 234 mm which is 56 mm more than that received a year ago, and which corresponds to 133% of the 30-year (1971-2000) monthly mean value. Accumulated rainfall for Jamaica up to November 2017 was 1999 mm. This amount represents 121% of the 30-year (1971-2000) accumulated mean for the period. On the parish level Westmoreland and St. Elizabeth recorded higher consecutive percentages of monthly rainfall in the last 3-months. The parishes of Manchester and Kingston & St. Andrew recorded below-normal rainfall in October and November. St. Ann, St. Mary, Portland and Kingston & St. Andrew recorded less rainfall for November 2017 when compared to November 2016.



**Fig.2. Distribution of Jamaica's Rainfall for November 2017**

<sup>1</sup> Note that Kingston and St. Andrew (KSA) are combined and reported as one parish.

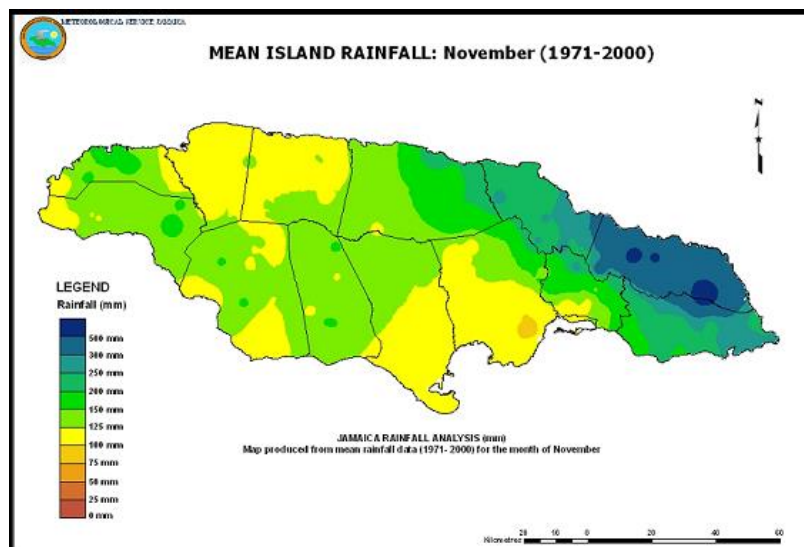


Fig.3. Thirty-year (1971-2000) Mean Island Rainfall for November

## Drought Conditions

### Meteorological Drought Methodology and Index

The Standardized Precipitation Index (SPI), developed by T.B. McKee, N.J. Doesken, and J. Kleist in 1993, is a tool used to monitor drought conditions based on precipitation. The SPI can be used to monitor conditions on a variety of time scales ranging from a 1-month to 12-months. This temporal flexibility allows the SPI to be useful in both short-term meteorological, agricultural and long-term hydrological applications by providing early warning of drought and for making assessments on the severity of a drought. The Meteorological Service, Jamaica (MSJ) calculates an observed SPI Drought Index (see Table 1) using a 2-month time interval.

Drought is defined as a long period of weather without rain (Heinemann English Dictionary). The more precise definitions for specific areas of concern that are most commonly used are:

- Agricultural drought* – a period when soil moisture is inadequate to meet the demands for crops to initiate and sustain plant growth.
- Hydrological drought* – period of below average or normal stream-flow and/or depleted reservoir storage.
- Meteorological drought* – a period of well-below average or normal precipitation (rainfall) that spans from a few months to a few years.



### Parish Drought Assessment

<b>Observed SPI for August to November 2017</b>			
<b>Parishes</b>	<b>Aug/Sep</b>	<b>Sep/Oct</b>	<b>Oct/Nov</b>
Hanover	-1.17	-1.00	-0.03
Westmoreland	-1.17	-0.73	0.45
Manchester	0.00	0.00	-0.57
St. Elizabeth	-0.44	-0.06	0.29
Clarendon	0.24	0.90	1.28
St. Catherine	0.07	0.77	0.77
Trelawny	0.39	-0.05	-0.39
St. James	-0.44	-0.33	0.65
St. Ann	0.27	-0.47	-0.37
St. Mary	0.10	-0.22	0.34
Portland	-0.08	0.44	0.91
St. Thomas	0.42	1.15	1.33
Kingston & St. Andrew	-0.34	-0.24	-0.44

Table 2: Parish SPI for August to November 2017

<b>SPI Value</b>	<b>Category</b>	<b>SPI Value</b>	<b>Category</b>
0.00 to -0.50	Near Normal	0.00 to 0.50	Near Normal
-0.51 to -0.79	Abnormally Dry	0.51 to 0.79	Abnormally Wet
-0.80 to -1.29	Moderately Dry	0.80 to 1.29	Moderately Wet
-1.30 to -1.59	Severely Dry	1.30 to 1.59	Severely Wet
-1.60 to -1.99	Extremely Dry	1.60 to 1.99	Extremely Wet
-2.00 or less	Exceptionally Dry	2.00 or more	Exceptionally Wet

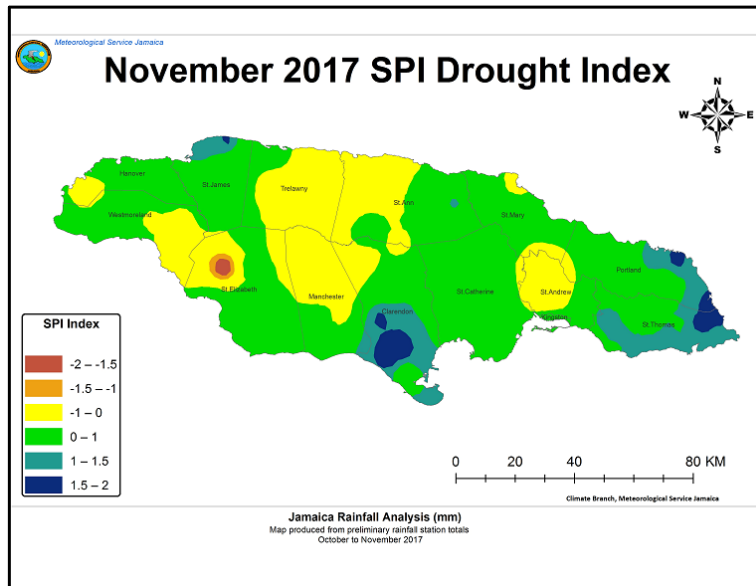
Table 3: Severity Classes of the SPI

### Drought Index Discussion

Based on the SPI figures for the October-November period, 8 of the 13 parishes showed near-normal (wet) to severely wet conditions and the remaining 5 parishes showed near-normal (dry) to moderately dry conditions. Over the last three bi-monthly periods four parishes, namely; Westmoreland, St. Elizabeth, St. James and Portland have seen improvements, moving from



drier to wetter conditions. Clarendon and St. Thomas continue to experienced wetter conditions while, Trelawny has experienced drier conditions.



**Fig.4. Drought Analysis for October/November 2017**

### **Precipitation Outlook: December 2017 to February 2018**

As we approach the next three months (December/January/February) which represents the greater part of the dry season, the forecast models are indicating that Jamaica should receive near-normal to above-normal rainfall, however, Westmoreland and St. James are expected to receive normal rainfall during the December to February period. Higher than normal temperatures are also expected across the island.



Table 4 below shows the precipitation outlook for selected stations across Jamaica as analysed by the Climate Predictability Tool. For the December 2017 to February 2018 period, eight (8) of the seventeen (17) stations are indicating higher probabilities for above-normal rainfall, another eight (8) stations for normal rainfall and one (1) station for below-normal rainfall

Stations	Parishes	Below (B) %	Normal (N) %	Above (A)%
Beckford Kraal	Clarendon	25	35	40
Mount Peto	Hanover	35	15	50
Manley Airport	Kingston	30	30	40
Langley	Kingston	33	34	33
Suttons	Manchester	30	30	40
Shirley Castle	Portland	33	34	33
Cave Valley	St. Ann	33	34	33
Tulloch Estate	St. Catherine	40	30	30
Worthy Park	St. Catherine	33	34	33
Y.S. Estate	St. Elizabeth	30	30	40
Potsdam	St. Elizabeth	30	30	40
Sangster	St. James	33	34	33
Serge Island	St. Thomas	25	35	40
Hampstead	St. Mary	33	34	33
Orange Valley	Trelawny	30	30	40
Savanna-La-Mar	Westmoreland	33	34	33
Frome	Westmoreland	33	34	33
<b>Key</b> A: Above-normal rainfall means greater than 66 percentile of the rank data N: Near-normal rainfall means between 33 and 66 percentile of the rank data B: Below-normal rainfall means below 33 percentile of the rank data				

**Table 4: Precipitation Outlook for Selected Stations for December 2017 to February 2018**



### **Forecast Verification**

For the December 2016-February 2017 period, the models performed fairly well, with accuracy in the range of 30-71 percentage points. The initial forecast indicated that rainfall was likely to be above normal for the period; however, most stations recorded near-normal rainfall amounts.

### **Summary**

Eleven of thirteen parishes recorded rainfall that were above their respective 30-year (1971-2000) monthly means, one parish recorded rainfall near its 30-year mean and the other parish recorded rainfall below its 30-year mean.

Overall, Jamaica recorded above-normal (133%) rainfall in November. On the parish level Westmoreland and St. Elizabeth recorded higher consecutive percentages of monthly rainfall in the last 3-months. Manchester and Kingston & St. Andrew have recorded below normal rainfall over the last 2-months.

During November western parishes along with St. Mary received more rainfall than expected and this should have brought some relief to those areas which were experiencing dry conditions, as well as, possible improvements in water levels in storage facilities.

Should the projections for near-normal to above-normal rainfall over the next three (3) months materialize, this could bring more relief especially to farming areas in western parishes which experienced a deficit in rainfall during the previous three (3) months. Even with this projection, water management plans as well as, cooling solutions for animals who could suffer from heat stress due to projected higher-than-normal temperatures are still being recommended, to ensure that whatever scenario unfolds during this dry season it can be properly managed.