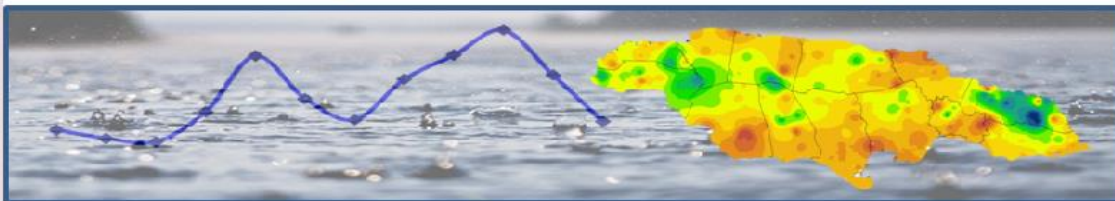




Monthly Rainfall Summary



December 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.

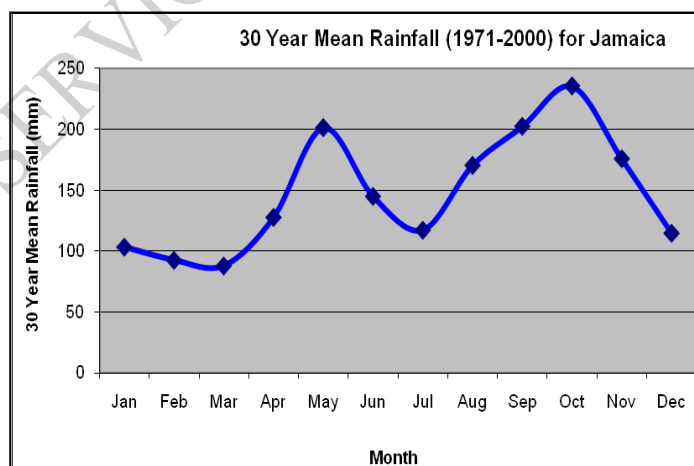


Figure 1: Precipitation Pattern from 1971-2000 for Jamaica.

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HIGHLIGHTS FOR DECEMBER

- Ten of thirteen parishes received above-normal rainfall.
- Some areas are still experiencing dry conditions.
- Below-normal to near-normal rainfall is forecast for sections of some central and eastern parishes for the dry season (January to March).

Parish Mean Rainfall and Comparison with 30-YR Averages							
Parishes	KEY	DEC	DEC	DEC	% OF 30 YR NORMAL		
		2017	2016	30 YR NORMAL (1971-2000)	2017	2017	2017
					OCT	NOV	DEC
Hanover	HAN	95	21	90	71	107	106
Westmoreland	WES	72	19	74	88	113	98
Manchester	MAN	112	22	58	67	97	191
St. Elizabeth	STE	122	43	60	92	137	205
Clarendon	CLA	47	23	49	141	224	96
St. Catherine	STC	67	49	62	155	115	109
Trelawny	TRE	176	36	116	86	133	152
St. James	STJ	122	43	96	92	182	127
St. Ann	STA	177	177	117	91	134	152
St. Mary	STM	149	181	209	71	114	71
Portland	POR	595	330	366	112	144	163
St. Thomas	STT	174	89	116	129	156	150
Kgn. & St. And.	KSA	112	79	79	75	85	143
Jamaica	JAM	156	86	115	98	132	136

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



Rainfall Assessment

For December 2017, ten (10) of thirteen (13) parishes¹ recorded above-normal rainfall, two (2) parishes recorded near-normal rainfall and the other parish recorded below-normal rainfall. Overall, the island's average rainfall for December was 156 mm which is 70 mm more than that received a year ago, and which corresponds to 136% of the 30-year (1971-2000) monthly mean value. Accumulated rainfall for Jamaica up to December 2017 was 2157 mm. This amount represents 122% of the 30-year (1971-2000) accumulated mean for the period. On the parish level Portland has recorded higher consecutive percentages of more than 100% of monthly rainfall in the last 3-months. St. Catherine and St. Thomas have also recorded more than 100% of monthly rainfall in the last 3-months, though not consecutively higher. St. Mary is the only parish to record less rainfall in December 2017 when compared to December 2016, while, St. Ann recorded the same percentage (177%) of rainfall in December 2017 as it did in December 2016.

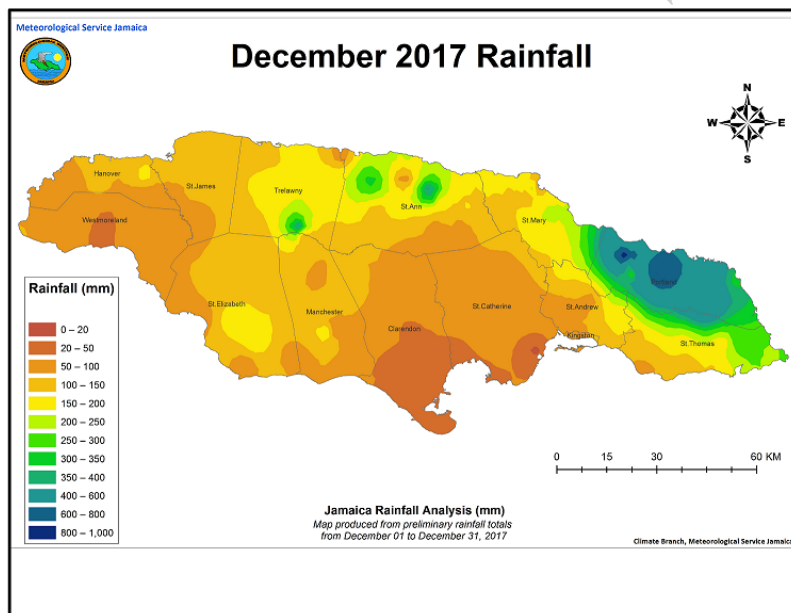


Fig.2. Distribution of Jamaica's Rainfall for December 2017

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

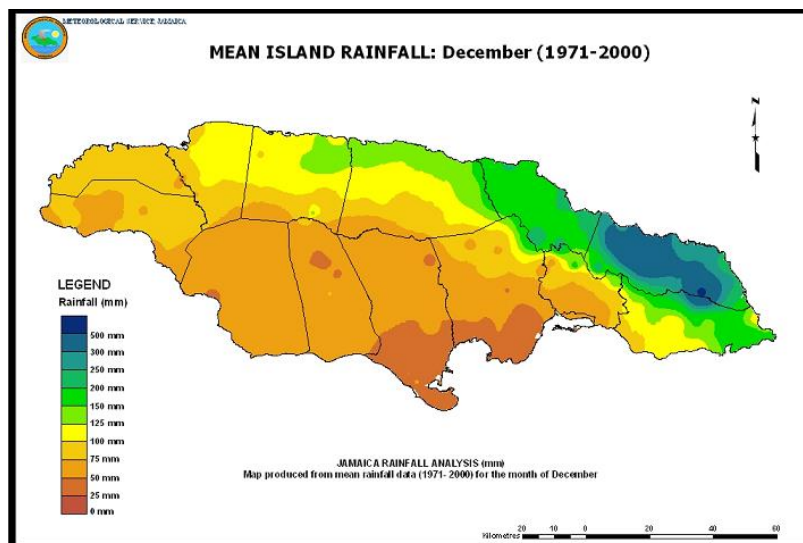


Fig.3. Thirty-year (1971-2000) Mean Island Rainfall for December

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 2) 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

Observed SPI for September to December 2017			
Parishes	Sep/Oct	Oct/Nov	Nov/Dec
Hanover	-1.00	-0.03	0.67
Westmoreland	-0.73	0.02	0.31
Manchester	0.06	-0.39	0.85
St. Elizabeth	-0.06	0.29	1.37
Clarendon	0.90	1.43	1.42
St. Catherine	0.77	0.77	0.35
Trelawny	0.22	-0.21	0.81
St. James	-0.31	0.65	1.51
St. Ann	-0.27	0.30	1.01
St. Mary	-0.22	0.34	0.21
Portland	0.28	0.81	1.29
St. Thomas	1.15	1.33	1.32
Kingston & St. Andrew	-0.24	-0.44	-0.30

Table 2: Parish SPI for September to December 2017

SPI Value	Category	SPI Value	Category
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 November-December period, 12 of the 13 parishes showed near-normal (wet) to severely wet conditions and the other parish showed near-normal (dry) conditions. Over the last three bi-monthly periods six parishes, namely; Hanover, Westmoreland, St. Elizabeth, St. James, St. Ann and Portland have seen improvements, moving from drier to wetter conditions. Clarendon and St. Thomas continue to experienced severely wet conditions while, Kingston & St. Andrew continues to have a near-normal (dry) ranking.

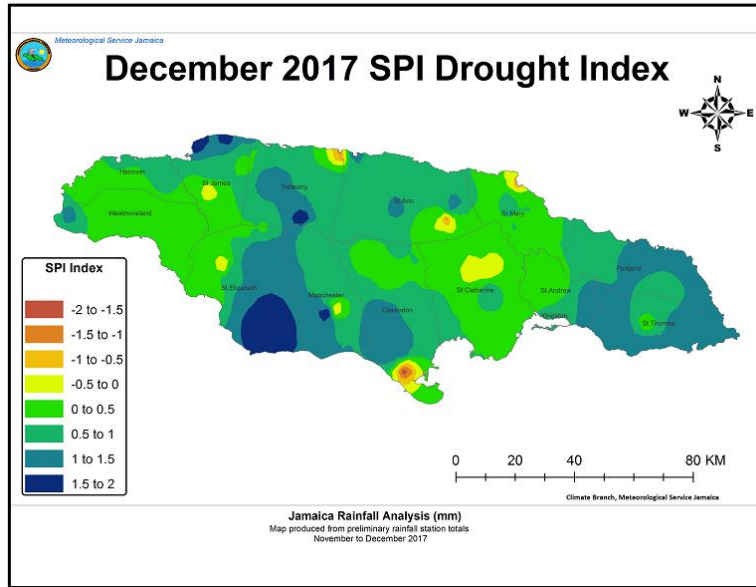


Fig.4. Drought Analysis for November/December 2017

Precipitation Outlook: January to March 2018

As we approach the next three months (January/February/March), the forecast models are indicating that Jamaica should receive above-normal rainfall, that is, a wetter-than-normal dry season; however, sections of some eastern and central parishes could receive below-normal to near-normal rainfall. 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 January to March 2018 period, nine (9) of the seventeen (17) stations are indicating higher probabilities for above-normal rainfall, five (5) stations for normal rainfall and three (3) stations for below-normal rainfall



Stations	Parishes	Below (B) %	Normal (N) %	Above (A)%
Beckford Kraal	Clarendon	30	30	40
Mount Peto	Hanover	25	30	45
Manley Airport	Kingston	25	30	45
Langley	Kingston	30	30	40
Suttons	Manchester	10	20	70
Shirley Castle	Portland	33	34	33
Cave Valley	St. Ann	33	34	33
Tulloch Estate	St. Catherine	33	34	33
Worthy Park	St. Catherine	33	34	33
Y.S. Estate	St. Elizabeth	20	10	70
Potsdam	St. Elizabeth	20	25	55
Sangster	St. James	55	25	20
Serge Island	St. Thomas	33	34	33
Hampstead	St. Mary	40	30	30
Orange Valley	Trelawny	50	30	20
Savanna-La-Mar	Westmoreland	20	30	50
Frome	Westmoreland	20	30	50

Key
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 January to March 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

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

Overall, Jamaica recorded above-normal (136%) rainfall in December. On the parish level Portland has recorded a higher consecutive percentage of more than 100% of monthly rainfall in the last 3-months. St. Catherine and St. Thomas have also recorded more than 100% of monthly rainfall in the last 3-months, though not consecutively higher.

During December most parishes received more rainfall than expected which has helped to reduce the number of areas experiencing dry conditions which is evident in the Parish SPI index table (Table 2) for Sep/Oct to Oct/Nov. It is also noted however that KSA was the only parish that is still reporting normal drought for November/December.

The projections over the next three (3) months for below-normal to near-normal rainfall in sections of some eastern and central parishes, could create problems for farming communities during this dry season. Therefore, 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.