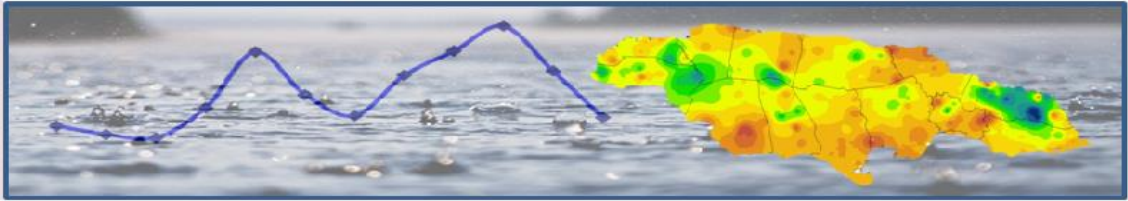




Monthly Rainfall Summary



September 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.

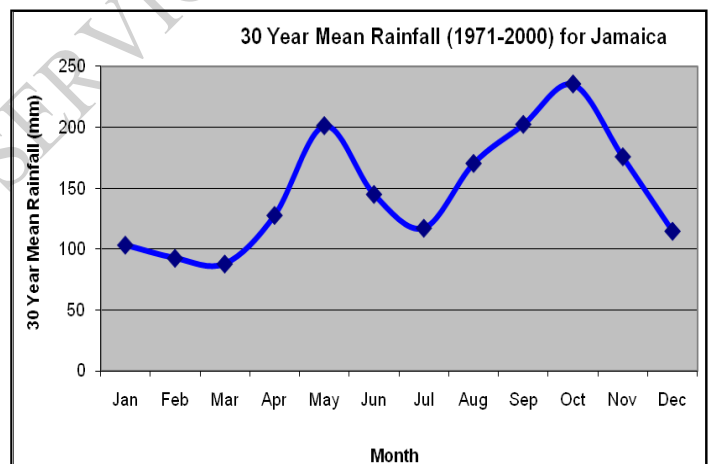


Figure 1: Precipitation Pattern from 1971-2000 for Jamaica.

Prepared by the
Climate Branch
Meteorological Service, Jamaica
65 ¾ Half Way Tree Road
Kingston 10
Telephone: 929-3700/3706
Email: datarequest@metservice.gov.jm



HIGHLIGHTS FOR SEPTEMBER

- Eight parishes received above-normal rainfall.
- No parish experienced drought conditions.
- Below-normal rainfall is forecast for southwestern parishes for October to December.

Parish Mean Rainfall and Comparison with 30-YR Averages							
Parishes	KEY	SEP	SEP	30 YR NORMAL (1971-2000)	% OF 30 YR NORMAL		
		2017	2016		2017	2017	2017
					JUL	AUG	SEP
Hanover	HAN	212	262	292	68	84	73
Westmoreland	WES	158	247	254	86	77	62
Manchester	MAN	303	120	203	43	63	149
St. Elizabeth	STE	209	150	229	67	73	91
Clarendon	CLA	229	74	171	115	62	133
St. Catherine	STC	243	113	172	107	78	141
Trelawny	TRE	210	176	137	93	102	153
St. James	STJ	192	190	222	102	91	86
St. Ann	STA	135	152	103	83	131	130
St. Mary	STM	117	115	141	29	78	83
Portland	POR	245	164	243	49	76	101
St. Thomas	STT	346	60	255	21	48	136
Kgn. & St. And.	KSA	251	94	206	117	46	122
Jamaica	JAM	219	147	202	72	76	108

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



Rainfall Assessment

For September 2017, eight (8) of thirteen (13) parishes¹ recorded above-normal rainfall with the other five (5) parishes recording below-normal rainfall. Overall, the island's average rainfall for September was 219 mm which is more than the 147 mm received a year ago, and which corresponds to 108% of the 30-year (1971-2000) monthly mean value. Accumulated rainfall for Jamaica for the first 9 months of 2017 was 1549 mm or 342 mm more than that received in the same period in 2016. The amount received this year represents 124% of the 30-year (1971-2000) accumulated mean in the 9-months period. On the parish level Westmoreland and St. James recorded lower percentages of rainfall in September than in the previous two months. Hanover, Westmoreland and St. Ann recorded less rainfall for September 2017 when compared to September 2016.

Meteorological Drought Methodology and Index

Locally, the onset and the duration of a meteorological drought is determined by comparing the average rainfall over a period of two consecutive months with the 30-year historical averages (normal) for a similar bi-monthly period for each parish and the island. The percentage value that is generated is used to quantify the thresholds of the drought index (see Table 2). This index is similar to that used by the Australian Meteorological Service, except that bi-monthly periods are used locally instead of eight consecutive weeks.

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.

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



The Drought Index is calculated as follows:

$$\text{Drought Index} = \{(\text{Month 1} + \text{Month 2}) / (\text{Normal month 1} + \text{Normal month 2})\} \times 100$$

Percentage of Normal for 2 Consecutive Months	Drought Condition or Status
20% or less	Extreme Drought
21% to 40%	Severe Drought
41% to 60%	Normal Drought
Above 60%	No Drought

Table 2: Meteorological Drought Index

Island Drought Assessment

<u>Drought Indices (%) for June to September 2017</u>			
Parishes	Jun/Jul	Jul/Aug	Aug/Sep
Hanover	63	76	78
Westmoreland	68	81	70
Manchester	160	56	111
St. Elizabeth	96	70	83
Clarendon	206	80	105
St. Catherine	176	90	114
Trelawny	111	98	131
St. James	84	96	88
St. Ann	126	111	131
St. Mary	53	59	80
Portland	96	65	88
St. Thomas	66	36	99
Kingston & St. Andrew	109	67	90
Jamaica	97	74	93

Table 3: Parish Drought Indices (%) for June to September 2017

Based on the indices, no parish experienced drought condition this bi-monthly period when compared to the previous bi-monthly period. Hanover and St. Mary were the parishes recording higher drought indices in the August/September period than in the previous 2 bi-monthly periods.

**Precipitation Outlook: October to December 2017**

As we approach the next three month (October to December) which includes the primary rainfall season for Jamaica, the forecast models are indicating above-normal rainfall across most stations, with below-normal to near-normal rainfall for stations in southwestern parishes.

Overall, the island recorded above-normal rainfall in September, however western parishes recorded below-normal rainfall for the month. This makes it consecutive months of below-normal rainfall for western parishes, which has resulted in more areas experiencing drier conditions and possible reductions in water levels in storage facilities.

METEOROLOGICAL SERVICE, JAMAICA



Table 4 below shows the precipitation outlook for selected stations across Jamaica as analysed by the Climate Predictability Tool. Twelve (12) of the seventeen (17) stations are indicating higher probabilities for above-normal rainfall for the October to December 2017 period, while three (3) stations are indicating probabilities of normal rainfall and two (2) stations the probability of below-normal rainfall.

Stations	Parishes	Below (B) %	Normal (N) %	Above (A)%
Beckford Kraal	Clarendon	30	40	30
Mount Peto	Hanover	20	30	50
Manley Airport	Kingston	25	35	40
Langley	Kingston	25	35	40
Suttons	Manchester	25	35	40
Shirley Castle	Portland	25	35	40
Cave Valley	St. Ann	30	20	50
Tulloch Estate	St. Catherine	25	35	40
Worthy Park	St. Catherine	25	35	40
Y.S. Estate	St. Elizabeth	30	40	30
Potsdam	St. Elizabeth	40	35	25
Sangster	St. James	20	35	45
Serge Island	St. Thomas	25	35	40
Hampstead	St. Mary	30	20	50
Orange Valley	Trelawny	20	35	45
Savanna-La-Mar	Westmoreland	40	35	25
Frome	Westmoreland	30	40	30
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 October to December 2017



Forecast Verification

For the October-December period last year, the model performed fairly well, with accuracy in the range of 40-65 percentage points. The initial forecast indicated that rainfall was likely to be above normal for the period; however, most stations recorded near-normal to above-normal rainfall amounts. For the June-August 2017 period, the CPT forecast was for above-normal rainfall, especially over central and eastern parishes. Rainfall data indicated that most stations received higher than normal rainfall amounts.

Summary

Eight of thirteen parishes recorded rainfall that were above their respective 30-year (1971-2000) means while, the remaining five parishes recorded rainfall of less than 100% of their 30-year means.

For the August/September bi-monthly period, no parish recorded drought condition. The above-normal rainfall received over eastern and central parishes has resulted in the parishes which experienced drought in July/August being above drought conditions for this period. The reduced rainfall over western parishes has resulted in drier conditions over more areas of Hanover, Westmoreland and sections of St. Elizabeth.

Should the projections for less rains in southwestern parishes materialize there could be concerns for drought developing in these areas, especially for the farming sector. Therefore, water management plans as well as, cooling solutions for animals who could suffer from heat stress due to continued higher than normal temperatures are recommended, to ensure that if such a scenario unfolds in the next three (3) months, it can be properly managed.