METEOROLOGICAL SERVICE JAMAICA
CLIMATE BRANCH

MONTHLY RAINFALL SUMMARY FOR JANUARY 2013 (PRELIMINARY)

Introduction

This rainfall summary is prepared by the Climate Branch of the Meteorological Service, Jamaica. The Meteorological Service maintains a network of over two hundred (200) rainfall stations located across the island. Rainfall is usually read at 7am by a cadre of paid but mainly voluntary dedicated observers and reported for the previous 24 hours.

General

Jamaica's bimodal rainfall pattern consists of two peak periods with higher values of rainfall and corresponding periods of lower rainfall amounts. 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 and deviations from this pattern do occur year to year.

The rainfall pattern for the island is shown in the graph from information of the thirty-year mean rainfall for the period 1971 to 2000. Studies by the Meteorological Service have shown that the island's rainfall values have not changed significantly over the current thirty-year (1971-2000) period.

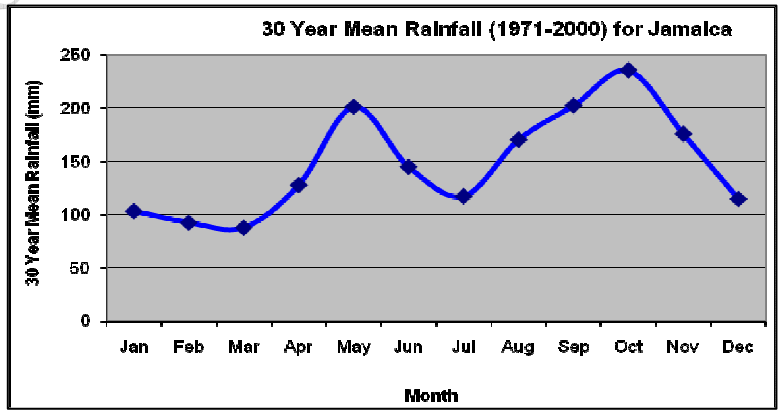

Figure 1: Precipitation Pattern for 1971-2000 for the island of Jamaica.

Island Monthly Rainfall

Troughs and high pressure ridges were the main weather features for the month of January with troughs being the most dominant feature. Rainfall amounts were greatest over northern parishes namely St. Ann, St. Mary and Portland. With the exception of Hanover all parishes recorded lower rainfall amounts when compared to January 2012 and this resulted in a lower island mean for 2013. The island's rainfall is 46% of normal or 54% below normal.

Table 1: Parish Rainfall Summary for January 2013 (Rainfall in mm)

Parish Rainfall Summary for January 2013 (Rainfall in mm)							
		JAN	JAN	JAN	% OF 30 YR NORMAL		
Parishes	KEY	2013	2012	30 YR NORMAL (1971-2000)	2012 NOV	2012 DEC	2013 JAN
Hanover	HAN	34	29	94	35	51	36
Westmoreland	WES	23	42	70	79	39	32
Manchester	MAN	45	78	61	55	116	74
St. Elizabeth	STE	42	85	66	80	106	63
Clarendon	CLA	7	27	45	19	54	16
St. Catherine	STC	14	21	53	39	61	27
Trelawny	TRE	16	31	92	93	17	17
St. James	STJ	28	36	67	98	18	41
St. Ann	STA	69	90	106	92	94	66
St. Mary	STM	97	70	181	59	51	54
Portland	POR	194	324	346	156	116	56
St. Thomas	STT	25	32	94	19	102	26
Kgn. & St. And.	KSA	22	59	70	68	169	31
Jamaica	JAM	47	71	103	80	80	46

Assessment of Parish Figures

The monthly average rainfall for the island for January was **46%** or (**47mm**) of the normal (1971-2000). The island and all parishes recorded below normal rainfall for the month. The parish rainfall figures indicate the following:

- Eight parishes recorded less than 50% of normal rainfall for the month. They were St. James with **41%** or (**28mm),** Hanover with **36%** or (**34mm**), Westmoreland with **32%** or (**23mm**), Kingston & St. Andrew with **31%** or (**22mm**), St. Catherine with **27%** or (**14mm**), St. Thomas with **26%** or (**25mm**), Trelawny with **17%** or (**16mm**) and Clarendon with **16%** or (**7mm**).
- The five parishes which reported above 50% but were still below their normal were Manchester **74%** or (**45mm**), St. Ann **66%** or (**69mm**), St. Elizabeth **63%** or (**42mm**), Portland **56%** or (**194mm)** and St. Mary **54%** or (**97mm**).

(Kindly note that Kingston and St. Andrew are combined and reported as one).

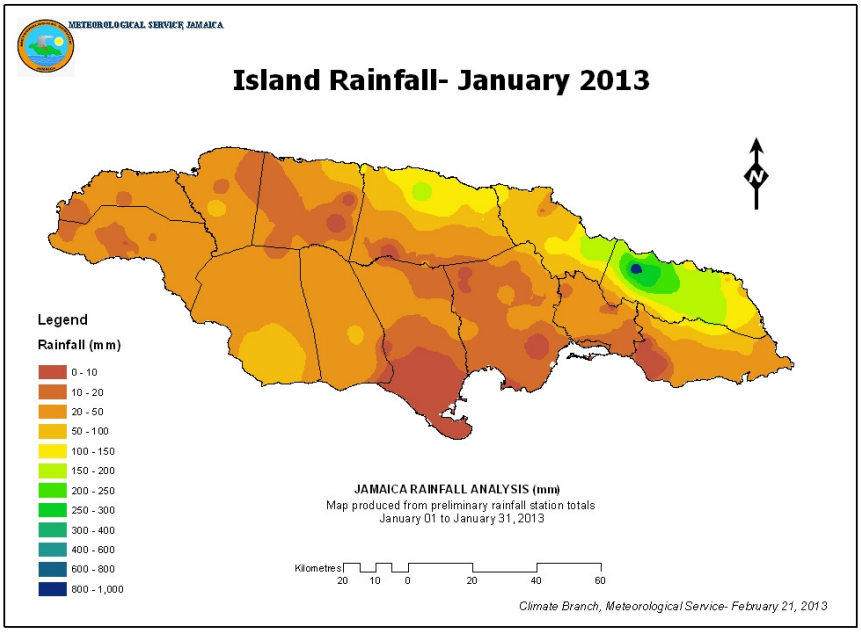

Fig.2. Distribution of Jamaica's Rainfall for January 2013

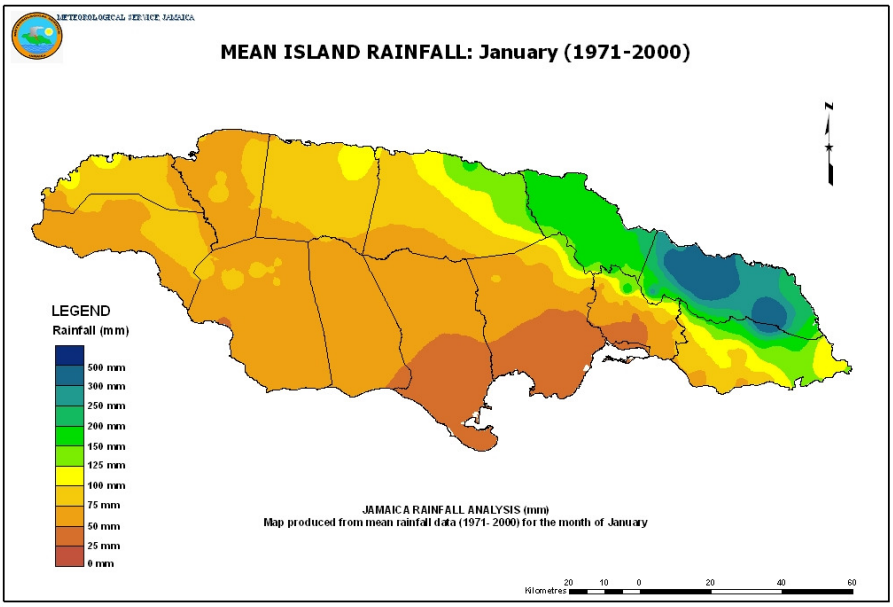

Fig.3. 30 Year Mean Island Rainfall for January 1971-2000.

Drought Conditions

Definition

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 few years.

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 that is presented in Table 2.

This index is similar to that used by the Australian Meteorological Service except for the duration of eight consecutive weeks instead of bi-monthly periods that is used locally.

Table 2: Meteorological Drought Index

Drought Conditions

Drought Indices (%) for October 2012 to January 2013			
Parishes	Oct/Nov 2012	Nov/Dec12	Dec12/Jan13
Hanover	51	41	48
Westmoreland	70	65	36
Manchester	67	73	94
St. Elizabeth	65	89	84
Clarendon	66	30	36
St. Catherine	39	46	45
Trelawny	100	56	17
St. James	65	62	28
St. Ann	112	93	81
St. Mary	65	55	52
Portland	146	139	87
St. Thomas	60	48	68
Kgn. & St. And.	72	102	104
Jamaica	81	80	64

Table 3: Drought indices (%) for October 2012 to January 2013

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 3 is calculated as follows:
Values = {(Month 1 + Month 2) / (Normal month 1 + Normal month 2)} x 100

Drought Assessment

The drought assessment for the bi-monthly period December 2012 to January 2013 (see Table 3) indicates that three parishes are currently reporting normal drought conditions, three parishes reporting severe drought conditions whilst one is report extreme drought. The breakdown is as follows:

- St. Mary - 52%, Hanover - 48% and St. Catherine 45% -normal drought.
- Westmoreland and Clarendon - 36% and St. James - 28% -severe drought.
- Trelawny - 17% - extreme drought.

Drought conditions have worsened in Trelawny and Westmoreland and figure 4 shows that the worse drought conditions remain over western parishes, however pockets of the activity has spread to sections of central parishes as well, with stations in St. Catherine and Clarendon reporting extreme drought conditions.

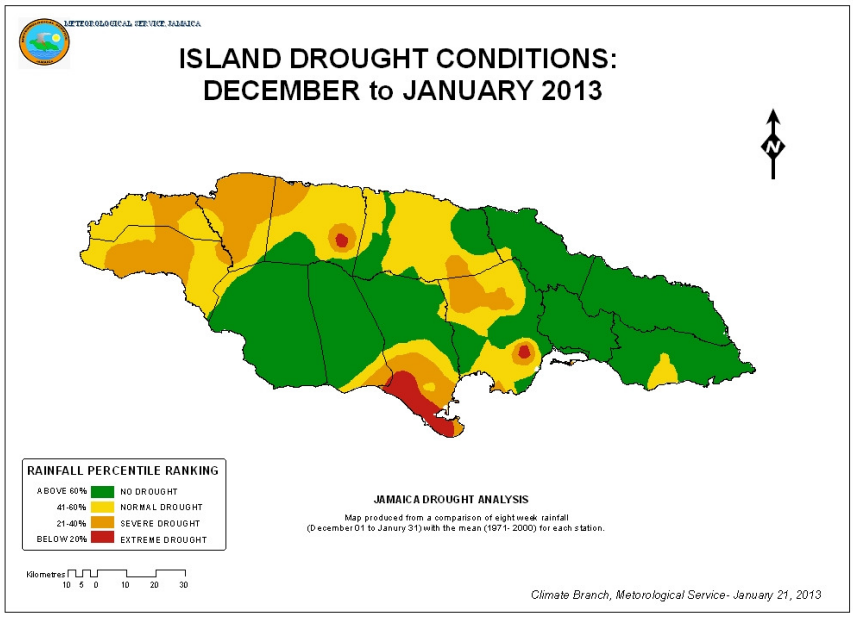

Fig 4: Island Drought Conditions for December 2012/January 2013

PRECIPITATION OUTLOOK

The Global Dynamic Models are forecasting that the Caribbean including Jamaica will be moving towards a period of near normal to below normal rainfall, as well as warmer than normal air temperatures for the period February through to April. This agrees strongly with the outlook from the statistical climate predictability tool (CPT) forecast for Jamaica for the same period.

The statistical model is indicating a near normal to below normal rainfall season for all stations that were analyzed for the period February to April 2013. Of a total of ten stations that were examined, all stations indicated below normal rainfall for the period February through to April. The overall average for Jamaica therefore, reflects a strong near normal to below normal rainfall pattern for the period February through to April. Strong signals and high forecast confidence drive home the message for water conservations as the dry season is forecast to continue at least for the next three months.

Sea Surface Temperature and ENSO Outlook:

According to ENSO forecast based on APCC prediction for February-April 2013, the sea surface temperatures indicate that ENSO condition is likely to remain neutral.

Table 4. Climate Predictability Tool (CPT) Outlook values.

Stations	Below(B) %	Normal (N) %	Above(A) %
Manley (Kingston)	48	30	22
Sangster (St. James)	48	29	23
Sav. (Westmoreland)	39	32	29
Beckford (Clarendon)	46	31	23
Serge Island (St. Thomas)	49	30	21
Cave Valley (St. Ann)	44	30	26
Tulloch Estate (St. Cath.)	46	31	23
Y.S. Estate (St. Elizabeth)	46	30	24
Hampstead (St. Mary)	45	31	24
Orange Valley (Trelawny)	47	30	23
Jamaica	**46**	**30**	**24**

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

SUMMARY

The month of January realised significant rainfall deficits, resulting in six parishes reporting drought conditions and small pockets within the remaining parishes across the island. A comparison of figure 3 (total rainfall) against figure 4 (mean rainfall) paints a very clear picture for the island, of the rainfall deficit experienced for the month of January

and contextualizes the effects of this continuation of below normal rainfall since December 2012.

The precipitation outlook has remained the same for February through April (that is below normal activity) and realization of this forecast requires immediate intervention to prevent significant impacts for the farming sector as well as possible reduced inputs in the islands' water catchments.