



# AGROMET BULLETIN



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## HIGHLIGHTS

- ✚ Selected stations in five parishes received below-normal rainfall in October.
- ✚ Most stations recorded increases in their SPI values, however, some stations were still experiencing dry conditions.
- ✚ Above-normal rainfall is forecast for Jamaica for November through January.
- ✚ Above-normal temperatures are forecast for the next 3 months.

### Weather Summary October 2018

The daily weather during the traditionally wet month of October was dominated by Troughs. These Troughs at times produced heavy showers that resulted in isolated cases of flash flooding especially along streets and gullies.

During the month, Sangster International Airport (SIA) in the island's northwest recorded 58.9 mm of rainfall, while Norman Manley International Airport (NMIA) in the southeast recorded 59.3 mm of rainfall. SIA received 37% of its 30-year mean rainfall, while NMIA received about 51 % of its 30-year mean rainfall. There were six (6) rain days recorded for SIA and nine (9) rain days for NMIA. The monthly means are eighteen (18) and ten (10) rain days respectively.

The highest maximum temperature recorded for SIA was 34.3°C on October 1. This year's value along with that of 1999 are both ranked 3rd, in the list of highest maximum temperatures recorded at the station since August 1992. Meanwhile, NMIA recorded 33.0°C also on October 1. This year's value along with those for 2005 and 2007 are ranked joint 16th as a maximum temperature at the station. The post 1992 record of 35.4 °C was set in 2001.



## Standardized Precipitation Index (SPI)

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 namely 1-month, 3-month, 6-month, 9-month and 12-month periods. This temporal flexibility allows the SPI to be useful in both short-term agricultural and long-term hydrological applications by providing early warning of drought and for making assessments on the severity of a drought. *There are also many different methodologies for monitoring drought. Droughts are regional in extent and each region has specific climatic characteristics<sup>1</sup>.* For the Caribbean, a drought event occurs any time the SPI is continuously negative and reaches an intensity of -0.80 or less during the dry season or -1.30 or less in the wet season. The Meteorological Service, Jamaica (MSJ) calculates an observed SPI (see Table 1 and Figure 1) and a forecast SPI (see Figure 2) using a 3-month and 6-month time intervals, respectively.

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 normal precipitation (rainfall) that spans from a few months to a few years.

<sup>1</sup> World Meteorological Organization, 2012: *Standardized Precipitation Index User Guide* (M. Svoboda, M. Hayes and D. Wood). (WMO-No. 1090), Geneva.



Parish	Station	October Rainfall Total (mm)	Percent of 30-year Mean (%)	Observed SPI for Jul-Aug-Sep	Observed SPI for Aug-Sep-Oct
Hanover	Mount Peto	258	73	-0.65	-0.59
Westmoreland	Savanna-La-Mar	296	123	0.06	0.75
Westmoreland	Frome	216	87	-0.91	-0.61
Manchester	Sutton	230	91	-1.72	-1.28
St. Elizabeth	Y.S. Estates	231	78	-0.42	-0.02
St. Elizabeth	Potsdam	294	119	-0.45	-0.13
Clarendon	Beckford Kraal	No data	No data	-1.77	No SPI value due to unavailability of rainfall data for October.
St. Catherine	Tulloch	265	111	0.40	0.76
St. Catherine	Worthy Park	225	99	0.31	0.13
Trelawny	Orange Valley	No data	No data	0.19	No SPI value due to unavailability of rainfall data for October.
St. James	Sangster Airport	59	37	-2.69	-0.30
St. Ann	Cave Valley	299	150	0.20	0.56
St. Mary	Hampstead	158	113	0.15	0.31
Portland	Shirley Castle	141	36	-0.57	-0.81
St. Thomas	Serge Island	393	148	-0.70	0.19
KSA	Lawrence Tavern	219	90	-1.46	-0.92
KSA	Palisadoes	59	51	-0.92	-1.02

*Table 1: Observed SPI for Selected Stations across Jamaica during the July-October period.*

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

*Table 2: Severity Classes of the SPI*



### **Standardized Precipitation Index Discussion**

Based on the SPI figures for the August-October period, nine of the seventeen reporting stations across the island had rankings ranging from near-normal (dry) to moderately dry; the other six reporting stations had rankings from near-normal (wet) to abnormally wet. A comparison of the August-October period with that for the July-September period showed that, twelve stations recorded improvements in their SPI figures, three stations recorded deterioration in their SPI values. The remaining two stations did not have SPI values for the August-October period for comparisons to be made.

The comparison of the SPI figures for Aug-Oct with those for Jul-Sep shows the following:

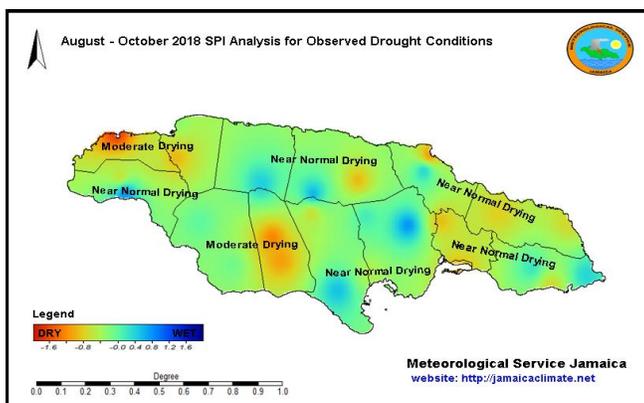
- Conditions deteriorated at Shirley Castle with the ranking moving from abnormally dry to moderately dry.
- Despite a minor decrease in the station's SPI value, condition at Palisadoes was still moderately dry.
- Conditions were not as dry at the following stations as indicated by their current rankings: Suttons and Lawrence Tavern both with moderately dry; and Mount Peto & Frome both with abnormally dry conditions.
- Sangster recorded the largest change in SPI value with the station's ranking moving 5 severity classes from exceptionally dry to near-normal (dry).
- Near-normal (dry) conditions were still being experienced at Y.S. Estates and Potsdam.
- Conditions were wetter at Savanna-La-Mar, Tulloch and Cave Valley with the 3 stations having SPI values in the abnormally wet category.
- At Serge Island conditions experienced a reversal, moving from abnormally dry to near-normal (wet).
- Meanwhile, near-normal (wet) conditions continued at Worthy Park and Hampstead as indicated by the SPI values.

In October, selected stations in five parishes namely, Hanover, St. James, Manchester, Kingston & St. Andrew (KSA) and Portland received below-normal rainfall. The stations in St. Catherine, St. Mary and St. Thomas recorded normal or above-normal rainfall. For St. Elizabeth the station in the north (Y.S. Estates) recorded below-normal rainfall while, the station in the south (Potsdam) recorded above-normal rainfall. For Westmoreland one station recorded below-normal rainfall while, the other station recorded above-normal rainfall.



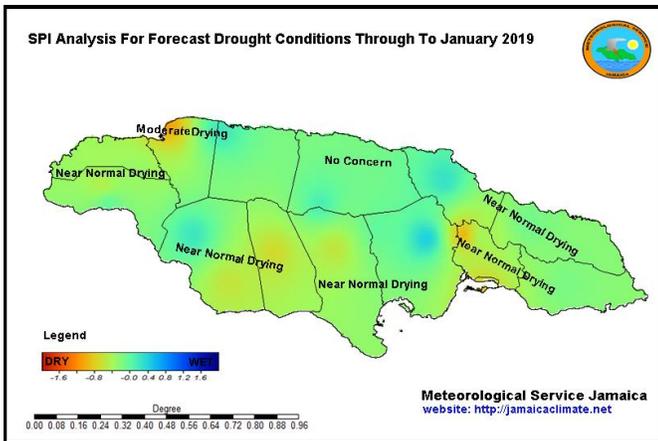
From analyses (see figure 1) varying levels of dryness were noticeable over sections of Hanover, St. James, Manchester, KSA, Portland, coastal areas of St. Mary, along with eastern sections of St. Ann. In the cases of Hanover and Manchester there were drier conditions in some areas when compared to areas of other parishes, although drought conditions were not indicated. Some areas of wetness were observed over sections Westmoreland, Clarendon, St. Catherine, St. Thomas, St. Ann and Trelawny.

See Figure 1 below for the graphic representation of observed SPI values for the August-September-October period.



*Figure 1: August – October 2018 SPI Analysis for Observed Conditions*

The forecast through January 2019, indicates that the island should receive above-normal rainfall, with the possibility of a further reduction in areas which experienced dryness, especially those in farming communities across Hanover, Manchester and Portland.



**Figure 2: Forecast Drought Conditions through to January 2019**

**Seasonal Forecast – November 2018 to January 2019**

The MSJ makes seasonal climate forecasts using the Climate Predictability Tool (CPT). The CPT was developed by the International Research Institute for Climate and Society (IRI) in order to create and communicate seasonal forecasts that address the needs of different user groups.

For the next three months (November/December/January), which mark the end of the wet season and going into the early part of the dry season, the forecast models are indicating that Jamaica should receive above-normal rainfall. The forecast is for above-normal temperatures over the same period.

	<b>% Below (B)</b>	<b>% Normal (N)</b>	<b>% Above (A)</b>
<b>Jamaica Rainfall Outlook</b>	25	30	45
<b>Jamaica Temperature Outlook</b>	20	35	45
<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 3: Jamaica Rainfall and Temperature Probability for November 2018 to January 2019.**



Table 4 below, shows the precipitation outlook for selected stations across Jamaica as analysed by the Climate Predictability Tool. For the November 2018 to January 2019 period, all seventeen (17) selected stations are indicating higher probabilities for above-normal rainfall.

Stations	Parishes	Below (B) %	Normal (N) %	Above (A)%
Beckford Kraal	Clarendon	20	30	50
Mount Peto	Hanover	25	30	45
Palisadoes	Kingston	30	30	40
Lawrence Tavern	Kingston	30	30	40
Suttons	Manchester	25	30	45
Shirley Castle	Portland	30	30	40
Cave Valley	St. Ann	25	30	45
Tulloch Estate	St. Catherine	25	30	45
Worthy Park	St. Catherine	25	30	45
Y.S. Estate	St. Elizabeth	25	30	45
Potsdam	St. Elizabeth	20	30	50
Sangster Airport	St. James	20	30	50
Serge Island	St. Thomas	20	30	50
Hampstead	St. Mary	10	30	60
Orange Valley	Trelawny	20	30	50
Savanna-La-Mar	Westmoreland	30	30	40
Frome	Westmoreland	25	30	45

**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 November 2018 to January 2019.*



### **Summary and Expected Agricultural Impacts**

Selected stations in Hanover, St. James, Manchester, Kingston & St. Andrew (KSA) and Portland received below-normal rainfall in October. Varying levels of dryness were evident over several parishes, with moderately dry conditions observed in sections Hanover and Manchester, although drought conditions were not indicated.

Stations in St. Catherine, St. Mary and St. Thomas received normal or above-normal rainfall which would have been welcomed by farming communities in sections of those parishes; especially the latter two parishes. Some levels of wetness were observed over sections of St. Ann, Trelawny, Westmoreland, Clarendon, St. Catherine and St. Thomas.

It was noticeable that rainfall received in September and October has resulted in the reduction in the dry conditions in areas across the island. Therefore, should the forecast of above-normal rainfall across the island over the November-January period materializes, this could bring a reversal from the current dryness being experienced; this at the end of the wet season and entering the early months of the (traditional) dry season. This could benefit not only farming communities dependent on rains for crop irrigation but, other water users as well.

Continued monitoring of conditions and dissemination of advisories will continue as usual.

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