# AGROMET BULLETIN

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## HIGHLIGHTS

- **Western stations experienced below-normal rainfall and extremely dry conditions.**
- **Near-normal rainfall is forecast for some areas for January through to March.**
- **Dry conditions could continue affecting western and some southern areas during this dry season.**

**Weather Summary December 2016**

During the month of December weather conditions were dominated by troughs, with some northern parishes getting significant rainfall.

Norman Manley Airport in the southeast recorded a total of 0.9 mm of rainfall, which was far below the climatological mean for the station. Sangster in the northwest recorded a rainfall total of 25.1 mm, which was also below the December climatological mean. There were six (6) rainfall days reported for Sangster Airport and zero (0) reported for Manley Airport. The rainfall day is taken at 1mm and above.

The highest maximum temperature recorded for Norman Manley Airport was 33.4°C (25th December) meanwhile that for the Sangster Airport was 32.0 °C (8th December).

## 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. The Meteorological Service, Jamaica (MSJ) calculates an observed SPI (see Table 1 and Figure1) and a forecast SPI (see Figure 2) using a 3-month and 6-month time interval, respectively.

### Observed October to December SPI for Selected Stations

| Parish | Station | December Rainfall Total (mm) | Percent of 30-year Mean (%) | Observed SPI for October-November-December |
|---|---|---|---|---|
| Hanover | Mount Peto | 15 | 16 | -1.74 |
| Westmoreland | Savanna-La-Mar | 0 | 0 | -0.95 |
| Westmoreland | Frome | 15 | 21 | -2.35 |
| Manchester | Sutton | 97 | 171 | 0.43 |
| St. Elizabeth | Y.S. Estates | 62 | 83 | 0.96 |
| St. Elizabeth | Potsdam | 90 | 154 | 0.97 |
| Clarendon | Beckford Kraal | 8 | 11 | -0.61 |
| St. Catherine | Tulloch | 34 | 38 | 0.38 |
| St. Catherine | Worthy Park | 50 | 63 | 0.07 |
| Trelawny | Orange Valley | 37 | 33 | -0.16 |
| St. James | Sangster | 25 | 26 | -1.02 |
| St. Ann | Cave Valley | 0 | 0 | 0.51 |
| St. Mary | Hampstead | 110 | 58 | 2.15 |
| Portland | Shirley Castle | 446 | 87 | 1.58 |
| St. Thomas | Serge Island | 6 | 6 | -0.27 |
| KSA | Langley | 97 | 58 | -0.80 |
| KSA | Manley Airport | 1 | 3 | -0.39 |

*Table 1: Observed SPI for Selected Stations across Jamaica during the October-November-December Period.*

| 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 2: Severity Classes of the SPI*

**Standardized Precipitation Index Discussion**

Based on the SPI figures for the October-November-December period, one station, Frome recorded exceptionally dry conditions. Mount Peto was extremely dry and three stations namely, Savanna-La-Mar, Sangster and Langley recorded moderately dry conditions, while Beckford Kraal was abnormally dry.

During the three month period, Hampstead had an SPI value in the 'exceptionally wet' category. This was followed by Shirley Castle in the 'severely wet' category, Y.S. Estates and Potsdam in the 'moderately wet' category and Cave Valley in the "abnormally wet' category. The remaining six (6) stations were considered to be within near-normal bounds. A slight majority of stations (nine of seventeen) and located mainly on the western and southern sides of the island, experienced near-normal to dry conditions for the three month period.

With very dry conditions being experienced in western and some southern parishes, there are concerns for the farming sector. In contrast, there are no concerns for the northeastern parishes of Portland and St. Mary along with sections of St. Ann where, wet conditions prevailed. See Figure 1 below for the graphical representation of observed SPI values for the October-November-December period.

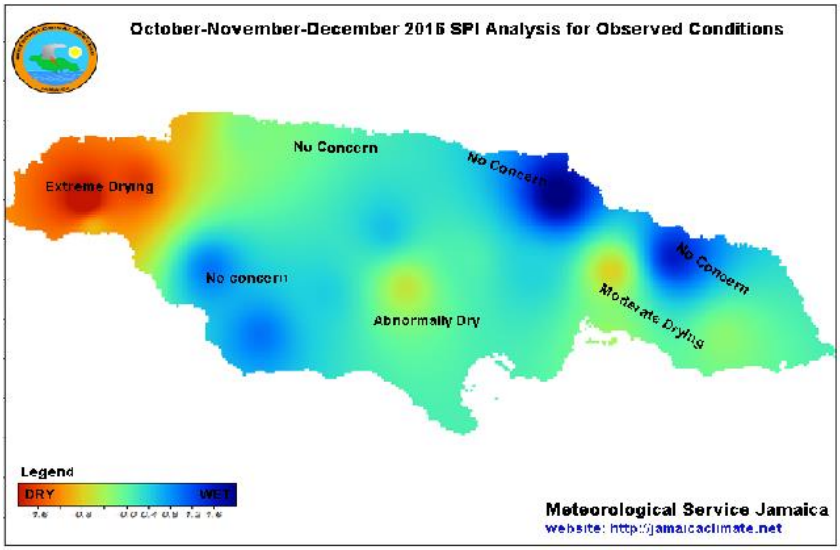


*Figure 1: October-November-December 2016 SPI Analysis for Observed Conditions*

The drought forecast through March (see Figure 2 below) has determined that there should continued drying over western and some southern parishes, while, northeastern parishes should continue to experience fairly wet conditions. With this outlook, there should be concerns in the farming sector for possible worsening of drought conditions over western and some southern parishes, currently experiencing severe drying.

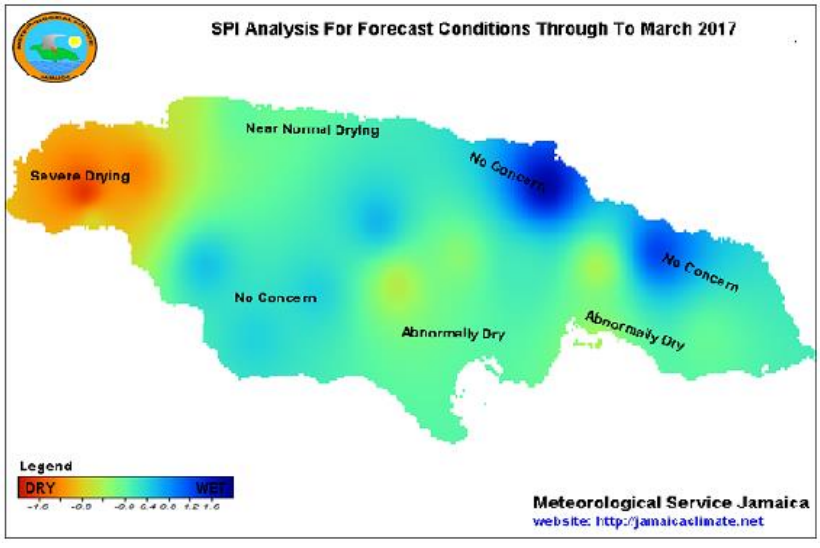


*Figure 2: Forecast Drought Conditions through to March 2017*

**Seasonal Forecast – January to March 2017**

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.

The rainfall outlook for January to March 2017 is reflecting near-normal (or expected) activity, along with warmer days. There were significant deficits in rainfall for Hanover and Westmoreland for the October to December period resulting in dry conditions for these parishes. Shortfall in rainfall activity was also seen in some southern parishes.

With a forecast of near-normal rainfall activity and with the (current) deficit in rainfall over some parishes, many areas are likely to continue to experience some level of drying over the next three months.

Given this situation plans should therefore be initiated for drought alleviation for those farming communities now experiencing dry conditions. We will however continue to monitor the findings from the models in order to better advise our farmers.

| | % Below (B) | % Normal (N) | % Above (A) |
|---|---|---|---|
| Jamaica Rainfall Outlook | 33 | 33 | 33 |
| Jamaica Temperature Outlook | 20 | 35 | 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 3: Jamaica Rainfall and Temperature Probability for January to March 2017.*

Table 4 below, shows the precipitation outlook for selected stations across Jamaica as analysed by the Climate Predictability Tool. Eleven (11) of the seventeen (17) stations are indicating higher probabilities for normal rainfall for the January to March 2017 period, another five (5) stations are indicating probabilities for above-normal rainfall while, one station, Potsdam is indicating below normal activity.

| Stations | Below (B) % | Normal (N) % | Above (A)% |
|---|---|---|---|
| Manley (Kingston) | 30 | 35 | 35 |
| Sangster (St. James) | 33 | 33 | 33 |
| Savanna-la-mar (Westmoreland) | 33 | 33 | 33 |
| Beckford Kraal (Clarendon) | 30 | 30 | 40 |
| Serge Island (St. Thomas) | 30 | 35 | 35 |
| Cave Valley (St. Ann) | 30 | 35 | 35 |
| Tulloch Estate (St. Catherine) | 30 | 35 | 35 |
| Y.S. Estate (St. Elizabeth) | 30 | 40 | 30 |
| Hampstead (St. Mary) | 30 | 30 | 40 |
| Orange Valley (Trelawny) | 33 | 33 | 33 |
| Langley (Kingston) | 30 | 40 | 30 |
| Mount Peto (Hanover) | 30 | 40 | 30 |
| Shirley Castle (Portland) | 30 | 30 | 40 |
| Suttons (Manchester) | 30 | 20 | 50 |
| Potsdam (St. Elizabeth) | 40 | 35 | 25 |
| Frome (Westmoreland) | 35 | 35 | 30 |
| Worthy Park (St. Catherine) | 35 | 20 | 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 January to March 2017.*

**Summary and Expected Agricultural Impacts**

The CPT is indicating that Jamaica is generally expected to experience near-normal rainfall during the January to March period.

With this forecast and along with the current deficit in rainfall over western and some southern parishes, there should be concerns for possible worsening of drought conditions over these sections of the island. Farming communities should therefore initiate plans for drought alleviation during this dry season.

We will continue to closely monitor conditions and disseminated the necessary advice.

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