



AGROMET BULLETIN



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HIGHLIGHTS

- ✚ All thirteen parishes received below-normal rainfall in July.
- ✚ Except for Trelawny and St. Catherine, all other parishes recorded meteorological drought conditions
- ✚ Below-normal rainfall is forecast for Jamaica for August through October.
- ✚ Above-normal temperatures are forecast for the next 3 months.

Weather Summary July 2018

Despite the presence of Troughs and Tropical Waves during July, there was a general lack of rainfall, resulting in dry/drought conditions impacting communities in several parishes, particularly St. Elizabeth, Westmoreland, Hanover, St. James and Portland.

During the month, Sangster International Airport (SIA) in the northwest recorded 14.5 mm of rainfall, while Norman Manley International Airport (NMIA) in the southeast recorded 2.0 mm of rainfall. SIA received 28% of its 30-year mean rainfall, while NMIA received 7% of its 30-year mean rainfall. There were four (4) rain days recorded for SIA, while, NMIA recorded one (1) rain day. The monthly means are twelve (12) and five (5) rain days respectively.

The highest maximum temperature recorded for SIA was 35.6°C (July 21). A look at the records dating back to 1992 showed that, this value ranks joint 1st for a July highest maximum temperature, equalling that recorded in 2015. Meanwhile, the highest maximum temperature recorded for NMIA was 34.6°C (July 31). This year's



value is ranked joint 9th, as the highest maximum temperature recorded at the station since July 1993. There were 4 other years recording this value, with the post-1992 record of 36.4°C set in 1998.

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 Figure 1) and a forecast SPI (see Figure 2) using a 3-month and 6-month time interval, respectively.

| Parish | Station | July Rainfall Total (mm) | Percent of 30-year Mean (%) | Observed SPI for Apr-May-Jun | Observed SPI for May-Jun-Jul |
|---------------|------------------|--------------------------|-----------------------------|---|---|
| Hanover | Mount Peto | 143 | 58 | -0.28 | -1.35 |
| Westmoreland | Savanna-La-Mar | 66 | 38 | 0.91 | -0.28 |
| Westmoreland | Frome | 158 | 68 | 0.92 | 0.31 |
| Manchester | Sutton | N/A | N/A | No SPI value due to unavailability of rainfall data for 3 months. | No SPI value due to unavailability of rainfall data for 3 months. |
| St. Elizabeth | Y.S. Estates | 64 | 36 | 0.10 | -1.76 |
| St. Elizabeth | Potsdam | 42 | 50 | 0.23 | -0.12 |
| Clarendon | Beckford Kraal | 0 | 0 | -0.55 | -0.76 |
| St. Catherine | Tulloch | 48 | 32 | -0.75 | -0.91 |
| St. Catherine | Worthy Park | 120 | 114 | -0.58 | -0.32 |
| Trelawny | Orange Valley | 11 | 20 | -0.01 | -0.29 |
| St. James | Sangster Airport | 15 | 28 | -0.65 | -1.11 |
| St. Ann | Cave Valley | 81 | 94 | -0.48 | -0.60 |
| St. Mary | Hampstead | 28 | 45 | -0.10 | 0.41 |
| Portland | Shirley Castle | 54 | 39 | -1.56 | -1.16 |
| St. Thomas | Serge Island | 73 | 45 | 0.15 | 0.03 |
| KSA | Lawrence Tavern | 29 | 37 | -0.26 | -0.48 |



| | | | | | |
|-----|------------|---|---|------|------|
| KSA | Palisadoes | 2 | 7 | 0.77 | 0.61 |
|-----|------------|---|---|------|------|

Table 1: Observed SPI for Selected Stations across Jamaica during the May-July 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 May-July period, twelve (12) of seventeen (17) stations across the island had rankings ranging from extremely dry to near-normal (dry). Another four (4) stations had rankings ranging from abnormally wet to near-normal (wet), while one (1) station had no ranking due to the unavailability of rainfall data. There were thirteen (13) stations that recorded decreases in their SPI figures, while, another three (3) stations recorded increases in their SPI values, for the May-July period when compared to the April-June period.

A comparison of the SPI figures for May-Jul with those for Apr-Jun shows the following:

- Conditions at Mount Peto and Y.S. Estates deteriorated, as indicated by their severely dry and extremely dry rankings, respectively. In the case of the latter moving 3 severity classes.
- That the rankings at Tulloch and Sangster, both moved from abnormally dry to moderately dry.
- Conditions at Worthy Park and Shirley Castle were not as dry at the end of July compared to the end of June, with rankings of near-normal (dry) and moderately dry respectively.
- That there were changes in the rankings for the following stations:- Savanna-La-Mar, from moderately wet to near-normal (dry), Potsdam, from near-normal (wet) to near-normal (dry).



The following stations recorded wet conditions at the end of July:

- Hampstead, moving from near-normal (dry) to near-normal (wet).
- Despite decreases in their SPI values, conditions were still wet at Palisadoes (abnormally wet) and Frome & Serge Island both with rankings of near-normal (wet).

In July, all thirteen (13) parishes received below-normal rainfall. From analyses drier conditions were experienced over most areas of the island; however, extremely dry conditions were observed over northern areas of St. Elizabeth and extended into eastern areas of Hanover and Westmoreland and western areas of St. James and Portland. On the parish level, meteorological drought conditions were recorded for eleven (11) of thirteen (13) parishes with only Trelawny and St. Catherine remaining above drought conditions.

See Figure 1 below for the graphic representation of observed SPI values for the May-June-July period.

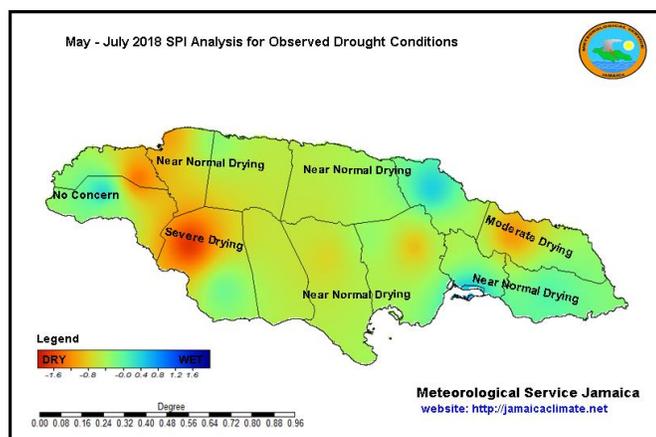


Figure 1: May – July 2018 SPI Analysis for Observed Conditions

The forecast through October, indicates that the island should receive less than expected rainfall, with the possibility of dry/drought conditions becoming worse; of particular concern to farming communities.

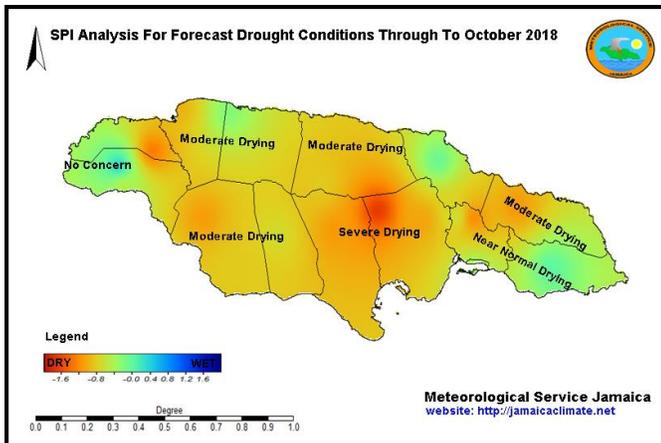


Figure 2: Forecast Drought Conditions through to October 2018

Seasonal Forecast – August to October 2018

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 (August-October), which includes the peak period for the hurricane season (August/September), as well as the transition to the primary wet season (August/September/October), the forecast models are indicating that Jamaica should continue to receive below-normal rainfall. The forecast for above-normal temperatures remains consistent for the August-October 2018 period.

| | % Below (B) | % Normal (N) | % Above (A) |
|---|-------------|--------------|-------------|
| Jamaica Rainfall Outlook | 50 | 30 | 20 |
| Jamaica Temperature Outlook | 15 | 25 | 60 |
| 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 August to October 2018.



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

| Stations | Parishes | Below (B) % | Normal (N) % | Above (A)% |
|------------------|---------------|-------------|--------------|------------|
| Beckford Kraal | Clarendon | 60 | 25 | 15 |
| Mount Peto | Hanover | 45 | 30 | 25 |
| Palisadoes | Kingston | 60 | 25 | 15 |
| Lawrence Tavern | Kingston | 60 | 25 | 15 |
| Suttons | Manchester | 50 | 30 | 20 |
| Shirley Castle | Portland | 45 | 30 | 25 |
| Cave Valley | St. Ann | 50 | 30 | 20 |
| Tulloch Estate | St. Catherine | 60 | 25 | 15 |
| Worthy Park | St. Catherine | 60 | 25 | 15 |
| Y.S. Estate | St. Elizabeth | 50 | 30 | 20 |
| Potsdam | St. Elizabeth | 55 | 30 | 15 |
| Sangster Airport | St. James | 45 | 30 | 25 |
| Serge Island | St. Thomas | 40 | 35 | 25 |
| Hampstead | St. Mary | 40 | 35 | 25 |
| Orange Valley | Trelawny | 50 | 30 | 20 |
| Savanna-La-Mar | Westmoreland | 50 | 30 | 20 |
| Frome | Westmoreland | 45 | 30 | 25 |

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 August to October 2018.



Summary and Expected Agricultural Impacts

The below-normal rainfall received in July, makes it two consecutive months of below-normal rainfall for all parishes. This resulted in dryness spreading to more areas across the island and meteorological drought conditions being recorded in eleven parishes, with the exception (for now) of Trelawny and St. Catherine. Farming communities in those two parishes, however, continue to record dry/drought conditions.

Should the forecast of less-than-normal rainfall over the August-October period materializes, this could add to the rainfall deficit and further exacerbate existing drought conditions in farming communities across the island. Irrigation for farming communities, as well as, provision of water for other users, should, therefore, be continued to lessen the impacts on crops and livestock due to the expected deficits in rainfall amounts.

The forecast for continued above-normal temperatures could cause heat stress for other animals; therefore, cooling solutions are still being recommended.

Of note, is the Meteorological Service's inability to determine the true impact of the drought conditions in some farming communities across the island due to the inadequacy of data collection instruments in some areas. Conditions could, therefore, be more severe in some farming communities, which could have resulted not only from deficits in rainfall amounts (meteorological drought) but other factors as well.

Close monitoring of conditions and dissemination of advisories will continue as necessary.

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