Government of Malawi
Ministry of Natural Resources, Energy and Mining

# Malawi 10-day Weather and Agrometeorological Bulletin

*"In support of National Early Warning Systems and Food Security"*

Be wise be weather-wise
Department of Climate Change and Meteorological Services

Period: 01 – 10 March 2019 | Season: 2018/2019 | Issue No.16

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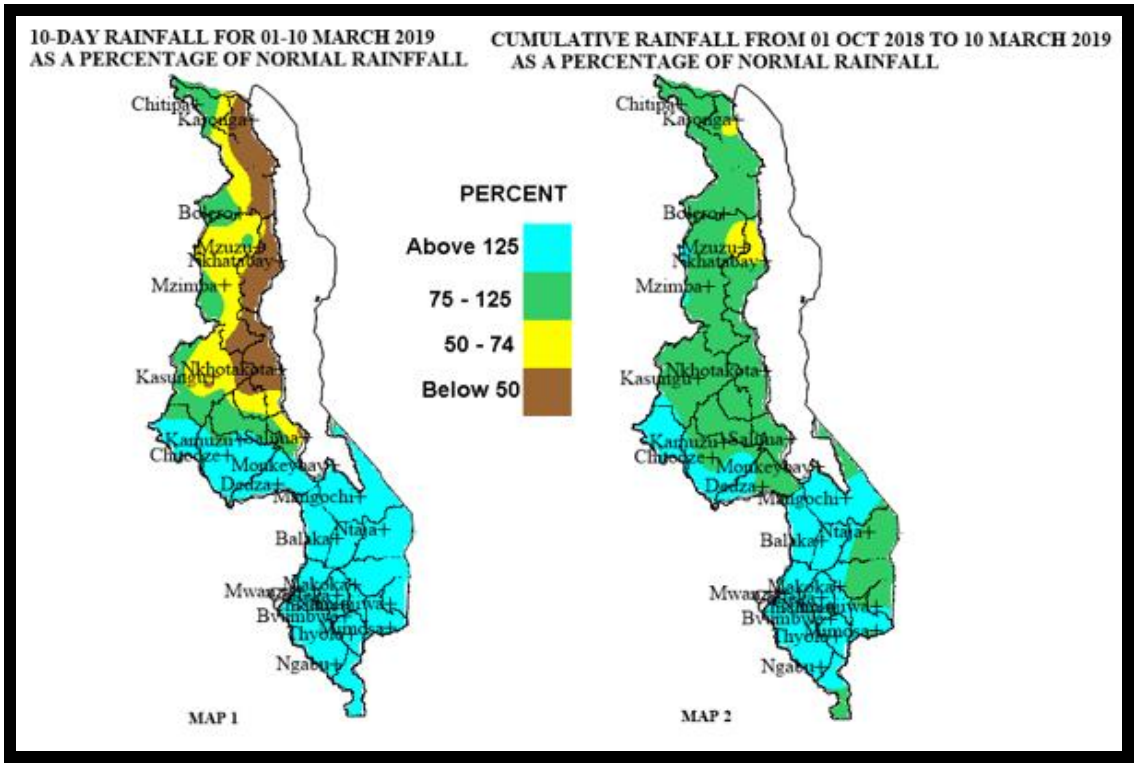
## HIGHLIGHTS

- **Heavy rainfall cause flooding, loss of lives and damage property in southern Malawi…**
- **Maize crop doing well between maturing and drying stages…**
- **More rainfall expected during the period 11 to 20 March 2019…**




**Rainfall Maps for 01 to 10 March 2019**

## 1.0 WEATHER SUMMARY

During the period 01 to 10 March 2019, a deep low pressure system around Mozambique Channel influenced weather over the Southern half of Malawi while a diffused Inter-Tropical Convergence Zone (ITCZ) affected the northern half of the country. As a result, most areas over southern half of Malawi received above normal rainfall amounts (light blue colours on Map 1) which caused floods resulting in loss of life and property as well as washing away of crops and displacement of thousands of people. Most areas over northern half of the country received below normal rainfall amounts and northern Lakeshore areas being driest (brown colour on Map 1).

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## 1.1 RAINFALL SITUATION

During the period 01 to 10 March 2019, heavy rainfall amounts were recorded over most areas in southern Malawi. The ten-day total rainfall amounts were higher than the long-term mean rainfall amounts for the period over most southern areas of Malawi while most northern areas recorded ten-day total rainfall amounts below the long-term rainfall averages (Brown colour in Map1). Areas that had recorded cumulative rainfall amounts of at least 200mm and above during the period under review included Chizunga Factory in Thyolo District which recorded 559.8mm, Mpemba Vet recorded 540.1mm, Mulanje Boma recorded 525.5mm, Satemwa Tea Estate recorded 494.3mm, Lujeri Tea Estate recorded 485.5mm, Neno Agric recorded 465.4mm, Chileka Airport recorded 402.5mm, Bvumbwe Met recorded 392.8mm, Thyolo Met recorded 381.2mm, Makhanga Agric in Nsanje recorded 376.7mm, Mimosa Met recorded 356.7mm, Chiradzulu Agric recorded 327.2mm, Chichiri Met recorded 320.8mm, Nsanje Boma recorded 317mm, Thuchila Agric recorded 310.1mm, Mangochi Met recorded 292.9mm, Chancellor College recorded 287.5mm, Phalula Agric recorded 281.7mm, Makoka Met recorded 271.3mm, Zomba RTC recorded 247.3mm and Nchalo recorded 237.8mm, Chikwawa Boma recorded 227.7mm, Dedza RTC recorded 222.8mm, Mwanza Agriculture recorded 222.4, Namwera recorded 221.2mm, Kasinthula Research Station recorded 218.8mm, Ngabu recorded 208.4mm, Namiasi recorded 200.1 and Toleza in Balaka recorded 200.0. More details in Table 1.

Map 2 indicates the spatial cumulative rainfall distribution since the start of the 2018/19 rainfall season in October 2018, up to 10 March 2019. The map generally indicates that most areas over Malawi have received normal to above normal rainfall (Green and light Blue colours) with isolated cases of below normal rainfall amount over some parts of Karonga, Nkhatabay and Mzimba Districts in northern Malawi as shown by Brown and Yellow colours on the map.

## 1.3 AIR TEMPERATURE

Generally warm to hot temperatures were experienced over Malawi during the period 01 to 10 March 2019. Mean daily maximum temperatures had ranged from 22°C at Mimosa in Mulanje District to 32°C at Karonga while the mean daily minimum temperatures had ranged from 15°C at Dedza to 23°C at Ngabu in Chikwawa District. Details in Table 2.

## 1.4 WIND SPEEDS

During the period 01 to 10 March 2019 most parts of Malawi continued to experience light to moderate wind speeds. Daily average wind speeds measured at a height of two metres above the ground level across the country had ranged from 1.8 km per hour at Bolero in Rumphi District to 11.2km per hour at Chileka in Blantyre District. More details in Table 2.

## 1.5 RELATIVE HUMIDITY

During the period 01 to 10 March 2019, air over Malawi was moist. Daily average relative humidity values recorded from various weather stations in Malawi had ranged from 64% at Monkey Bay in Mangochi District to 84% at Bvumbwe in Thyolo District. Details as in Table 2.

## 1.6 SUNSHINE HOURS

Generally low to medium hours of bright sunshine were observed over Malawi during the period 01 to 10 March 2019. The daily values had ranged from around 3.0 hours per day at Makoka, Chichiri, Bvumbwe and Mimosa in Zomba, Blantyre, Thyolo and Mulanje Districts respectively to 7.2 hours per day at KIA in Lilongwe District and consequently the amount of Solar Radiation had ranged from 6.3 to 9.1 cal/cm$^2$/day. For details see Table 2.

## 2. AGROMETEOROLOGICAL ASSESSMENT

During the period 01 to 10 March 2019, heavy rains that were experienced particularly in southern Malawi had caused flooding, loss of lives and infrastructure damages in most the districts including Chikwawa, Nsanje, Mulanje, Phalombe, Zomba, Mwanza, Neno, Mangochi and Blantyre. This according to media reports quoting statements from the Department of Disaster Management Affairs has led to loss of over 40 lives and over 500 injuries. In addition, the reports indicate that the disaster has affected a total of 147958 households (approximately 739,790 people) and 15,185 households have been displaced and thousands of hectares of crop land have also been washed away. On a positive note, the rainfall received over central and northern areas was beneficial to late planted crops that needed more moisture to reduce water stress at critical flowering and cob formation stages. Furthermore, these rains supported the growth of pastures for Livestock production as well as facilitated growth and development of roots and tuber crops. Maize was reported doing well at various growing stages. Countrywide the crop had ranged from tasselling to maturity and drying stages. For crops that were at drying stage, more sunshine was required for proper drying.

Basing on the current crop stand, good crop yields and production are anticipated this season provided good rains continue through March 2019 particularly over central and northern Malawi. However, in southern areas crops have been negatively affected by the heavy rains and flooding, a situation that is likely to cause localised reduction in the 2018/19 production due reduction in area planted.

## 3. PROSPECTS FOR 2018/2019 RAINFALL SEASON

ENSO-neutral to protracted El Nino conditions are present. Therefore, as the 2018/19 rainfall season comes to an end, Malawi is likely to receive favourable rainfall amounts for agricultural purposes during March and April 2019.

## 4. OUTLOOK FOR 11 TO 20 March 2019

Models for short and medium range forecasts show that most parts of Malawi are likely to experience moderate to locally heavy rainfall amounts during the period 11-20 March 2019.

**TABLE 1: 10-DAY RAINFALL TOTALS AT SELECTED STATIONS FOR 01 TO 10 MARCH 2019**

| ADD | STATION NAME | ACTUAL TEN-DAY TOTAL RAINFALL (mm) | TEN-DAY NORMAL EXPECTED RAINFALL (mm) | ACTUAL TOTAL AS PERCENTAGE OF NORMAL (EXPECTED RAINFALL) | ACTUAL TOTAL RAINFALL TO DATE (mm) | NORMAL (EXPECTED) RAINFALL TO DATE (mm) | ACTUAL TO DATE AS PERCENTAGE OF NORMAL (EXPECTED RAINFALL) | RAINY DAYS ≥.3mm |
|---|---|---|---|---|---|---|---|---|
| KARONGA | Baka Res. Stn. | 14.1 | 115.8 | 12 | 423.5 | 731.3 | 58 | 4 |
| | Chitipa Met | 72.2 | 64.3 | 112 | 841.0 | 761.6 | 110 | 6 |
| | Karonga Met. | 3.9 | 73.4 | 5 | 605.7 | 614.8 | 99 | 3 |
| | Lupembe | 4.6 | 65.6 | 7 | 445.2 | 558.6 | 80 | 1 |
| | Vinthukutu Agric. | 4.1 | 76.7 | 5 | 808.9 | 679.0 | 119 | 1 |
| MZUZU | Bolero Met | 40.9 | 47.9 | 85 | 451.2 | 538.4 | 84 | 5 |
| | Bwengu Agric. | 24.2 | 38.1 | 64 | 486.8 | 615.4 | 79 | 3 |
| | Emfeni Agric | 33.2 | 66 | 50 | 549.8 | 679.7 | 81 | 2 |
| | Ekwendeni Agric. | 46.5 | 46.3 | 100 | 368.9 | 660.4 | 56 | 2 |
| | Euthini Agric. | 31.7 | 52 | 61 | 798.0 | 639.7 | 125 | 3 |
| | Mbawa Res. Stn | 76.9 | 68.8 | 112 | 862.7 | 688.9 | 125 | 7 |
| | Mzimba Met | 42.1 | 71.7 | 59 | 818.7 | 748.9 | 109 | 5 |
| | Mzuzu Met. | 32.8 | 81 | 40 | 426.1 | 717.1 | 59 | 4 |
| | NkhataBay Met. | 18.8 | 97.5 | 19 | 605.6 | 819.2 | 74 | 3 |
| | Rumphi Boma | 17.6 | 61.4 | 29 | 506.7 | 600.7 | 84 | 6 |
| | Zombwe Agric | 36.3 | 56.5 | 64 | 447.8 | 588.7 | 76 | 3 |
| KASUNGU | Dowa Agric | 80.9 | 74.8 | 108 | 837.9 | 748.7 | 112 | 8 |
| | Kasungu Met | 51.2 | 64.3 | 80 | 589.4 | 673.4 | 88 | 5 |
| | Madisi Agric | 56.0 | 66.7 | 84 | 791.5 | 735.3 | 108 | 4 |
| | Mchinji Boma | 106.0 | 57.8 | 183 | 1181.5 | 851.3 | 139 | 4 |
| | Mkanda Met | 74.0 | 60.2 | 123 | 1121.5 | 742.4 | 151 | 5 |
| | Mponela Agric | 55.2 | 61.2 | 90 | 712.8 | 704.4 | 101 | 3 |
| | Mwimba Research | 19 | 76.5 | 25 | 706.4 | 771.2 | 92 | 2 |
| | Ntchisi Boma | 57.7 | 86.3 | 67 | 941.5 | 991.7 | 95 | 2 |
| LILONGWE | Chileka Namitete | 190.1 | 44.7 | 425 | 1144.8 | 782.4 | 146 | 5 |
| | Chitedze Met. | 113.1 | 67.5 | 168 | 705.1 | 737 | 96 | 5 |
| | K.I.A Met | 125.0 | 69.1 | 181 | 791.0 | 721.7 | 110 | 6 |
| | Kasiya Agric | 61.7 | 83.5 | 74 | 902.3 | 834.1 | 108 | 2 |
| | Mlangeni Njolo | 177.3 | 78.3 | 226 | 1106.8 | 816.9 | 135 | 5 |
| | Nathenje Agric | 124.5 | 62.7 | 199 | 1040.5 | 718.7 | 145 | 4 |
| | Ntcheu - Nkhande | 175.2 | 79.3 | 221 | 1286.4 | 896.6 | 143 | 4 |
| | Dedza RTC | 222.8 | 86.8 | 257 | 928.3 | 851.5 | 109 | 5 |
| SALIMA | Nkhotakota Met | 31.9 | 118.2 | 27 | 1046.9 | 988.4 | 106 | 5 |
| | Salima Met | 38.6 | 98.7 | 39 | 1044.2 | 966.2 | 108 | 5 |
| MACHINGA | Balaka Township | 185.6 | 57.5 | 323 | 1110.5 | 736.5 | 151 | 4 |
| | Chancellor College | 287.5 | 88.4 | 325 | 929.8 | 1042.2 | 89 | 6 |
| | Chikweo Agric. | 188.1 | 71.6 | 263 | 891.1 | 878 | 101 | 3 |
| | Makoka Met | 271.3 | 65.1 | 417 | 1044.0 | 825.1 | 127 | 7 |
| | Mangochi Met. | 292.9 | 55.1 | 532 | 897.9 | 586.0 | 153 | 5 |
| | Monkey Bay Met. | 69.4 | 42.4 | 164 | 654.6 | 521.9 | 125 | 5 |
| | Namiasi Agric | 200.1 | 44 | 455 | 810.9 | 659.8 | 123 | 3 |
| | Naminjiwa Agric | 185.7 | 66.3 | 280 | 1047.2 | 829.3 | 126 | 5 |
| | Namwera Agric | 221.2 | 71.1 | 311 | 1239.4 | 851.2 | 146 | 4 |
| | Phalula Agric | 281.7 | 57.2 | 492 | 954.6 | 720.6 | 132 | 4 |
| | Toleza Farm | 200.0 | 64 | 313 | 1141.5 | 731.4 | 156 | 4 |
| | Zomba RTC | 247.3 | 76 | 325 | 1011.4 | 979.7 | 103 | 6 |
| BLANTYRE | Bvumbwe Met. | 392.8 | 70.3 | 559 | 1360.0 | 904.0 | 150 | 4 |
| | Chichiri Met. | 320.8 | 24.6 | 1304 | 1456.8 | 997.1 | 146 | 5 |
| | Chileka Airport | 402.5 | 51.8 | 777 | 1132.8 | 736.6 | 154 | 5 |
| | Chiradzulu Agric | 327.2 | 73.1 | 448 | 1142.5 | 836.9 | 137 | 5 |
| | Chizunga Factory | 559.8 | 89.1 | 628 | 1525.2 | 1047.3 | 146 | 5 |
| | Lujeri Tea Estate | 485.5 | 14.8 | 3280 | 2097.2 | 1466.3 | 143 | 6 |
| | Mimosa Met. | 356.6 | 95.1 | 375 | 1180.1 | 1097.7 | 108 | 5 |
| | Mpemba Vet | 540.1 | 77.9 | 693 | 1689.6 | 926.5 | 182 | 5 |
| | Mulanje Boma | 525.5 | 119.1 | 441 | 1674.2 | 1328.9 | 126 | 5 |
| | Mwanza Boma | 222.4 | 65.8 | 338 | 1289.3 | 846.3 | 152 | 5 |
| | Neno Agric | 465.4 | 79.9 | 582 | 1705.1 | 921.6 | 185 | 4 |
| | Satemwa Tea Est. | 494.3 | 73 | 677 | 1489.6 | 854.1 | 174 | 6 |
| | Thuchila Agric | 310.1 | 68.6 | 452 | 952.7 | 737.0 | 129 | 6 |
| | Thyolo Met | 381.2 | 70.3 | 542 | 1201.7 | 992.2 | 121 | 6 |
| SHIRE VALLEY | Chikwawa Boma | 227.7 | 43.8 | 520 | 868.3 | 647.2 | 134 | 5 |
| | Kasinthula Res. S | 218.8 | 87.2 | 251 | 916.6 | 616.4 | 149 | 4 |
| | Makhanga Met | 376.7 | 48.4 | 778 | 1077.8 | 612.5 | 176 | 7 |
| | Nchalo Sucoma | 237.8 | 41 | 580 | 798.6 | 559.5 | 143 | 5 |
| | Ngabu Met. | 208.4 | 41.8 | 499 | 862.1 | 632.4 | 136 | 7 |
| | Nsanje Boma | 317.0 | 81.5 | 389 | 798.5 | 892.9 | 89 | 6 |

**TABLE 2: AGROMETEOROLOGICAL PARAMETERS FOR 01 TO 10 MARCH 2019**

| STATION/ADD | MAX TEMP (°C) | MIN TEMP (°C) | ABS MAX (°C) | ABS MIN (°C) | WIND SPEED Km/hr | RH % | SUN SHINE HOURS | Eo mm per day | Et mm per day | RAD-TION cal $cm^{-2}$ p/day |
|---|---|---|---|---|---|---|---|---|---|---|
| KARONGA ADD | | | | | | | | | | |
| CHITIPA | 27.8 | 17.8 | 29.9 | 17.1 | 5.0 | 78 | 5.0 | 5.4 | 4.3 | 7.6 |
| KARONGA | 32.1 | 21.6 | 33.4 | 20.5 | 4.3 | 68 | 5.0 | 6.1 | 5.0 | 7.6 |
| MZUZU ADD | | | | | | | | | | |
| BOLERO | 29.2 | 18.8 | 33.7 | 17.3 | 1.8 | 74 | 4.0 | 5.2 | 4.1 | 7.0 |
| MZIMBA | 26.4 | 16.5 | 29.3 | 15.2 | 3.6 | 79 | 3.5 | 4.7 | 3.7 | 6.7 |
| MZUZU | 26.9 | 17.4 | 28.9 | 16.3 | 5.0 | 78 | 3.3 | 4.8 | 3.8 | 6.6 |
| NKHATA BAY | 30.7 | 21.9 | 32.3 | 20.7 | 2.5 | 79 | 3.7 | 5.3 | 4.2 | 6.8 |
| KASUNGU ADD | | | | | | | | | | |
| KASUNGU | 27.0 | 19.0 | 30.0 | 18.3 | 3.6 | 74 | 6.5 | 6.0 | 4.7 | 8.6 |
| LILONGWE ADD | | | | | | | | | | |
| CHITEDZE | 27.2 | 17.8 | 31.0 | 14.4 | 2.9 | 77 | 6.0 | 5.7 | 4.5 | 8.3 |
| DEDZA | 23.5 | 15.2 | 27.1 | 14.0 | 3.6 | 82 | 6.5 | 5.4 | 4.2 | 8.6 |
| K I A | 24.6 | 17.6 | 29.3 | 16.8 | 5.0 | 76 | 7.2 | 6.0 | 4.7 | 9.1 |
| SALIMA ADD | | | | | | | | | | |
| NKHOTAKOTA | 29.9 | 20.9 | 30.7 | 20.0 | 2.5 | 73 | 5.0 | 5.8 | 4.7 | 7.7 |
| SALIMA | 28.8 | 22.0 | 31.2 | 20.5 | 5.8 | 79 | 5.2 | 6.0 | 4.8 | 7.8 |
| MACHINGA ADD | | | | | | | | | | |
| NTAJA | 27.6 | 20.8 | 31.8 | 18.4 | 6.1 | 84 | 3.5 | 5.0 | 4.0 | 6.6 |
| MAKOKA | 25.7 | 18.2 | 29.7 | 15.0 | 6.5 | 85 | 3.0 | 4.5 | 3.6 | 6.3 |
| MANGOCHI | 30.4 | 22.7 | 33.6 | 21.5 | 4.0 | 86 | 3.5 | 5.1 | 4.1 | 6.7 |
| MONKEY BAY | 30.0 | 23.0 | 32.0 | 21.5 | 5.0 | 64 | 4.5 | 6.1 | 5.0 | 7.3 |
| BLANTYRE ADD | | | | | | | | | | |
| BVUMBWE | 23.3 | 17.4 | 26.9 | 15.1 | 7.2 | 87 | 3.0 | 4.3 | 3.4 | 6.3 |
| CHICHIRI | 24.3 | 18.5 | 28.0 | 17.0 | 9.4 | 83 | 3.0 | 4.6 | 3.7 | 6.3 |
| CHILEKA | 27.3 | 19.2 | 30.4 | 15.7 | 11.2 | 81 | 3.2 | 5.0 | 4.1 | 6.5 |
| MIMOSA | 22.3 | 19.4 | 31.2 | 17.1 | 4.3 | 79 | 3.0 | 4.5 | 3.6 | 6.3 |
| SHIRE VALLEY ADD | | | | | | | | | | |
| NGABU | 31.2 | 23.2 | 34.9 | 22.1 | 2.2 | 83 | 4.0 | 5.4 | 4.3 | 7.0 |

**Glossary of some terms on this table**

- Eo = Potential Evaporation, Et = Potential Evapotranspiration and RH = Relative Humidity
- Mean Temperature of the day =(Max of the day + Min of the same day )/2
- ABS Max (Min) = Absolute Maximum (minimum) is the highest (lowest) of maximum (minimum) temperatures observed for a given number of days (calendar month) of a specified period of months (years).
- To convert Meters Per Second (mps) to Kilometres per hour (Km/hr) = mpsx3.6