

TEN-DAY CLIMATE DIAGNOSTICS BULLETIN

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HIGHLIGHTS

- ✓ *During the second dekad of March 2023, rainfall activities were observed over the northern, subequatorial and tropical bands of the Continent. Such that, below average to well below average conditions were observed over one or two places in the continent's regions; North Africa, West Africa, Central Africa, East Africa and the SADC regions. Above-average to well above-average rainfall conditions were observed over West Africa, Central Africa, East Africa and the SADC regions.*
- ✓ *The outlook for the next two weeks, from March 24 to April 06 2023, shows that above normal to well above normal rainfall conditions are expected over Liberia, much of Cote d'Ivoire, southern Ghana, southern Togo, southern Benin, southern Nigeria, southern Cameroon, south-western CAR, South Sudan, Ethiopia, Somalia, Equatorial Guinea, Gabon, Congo, DRC, Uganda, Rwanda, Burundi, Tanzania, Angola, Zambia, northern Malawi, northern Mozambique, and northern Madagascar. However, normal to below normal rainfall is expected over DRC, southern Zambia, northern Mozambique, much of Zimbabwe, north-eastern part of South Africa and northern Madagascar.*

1.0 GENERAL CLIMATOLOGICAL SITUATION

Subsection 1.1 provides the strength of the surface pressure systems, ITD, CAB and ITCZ displacements, while subsection 1.2 is discussing the state of the troposphere and gives a summary of monsoon and relative humidity thresholds.

1.1 SURFACE

Pressure Systems

- **The Azores High** maintained a constant central value of 1019hPa from previous dekad, weakened by 1hPa when compared to the climatological mean (1991-2020). It was located at 20°W and 31°N. The center moved to the west of its position during previous dekad.
- **St. Helena High** observed a central pressure value of 1017hPa; it weakened by 4hPa from previous dekad and weakened by 1hPa when compared to its climatological mean (1991-2020). It was located at 04°E and 30°S.
- **Mascarene High** observed a central value of 1023hPa. It was strengthened by 6hPa from previous dekad and strengthened by 4hPa when compared to the climatological mean (1991-2020). Positioned at 58°E and 38°S, it moved eastward over the south Indian Ocean.
- **Heat Low:** Thermal lows (low pressure areas) were observed with central values of 1007hPa, 1007hPa and 1005hPa over Burkina Faso, southern Chad and South Sudan. These areas deepened from their climatological mean by 2hPa, 1hPa and 2hPa respectively.

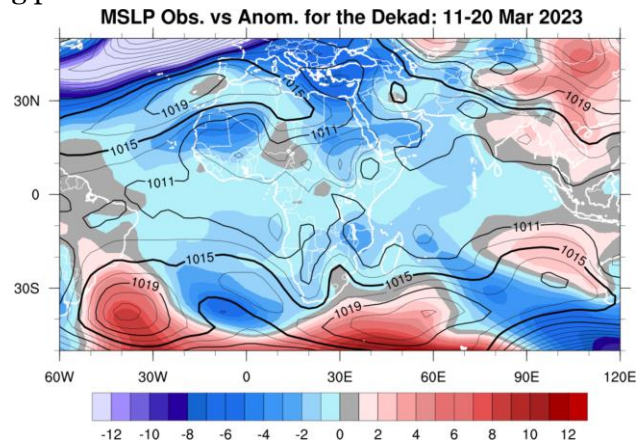


Figure 1. Observed Mean Sea Level Pressure (Contour) and anomaly (shaded) from 11th - 20th March 2023

1.2 TROPOSPHERE

1.2.1 African Monsoon

The African Monsoons combined influence of the Indo-Pacific and the Atlantic Oceans drive the inter-annual and the decadal monsoon variability over these regions.

Figure 2.a shows the dekadal average wind at 850hPa. Positive vortex wind was observed over southern Algeria, northern Mali, Guinea, northern Angola, northern Zambia, northern Mozambique and western South Africa. Negative vortex wind was observed over the stretch of Northern Africa, Niger, Chad, southern Mozambique, Zimbabwe, eastern Botswana, South Africa, Eswatini and Lesotho.

At the 700hpa level (see Fig.2b), the positive vortex wind anomaly was observed over Angola, northern Zambia and northern Mozambique.

At 200hpa level (see Fig.2c), the negative vortex wind anomaly was observed over Angola, northern Zambia and northern Mozambique.

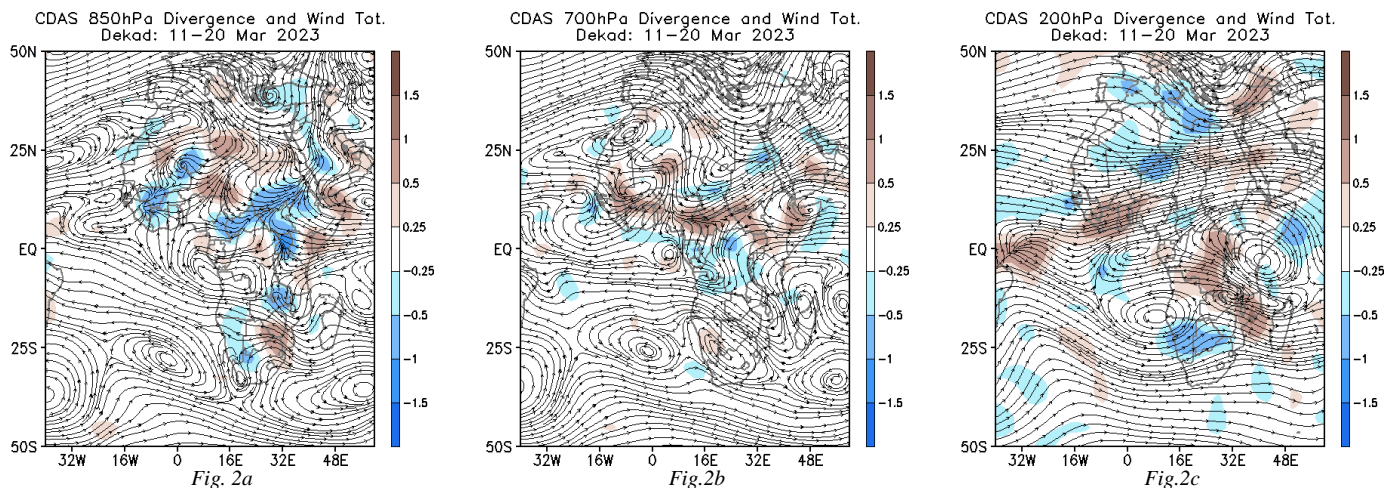


Figure 2: Mean wind (streamlines: m/s) and divergence (shaded: s^{-1}) observed at 850hPa (Fig.2a), 700hPa (Fig.2b) and 200hPa (Fig.2c) during the second dekad of March 2023 (from 11th - 20th Mar 2023). Source: NOAA/NCE.

1.2.2 Relative Humidity (RH) at 850hPa and 700hPa

Figure 3.a and 3.b respectively show the dekadal observed relative humidity and related anomalies at 850hPa and 700hPa for the second dekad of March 2023 compared to the reference period of 1991-2020.

At 850hPa (see Fig.3a), wet atmospheric conditions (relative humidity $\geq 60\%$) were observed over Africa; northern parts of Libya and Egypt in North Africa, Sierra Leon and Liberia in West Africa, southern part of Central Africa, southern part of East Africa and eastern part of the SADC region. The rest of the continent observed RH values $\leq 60\%$. Negative anomalies were observed during the second dekad of March 2023 over Morocco, Algeria, Tunisia, Mauritania, Mali, Liberia, Burkina Faso, Cote d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon, southern Chad, CAR, southern Sudan, South Sudan, Ethiopia, Somalia, Gabon, northern Congo, DRC, Uganda, Kenya, Rwanda, Burundi, Tanzania, southern Angola, western Zambia, northern Mozambique, Namibia, Botswana, north-western South Africa and Madagascar. The positive anomalies were recorded over the remaining parts of the continent.

At 700hPa (Fig.3b), high relative humidity ($\geq 60\%$) were observed over Africa; south-western part of West Africa, much of Central Africa, much of East Africa and much of SADC region. Relative humidity anomalies for the second dekad of March 2023 were negative over northern Morocco, Algeria, Tunisia, Libya, Mauritania, Mali, Sierra Leon, Liberia, Burkina Faso, Cote d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon, southern Chad, CAR, southern Sudan, Ethiopia, Somalia, Gabon, northern Congo, northern DRC, Uganda, Kenya, southern Namibia, Botswana, South Africa, Eswatini and northern Madagascar. The positive anomalies were recorded over the remaining parts of the continent.

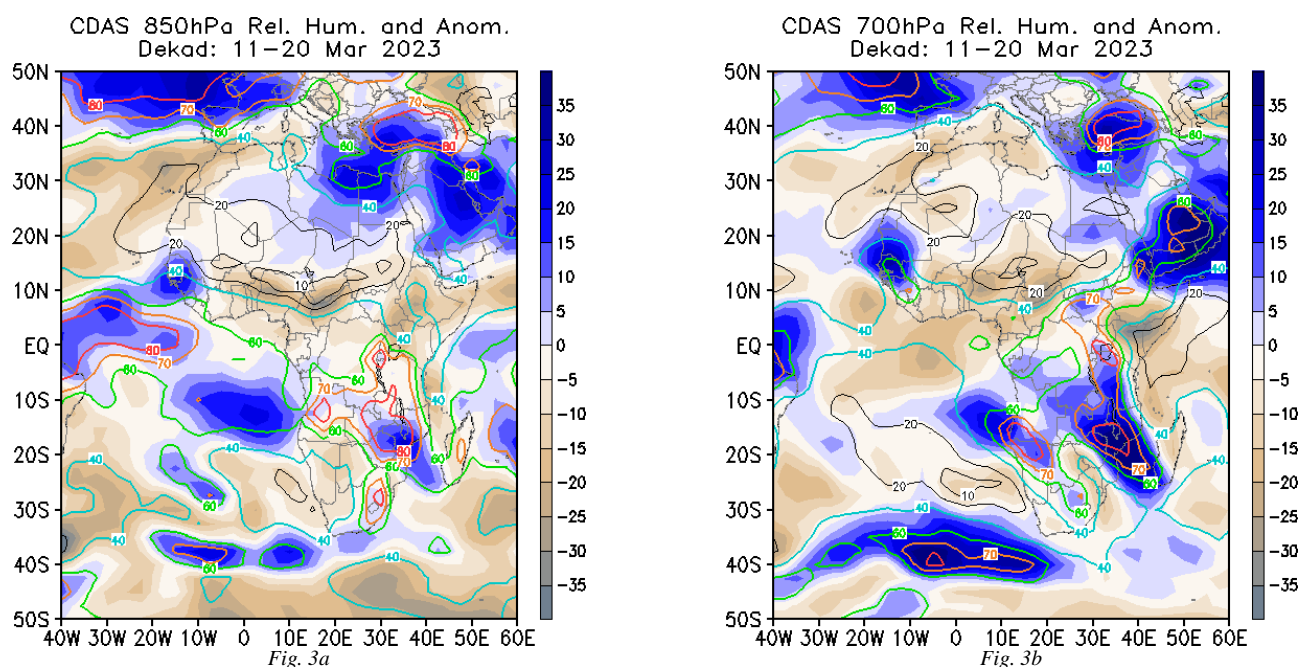


Figure 3. Relative Humidity (contour; %) and associated anomalies (shaded) observed at 850hPa (Fig.3a) and 700hPa (Fig.3b) during the second dekad of March 2023 (from 11th- 20th Mar 2023). SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

2.0 PRECIPITATION

Figure 8 shows that during the second dekad of March 2023, rainfall activities were observed over the northern, subequatorial and tropical bands of the Continent. Such that, below average to well below average conditions were observed over one or two places in the continent's regions; North Africa, West Africa, Central Africa, East Africa and the SADC regions. Above-average to well above-average rainfall conditions were observed over West Africa, Central Africa, East Africa and the SADC regions.

Details:

- **North Africa:** This region experienced below average to well below average rainfall conditions over the northern coastal areas of Algeria and Tunisia.
- **Sahel:** This region observed near average rainfall conditions.
- **Gulf of Guinea countries:** Below normal to well below normal conditions were observed over Liberia, Cote d'Ivoire, southern Ghana, southern Togo, southern Benin and southern Nigeria. Above average to well above average precipitation was observed over Cote d'Ivoire and southern Nigeria.

- **Central Africa countries:** This region experienced above normal to well above normal precipitation over south-eastern Cameroon, CAR, Congo, eastern DRC and Angola. Below normal to well below normal conditions were observed over Cameroon, western CAR, Equatorial Guinea, much of Gabon, much of DRC and Angola.
- **East African countries:** Above average to well above average conditions were observed over Ethiopia, Uganda, Kenya, Rwanda, Burundi, Tanzania, northern Zambia, Malawi, Mozambique, eastern Zimbabwe and southern Madagascar. Below average to well below average rainfall conditions were observed over south-eastern Kenya, north-eastern Tanzania, southern Zambia, western Zimbabwe and Madagascar.
- **Southern Africa countries:** Below average to well below average precipitation was observed over north-eastern Namibia, much of Botswana, north-eastern South Africa and Eswatini. Above average to well above average precipitation was observed over South Africa and Lesotho.

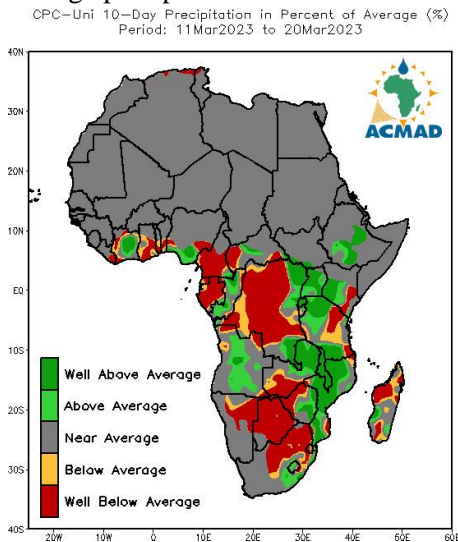


Figure 6: Precipitation in the percentage of the average for the second decade of March 2023. The reference period used is 1991-2020. Source: NOAA/. NCEP/. CPC/. UNIFIED/. Africa/. DAILY/)

3.0 RAINFALL OUTLOOK

The outlook for the next two weeks, from March 24 to April 06 2023, shows that above normal to well above normal rainfall conditions are expected over Liberia, much of Cote d'Ivoire, southern Ghana, southern Togo, southern Benin, southern Nigeria, southern Cameroon, south-western CAR, South Sudan, Ethiopia, Somalia, Equatorial Guinea, Gabon, Congo, DRC, Uganda, Rwanda, Burundi, Tanzania, Angola, Zambia, northern Malawi, northern Mozambique, western Botswana, South Africa and northern Madagascar. However, normal to below normal rainfall is expected over DRC, southern Zambia, northern Mozambique, much of Zimbabwe, north-eastern part of South Africa and northern Madagascar.

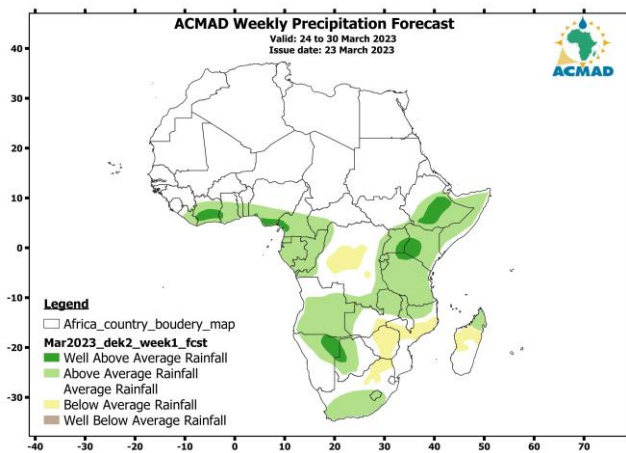


Figure 9a: Precipitation forecast for 24 - 30 March 2023

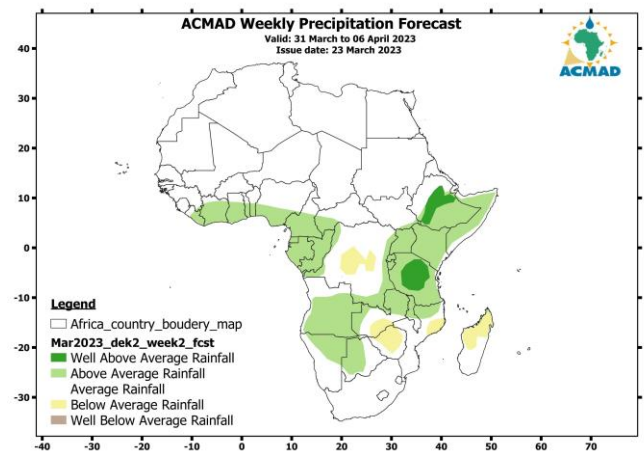


Figure 9b: Precipitation forecast for 22 March - 06 April 2023