

## TEN-DAY CLIMATE DIAGNOSTICS BULLETIN

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REPORTING PERIOD: Dekad 2; 11<sup>th</sup> –20<sup>th</sup> September 2022

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### HIGHLIGHTS

- ✓ During the second dekad of September 2022, rainfall activities were observed over most of subtropical and tropical bands of the Continent, with above-average to well above-average rainfall conditions observed over most of Western Africa, some northern parts of Central Africa and most parts of Eastern Africa regions. Below-average to well below-average rainfall was recorded over southern and western parts of West Africa and eastern parts of Central Africa.
- ✓ The dekad was characterized by neutral to warm SSTs conditions in the eastern parts of the Atlantic Ocean closer to the western coastline of the Continent. In addition, in the equatorial pacific region, La Nina conditions have persisted during most of the last four weeks. Over the Indian Ocean, the SSTs were mostly dominated by neutral to cold conditions over western parts that led to reduced rainfall over most of the eastern side of East African countries.
- ✓ The outlook for 21 – 27 September 2022 depicts a general tendency for below to normal precipitation over Guinea, Serra Leone, Uganda and Kenya. Above average precipitation is expected to be observed over Senegal, Gambia, Guinea Bissau, south of Mali, Burkina Faso, Ghana, Benin, eastern Nigeria, Cameroon, southern CAR, DRC, southern Sudan, northern South-Sudan and western Ethiopia. In the second week, whereas normal to above precipitation can be expected in Senegal, Gambia, Guinea Bissau, Benin, Nigeria, southern Chad, Cameroon, CAR and DRC, during the second week with below normal precipitation over Gabon, Equatorial Guinea, Uganda, Kenya and southern Ethiopia.

## 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** observed a central value of 1021hPa, a 1hPa strengthened compared to the climatological mean (1991-2020). It was located at 34°W and 28°N.
- **St. Helena High** observed a central pressure value of 1026hPa; a 3hPa strengthened from the previous dekad and from the climatological mean (1991-2020). It was located at 3°W and 36°S.
- **Mascarene High:** The central value for Mascarene High was 1030hPa. It strengthened by 7hPa from the previous dekad and by 5hPa from the climatological mean (1991-2020). Positioned at 78°E and 33°S, it moved to the east over the south Indian Ocean.
- **Heat Low:** Thermal low was observed with the value of 1007hPa over western parts of Chad, located at 15°E/26°N stable to previous dekad and its climatological mean.

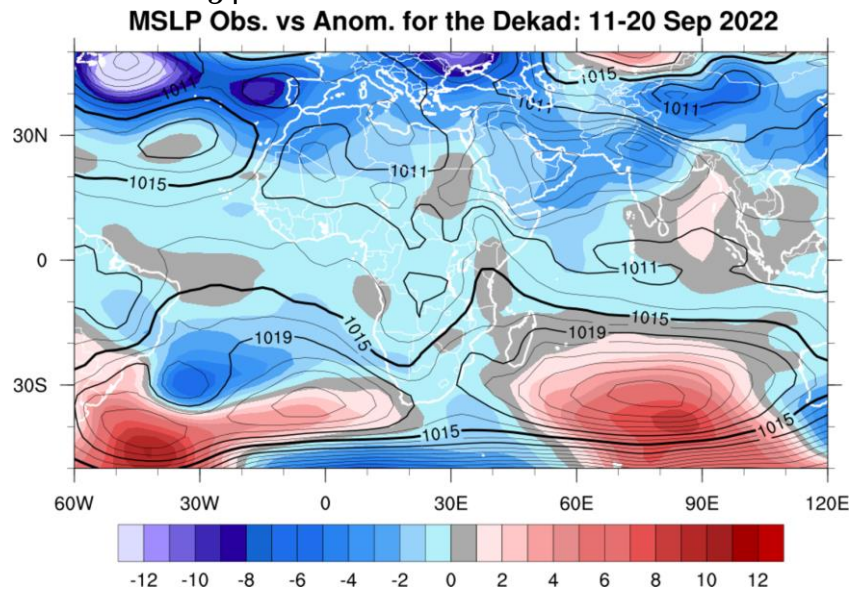


Figure 1. Observed Mean Sea Level Pressure (Contour) and anomaly (shaded) from 11<sup>th</sup> to 20<sup>th</sup> September 2022

### 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 the regions.

This figure 2.a shows the dekad average wind at 850hPa. Positive wind from north to westerly and south easterly anomalies observed over Botswana, Zimbabwe, Mozambique, Tanzania, Egypt and Libya. Negative wind anomalies were observed over Angola, Namibia, South Africa, DRC, Western Tanzania, Chad, Sudan, Algeria and Cameroon.

At the 700hPa level (see Fig.2b), the vortex wind anomaly was observed over northern parts of North Africa region, in the central parts of the Continent neutral westerlies were observed.

At the 200hPa level (see Fig.2c), the vortex wind anomaly was observed over north-eastern parts of North Africa. Very strong easterly wind vector anomalies at 200hPa observed mainly over Eastern and Central Africa region.

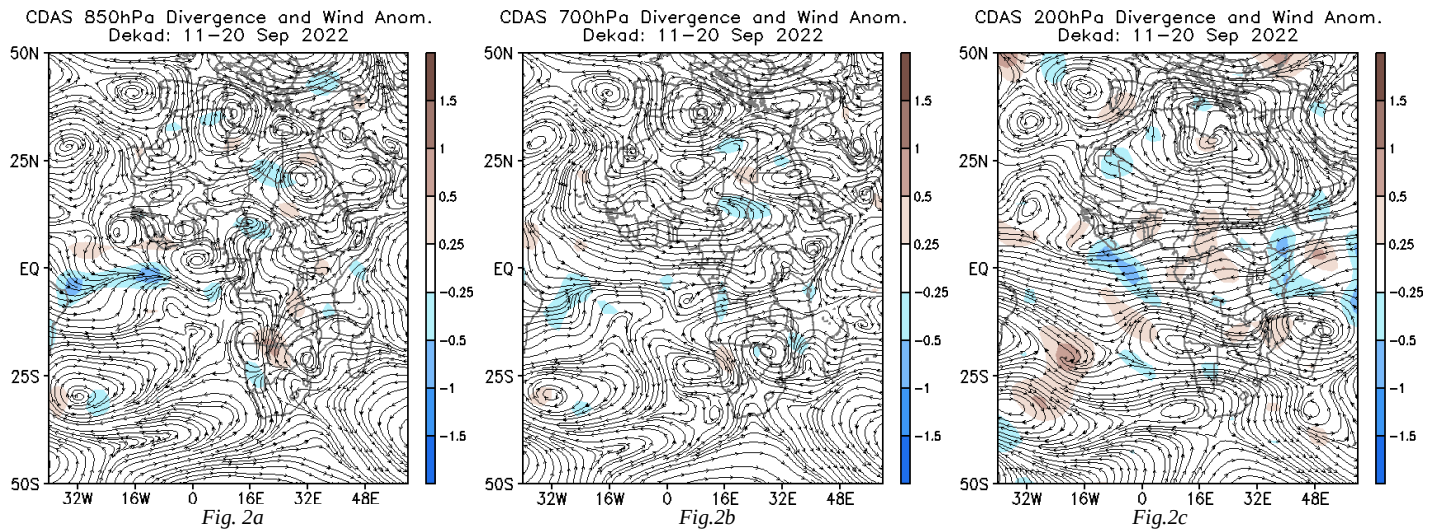


Figure 2: Mean wind (streamlines:  $m/s$ ) and divergence (shaded:  $s^{-1}$ ) observed at 850hPa (Fig.2a), 700hPa (Fig.2b) and 200hPa (Fig.2c) during the second decade of September 2022 (from 11<sup>th</sup> to 20<sup>th</sup> Sep). Source: NOAA/NCEP

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

Figure 3.a and 3.b shows respectively the dekadal observed relative humidity and related anomalies at 850hPa and 700hPa for the second decade of September 2022 compared to the reference period of 1991-2020.

At 850hPa (see Fig.3a), wet atmospheric conditions (relative humidity  $\geq 60\%$ ) were observed over southern parts of Western Africa countries, most of Central Africa and most parts of the East African region. The rest of the continent observed RH values  $\leq 60\%$ . Negative anomalies were observed during the second decade of September 2022 over most of DRC, Gabon, Congo, Angola, western parts of South Africa, Algeria, Libya, Tunisia and Mali, whilst positive anomalies were recorded over the rest of the continent.

At 700hPa (Fig.3b), high relative humidity ( $\geq 60\%$ ) were observed over Central Africa, most parts of Western Africa countries and East African regions. Relative humidity anomalies for the second decade of September 2022 were negative over Congo, DRC, Uganda, Kenya, Southern Ethiopia, Somalia, northern Egypt, northern Libya, most of Algeria, morocco, Mauritania, most parts of Mali and South Africa, southern Mozambique, and north Madagascar. While the rest of the continent received a surplus of moisture.

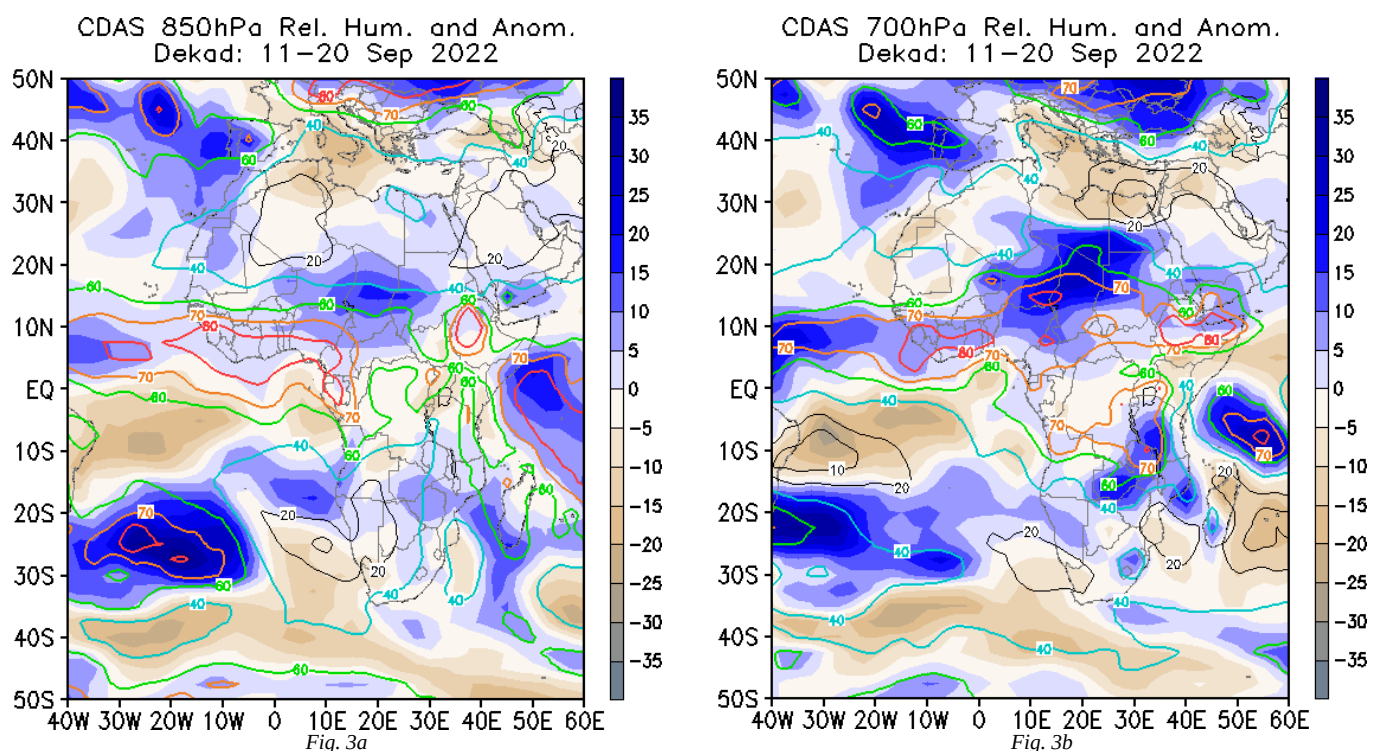


Figure 3. Relative Humidity (contour; %) and associated anomalies (shaded) observed at 850hPa (Fig.3a) and 700hPa (Fig.3b) during the period 11<sup>th</sup> to 20<sup>th</sup> September 2022. SOURCE/. NOAA/. NCEP-CAR/. CDAS1)



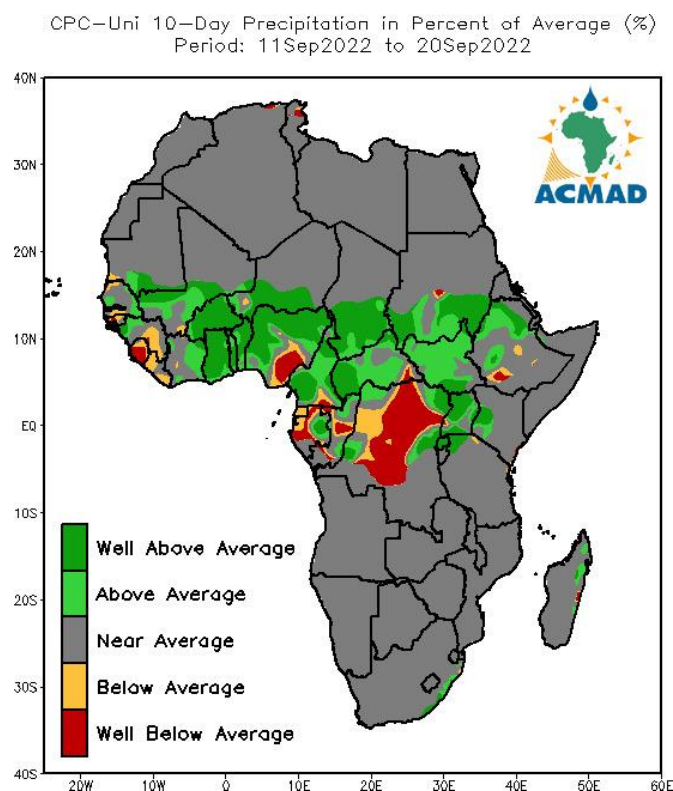
## 2.0 PRECIPITATION

Figure 8 shows the observed precipitation as a percentage of average for the second dekad of September 2022.

During the second dekad of September 2022, rainfall activities were observed over most of subtropical and tropical bands of the Continent, with above-average to well above-average rainfall conditions observed over most of Western Africa, some northern parts of Central Africa and most parts of Eastern Africa regions. Below-average to well below-average rainfall was recorded over southern and western parts of West Africa and eastern parts of Central Africa.

### Details:

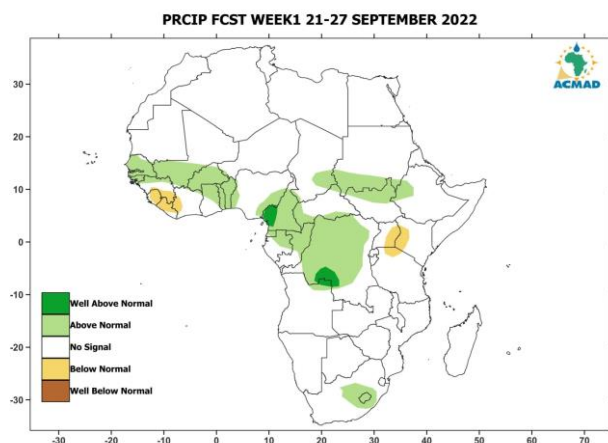
- **North Africa:** This region experienced mostly near average rainfall conditions.
- **Sahel:** Above to well above average rainfall conditions were experienced over southern parts of Mauritania, Mali, Niger, Chad and Sudan, during the same dekad below to well below average precipitation over some spot areas in Sudan and Mauritania.
- **Gulf of Guinea countries:** Most parts of the region received above to well above-average precipitation over Nigeria, Ivory Coast, Ghana, Togo, Benin, Gabon and Cameroon, below to well below average rainfall over Liberia, Sierra Leon, Guinea, Equatorial Guinea, western Gabon and south eastern parts of Nigeria.
- **Central Africa countries:** experienced below to well above normal precipitation over Central Africa, below to well below average observed over DRC and Congo.
- **East African countries:** most of eastern parts observed above to well above average rainfall conditions over southern parts of Sudan, South-Sudan, Uganda, Rwanda, northern parts of Ethiopia and west Kenya, below to well below average rainfall were observed in the south western parts of Ethiopia.
- **Southern Africa countries:** most parts of the region are still off-season.



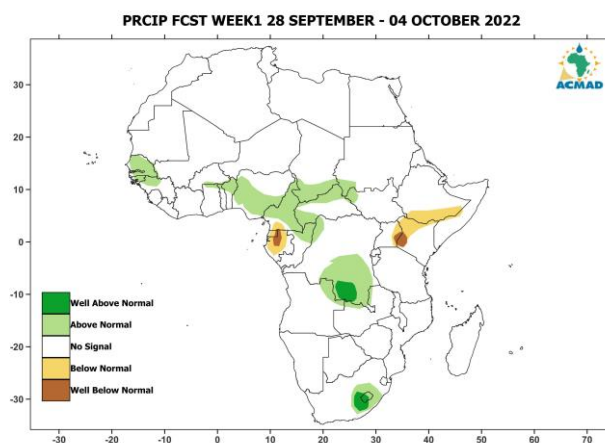
**Figure 6:** Precipitation in the percentage of the average for the second dekad 11<sup>th</sup> to 20<sup>th</sup> September 2022. The reference period used is 1991-2020. Source: NOAA/. NCEP/. CPC/. UNIFIED/. Africa/. DAILY/)

### 3.0 RAINFALL OUTLOOK VALID FOR 21 SEPTEMBER TO 04 OCTOBER 2022

The outlook for 21 – 27 September 2022 depicts a general tendency for below to normal precipitation over Guinea, Serra Leone, Uganda and Kenya. Above average precipitation is expected to be observed over Senegal, Gambia, Guinea Bissau, south of Mali, Burkina Faso, Ghana, Benin, eastern Nigeria, Cameroon, southern CAR, DRC, southern Sudan, northern South-Sudan and western Ethiopia. In the second week, whereas normal to above precipitation can be expected in Senegal, Gambia, Guinea Bissau, Benin, Nigeria, southern Chad, Cameroon, CAR and DRC, during the second week with below normal precipitation over Gabon, Equatorial Guinea, Uganda, Kenya and southern Ethiopia.



**Figure 9a:** Precipitation forecast for 21 – 27 September 2022



**Figure 9b:** Precipitation forecast for 28 September- 04 October 2022