

Ten Days Climate Diagnostics Bulletin

N°33

Dekad 3, 21 – 30 November 2021

HIGHLIGHTS

- ✓ During the third dekad of November 2021, this region experienced mostly near average rainfall conditions. Below average rainfall was recorded over the northern edges of Morocco while above average rainfall conditions was observed over north of Algeria and Morocco
- ✓ This dekad was characterized by persistence of warm SSTs conditions in the Gulf of Guinea region and most of north Atlantic with moderate anticyclone wind vector anomalies at 850hPa and 700hPa in the northern part of Africa and easterlies in the Gulf of Guinea into the Atlantic Ocean
- ✓ The outlook for 4th – 17th December 2021, depict a general tendency of an increase chance for low to moderate precipitation over the central and southern sub-regions of the African continent. Moderate to heavy precipitation is likely over western part of Angola, southern Gabon, Congo Republic, the border of DRC and Zambia and southern 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 on 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 1033hPa, intensifying by 9hPa when compared to the previous dekad and by 15hPa to its climatological mean (1991-2020). The high pressure was located at 32°W and 50°N, moving slightly northwestward of its climatological position over the North Atlantic Ocean.
- **St. Helena High** maintained its previous dekad central value of 1023hPa and also had the same value as the climatological mean (1991-2020). It was located at 0°E and 28°S. It shifted slightly eastward of its climatological position over the South Atlantic Ocean.
- **Mascarene High** observed 1022hPa, weakening by 3hPa when compared to the previous dekad and by 1hPa compared to the climatological mean (1991-2020). Positioned at 100°E and 35°S, it is located eastward of its climatological position over the south Indian Ocean.
- **Heat Low:** Twin low-Pressure systems over southern Chad and at the border of North Sudan and South Sudan had a central values of 1009hPa and 1008hPa respectively. Both heat-lows maintained their central values as the previous dekad and are located at 20°E and 10°N and at 32°E and 10°N respectively.

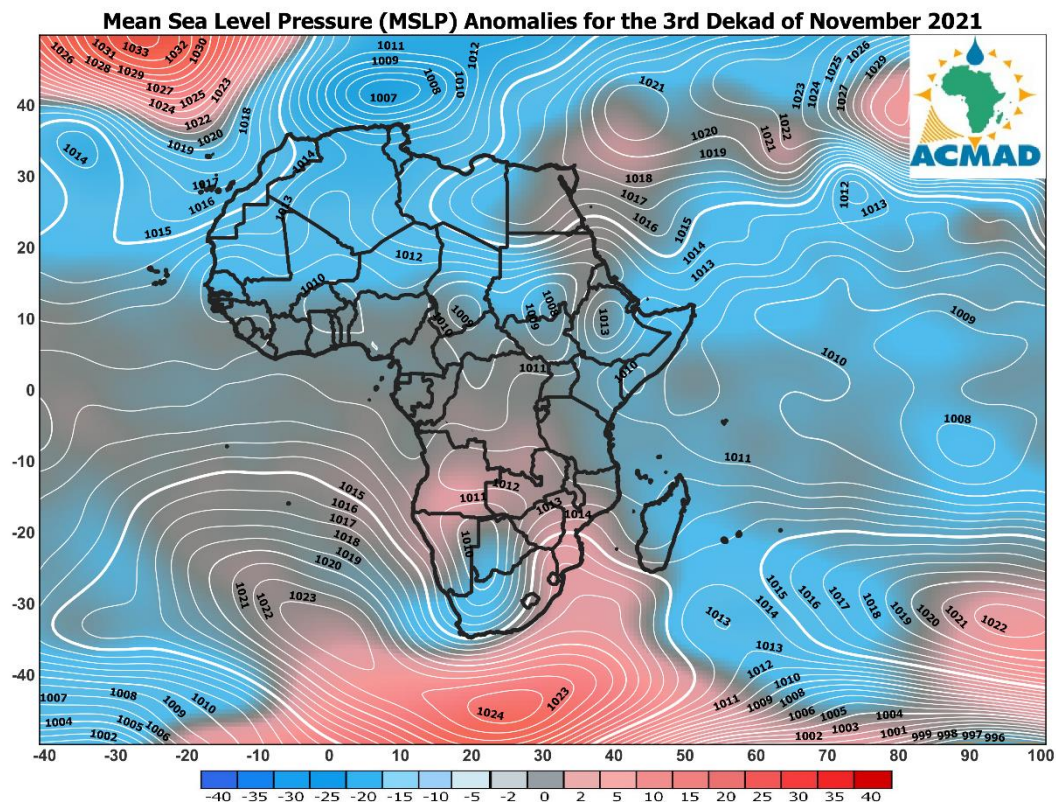


Figure 1. Observed Mean Sea Level Pressure (Contour) and anomaly (shaded) from 21st to 30th November 2021

1.2 TROPOSPHERE

1.2.1 African Monsoon

Figure 2a: This figure shows the average dekadal wind (m/s) at 850hPa. Light to moderate winds was observed over most areas with an anticyclone circulation over Tunisia, Libya and Algeria with an average wind anomaly of about 8m/s-10m/s. Winds with speed of about 6m/s-8m/s were observed over the border of Chad and North Sudan.

Figure 2b: At the 700hpa level, the western wind anomaly dominated circulation over northern Africa while the equatorial region observed easterly wind anomalies of about 6m/s to 11m/s. The southern part of Africa observed north-westerly wind anomalies with varying speeds of 6m/s - 9m/s.

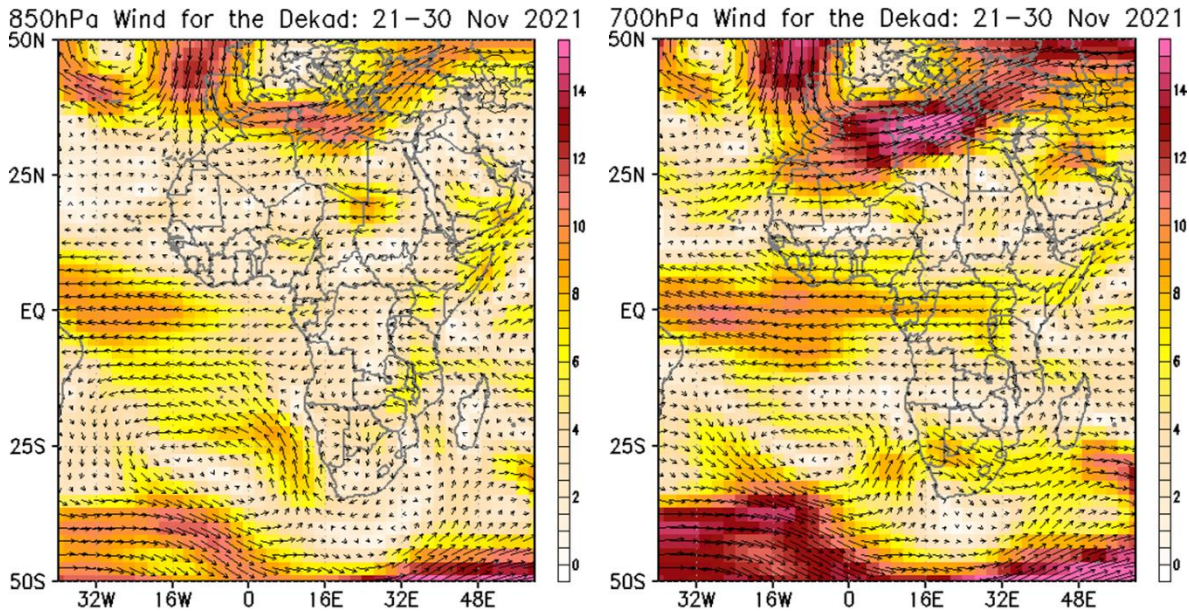


Figure 2a: Mean wind (m/s) at 850hpa from 21-30 November 2021
Source: NOAA/NCEP

Figure 2b: Mean wind (m/s) at 700hpa from 21-30 November 2021
Source: NOAA/NCEP

Figure 2c: shows the wind vector anomaly at 200hPa. During the third dekad of November 2021, very strong westerly winds of more than 14m/s were observed mainly over northern Africa, countries in the Sahel, eastern and southern Africa. The central band of the continent observed low to moderate easterly winds.

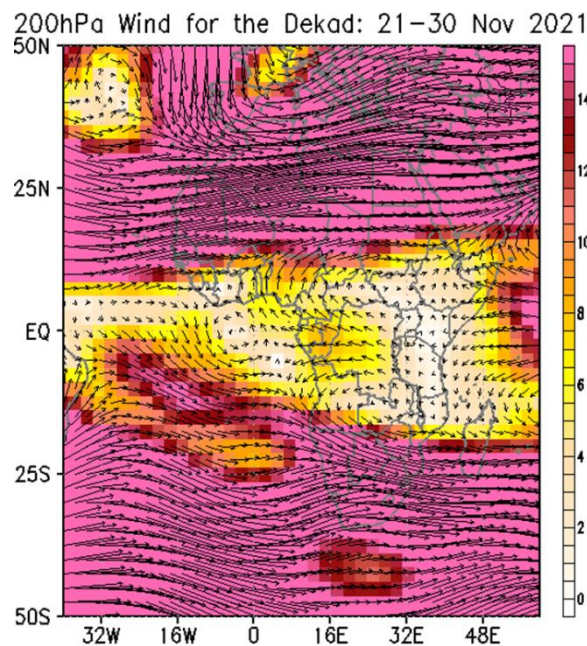


Figure 2c: Mean wind at 200 hPa (m/s) during the period from 21-30 November 2021
(Source: NOAA/NCEP)

1.2.3 Relative Humidity (RH) at 850hPa

Figure 4 presents the dekadal observed relative humidity at 850hPa for the second dekad of November 2021 and anomalies to the reference period 1991-2020. Wet atmospheric conditions (relative humidity $\geq 60\%$) were witnessed over the northern edges of North Africa, Sierra Leone, Liberia, eastern Guinea and Ivory Coast, southeast of Nigeria, and over most of central, eastern and southern Africa. The rest of the continent observed RH values $\leq 60\%$.

The relative humidity anomalies for the second dekad of November 2021 were negative over the southern part of countries in the Gulf of Guinea, Egypt, Equatorial Guinea, south of Cameroon, most of Ethiopia, and over parts of Libya, Kenya, Tanzania and Somalia.

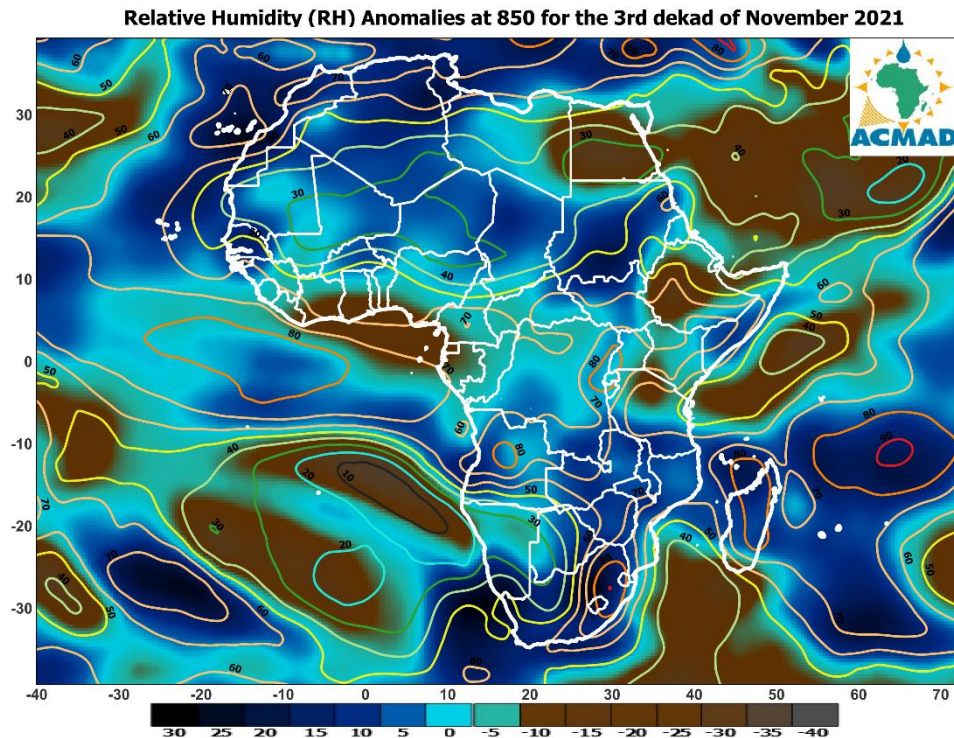
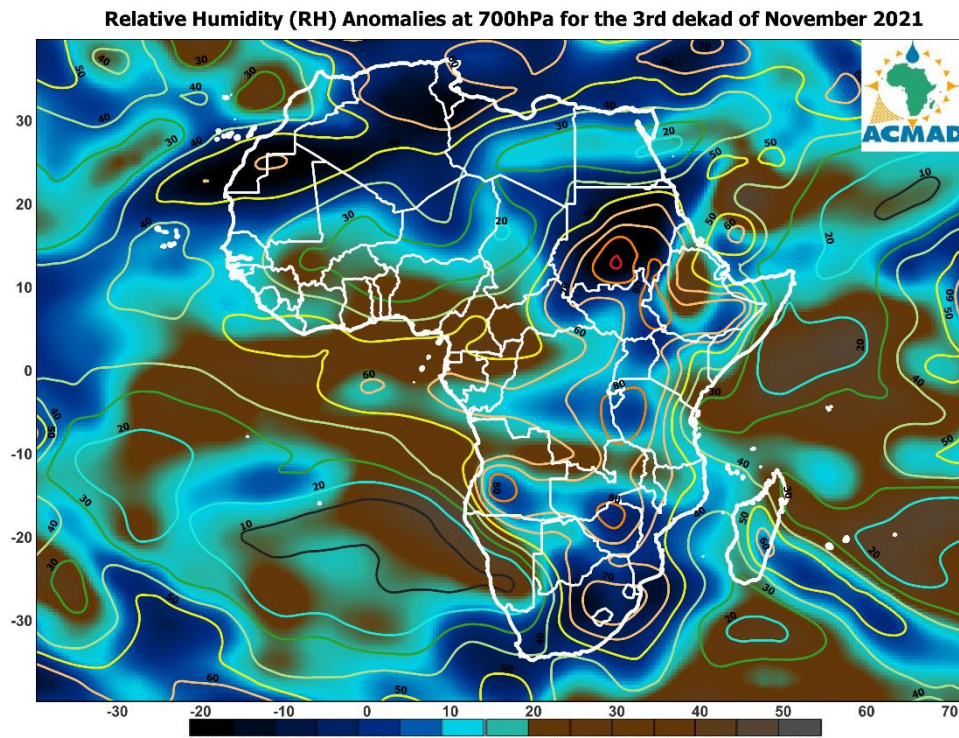


Figure 4. RH (%) at 850hPa (contour) and anomaly (shaded) during the period of 21st to 30th November 2021
SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

1.2.4 Relative Humidity at 700hPa

Figure 5 presents the dekadal observed and anomalies of relative humidity at 700 hPa. The figure shows that the high relative humidity belt with values $\geq 60\%$ at 700hPa was observed over Tunisia, the northern part of Mauritania and Algeria, north west of Libya, most of eastern, central and southern Africa. The rest of the continent observed RH values $\leq 60\%$.

The relative humidity anomalies for the third dekad of November 2021 were negative over southern Niger, Burkina Faso, Ghana, Togo, Lome, central to southern Nigeria, the western part of Central Africa, parts of Ethiopia, Kenya, Somalia, Malawi, Zambia, Madagascar, Angola and most of Namibia. The rest of the continent observed positive anomalies.



2.0 PRECIPITATION

Figure 6 shows the observed precipitation in the percentage of average for the third dekad of November 2021.

2.1 Precipitation

The rains retreated completely from northern and western Africa except over few areas such as the northern edges of North Africa, south west of Ivory Coast and south east of Liberia. The season was effectively implemented further south of the Equator, with above-average precipitation recorded over parts of central, eastern and southern Africa. Below-average rainfall was observed over large portions of the DRC, Congo, Gabon, Angola, Namibia, Tanzania, Mozambique, Zambia, South Africa and Madagascar.

Details:

- **North Africa:** This region experienced mostly near average rainfall conditions. Below average rainfall was recorded over the northern edges of Morocco while above average rainfall conditions was observed over north of Algeria and Morocco.
- **Gulf of Guinea countries:** Near-average precipitation was observed in this region except over the southwest of Ivory Coast and south east of Liberia..
- **Central Africa countries:** Equatorial Guinea, southwest of Cameroon, most of Gabon, Congo and a large portion of DRC witnessed below average to precipitation while above average to well above average precipitation was observed over the southern half of DRC and parts of Congo and Gabon.
- **East Africa countries:** Above average to well above rainfall conditions was observed over parts of Kenya, Uganda, Rwanda, Burundi and Tanzania. Southern Kenya and eastern Tanzania experienced below average to well below average rainfall conditions in the dekad under review.
- **Southern Africa countries:** Most of Angola, Zambia, Botswana and Mozambique, parts of Madagascar, South Africa, Malawi, and northern Namibia witnessed below average to well below average precipitation. Above average to well above average rainfall was experienced in the eastern half of South Africa, southern Botswana and Zimbabwe and over parts of Zambia, Mozambique and Madagascar.

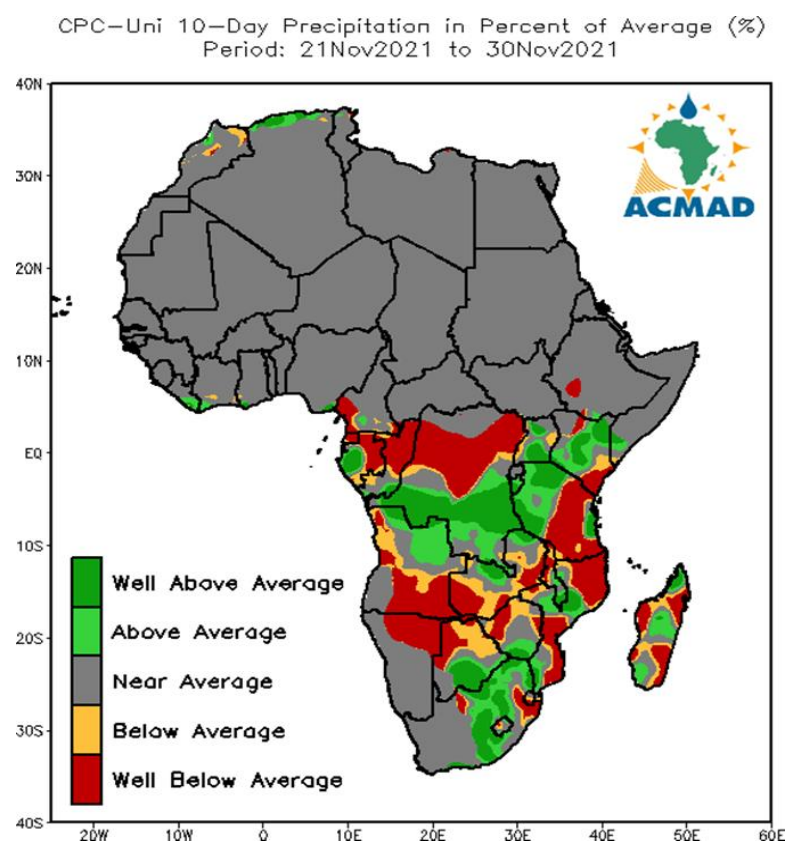


Figure 6: Precipitation in the percentage of average for the third dekad 21st to 30th November 2021. The reference period used is 1991-2020. Source: NOAA/. NCEP/. CPC/. UNIFIED/. Africa/. DAILY/)

3.0 OUTLOOK VALID FOR 13th-19th AND 20th-26th NOVEMBER 2021

3.1 PRECIPITATION

During the period of 4th - 10th December 2021, low to moderate precipitation is expected over parts of the Central to southern Africa sub-region such as southern Cameroon, Equatorial Guinea, Gabon, Zambia, Zimbabwe, Malawi, Angola, Botswana, Madagascar parts of South Africa, Mozambique and Tanzania. Moderate to heavy precipitation is likely to be observed over the western part of Angola, eastern South Africa, southern Gabon and Congo Republic.

Figure 7b shows that during week 2 of 11th – 17th December 2021, low to moderate precipitation is expected over countries like Gabon, Congo, Zambia, Malawi, Mozambique, Madagascar, parts of Angola, South Africa DRC and Tanzania. Moderate to heavy precipitation is likely over the border of DRC and Zambia, eastern South Africa and southern Madagascar.

Precipitation Forecast for Week 1 (04-10 December 2021)

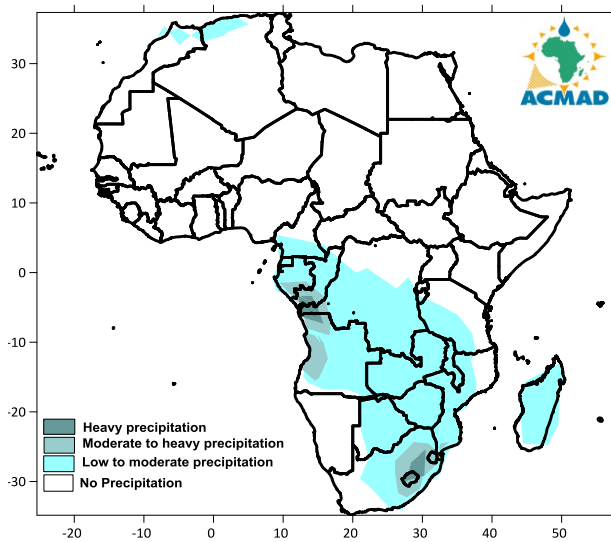


Figure 7a: Precipitation forecast for 4th -10th December 2021

Precipitation Forecast for Week 1 (11-17 December 2021)

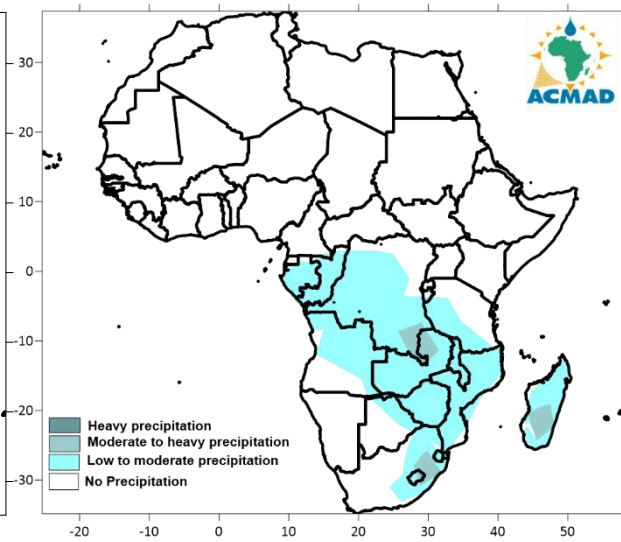


Figure 7b: Precipitation forecast for 11th -17th December 2021

3.2 TEMPERATURE

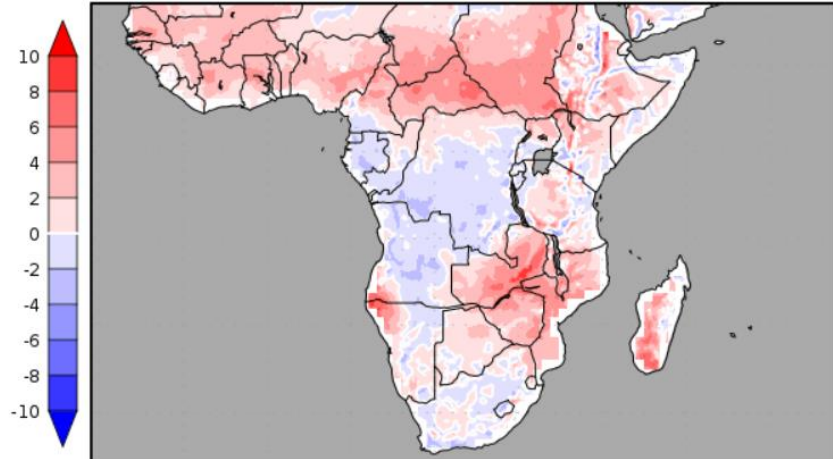
Figure 8 presents the temperature anomalies forecast for the week of 3rd – 11th December 2021. Temperatures are expected to be above average over most of the continent except for most parts of the central Africa and some parts of eastern and southern African region.

Temperature Anomaly during the first period:

Fri, 03 DEC 2021 at 00Z

-to-

Sat, 11 DEC 2021 at 00Z



Temperature forecasts from the National Centers for Environmental Prediction.
Normal Temperature derived from CRU monthly climatology for 1901-2000
Forecast Initialization Time: 00Z03DEC2021

GrADS/COLA

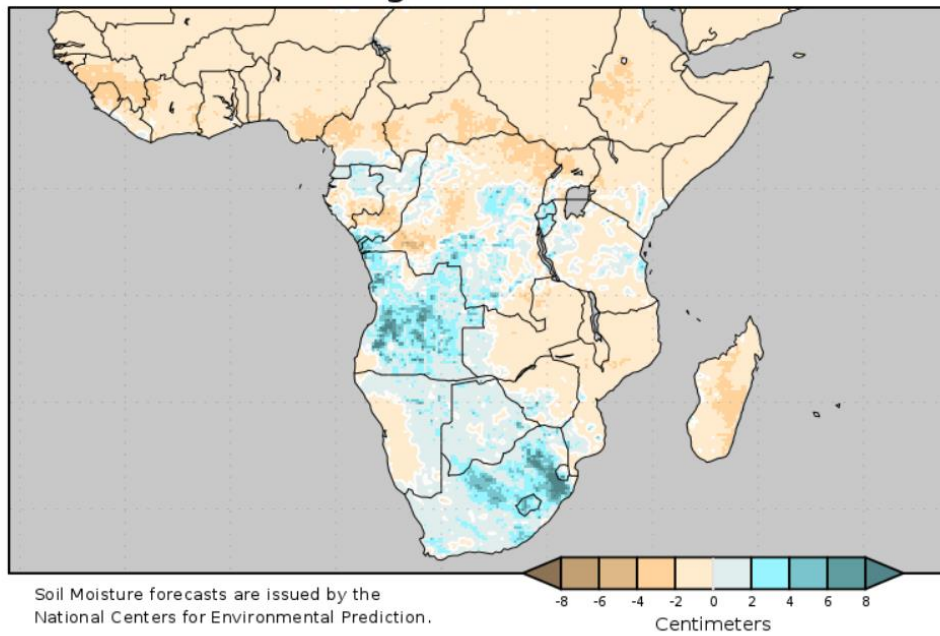
Figure 8: Temperature anomalies prospect from 3rd – 11th December 2021
(Source: COLA)

3.3 SOIL MOISTURE

Figure 9 shows soil moisture anomalies forecast for the week of 3rd – 11th December 2021 where positive soil moisture is expected over most parts of central Africa and some parts of eastern and southern Africa. The rest of the continent is expected to observe negative soil moisture values during the forecast period.

Soil Moisture Change

00Z 03 DEC 2021 to 00Z 11 DEC 2021



GrADS/COLA

Figure 9: Soil moisture change prospect for the period 3rd – 11th December 2021
(Source: COLA)