

Ten Days Climate Diagnostics Bulletin

N°32

Dekad 2, 11 – 20 November 2021

HIGHLIGHTS

- ✓ During the second dekad of November 2021, the rains continued to retreat from northern and western Africa. General tendency of below to well below average rainfall conditions dominated most of the continent except for the southern part of a few countries in the Gulf of Guinea, south east Cameroon, northern, western, and south eastern DRC, most of Zambia, and parts of Kenya, Uganda, Tanzania, Angola, Zimbabwe, Botswana, Mozambique, and Madagascar
- ✓ 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 23rd November - 6th 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 northern Angola, western DRC and Congo

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 1024hPa, weakening by 2hPa compared to the previous dekad while intensifying by 6hPa to its climatological mean (1991-2020). The high pressure was located at 10°W and 44°N, moving slightly eastward 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 14°W and 30°S. It maintained its climatological position over the South Atlantic Ocean.
- **Mascarene High** observed 1025hPa, intensifying by 2hPa compared to the previous dekad and by the same value compared to the climatological mean (1991-2020). Located at 100°E and 35°S, it continued to move eastward of its climatological position over the south Indian Ocean.
- **Heat Low:** Low-Pressure system over southwestern Chad had a central value of 1008hPa, deepening by 1hPa compared to the previous month. This pressure system was located at 18°E and 12°N. A second low-pressure system over southcentral North Sudan and northern South Sudan observed a central value of 1008hPa, deepening by 1hPa compared to the previous dekad was located at 30°E and 13°N.

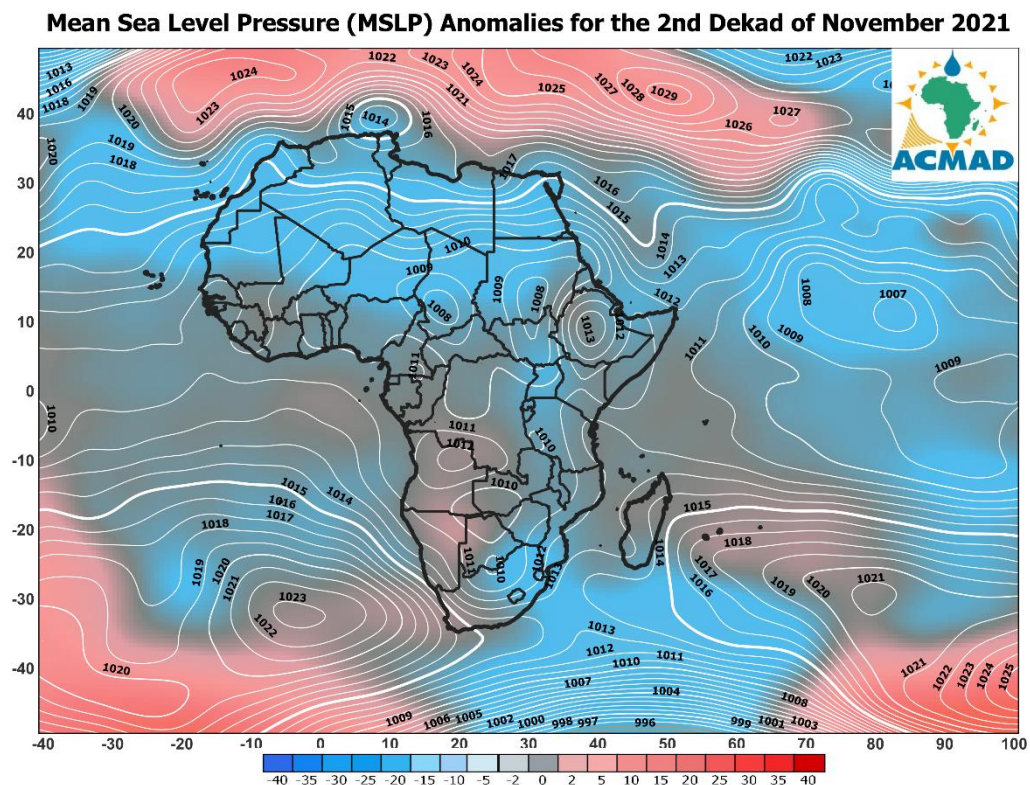


Figure 1. Observed Mean Sea Level Pressure (Contour) and anomaly (shaded) from 11th to 20th November 2021

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 were observed over most areas with an anticyclone circulation over Tunisia, Libya and Algeria with an average wind anomaly of about 6m/s-8m/s. Winds over East Africa are generally easterlies and westerlies over South Africa.

Figure 2b: At the 700hPa level, the western wind anomaly dominated circulation over northern Africa while the Sahel belt observed westerly wind anomalies of about 8m/s to 14m/s. The southern part of Africa observed westerly to north-westerly wind anomalies with varying speeds of 6m/s - 10m/s.

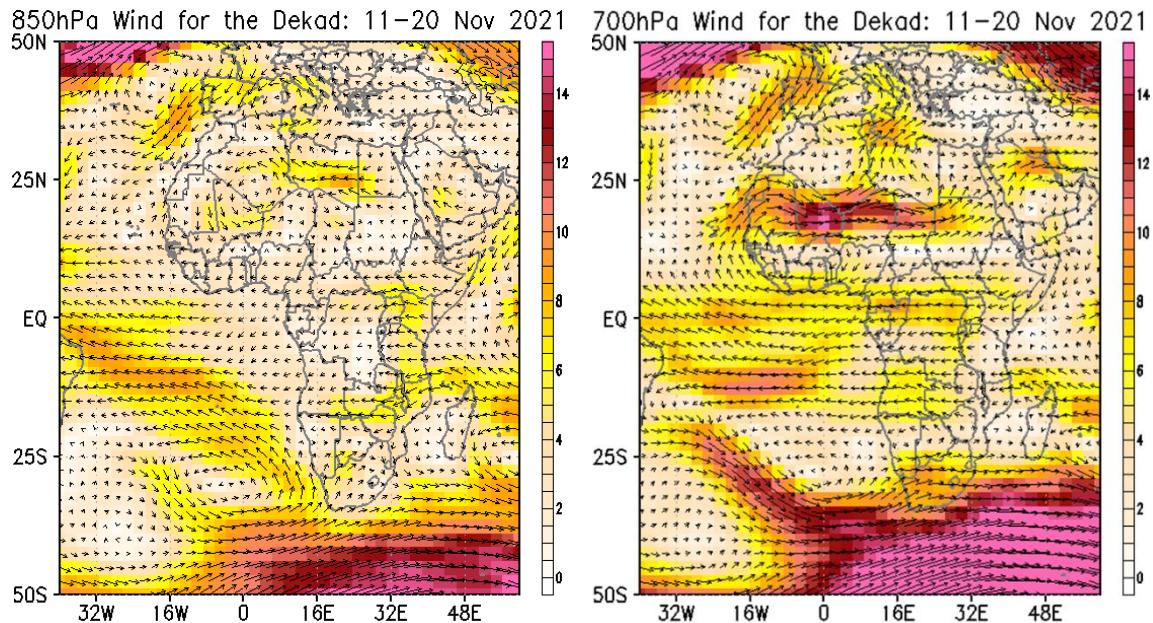


Figure 2a: Mean wind (m/s) at 850hPa from 11-20 November 2021
Source: NOAA/NCEP

Figure 2b: Mean wind (m/s) at 700hPa from 11-20 November 2021
Source: NOAA/NCEP

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

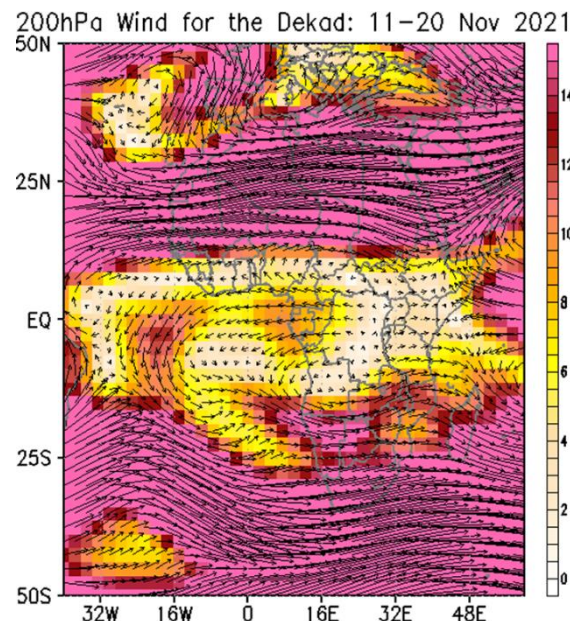


Figure 2c: Mean wind at 200 hPa (m/s) during the period from 11-20 November 2021
(Source: NOAA/NCEP)

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 part of North Africa, the southern part of some countries in the Gulf of Guinea, most of Central Africa, and parts of East and Central Africa such as South Sudan, Ethiopia, Somalia, Madagascar, southern Mozambique and the eastern part of South Africa.

The relative humidity anomalies for the second dekad of November 2021 were positive over most of the continent except over Gabon, Equatorial Guinea, Kenya, Uganda, Burundi, Rwanda, southern Nigeria and Cameroon, and parts of Togo, Benin, Ghana, Ethiopia, South Sudan, Somalia, Tanzania, Botswana and South Africa.

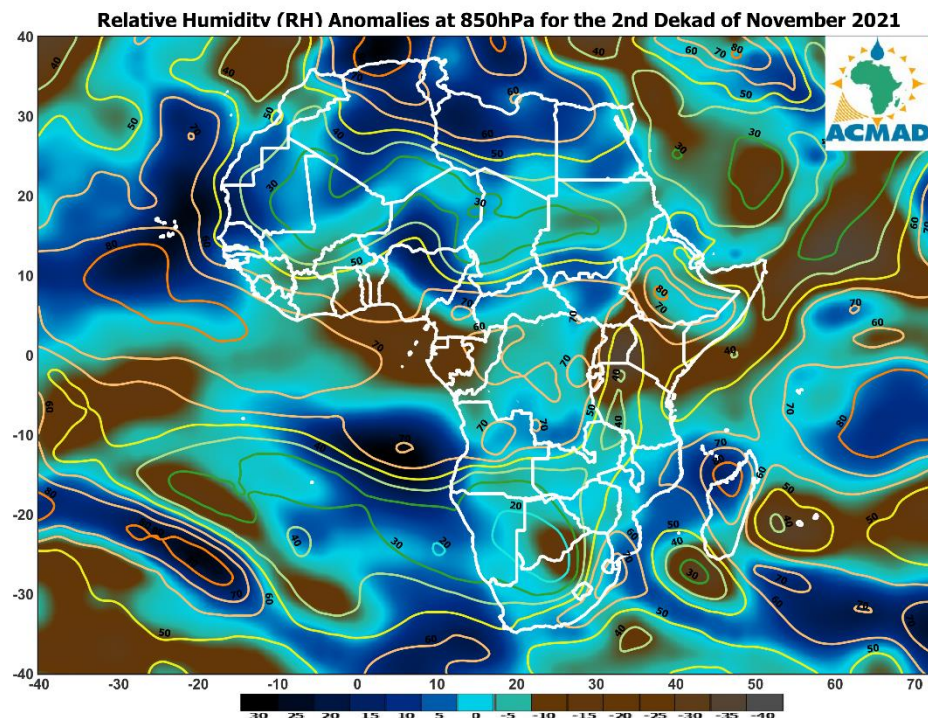


Figure 4. RH (%) at 850hPa (contour) and anomaly (shaded) during the period from 11th to 20th November 2021
SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

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 the western part of West Africa over countries such as Senegal, Gambia, Guinea Bissau, Guinea, western Mauritania and Burkina Faso, the north of Ivory Coast. Others are; central Niger, north of Libya and Algeria, most of East Africa and parts of central to southern Africa such as Angola, Zambia, Zimbabwe, Malawi, DRC, southern Gabon, south-eastern Chad, north-eastern CAR and north-western Mozambique. The rest of the continent observed RH values $\leq 60\%$.

The relative humidity anomalies for the first dekad of November 2021 were negative over the southern part of the Gulf of Guinea countries, parts of Kenya, Tanzania, Botswana and South Africa, and also over western Central Africa. The rest of the continent observed positive anomalies.

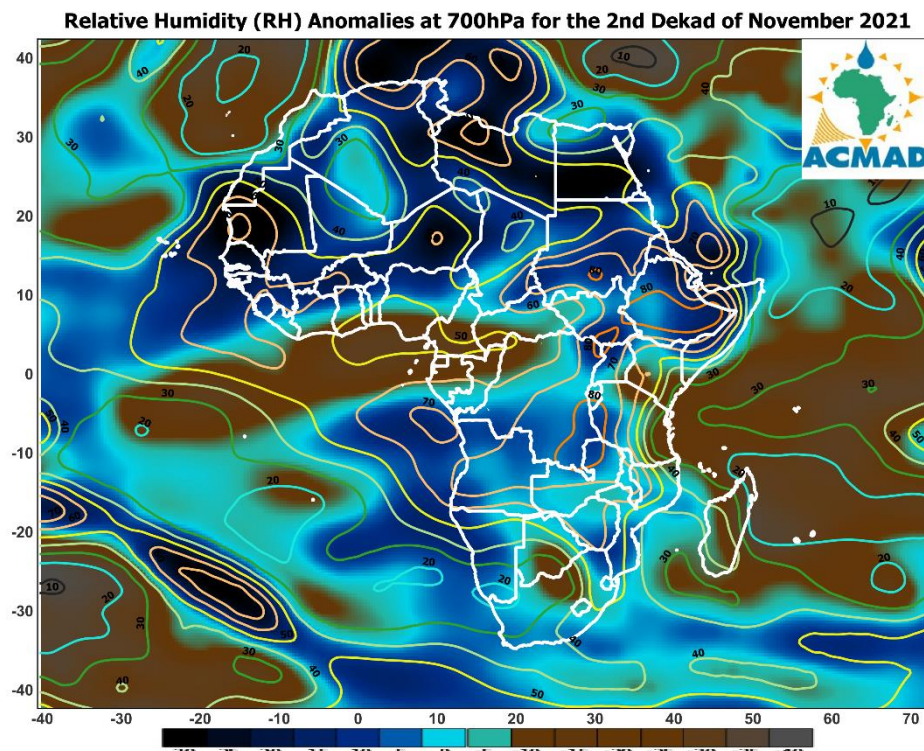


Figure 5. RH (%) at 700hPa (contour) and anomaly (shaded) during the period 11th to 20th November 2021
(SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

2.0 PRECIPITATION

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

2.1 Precipitation

The rains continued to retreat from northern and western Africa, and the season was effectively implemented further south of the Equator, with above-average precipitation recorded across the southern parts of a few Gulf of Guinea countries. Southeast Cameroon, northern, western, and southeastern DRC, most of Zambia, and parts of Kenya, Uganda, Tanzania, Angola, Zimbabwe, Botswana, Mozambique, and Madagascar experienced above average to well above average rainfall conditions. The majority of central Africa, as well as parts of eastern and southern Africa, observed below-average rainfall.

Details:

- **North Africa:** This region experienced mostly near average rainfall conditions meanwhile pockets of below to well below average rainfall was recorded over the northern fringes of Morocco, Algeria, Tunisia and Libya. The extreme northern axis of Algeria observed well above average rainfall conditions.
- **Gulf of Guinea countries:** Gulf of Guinea countries: Near-average precipitation was observed over southern Ghana and Ivory Coast, and the south-eastern part of Nigeria while the southeast of Liberia and Nigeria experienced below average to well below average rainfall.
- **Central Africa countries:** The majority of this region received below average to well below average precipitation while the south-east of Cameroon, northern, western and southeastern DRC, most of Zambia, and parts of Kenya and Uganda observed above average to well above average rainfall conditions.
- **East Africa countries:** Below to well below-average rainfall was observed over southern Ethiopia and Somalia, most of Kenya and the northeastern part of Tanzania. Parts of Uganda and Tanzania received above average to well above average rainfall.
- **Southern Africa countries:** Malawai, eastern and western Zambia, parts of Angola, and most of South Africa and Madagascar observed below average to well below-average precipitation for the

SADC countries. There were areas of above-average to well-above-average rainfall in central Zambia, as well as parts of Angola, Zimbabwe, Botswana, Mozambique, and Madagascar.

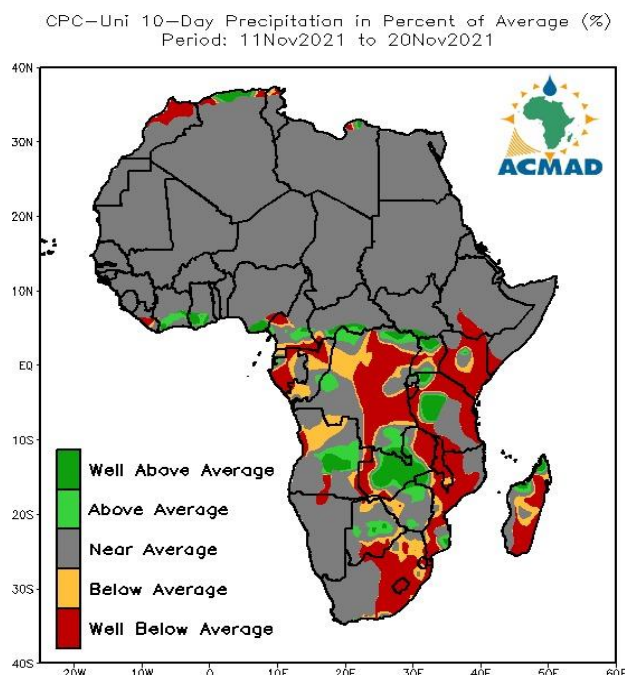


Figure 6: Precipitation in the percentage of average for the second dekad 11th to 20th November 2021. The reference period used is 1991-2020. Source: NOAA/. NCEP/. CPC/. UNIFIED/. Africa/. DAILY/)

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

3.1 PRECIPITATION

During the period of 23rd-29th November 2021, low to moderate precipitation is expected over most of the Central to southern Africa sub-region, over parts of Somalia, Tanzania, northern Algeria and the southern part of some countries in the Gulf of Guinea such as Nigeria, Ghana, Ivory Coast and Liberia. Moderate to heavy precipitation is likely to be observed over the north of Angola and western DRC and the Congo Republic.

Figure 7b shows that during week 2 of 30th November – 6th December 2021, the same scenario of low to moderate precipitation as Week 1 is expected over the Central African and southern African region, with moderate to heavy precipitation over the border of Angola, DRC and the Congo Republic as well as over Tanzania and southern part of South Africa.

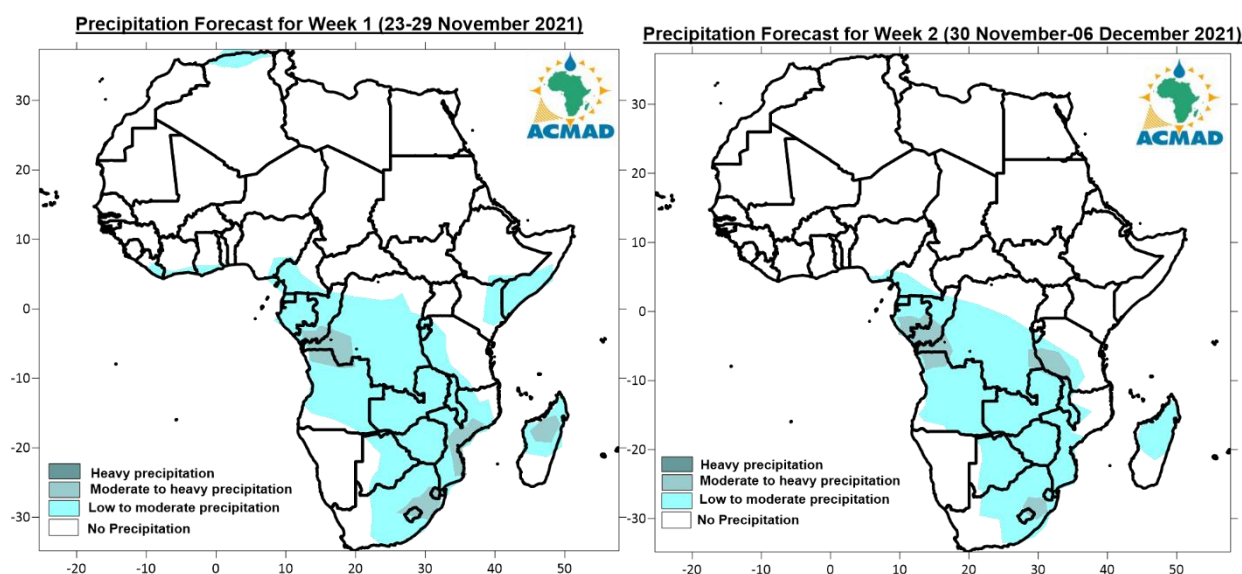


Figure 7a: Precipitation forecast for 23rd -29th November 2021 **Figure 7b:** Precipitation forecast for 30th November-06 December 2021

3.2 TEMPERATURE

Figure 8 presents the temperature anomalies forecast for the week of 22nd – 30th November 2021. Temperatures are expected to be above average over most of the continent except for most parts of the central to southern African region, parts of eastern Africa and pockets of areas in western Africa.

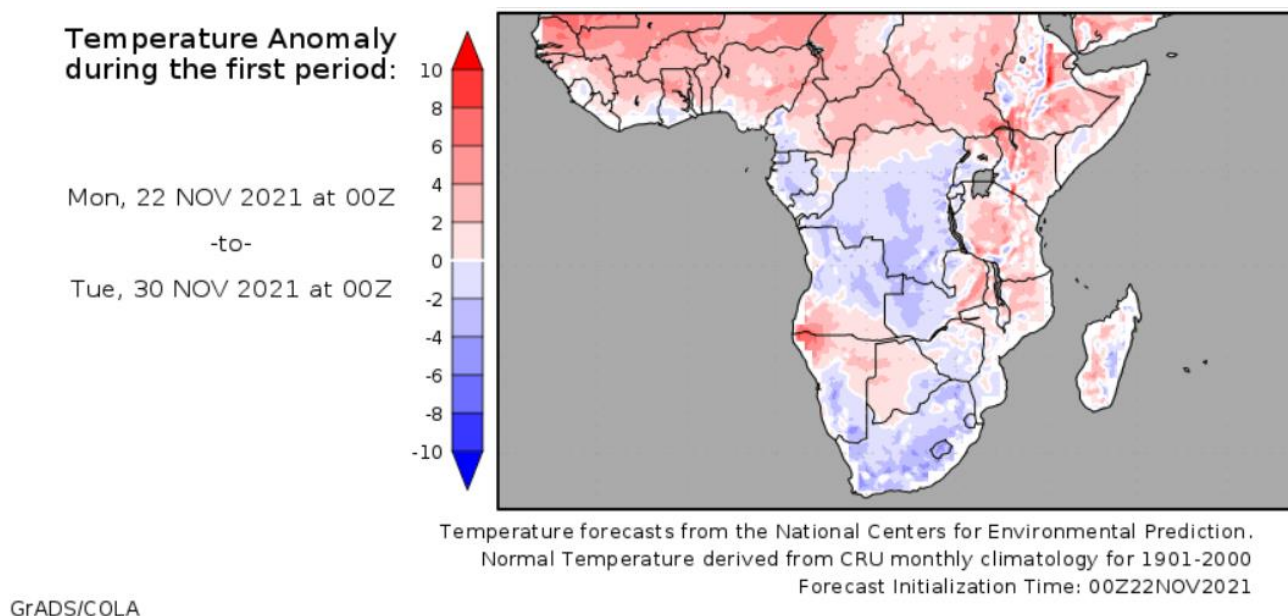


Figure 8: Temperature anomalies prospect from 22nd – 30th November 2021
(Source: COLA)

3.3 SOIL MOISTURE

Figure 9 shows soil moisture anomalies forecast for the week of 22nd – 30th November 2021 where positive soil moisture is expected over most parts of central, eastern and southern Africa. The rest of the continent is expected to observe negative soil moisture values during the forecast period.

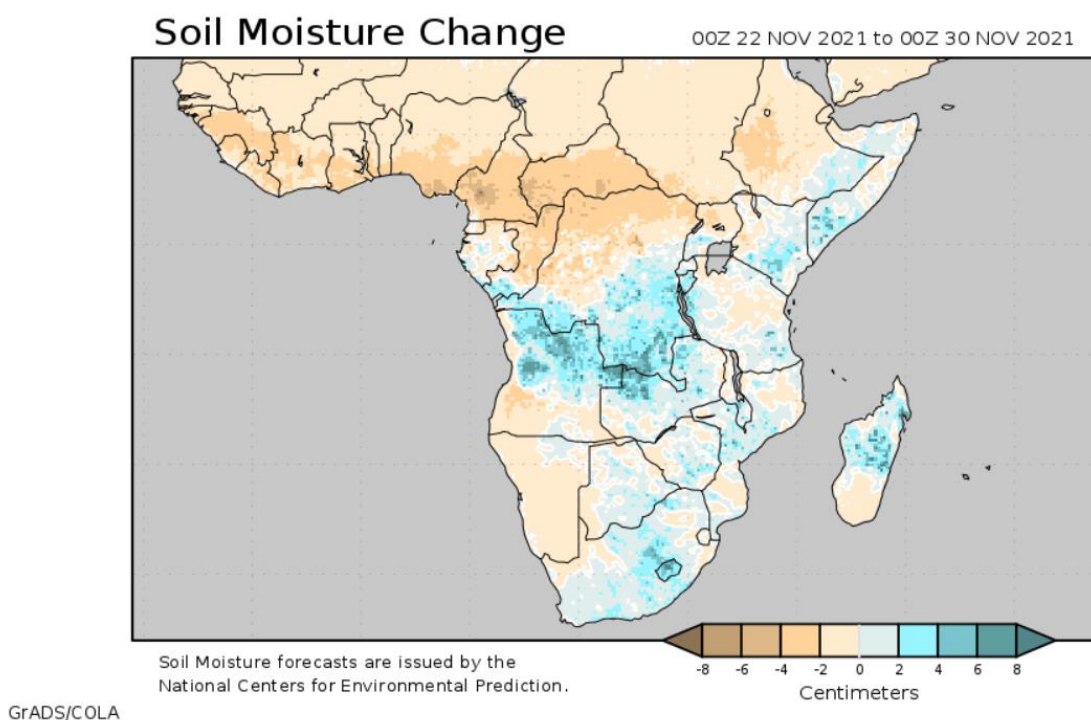


Figure 9: Soil moisture change prospect for the period 22nd – 30th November 2021
(Source: COLA)