



HIGHLIGHTS

- ✓ *The third dekad of December 2021 witnessed enhanced rainfall activities when compared to the three previous dekad, over the central and southern regions of the continent. Above-average to well above-average precipitation was observed over Congo, Rwanda, Burundi, most of Gabon, Botswana, Zimbabwe, South Africa, northern edges of Libya and Egypt, southern Côte D'Ivoire, Cameroon, Somalia and Zambia, north eastern Angola, as well as parts of DRC, Uganda, Kenya, Tanzania, Namibia, Mozambique and Madagascar. Below-average rainfall was observed over the northern part of northern Africa, most of Angola, Namibia, Mozambique, Malawi, Tanzania, and parts of Liberia, Cote D'Ivoire, Ghana, Cameroon, Gabon, DRC, Uganda, Kenya, Ethiopia, Zambia, South Africa and Madagascar*
- ✓ *This dekad was characterized by neutral to cold SSTs conditions in the Gulf of Guinea region, most of north Atlantic and western Indian Ocean 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 -10th AND 11th – 17th January 2022, depict a general tendency of low to moderate precipitation over parts of the central and the southern Africa sub-region of the continent. In Week 1, moderate to heavy precipitation is expected over parts of Malawi, Tanzania, Zambia, Madagascar, DRC, southern Congo, and northern Botswana; in Week 2, the same is expected over Eswatini, Lesotho, Rwanda, Burundi, most of South Africa and Tanzania, as well as parts of DRC, Congo, Mozambique, Zambia, and Madagascar. Heavy precipitation is expected over portion of eastern Tanzania.*

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 1024hPa, which was 1hPa less than the previous dekad and 5hPa greater than the climatological mean (1991-2020). Over the North Atlantic Ocean, the high pressure was located at 45°E and 38°N, moving eastward of its climatological position.
- **St. Helena High** observed a central pressure of 1020hPa, a 3hPa decrease from the previous dekad and the same as the climatological mean (1991-2020). It was located at 8°W and 32°S. It remained quasi-stationary compared to its climatological position over the South Atlantic Ocean.
- **Mascarene High:** The central value for Mascarene High was 1019hPa. It weakened by 6hPa compared to the previous dekad and by 4hPa compared to the climatological mean (1991-2020). Positioned at 55°E and 35°S, it moved eastward of its climatological position over the south Indian Ocean.
- **Heat Low:** Two heat-lows located over central CAR into southern Chad and South Sudan into southern Sudan had central value of 1010hPa, the two low pressure systems filled by 1hPa compared to the last dekad. The heat-lows were located at 18°E and 8°N and at 30°E and 8°N respectively.

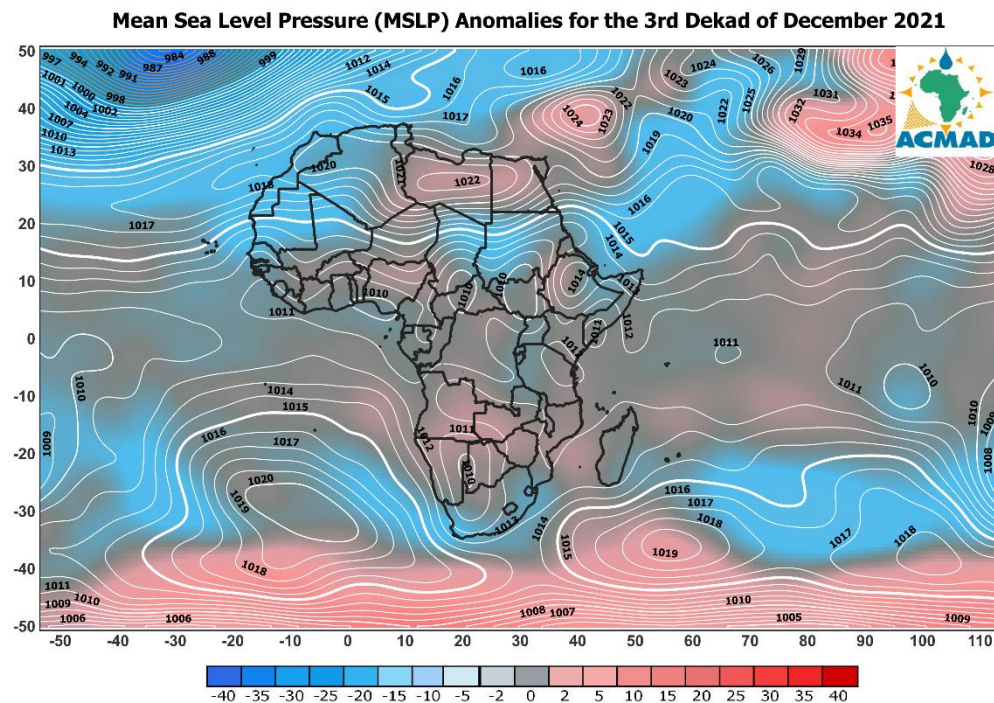


Figure 1. Observed Mean Sea Level Pressure (Contour) and anomaly (shaded) from 21st to 31st December 2021

1.2 TROPOSPHERE

1.2.1 African Monsoon

Figure 2a: This figure shows the average dekadal wind (m/s) at 850hPa. Light to moderate westerly winds were observed over the northern edges of Africa while the Sahel, Somalia, Kenya, Uganda, Malawi, northern Mozambique and Zambia experienced easterly wind anomalies with an average speed of about 4m/s-7m/s.

Figure 2b: At the 700hpa level, western wind anomalies of 6m/s-14m/s dominated circulation over the Sahelian belt and some parts of northern Africa while the central region observed easterly wind anomalies of about 6m/s to 10m/s.

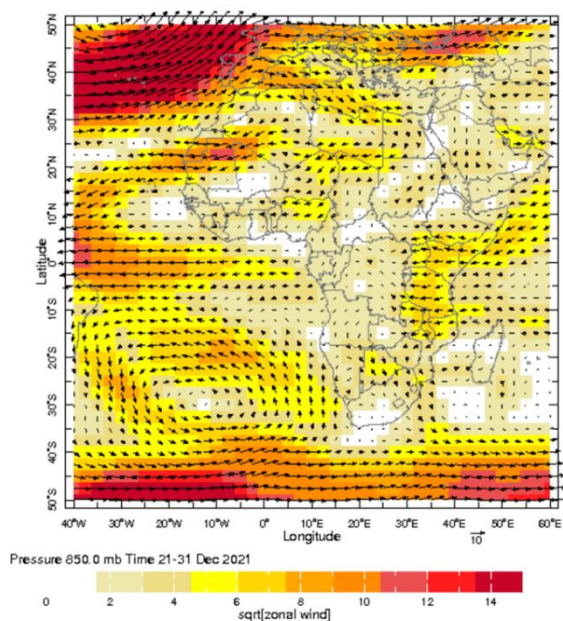


Figure 2a: Mean wind (m/s) at 850hPa from 21-31 December 2021
Source: NOAA/NCEP

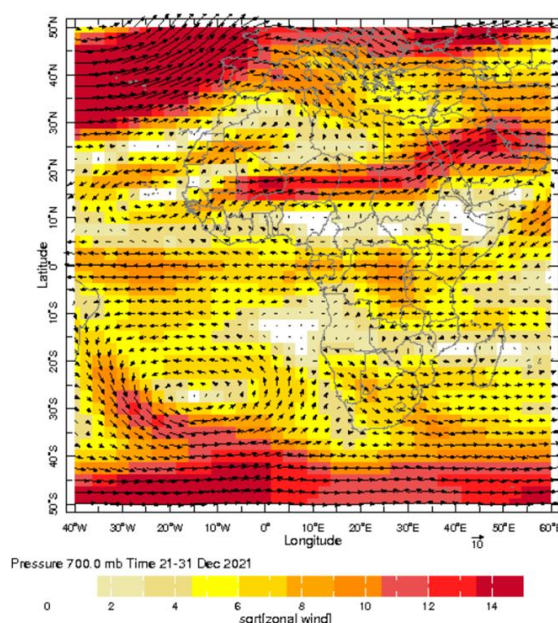


Figure 2b: Mean wind (m/s) at 700hPa from 21-31 December 2021
Source: NOAA/NCEP

Figure 2c: shows the wind vector anomaly at 200hPa. During the third dekad of December 2021, very strong westerly winds ≥ 14 m/s were observed mainly over the continent except for the central region that observed low to moderate wind speeds of about 3m/s-8m/s.

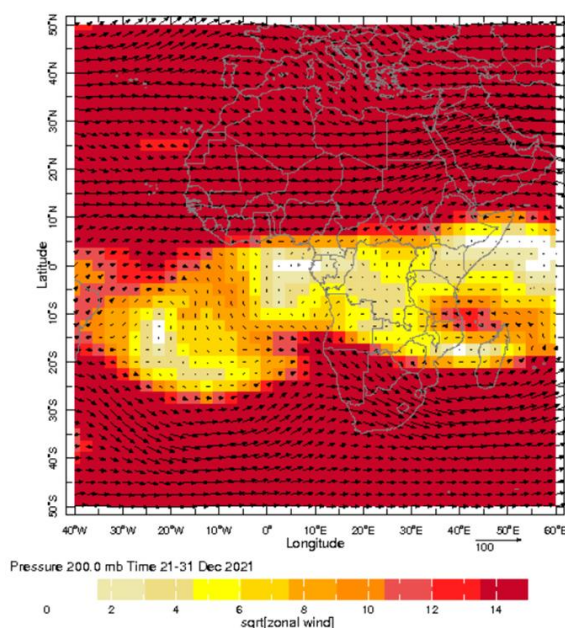


Figure 2c: Mean wind at 200 hPa (m/s) during the period 21-31 December 2021
(Source: NOAA/NCEP)

1.2.3 Relative Humidity (RH) at 850hPa

Figure 4 presents the dekadal observed relative humidity at 850hPa for the third dekad of December 2021 and anomalies of the reference period 1991-2020. Wet atmospheric conditions (relative humidity $\geq 60\%$) were observed over the northern edges of North Africa, southern parts of the Gulf of Guinea countries, parts of eastern Africa, as well as over most of central and southern Africa. The rest of the continent observed RH values $\leq 60\%$.

Negative anomalies were observed during the third dekad of December 2021 over Uganda, Rwanda, Burundi, most of Libya, Malawi, Somalia, North Sudan, and Tanzania, parts of Algeria, Egypt, Kenya, eastern DRC, and northern Zambia and Mozambique. Positive anomalies were recorded in the other parts of the continent.

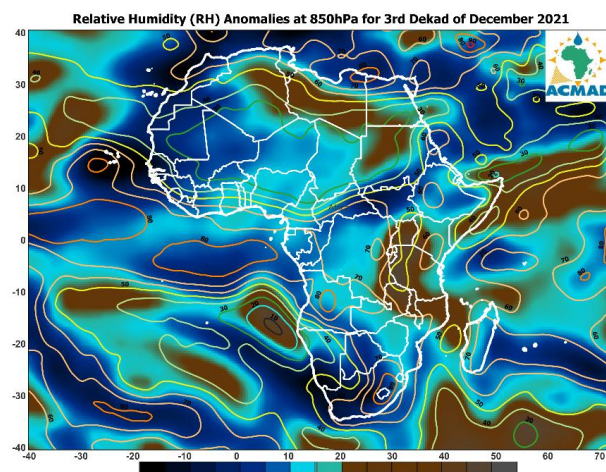


Figure 4. RH (%) at 850hPa (contour) and anomaly (shaded) during the period 21st - 31st December 2021
(SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

1.2.4 Relative Humidity at 700hPa

Figure 5 presents the dekadal observed and anomalies of relative humidity at 700hPa. The figure shows that high relative humidity values $\geq 60\%$ at 700hPa were observed over eastern Morocco, north-western Algeria, parts of eastern Africa, and most of central and southern Africa. The rest of the continent observed RH values $\leq 60\%$.

The relative humidity anomalies for the third dekad of December 2021 were negative over most of Kenya, Tanzania, Angola, eastern Nigeria, northern Cameroon, south-western Chad, western Madagascar, northern Mozambique, and parts of Angola, Malawi, Uganda and Somalia. The rest of the continent observed positive anomalies.

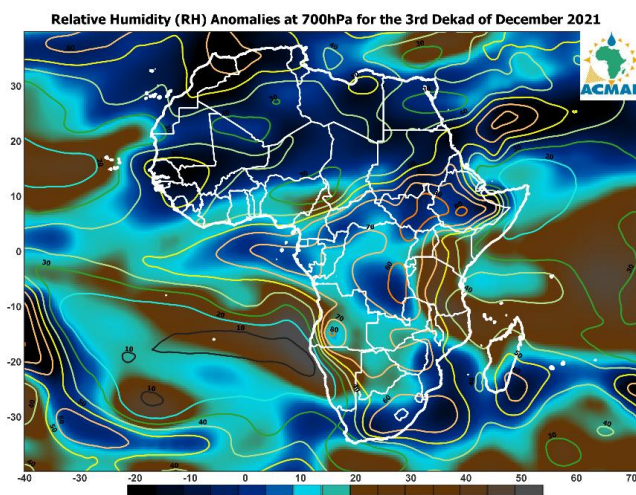


Figure 5. RH (%) at 700hPa (contour) and anomaly (shaded) during the period 21st - 31st December 2021
(SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

2.0 PRECIPITATION

Figure 6 shows the observed precipitation as percentage of average for the third dekad of December 2021.

2.1 Precipitation

The third dekad of December 2021 witnessed enhanced rainfall activities when compared to the three previous dekads, over the central and southern regions of the continent. Above-average to well above-average precipitation was observed over Congo, Rwanda, Burundi, most of Gabon, Botswana, Zimbabwe, South Africa, northern edges of Libya and Egypt, southern Côte D'Ivoire, Cameroon, Somalia and Zambia, north-eastern Angola, as well as parts of DRC, Uganda, Kenya, Tanzania, Namibia, Mozambique and Madagascar. Below-average rainfall was observed over the northern part of northern Africa, most of Angola, Namibia, Mozambique, Malawi, Tanzania, and parts of Liberia, Cote D'Ivoire, Ghana, Cameroon, Gabon, DRC, Uganda, Kenya, Ethiopia, Zambia, South Africa and Madagascar.

Details:

- **North Africa:** This region experienced mostly near average rainfall conditions. Below-average to well below-average rainfall was recorded over the northern fringes of the region while above average rainfall conditions were observed over the northern edges of Libya and Egypt.
- **Gulf of Guinea countries:** The region received near-average precipitation, except for southern Côte d'Ivoire, which received above-average to well above-average rainfall, while the south-western parts of Nigeria, Ghana, Cote D'Ivoire, and south-eastern Liberia received well below-average rainfall.
- **Central Africa countries:** Congo, Rwanda, Burundi, most of Gabon, southern Cameroon, parts of DRC and Uganda received above-average to well above-average precipitation while below average to well below-average precipitation was observed over southern Cameroon, parts of Gabon, DRC, Uganda and Angola.
- **East Africa countries** Parts of Somalia, Kenya and Tanzania observed above average to well above average rainfall conditions while south-western Ethiopia, northern Kenya and most of Tanzania observed below average to well below average rainfall precipitation.
- **Southern Africa countries:** Most of Namibia, Mozambique, Malawi, parts of Zambia, South Africa and Madagascar observed below-average to well below-average precipitation. Above-average to well-above-average rainfall was experienced in most of Botswana, Zimbabwe, South Africa, Zambia, Namibia, Mozambique and Madagascar.

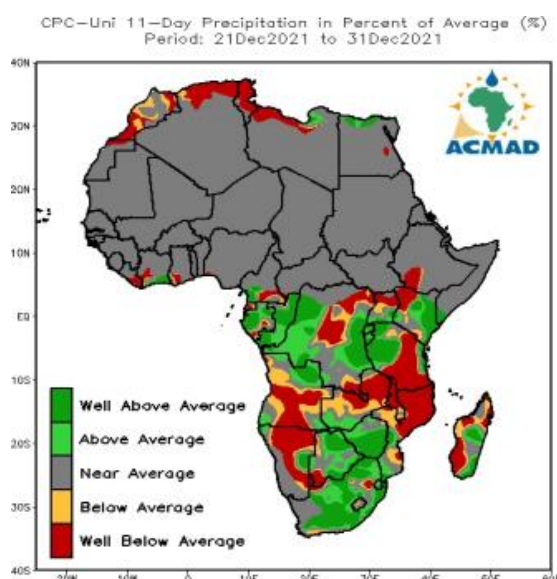


Figure 6: Precipitation in the percentage of average for the third dekad 21st – 31st December 2021. The reference period used is 1991-2020. Source: NOAA/. NCEP/. CPC/. UNIFIED/. Africa/. DAILY/)

3.0 OUTLOOK VALID FOR 24th - 30th December AND 31st December 2021 - 06th January 2022

3.1 PRECIPITATION

During the period of 4th - 10th January 2022, low to moderate precipitation is expected over parts of central and southern Africa sub-regions. Moderate to heavy precipitation will likely be observed over parts of Malawi, Tanzania, Zambia, Madagascar, DRC, southern Congo and northern Botswana.

Figure 7b shows that during week 2 of 11th - 17th January 2022, low to moderate precipitation is expected over parts of the central and the southern Africa sub-region. Moderate to heavy precipitation is likely over Eswatini, Lesotho, Rwanda, Burundi, most of South Africa and Tanzania, as well as parts of DRC, Congo, Mozambique, Zambia, Malawi, Angola, Uganda and Madagascar. Heavy precipitation is expected over a small area in north-western Tanzania.

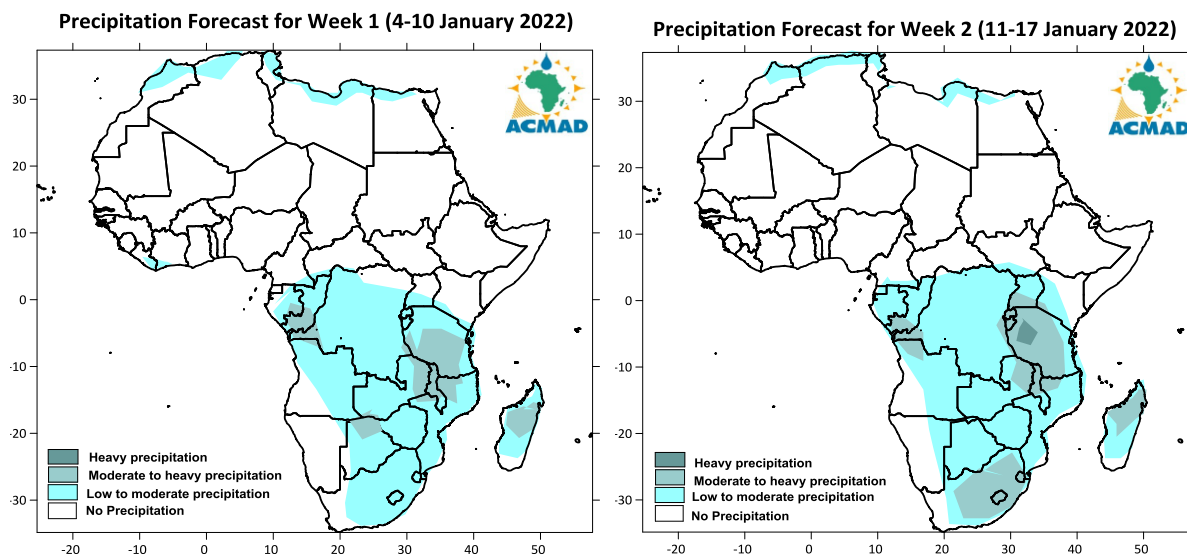


Figure 7a: Precipitation forecast for 4th - 10th January 2022 **Figure 7b:** Precipitation forecast for 11th - 17th January 2022

3.2 TEMPERATURE

Figure 8 presents the temperature anomalies forecast for the week of 4th –12th January 2022. Temperatures are expected to be above average over most of the northern, central and eastern parts of the continent except for the central parts of southern Africa where below average temperatures are expected.

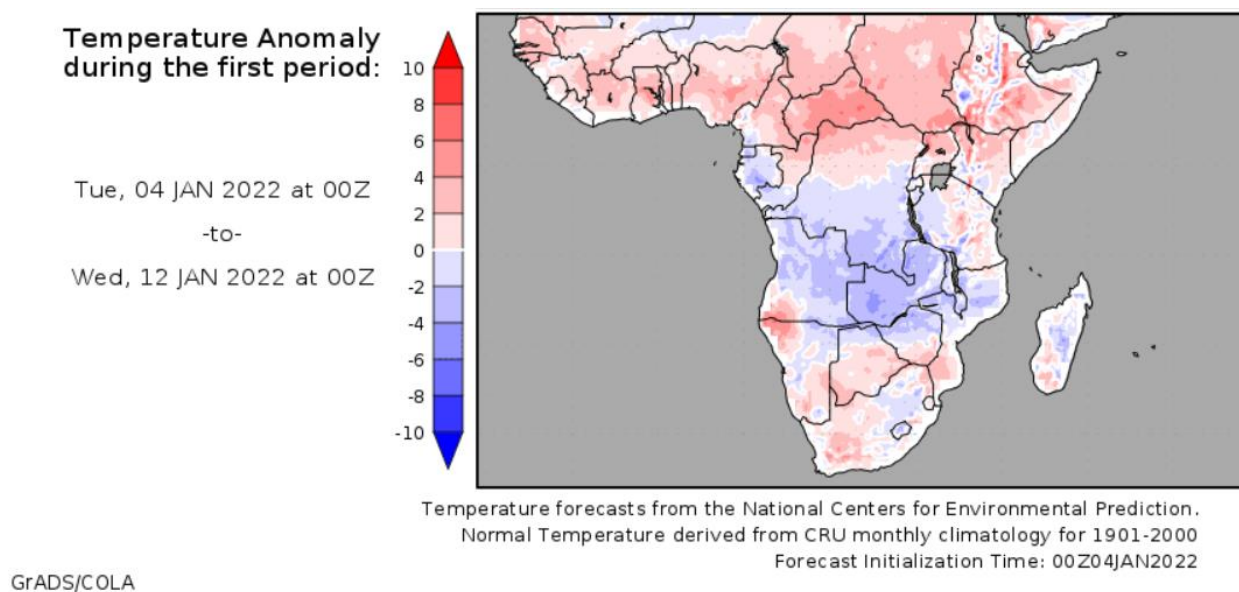


Figure 8: Temperature anomalies prospect from 4th –12th January 2022
(Source: COLA)

3.3 SOIL MOISTURE

Figure 9 shows soil moisture anomalies forecast for the week of 4th –12th January 2022 where positive soil moisture is expected mostly over Zambia, Madagascar, Malawi, northern Zimbabwe and Mozambique, parts of South Africa, Botswana, Angola, Namibia, Tanzania, Ethiopia, Liberia, Lesotho and southern DRC. The rest of the continent is expected to observe negative soil moisture values during the forecast period.

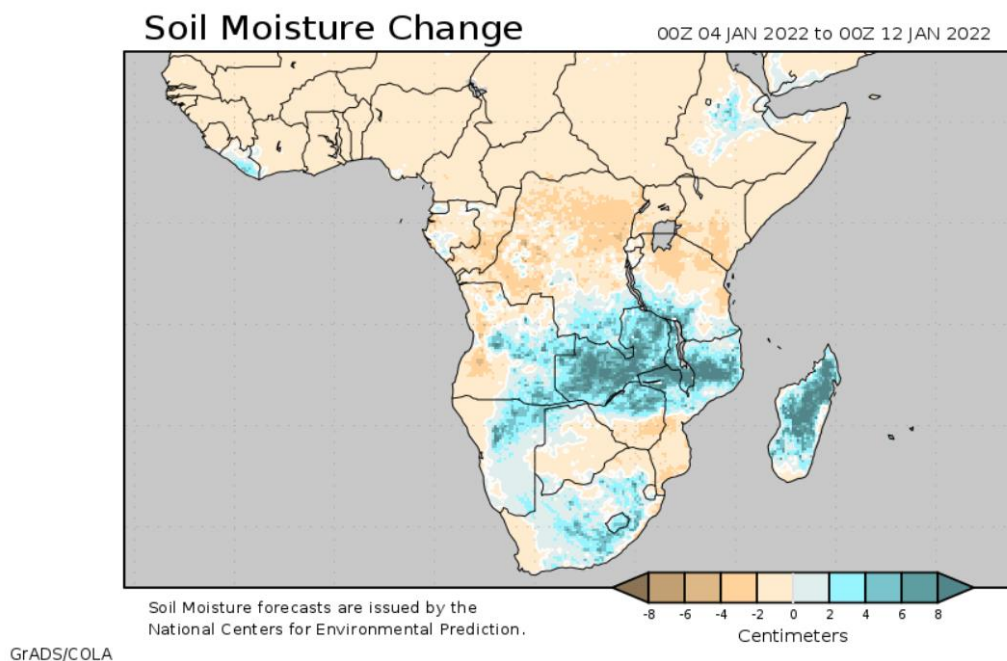


Figure 9: Soil moisture change prospect for the period 4th –12th January 2022
(Source: COLA)