

Ten Days Climate Diagnostics Bulletin

N°13

Dekad1, 1st to 10th May 2021

HIGHLIGHTS

During the first dekad of May 2021, above average and well above average rainfall were observed over the countries along the equator, between the latitudes 10N and 10S, except for Kenya, the eastern parts of Tanzania, eastern Madagascar and northern parts of Nigeria received below average rainfall.

The forecasts show that during the next two weeks from the 17th to the 30th of May 2021, low to moderate precipitation is expected over southern parts of South-Africa, Eastern Mozambique and north-eastern corner of Madagascar including the whole of Somalia and northern parts of Kenya.

Moderate to heavy rainfall is to be expected over the Cape- town areas, extreme north-eastern Madagascar and all of the countries around the Equator and between latitudes 10N and 10S, except for Kenya.

During the week of the 17th to the 23rd of May 2021, temperatures are expected to be above average over all of the SADC Countries, except for over Lesotho, DRC, northern Zambia, Northern Mozambique, Tanzania and Madagascar, where temperatures will be cooler than average. Most of the Countries along the Equator will also be cooler than average, due to the moderate to heavy rainfalls expected in those areas, except for Kenya, Somalia and the Countries north of latitude 10N will warmer than average temperatures.

An increase in soil moisture is expected over the extreme western cape, extreme southern Madagascar, northern DRC, western Ethiopia and Kenya, extreme southern Sudan, eastern parts of Central African Republic, Congo Republic, Gabon, Cameroun, Burkina Faso, Guinea, Sierra Leone and some areas over Liberia, southern Mali, Ghana, Nigeria, Togo and Benin.

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 brief on monsoon and relative humidity thresholds.

1.1 SURFACE

Pressure Systems

- **The Azores High** of 1023hPa weakened by 2hpa compared to the previous dekad and strengthened to 2hPa compared to the climatological means (1981-2010). It was located at 43°W and 30°N. It moved slightly to the south-west, but was more or less in the same climatological position over the North Atlantic Ocean.
- **St. Helena High** of 1026hPa has strengthened by 6hPa compared to the previous dekad and strengthened by 8hPa compared to the climatological mean (1981-2010). It was located at 4°E and 35°S. It moved south-eastward from the climatological position over the South Atlantic Ocean.
- **Mascarene High** of 1026hPa weakened by 1hPa compared to the previous dekad and strengthened by 6hpa compared to the climatological means (1981-2010). It was located at 86°E and 33°S. It moved to the east of the climatological position over the Indian Ocean.
- **Heat Low 1** The low pressure system has a pressure value of 1007hPa, which is currently over western Niger 2°E and 15°N and has strengthened by 1hpa compared to the previous dekad and strengthened by 0.3hPa compared to the climatological means (1981-2010). It had moved to the west of the climatological position.
- **Heat Low 2** The low pressure system has a pressure value of 1006 hPa, which is currently located over Chad at 16°E and 15°N, and is the same compared to the previous dekad and strengthened by 0.4hPa compared to the climatological means (1981-2010). It was stable to compared to the climatological position.
- **Heat Low 3** The low pressure system has a pressure value of 1007 hPa, which is currently located over northern Sudan at 30°E and 17°N and has strengthened by 1hpa compared to the previous dekad and weakened to 0.08hPa compared to the climatological means (1981-2010). It was stable to the compared to the climatological position.

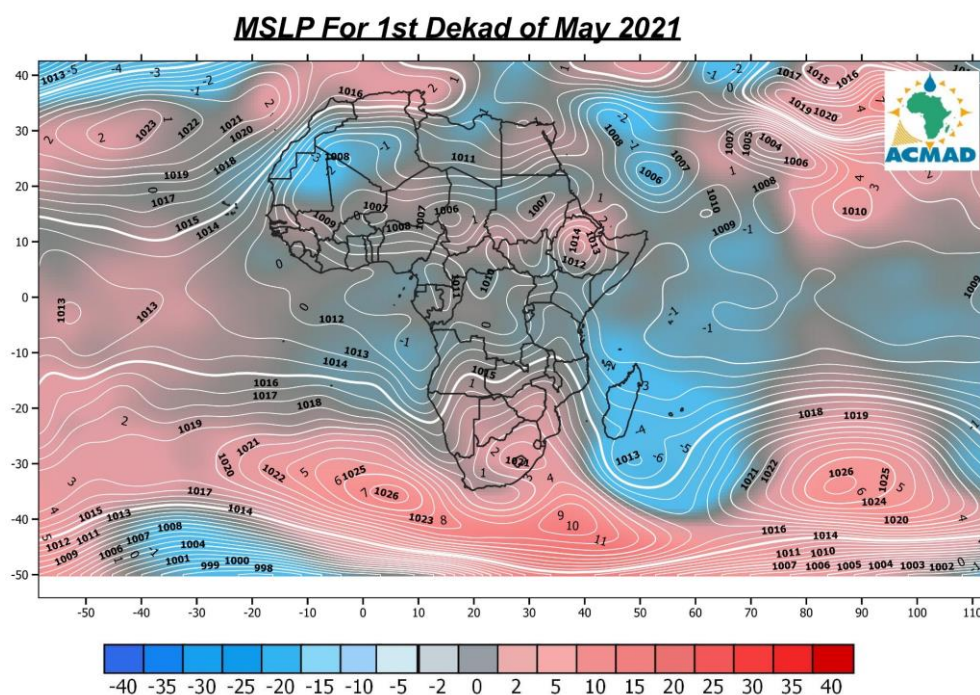


Figure 1. Observed Mean Sea Level Pressure (Contour) and anomaly (shaded) during the period from 1st to the 10th of May 2021.

1.2 TROPOSPHERE

1.2.1 African Monsoon

Figure 2a shows the average wind dekad at 850 hPa. Strong cyclonic (high pressure) winds were observed over Egypt and Libya. The intensity of the zonal winds was at more than 14ms. Strong north-easterly winds were also observed over Mauritania and Algeria. Over Zambia and Angola, there were also strong westerly winds, whereas over Mozambique, Tanzania and Kenya, there was a strong southerly flow from the Indian Ocean.

Figure 2b At the 700hpa level, the intensity of the winds was even more, as there was a wind flow from over Mauritania, moving north-eastwards then merging into a cyclonic flow over Libya and Egypt, then moving down south-westwards into the southern parts of West Africa, forming a huge cyclonic flow over the northern part of Africa. The wind intensity at 700hpa, reduced over Zambia, but still maintained the strong southerly flow over Mozambique.

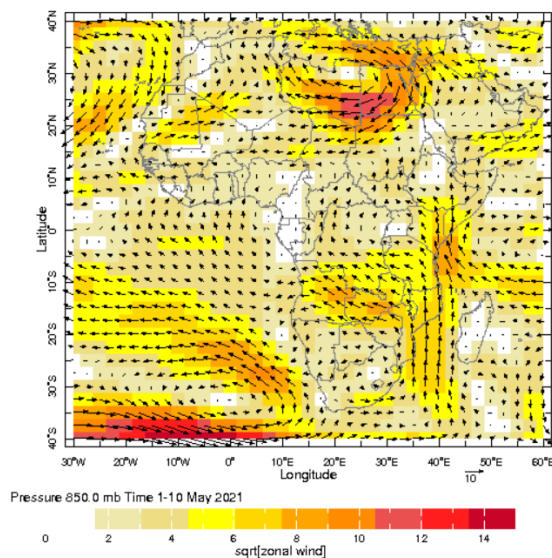


Figure 2 a: Mean wind at 850 hpa (m/s) during the period from 1st to 10th of May 2021.
Source: NOAA/NCEP

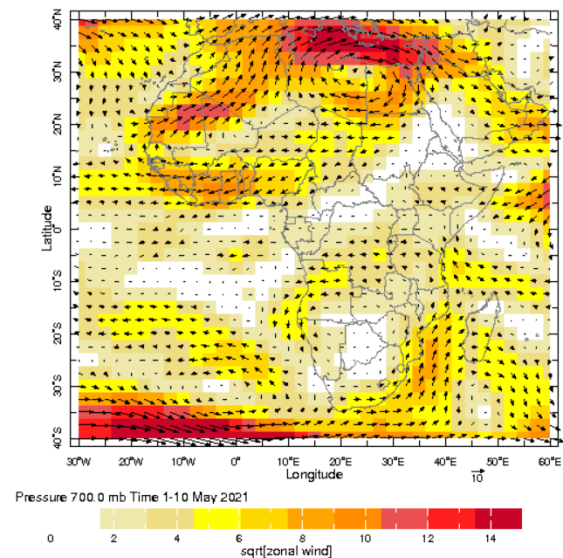


Figure 2b: Mean wind at 700 hpa (m/s) during the period from 1st to 10th of May 2021.
Source: NOAA/NCEP

1.2.2 Wind at 200 hPa.

Figure 3 shows the wind speed and direction at 200 hPa. During the first dekad of May 2021, very strong easterly zonal winds were observed both over the northern and southern parts Africa, which depict Jet Streams at this level.

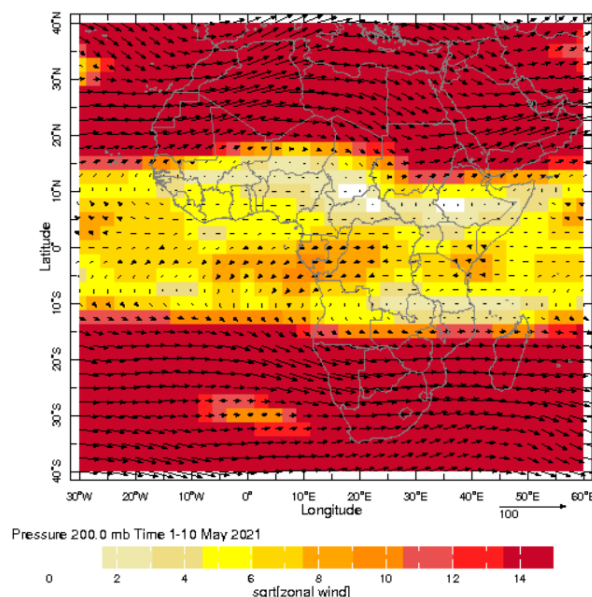


Figure 3: Mean wind at 200 hPa (m/s) during the period from 1st to 10th of May 2021.

1.2.3 Relative Humidity (RH) at 850 hPa

Figure 4 presents the dekadal mean of relative humidity at 850 hPa the first dekad of May 2021 and anomalies compared to the reference period 2002-2020. Wet atmospheric conditions (humidity relative $\geq 60\%$) were observed over eastern Africa, over Ethiopia, Kenya, Tanzania, DRC, northern Angola, Mozambique and eastern South-Africa and all the countries along the southern coast of West Africa and western parts of Central Africa also eastern parts of Madagascar. Dry air (humidity relative between 20 and 40%) was observed over the rest of the continent.

The relative humidity anomalies for the first dekad of May 2021 were negative over northern Kenya and southern Ethiopia, Niger, Libya and Egypt.

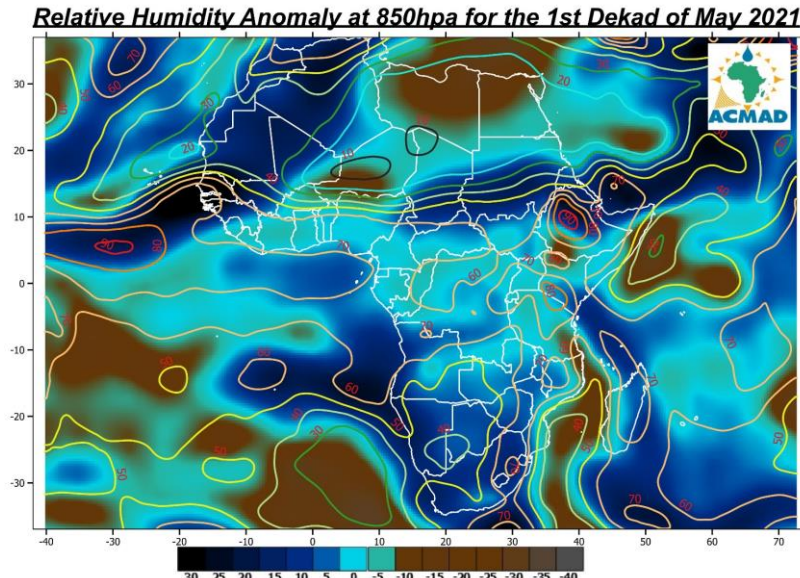


Figure 4. RH (%) at 850hPa (contour) and anomaly (shaded) during the period from 1st to 10th of May 2021. SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

1.2.4 Relative Humidity at 700hPa

Figure 5 presents the dekadal mean and anomalies of relative humidity at 700 hPa. The figure shows that the High relative humidity with values $\geq 60\%$ at 700hPa were observed over most parts of the continent except for Niger, Libya, Egypt, Somalia and northern parts of Kenya.

The relative humidity anomalies for the first dekad of May 2021 were negative over Niger, Libya, West Africa region, Libya, Egypt, Western Sahara, CAR, northern DRC, northern Kenya, Somalia, Zambia, southern Tanzania and northern Mozambique.

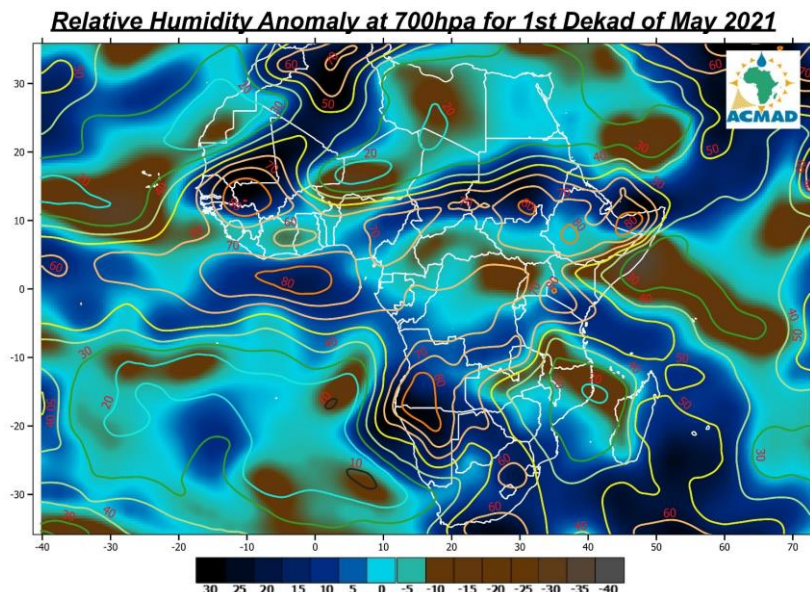


Figure 5. RH (%) at 700hPa (contour) and anomaly (shaded) during the period 1st to 10th of May 2021. (SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

2.0 PRECIPITATION

Figure 6 shows the observed precipitation estimated in percentage of average for the first dekad of May 2021.

2.1 Precipitation

During the first dekad of May 2021, above average and well above average rainfall were observed over most of the central African countries. These are countries around the Equator and within latitudes 10N and 10S, except for most of Kenya, eastern Tanzania, northern Nigeria and extreme eastern Madagascar experienced below average rainfall. For the rest of Africa they experienced normal conditions.

Details:

- **North Africa:** Extreme northern Algeria received well above and above average rainfall, with a few areas which had below average rainfall. Almost all the countries in North Africa had normal conditions.
- **The Sahel countries:** The region experienced near average rainfall.
- **Gulf of Guinea countries:** The region experienced well above average to above average rainfall in all the countries, except northern Nigeria experienced below average to well below average rainfall.
- **Central Africa countries:** Well above average to above average rainfall was received in all the countries in Central Africa.
- **East Africa countries:** Most of the countries over East Africa received well above average to above average rainfall, except for the bulk of Kenya, parts over northern Somalia, extreme northern and eastern Ethiopia and extreme eastern Tanzania received well below to below average rainfall. The bulk of Tanzania, most of Kenya and extreme northern Ethiopia and Somalia experienced near average rainfall.
- **Southern Africa countries:** Most of the SADC countries experienced near average rainfall, except for extreme northern Madagascar and pockets in the northern part of DRC experienced well below to below average rainfall. Extreme north-western DRC and extreme northern Madagascar also experienced well above to above average rainfall. The extreme southern parts of South-Africa experienced above average rainfall in some places and below average rainfall over some places in the Western Cape.

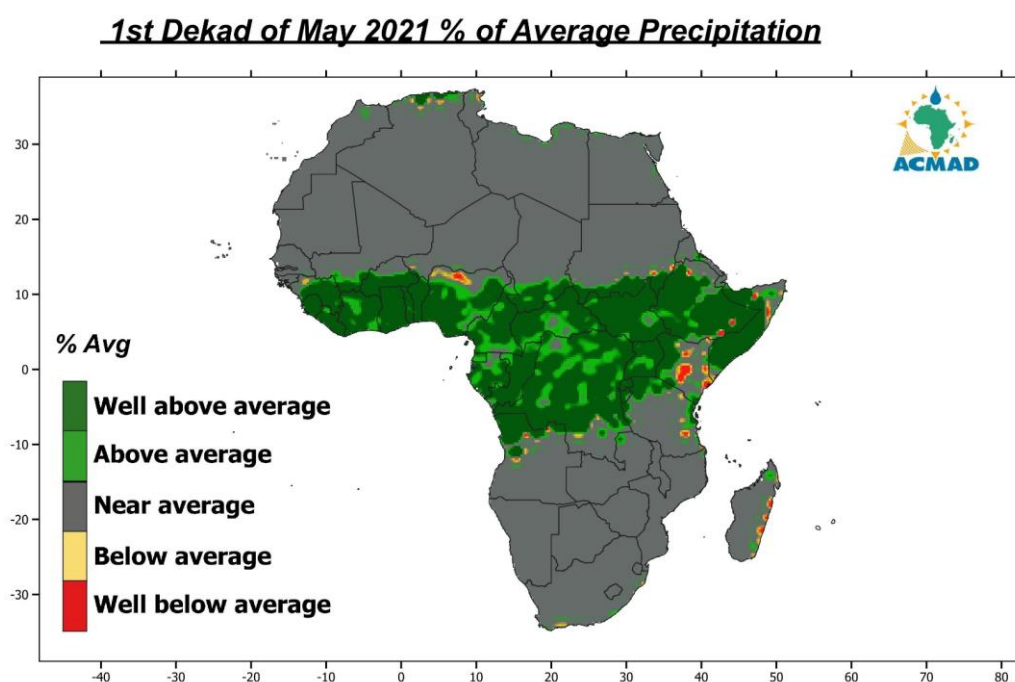


Figure 6: Precipitation in percent of average for first dekad 1st to 10th of May 2021. The reference period used is 1981-2010. Source: NOAA/. NCEP/. CPC/. FEWS/. Africa/. DAILY/)

3.0 OUTLOOK VALID FROM 17TH TO THE 30TH OF MAY 2021

3.1 PRECIPITATION

During the period from the 17th to the 30th of May 2021, low to moderate precipitation is expected to be very likely over southern parts of South-Africa, eastern Mozambique, the bulk of Somalia, the southern parts of the Sahel region, northern Ethiopia and the bulk of Kenya.

During the week of the 17th to the 23rd, Almost all the countries in Central Africa, Rwanda, Burundi, western Uganda and extreme eastern DRC will receive heavy precipitation, but the intensity will reduce during the week of the 24th to the 30th of May and these same countries will receive only moderate to heavy precipitation.

For the whole period the rest of the countries along the Equator and between the latitudes 10n and 10S will received moderate to heavy precipitation.

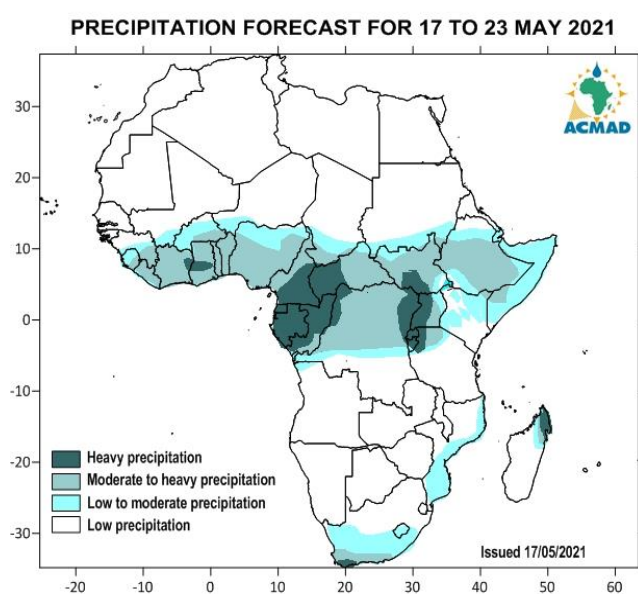


Figure 7a: Precipitation forecast from 17th to 23rd May 2021 (Source: ACMAD)

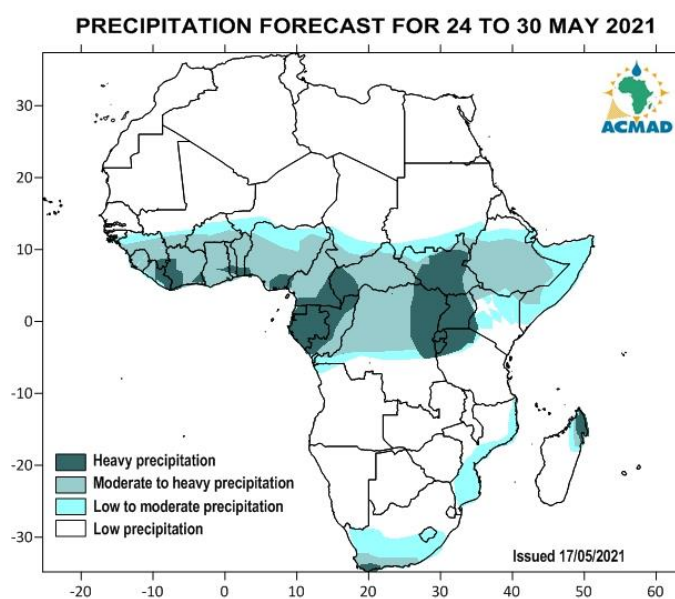


Figure 7b: Precipitation forecast from 24th to 30th of May 2021. (Source: ACMAD)

3.2 TEMPERATURE

Figure 8 presents the temperature anomalies forecasted for the week of the 17th to the 23rd of May 2021. Temperatures are expected to be above average over all of the SADC Countries, except for over Lesotho, DRC, northern Zambia, Northern Mozambique, Tanzania and Madagascar, where temperatures will be cooler than average. Most of the Countries along the Equator will also be cooler than average, due to the moderate to heavy rainfalls expected in those areas, except for Kenya, Somalia and the Countries north of latitude 10N will warmer than average temperatures.

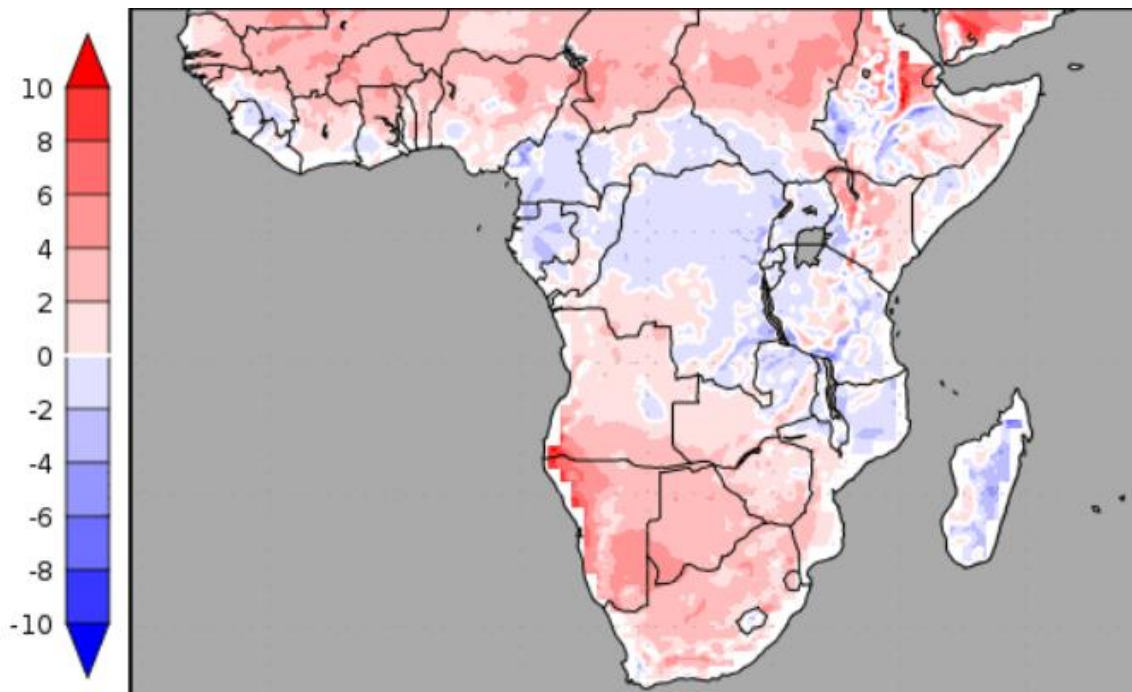


Figure 8: Temperature anomalies prospected from 17th to 25th of May 2021
(Source: COLA)

3.3 SOIL MOISTURE

Figure 9 shows soil moisture anomalies forecasted for the week of 17th to 25th of May 2021 whereby an increase in soil moisture is expected over the extreme western cape, extreme southern Madagascar, northern DRC, western Ethiopia and Kenya, extreme southern Sudan, eastern parts of Central African Republic, Congo Republic, Gabon, Camerron, Bukino Faso, Guinea, Sierra Leon and some areas over Liberia, southern Mali, Ghana, Nigeria,Togo and Benin.

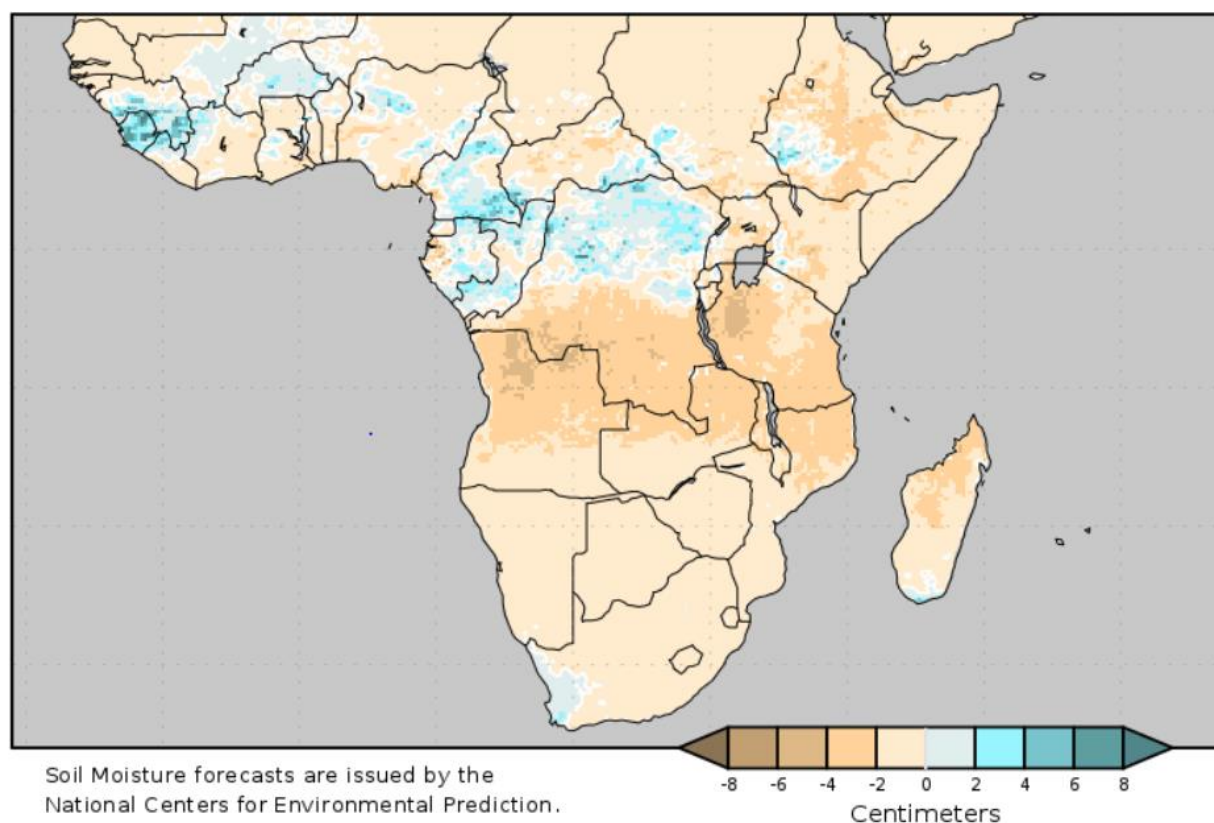


Figure 9: Soil moisture change prospected for the period 17th to the 25th of May 2021
(Source: COLA)