

Ten Days Climate Diagnostics Bulletin

N°27

Dekad 3, 21-30th September 2021

HIGHLIGHTS

The third dekad of September saw a gradual retreat of the rains from the Sahel and an effective commencement of rainfall further south of the Equator with above to well above average precipitation observed over the Gulf of Guinea countries, western DRC, west of CAR and southern part Sudan. Below to well below average precipitation was observed over most of Senegal, central south Nigeria, western Cameroon, most of Gabon, DRC and west of South Sudan during this period. The third dekad experienced a larger spatial coverage of below to well below normal precipitation as compared to the two previous dekad despite the southward movement of the rains.

This dekad was characterized by persistence of warm SSTs conditions in the Gulf of Guinea region with moderate to strong anticyclone wind anomalies at 850hPa and 700hPa in the northern part of Africa.

The forecasts show that during the weeks of 7-13th and 14th -20th of October 2021, low to moderate precipitation is expected to dominate over most parts of the Gulf of Guinea countries and Central African states extending up to Sudan and Ethiopia. Areas of isolated moderate to heavy precipitation are expected around the western parts of Cameroon, Gabon, Congo with Sierra Leone, Liberia and south of Cote d'Ivoire. The rest of the continent is expected to have a dominant no significant rainfall scenario.

Both weeks on figure 7a and 7b are showing dominant normal conditions over most areas of the northern and southern part of the continent.

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 summary on monsoon and relative humidity thresholds.

1.1 SURFACE

Pressure Systems

- **The Azores High** observed a central value of 1025hPa, compared to the previous dekad, it has intensified by 1hPa and by 5hPa compared to the climatological mean (1991-2020). The high pressure was located at 23°W and 41°N and moving North West of its climatological position over the North Atlantic Ocean.
- **St. Helena High** observed a central value of 1022hPa and has relaxed by 5hPa compared to the previous dekad and by 1hPa to the climatological mean (1991-2020). It was located at 4°W and 28°S. It moved slightly north east from its climatological position over the South Atlantic Ocean.
- **Mascarene High** observed 1028hPa intensified by 2hPa compared to the previous dekad and by 4hPa compared to its climatological position. It equally moved south west of its climatological position over the Indian Ocean and was located at 68°E and 32°S.
- **Heat Low:** The low-pressure system over Ethiopia in East Africa maintained its central value of 1014hPa as in the previous dekad and moved north east of its climatological position with location at 35°E and 8°N.
- **Siberian Low:** over the Indian sub-continent observed 1003hPa filling by 2hPa compared to the previous dekad and its climatology. It moved south west of its climatological position at 54°E and 23°N.

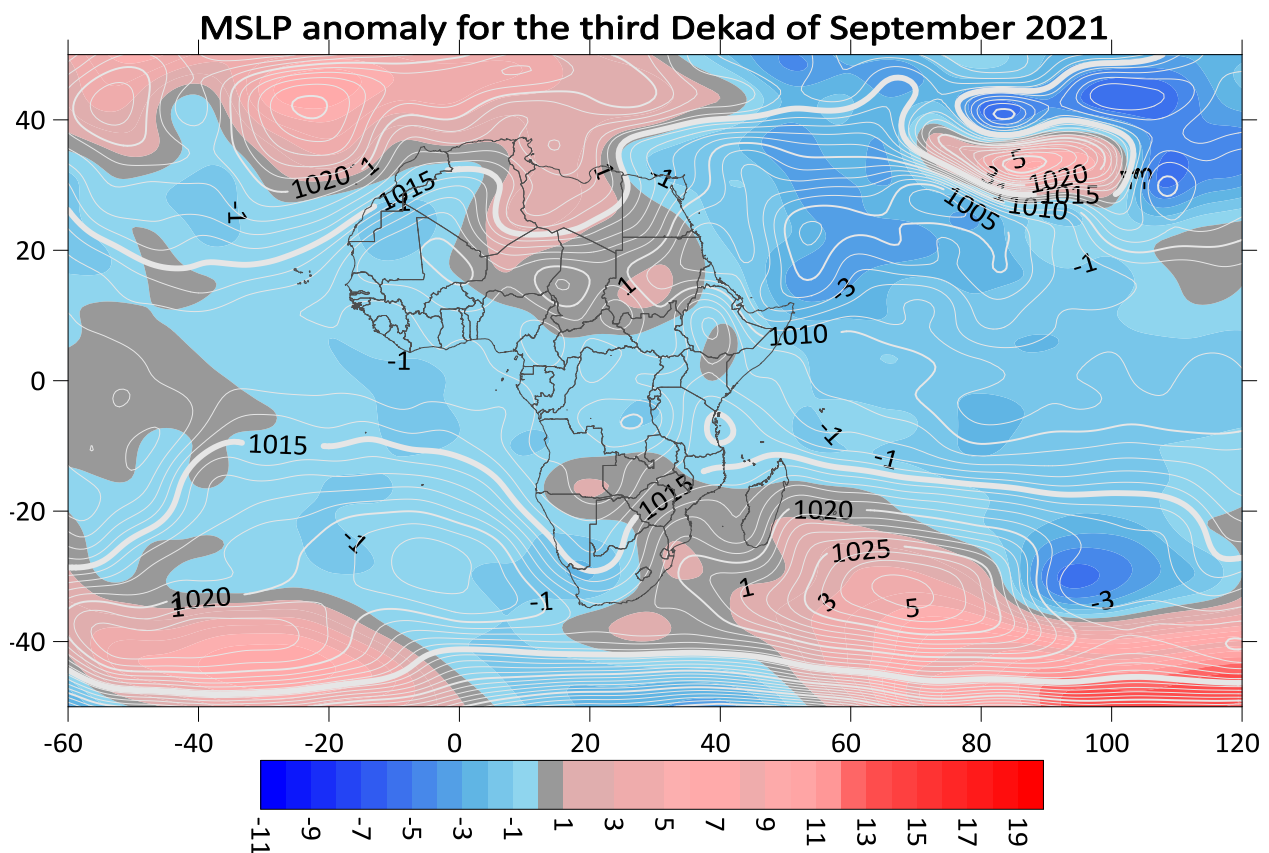


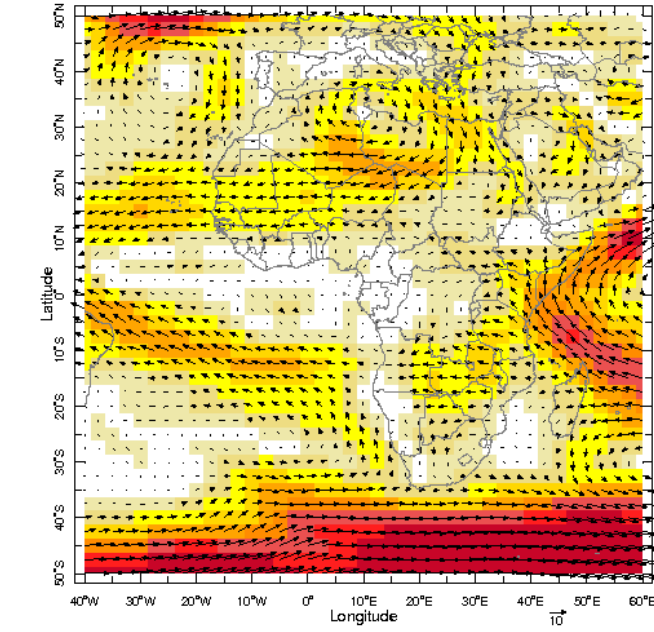
Figure 1. Observed Mean Sea Level Pressure (Contour) and anomaly (shaded) from 21st to 30th September 2021

1.2 TROPOSPHERE

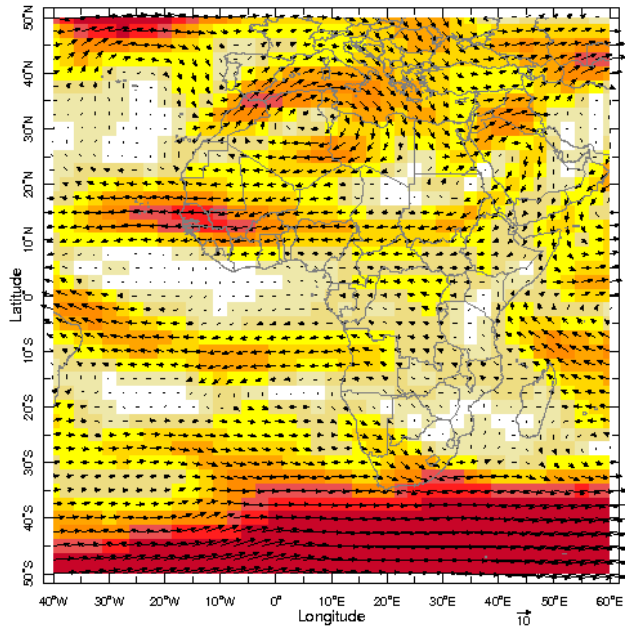
1.2.1 African Monsoon

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 northern Africa with an easterly arm of about 6m/s into the Atlantic Ocean

Figure 2b: At the 700hpa level, the pattern persisted with more strength and stronger easterly winds of 10-12 m/s extending further south over Senegal, Guinea, Liberia, Sierra Leone and south Mali.



Pressure 850.0 mb Time 21-30 Sep 2021

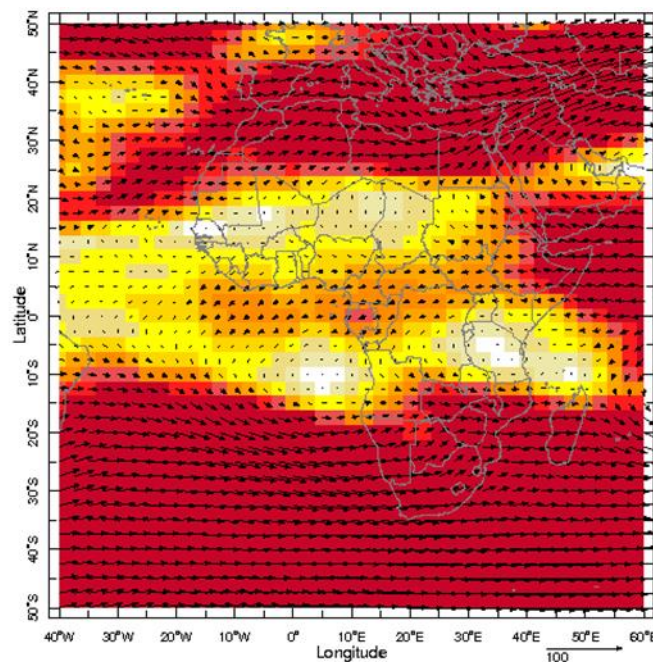


Pressure 700.0 mb Time 21-30 Sep 2021

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

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

Figure 2c: shows the wind speed and direction at 200hPa. During the third dekad of September 2021, very strong westerly zonal winds of about 14m/s were observed mainly over northern African countries and southern African countries. The Sahelian band with most of Central Africa observed low to moderate westerly zonal winds cutting across to eastern Africa.



Pressure 200.0 mb Time 21-30 Sep 2021

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

1.2.3 Relative Humidity (RH) at 850hPa

Figure 4 presents the dekadal mean of relative humidity at 850hPa for the third dekad of September 2021 and anomalies compared to the reference period 1991-2020. Wet atmospheric conditions (relative humidity $\geq 60\%$) covered a narrow band of the Gulf of Guinea Central Africa to the Horn of Africa and part of eastern Tanzania.

The relative humidity anomalies for the third dekad of September 2021 were negative over part of Congo, Cameroon, most part of the Gulf of Guinea countries, most of Mali, Mauritania, Uganda and Algeria. The major part of the continent observed a positive anomaly.

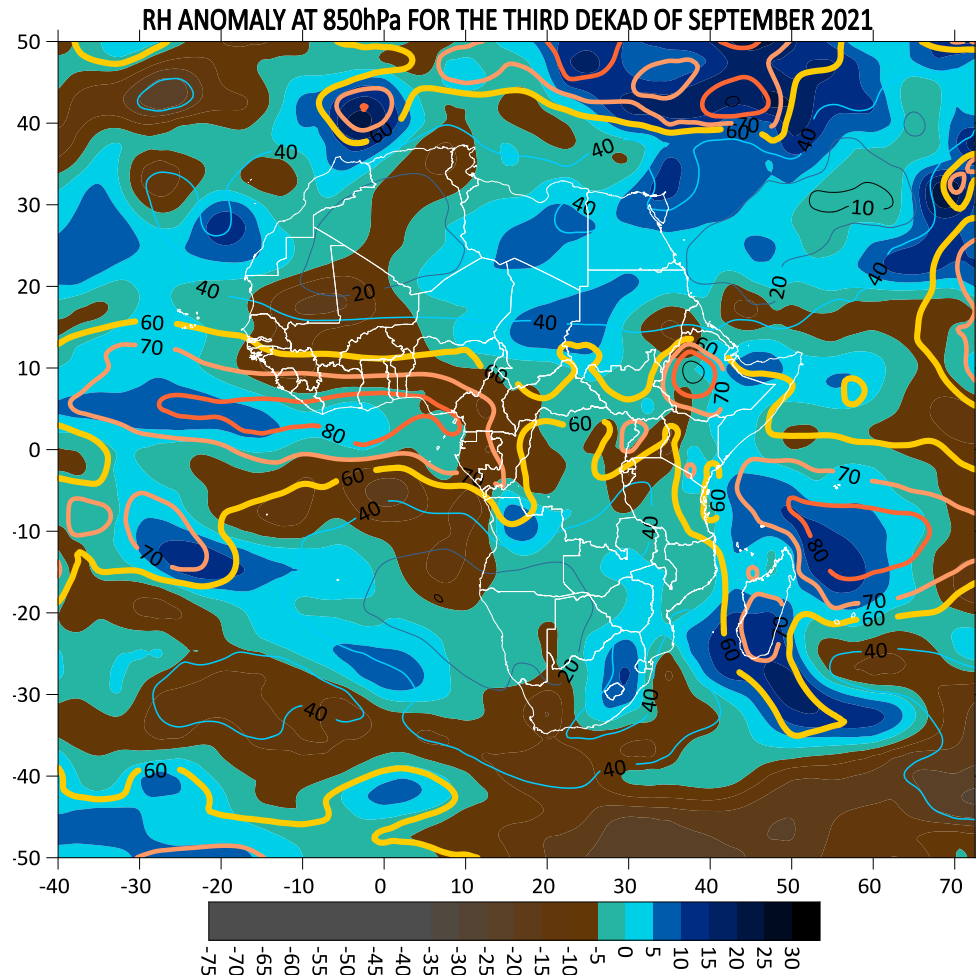


Figure 4. RH (%) at 850hPa (contour) and anomaly (shaded) during the period from 21st to 30th of September 2021
SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

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 belt with values $\geq 60\%$ at 700hPa covered still the Gulf of Guinea expanding to include more of Central Africa further narrowing into the horn of Africa.

The relative humidity anomalies for the third dekad of September 2021 were negative over the Gulf of Guinea, most of Mauritania, Algeria, Libya, Kenya, south Namibia, Botswana and south west of South Africa. The rest of the continent observed a positive anomaly.

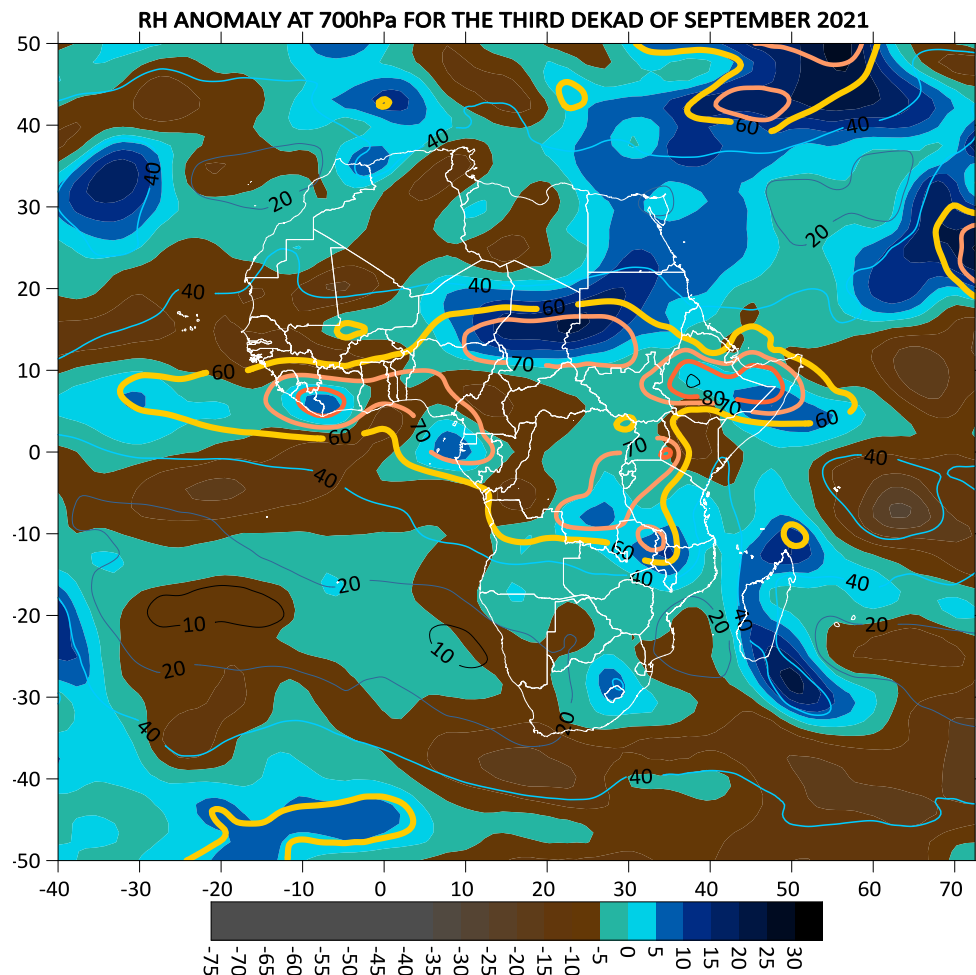


Figure 5. RH (%) at 700hPa (contour) and anomaly (shaded) during the period 21st to 30th of September 2021 (SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

2.0 PRECIPITATION

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

2.1 Precipitation

The third dekad of September witnessed a variety of climatological variations across the continent, above average to well above average precipitation was observed over isolated areas of the Gulf of guinea, south west of DRC, southern Sudan, north east of South Sudan, western Ethiopia and north part of Nigeria. Below to well below average precipitation was observed over Senegal, west Cameroon, central to north east of DRC east of CAR and west of South Sudan.

Details:

- **North Africa:** This region experienced mostly near average rainfall conditions during the dekad.
- **Gulf of Guinea countries:** The region observed above average to well above with some spots of well below average rainfall conditions like in Cameroon and Nigeria.
- **Central Africa countries:** Above average to well above-average rainfall was observed over parts of CAR, Equatorial Guinea, DRC and Congo. Below to well below average precipitation was observed in the east of CAR and centre to north east of DRC.
- **East Africa countries:** The easternmost flank of East Africa observed near average rainfall. Well below average rainfall was experienced around the western part of Uganda and the west of Kenya.
- **Southern Africa countries:** Most of the SADC countries experienced near average rainfall

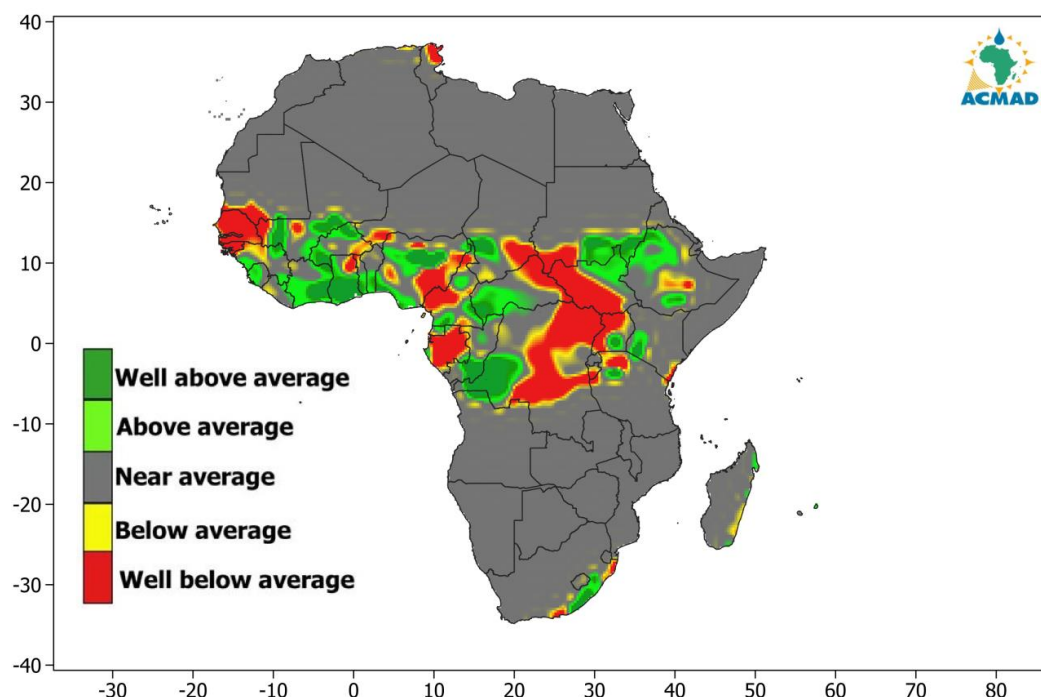


Figure 6: Precipitation in the percentage of average for the third dekad 21st to 30th of September 2021. The reference period used is 1991-2020. Source: NOAA/. NCEP/. CPC/. UNIFIED/. Africa/. DAILY/)

3.0 OUTLOOK VALID FOR 7th – 13TH OCTOBER 2021 AND 14TH-20TH OCTOBER 2021

3.1 PRECIPITATION

During the period of 7-13th October 2021, low to moderate precipitation is expected to dominate over the Gulf of Guinea, Central Africa, South Sudan, Ethiopia and Uganda. The west coast of Cameroon, Equatorial Guinea and Gabon expect to have moderate to heavy precipitation.

Figure 7b shows that during the week of 14-20th October 2021, there is likelihood of a, generally moderate to heavy precipitation over the equatorial band with reduction in precipitation over the coastal cities over the south of Nigeria and west of Cameroon. Most of the continent is expected to observe no significant rainfall during the two week period.

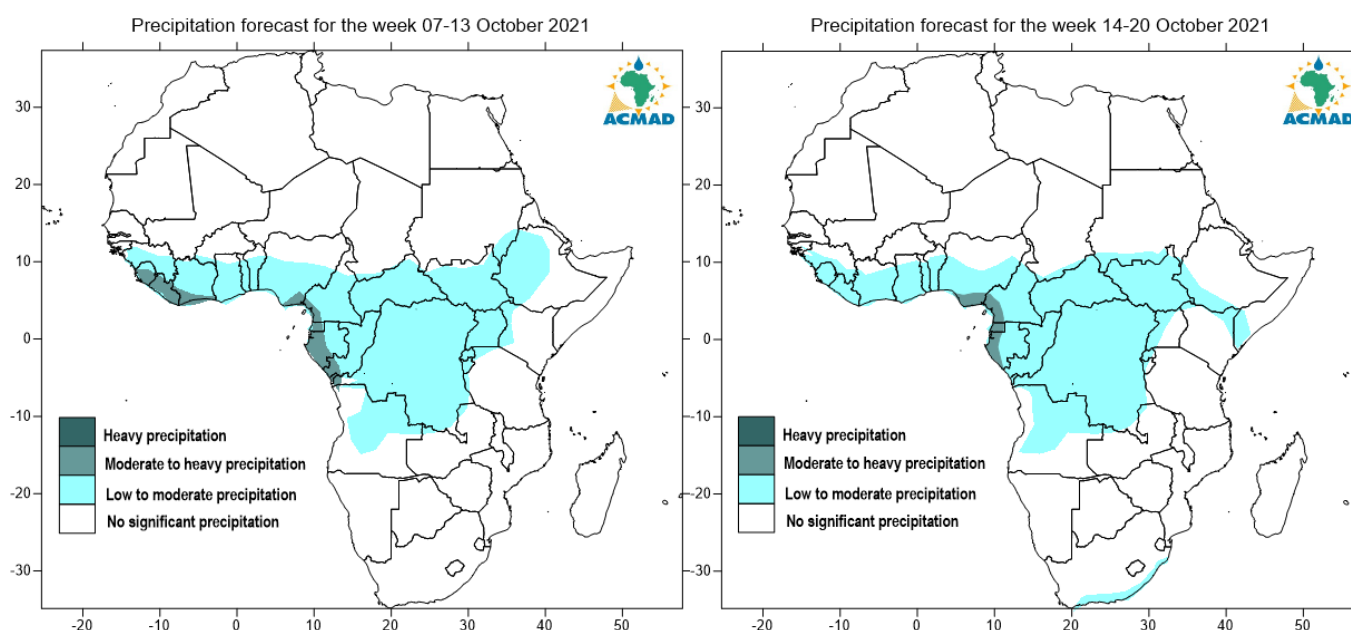


Figure 7a: Precipitation forecast for 07th to 13th October 2021

Figure 7b: Precipitation forecast for 14th to 20th October 2021

3.2 TEMPERATURE

Figure 8 presents the temperature anomalies forecast for the week of 7-15th October 2021. Temperatures are expected to be above average over most areas of the north tip of Africa and the southern part of Africa. Colder than normal temperatures are expected over countries along the Gulf of Guinea, CAR, Southern Sudan and Ethiopia.

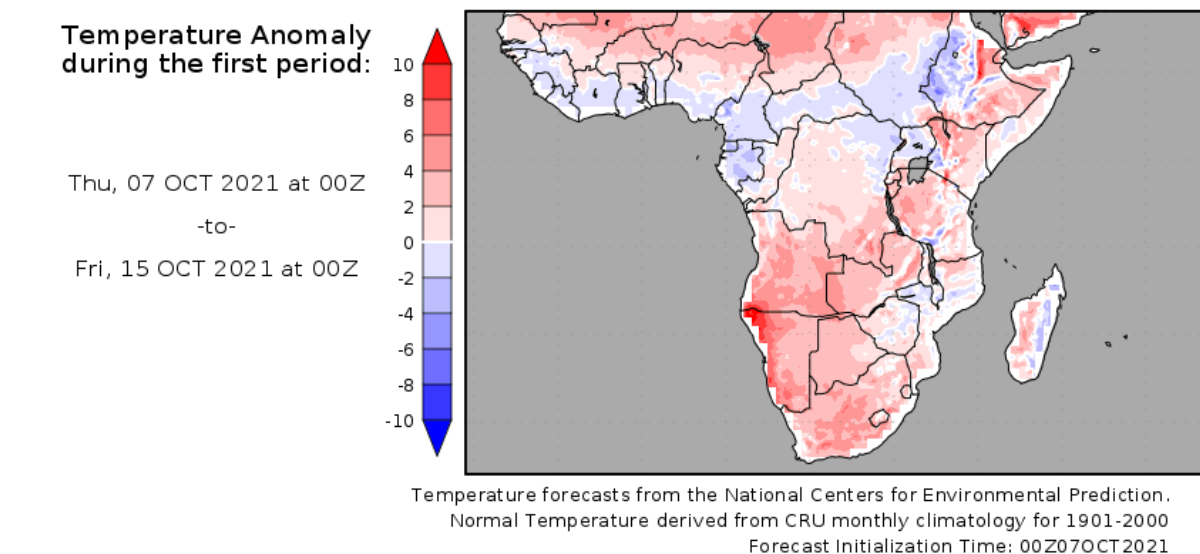


Figure 8: Temperature anomalies prospect from 7th to 15th of October 2021
(Source: COLA)

3.3 SOIL MOISTURE

Figure 9 shows soil moisture anomalies forecast for the week of 7-15th October 2021 where an increase in soil moisture is expected over Gabon, DRC, north Uganda, Sudan, central part of Ethiopia and west of Mozambique.

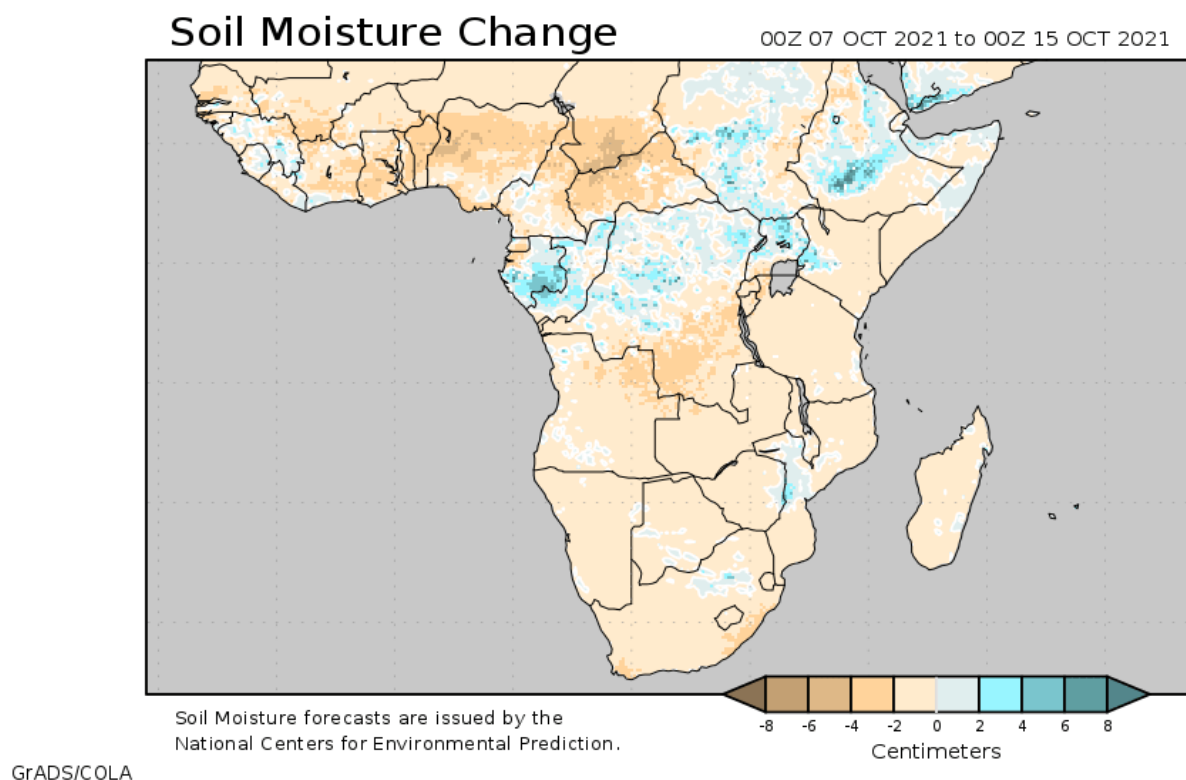


Figure 9: Soil moisture change prospect for the period 7th to 15th October 2021
(Source: COLA)