

Ten Days Climate Diagnostics Bulletin
N°10

Dekad 1, 1st to 10th April 2021

HIGHLIGHTS

During the first dekad of April 2021, above average and well above average rainfall were observed over pockets of north Africa, most of the southern coastal section of Gulf of Guinean countries, part of central Africa, south of east Africa sub-region and some pocket places in the SADC regions. Below average rainfall was observed over some few places in north of Gulf of Guine, most places in the east African sub regions, few places in the SADC area and pockets of places in the north Africa sub-region. Near average rainfall was observed over the rest of the continent.

During the period from 13th to 19th April 2021, low to moderate precipitation is very likely over the northern-east Morocco, northern Algeria, Sierra Leone, south-eastern Guinea, most of Liberia, central Côte d'Ivoire, southern Ghana, south-western Gabon, central Congo, central west and south-eastern of DRC, north-western Angola, much of Rwanda, Burundi, southernmost of Kenya, northern Tanzania, central and eastern Zambia, most part of Malawi, most of the northern Mozambique and half of Madagascar. Moderate to heavy rainfall are very likely over south-easternmost of Gabon, southern Congo, south-westernmost of DRC, southern Tanzania and north-eastern Mozambique

Over the same period, the temperature anomalies prospected for the week from 13-21 April 2021. As shown in the map, negative temperature anomaly (cooler than average) condition is expected over the the south parts of Gulf of Guinea, most of southern half of Cameroon, Eq.Guinea, parts of Congo, DRC, Uganda, parts of Somalia and Ethiopia, Tanzania, Zambia, Angola, Mozambique, and Madagascar. Areas expected to experience positive temperature anomaly (warmer than average) conditions are the Sahelian zone and places in the SADC region. The rest of the continent is expected to experience normal temperature anomaly (no change) conditions.

During the period from 20th to 26th April 2021, low to moderate precipitation is expected over Algeria, eastern Liberia, southern Côte d'Ivoire, south-western Ghana, southern part of Gabon, Congo, south-western DRC, southernmost of Tanzania, eastern Zambia, much of Malawi, north-western Mozambique and northern Madagascar. Moderate to heavy rainfall is very likely over north-western Mozambique and northernmost of 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 brief on monsoon and relative humidity thresholds.

1.1 SURFACE

Pressure Systems

- **The Azores High:** The pressure systems at the Azores high recorded 1032 hPa, a strengthening of 3hPa compared to the previous dekad whiles it strengthened by 12hPa compared to its climatological mean (1981-2010). It was located at 33°W and 57°N. It moved northward compared to the climatology position over the North Atlantic Ocean.
- **St. Helena High:** The pressure systems at the St. Helena High high recorded 1023 hPa, a strengthening of 4hPa compared to the previous dekad whiles it strengthened by 3hPa compared to its climatological mean (1981-2010). It was located at 40°W and 38°S. It moved to eastward compared to the climatology position over the South Atlantic Ocean.
- **Mascarene High** The pressure systems at the Azores high recorded 1027 hPa, a strengthening of 4hPa compared to the previous dekad whiles it strengthened by 6hPa compared to its climatological mean (1981-2010). It was located at 90°E and 36°S and it made a slight shift toward the east compared to the climatological position over the Indian Ocean.
- **Heat Low:** The low pressure at Sudan, recorded 1006 hPa, was strengthening by 2hPa compared to the previous dekad whiles it remained at same magnitude and position compared to its climatological mean (1981-2010). It was located at 31°E and 9°S.

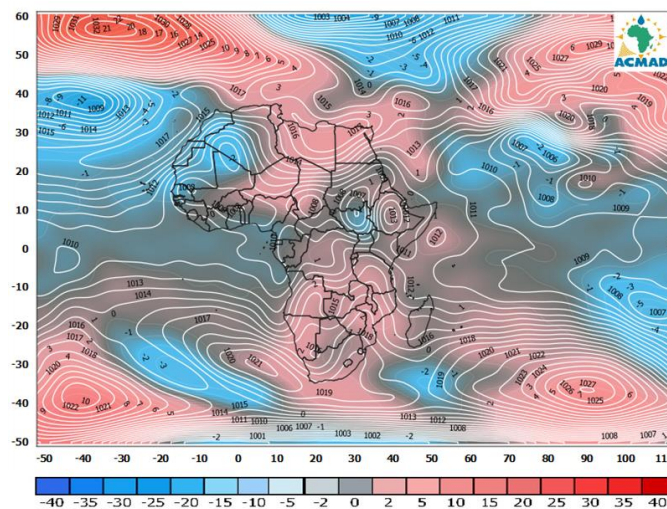


Figure 1. Observed Mean Sea Level Pressure (Contour) and anomaly (shaded) during the period from 1st to 10th April 2021

1.2 TROPOSPHERE

1.2.1 African Monsoon

In Figure 2, the left pannel shows the average wind velocity during the first dekad of April at 850 hPa atmospheric level. The north-western moderate winds were prevailed over central parts Sudan, southern Morocco, north-western Mauritania and north-eastern Mali. The weak to moderate wind from north-eastern, western and eastern were prevailed over the rest of the continent.

On the other hand, the right pannel in figure 2 shows the observed mean dekadal wind velocity at 700 hPa. The figure indicates a moderate to strong westerly wind over southern Morocco, northern Mauritania,

northern Mali, Northern Burkina Faso, North-western Niger, northern Chad and Sudan. The weak to moderate wind were observed over the rest of continent.

During the first decade of April 2021, weak to moderates winds were prevailed over southern parts of East Africa Region and southern parts of Central Africa region. The strong south-westerly and north-easterly winds were prevailed over the rest of the continent.

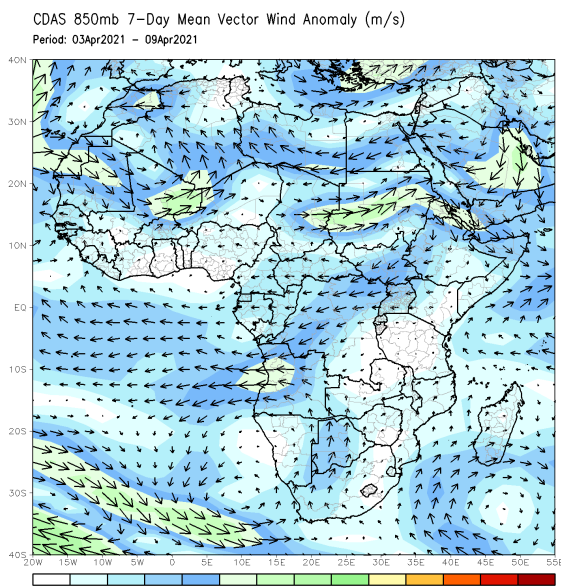


Figure 2: Mean wind at 850 hpa (m/s) during the period from 1th to 10th April 2021.
Source: NOAA/NCEP

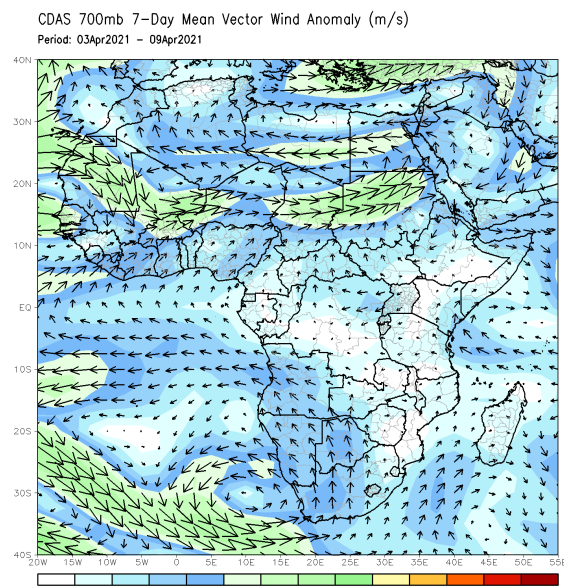


Figure 2: Mean wind at 700 hpa (m/s) during the period from 1th to 10th April 2021.
Source: NOAA/NCEP

1.2.3 Relative Humidity (RH) at 850 hPa

Figures 4 presents the dekadal relative humidity anomalies for the first dekad of April 2021 at 850 hPa to the reference period 2002-2011. Negative relative humidity anomalies were observed over Eritrea, Ethiopia, somalie, south Sudan, Uganda, Nigeria, southern parts of Chad, Zambia, Malawi, Namibia, Botswana, and South Africa. Positive RH (Indicating moist condition) was observed over the Northern tip of Libya and Egypt and some pocket place in Sudan, Somalia, DRC and Swaziland. The rest of the continent was subjected under normal relative humidity. The anomalies were determined based on the reference period: 2002-2011.

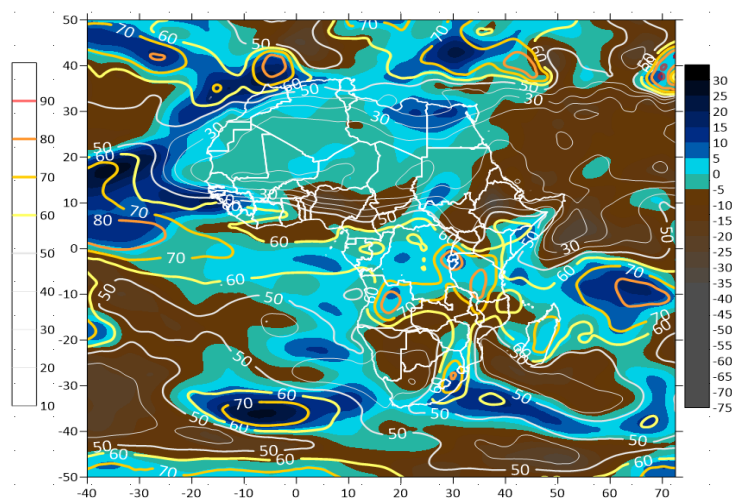


Figure 4. RH (%) at 850hPa (contour) and anomaly (shaded) during the period from 1st to 10th April 2021.SOURCE/. NOAA/. NCEP-CAR/. CDAS1

1.2.4 Relative Humidity at 700hPa

Figure 5 presents the dekadal relative humidity anomalies for the first dekade of April 2021 at 700 hPa to the reference period 2002-2011. Negative relative humidity anomalies were observed over south of Libya, most of Egypt, fringe of north Tunisia, south of Mauritania and Mali, Niger, Chad, most part of Gulf of Guinea countries, Eritrea, Ethiopia, Somalia, the northern parts of Zambia, most of Mozambique, southern tip of Namibia and South Africa. Most of the rest of the continent was under positive relative humidity, especially from Sudan stretching to the entire Central Africa and SADC sub-region area. The anomalies were determined based on the reference period: 2002-2011.

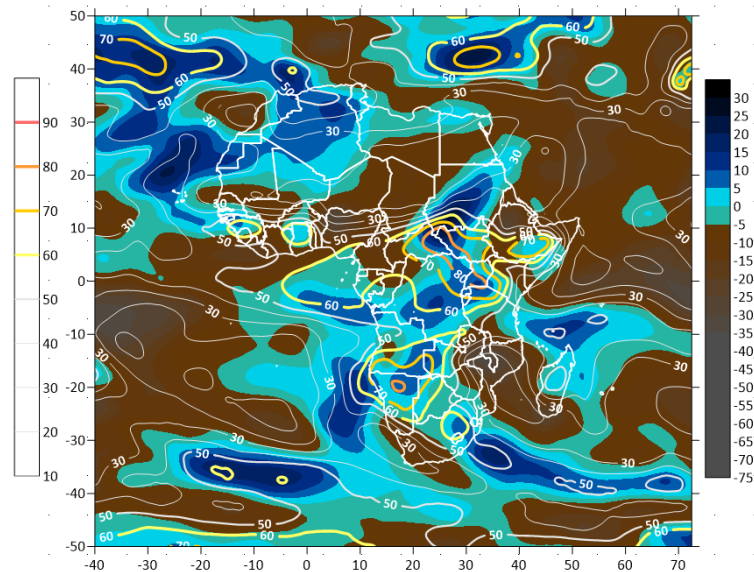


Figure 5. RH (%) at 700hPa (contour) and anomaly (shaded) during the period 1st to 10th April 2021. (SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

2.0 PRECIPITATION

Figure 6 shows the observed precipitation estimated in percentage of average for the first dekade of April 2021.

2.1 Precipitation

During the first dekade of April 2021, above average and well above average rainfall were observed over pockets of north Africa, most of the southern coastal section of Gulf of Guinean countries, part of central Africa, south of east Africa sub-region and some pocket places in the SADC regions. Below average rainfall was observed over some few places in north of Gulf of Guine, most places in the east African sub regions, few places in the SADC area and pockets of places in the north Africa sub-region. Near average rainfall was observed over the rest of the continent.

Details:

- North Africa: pockets of places in north of Morocco, Algeria, Tunisia, fringe of Libya and Egypt received above average rainfall, while some pockets of areas of these countries also experienced below to well below average precipitation. The rest of the region experienced near average rainfall.
- **The Sahel countries:** Most of the sub-region received near average rainfall.

- **Gulf of Guinea countries:** except some pocket places in northern section, most of the sub-region experienced above to well-above average precipitations.
- **Central Africa countries:** Above average to well above average rainfall was observed over most of DRC, south of CAR and southern half of Cameroon. Near average rainfall was observed over the rest of the sub-region.
- **East Africa countries:** Above to well above average rainfall was recorded at south of Ethiopia, south of Somalia, south-east of Kenya, Burundi, Rwanda, Uganda and north and south-east of Tanzania. Below average to well below average precipitation was observed over pocket areas of Somalia, central and eastern Rift Valley of Ethiopia and most places in central Kenya. The near average precipitation was observed over the rest of this region.
- **Southern Africa countries:** Above to well above average precipitation was observed across northern and western section of Angola, pocket places in Zambia, few places of Mozambique and northern half of Madagascar. Below to well below average precipitation was observed over places in Zambia, northern and eastern Mozambique, pockets in the SADAC sub-region. The rest of the region experienced near average average precipitations.

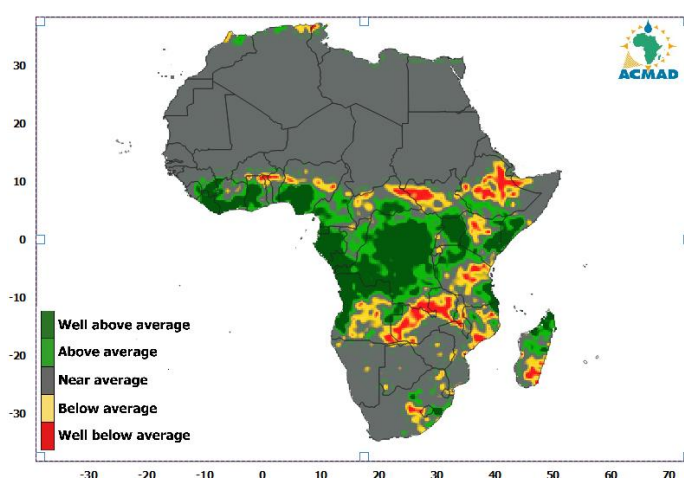


Figure 6: Precipitation in percent of average for First dekad of April 2021. The reference period used is 1981-2010. Source: NOAA/. NCEP/. CPC/. FEWS/. Africa/. DAILY/)

2.2. Impact of the previous dekad

In north Africa subregion, mostly near average and above average recorded in some few areas of the subregion were generally favourable toward sustaining the growth of partly or fully rain fed crops, particularly those which have been planted in October, November and February. These crops are currently found in different growth stage ranging from vegetative to reproductive phase so the rainfall received during the last 10-days can sustain the development of these crops as well as for the provision of pasture and drinking water for livestock production.

In west Africa (Sudan Shael zone), the region mostly received near average precipitations and this might assist farmers and pastoralists to conduct business as usual agricultural activities.

In west Africa (Guinea Gulf zone), the observed above to well above average precipitation over part of the subregion are positively impacting early land preparation for planting different crops during April and May. In addition, the enhanced moisture in the sub region is also favorable to satisfy the daily water need of crops which were planted from February to March. The received moisture has also supported the foodcrops like cassava, plantain, yam, etc., grown mostly in the southern areas as most of them are at the maturing stage. It has also benefited pastoral and agro pastoral community toward accessing fresh pasture and drinking water. However, the condition might cause water logging and soil erosion over heavier soils and low lying areas of the region.

In Central Africa, the received near average to well above average precipitation in the region are generally favourable for early land preparation and planting of various cereals and other crops during April. The wet condition is favourable for crops that were planted during March and now are found at vegetative stage. Conversely the above average condition might cause flood and river overflow related damages over parts of the sub region. The prevailed dry conditions could be favour to harvest some crops such as Rice, which were mostly planted last November and December. However, the dry conditions over the northern section of the subregion might delay sowing of second season crops as well as affecting the availability of fresh forage and drinking water for livestock production.

In east Africa region, the received above average rainfall are generally favourable toward sustaining the growth of crops planted from February to March planted crops such as, Maize, Millete, Barly and Wheat. However, areas that received below to well below average rainfall might encounter series moisture stress for crop development and it could be a challenge to ensure the availability of fresh forage and drinking water.

In the Southern Africa region, the prevailed dry condition across most parts of the region are generally favourable for the dry up of fully matured crops as well as to conduct harvest and post harvest activities. However, lately planted crops in this particular places experienced series water shortage during the period under review.

3. OUTLOOK FOR PRECIPITATION, AIR TEMPERATURE AND SOIL MOISTURE

3.1 PRECIPITATION

During the period from 13th to 19th April 2021, low to moderate precipitation is very likely over the northern-east Morocco, northern Algeria, Sierra Leone, south-eastern Guinea, most of Liberia, central Côte d'Ivoire, southern Ghana, south-western Gabon, central Congo, central west and south-eastern of DRC, north-western Angola, much of Rwanda, Burundi, southernmost of Kenya, northern Tanzania, central and eastern Zambia, most part of Malawi, most of the northern Mozambique and half of Madagascar. Moderate to heavy rainfall are very likely over south-easternmost of Gabon, southern Congo, south-westernmost of DRC, southern Tanzania and north-eastern Mozambique

During the period from 20th to 26th April 2021, low to moderate precipitation is expected over Algeria, eastern Liberia, southern Côte d'Ivoire, south-western Ghana, southern part of Gabon, Congo, south-western DRC, southernmost of Tanzania, eastern Zambia, much of Malawi, north-western Mozambique and northern Madagascar. Moderate to heavy rainfall is very likely over north-western Mozambique and northernmost of Madagascar.

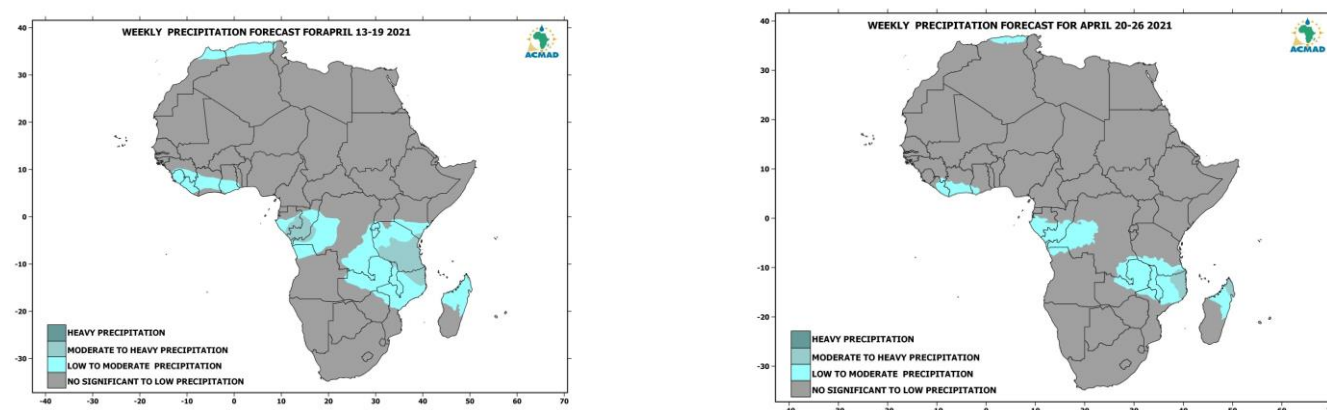


Fig 7: Precipitation forecast for weeks one (left panel) & two (right panel) (Source: ACMAD)

3.1.1. Impact outlook for the coming two weeks on the sectoral activities and advisories

As indicated in the weekly weather forecast, during the week from 13th to 19th April 2021,(week 1) and from 20th to 26th April 2021 (week 2) some few places to the west and south-east of the continent are likely to receive Moderate to heavy preceipitaion. The impact summary and subsequent advisory are provided in table 1 below.

Sub Region	Precip Category	Impact		Measure need to be taken
		Negative	Positive	
North Africa	low to Moderate	Moisture stress for crops at at flowering and grain filling stage;	Can support the availability of fresh pasture and drinking water. Good for harvest and post harvest	supplemental irrigation; agronomic practice to reduce moisture loss through evaporation
Gulf of Guinea and Central Africa	low to Moderate	water stress for early planted crops; moisture deficit for perennial plants: Insufficient fresh pasture and drinking water;	Can sustain land prepartation to sow crops like rice in some parts of the subregion; Positive for the avalibility of fresh fodder: Favorable for input application;	supplemental irrigation; agronomic practice to reduce moisture loss through evaporation
East Africa	Low precip	Series water stress for early planted second season crops; delay to palnt long cycle crops crops and this may shorten the Length of Growing Period (LGP). Negetively impact the avaiability of fresh pasture and drinking water Lower dam level may impact on continous power generation	Reduce the possible new out break and multiplication of desert locust.	Ex-situ Water harvesting for supplemental irrigation; In-situ soil water conservation Develop watering points and use paddock system
SADC Region	Mostly low	Moisture stress can be a problem for late planted crops; A concern on the availability of fresh pasture and drinking water	positive for the dry up of matured crops; favorable for harvest and post harvest practice;	farmers need to take advantage to harvest fully matured crops; supplemental irrigation;

3.2 Temperature

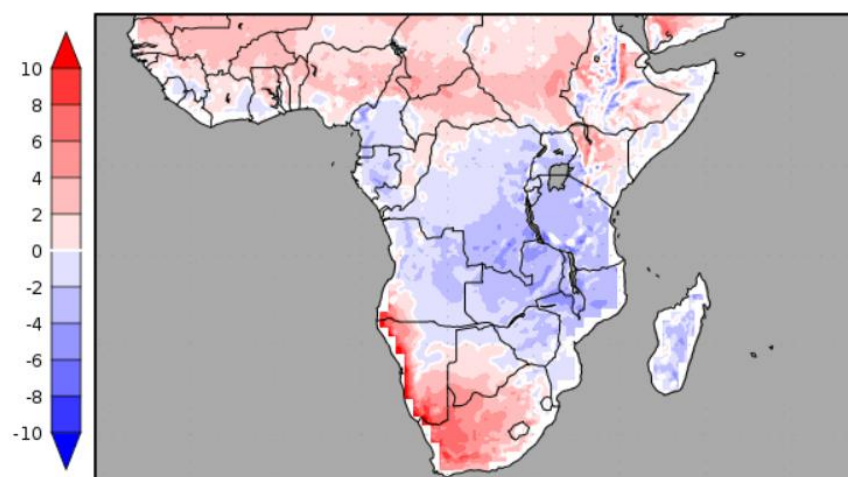
Figure 8 presents the temperature anomalies prospected for the week from 13-21 April 2021. As shown in the map, negative temperature anomaly (cooler than average) condition is expected over the the south parts of Gulf of Guinea, most of southern half of Cameroon, Eq.Guinea, parts of Congo, DRC, Uganda, parts of Somalia and Ethiopia, Tanzania, Zambia, Angola, Mozanbique, and Madagascar. Areas expected to experience positive temperature anomaly (warmer than average) conditions are the Sahelian zone and places in the SADC region. The rest of the continent is expected to experience normal temperature anomaly (no change) conditions.

Temperature Anomaly during the first period:

Tue, 13 APR 2021 at 00Z

-to-

Wed, 21 APR 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: 00Z13APR2021

Figure 8: Temperature anomalies prospected from 13 - 21 April, 2021: (Source: COLA)

3.3. Soil Moisture

Figure 9 shows soil moisture anomalies prospect for the week from 13 -21 April 2021. As depicted in the map, increase in soil moisture (positive value) is expected over parts of Gulf of Guinea, southern half of Cameroon, northern parts of Congo, northern half of Angola, eastern parts of DRC, eastern half of Ethiopia, north of Somalia, Uganda, Rwanda, Burundi and most of Tanzania. Areas experiencing soil moisture deficit includes north of Mozambique, Zambia, Malawi and the north of Angola. The rest of the continent is expected to experience soil moisture deficit during the coming week of April.

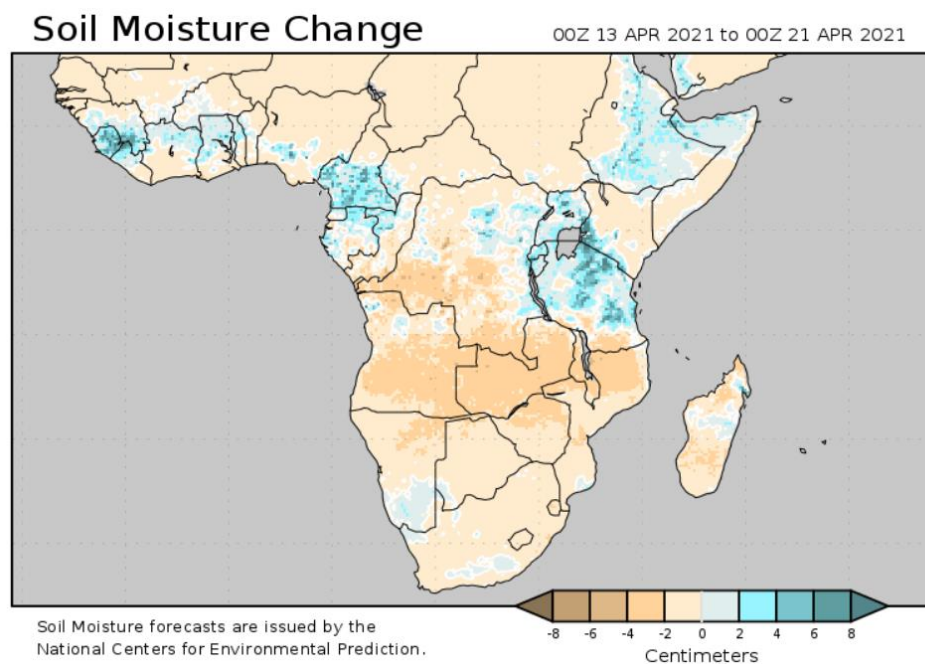


Figure 9: Soil moisture change prospected for the period 13 -21 April, 2021
(Source: COLA)