

Ten Days Climate Diagnostics Bulletin

N°15

Dekad 3, 21st to 31st May 2021

HIGHLIGHTS

During the third dekad of May, the eastern parts of Africa experienced a great reduction in precipitation leading to well below average rainfall. Central African and Gulf of Guinea Countries continued to experience above to well above average rainfall. Low to moderate precipitation to be expected over the bulk of South Africa, with moderate to heavy precipitation next to Lesotho. The rest of the countries experienced near average precipitation conditions.

This situation was characterized by low pressure activities over mid-latitude and equatorial regions with warm SSTs conditions in the Gulf of Guinea regions.

The forecasts show that during the period from the 4th to the 10th of June 2021, low to moderate precipitation is expected to be very likely over the extreme eastern parts of Mozambique and Madagascar. Also over the northern parts of the Countries over Central Africa and the Gulf of Guinea. Moderate to heavy precipitation is expected over most countries in the Gulf of Guinea and Central Africa, also over western Ethiopia.

During the week of the 11th to the 17th of June, there will be a reduction of precipitation over the countries over eastern Africa. Western parts of Ethiopia will still experience moderate to heavy precipitation, but low precipitation is expected over Uganda, Rwanda and Burundi. The countries west of the Central African countries and the countries in the Gulf of Guinea will continue to experience moderate to heavy precipitation, more especially Nigeria and Cameroon.

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 1028hPa strengthened by 3hPa compared to the previous dekad and strengthened to 7hPa compared to the climatological means (1981-2010). It was located at 30°W and 38°N. It moved to the north-east of the climatological position over the North Atlantic Ocean.
- **St. Helena High** of 1021hPa has weakened by 2hPa compared to the previous dekad and weakened by 1hPa compared to the climatological mean (1981-2010). It was located at 3°E and 27°S. It moved slightly eastwards from the climatological position over the South Atlantic Ocean.
- **Mascarene High** of 1026hPa strengthened by 1hPa compared to the previous dekad and strengthened by 7hPa compared to the climatological means (1981-2010). It was located at 66°E and 36°S. It moved slightly southwards 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 Mali positioned at 1.5°W and 20°N and there was no change in the pressure compared to the previous dekad and weakened by 2hPa compared to the climatological means (1981-2010). It has moved slightly to the west, but is in more or less the same position compared to its climatological position.
- **Heat Low 2** The low pressure system has a pressure value of 1007 hPa, which is currently located over Chad at 16°E and 14°N, and has maintained the same pressure compared to the previous dekad and strengthened by 1hPa compared to the climatological means (1981-2010). It is in the same position compared to the climatological position.
- **Heat Low 3** The low pressure system has a pressure value of 1006 hPa, which is currently located over north-eastern parts of North-Sudan at 35°E and 19°N and has weakened by 1hPa as compared to the previous dekad and weakened to 1hPa compared to the climatological means (1981-2010). It is positioned in the same position as compared to the climatological position.

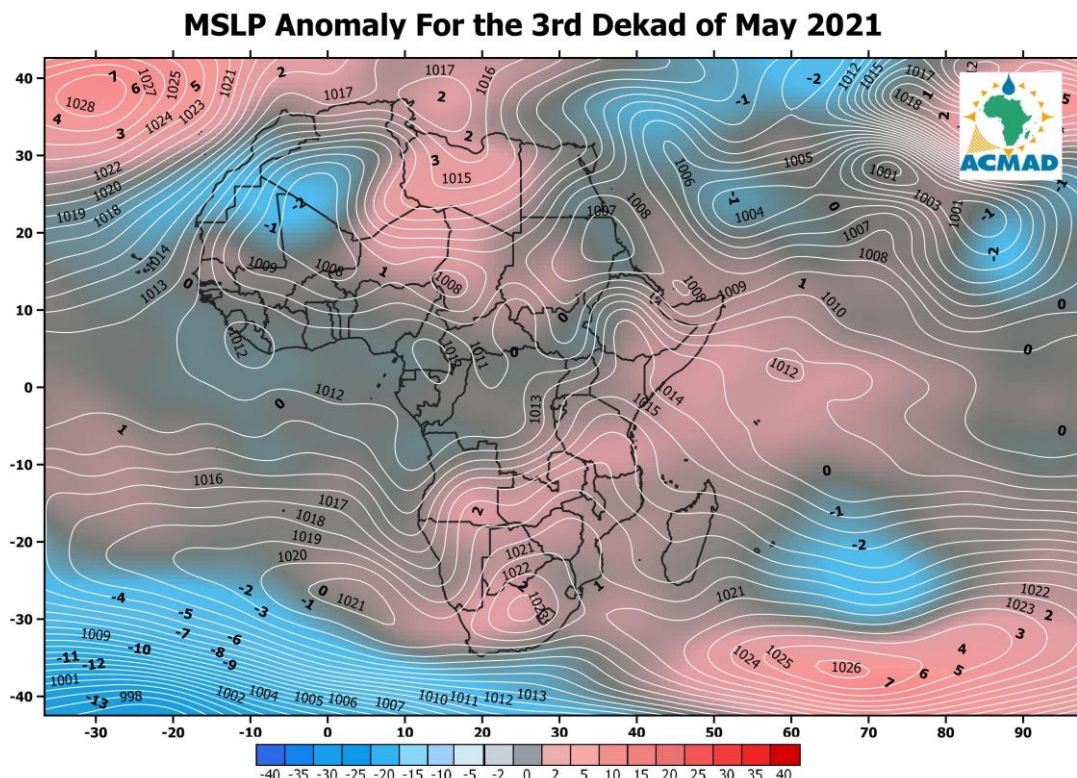


Figure 1. Observed Mean Sea Level Pressure (Contour) and anomaly (shaded) during the period from the 21st to the 31st of May 2021.

1.2 TROPOSPHERE

1.2.1 African Monsoon

Figure 2a shows the average wind dekadal at 850 hPa. Strong cyclonic (low pressure) winds were observed over Libya. The intensity of the zonal winds was at more than 14ms. Strong north-easterly winds were also observed over Egypt. Over Zambia and Angola, there were also strong westerly winds.

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. The wind intensity at 700hpa, reduced over Zambia, but still maintained the strong southerly flow over Angola. There is also a strong westerly flow over the Countries in the Gulf of Guinea.

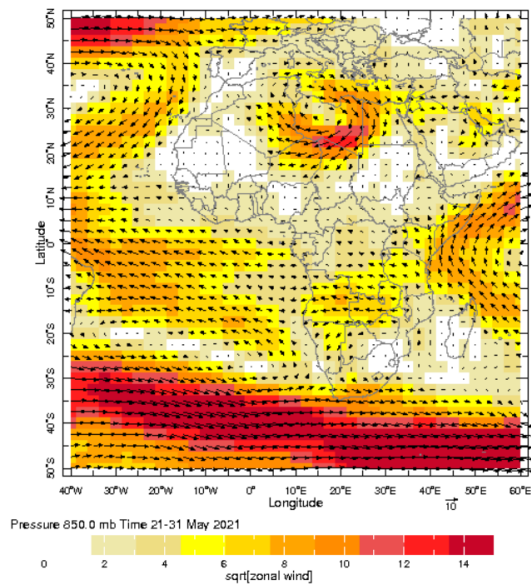


Figure 2 a: Mean wind at 850 hpa (m/s) during the period from 21st to 31st of May 2021.
Source: NOAA/NCEP

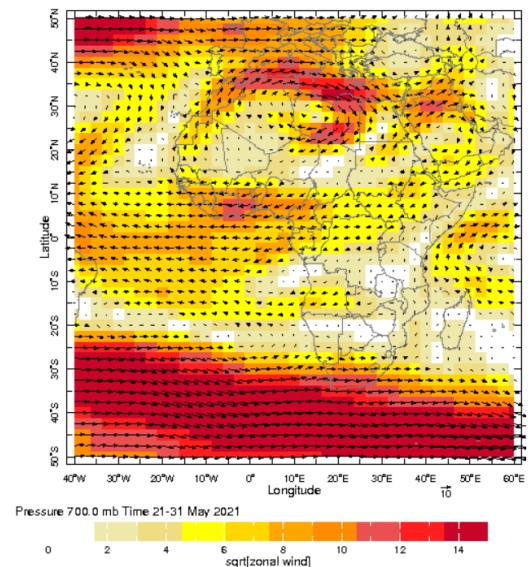


Figure 2b: Mean wind at 700 hpa (m/s) during the period from 21st to 31st of May 2021.
Source: NOAA/NCEP

1.2.2 Wind at 200 hPa.

Figure 3 shows the wind speed and direction at 200hPa. During the third 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.

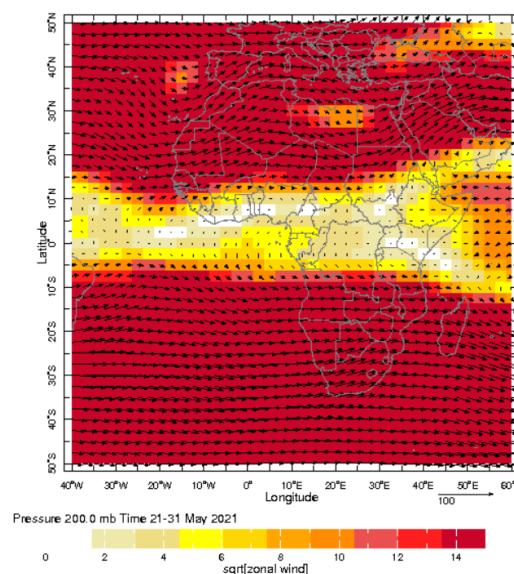


Figure 3: Mean wind at 200 hPa (m/s) during the period from 21st to 31st of May 2021.
(Source: NOAA/NCEP)

1.2.3 Relative Humidity (RH) at 850hPa

Figure 4 presents the dekadal mean of relative humidity at 850 hPa for the third dekad of May 2021 and anomalies compared to the reference period 2002-2020. Wet atmospheric conditions (humidity relative $\geq 60\%$) were observed over Madagascar, northern Mozambique, Tanzania, Kenya, southern Ethiopia, South Sudan, all Countries in central Africa and the gulf of Guinea. Dry air (humidity relative between 20 and 40%) was observed over most SADC countries, and all the Countries in the Sahel and Northern Africa.

The relative humidity anomalies for the third dekad of May 2021 were negative over Zimbabwe, Zambia, Tanzania, bulk of Ethiopia, eastern parts of North Sudan, eastern Niger, northern Nigeria, western Chad, northern Algeria and northern Libya and Egypt.

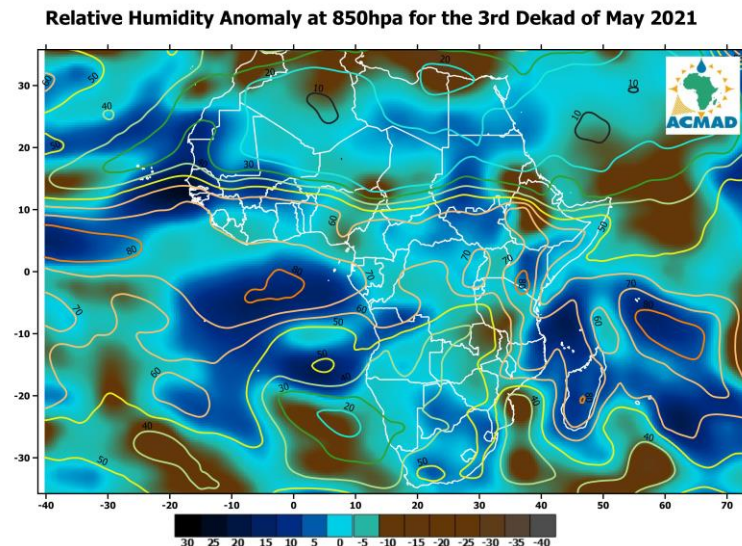


Figure 4. RH (%) at 850hPa (contour) and anomaly (shaded) during the period from 21st to 31st of May 2021. SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

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 the central parts of Africa. This includes Eastern Africa, Central Africa and Gulf of Guinea Countries. The rest of the continent experienced RH of less than 50%.

The relative humidity anomalies for the third dekad of May 2021 were negative over most of the SADC Countries, northern Ethiopia, and southern parts of the Countries in the Gulf of Guinea.

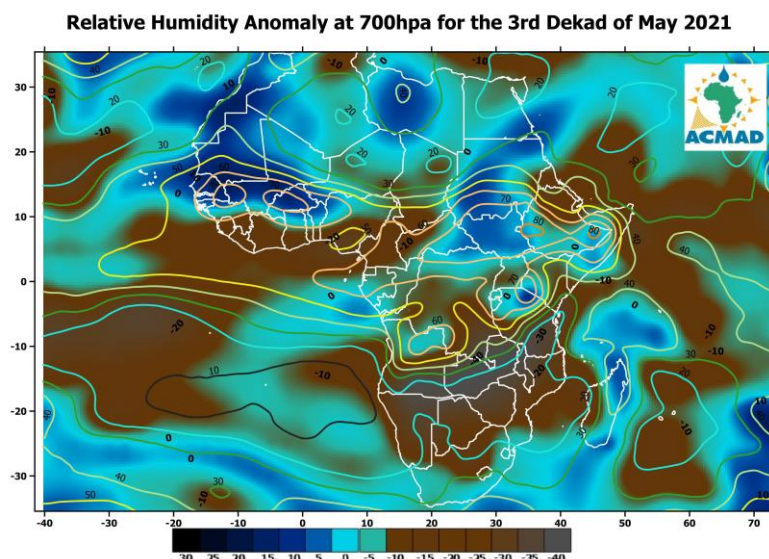


Figure 5. RH (%) at 700hPa (contour) and anomaly (shaded) during the period 21st to 31st of May 2021. (SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

2.0 PRECIPITATION

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

2.1 Precipitation

During the third dekad of May, the eastern parts of Africa experienced a great reduction in precipitation leading to well below average rainfall. Central African and Gulf of Guinea Countries continued to experience above to well above average rainfall. Low to moderate precipitation to be expected over the bulk of South Africa, with moderate to heavy precipitation next to Lesotho. The rest of the countries experienced near average precipitation conditions.

Details:

- **North Africa:** Extreme northern Algeria, Mauritania and Libya received above average rainfall, with a pocket over northern Morocco had below average rainfall. Almost all the countries in North Africa had average 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 the northern parts of Nigeria which experienced well below average rainfall. Otherwise most countries over the Equator and latitude of 10°N received above to well above average rainfall.
- **Central Africa countries:** Well above average to above average rainfall was received in all the countries in Central Africa, except for the extreme southern Chad and South-Sudan extending into central DRC experienced well below average rainfall.
- **East Africa countries:** The rainfall situation worsened over eastern Africa. The bulk of Ethiopia, western Kenya, extreme northern Tanzania experienced well below average rainfall. The bulk of Tanzania and most of Kenya and extreme southern and north-eastern Ethiopia and Somalia experienced near average rainfall.
- **Southern Africa countries:** Most of the SADC countries experienced near average rainfall, except for extreme eastern Madagascar and central DRC experienced well below average rainfall.

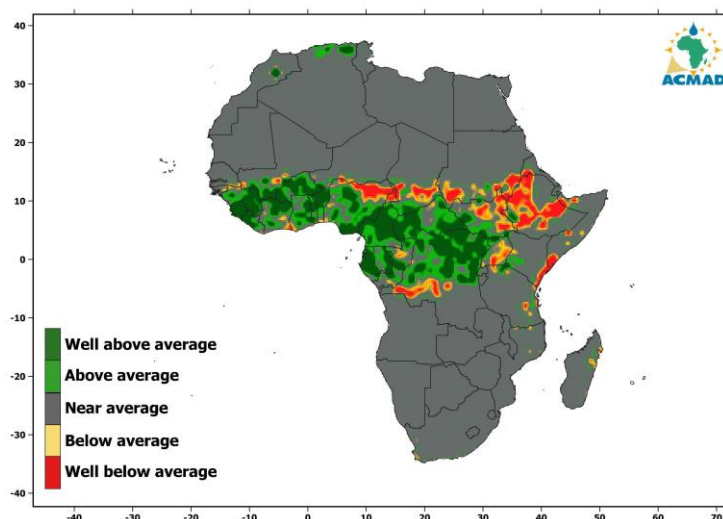


Figure 6: Precipitation in percent of average for first dekad 21st to 31st of May 2021. The reference period used is 1981-2010. Source: NOAA/. NCEP/. CPC/. FEWS/. Africa/. DAILY/)

3.0 OUTLOOK VALID FROM 4TH TO THE 17^H OF JUNE 2021

3.1 PRECIPITATION

During the period from the 4th to the 10th of June 2021, low to moderate precipitation is expected to be very likely over the extreme eastern parts of Mozambique and Madagascar. Also over the northern parts of the Countries over Central Africa and the Gulf of Guinea. Low to moderate precipitation to be expected over the bulk of Southafrica, with moderate to heavy precipitation next to Lesotho. Moderate to heavy precipitation is expected overmost countries in the Gulf of Guinea and Central Africa, also over western Ethiopia.

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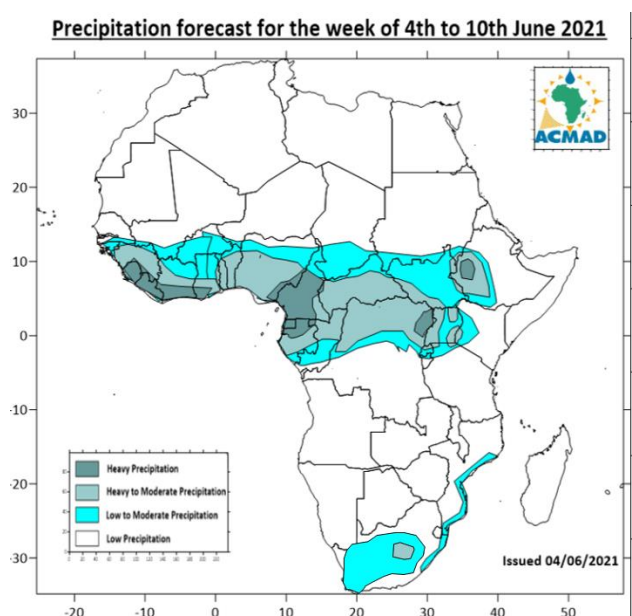


Figure 7a: Precipitation forecast from 4th to 10th June 2021 (Source: ACMAD)

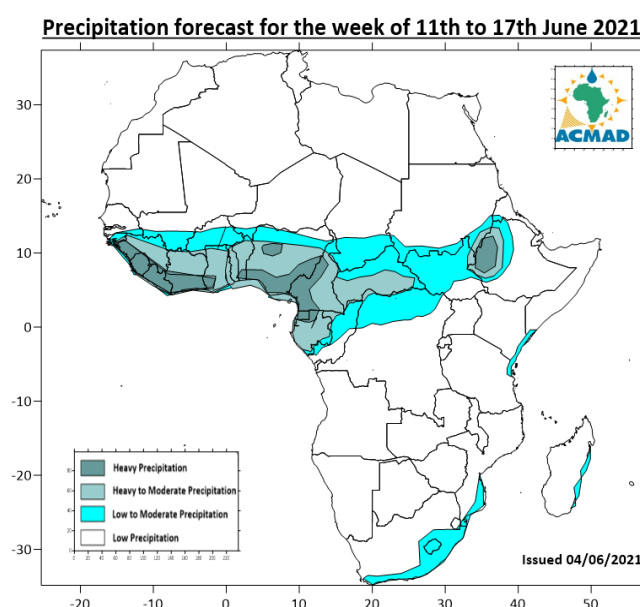


Figure 7b: Precipitation forecast 11th to 17th June 2021. (Source: ACMAD)

3.2 TEMPERATURE

Figure 8 presents the temperature anomalies forecasted for the week of the 4th to 12th of June 2021. Temperatures are expected to be above average over most of the countries, except for over Lesotho, Zimbabwe, Zambia, Mozambique, Tanzania and Madacascar, were temperatures will be cooler than average. Most of the Countries in the Gulf of Guinea will also be cooler than average, due to the moderate to heavy rainfalls expected in those areas.

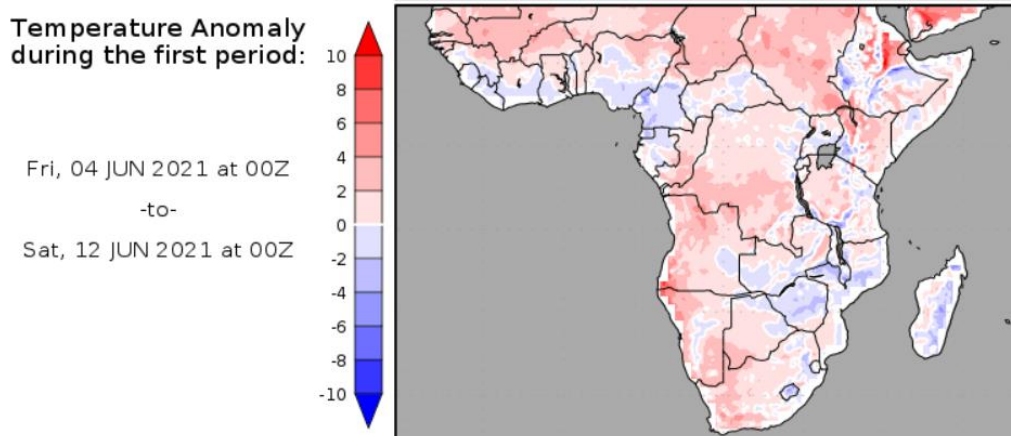


Figure 8: Temperature anomalies prospected from 4th to 12th of June 2021

(Source: COLA)

3.3 SOIL MOISTURE

Figure 9 shows soil moisture anomalies forecasted for the week of 4th to 12th of June 2021, whereby an increase in soil moisture is expected over most countries over the Gulf of Guinea, Cameroon, CAR, central Sudan, western Ethiopia, bulk of South Africa and extreme northern DRC.

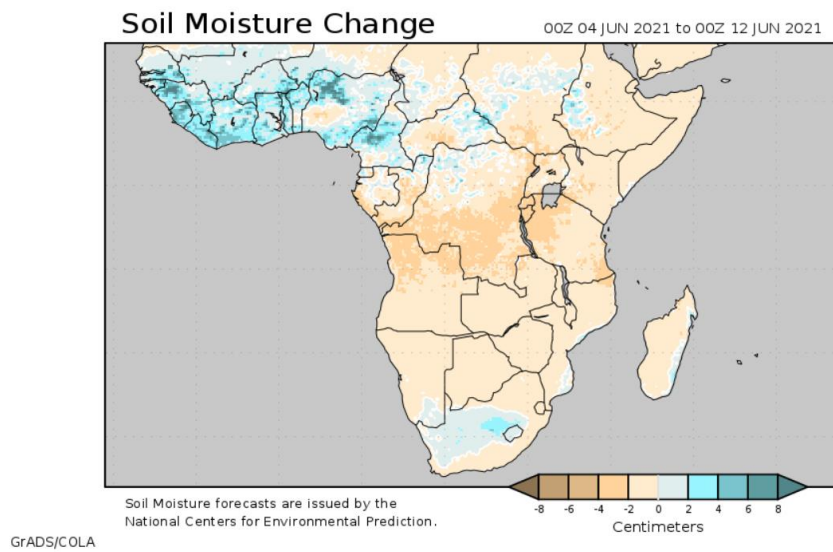


Figure 9: Soil moisture change prospected for the period 4th to the 12th of June 2021
(Source: COLA)