African Centre of Meteorological Applications for Development
Centre Africain pour les Applications de la Météorologie au Développement

Ten Days Climate Diagnostics Bulletin
N°01

Dekad 1, 1 – 10 January 2022

HIGHLIGHTS

- ✓ *During the first dekad of January 2022, rainfall activities were observed over the central and southern regions with above-average to well above-average conditions over south-western DR Congo, much of Angola, Zambia, Malawi, western and southern Tanzania, northern Mozambique, Zimbabwe, central of South Africa and most of the eastern parts Madagascar. At same dekad, below-average rainfall was observed over the northern Morocco, Algeria, western Gabon, south-western Congo, central and eastern DR Congo, much of Rwanda, Burundi, southern Uganda, Kenya, eastern Tanzania, south-eastern parts of Angola, north-eastern Namibia, northern Botswana, southern Zimbabwe, north-eastern part of South Africa and western parts of Madagascar.*

- ✓ *This dekad was characterized by neutral to warm SSTs conditions in the Eastern parts the Continent. These SST conditions contributed to above normal precipitation in the above regions. In addition, in the equatorial pacific region, below normal conditions have persisted for the past four weeks. Over the Atlantic, the SSTs were mostly neutral to warm.*

- ✓ *The outlook for 14th -20th AND 21st – 27th 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, Rwanda South Africa and Lesotho; during the Week 2, the same is expected over Rwanda, Burundi, DRC, Tanzania, Mozambique, Zambia, and 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 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 1027hPa, which was 4hPa less than the previous dekad and the climatological mean (1991-2020). Over the North Atlantic Ocean, the high pressure was located at 22°W and 36°N, moving eastward of its climatological position.
- **St. Helena High** divided by two cells a central pressure of 1019hPa, a 1hPa decrease from the previous dekad and stable to the climatological mean (1991-2020). It was located at 22°W/27°S and 4°E/31°S. It remained quasi-stationery compared to its climatological position over the South Atlantic Ocean.
- **Mascarene High:** The central value for Mascarene High was 1022hPa. It weakened by 3hPa compared to the previous dekad and by 2hPa compared to the climatological means (1991-2020). Positioned at 99°E and 36°S, it moved eastward of its climatological position over the south Indian Ocean.
- **Heat Low:** The heat-lows located over South Sudan into the northern had central value of 1007hPa; it was deepened by 3hPa compared to the last dekad. The heat-lows were located at 30°E and 7°N respectively.

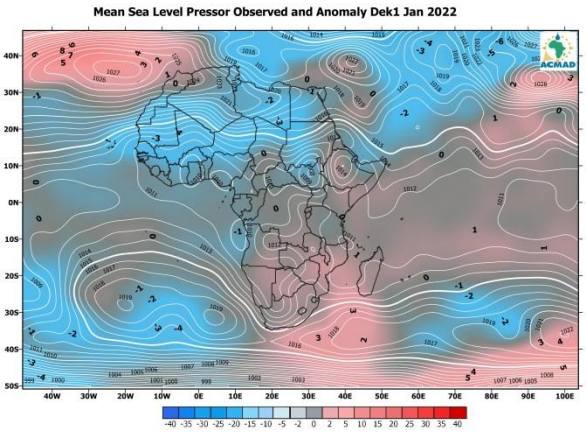

***Figure 1**. Observed Mean Sea Level Pressure (Contour) and anomaly (shaded) from 1st to 10th January 2022*

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 to10m/s.

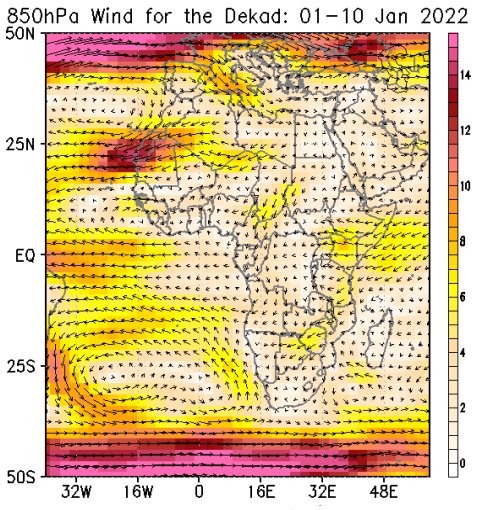

Figure 2a: Mean wind (m/s) at 850hPa from 1-10 January 2022
Source: NOAA/NCEP

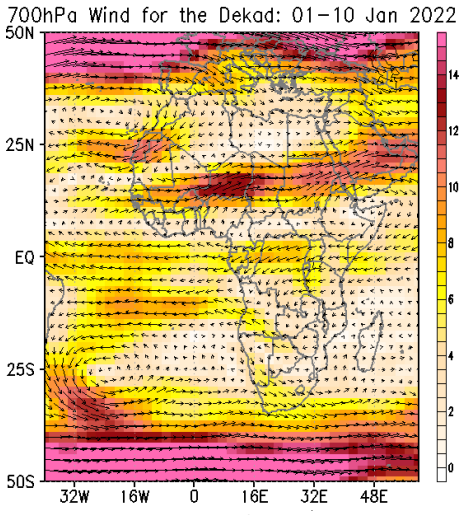

Figure 2b: Mean wind (m/s) at 700hPa from 1-10 January 2022
Source: NOAA/NCEP

Figure 2c: shows the wind vector anomaly at 200hPa. During the first dekad of January 2022, very strong westerly winds ≥14m/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.

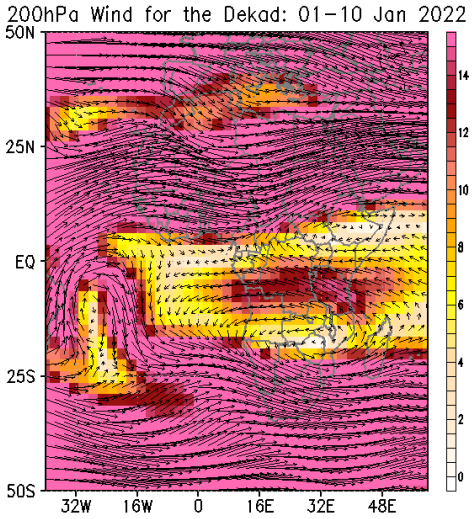

***Figure 2c: Mean wind at 200 hPa (m/s) during the period* 1-10 January 2022**
(Source: NOAA/NCEP)

1.2.3 Relative Humidity (RH) at 850hPa

Figure 4 presents the dekadal observed relative humidity at 850hPa for the first dekad of January 2022 and anomalies of the reference period 1991-2020. Wet atmospheric conditions (relative humidity ≥ 60%) were observed over 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 ≤ 60%.

Negative anomalies were observed during the first dekad of January 2022 over Uganda, Rwanda, Burundi, northern Morocco, Algeria, Tunisia, Libya, Malawi, Somalia, North Sudan, and Tanzania, parts of Morocco, Algeria, Tunisia, Egypt, Kenya, eastern DRC, and northern Zambia and Mozambique. Positive anomalies were recorded in the other parts of the continent.

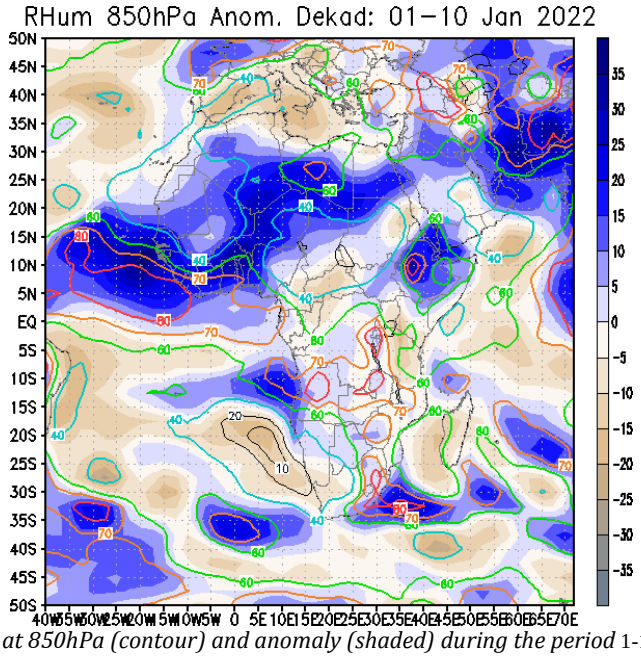

Figure 4. *RH (%) at 850hPa (contour) and anomaly (shaded) during the period* 1-10 January 2022
SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

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 ≥ 60% at 700hPa were observed over eastern Africa, and most of central and southern Africa. The rest of the continent observed RH values ≤ 60%.

The relative humidity anomalies for the first dekad of January 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.

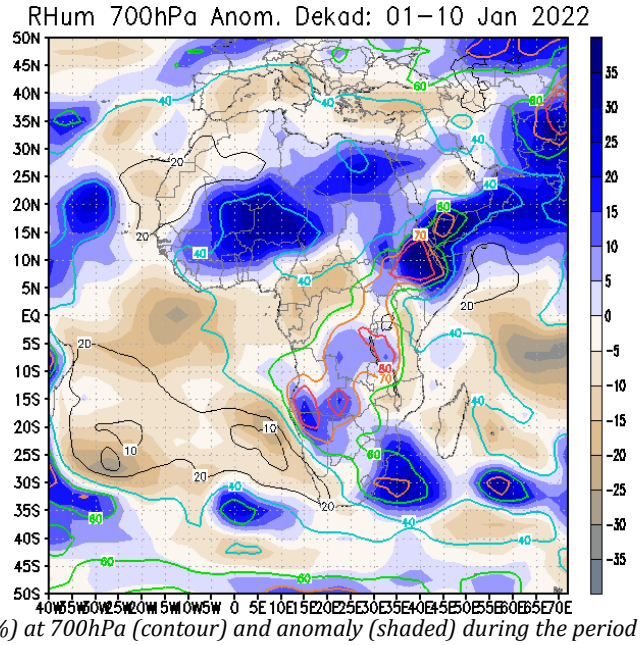

Figure 5. *RH (%) at 700hPa (contour) and anomaly (shaded) during the period* 1-10 January 2022
(SOURCE/. NOAA/. NCEP-CAR/. CDAS1)

2.0 PRECIPITATION

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

2.1 Precipitation

During the first dekad of January 2022, rainfall activities were observed over the central and southern regions with above-average to well above-average conditions over south-western DR Congo, much of Angola, Zambia, Malawi, western and southern Tanzania, northern Mozambique, Zimbabwe, central of South Africa and most of the eastern parts Madagascar. At same dekad, below-average rainfall was observed over the northern Morocco, Algeria, western Gabon, south-western Congo, central and eastern DR Congo, much of Rwanda, Burundi, southern Uganda, Kenya, eastern Tanzania, south-eastern parts of Angola, north-eastern Namibia, northern Botswana, southern Zimbabwe, north-eastern part of South Africa and western parts of 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 Tunisia, Libya and Egypt.
- **Gulf of Guinea countries**: The region received near-average precipitation.
- **Central Africa countries**: Congo, Rwanda, Burundi, west of Gabon, central and eastern DRC received below-average to well below-average precipitation while above average to well above-average precipitation was observed over south-eastern Congo, south-western DRC and must of Angola.
- **East Africa countries** southern Uganda, Kenya and Tanzania observed below average to well below average rainfall conditions while western of Tanzania observed above average to well above average rainfall precipitation.
- **Southern Africa countries:** Northern Mozambique, Zimbabwe most parts Malawi, Zambia, South Africa and Madagascar observed above-average to well above-average precipitation. Below-average to well below-average rainfall was experienced in south-eastern Angola, north-eastern Namibia, northern Botswana, southern Zimbabwe, Mozambique, eastern South Africa and western Madagascar.

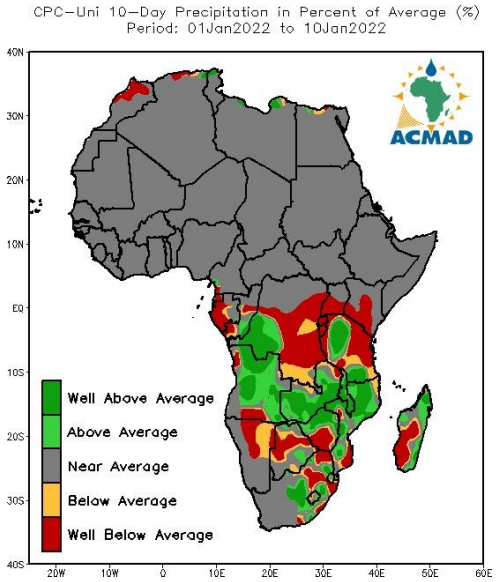

Figure 6: *Precipitation in the percentage of average for the third dekad 21st – 31st December 2021. The reference period used is 1991-2020. Source: NOAA/. NCEP/. CPC/. UNIFIED/. Africa/. DAILY/)*

3.0 OUTLOOK VALID FOR 14th- 27th January 2022

3.1 PRECIPITATION

The outlook for 14th -20th AND 21st – 27th 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, Rwanda South Africa and Lesotho; during the Week 2, the same is expected over Rwanda, Burundi, DRC, Tanzania, Mozambique, Zambia, and Madagascar..

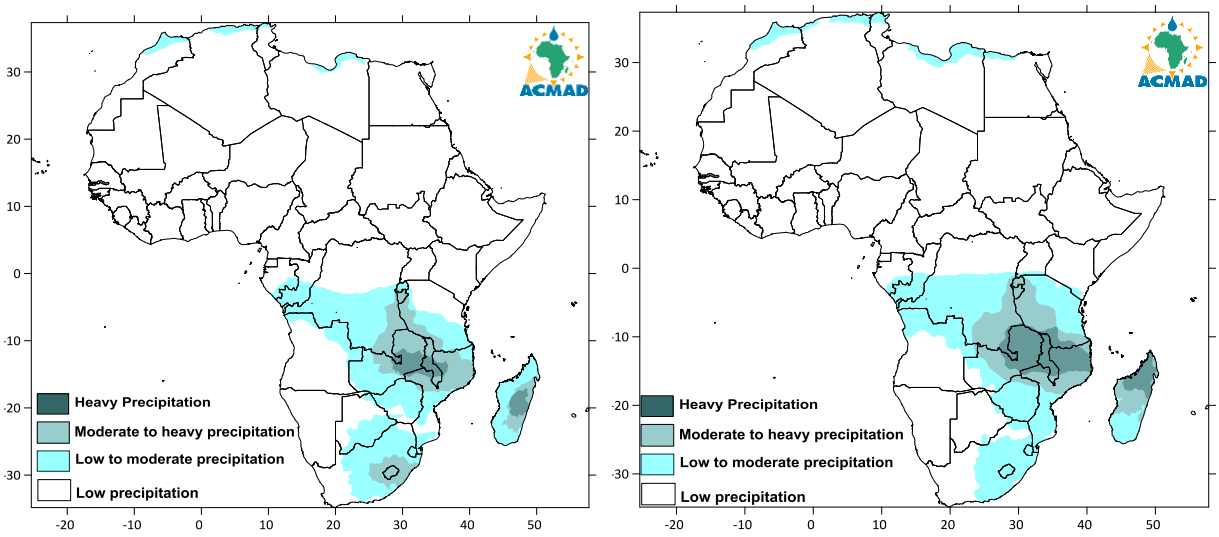

***Figure 7a**: Precipitation forecast for 14th - 20th January 2022* ***Figure 7b**: Precipitation forecast for 21st - 27th January 2022*

3.2 TEMPERATURE

Figure 8 presents the temperature anomalies forecast for the week of 15th –23th January 2022. Temperatures are expected to be above average over most of the western, central, eastern and south-eastern parts of the continent except for the central Sahel, central parts of southern Africa expected to be below average temperatures are expected.

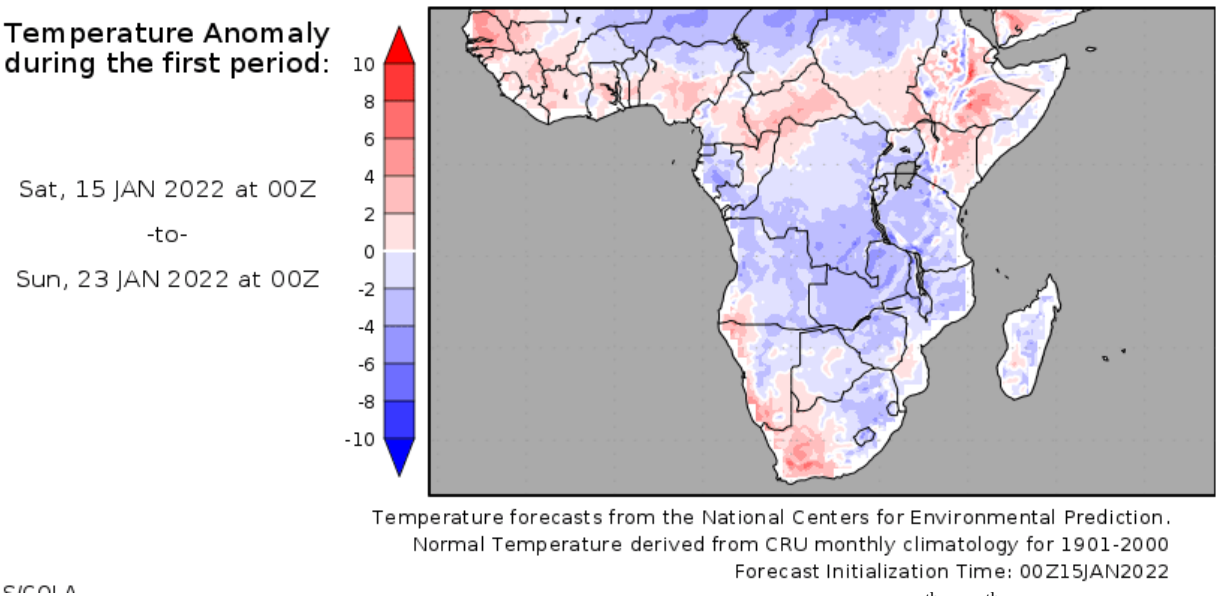

***Figure 8:** Temperature anomalies prospect from 4th –12th January 2022*
(Source: COLA)

3.3 SOIL MOISTURE

Figure 9 shows soil moisture anomalies forecast for the week of 15th –23th January *2022* will be observed 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.

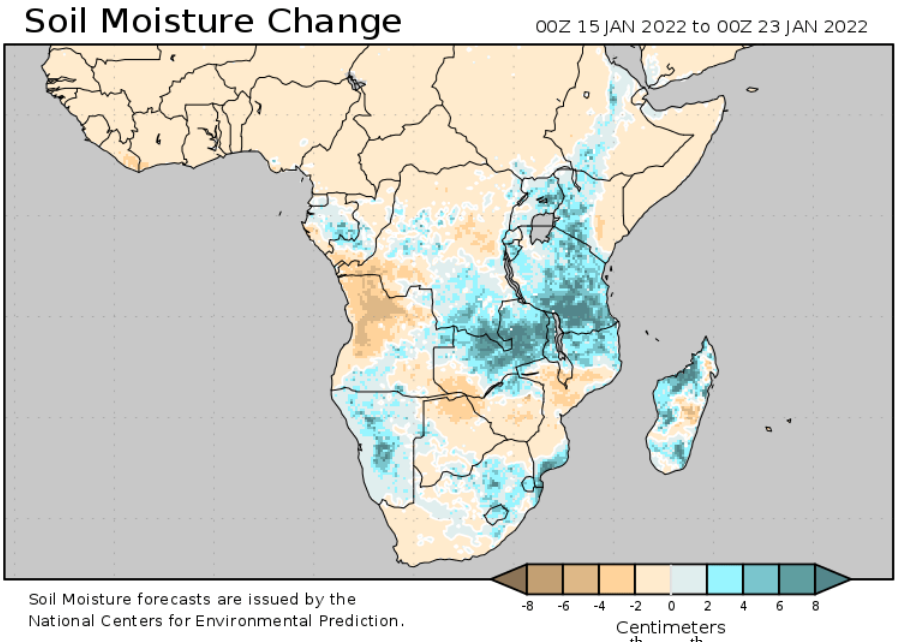

Figure 9: Soil moisture change prospect for the period 15th –23th January 2022 (Source: COLA)