

Climate Services for Disaster Risks Reduction in Africa

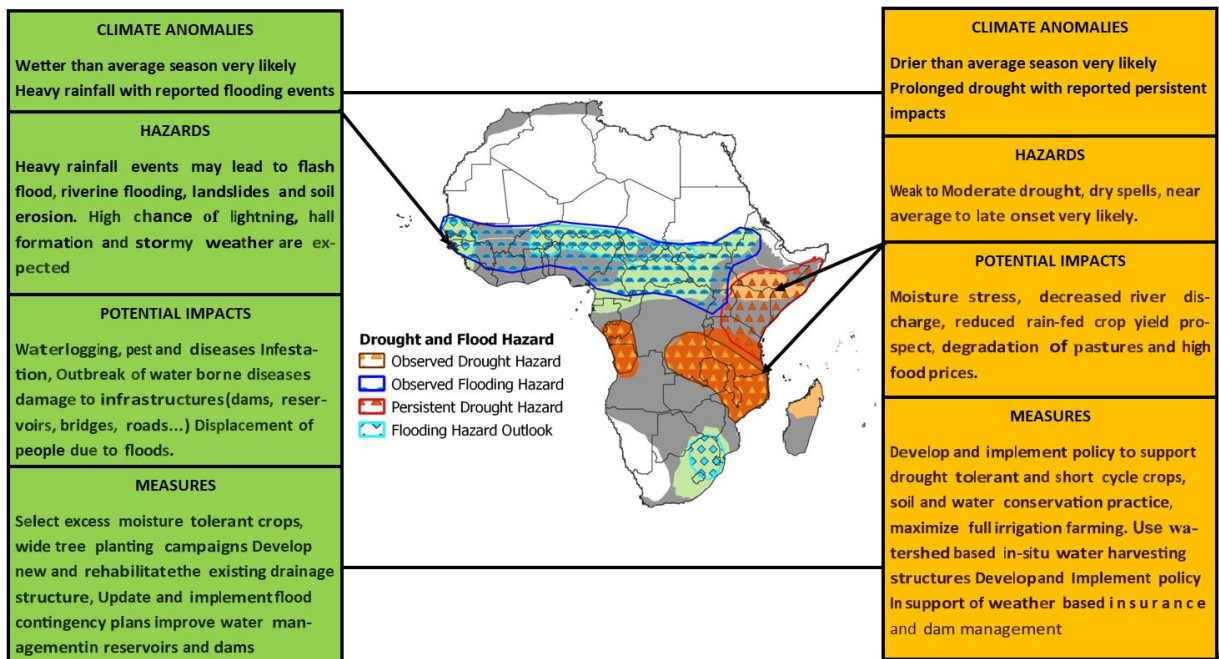
DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

ISSUED: 19 August 2022

Selected Significant Weather and Climate events 'updates: Valid for
September to December 2022.



CONTINENTAL
BRIEF FOR POLICY AND DECISION MAKERS BASED ON
SIGNIFICANT WEATHER AND CLIMATE EVENTS UPDATE.
VALID FOR: SEPTEMBER TO DECEMBER 2022



DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

BULLETIN No.9, 2022

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HIGHLIGHTS

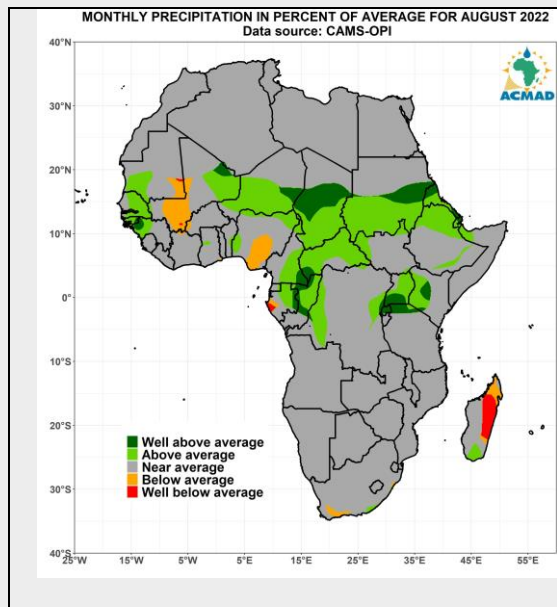
Performance of the past season and impacts

- ✓ In Sierra Leone- at least 6 people lost their lives following torrential rains that caused floods and landslides in Freetown (floodlist 29, August 2022).
- ✓ In Nigeria, 60 people have died after heavy rainfall over the country during August (floodlist 26, August 2022).
- ✓ In Sudan, the Government authorities reported that 89 people died following heavy rainfall causing floods across the country (floodlist 24, August 2022).
- ✓ In Mauritania, 14 people died following heavy rainfall in late July that caused severe flooding across several regions of the country (floodlist 24, August 2022).
- ✓ In Cameroon, at least 5 people died due to flooding and landslides triggered by heavy rainfall (floodlist 15, August 2022).
- ✓ In Chad, 22 people died following weeks of heavy rainfall and floods (floodlist 14, August 2022).
- ✓ In Niger, at least 27 people have now died due to flooding brought by seasonal heavy rains (floodlist 12 August 2022).
- ✓ In Senegal, at least 1 person has died after floods caused by heavy rain in Dakar (floodlist 8, August 2022).
- ✓ In Gambia, at least 2 people have died following floods triggered by floods (floodlist 3 August 2022)
- ✓ In Uganda, at least 10 people have been killed by flooding and landslides triggered by heavy rainfall (floodlist 1, August 2022).

Outlook SEPTEMBER -OCTOBER-NOVEMBER AND OCTOBER-NOVEMBER-DECEMBER 2022

SEASONS

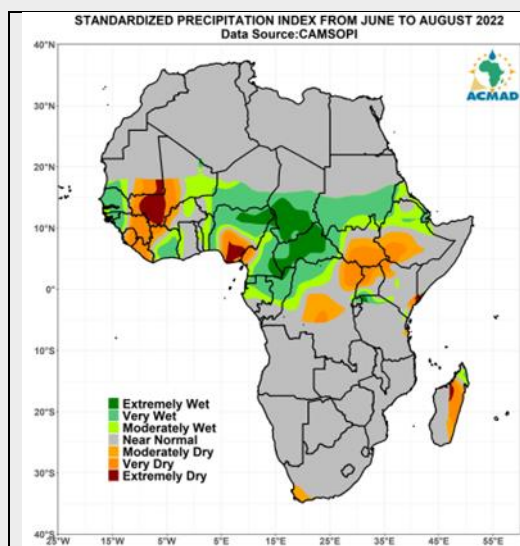
- ❖ Below average Sea Surface Temperatures (SSTs) were observed over most of the Equatorial Pacific (ENSO region) since August 2021. From May to August 2022, the negative anomalies persisted over the Pacific equatorial; the models' output and experts' judgment are favourable for the persistence of the weak La Nina. The persistence of the weak La Nina is very likely during September-December 2022.
- ❖ Near-average SSTs were observed over the Tropical North Atlantic (TNA) during August 2022. Most models' outputs and expert judgment are favourable for a transition from neutral to warm conditions in the tropical north Atlantic during the September-December season.
- ❖ Near-average Sea Surface Temperatures characterize the North Atlantic Tropical (NAT) since July 2021. The persistence of this condition is very likely during the September-November season.
- ❖ Near-average Sea Surface Temperatures characterize the South Atlantic Tropical (SAT) August 2022. This condition expected to persist is very probable in the coming months.
- ❖ The tropical south Atlantic (TSA) has been near average from May to August 2022. Models' outputs and expert judgment are favourable for a neutral to below average of this pattern during the coming seasons.
- ❖ Seas surface temperatures of the western tropical Indian Ocean (WTIO) and South-eastern tropical Indian Ocean (SETIO) have been near to below average. Models' outputs and expert assessments are favourable to support the persistence of these conditions during the coming months.
- ❖ The Seas surface temperatures of the Mediterranean Sea have been near average from January to August 2022. Models' outputs and expert judgment are favourable for the persistence of this condition during the coming few months.

I. REVIEW OF DROUGHT INDICATORS: Precipitation, SPI, Soil Moisture, NDVI and Water Level**1.1 PRECIPITATION IN PERCENT OF AVERAGE**

During August 2022, above to well above average was observed over much of Senegal, southwest Mauritania, Gambia, Guinea-Bissau, west Guinea, Sahel belt: from eastern Mali, central Niger, northernmost Nigeria, south-central Tchad, central-South Sudan, parts of north-east Ethiopia and Djibouti; the Central African Republic, east Cameroon, north Gabon, central-north Congo, Parts of the northwest DRC, Rwanda, Uganda, western Kenya and northern Madagascar.

Below and well below average precipitation was observed over southwest Mali, parts of southern Nigeria, south Gabon, and north-eastern Madagascar.

Figure 2: Precipitation in per cent of the average for August 2022 (Data source: https://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP/.CPC/.CAMS_OPI/.v0208/.mean/.prcp)

1.2. STANDARDIZED PRECIPITATION INDEX (SPI)

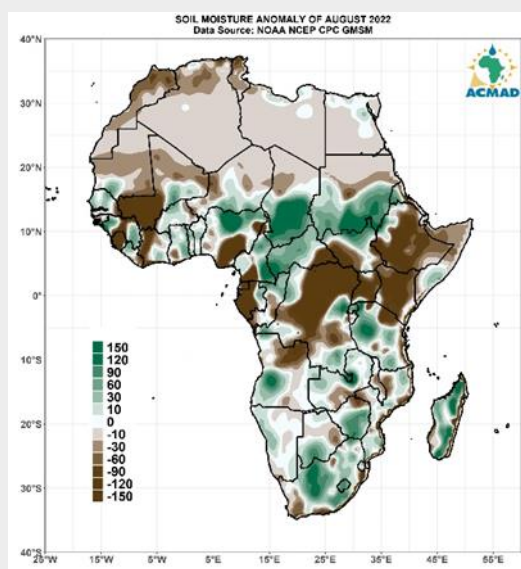
The SPI for from June to August 2022 reveals that very dry to extremely dry conditions were observed over, south Mali, Sierra Leone, Liberia, much of Guinea, south Nigeria South Sudan, central and northeast DRC, South-South Sudan, northern Uganda, west Ethiopia and east Madagascar.

Very wet to extremely wet conditions were recorded over Senegal, Southern Mauritania, east Mali, Gambia, west Guinea, east Ivory Coast, Benin, central to northern Nigeria, central to southern Niger, central to southern Chad, central to Southern Sudan, north Ethiopia and northernmost Madagascar.

Figure 3: Standardized precipitation index for June to August 2022. Green corresponds to wet, grey to near-normal SPI conditions, and orange, brown and dark brown indicate very dry to extremely dry conditions.

http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP/.CPC/.CAMS_OPI/.v0208/.mean/.prcp/

1.3. SOIL MOISTURE ANOMALY

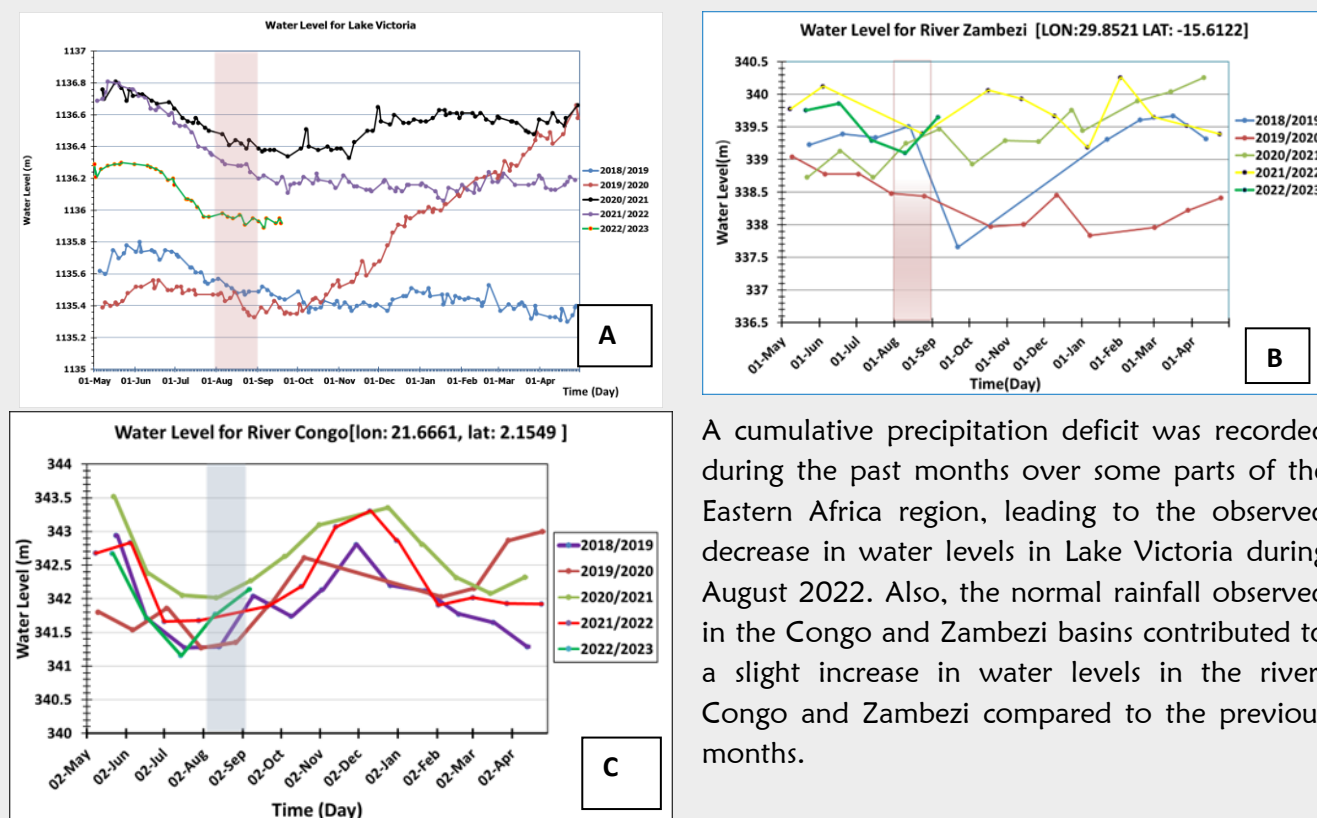


Strong to moderate moisture deficit was located over Morocco, north Algeria, Tunisia, Sierra Leone, central Guinea, much of Mali, Parts of south Nigeria, parts of southern Cameroon, Equatorial Guinea, Gabon, much of DRC, Uganda, the east Central Africa Republic to west South Sudan, Kenya, Ethiopia and Somalia.

Below average precipitation was recorded over most of these areas during August 2022 which resulted in large moisture deficits and below average vegetation conditions.

Figure 4: Soil moisture anomaly for August 2022. Green corresponds to positive anomalies, white to near-average soil moisture conditions, and brown and dark brown denotes negative anomalies. Data source: <http://www.esrl.noaa.gov/psd/data/gridded/data.cpcsoil.html>

1.5. WATER LEVEL



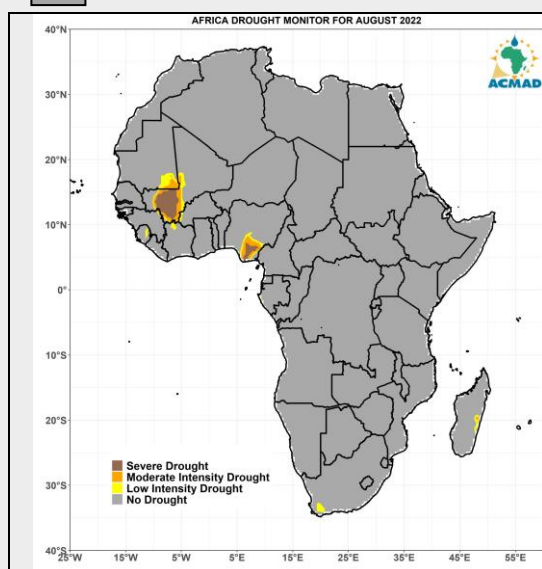
A cumulative precipitation deficit was recorded during the past months over some parts of the Eastern Africa region, leading to the observed decrease in water levels in Lake Victoria during August 2022. Also, the normal rainfall observed in the Congo and Zambezi basins contributed to a slight increase in water levels in the rivers Congo and Zambezi compared to the previous months.

Figure 5: Daily water levels of Lake Victoria[A], River Zambezi[B] and Congo[C]. Data Source: <http://hydroweb.theialand.fr/collections/hydroweb>.

II DROUGHT MONITORING

Africa Drought Monitor Intensity:

-  RR < [50]% or RR [50; 75]% ; SPI[-3;-2] or SPI<[-3], SM<[-60] & NDVI<[-0.20] Severe drought
-  RR [50; 75]% ; SPI[-2;-1]; SM [-60; -10]mm & NDVI [-0.20; -0.1] Moderate intensity drought
-  RR [75; 100]% ; SPI[-1; -0.5]; SM [-30; -10]mm & NDVI [-0.1; 0.05] Low intensity drought
-  No drought signal



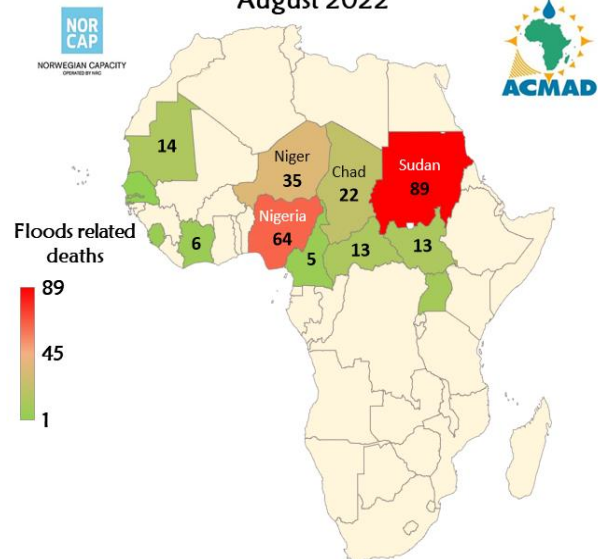
Given the cumulative precipitation deficits during the past and the month of August, SPI and soil moisture deficits, the adjacent map characterizes the drought situation in Africa during August 2022.

According to OCHA, across the Horn of Africa, at least 36.1 million people will be affected by severe drought in October 2022, including 24.1 million in Ethiopia, 7.8 million in Somalia and 4.2 million in Kenya(OCHA 21, September 2022).

Figure 6: African Drought Monitor, expressed as a composite of Precipitation, SPI, Soil Moisture deficit, and water level, valid for August 2022.

III. RECORDED IMPACTS

Recorded deaths due to floods in June, July and August 2022



At least 280 people lost their lives due to flooding during the months of June, July and August. Out of those deaths, South Sudan recorded 89 the highest deaths recorded in the last three months, 64 deaths were recorded in Nigeria ,35 deaths recorded in Niger , South Sudan recorded 13 deaths, Cote d'Ivoire recorded 6 deaths, 13 deaths in Central African Republic, 2 deaths in Gambia, 1dead in Senegal, 22 deaths in Chad, 5 deaths in Cameroon , Mauritania recorded 14 deaths , 6 deaths in Sierra Leone and Uganda recorded 10 deaths.

Data Source: floodlist.com

IV. CLIMATE AND HAZARDS OUTLOOK

Given these SST anomalies, sub-surface temperature patterns and trends, knowledge and understanding of seasonal climate variability in Africa, and the available long-range forecast products from Global Producing Centres for Long Range Forecasts, the following outlooks for precipitation and temperature are provided for September-October-November (SON) and October-November-December (OND) 2022 seasons across Africa (see the figures: Fig7, Fig8, Fig9 and Fig10):

During the September to November 2022 period:

During the month of August 2022, below-normal precipitation was experienced over southernmost of Mali, southern and western Guinea, much of Sierra Leone, Liberia, south-east Nigeria, western Cameroon, north-eastern DRC and southern South Sudan. Above to well above precipitation was observed over Senegal, Gambia, Guinea Bissau, Côte d'Ivoire, Ghana, Togo, Benin, Nigeria, southern Niger, Chad Sudan, Ethiopia, South-Sudan, CAR, north and south Cameroon, much Guinea equatorial and Gabon.

The outlooks for the rainfall season during the September to November 2022 season favour a below average to normal rainfall expected over southern Ethiopia, much of Somalia, Kenya and north-eastern Tanzania.

Normal to above average precipitation is very likely over south-wester Mauritania, much of Senegal, Gambia, Guinea Bissau, north-western Guinea, southern Mali, Niger, most parts of Burkina Faso, northern Côte d'Ivoire, Ghana, Togo, Benin, Nigeria, central and southern parts of Chad, CAR, northern Cameroon, northern Congo, DRC and western South-Sudan during September to November 2022.

Above average precipitation is expected over south-eastern Sudan, northern Ethiopia, Eritrea, Djibouti, and eastern South Sudan during the months of September to November 2022.

Above average Temperature is very likely over northern Morocco, Algeria, and Egypt from September to November 2022. And from August to November 2022, near above temperature is expected Over northern Africa, Mauritania, Mali, Niger, and Sudan, near to above temperature is expected from August to November 2022.

From September to November 2022, near to below average temperatures are very likely over South Africa, Lesotho and Eswatini. Morocco, much of Algeria, Tunisia, Libya, north Mauritania, northernmost of Mali, eastern Botswana, southern Zimbabwe, and northern South Africa.

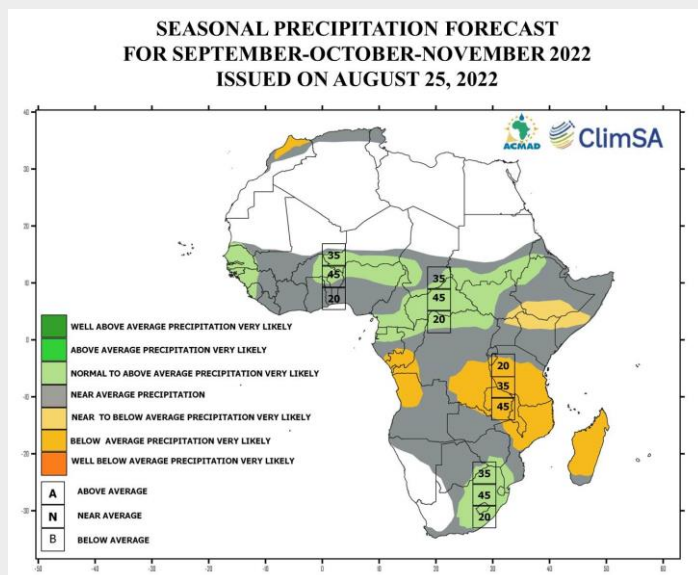


Figure 7: Seasonal precipitation forecast for September-October-November 2022

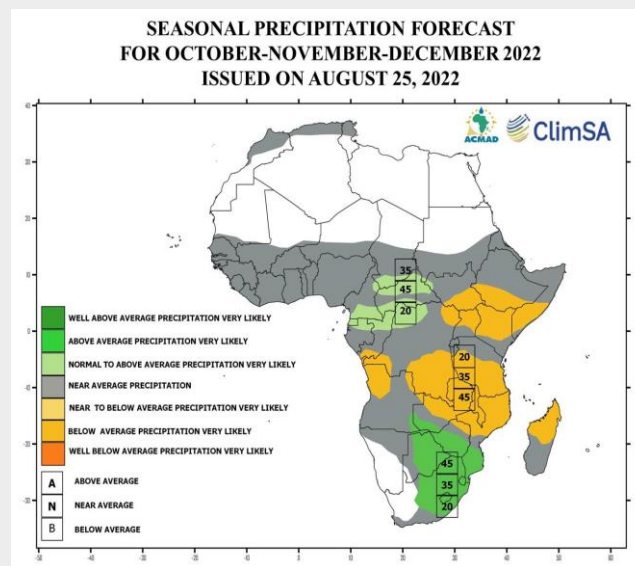


Figure 8: Seasonal precipitation forecast for October-November- December 2022

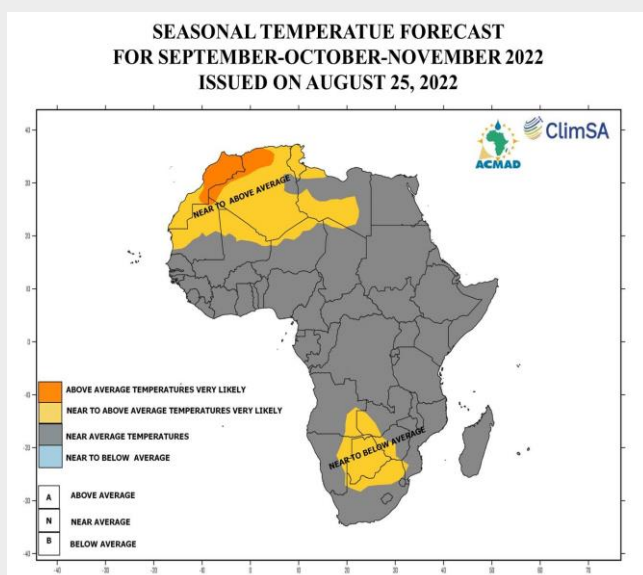


Figure 9: Seasonal temperature forecast for August-September-October 2022

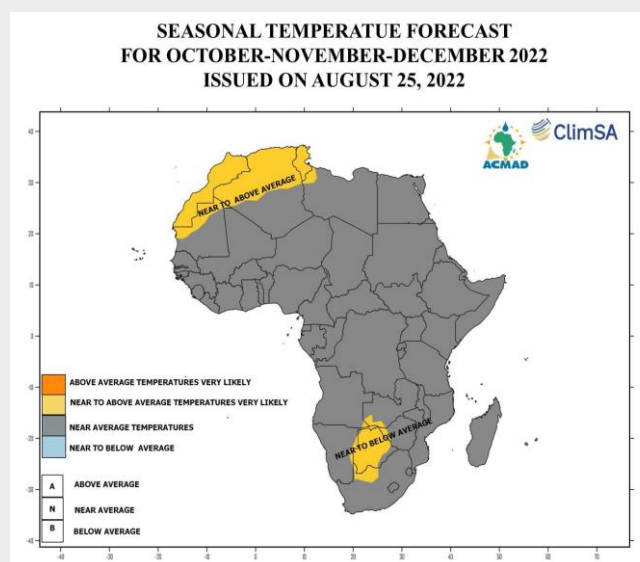


Figure 10: Seasonal temperature forecast for September- October-November 2022

NB: Users are advised to seek more detailed climate information on the distribution of precipitation during the season, impacts, and action options from the National Meteorological and Hydrological Services and the ACMAD website (www.acmad.net/www.acmad.org).

V. *POTENTIAL IMPACTS EXPECTED AND RESPONSE MEASURES*

The following impacts are expected during the coming seasons:

5.1 Agriculture and Food Security Sector

- ✚ Above average precipitation is expected over south-eastern Sudan, northern Ethiopia, Eritrea, Djibouti, and eastern South Sudan during the months of September to November 2022
- ✚ Normal to above average precipitation is very likely over south-western Mauritania, much of Senegal, Gambia, Guinea Bissau, north-western Guinea, southern Mali, Niger, most parts of Burkina Faso, northern Côte d'Ivoire, Ghana, Togo, Benin, Nigeria, central and southern parts of Chad, CAR, northern Cameroon, northern Congo, DRC and western South-Sudan during September to November 2022.
- ✚ From September to November 2022, above average precipitation is expected over south-eastern Sudan, northern Ethiopia, Eritrea, Djibouti, and eastern South Sudan.
- ✚ From September to November 2022, above average Temperature is very likely over northern Morocco, Algeria and Egypt. Over northern Africa, Mauritania, Mali, Niger and Sudan near to above temperature is expected during September to November 2022

Above average, rainfall conditions are expected to lead to further excessive rainfall leading to heavy precipitation leading to flash floods and landslides soil erosion events, which will affect livestock products, impact on crops yield and cause erosion, waterlogging, leaching of animal wastes etc. It is therefore important to prepare for emergency assistance. Select excess moisture tolerant crops, rehabilitate existing drainage structures; and update and implement flood contingency plans. A rainfall deficit will lead to drought. Water supply and demand management; estimate the quantity of current water supplies; develop ways to reduce water use and identify potential supplemental water supplies are the recommended measures to respond to drought.

5.2 Health Sector

- ✚ Normal to above average precipitation is very likely over south-western Mauritania, much of Senegal, Gambia, Guinea Bissau, north-western Guinea, southern Mali, Niger, most parts of Burkina Faso, northern Côte d'Ivoire, Ghana, Togo, Benin, Nigeria, central and southern parts of Chad, CAR, northern Cameroon, northern Congo, DRC and western South-Sudan during September to November 2022.
- ✚ From September to November 2022, above average precipitation is expected over south-eastern Sudan, northern Ethiopia, Eritrea, Djibouti, and eastern South Sudan
- ✚ From September to November 2022, above average Temperature is very likely over northern Morocco, Algeria and Egypt and over northern Africa, Mauritania, Mali, Niger and Sudan near to above temperature is expected from September to November 2022.

The risk of vector and water-borne diseases is particularly high, especially for cholera and malaria outbreaks, and flooding will exacerbate poor water and sanitation conditions. It is therefore advised that hygiene and sanitation be enforced, monitor malaria and cholera cases and preposition drug stocks.

5.3 Disaster Management Sector

The expected near-to above-average precipitation with moderate to heavy precipitation is usually associated with floods. These conditions are favourable to massive displacement of people and continued destruction of infrastructure, property and livelihoods. It is thus advisable to update and implement flood contingency plans.

5.4 Water Resources Management and the Energy Sectors

The regions expecting significant precipitation deficits will experience impacts on water resources, including low water levels in reservoirs, dams and rivers, water shortages for domestic use, disruption in hydropower generation, crop failure and reduced livestock productivity as well as reduced income from agricultural labour and livestock exports.

It is advisable to sensitize and prepare the populations and businesses for power brownouts and water restrictions. Develop water conservation practices and implement policy in support of weather-based insurance and dam management. Alternative sources of energy should be considered.

VI. Drought Service and Seasonal Climate Forecast methodology

DROUGHT INDICATORS

a) Precipitation ftp://ftp.cpc.ncep.noaa.gov/precip/data-req/cams_opi_v0208/–

Provides information on Meteorological Drought.

b) Soil Moisture <http://www.esrl.noaa.gov/psd/data/gridded/data.cpcsoil.htm> land

c) Vegetation Index Anomaly (NDVI) USGS Land DAAC MODIS 250m –both

b) and c) provide information on Agricultural Drought.

d) Water level e.g. Lake Victoria provides information on the drought situation in the region.

The Africa Drought Monitor focuses on continental, broad-scale conditions by creating composites of a) to c) with four drought indicator categories (see page 6).

SEASONAL CLIMATE FORECAST

The **Seasonal Climate Forecast** by ACMAD is generated using a probabilistic approach based upon the assessment of outputs from global single and multi-model ensemble forecasting systems, statistical seasonal forecasting tools, analogue years, persistence, composites, patterns and trend analysis as well as available findings from climate studies at local, national, regional and global levels and expert knowledge. Eight (8) steps are integrated into the final forecast (step 9) as listed here (Refer to the ACMAD's Technical Note).