

Climate Services for Disaster Risks Reduction in Africa

DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

ISSUED: 19 August 2022

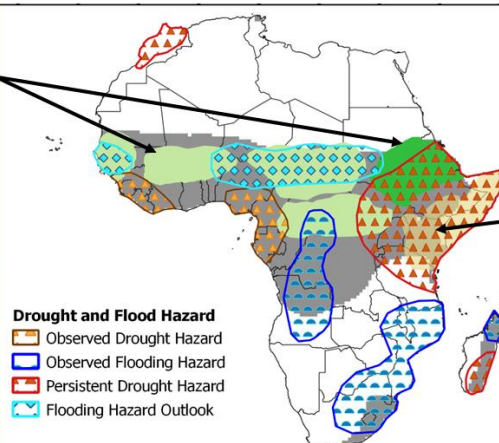
Selected Significant Weather and Climate events 'updates: Valid for August to November 2022.



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



CLIMATE ANOMALIES
Wetter than average season very likely Heavy rainfall with reported flooding events
HAZARDS
Heavy rainfall events may lead to flash flood, riverine flooding, landslides and soil erosion. High chance of lightning, hail formation and stormy weather are expected
POTENTIAL IMPACTS
Waterlogging, pest and diseases Infestation, Outbreak of water borne diseases damage to infrastructures(dams, reservoirs, bridges, roads...) Displacement of people due to floods.
MEASURES
Select excess moisture tolerant crops, wide tree planting campaigns Develop new and rehabilitatethe existing drainage structure, Update and implement flood contingency plans improve water management in reservoirs and dams



CLIMATE ANOMALIES
Drier than average season very likely Prolonged drought with reported persistent impacts
HAZARDS
Weak to Moderate drought, dry spells, near average to late onset very likely.
POTENTIAL IMPACTS
Moisture stress, decreased river discharge, reduced rain-fed crop yield prospect, degradation of pastures and high food prices.
MEASURES
Develop and implement policy to support drought tolerant and short cycle crops, soil and water conservation practice, maximize full irrigation farming. Use watershed based in-situ water harvesting structures Develop and Implement policy in support of weather based insurance and dam management

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BULLETIN No.8.2022

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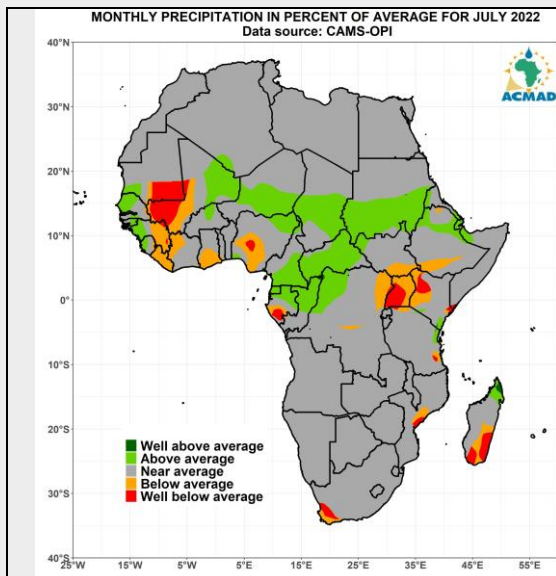
HIGHLIGHTS

Performance of the past season and impacts

- ✦ In the Central African Republic, at least 13 people have died following torrential rain that triggered flash floods in the capital Bangui and other regions of the country. Strong winds were also reported (Floodlist 26, July 2022).
- ✦ In Nigeria, at least 4 people have died following heavy rain causing severe flooding in the state of Yobe in north-eastern Nigeria. Flooding has affected other areas of the country (20, July 2022).
- ✦ In Niger, at 8 lost their lives and hundreds of Homes were destroyed as a result of heavy rain and flooding in the country since the start of this year's rainy season in June (floodlist 18. July 2022).
- ✦ At 13 people lost their lives in Kas locality, South Darfur, after flash floods on 15 July 2022, and over 500 people were affected, 30 homes were destroyed and 75 were damaged (floodlist 18 JULY, 2022).
- ✦ According to OCHA, March-May 2022 rainy season was the driest on record in the last 70 years—making 2020-2022 surpass the horrific droughts in both 2010-2011 and 2016-2017 in duration and severity—and early forecasts indicate that the October-December 2022 rainy season is also likely to fail (OCHA, 5 July 2022).

Outlook AUGUST-SEPTEMBER -OCTOBER AND SEPTEMBER-OCTOBER-NOVEMBER 2022 SEASONS

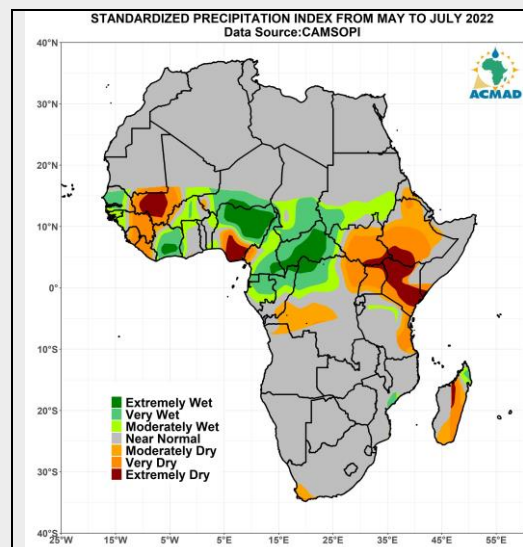
- ❖ Below average Sea Surface Temperatures (SSTs) were observed over most of the Equatorial Pacific (ENSO region) since August 2021. From April to July 2022, the negative anomalies persisted over the Pacific equatorial; the models' output and experts' judgment are favourable for the persistence of the weak La Nina. The latter is very likely during August-November 2022.
- ❖ Near-average SSTs were observed over the Tropical North Atlantic (TNA) during June 2022. Most models' outputs and expert judgment are favourable for a transition from neutral to warm conditions in the tropical north Atlantic during the July-October season.
- ❖ Near-average Sea Surface Temperatures characterize the North Atlantic Tropical (NAT) since June 2021. The persistence of this condition is very likely during the August-November season.
- ❖ Near-average Sea Surface Temperatures characterize the South Atlantic Tropical (SAT) July 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 July 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 sea surface temperatures of the Mediterranean Sea have been near average from January to July 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 July 2022, above to well above average was observed over northwest Senegal, West Guinea, west Sierra Leone, Sahel belt: from Eastern Mali, central Niger, northeast Nigeria, south-central Tchad, Central-South Sudan, parts of north-east Ethiopia and Djibouti; the Central African Republic, South-east Cameroon, Equatorial Guinea, North Gabon, central-north Congo, Northwest DRC and North Madagascar.

Below and well below average precipitation was observed over Mauritania, southwest Mali, East Guinea, east Liberia, north-west Ivory coast, South Ghana, parts of southern Nigeria, south Gabon, southernmost South Africa, Uganda, eastern DRC, southmost South Sudan, West Kenya and south-eastern Madagascar.

Figure 2: Precipitation in per cent of the average for July 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 May-July 2022 reveals that very dry to extremely dry conditions were observed over, south Mali, Sierra Leone, Liberia, Guinea, south Nigeria much of the Eastern Africa region (South Sudan, Ethiopia, Kenya, Uganda, Eastern DRC) and central-east Madagascar.

Very wet to extremely wet conditions were recorded over the Ivory Coast, Northern Ghana, Central Burkina Faso, South Niger, central to northern Nigeria, South Chad, Cameroun, Central Africa Republic, much of Gabon, Congo, much of DRC, northwest Angola, Western Mozambique, and South and North Madagascar.

Figure 3: Standardized precipitation index from May to July 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/.CAM5_OPI/.v0208/.mean/.prcp/

1.3. SOIL MOISTURE ANOMALY

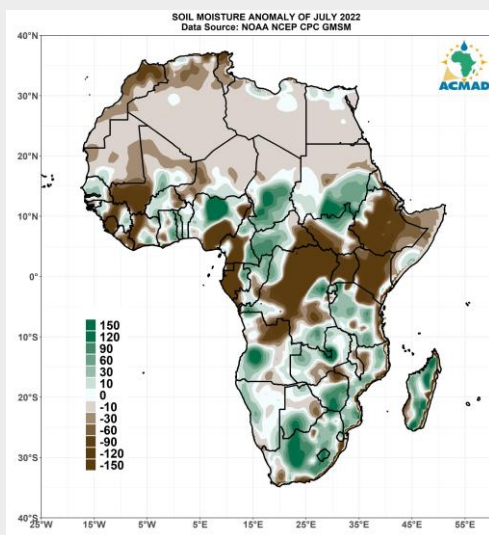


Figure 4: Soil moisture anomaly for July 2022. Green corresponds to positive anomalies, white to near-average soil moisture conditions, and brown and dark brown denotes negative anomalies. Data source: <http://www.esrl.noaa.gov/psd/data/gridded/data.cpcsoil.html>

Strong to moderate moisture deficit was located over Morocco, North Algeria, Tunisia, Sierra Leone, central Guinea, South Mali, Liberia, South Nigeria, Southwest Cameroon, Equatorial Guinea, much of Gabon, much of DRC, Uganda, East central Republic to west South Sudan, Kenya, Ethiopia and Somalia.

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

1.5. WATER LEVEL

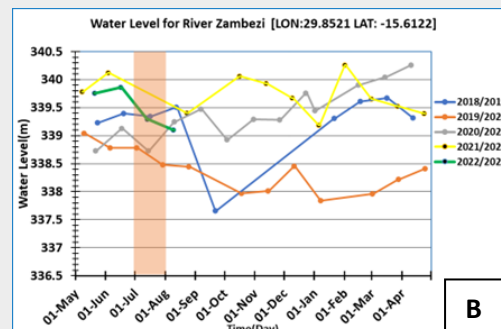
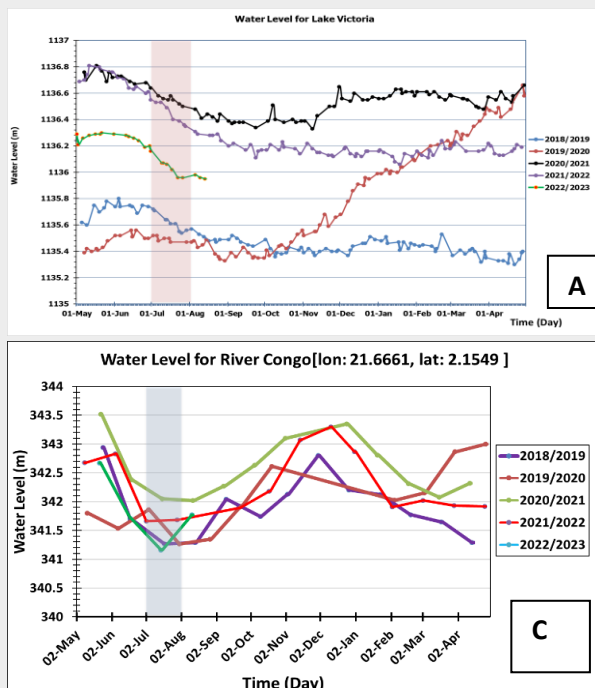


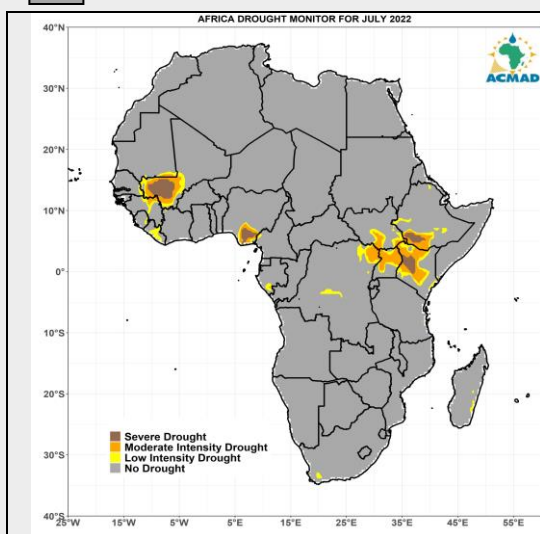
Figure 5: Daily water levels of Lake Victoria[A], River Zambezi[B] and Congo[C]. Data Source: <http://hydroweb.theialand.fr/collections/hydroweb>.

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 July 2022 compared to the previous month. Also, the below rainfall observed in the Congo and Zambezi basins contributed to a decrease in water levels in the rivers Congo and Zambezi.

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



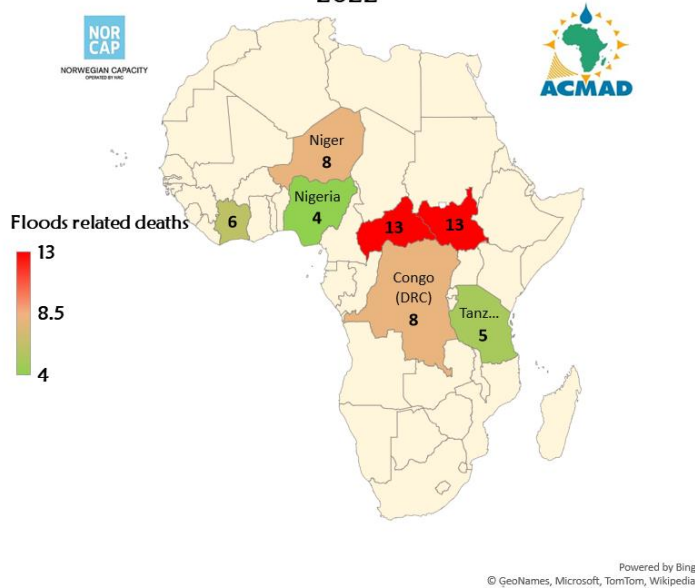
Given the cumulative precipitation deficits during the past and the month of July, SPI and soil moisture deficits, the adjacent map characterizes the drought situation in Africa during July 2022.

Over 50 million people are expected to face high levels of acute food insecurity (IPC Phase 3 or above*) this year across seven IGAD countries (Djibouti, Ethiopia, Kenya, Somalia, South Sudan, Sudan, and Uganda)(IGAD, 22 Jul 2022).

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

III. RECORDED IMPACTS

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



At least 57 people lost their lives due to flooding during the months of May, Jun and July. Out of those deaths, at least 13 people have died in South Sudan, 13 deaths were recorded in the Central Africa Republic, 8 deaths in Niger, 4 deaths in Nigeria, 9 deaths in DRC, 5 deaths in Tanzania and 6 deaths in the Ivory Coast.

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 August-September-October (ASO) and September-October-November (SON) 2022 seasons across Africa (see the figures: Fig7, Fig8, Fig9 and Fig10):

During the August to November 2022 period:

During the month of July 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 August to October 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 August to November 2022.

Above average precipitation is expected over south-eastern Sudan, northern Ethiopia, Eritrea, Djibouti, and eastern South Sudan from August to October 2022.

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

From August 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.

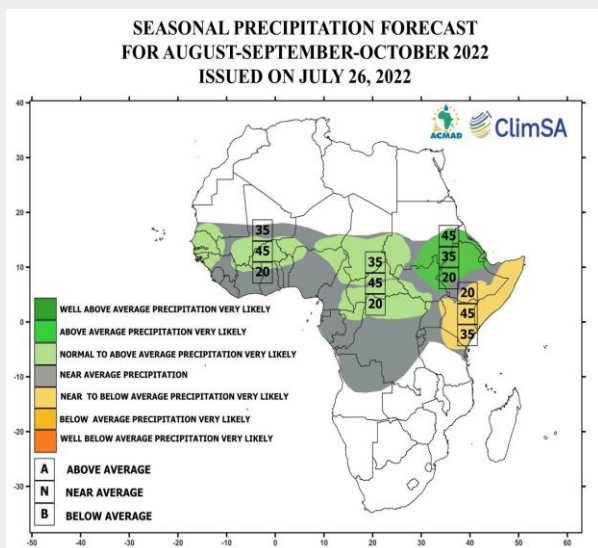


Figure 7: Seasonal precipitation forecast for August-September-October 2022

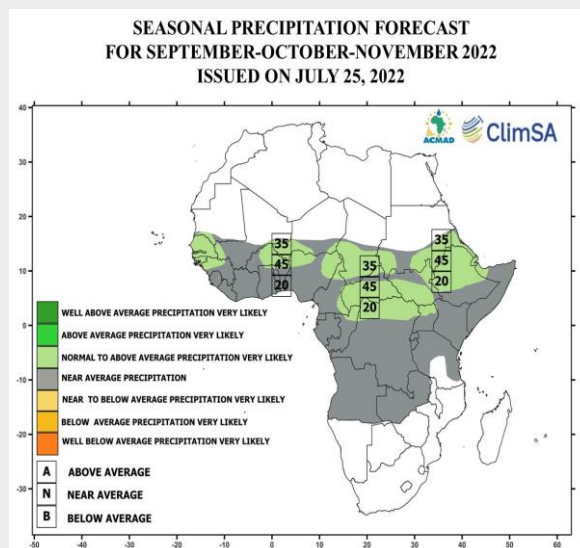


Figure 8: Seasonal precipitation forecast for September- October-November 2022

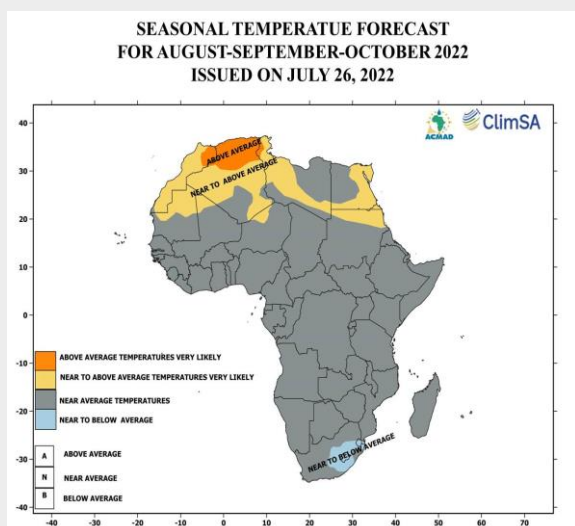


Figure 9: Seasonal temperature forecast for August-September-October 2022

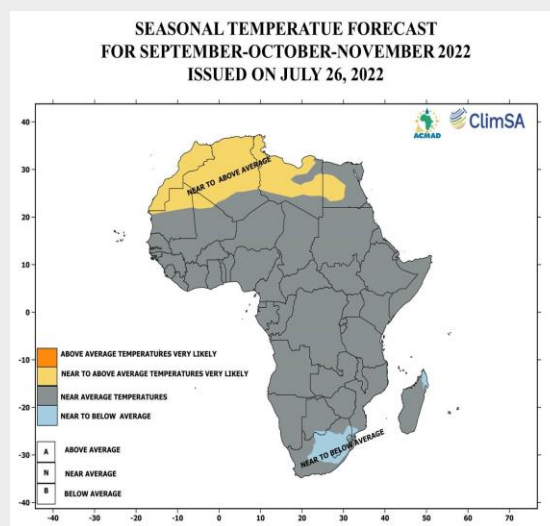


Figure 10: Seasonal temperature forecast for September- October-November 2022

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

- ✚ Below average to normal rainfall is expected over southern Ethiopia, much of Somalia, Kenya and north-eastern Tanzania during the August to October 2022 season.
- ✚ 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 August to November 2022.
- ✚ From August to October 2022, above average precipitation is expected over south-eastern Sudan, northern Ethiopia, Eritrea, Djibouti, and eastern South Sudan.
- ✚ From July to October 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 from August 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 August to November 2022.
- ✚ From August to October 2022, above average precipitation is expected over south-eastern Sudan, northern Ethiopia, Eritrea, Djibouti, and eastern South Sudan
- ✚ From July to October 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 August 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).