

## Climate Services for Disaster Risks Reduction in Africa

# DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

ISSUED: 21 June 2022

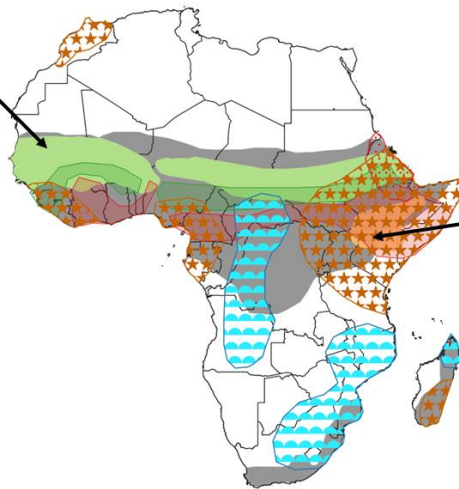
**Selected Significant Weather and Climate Events 'updates: Valid for June to September 2022.**



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



<p><b>CLIMATE ANOMALIES</b></p> <p>Wetter than average season very likely</p>
<p><b>HAZARDS</b></p> <p>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</p>
<p><b>POTENTIAL IMPACTS</b></p> <p>Waterlogging, pest and diseases infestation, Outbreak of water borne diseases damage to infrastructures (dams, reservoirs, bridges, roads...) Displacement of people due to floods.</p>
<p><b>MEASURES</b></p> <p>Select excess moisture tolerant crops, wide tree planting campaigns Develop new and rehabilitate the existing drainage structure, Update and implement flood contingency plans improve water management in reservoirs and dams</p>



<p><b>CLIMATE ANOMALIES</b></p> <p>Drier than average season very likely</p>
<p><b>HAZARDS</b></p> <p>Weak to Moderate drought, dry spells, near average to late onset very likely.</p>
<p><b>POTENTIAL IMPACTS</b></p> <p>Moisture stress, decreased river discharge, reduced rain-fed crop yield prospect, degradation of pastures and high food prices.</p>
<p><b>MEASURES</b></p> <p>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</p>

# DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

**BULLETIN No.6, 2022**

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## HIGHLIGHTS

### Performance of the past season and impacts

In May 2022, heavy rainfall caused severe flooding in southern parts of Tanzania leaving 5 dead; thousands of people have been displaced and 10000 hectares of crops have been damaged (floodlist 03 May 2022). In Uganda, heavy rainfall caused extensive flooding and almost 7,000 people have been affected (floodlist 05 May 2022). In DRC, Floodings triggered by heavy rainfall left 8 people dead and 9 others were seriously injured.

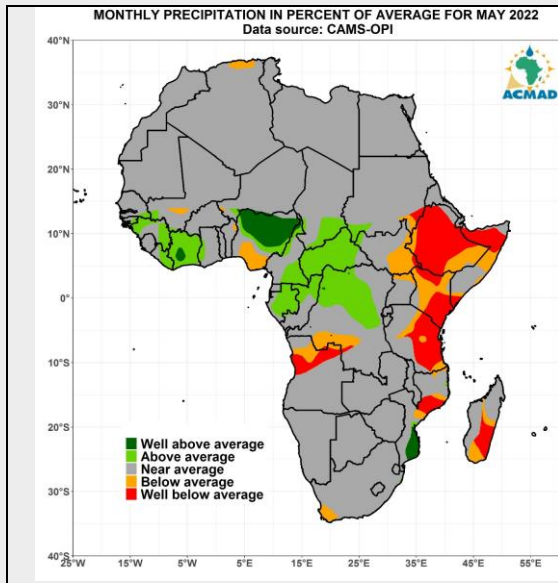
The Horn of Africa is experiencing one of its most severe droughts in recent history, with more than 15 million people acutely food insecure in Ethiopia, Kenya and Somalia (OCHA May 2022).

### Outlook March-April-May and April-May-June 2022 Seasons

- ✚ Below average Sea Surface Temperatures (SSTs) were observed over most of the Equatorial Pacific (ENSO region) since August 2021. During the April to May 2022, the negative anomalies persisted over the Pacific equatorial; The models output, and experts' judgment are favor for very likely persistence of the weak La Nina during June-September 2022.
- ✚ Near average SSTs were observed over the Tropical North Atlantic (TNA) during April 2022 until last two week of May 2022. Most models' outputs and expert judgment are favorable for a transition from neutral to warm condition in the tropical north Atlantic during the June-September season.
- ✚ Near average Sea Surface Temperatures characterize the North Atlantic Tropical (NAT) during May 2022. A persistence of this condition is very likely during the June-September season.
- ✚ Near to below average Sea Surface Temperatures characterize the South Atlantic Tropical (SAT) since February 2022. Since mid-March, there has been a neutral tendency in the Southern Atlantic Tropical. This condition expected to persist is very probable in the coming months.
- ✚ The tropical south Atlantic (TSA) has been near to below average from February to April 2022. Models' outputs and expert judgment are favorable 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 average. Models' outputs and experts' assessments are favorable support of the persistence of these conditions during the coming months.
- ✚ The Seas surface temperatures of the Mediterranean Sea have been to near average from January to May 2022. Models' outputs and expert judgment are favorable 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

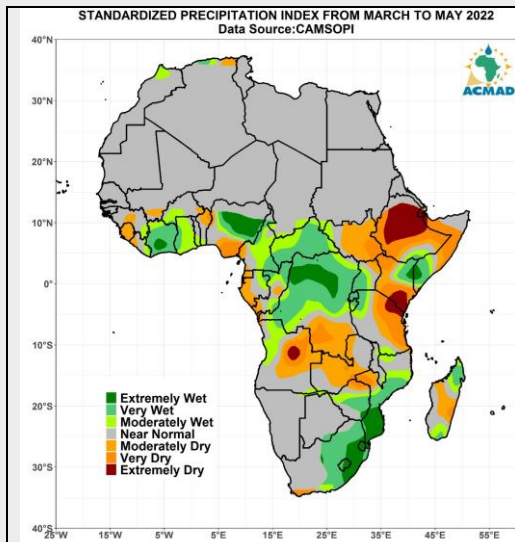


During May 2022, above to well above average precipitation was observed in Cote d'Ivoire, much of Nigeria, Gabon, southwestern Cameroon, Central Africa Republic, central parts of DRC and Southwestern Mozambique

Below and well below average precipitation was observed over west Uganda, Ethiopia, much of Somalia, Kenya, East Tanzania, South Madagascar, northern Angola and southernmost DRC.

Figure 2: Precipitation in percent of average for May 2022 (Data source: [https://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP/.CPC/.CAMS\\_OPI/.v0208/.mean/.prcp](https://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP/.CPC/.CAMS_OPI/.v0208/.mean/.prcp))

### 1.2. STANDARDIZED PRECIPITATION INDEX (SPI)



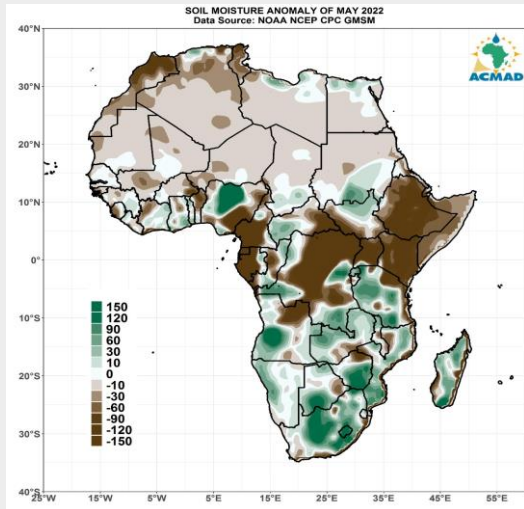
The SPI for May 2022 indicates that very dry to extremely dry conditions were observed over Sierra Leone, northern Benin, south Nigeria, Equatorial Guinea, West Gabon, Central to East Angola, South DRC, Central Zambia, Uganda, Ethiopia, much of Somalia, Much of Kenya, East Tanzania, Central Madagascar.

Very wet to extremely wet conditions were recorded over Cote d'Ivoire, Ghana, central Nigeria, Much of Cameroon, Central African Republic, DRC, Uganda, Rwanda, Burundi, Mozambique, east Southern Africa, and North and southern Madagascar.

Figure 3: Standardized precipitation index for May 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/](http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP/.CPC/.CAMS_OPI/.v0208/.mean/.prcp/)

### 1.3. SOIL MOISTURE ANOMALY



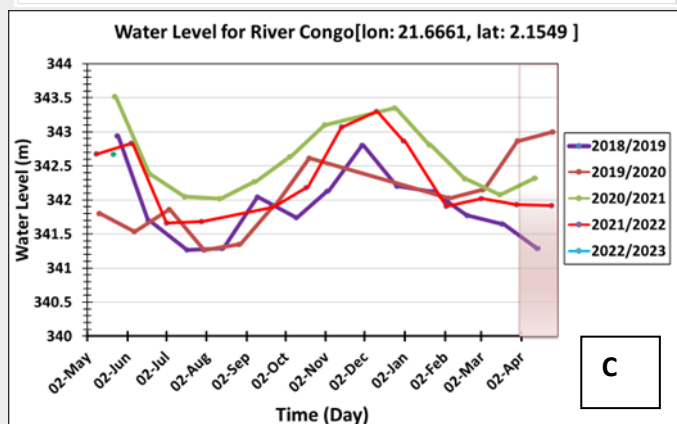
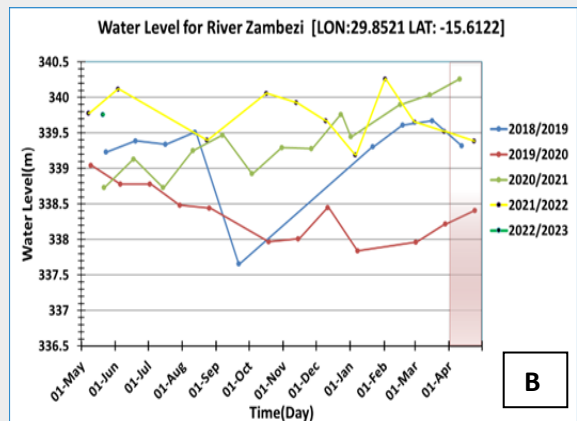
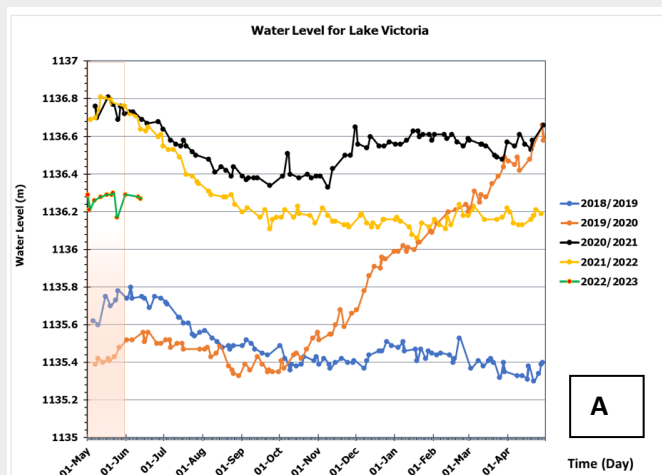


Strong to moderate moisture deficit was located over parts of Ethiopia, Somalia, Kenya, Uganda, Congo, Gabon, Equatorial, Angola, Cameroon, Congo, Southwest Niger, Benin, Senegal, Gambia, Morocco, North Algeria, Tunisia

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

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

**1.5. WATER LEVEL**



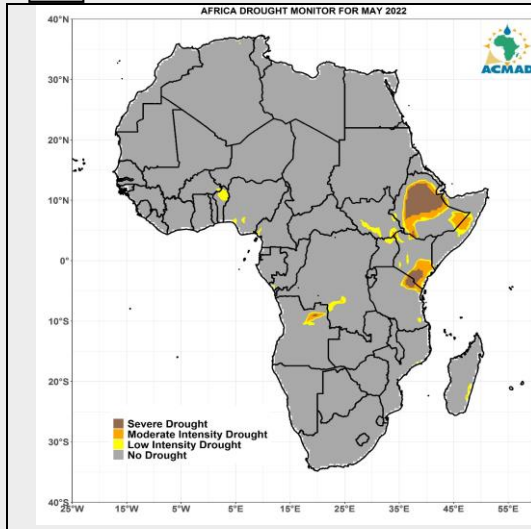
A cumulative precipitation excess was recorded during the past months over some parts of the Eastern Africa region, leading to the observed increase in water levels in Lake Victoria during May 2022 compared to the previous month. Also, the above rainfall observed in the Congo and Zambezi basins contributed to an increase in water levels in the rivers Congo and Zambezi.

**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

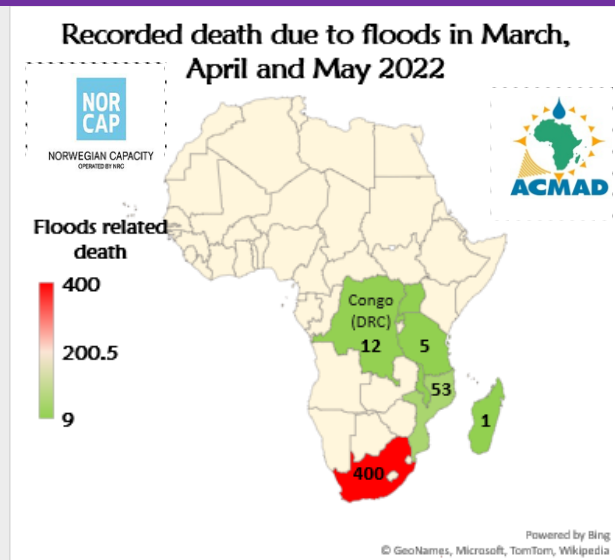


Given the cumulative precipitation deficits during the past and the month of May, SPI and soil moisture deficits, the adjacent map characterizes the drought situation in Africa during May 2022.

The Horn of Africa is experiencing one of its most severe droughts in recent history, with more than 15 million people acutely food insecure in Ethiopia, Kenya and Somalia (Refiefweb April 2022)

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

## III. RECORDED IMPACTS



During the last three months: March-April and May, at least 395 people have lost their lives due following heavy rain triggering severe flooding. The countries most affected by floods in the last three months: are South Africa with a record death of 400 people, followed by Mozambique with 53 deaths, then DRC with 12 deaths, Rwanda with 11 deaths, Uganda with 9 deaths, Tanzania with 5 deaths, and Malawi with 4 deaths and Madagascar with 1 death.

#### 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 Centers for Long-Range Forecasts, the following outlooks for precipitation and temperature are provided for June-July-August (JJA) and July-August-September (JAS) 2022 seasons across Africa (see the figures: Fig7, Fig8, Fig9 and Fig10):

##### During the June to September 2022 period:

- Below average to Normal-to-below normal rainfall is expected over south-eastern Nigeria, western Cameroon, much of Guinea Equatorial, north-eastern Gabon, southern Ethiopia and northern Kenya during the June to September 2022 season.
- Normal to above precipitation is very likely over much of Senegal, Gambia, Guinea Bissau, northern Guinea, southern Mauritania, Mali, Niger, most parts of Burkina Faso, southern Niger, northern Benin, Nigeria, southern parts of Chad, Sudan, and northern South-Sudan and Ethiopia during June to August; and during July to September 2022 expected to observed over much of Senegal, Gambia, Guinea Bissau, northern Guinea, southern Mauritania, Mali, Niger, must part of Burkina Faso, southern Niger, northern Benin.
- Near to above average is expected over Morocco, Algeria, Tunisia, Mauritania, Libya, Egypt and northernmost of Sudan and near to below average is very likely eastern Botswana, western Zimbabwe, and most parts of South Africa from June to September 2022.
- Above average Temperature is very likely over northern Morocco and Algeria during June to September 2022

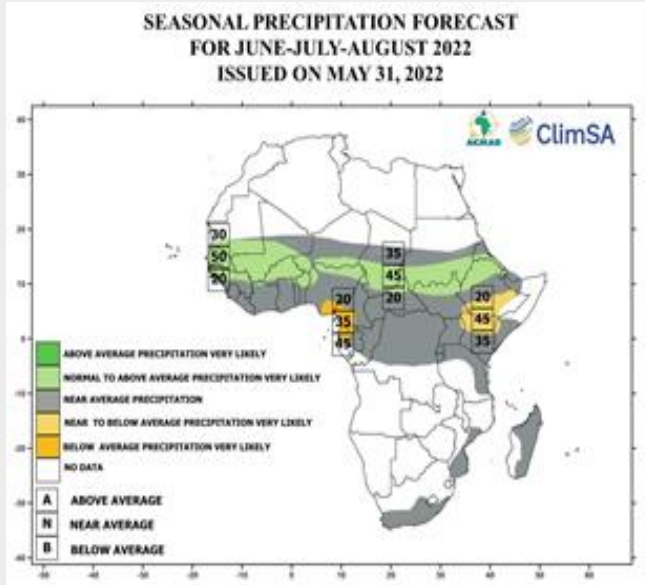


Figure 7: Seasonal precipitation forecast for June-July-August 2022

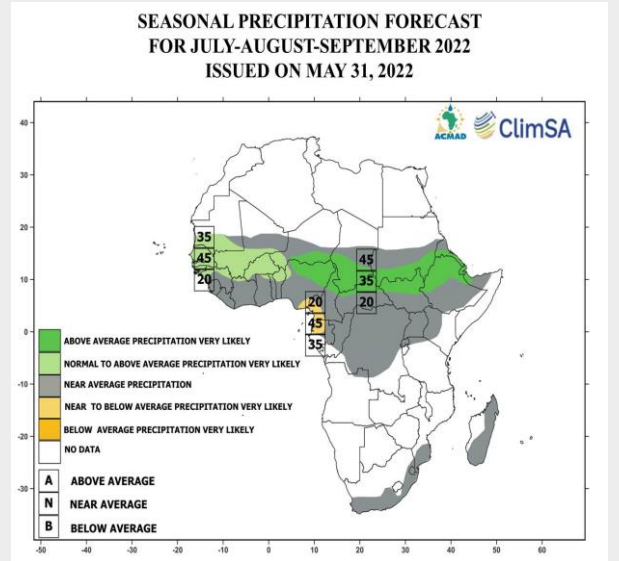


Figure 8: Seasonal precipitation forecast for July-August-September 2022

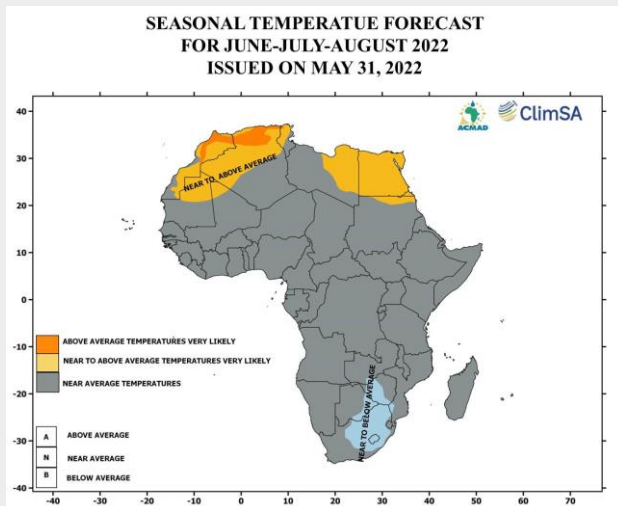


Figure 9: Seasonal Temperature forecast for June- July-August 2022

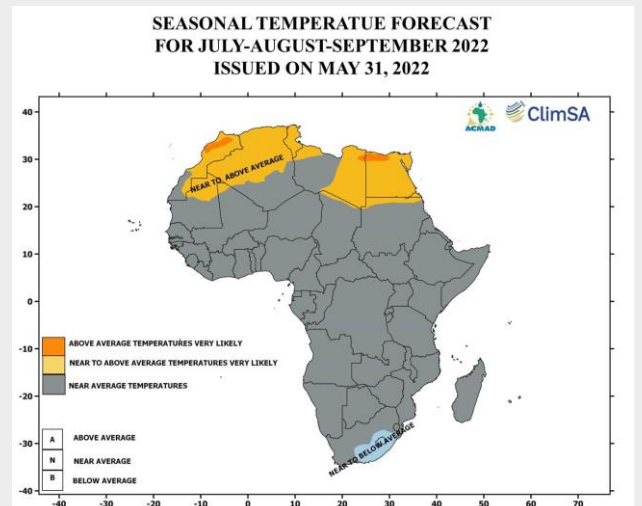


Figure 10: Seasonal Temperature forecast for July -August-September 2022

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](http://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-to-below normal rainfall is expected over south-eastern Nigeria, western Cameroon, much of Guinea Equatorial, north-eastern Gabon, southern Ethiopia and northern Kenya during the June to September 2022 season.
- ✓ Normal to above precipitation is very likely over much of Senegal, Gambia, Guinea Bissau, northern Guinea, southern Mauritania, Mali, Niger, most parts of Burkina Faso, southern Niger, northern Benin, Nigeria, southern parts of Chad, Sudan, and northern South-Sudan and Ethiopia during June to August; and during July to September 2022 expected to observed over much of Senegal, Gambia, Guinea Bissau, northern Guinea, southern Mauritania, Mali, Niger, must part of Burkina Faso, southern Niger, northern Benin.
- ✓ Near to above average Temperature is expected over Morocco, Algeria, Tunisia, Mauritania, Libya, Egypt and northernmost of Sudan and near to below average is very likely in eastern Botswana, western Zimbabwe, and most parts of South Africa from June to September 2022.
- ✓ Above average Temperature is very likely over northern Morocco and Algeria during June to September 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 crop 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 precipitation is very likely over much of Senegal, Gambia, Guinea Bissau, northern Guinea, southern Mauritania, Mali, Niger, most parts of Burkina Faso, southern Niger, northern Benin, Nigeria, southern parts of Chad, Sudan, and northern South-Sudan and Ethiopia during June to August; and during July to September 2022 expected to observed over much of Senegal, Gambia, Guinea Bissau, northern Guinea, southern Mauritania, Mali, Niger, must part of Burkina Faso, southern Niger, northern Benin.
- ✓ Above average Temperature is very likely over northern Morocco and Algeria during June to September 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 systems 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/](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 LandDAAC 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).