

Climate Services for Disaster Risks Reduction in Africa

DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

ISSUED: 15 July 2022

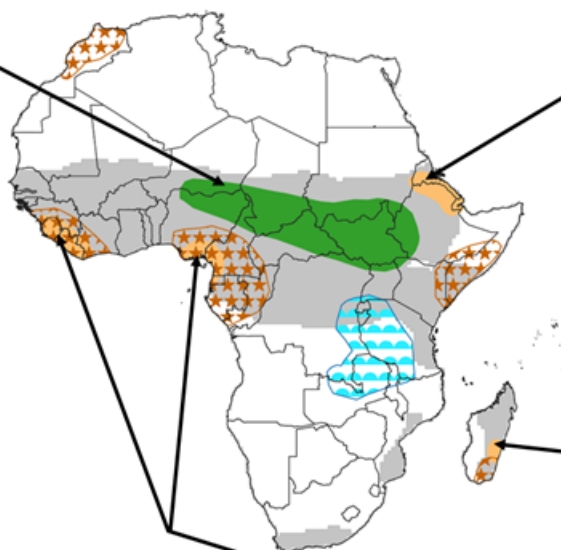
Selected Significant Weather and Climate events 'updates: Valid for July to October 2022.



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



CLIMATE ANOMALIES
Wetter than average season very likely
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 rehabilitate the existing drainage structure, Update and implement flood contingency plans improve water management in reservoirs and dams



CLIMATE ANOMALIES
Drier than average season very likely
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

DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

BULLETIN No.7, 2022

Chair Editorial Board:

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Editorial Board:

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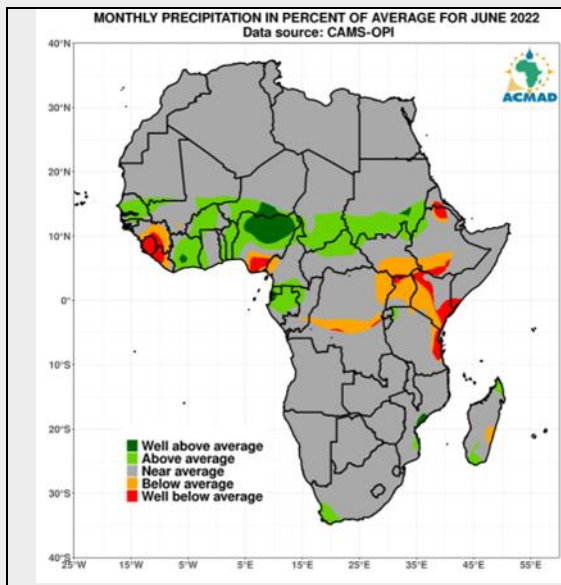
HIGHLIGHTS

Performance of the past season and impacts

- ✓ Heavy rainfall in South Africa has caused flooding in the area of Cap town and the area of Western Cape province (floodlist, 17 June 2022).
- ✓ In Ivory Coast, at least 6 people died including 4 children aged between 4 and 15 and 2 injuries in a landslide after heavy rainfall on 16 and 22 June 2022 (floodlist, 22 June 2022).
- ✓ Flooding has also affected Accra, the capital of Ghana, following heavy rain that occurred on 16 June 2022. No injury or fatalities were reported (floodlist, 17 June 2022).
- ✓ According to OCHA, at least 18.4 million people are already waking each day to high levels of acute food insecurity and rising malnutrition across Ethiopia, Kenya and Somalia, and this figure could increase to 20 million by September (OCHA, 10 June 2022).

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

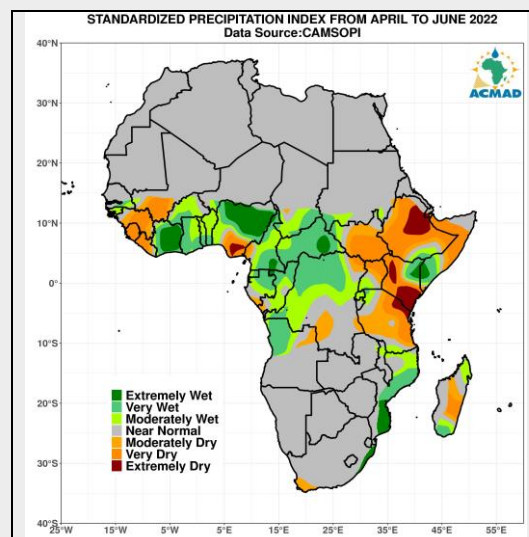
- ❖ Below average Sea Surface Temperatures (SSTs) were observed over most of the Equatorial Pacific (ENSO region) since August 2021. From April to June 2022, the negative anomalies persisted over the Pacific equatorial; the models' output and experts' judgment are favourable for the persistence of the weak. The latter is very likely during July-October 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 condition 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 July-October season.
- ❖ Near to above average Sea Surface Temperatures characterize the South Atlantic Tropical (SAT) June 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 June 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 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 June 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 June 2022, above to well above average was observed over Senegal, Southwest Niger much of Burkina Faso, Ivory Coast, Togo, Benin, Central to North Nigeria, South Chad, North Central African Republic, South Sudan and Gabon.

Below and well below average precipitation was observed over Sierra Leone, Liberia, much of Guinea, South Nigeria, Uganda, south South Sudan, western and south Kenya, southwest Ethiopia and central DRC.

Figure 2: Precipitation in percent of average for June 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 June 2022 reveals that very dry to extremely dry conditions were observed over Sierra Leone, Liberia, Guinea, south Nigeria much of the Eastern Africa region and central Madagascar

Very wet to extremely wet conditions were recorded over the Ivory Coast, Ghana, central to northern Nigeria, 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 for June 2022. Green corresponds to wet, grey to near-normal SPI conditions, 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

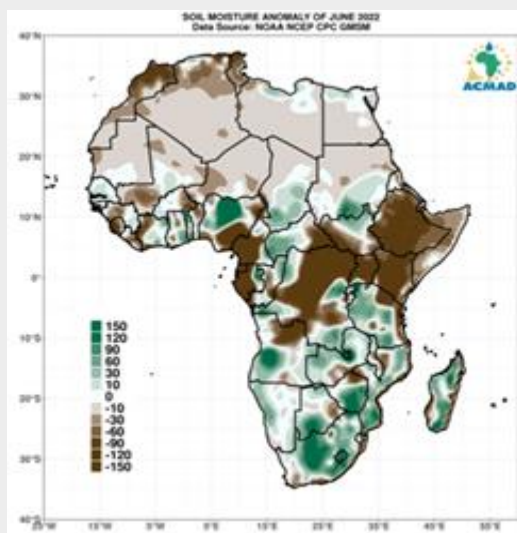
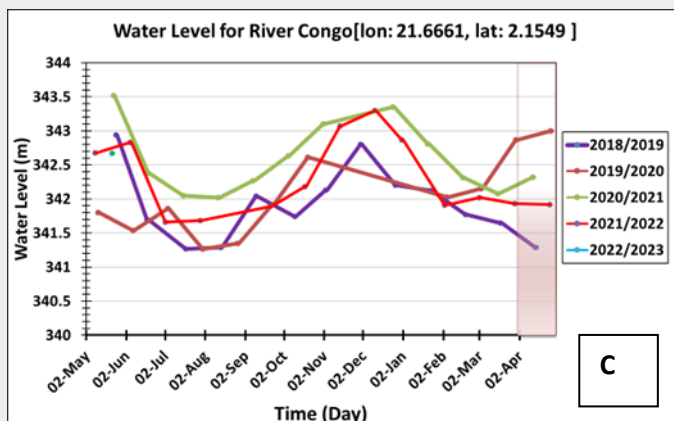
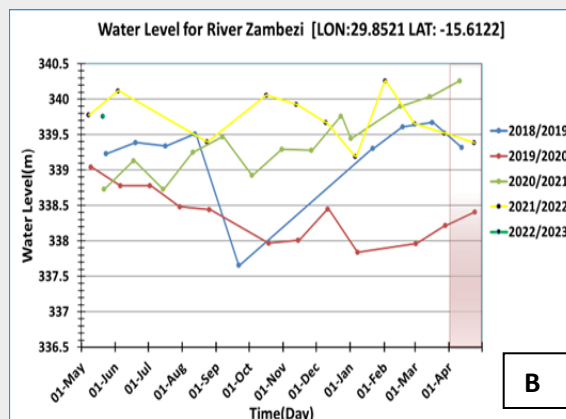
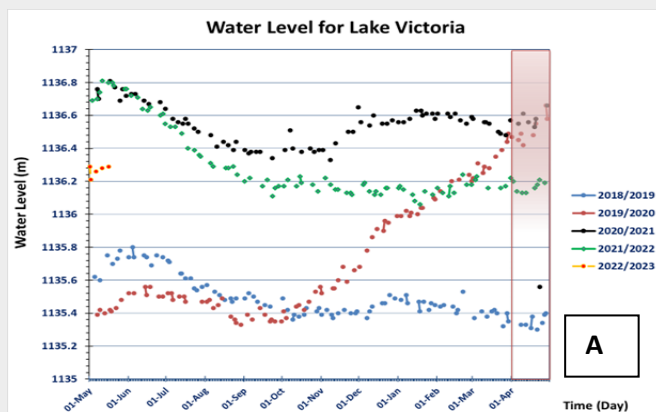


Figure 4: Soil moisture anomaly for June 2022. Green corresponds to positive anomalies, white to near-average soil moisture conditions, and brown and dark brown denotes negative anomalies. Data source: <http://www.esrl.noaa.gov/psd/data/gridded/data.cpcsoil.html>

1.5. WATER LEVEL



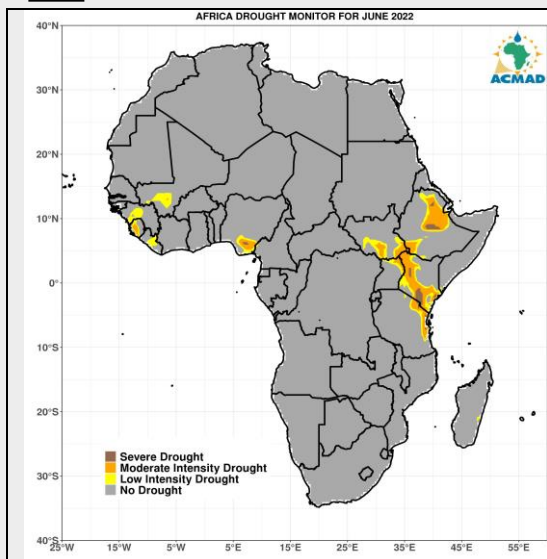
A cumulative precipitation deficit was recorded during the past months over Some parts of the Eastern Africa region, leading to the observed decrease in water levels in Lake Victoria during June 2022 compared to the previous month. Also, the below rainfall observed in the Congo and Zambezi basins contributed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

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

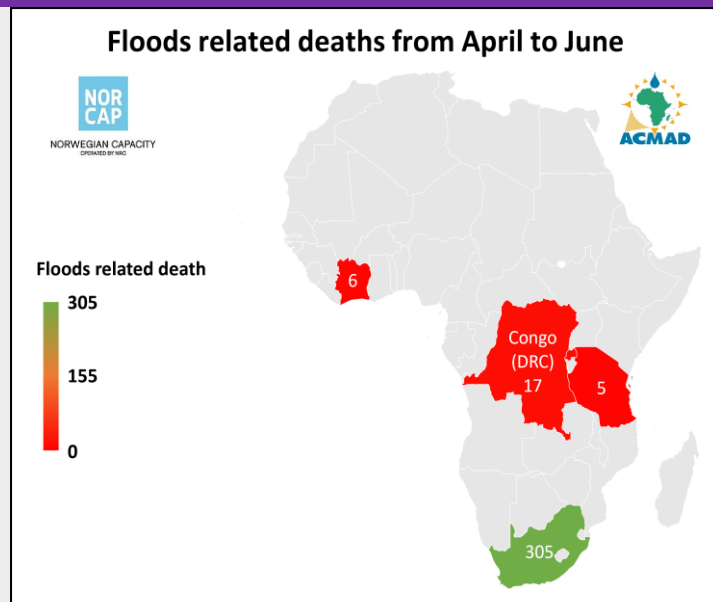


Given the cumulative precipitation deficits during the past and the month of June, SPI and soil moisture deficits, the adjacent map characterizes the drought situation in Africa during June 2022.

Across Ethiopia, Kenya and Somalia an estimated total of 20 million people is expected to wake each day to high levels of acute food insecurity and malnutrition in the next two months (OCHA, 10 June 2022).

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

III. RECORDED IMPACTS



A Total of 344 deaths due flooding have been recorded during April, May and June.

At least 305 peoples have died in South Africa, and at least 17 person have died in DRC, 9 people died in Rwanda, 6 in Ivoty coast and 5 in Tanzania (floodlist, June 2022).

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

During the May to August 2022 period:

During June 2022, below-normal precipitation was experienced over northern Morocco, Algeria, Tunisia, southwestern Mali, north Guinea, western Côte d'Ivoire, southern-east Nigeria, central Cameroon, north and central DRC, western parts South Sudan, southern Ethiopia, Somalia, much of Uganda and Kenya and Tanzania. Above average precipitation was observed over Senegal, Gambia, Guinea Bissau, Liberia, Côte d'Ivoire, central southern Niger, Nigeria, central and western parts of the Central Africa region and the eastern SADC region.

The outlooks for the rainfall season during the July to October 2022 period favour a below average to Normal-to-below normal rainfall is expected over south-eastern Nigeria, western Cameroon, much of Guinea Equatorial, north-eastern DRC, south-western South-Sudan, western Uganda, southern Ethiopia and northern-west Kenya.

Above average 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 July to October 2022.

From July to October 2022, near to above average temperature is expected over Morocco, Algeria, Tunisia, Mauritania, Libya, Egypt and northernmost of Mauritania, Mali, Niger, Chad, Sudan and near to below average is very likely southern Namibia, most parts South Africa.

Above average Temperature is very likely over northern Morocco, Algeria and Egypt from July to October 2022.

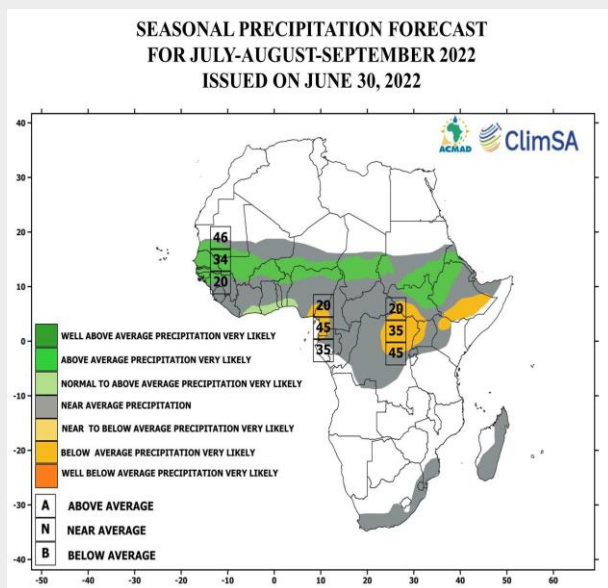


Figure 7: Seasonal precipitation forecast for July-August-September 2022

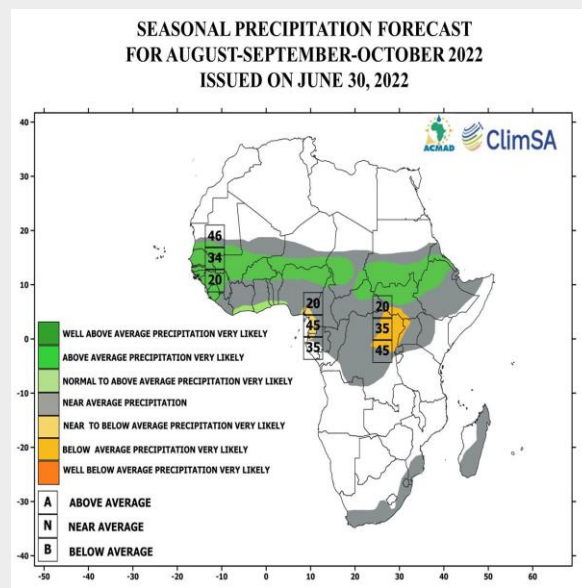


Figure 8: Seasonal precipitation forecast for August-September- October 2022

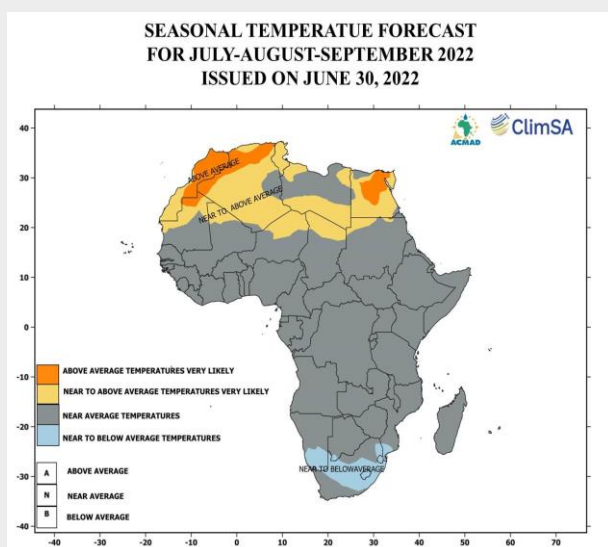


Figure 9: Seasonal Temperature forecast for July-August-September 2022

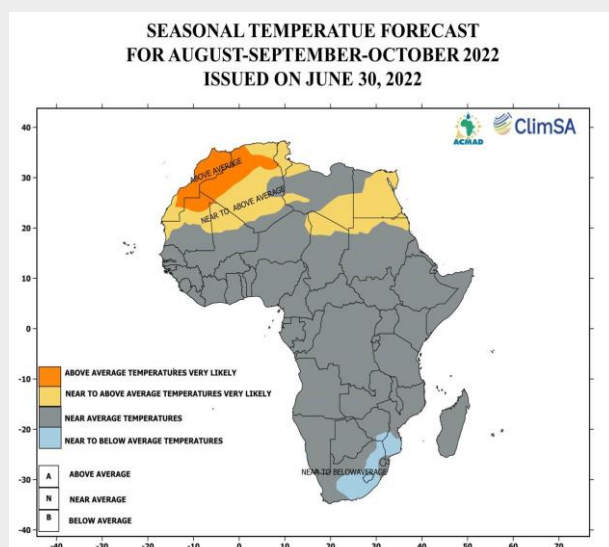


Figure 10: Seasonal Temperature forecast for August-September- October 2022

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 normal precipitation was experienced over northern Morocco, Algeria, Tunisia, southwestern Mali, north Guinea, western Côte d'Ivoire, southern-east Nigeria, central Cameroon, north and central DRC, western parts South Sudan, southern Ethiopia, Somalia, much of Uganda and Kenya and Tanzania. Above average precipitation was observed over Senegal, Gambia, Guinea Bissau, Liberia, Côte d'Ivoire, central southern Niger, Nigeria, central and western parts of the Central Africa region and the eastern SADC region.
- ✓ Below average to normal-to-below normal rainfall is expected over south-eastern Nigeria, western Cameroon, much of Guinea Equatorial, north-eastern DRC, south-western South-Sudan, western Uganda, southern Ethiopia and northern-west Kenya.
- ✓ Above average 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 July to October 2022.
- ✓ From July to October 2022 near to above average temperature is expected over, Tunisia, Mauritania, Libya and northernmost of Mauritania, Mali, Niger and Chad,

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

- ✚ Above average 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 July to October 2022.
- ✚ From July to October 2022 near to above average temperature is expected over, Tunisia, Mauritania, Libya and northernmost of Mauritania, Mali, Niger and Chad.

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-reg/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).