

Climate Services for Disaster Risks Reduction in Africa

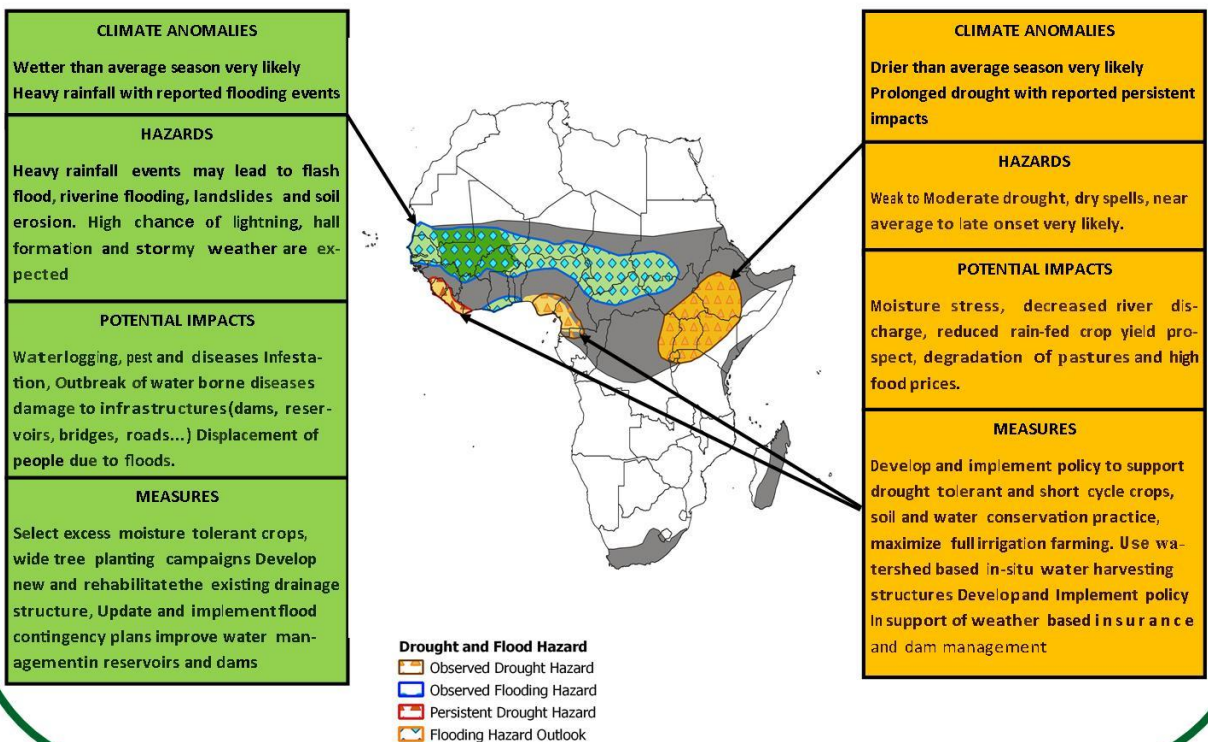
DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST.

ISSUED: 19 May 2023

Selected Significant Weather and Climate events 'updates: Valid for May to July 2023.



CONTINENTAL
**BRIEF FOR POLICY AND DECISION MAKERS BASED ON
SIGNIFICANT WEATHER AND CLIMATE EVENTS UPDATE.**
VALID FOR: MAY TO SEPTEMBER 2023



DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

BULLETIN No.5, 2023

Chair Editorial Board:

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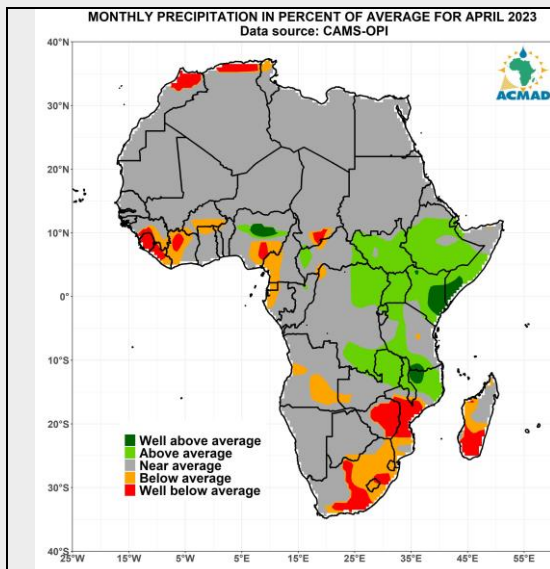
HIGHLIGHTS

Performance of the past season and impacts.

- ✦ In the eastern Democratic Republic of Congo (RDC), more than 20 people lost their lives on Sunday, April 2, 2023 following a landslide that occurred after heavy rain ([Floodlist, 03 April 2023](#)).
- ✦ In southern Kenya, Flash floods caused severe damage, on 02 April 2023. 4 people are feared dead ([Floodlist, 4 April 2023](#)).
- ✦ The United Nations reports that flooding and heavy rain have affected or displaced around 240,000 people in several regions of Ethiopia since mid-March 2023. At least 29 people have died ([Floodlist 04, April 2023](#)).
- ✦ In Burundi, at least 14 people have died in floods and landslides over the past week ([Floodlist, 7 April 2023](#)).
- ✦ In western Tanzania, it has been reported that at least 7 people have lost their lives after flooding ([Floodlist, 14 April 2023](#)).
- ✦ In several provinces of Angola, heavy rain caused damages and flooding from early April 2023. As of 21 April, at least 20 people had lost their lives, many of them children. Damage to houses has left hundreds of families homeless. ([Floodlist, 21 April 2023](#)).

OUTLOOK MAY-JUNE-JULY AND JUNE-JULY-AUGUST 2023 SEASONS

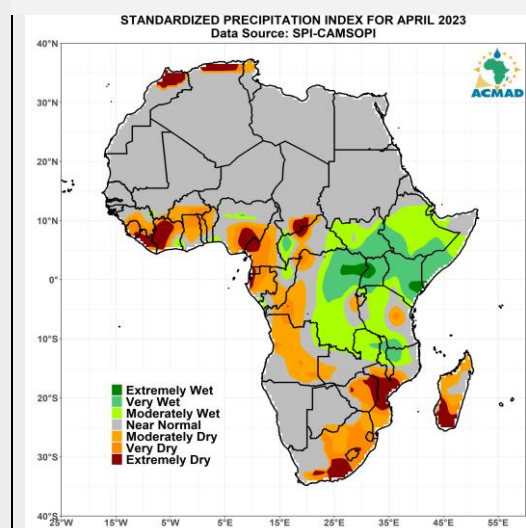
- ✦ The Equatorial Sea surface temperatures (SSTs) have been near average conditions across most of the Pacific Ocean from March to April 2023. During the May to August 2023 period, ENSO is favoured to transition from neutral (positive SSTs) to a weak El Nino phase.
- ✦ Above average SSTs were observed over the Tropical North Atlantic (TNA) from January to April 2023. Most model outputs and expert judgments favour the persistence of above average conditions during the evolution of the seasons (May to August 2023).
- ✦ Above average SSTs characterized the North Atlantic Tropical (NAT) during February to April 2023 period. During the coming months, May to August, above average SSTs is expected to persist.
- ✦ Near to above average SSTs characterized the South Atlantic Tropical (SAT) from February to April 2023. These conditions are expected to remain near normal during the coming seasons.
- ✦ The SSTs over the Tropical South Atlantic (TSA) have been near average during January to April 2023. Model outputs and our expert judgment favour the persistence of these conditions during the coming seasons (MJJ and JJA 2023).
- ✦ Sea Surface Temperatures in the Western Tropical Indian Ocean (WTIO) and South-Eastern Tropical Indian Ocean (SETIO) have been near average during February to April 2023. Model outputs and our expert assessments are in favour of the persistence of this condition for the coming four months.
- ✦ The Sea Surface Temperatures over the Mediterranean Sea have been above average during January to April 2023. Model outputs and our expert judgment predicted near-average conditions during the next seasons (MJJ and JJA 2023).

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

Above to well above average precipitation was observed over Central Nigeria, parts of the Central Africa Republic, northeast and southern RDC, South Sudan, Ethiopia, most parts of Somalia, Kenya, Uganda, Rwanda, parts of Tanzania, Northern Zambia, most of Malawi and Mozambique, during April 2023.

Below and well below precipitation was recorded over northernmost Morocco, Algeria and Tunisia, most of Liberia, Sierra Leone, southern Guinea, Western Ivory Coast, southern Burkina Faso, Southeast of Nigeria, Western Cameroon, Parts of Gabon, southernmost Chad, parts of Angola, many parts of Mozambique, Zimbabwe, most of South Africa, and northern Madagascar.

Figure 2: Precipitation in per cent of the average for April 2023 (Data source: https://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP/.CPC/.CAM5_OPI/.v0208/.mean/.prcp/)

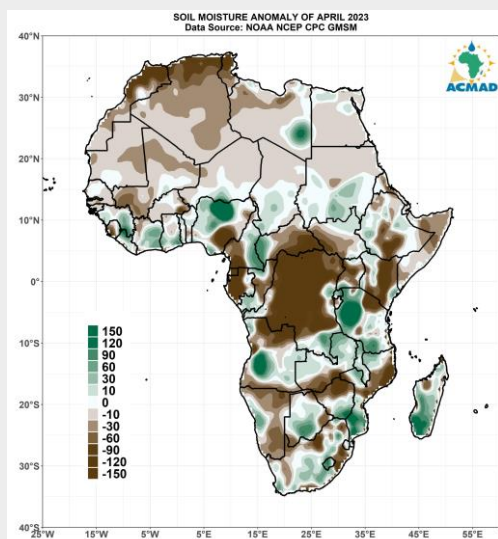
1.2. STANDARDIZED PRECIPITATION INDEX (SPI)

During April 2023, the SPI index shows a dry to extremely dry situation over northernmost Morocco, Algeria and Tunisia; southern Burkina Faso and Guinea, much of Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Benin, Southern Eastern Nigeria, Cameroun, Gabon, Southernmost Chad, parts of Central Africa Republic, parts of Congo, large part of Angola, Zimbabwe, Mozambique, South Africa and Madagascar.

Wet to extremely wet conditions were recorded over much of Ethiopia, Somalia, South Sudan, eastern DRC, Uganda, Kenya, many parts of Tanzania, Malawi northern Mozambique and Zambia.

Figure 3: Standardized precipitation index for April 2023. 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

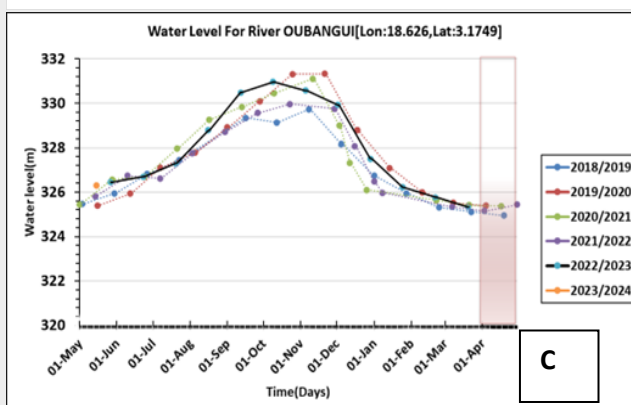
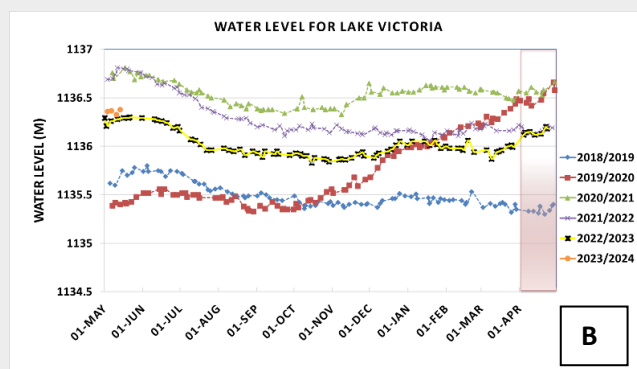
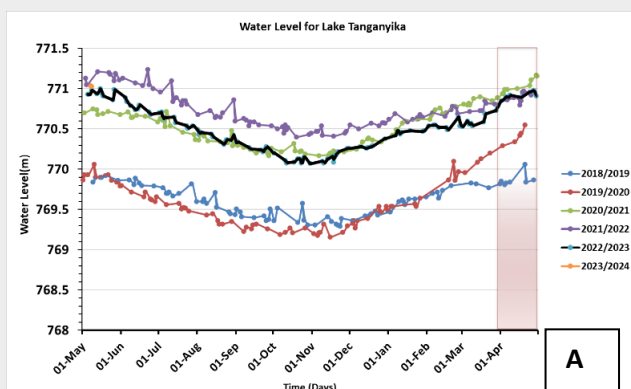


Strong to moderate moisture deficit was located over northern Morocco, Tunisia, much of Algeria, parts of Mauritania, Mali, Eastern Burkina Faso, Nigeria, Western Cameroon, most of Central Africa, RDC, Congo, Gabon, South Sudan, Ethiopia, Somalia, Uganda, Kenya, Burundi, large parts of Angola, Namibia, Zimbabwe, Mozambique, Zambia, parts of South Africa, Botswana, Tanzania, Madagascar.

Over most of these areas, below average precipitation has been recorded between March and April. This resulted in large moisture deficits and below average vegetation conditions.

Figure 4: Soil moisture anomaly for April 2023. 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



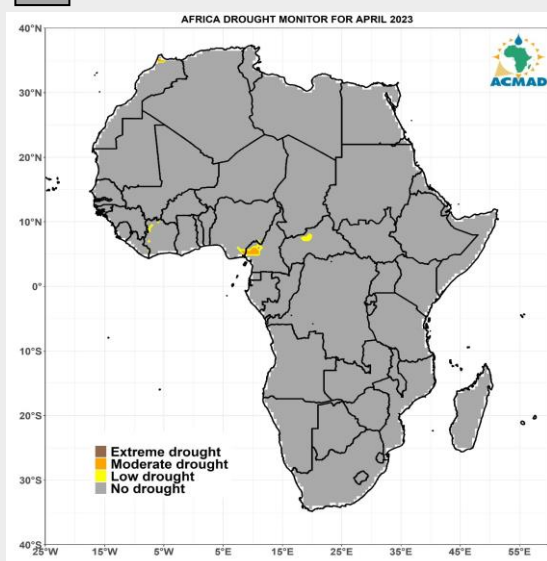
A decrease in water levels is observed in the OUBANGUI River. This is the result of a cumulative rainfall deficit recorded over the last few months in some parts of the DRC. On the other hand, the very wet situation observed in some parts of East Africa has contributed to an increase in water levels in lakes Tanganyika and Victoria.

Figure 5: Daily water levels of Lake Tanganyika[A], Lake Victoria[B] and River OUBANHUI[C]. Data Source: https://doi.org/10.24400/329360/HYDROWEB_WATER_+%EVELE

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

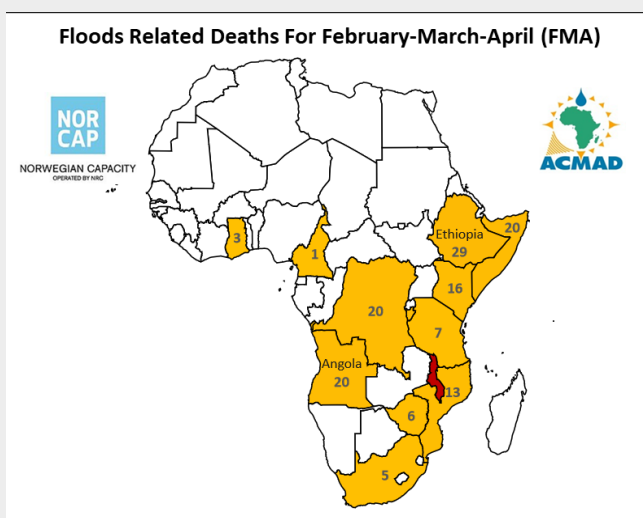


Considering the cumulative precipitation deficits during the past and the month of March, SPI and soil moisture deficits, the adjacent map characterizes the drought situation in Africa during April 2023.

During April 2023 low to moderate intensity drought was recorded over northernmost Morocco, parts of Ivory Coast, Nigeria, western Cameroon, and part of Central Africa Republic.

Figure 6: African Drought Monitor, expressed as a composite of Precipitation, SPI, Soil Moisture deficit, and water level, valid for April 2023.

III. RECORDED IMPACTS



It has been reported that at least 769 people have lost their lives due to flooding during the months of February, March and April 2023 combined. The highest number of deaths in the last three months was recorded at Malawi with 611 deaths. 29 deaths were recorded in Ethiopia, 20 deaths in Somalia, Angola and DRC, 16 deaths in Kenya, 14 deaths in Burundi, 13 deaths in Mozambique, 7 deaths in Tanzania, 6 deaths in Zimbabwe, 5 deaths in South Africa, 3 deaths in Burkina Faso and 1 death in Cameroon.

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 Centers for Long Range Forecasts, the following outlooks for precipitation and temperature are provided for May-June-July (MJJ) and June-July-August (JJA) 2023 seasons across Africa (see the figures: Fig7, Fig8, Fig9, and Fig10):

During the May to August 2023 period.

- ✓ The outlook for the rainfall season during the May to August 2023 period is that below average and normal to below average rainfall is expected over western and eastern parts of the Guinea Gulf region, north-eastern of DRC, much of Rwanda, Uganda, western and northern Kenya, south-eastern South-Sudan and western Ethiopia,
- ✓ From May to July 2023 normal to above average rainfall is very likely over southern Niger, northern Nigeria, western and southern Chad, northernmost of Cameroon, CAR, and north-western South-Sudan south-western Sudan. And above average precipitation is expected over southern Mauritania, much of Senegal, Gambia, Guinea Bissau, southern Mali and northern Burkina Faso.
- ✓ Over south-western Mauritania, much of Senegal, Gambia, southern Niger, northern Nigeria, central eastern parts of Nigeria, most of southern Chad, northern Cameroon, CAR, north-western South-Sudan and south-western Sudan. And above average precipitation over south-eastern Mauritania, southern Mali and much of Burkina Faso is expected during June to August 2023
- ✓ Near to above average temperature is very likely over Morocco, Algeria, Tunisia, Libya, Egypt, northern Sudan, Chad, Niger, Mali and Mauritania, Mali, south of Angola, Zimbabwe and Mozambique, much of Botswana, South Africa, Lesotho, Eswatini, and southern Mozambique during May to August 2023.
- ✓ From May to August 2023 Above average temperature is very likely over south-eastern Algeria, southern Libya, much of Egypt, eastern Namibia, western Botswana, and northern South Africa.

NB: Users are advised to seek more detailed climate information on the distribution of

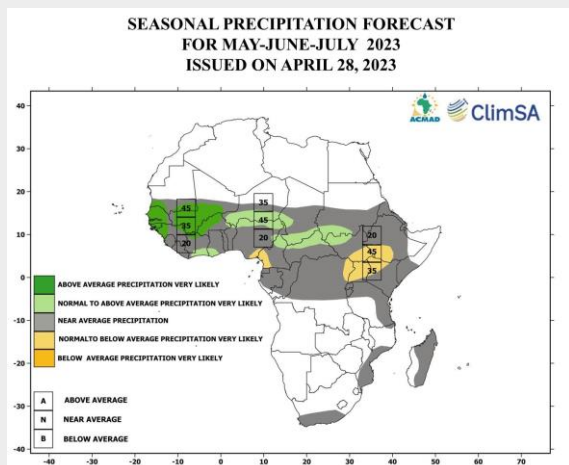


Figure 7: Seasonal precipitation forecast for May-June-July 2023.

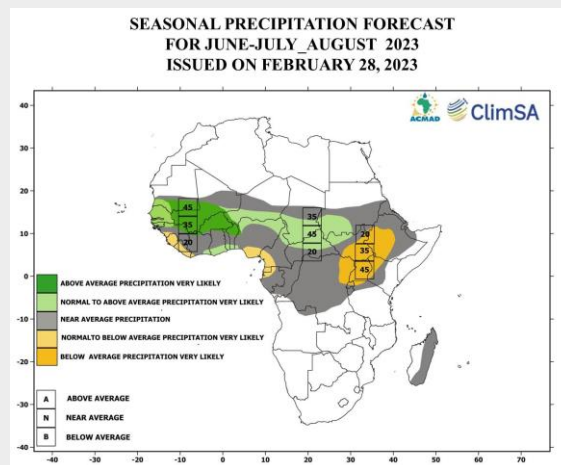


Figure 8: Seasonal precipitation forecast for June-July-August 2023.

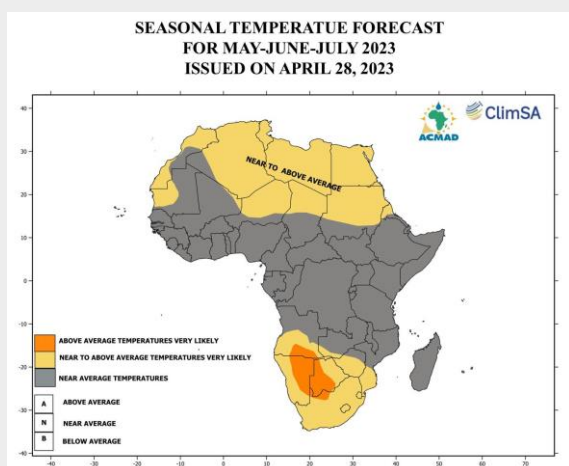


Figure 9: Seasonal Temperature forecast for May-June-July 2023

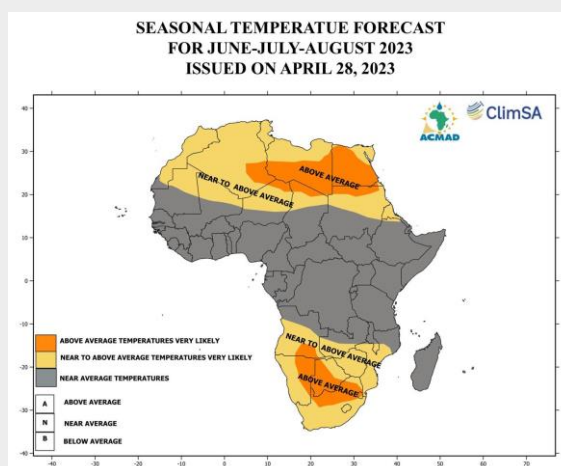


Figure 10: Seasonal Temperature forecast for June-July-August 2023

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

From May to July 2023 normal to above average rainfall is very likely over southern Niger, northern Nigeria, western and southern Chad, northernmost of Cameroon, CAR, and north-western South-Sudan south-western Sudan. And above average precipitation is expected over southern Mauritania, much of Senegal, Gambia, Guinea Bissau, southern Mali and northern Burkina Faso.

The rainfall season during the May to August 2023 period is below average and normal to below average rainfall is expected over western and eastern parts of the Guinea Gulf region, north-eastern of DRC, much of Rwanda, Uganda, western and northern Kenya, south-eastern South-Sudan and western Ethiopia.

Above average temperature is very likely over south-eastern Algeria, southern Libya, much of Egypt, eastern Namibia, western Botswana, and northern South Africa from May to August 2023.

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 number 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 rainfall is very likely over southern Niger, northern Nigeria, western and southern Chad, northernmost of Cameroon, CAR, and north-western South-Sudan south-western Sudan. And above average precipitation is expected over southern Mauritania, much of Senegal, Gambia, Guinea Bissau, southern Mali and northern Burkina Faso.

during May to July 2023.

Near to above average temperature is very likely over Morocco, Algeria, Tunisia, Libya, Egypt, northern Sudan, Chad, Niger, Mali and Mauritania, Mali, south of Angola, Zimbabwe and Mozambique, much of Botswana, South Africa, Lesotho, Eswatini, and southern Mozambique during May to August 2023.

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. Take precautions for heat stress where the expected temperature is above normal.

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 policies 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).