

Climate Services for Disaster Risks Reduction in Africa

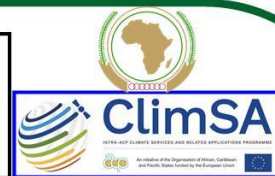
DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST.

ISSUED: 21 June 2023

Selected Significant Weather and Climate events 'updates: Valid for June to August 2023.



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

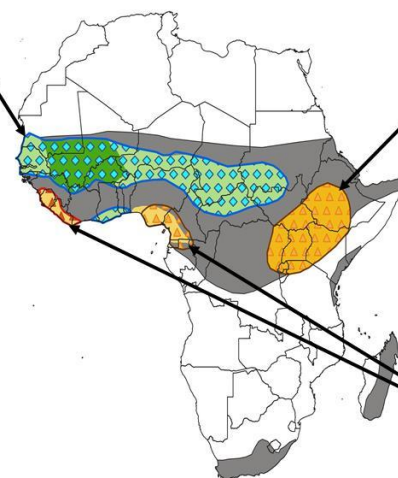


CLIMATE ANOMALIES
Wetter than average season very likely
Heavy rainfall with reported flooding events

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 rehabilitate the existing drainage structure, Update and implement flood contingency plans improve water management in reservoirs and dams



Drought and Flood Hazard
Observed Drought Hazard
Observed Flooding Hazard
Persistent Drought Hazard
Flooding Hazard Outlook

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

DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

BULLETIN No.6, 2023

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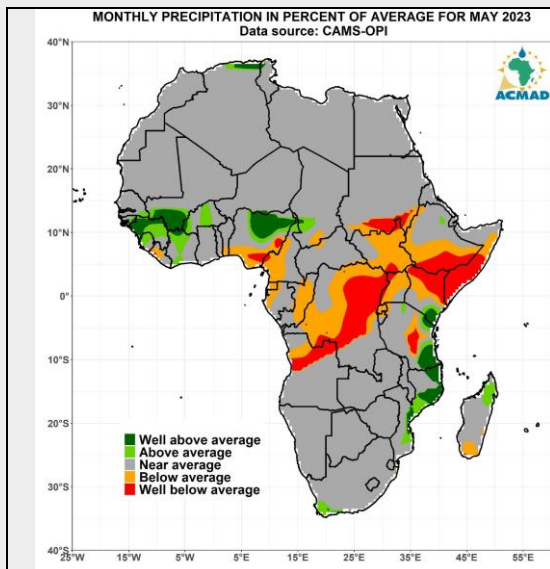
HIGHLIGHTS

Performance of the past season and impacts.

- ✦ In the eastern and Western Rwanda, Dozens of people have lost their lives after heavy rain, floods and landslides ([Floodlist, 03 May 2023](#)).
- ✦ It has been reported that at least 6 people died after heavy rain-triggered landslides in Kisoro District in Western Uganda Region ([Floodlist, 03 May 2023](#)).
- ✦ Almost 400 people have lost their lives after floods and landslides in Kalehe territory of South Kivu Province, DR Congo, on 04 May 2023 ([Floodlist 08, May 2023](#)).
- ✦ At least 7 people have lost their lives after storms and heavy rain caused flooding and mudslides in parts of Freetown, the capital city of Sierra Leone ([Floodlist, 11 May 2023](#)).
- ✦ In Somalia, The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) has reported that over 460,000 people have been affected by devastating floods since March this year ([Floodlist, 18 May 2023](#))
- ✦ In 9 provinces of Algeria, At least 2 people have died and dozens have been rescued or evacuated after flash floods ([Floodlist, 26 May 2023](#)).

OUTLOOK FOR JUNE-JULY-AUGUST AND JULY-AUGUST-SEPTEMBER 2023 SEASONS

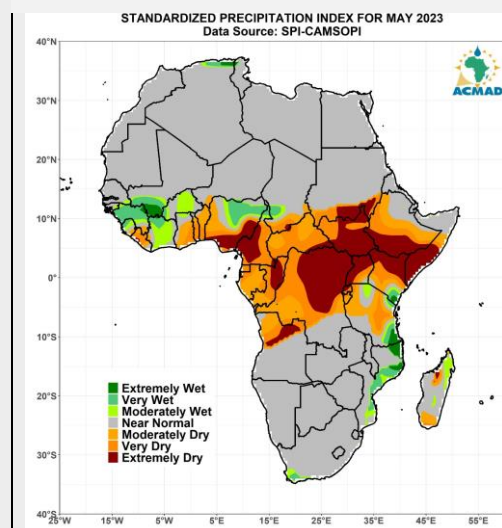
- ✦ The Equatorial Sea surface temperatures (SSTs) have been near average conditions across most of the Pacific Ocean from April to May 2023. During the June to September 2023 period, ENSO is favoured to transition from neutral (positive SSTs) to weak El Nino phase
- ✦ Above average SSTs were observed over the Tropical North Atlantic (TNA) during January to May 2023. Most model outputs and expert judgments favour the persistence of above average conditions during the evolution of the seasons (June to September 2023)
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- ✦ Above average SSTs characterized the North Atlantic Tropical (NAT) during April to May 2023. During the coming months, June to September 2023, above average SSTs is expected to persist.
- ✦ Near to above average SSTs characterized the South Atlantic Tropical (SAT) from February to May 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 May 2023. Model outputs and our expert judgment favour persistence of these conditions during the coming seasons (JJA and JAS 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 May 2023. Model outputs and our expert assessments are in favour near to above average condition for the coming four months.
- ✦ The Sea Surface Temperatures over the Mediterranean Sea have been above average during January to May 2023. Model outputs and our expert judgment predicted near average conditions during the next seasons (JJA and JAS 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 northernmost Algeria, a large part of Guinea, southern Mali, northern and central Ghana, western and central Burkina Faso, northern Nigeria, Northernmost Cameroon, South-Eastern Kenya, Eastern Tanzania, eastern Mozambique and northern Madagascar, during May 2023.

Below and well below precipitation was recorded over western Liberia, southern Benin, Nigeria, western Cameroon, equi Guinea, western Gabon, a large part of Congo, northern Chad, DRC, northern Namibia, most of Uganda, most of south Sudan, northern North-Sudan, southern Ethiopia, northern Kenya, a large part of Somalia and parts of Tanzania.

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

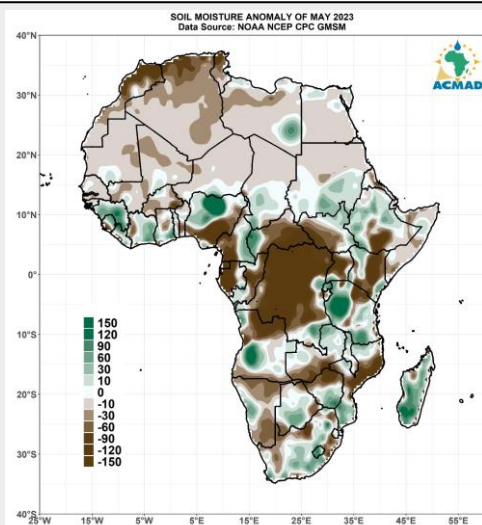
1.2. STANDARDIZED PRECIPITATION INDEX (SPI)

During May 2023, the SPI index shows a dry to extremely dry situation over most parts of central and eastern Africa, southern Nigeria, Togo, Benin, Ivory Coast and Sierra Leone.

Wet to extremely wet conditions were recorded over Liberia, Southern Mali, Ghana, central Burkina Faso, central to eastern Nigeria, northernmost Algeria, southeastern Tanzania, eastern Mozambique, northern Mozambique and parts of southernmost South Africa.

Figure 3: Standardized precipitation index for May 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/.CAMS_OPI/.v0208/.mean/.prcp/

1.3. SOIL MOISTURE ANOMALY

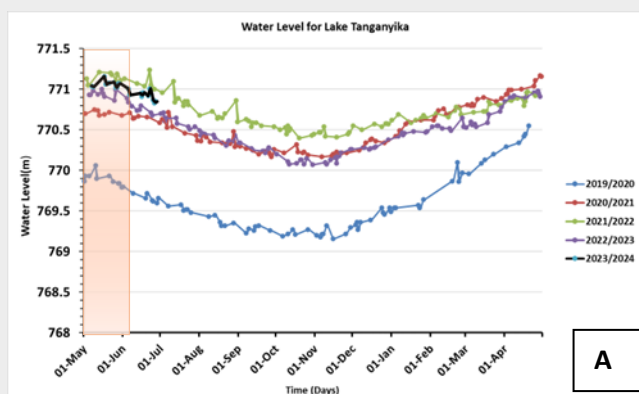


Strong to moderate moisture deficit was located over Morocco, Tunisia, north Algeria, southern Nigeria, Western Cameroon, most of DRC, Congo, Gabon, parts of south Ethiopia, south South Sudan, Uganda, eastern Kenya, parts of Angola, Namibia, north Zimbabwe, East Mozambique, south Zambia and parts of South Africa,

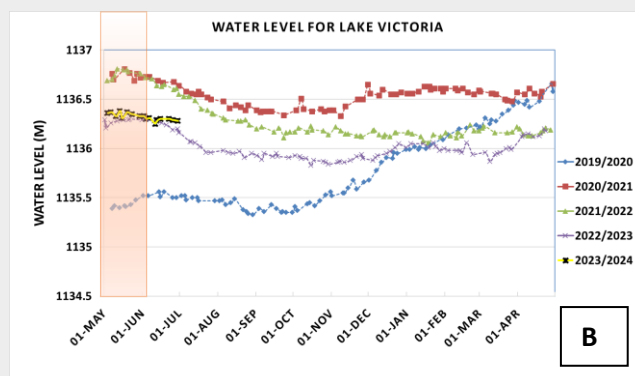
Over most of these areas, below average precipitation has been recorded between April and May. This resulted in large moisture deficits and below average vegetation conditions.

Figure 4: Soil moisture anomaly for May 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>

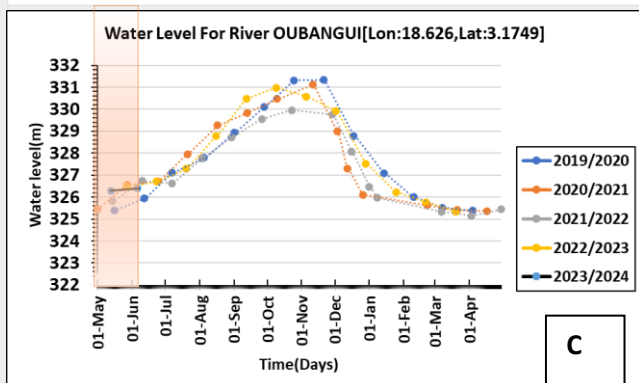
1.5. WATER LEVEL



A



B



C

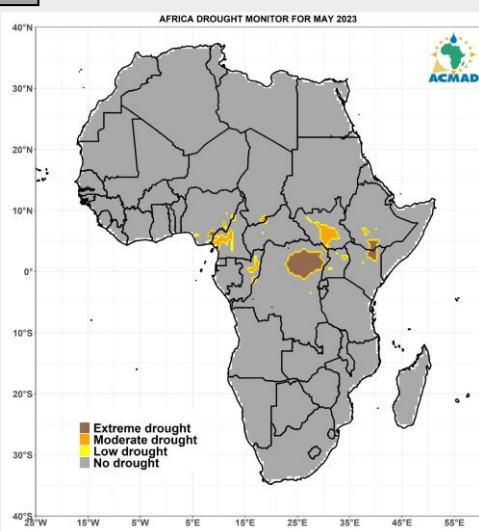
A decrease in water levels is observed in the OUBANGUI River. This is the result of a cumulative rainfall deficit recorded over the last few months in some parts of the DRC. On Also a decrease in rainfall situation observed in some parts of East Africa has contributed to an increase in water levels in 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

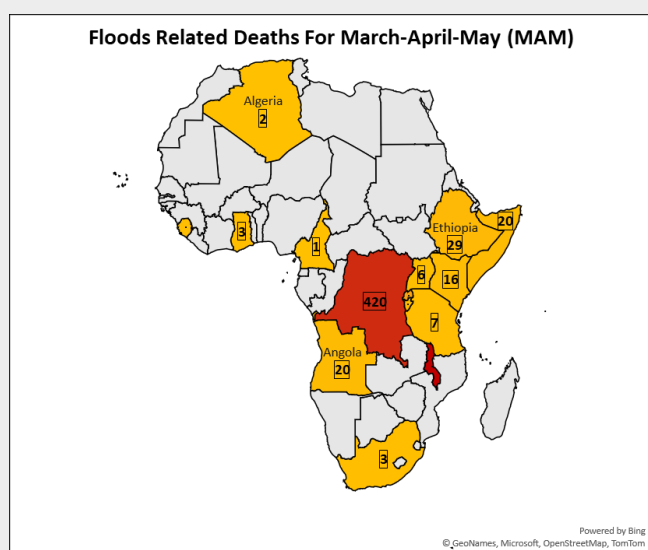


Considering the cumulative precipitation deficits during the past and the month of April and May, SPI and soil moisture deficits, the adjacent map characterizes the drought situation in Africa during May 2023.

During May 2023 low to moderate-intensity drought was recorded over southwest Cameroon, north Congo, Northeast DRC and central South Sudan.

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

III. RECORDED IMPACTS



It has been reported that at least 1162 people have lost their lives due to flooding during the months of March, April and May 2023 combined. The highest number of deaths in the last three months was recorded at Malawi with 507 deaths. 420 deaths were recorded in DRC, 109 deaths in Rwanda, 20 in Angola, 20 in Somalia and many other countries have registered death(see the map)

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 June-July-August (JJA) and July-August-September (JAS) 2023 seasons across Africa (see the figures: Fig7, Fig8, Fig9, and Fig10):

During the June to October 2023 period.

- ✚ The outlook for the rainfall season from July to October 2023 is that below average and normal to below average rainfall is expected over the northeastern DRC, northern Uganda, southern South Sudan, Ethiopia and northwest of Kenya.
- ✚ From July to October 2023 normal to above average rainfall are very likely over much of Senegal, Gambia, Guinea, southern Mauritania, Mali, Côte d'Ivoire, Togo, Benin, Niger, Chad, north Guinea, Burkina Faso, Nigeria, Cameroon, and most parts of CAR.
- ✚ Over south-eastern Mauritania, southern Mali, much of Guinea, Sierra Leone, Burkina Faso, and northernmost of Côte d'Ivoire normal precipitation is expected from July to September 2023
- ✚ Near to above and above average temperature is very likely over Morocco, Algeria, central Sudan, Chad, Niger, northern Mali and much of Mauritania, western Angola, most of Namibia, southern South Africa, Mozambique, northern Zimbabwe, and southern Zambia.
- ✚ From July to October 2023, the Above temperature is very likely over eastern Algeria, much of Tunisia, Libya, Egypt, northern Sudan, Chad, northwestern Niger, eastern Angola, north-eastern Namibia, much of Botswana, northern South Africa, southern Zimbabwe.

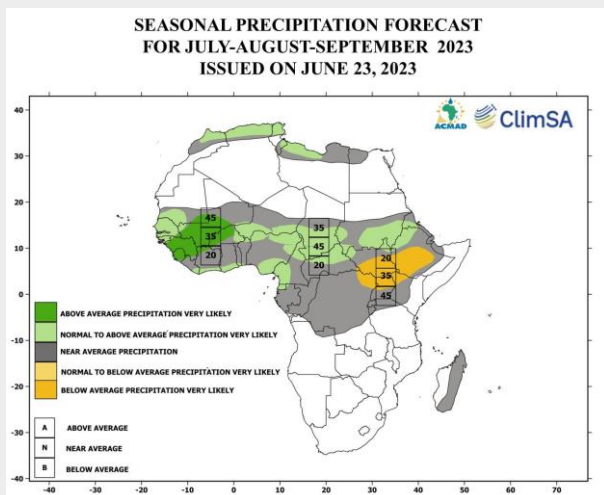


Figure 7: Seasonal precipitation forecast for July-August-September 2023.

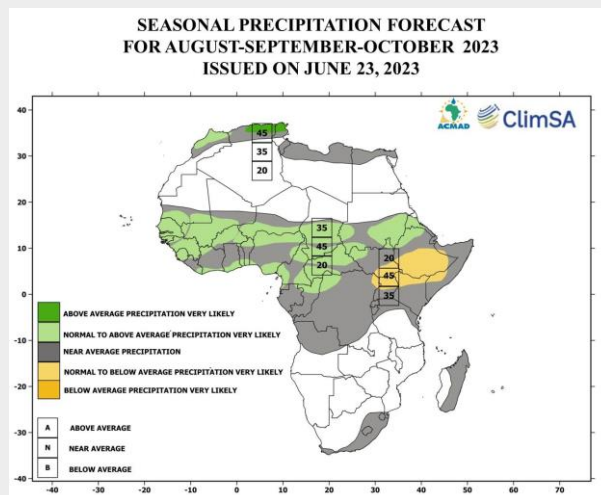


Figure 8: Seasonal precipitation forecast for August-September-October 2023.

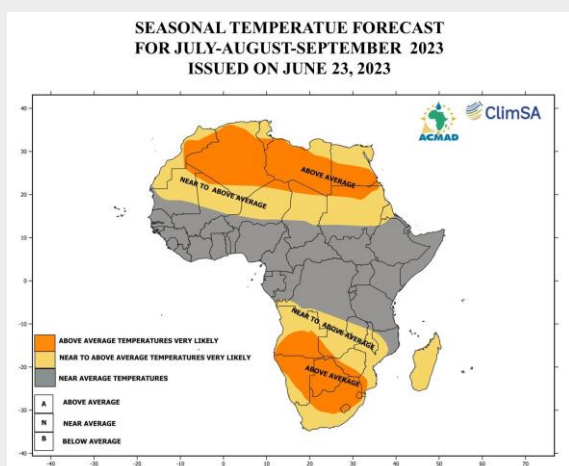


Figure 9: Seasonal Temperature Forecast for July-August-September 2023

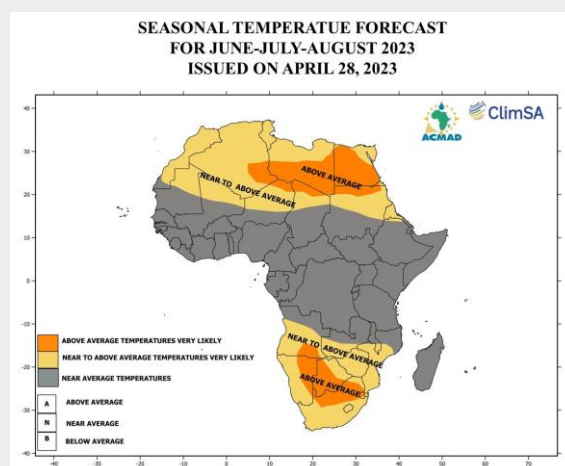


Figure 10: Seasonal Temperature Forecast for August-September-October 2023

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

The outlook for the rainfall season during the July to October 2023 period is that below average and normal to below average rainfall is expected over the northeastern DRC, northern of Uganda, southern, Ethiopia and north-west of Kenya.

From July to October 2023 normal to above average rainfall are very likely over much of Senegal, Gambia, Guinea, southern Mauritania, Mali, Côte d'Ivoire, Togo, Benin, Niger, Chad, north Guinea, Burkina Faso, Nigeria, Cameroon, and most parts of CAR.

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 are very likely over much of Senegal, Gambia, Guinea, southern Mauritania, Mali, Côte d'Ivoire, Togo, Benin, Niger, Chad, north Guinea, Burkina Faso, Nigeria, Cameroon, and most parts of CAR from July to October 2023.

Near to above and above average temperature is very likely over Morocco, Algeria, central Sudan, Chad, Niger, northern Mali and much of Mauritania, western Angola, most of Namibia, southern South Africa, Mozambique, northern Zimbabwe, and southern Zambia.

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> and

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).