

Climate Services for Disaster Risks Reduction in Africa

DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

ISSUED: 25 May 2022

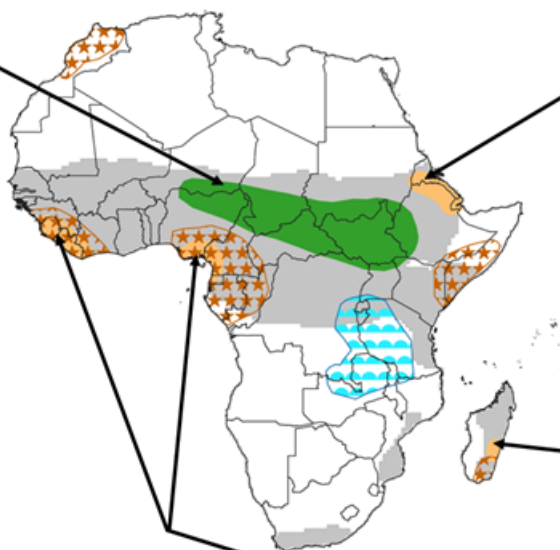
Selected Significant Weather and Climate Events 'updates: Valid for July to September 2022.



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.5, 2022

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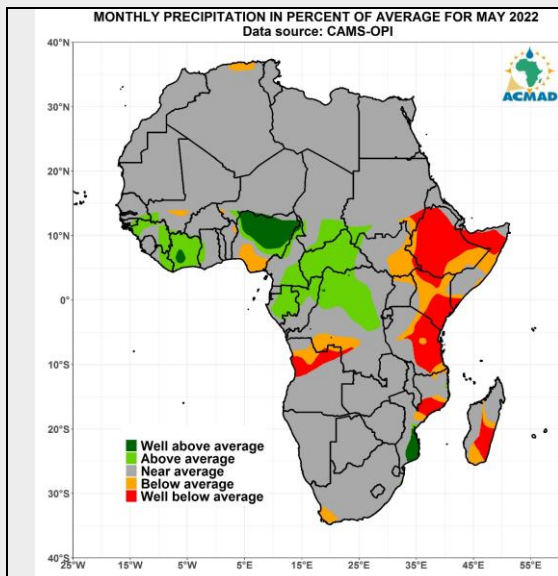
HIGHLIGHTS

Performance of the past season and impacts

During April 2022, Severe flooding and landslides caused at least 325 deaths: 9 deaths were recorded in Rwanda, 11 in DRC and 305 in South Africa (floodlist, April 2022).

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

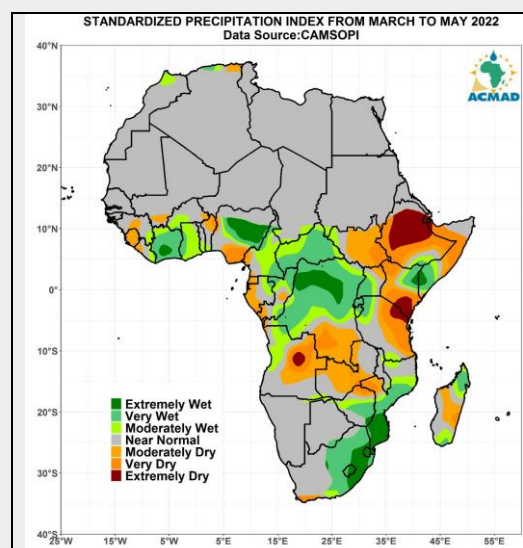
- ✚ La Nina conditions persistence during April 2022 influenced the equatorial Sea Surface Temperatures (SSTs) continue be below average across most of the Pacific Ocean due to the ongoing. During the May to August 2022 period, the La Niña signal is predicted to decrease into a weak La Nina phase.
- ✚ Near-average to below average SSTs were observed over the Tropical North Atlantic (TNA) during March to April 2022. Most model outputs and expert judgments favour persistence of these conditions.
- ✚ Near to average Sea Surface Temperatures characterized the North Atlantic Tropical (NAT) during April 2022. This pattern is expected to persist during the coming months.
- ✚ Near average to below average Sea Surface Temperatures characterized the South Atlantic Tropical (SAT) during the month of February and April 2022 and it is expected to be below normal conditions during the coming months.
- ✚ The SST over the Tropical South Atlantic (TSA) has been near to below average during April 2022. Model outputs and expert judgment favours below average SSTs during the coming seasons (MJJ and JJA 2022).
- ✚ Sea Surface Temperatures in the Western Tropical Indian Ocean (WTIO) and South-Eastern Tropical Indian Ocean (SETIO) have been near average during March to April 2022. Model outputs and experts' assessments are in favour of persistence of this condition for the coming months.
- ✚ Sea Surface Temperatures over the Mediterranean Sea have been near average in March 2022. Model outputs and experts' judgment predict persistence of these conditions during the next seasons (MJJ to JAJ 2022).

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

During April 2022, above to well above average was observed over North Morocco, pocket part of northern Algeria, Ghana, Togo, south Benin, central Nigeria, Eastern Central Republic, north South Sudan, northeast DRC, western Uganda, Rwanda, north Burundi, southern Ethiopia, southwestern Somalia, west Kenya, Northeast Zambia, Malawi, Mozambique, East Zimbabwe, much of South Africa, South Madagascar, north-west Angola and western DRC.

Below and well below average precipitation was observed over north Tunisia, Ethiopia, northern Somalia, and southwest Kenya stretching to eastern Tanzania, pocket part of central Mozambique, Southernmost South Africa, Liberia, Sierra Leone and central parts of Guinea Bissau.

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

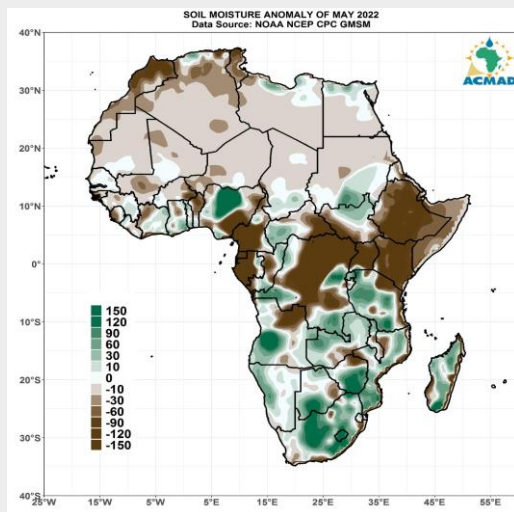
1.2. STANDARDIZED PRECIPITATION INDEX (SPI)

The SPI for April 2022 reveals that very dry to extremely dry conditions were observed over northern Tunisia, Ethiopia, Central to North Somalia, much of Kenya, much of Tanzania, southwest Gabon, West Ivory Coast, Liberia, Sierra Leone and much of Guinea Bissau.

Very wet to extremely wet conditions were recorded over northern Morocco and Algeria, west Central Republic, South Soudan, Uganda, much of DRC, Burundi, Rwanda, Easternmost Kenya stretching to southern Somalia and Ethiopia, Malawi, East Zambia and Zimbabwe, Northeast Namibia, Cameroon, Congo, Ghana and Togo, Pockets parts of Morocco and Algeria.

Figure 3: Standardized precipitation index for April 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

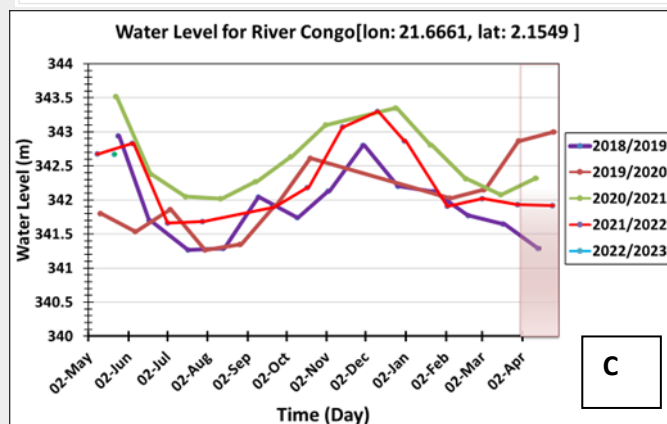
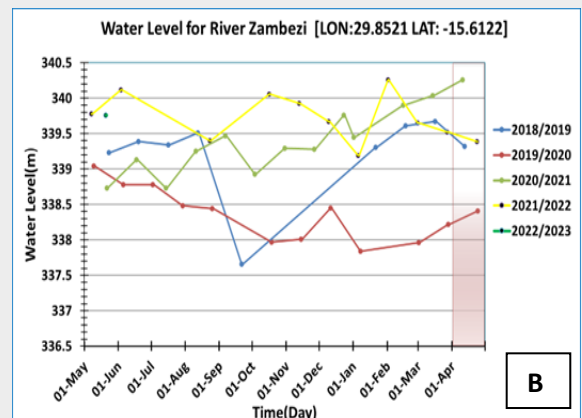
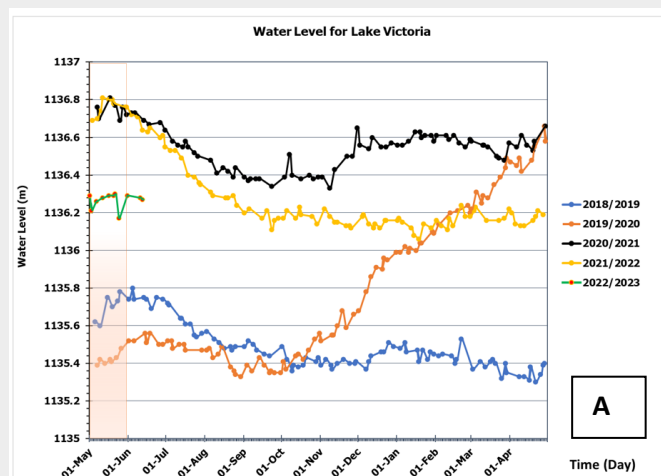


Strong to moderate moisture deficit was located over parts of North Africa, West Africa, and Much of central Africa: Cameroon, Gabon, Central Africa Republic, South Soudan, Gabon, Ethiopia, Uganda, Kenya, Somalia, and much of DRC and Benin.

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

Figure 4: Soil moisture anomaly for April 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



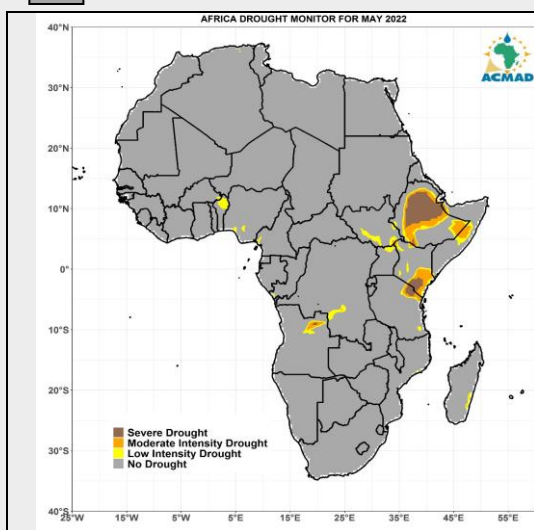
A cumulative precipitation excess was recorded during the past months over Some parts of the Eastern Africa region, leading to the observed increase in water levels in Lake Victoria during April 2022 compared to the previous month. Also, above rainfall observed in the Congo and Zambezi basins contributed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



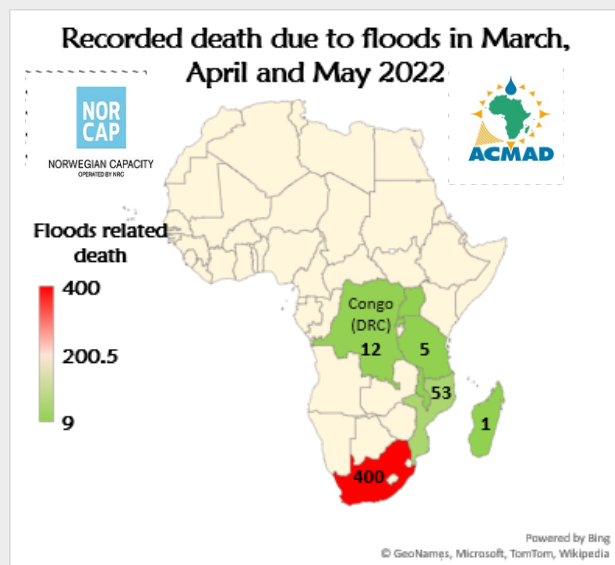
Given the cumulative precipitation deficits during the past and the month of March, SPI and soil moisture deficits, the adjacent map characterizes the drought situation in Africa during April 2022.

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 April 2022.

III. RECORDED IMPACTS

During the month of April, more than 40000 people have been affected by heavy rainfall in Rwanda, DRC and South Africa (floodlist, April 2022).



A Total of 325 deaths due flooding have been recorded during April

At least 305 peoples have died in South Africa, and at least 11 person have died in DRC, 9 people died in Rwanda (floodlist, April 2022).

IV. CLIMATE AND HAZARDS OUTLOOK

Given the 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) 2022 seasons across Africa (see the figures: Fig7, Fig8, Fig9 and Fig10):

During the May to August 2022 period:

During April 2022, below normal precipitation has been experienced over Liberia, south-eastern Nigeria, Cameroon, Gabon, south-western Congo and DRC, western Zambia, northern Zimbabwe, eastern Tanzania, south-eastern Kenya and eastern and central parts of Ethiopia. Above average was observed over DRC, the western parts of Eastern Africa, most of the central and eastern SADC region and parts of Madagascar.

The outlooks for the rainfall season during the May to August 2022 period favour a normal to below rainfall over eastern Sierra Leone, Liberia, south-western Côte d'Ivoire, Cameroon, Gabon, northern Ethiopia, much of Djibouti and southern Madagascar.

Above precipitation is very likely over southern Mali, Niger, Burkina Faso, northern Nigeria, central Chad, southern Sudan, northern South-Sudan and westernmost of Ethiopia during the May to August 2022 period.

During May to August 2022, above average temperature is very likely over northern Morocco and Algeria

Near to above average temperature is very likely over Morocco, much of Algeria, Tunisia, Libya, and north Mauritania, northernmost of Mali, eastern Botswana, southern Zimbabwe and northern South Africa.

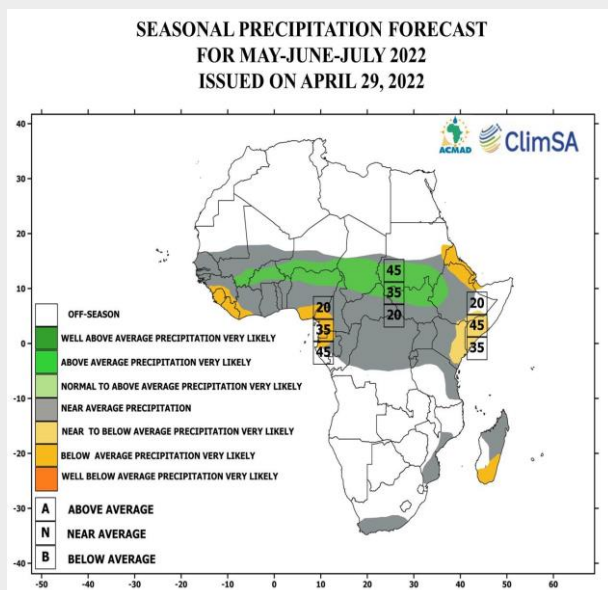


Figure 7: Seasonal precipitation forecast for May-June- July 2022

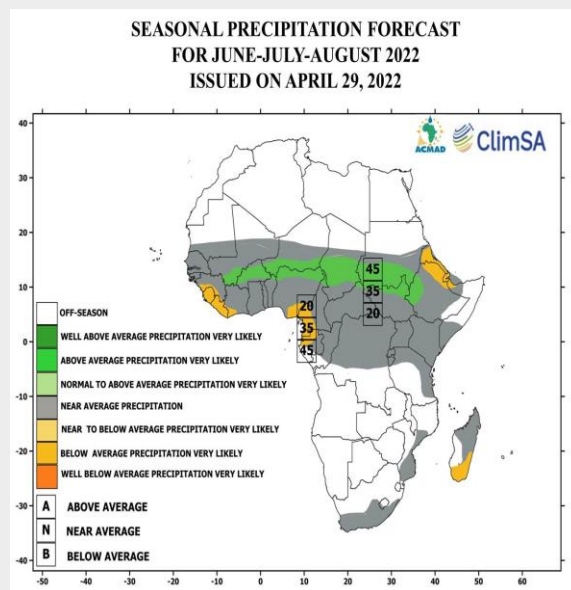


Figure 8: Seasonal precipitation forecast for June-July -August 2022

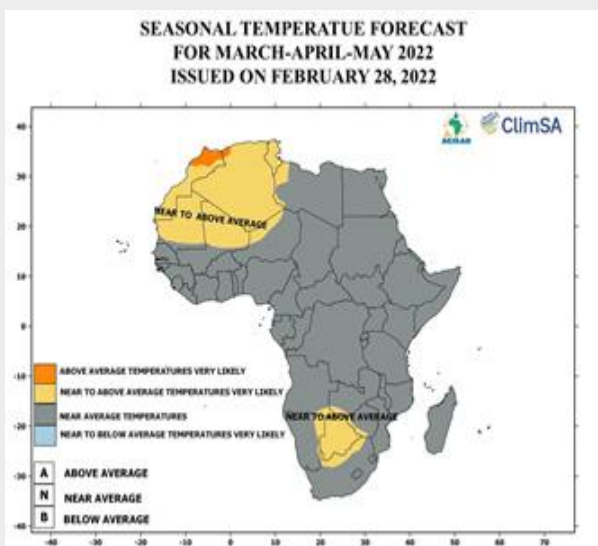


Figure 9: Seasonal Temperature forecast for May-June-July 2022

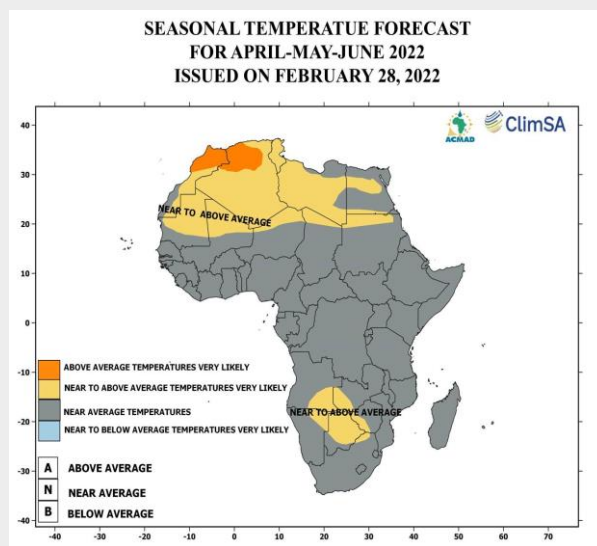


Figure 10: Seasonal Temperature forecast for June-July -August 2022

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

Normal-to-below normal rainfall is expected over eastern Sierra Leone, Liberia, south-western Côte d'Ivoire, Cameroon, Gabon, northern Ethiopia, much of Djibouti and southern Madagascar during the May to August 2022 season.

Above-normal precipitation is very likely over southern Mali, Niger, Burkina Faso, northern Nigeria, central Chad, southern Sudan, and northern South-Sudan, westernmost of Ethiopia during May to August 2022.

Above average Temperature is very likely over northern Morocco and Algeria during May to August 2022

During May to August 2022, near to above average temperatures are very likely over Morocco, much of Algeria, Tunisia, Libya, north Mauritania, northernmost of Mali, eastern Botswana, southern Zimbabwe, and northern South Africa.

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-normal precipitation is very likely over southern Mali, Niger, Burkina Faso, northern Nigeria, central Chad, southern Sudan, and northern South-Sudan, westernmost of Ethiopia during May to August 2022.

Above average Temperature is very likely over northern Morocco and Algeria during May to August 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 floods 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 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).