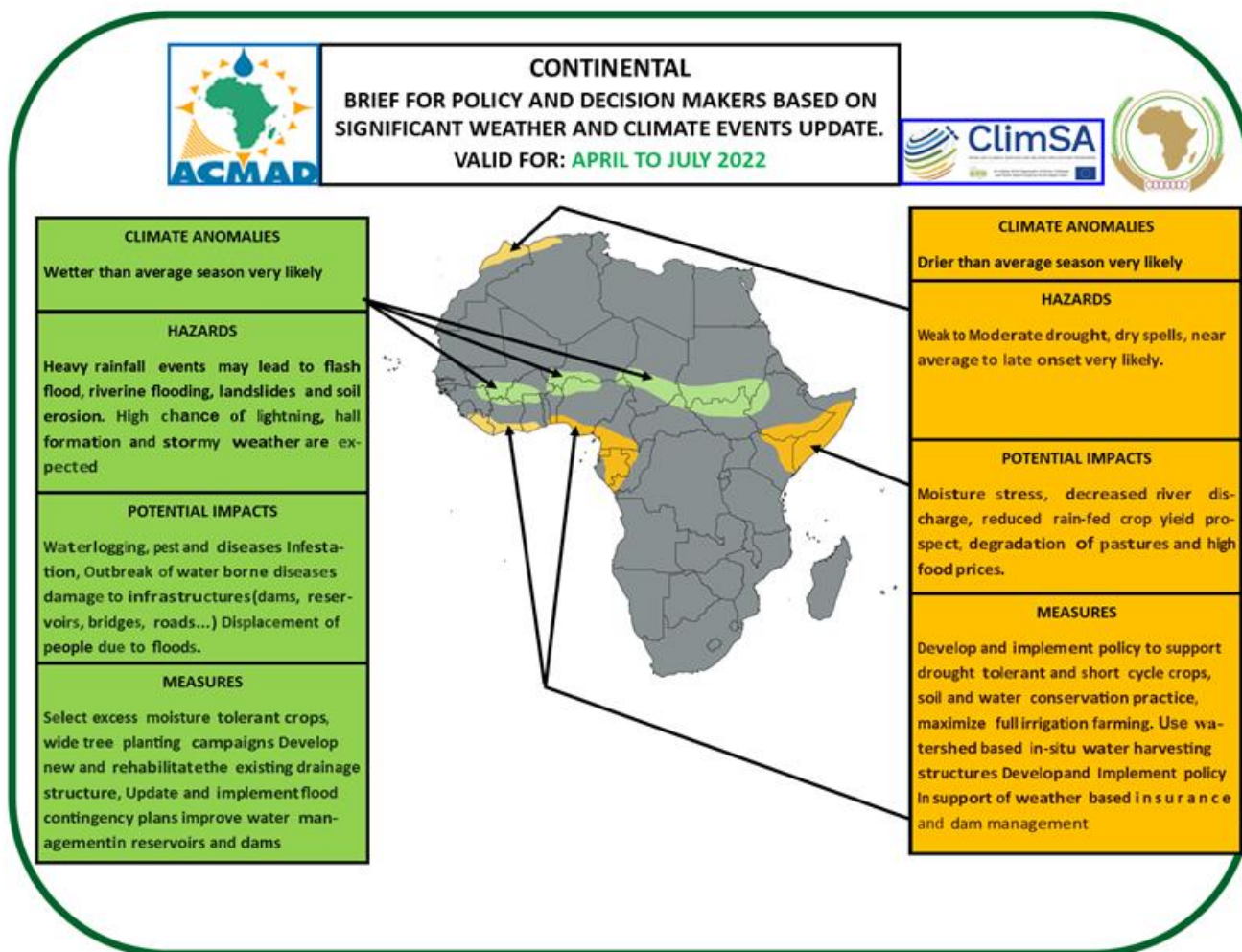


Climate Services for Disaster Risks Reduction in Africa

DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

ISSUED: 25 April 2022

Selected Significant Weather and Climate events'updates : Valid for April to June 2022.



DROUGHT SERVICE AND SEASONAL CLIMATE FORECAST

BULLETIN No.4, 2022

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HIGHLIGHTS

Performance of the past season and impacts

During March 2022, Floods and severe weather including tropical Gombe have affected countries such as Mozambique and Malawi as well as heavy rainfall in DRC triggering floods causing at least 60 deaths and more than 448,800 people have been affected only in Mozambique (floodlist, March 2022).

- ✓ At least 53 people have died in Mozambique, 4 deaths were recorded in Malawi, and at least 3 people have died in DRC following severe weather mentioned above.

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

The Equatorial Sea surface temperatures (SSTs) have been below average conditions across most of the Pacific Ocean since October 2021 to March 2022. During the April to July 2022 period, La Niña is favoured to decreasing phase.

Near to average SSTs were observed over the Tropical North Atlantic (TNA) during March 2022. Most model outputs and expert judgments favour persistence of these conditions during the evolution of the seasons (MAM and AMJ 2022).

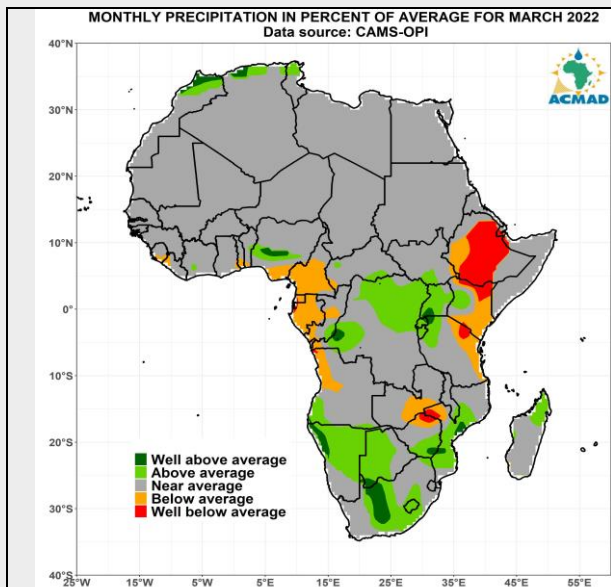
Near to average Sea Surface Temperatures characterized the North Atlantic Tropical (NAT) during February to March 2022. This pattern is expected to persist during the coming months.

Near average to below average Sea Surface Temperatures characterized the South Atlantic Tropical (SAT) during the month of February and March 2022 and it is expected for below normal conditions during the coming months.

The SST over the Tropical South Atlantic (TSA) has been near to above average during March 2022. Model outputs and expert judgment favours a decrease in SSTs during the coming seasons (AMJ and MJJ 2022).

Sea Surface Temperatures in the Western Tropical Indian Ocean (WTIO) and South-Eastern Tropical Indian Ocean (SETIO) have been near average during March 2022. Model outputs and experts assessments are in favour of persistence of this condition for the coming months.

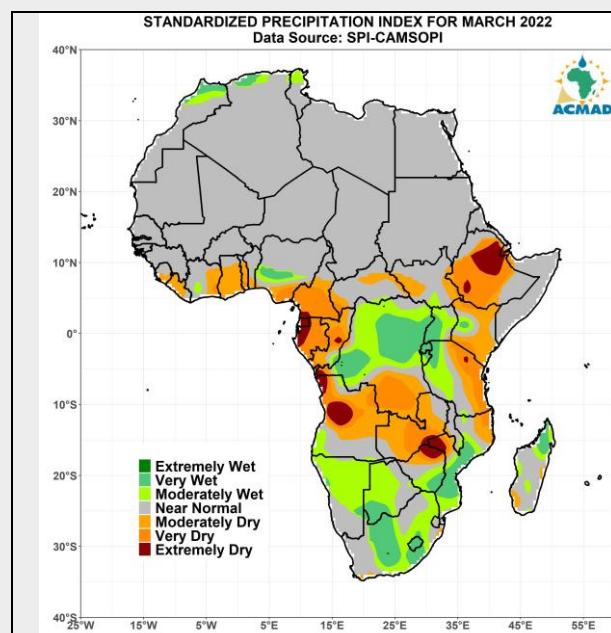
The Sea Surface Temperatures over the Mediterranean Sea have been near average March 2022. Model outputs and experts judgment predict persistence of these conditions during the next seasons (AMJ to MJJ 2022).

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

During March 2022, above to well above average was observed over North and East DRC, Uganda, Rwanda, Burundi, northwest Tanzania, Southernmost Malawi, central Mozambique, north Madagascar, South Zimbabwe, a large part of Botswana, South East South Africa, Namibia, North Morocco, Algeria, and North Tunisia.

Below and well below average precipitation was observed over Ethiopia, east and southern Kenya, east Tanzania, and Central and south Zambia stretching toward north Zimbabwe and Mozambique, Western Angola, and Gabon, from central to south Cameroon, southern Nigeria.

Figure 2: Precipitation in percent of average for March 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 March 2022 reveals that very dry to extremely dry conditions were observed over Ethiopia, Kenya, East Tanzania and Mozambique, Zambia, northeast Zimbabwe towards Mozambique, much of Angola, Gabon, Congo Republic, Cameroon south Nigeria south Benin, Togo, Ghana, Liberia and South sierra Leone.

Very wet to extremely wet conditions were recorded over north Morocco, Algeria, Tunisia, DRC, Burundi, Rwanda, Western Tanzania, central to southern Mozambique, South Africa, Namibia and a pocket part of central Nigeria.

Figure 3: Standardized precipitation index for March 2022. Green correspond 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

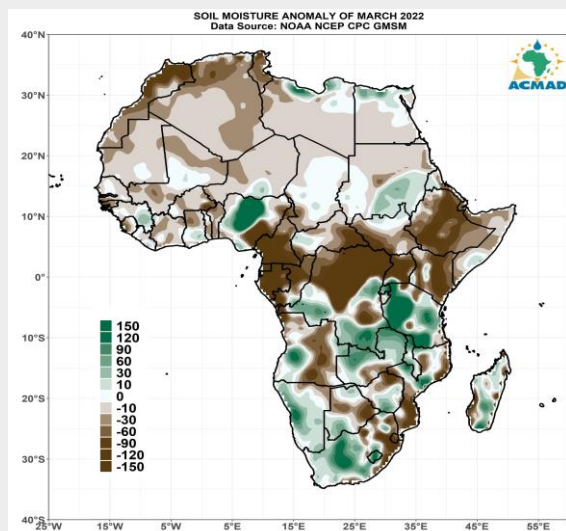
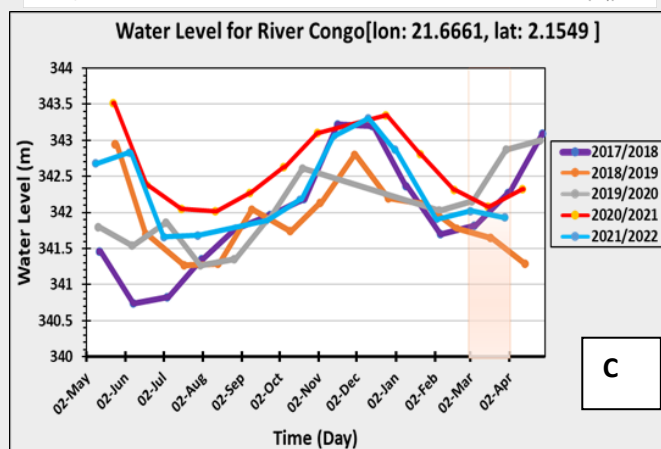
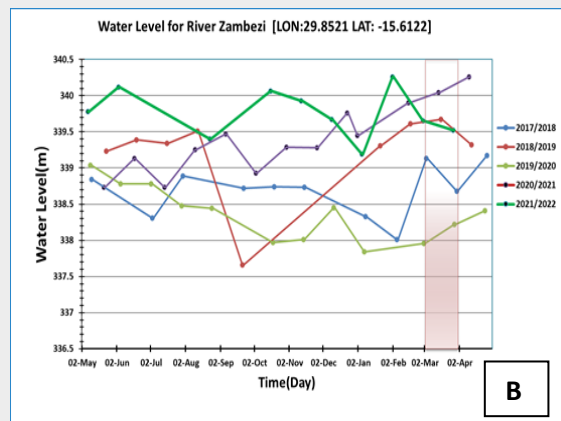
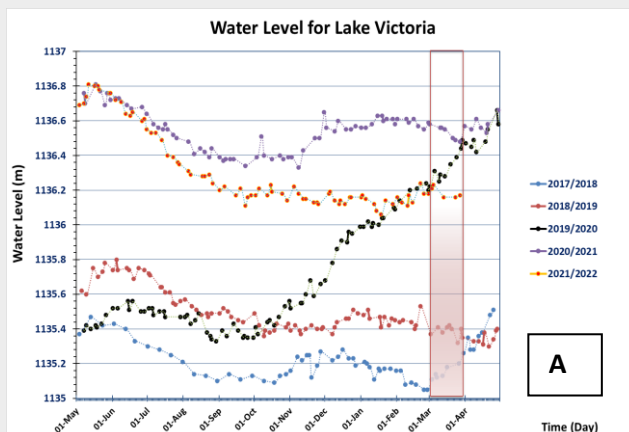


Figure 4: Soil moisture anomaly for March 2022. Green corresponds to positive anomalies, white to near-average soil moisture conditions, brown and dark brown denote negative anomalies. Data source: <http://www.esrl.noaa.gov/psd/data/gridded/data.cpcsoil.html>

Strong to moderate moisture deficit was located over parts of North Africa, West Africa, and Much of central Africa: Cameroon, Gabon, central Africa, South Soudan, Ethiopia, Uganda, Kenya, Somalia, and North-central DRC, western Angola, southern Mozambique and eastern Most south Africa.

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

1.5. WATER LEVEL



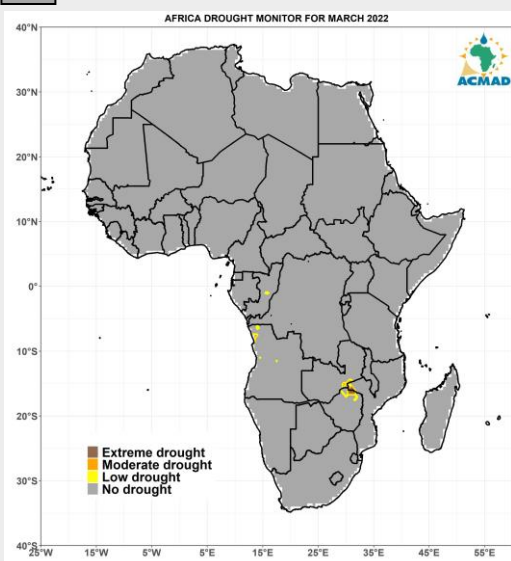
A cumulative precipitation excess was recorded during the past months over Eastern Africa, leading to the observed increase in water levels in Lake Victoria during March 2022 compared to the previous month. Poor rainfall observed in the Congo and Zambezi basins contributed to a decrease in water levels 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



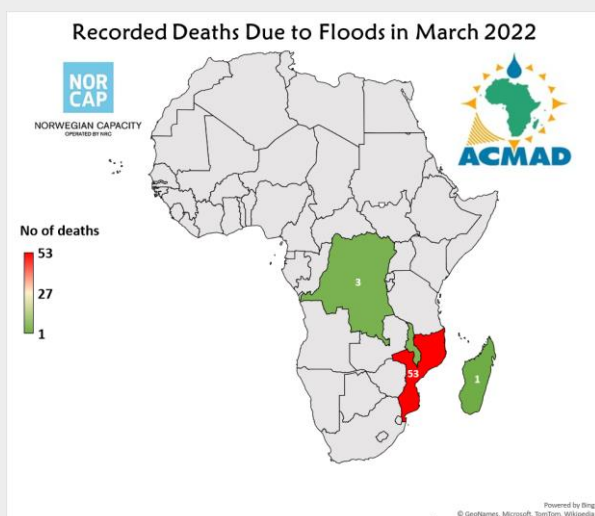
Given the cumulative precipitation deficits during the past and the month of March, SPI and soil moisture deficits, the adjacent map characterizes the drought situation in Africa during March 2022.

Moderate drought during March was observed over some parts of Angola, Northeast Zimbabwe towards Zambia, This is due to the poor rainfall leading to negative moisture ground conditions in the region.

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

III. RECORDED IMPACTS

More than 448,800 people have been affected by tropical Gombe in Mozambique (floodlist, March 2022).



A Total of 60 deaths due flooding have been recorded during February

At least 53 peoples have died in Mozambique and at least 4 person have died in Malawi, 3 people died in DRC and 1 in Madagascar (floodlist, March 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 April-May-June (AMJ) and May-June-July (MJJ) 2022 seasons across Africa (see the figures: Fig7, Fig8, Fig9 and Fig10):

During the April to July 2022 period :

The outlooks for the rainfall season during the April to July 2022 period are normal to below and below average is expected over Morocco, southern Guinea Gulf, Cameroon, Gabon, southern Ethiopia, Somalia, Kenya and southern Madagascar

Normal to above precipitation is very likely over southern Mali, Niger, northern Guinea, south-western Burkina Faso, northern Nigeria, central Chad, southern Sudan, northern South-Sudan, southern-western and easternmost of DRC, southern-west of Angola, southern Tanzania, Malawi, northern Mozambique and Madagascar from April to July 2022.

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

From April to July 2022, Near to above average temperature is very likely over Morocco, much of Algeria, Libya, north and central Mauritania, northern Mali, south-eastern Angola, and western Zambia. Much of Botswana, Zimbabwe and western Mozambique.

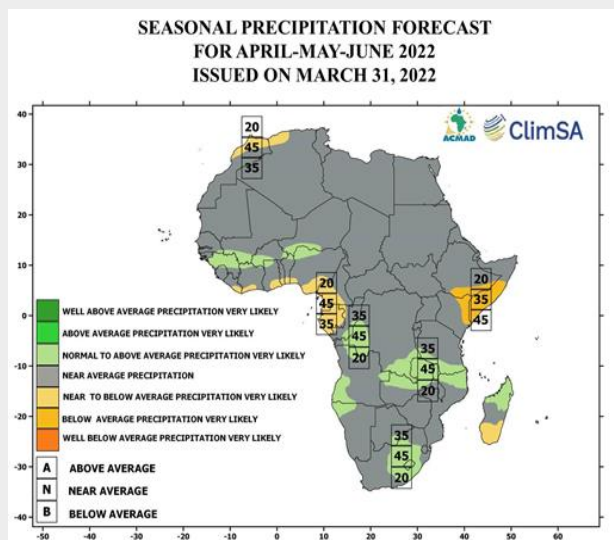


Figure 7: Seasonal precipitation forecast for
April-May-June 2022

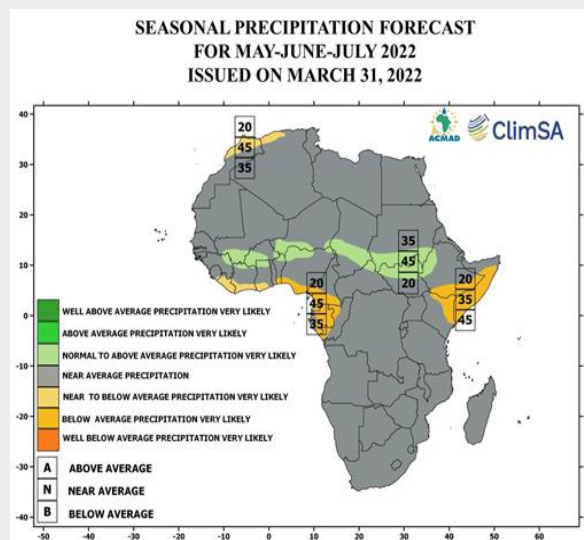


Figure 8: Seasonal precipitation forecast for
May-June-July 2022

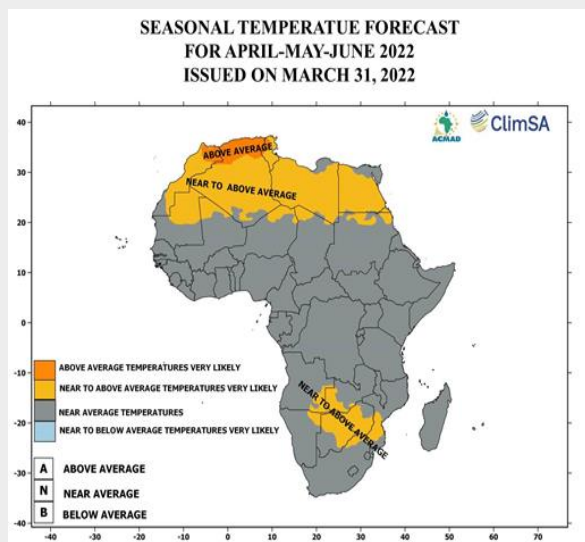


Figure 9: Seasonal Temperature forecast for
April-May-June 2022

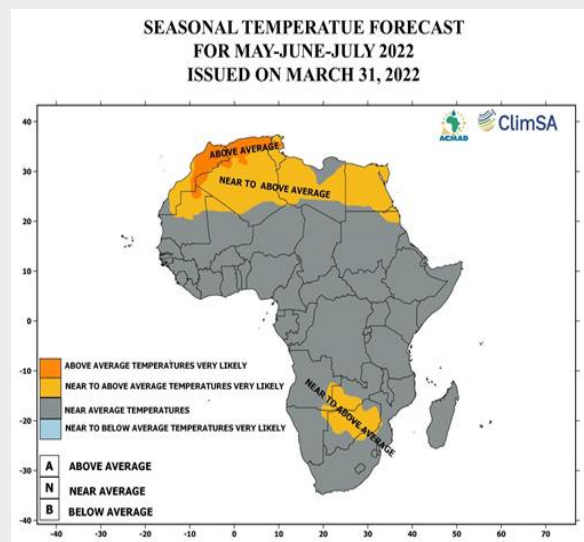


Figure 10: Seasonal Temperature forecast for
May-June-July 2022

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 and below average is expected over Morocco, southern Guinea Gulf, Cameroon, Gabon, southern Ethiopia, Somalia, Kenya and southern Madagascar.

Normal to above precipitation is very likely over southern Mali, Niger, northern Guinea, south-western Burkina Faso, northern Nigeria, central Chad, southern Sudan, northern South-Sudan, southern-western and easternmost of DRC, southern-west of Angola, southern Tanzania, Malawi, northern Mozambique and Madagascar from April to July 2022.

Above average Temperature is very likely over northern Morocco, Algeria and Tunisia from April to July 2022

Near to above average temperature is very likely over Morocco, much of Algeria, Libya, north and central Mauritania, northern Mali, south-eastern Angola, and western Zambia. Much of Botswana, Zimbabwe and western Mozambique.

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 southern Mali, Niger, northern Guinea, south-western Burkina Faso, northern Nigeria, central Chad, southern Sudan, northern South-Sudan, southern-western and easternmost of DRC, southern-west of Angola,

southern Tanzania, Malawi, northern Mozambique and Madagascar from April to July 2022

- ✓ Above average Temperature is very likely over northern Morocco, Algeria and Tunisia from April to July 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 which 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).