

Status of Drought across the Eastern Horn of Africa

2020 - 2022 Period



Main Highlights

- The eastern Horn of Africa region has experienced drought conditions following consecutive poor seasons since late 2020 leading to significant impacts on production, vegetation, water resources, food insecurity and livelihoods.
- Severe water shortage and significant vegetation deficits has grossly impacted on livestock production, productivity and body condition that has lowered their market prices amidst rising food prices. Over 3 million livestock deaths have occurred in Kenya and Ethiopia while official reporting for Somalia is lacking.
- The combined effect of drought and other shocks has led to significant deterioration in food security from 12-14 million people in first quarter of 2022 to at least 15 - 16 million in the second quarter as the drought conditions intensified.
- The much-awaited March-May rains to replenish water resources, regenerate vegetation and support crop production started late and were generally low (below 20mm) in most drought affected areas in March. In April, the rainfall amount and geographic coverage increased including to south-central Somalia but have largely remained below-average.
- As a result, the vegetation is still in poor condition but might slightly improve towards the end of season given that it takes time for vegetation to respond to moisture availability. However, high temperatures amidst below-average rains implies that rangelands may not fully recover and might experience earlier-than-normal deterioration in coming months. Similarly, water resources across northeastern Kenya, southern and southeast Ethiopia and Somalia have not adequately replenished and communities will continue facing water shortage. Measures to enhance access to water in coming months are needed.
- The onset of rains has allowed for crop planting to start including in parts of Somalia. However, the seasonal harvests might be affected by reduced area planted, insufficient moisture, and other socio-economic factors leading to a consecutive season with below-average harvests.
- The current seasonal performance (March-April 2022) mirrors the situation in 2021 unlike other drought years (2011, 2017, 2019) that had significant rainfall deficits. However, the vegetation and land surface temperature in early April mirrors that of 2011 and 2019. It is there possible that the situation could deteriorate further and much faster given the likelihood of below-average rainfall and high temperatures in May in eastern Kenya, southeast Ethiopia and parts of Somalia. The RAM unit will continue monitoring the situation, providing updates for decision-making and programming.

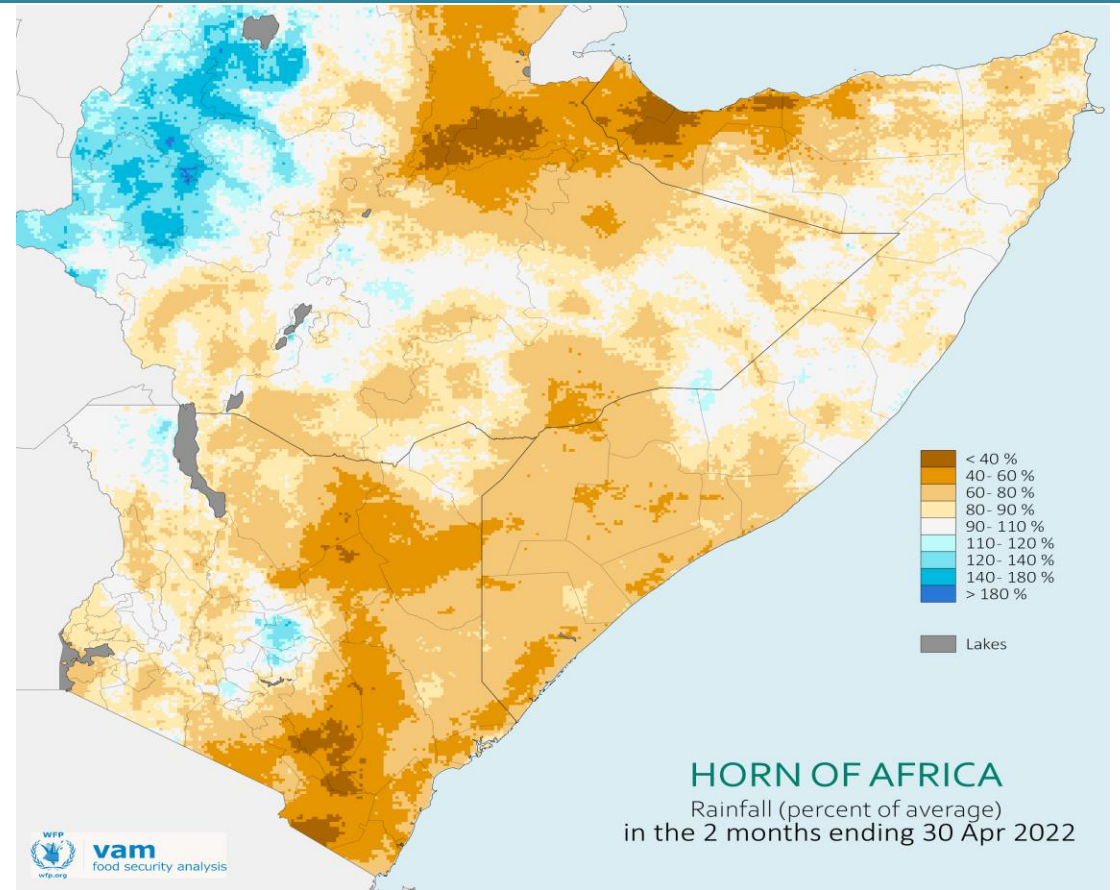
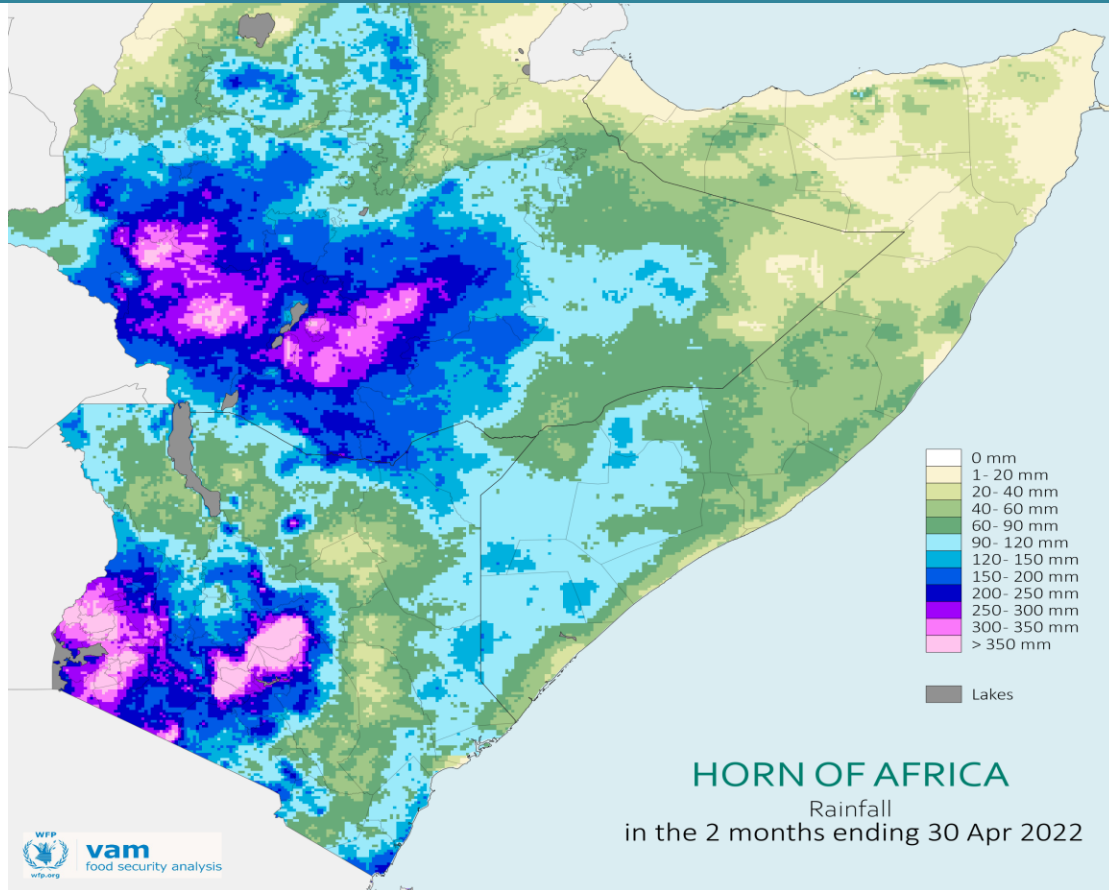
Background Information

- The eastern Horn of Africa region comprising Somalia, Arid and Semi-Arid Lands (ASALs) in Kenya, and southern and southeast Ethiopia is experiencing one of the most severe droughts following 3 consecutive below-average rainfall seasons since late 2020 leading to significant implications on food security and livelihoods of the affected populations.
- Over the three consecutive seasons, below-average rainfall and drought conditions impacted on crop production in marginal cropping areas of Kenya and Somalia. For instance, during the 2021 October-December short rains season, cereal production in southern Somalia declined to 42,700 MT (58 percent lower than the 1995-2020 average) - the third lowest Deyr harvest since 2010 - while in northwest Somalia, cereal production was 17,200 MT (56 percent lower than 2010-2020 average). During the same period, production in Kenya was 45-50 percent of 5-years average.
- Consecutive poor seasons, high temperatures over the January-March period led to severe water shortages particularly across Somalia. Millions of people are facing dire water shortages as surface water points dried up or water levels declined and diminished in quality. In worst affected areas in Somalia, the need for water trucking pushed water prices up since late 2021. In March 2022, the prices ranged between USD2-6/200L in parts of Somaliland, southwest, Hirshabelle, and Jubaland (WFP). In Kenya, the trekking distances to water points by households and livestock increased by between 2-6 km, and 15-20 km, respectively. In Ethiopia, surface water points started drying up or the water levels declined tremendously necessitating livestock outmigration.
- Coupled with deteriorating vegetation due to warmer-than-normal temperatures and utilisation, severe water shortage and unusual long trekking distances in search of water and pastures affected the livestock body condition, production and productivity, and increased competition and conflicts over the dwindling resources. Similarly, unusual livestock deaths increased reaching over 3 million in Kenya's ASAL counties, and in Ethiopia's Somali, Oromiya and southern SNNPR regions. In Somalia, no official reporting has been made despite incidences in Juba cattle pastoral, Coastal deeh pastoral, Southern Agro-pastoral, and Addun pastoral livelihood zones among other areas.

Background Information (conti..)

- At the same time, food prices kept rising in many drought-affected areas, due to a combination of below-average harvests, macro-economic challenges, and the general rising prices on international markets, including the impacts of the current Russia-Ukraine conflicts. This is against declining purchasing power due to declining livestock prices and limited agricultural wage labour opportunities. Many households were hence unable to afford even the basic food basket leading to huge consumption gaps among the pastoral and agropastoral livelihoods.
- Consequently, food insecurity deteriorated to between 12 and 14 million people in early 2022, which has further worsened to 15-16 million in the second quarter as the drought conditions intensified. This includes 6.1 million in Somalia, which is at risk of famine in coming months. Malnutrition is also high among children under 5-years and among pregnant and lactating women particularly in Somalia due to inadequate consumption following inadequate crop production, rising food prices, and insufficient access to water for consumption.
- Besides this, rainfall forecasts (local, regional and global) for the March-May 2022 rainfall season pointed towards a below-average performance especially in most drought affected areas. While the seasonal rains normally start in March and peak in April, the forecasts pointed to likelihood of delayed start. By mid-March, most benefiting areas had not received any rains and the distribution over space raised concern of a likely fourth consecutive poor season that could lead to an unprecedented climate emergency in the region.
- It is against this backdrop that this seasonal update is generated to provide an overview of the on-going March-May season for early-warning and early action.

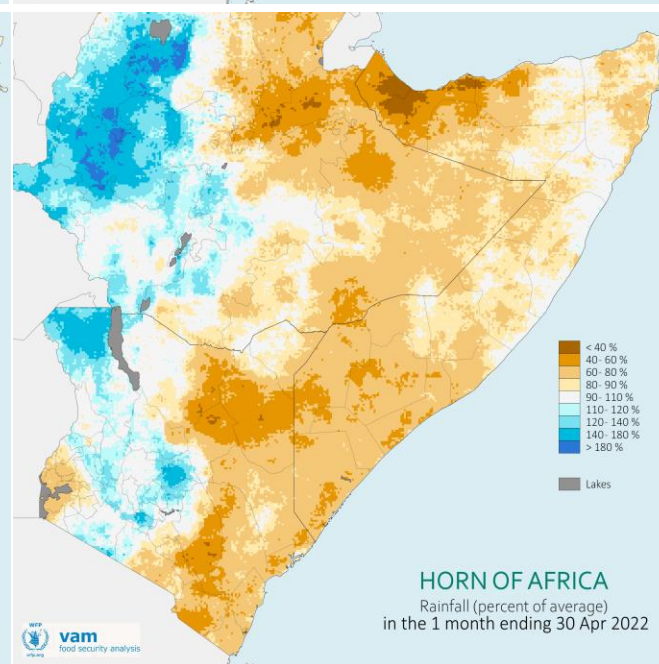
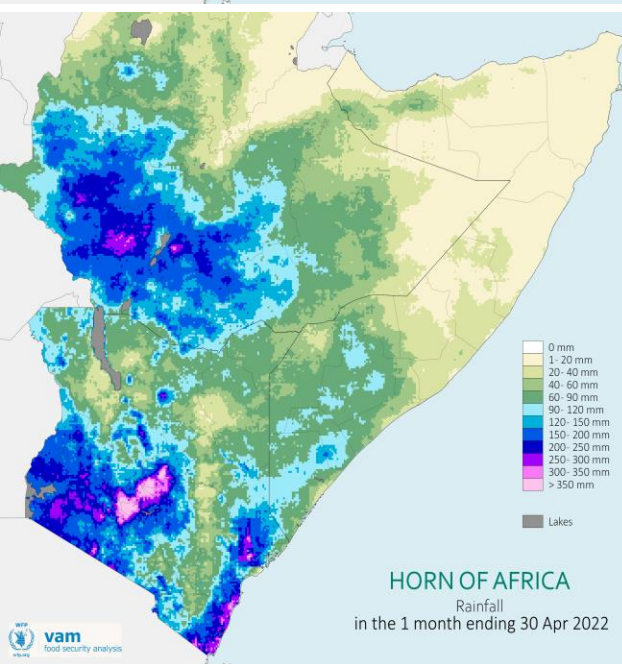
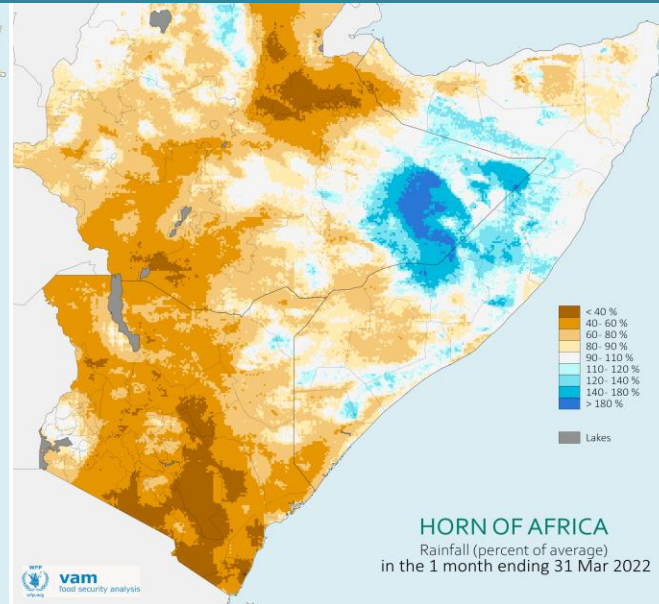
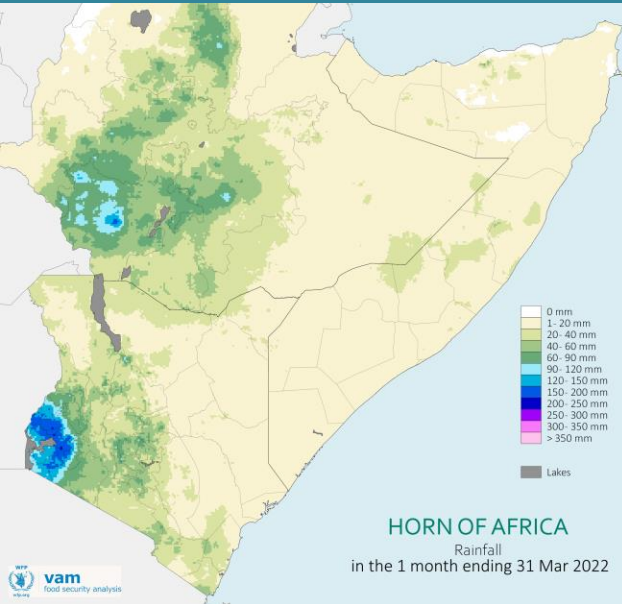
Rainfall Performance over March-April 2022 Season



Seasonal rainfall performance and anomaly for 2 months ending 30th April 2022 as a percentage of average (top). Brown shades indicate below-average rainfall; blue shades above-average seasonal rainfall (Source: CHIRPS, CHG. USCB).

- The cumulative rainfall amount over March to April show that the rains have start in most areas. Most of Kenya, southwest and southern Ethiopia, and parts of southern Somalia will have attained over 100mm of rain (Map on left) but generally below-average except in central Kenya, central Somalia, and localised areas in southern and southeast Ethiopia (Map on right).
- Although the received rains will to some extent provide some relief from the on-going drought, the overall seasonal rains might be insufficient to make a significant impact. This is because April is the peak rainfall month during the March-May season, and forecasts indicate chances of below-average rains in eastern areas of the region in May.

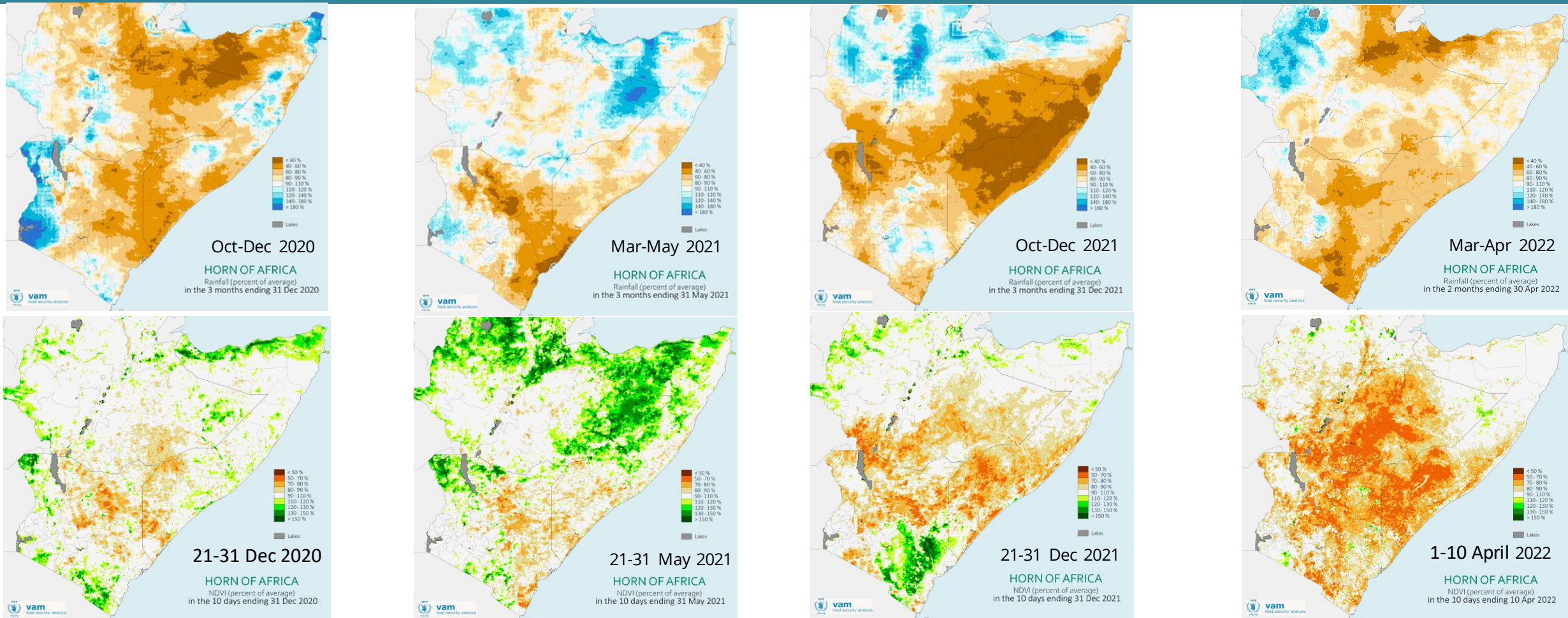
Rainfall Distribution over Time and Space



- In March, most drought affected pastoral and agropastoral areas remained dry or received very minimal rainfall (<20mm of rain) that was insufficient to replenish water sources (slide 11) or enhance soil moisture for vegetation growth (see slide 12).
- In the agricultural areas in Rift Valley, central, eastern and coastal Kenya, and Belg producing areas of Ethiopia, insufficient moisture led to delayed land preparation, crop planting and establishment that normally starts in February and/or March.
- In April, the rains intensified and spread eastwards into pastoral areas of Kenya, southern Somalia and southern Ethiopia despite being below-average. The rains allowed for crop planting to start in parts of southern Somalia.
- The insitu rains in southern Somalia alongside inflows from Ethiopia highlands have led to increasing water levels in Juba and Shabelle rivers. However, no significant irrigated cropping is taking place due to unreliable rainfall pattern, lack of farming inputs, households consumed seed stocks due to prolonged drought.

Rainfall performance and anomaly for March (above) and April (below) as a percentage of average (top). Brown shades indicate below-average rainfall; blue shades above-average seasonal rainfall (Source: CHIRPS, CHG, USCB).

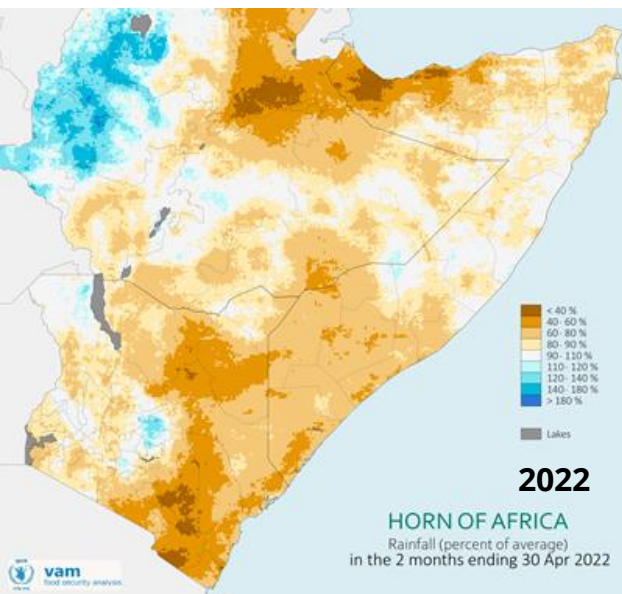
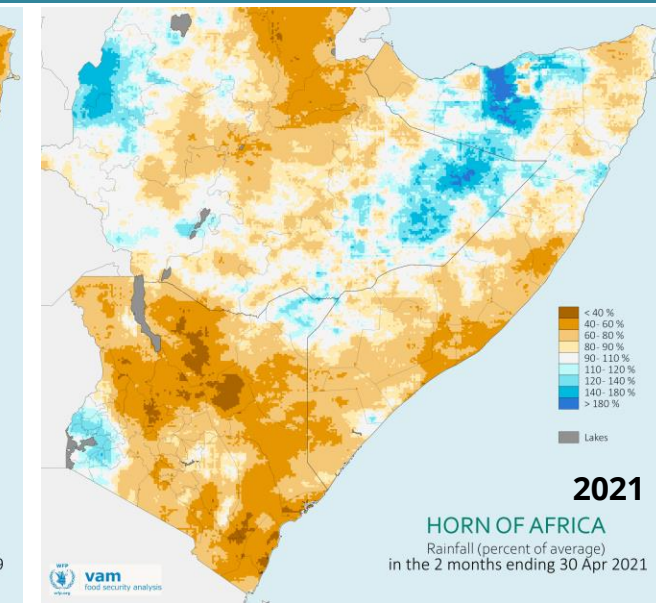
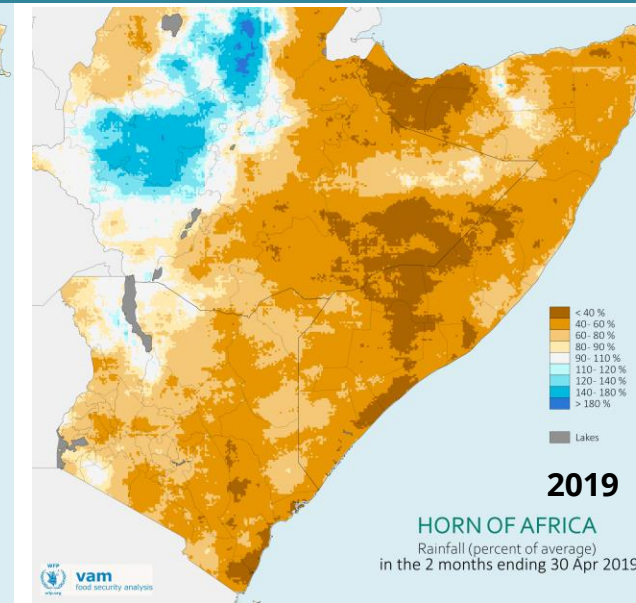
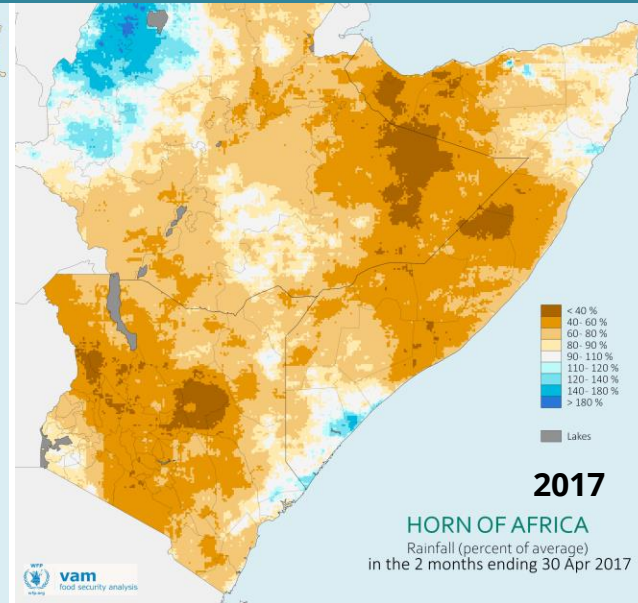
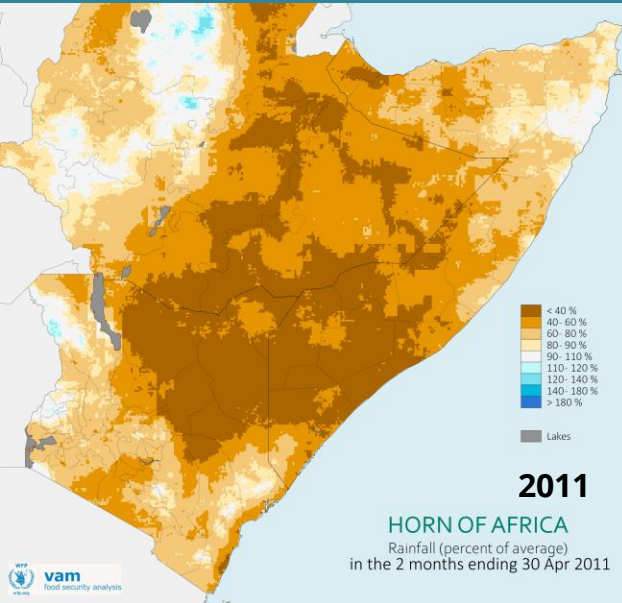
Below-Average Performance following consecutive poor seasons Since late 2020



Seasonal rainfall anomaly for MAM & OND 2020, 2021 & March-April 2022 as a percentage of 20-year average (top). Brown shades indicate below-average rainfall; blue shades above-average seasonal rainfall (Source: CHIRPS, CHG, USCB). Average dekadal vegetation conditions by end of corresponding season and current situation (bottom). Green shades indicate better-than-normal vegetation while shades of orange to red, below-average situation (MODIS, NDVI).

- While it is still early to conclude on the overall performance of the March-May 2022 season, a below-average March-April 2022 rainfall performance (Maps on extreme right) could point to a possibility of another poor season. If this materialises, it will be the fourth consecutive poor season since late 2020 that could lead to an unprecedented climate emergency in the region with significant food insecurity and implications on the livelihoods of the affected populations.
- It is also worth noting that while significant vegetation deficit is notable in early April 2022 due to cumulative effect of previous poor seasons, some improvement is expected following the rains in April.

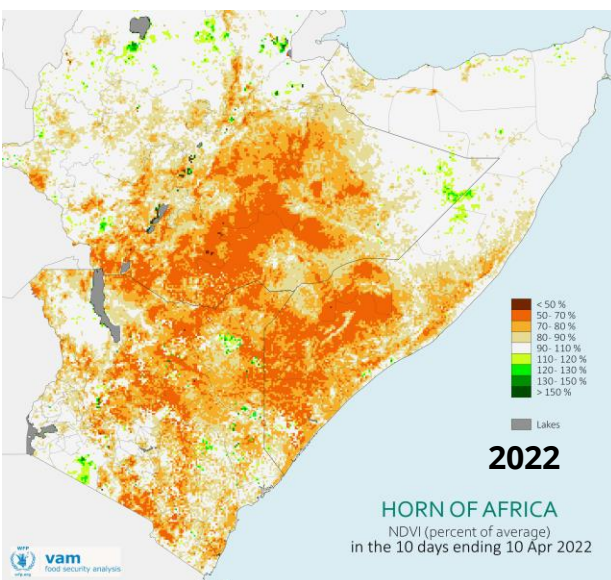
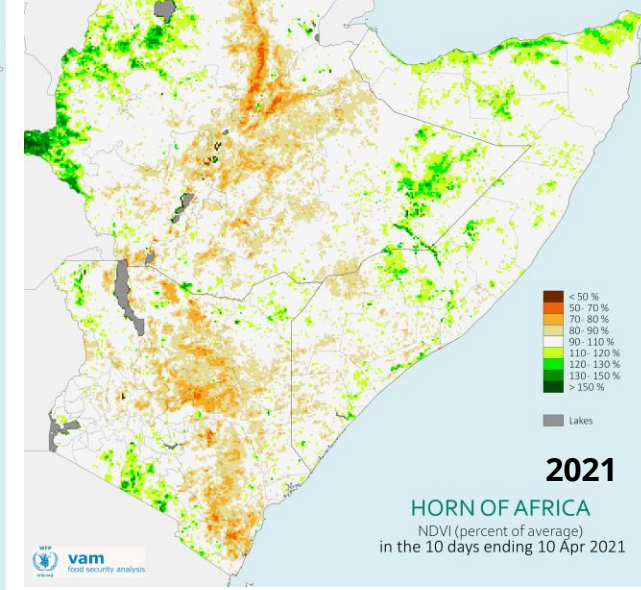
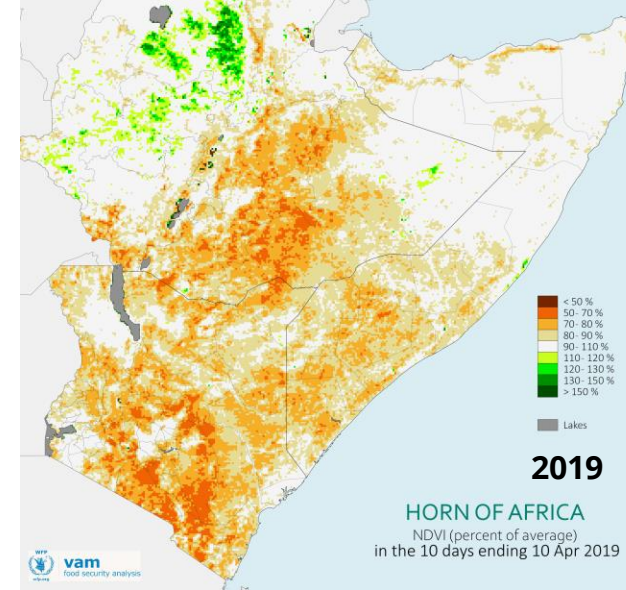
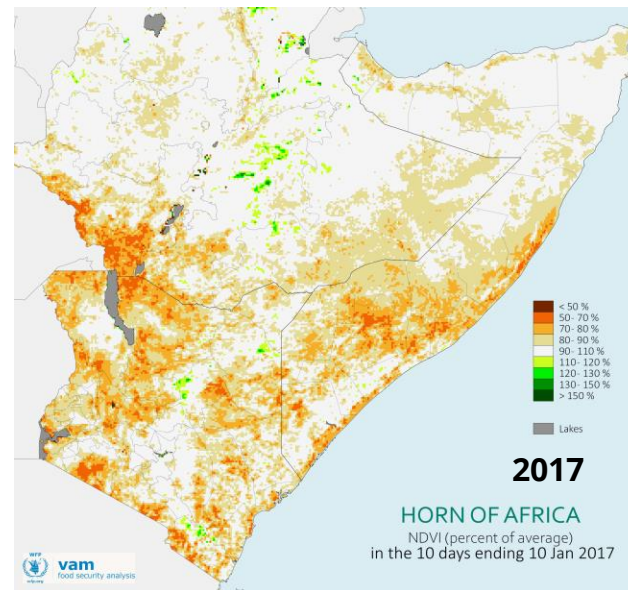
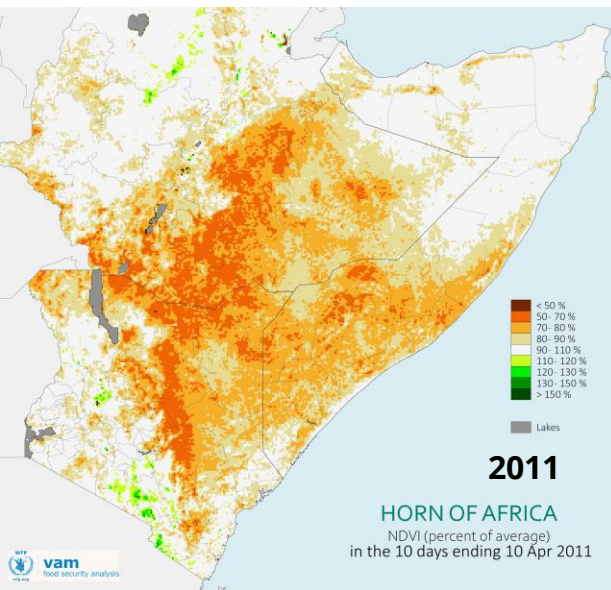
Current Season (March-April) Compared with Previous Drought Years



Rainfall anomaly for March-April 2022 compared to previous drought years as a percentage of 20-year average (top). Brown shades indicate below-average rainfall; blue shades above-average seasonal rainfall (Source: CHIRPS, CHG, USCB). The 2022 anomaly constitutes rainfall upto 20th April combined with the forecast for the last 10 days of month.

- The below-average cumulative rainfall in March-April mirrors to some extent the situation in 2021 but less severe than in 2011, 2017 and 2019 seasons especially in southern and central Somalia. During those years, there were significant rainfall deficits in many areas of the region as shown in maps above.
- It is however worthwhile to note that although the 2022 rainfall deficit is less severe, April is the peak rainfall month during the March-May season and the prospects for May are not promising based on the forecasts and therefore the situation might get worse as in previous drought years. Moreover, the environmental and socio-economic impacts of the current drought are quite severe given the cumulative effects of past 3 poor seasons.

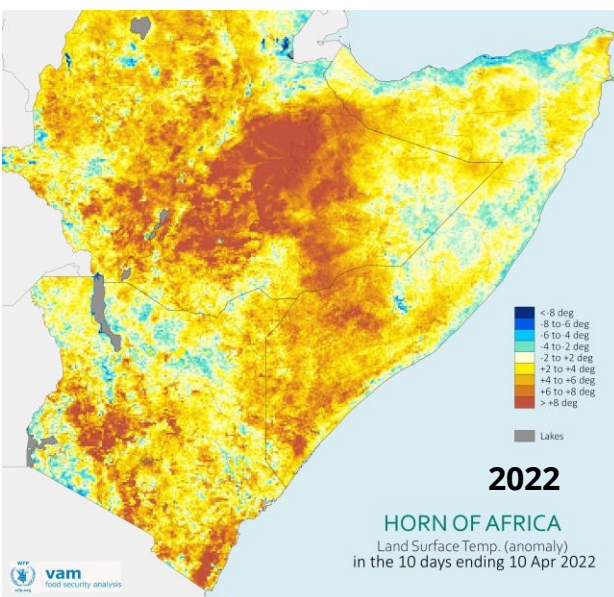
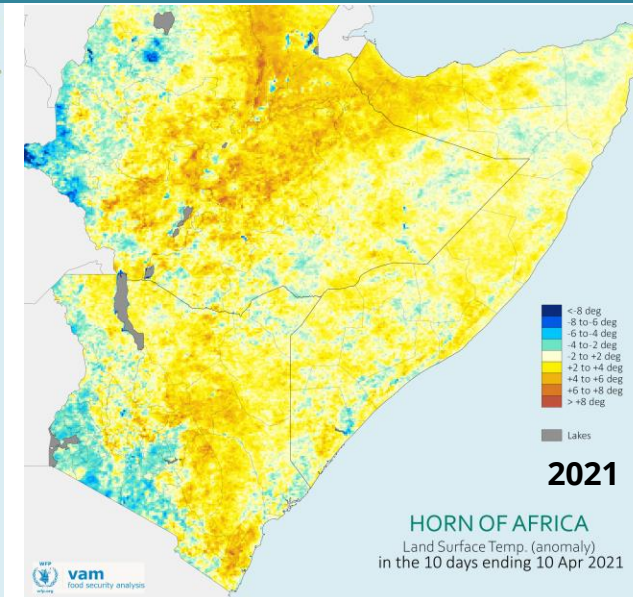
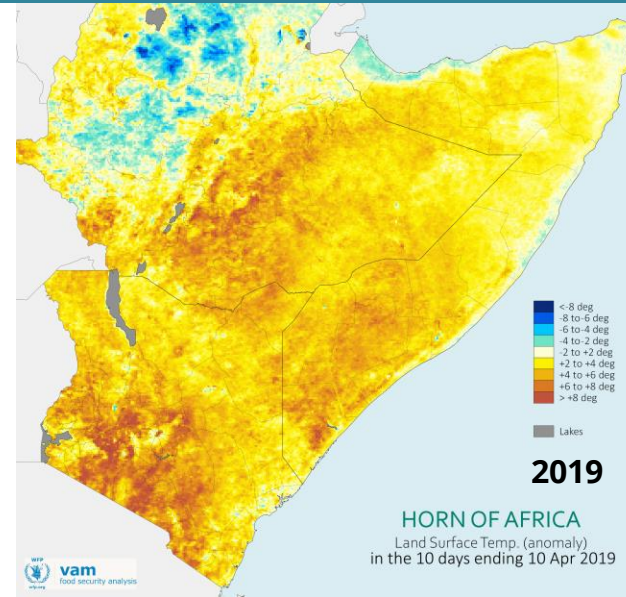
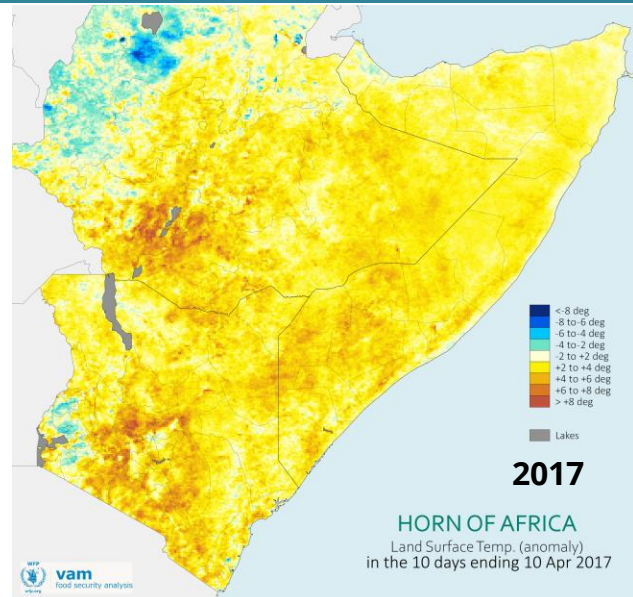
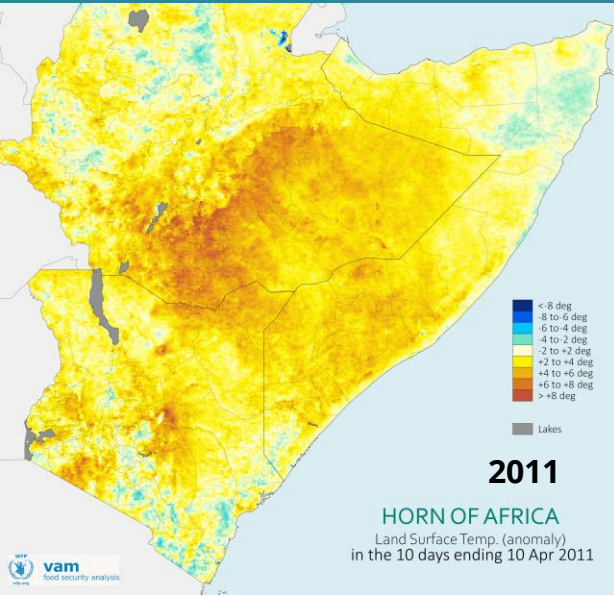
Vegetation Condition in early April (1st-10th April) Compared with Previous Drought Years



Vegetation anomaly in early April (1st-10th April) compared to during previous drought years. Green shades indicate better-than-normal vegetation while shades of orange to red, below-average situation (MODIS, NDVI).

- The significant vegetation deficit in southern Somalia, southern and southeast Ethiopia, and northeastern Kenya in early April show that regeneration has not taken place in many areas.
- The vegetation deficit mirrors the situation during the same period in 2011 and to some extent in 2019. The significant deficit is due to the cumulative effect of drought conditions, inadequate moisture and the lag phase between moisture availability and plant growth.
- The situation implies limited availability of grazing resources in pastoral and agropastoral areas which will continue impacting negatively on livestock recovery. Most will remain in poor body condition for quite some time with livestock deaths likely continuing in worst affected areas.

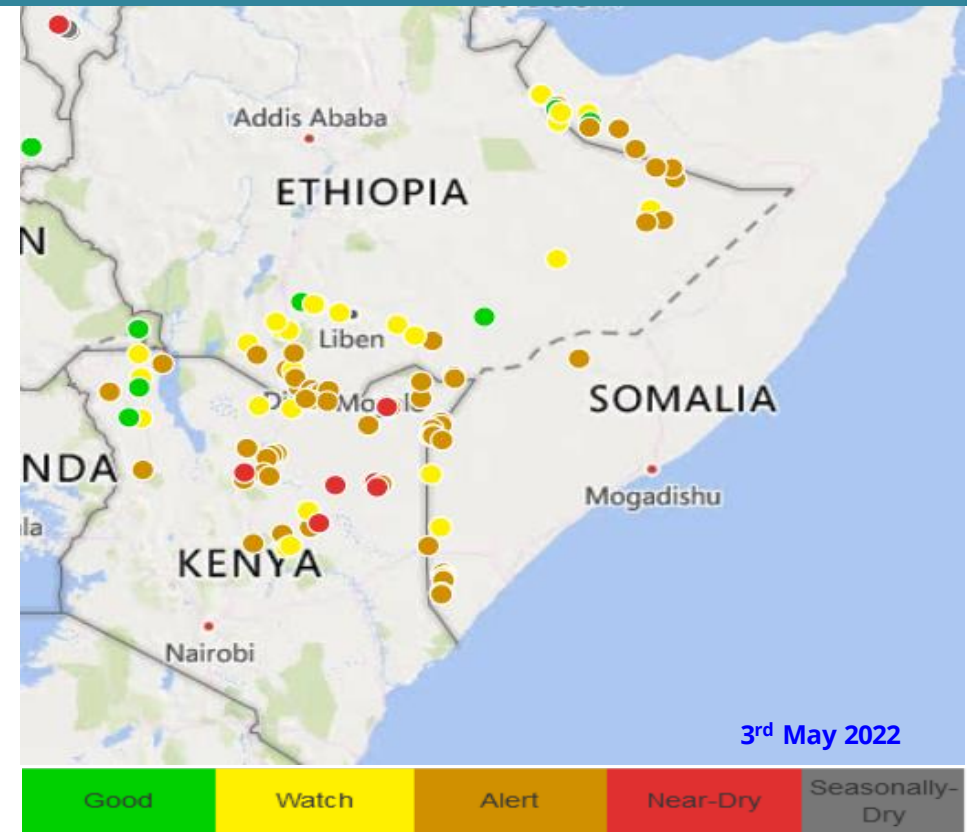
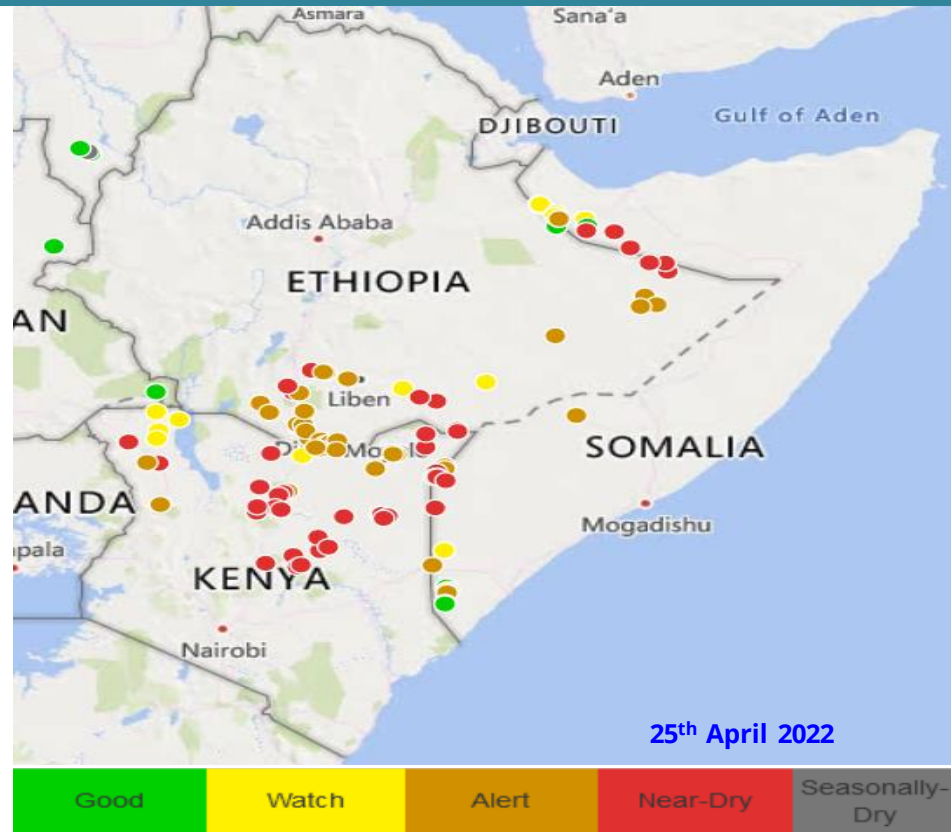
Land Surface Temperature in Early April Compared to Previous Drought Years



Land surface temperature anomaly in early April (1st-10th April) compared to during previous drought years. Light blue to blue shades indicate cooler-than-normal while shades of orange to brown, warmer than normal conditions.

- Available data on land surface temperature anomalies for 1st-10th April 2022 show that most areas of Ethiopia, southern Somalia, and lower Kenya were warmer-than-normal (Map on lower left) probably due to the prolonged dry conditions. Similar warmer-than-normal land surface temperatures were experienced in early April 2019 following delayed start of seasonal rains.
- Warmer-than-normal temperature amidst inadequate moisture/rainfall increases evapotranspiration and suppress plant growth, and impacts on water availability through evaporation (see next slide).
- Hence, the combined high temperatures and inadequate moisture can be associated with the high vegetation deficits observed in early April unlike in 2017, 2019 and 2021 droughts.

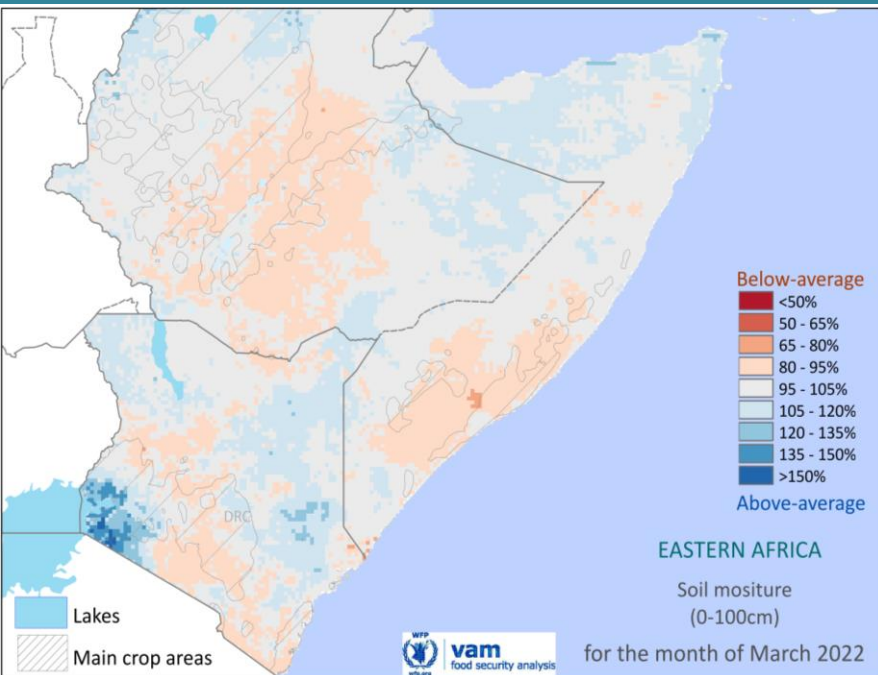
Status of Water Points by April 2022



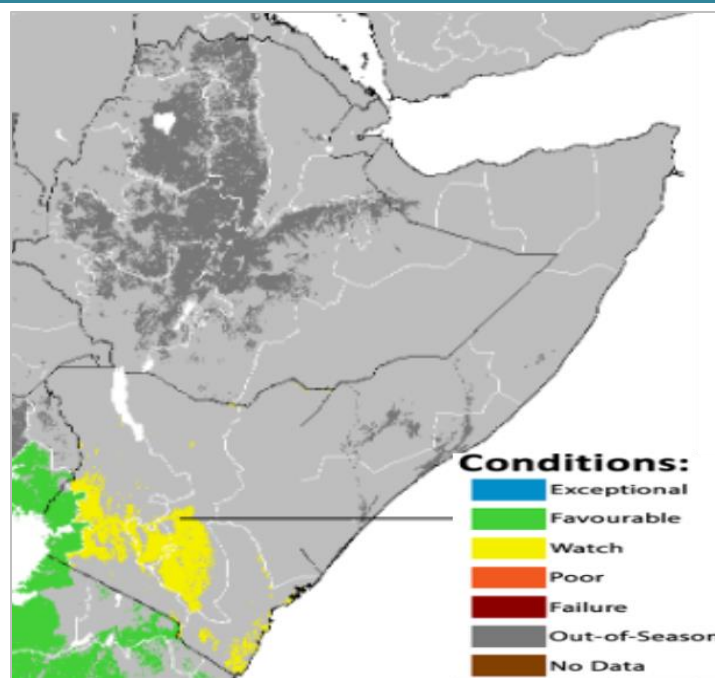
Status of water points by 25th April (left) and 3rd May 2022 (right) based on RFE; Green for good and orange to reddish for alert to nearly-dry water points

- Despite some slight improvement in early May compared to late April, water scarcity remains a problem in northeast Kenya, southern Ethiopia and Somalia given that most water points are still in alert to near-dry conditions following inadequate rainfall and impact of previous below-average seasons.
- The below-average rainfall forecast in May over eastern Kenya, southeast Ethiopia and Somalia reduces the likelihood of adequate water replenishment, hence, water trucking in severely drought affected areas will still be required. Water prices will likely remain high especially in Somalia.
- Moreover, given the likelihood of earlier-than-normal depletion of available water resources, contingency measures to allow communities access adequate water in coming months are needed.

Soil Moisture and Agricultural Activities



Soil moisture in March 2022; bluish for above-average and orange to reddish for below-average



A synthesis of crops condition by 28th March 2022, (GeoGLAM)

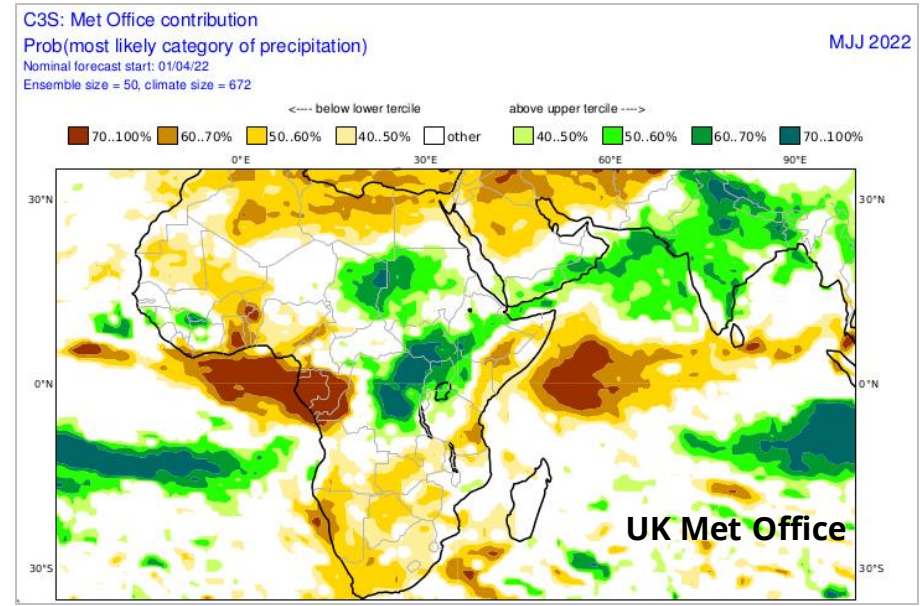
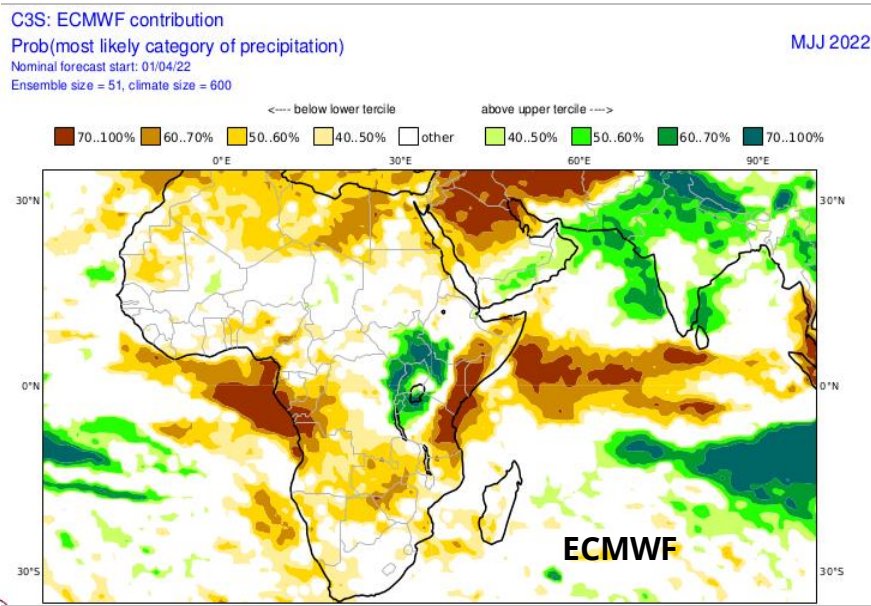
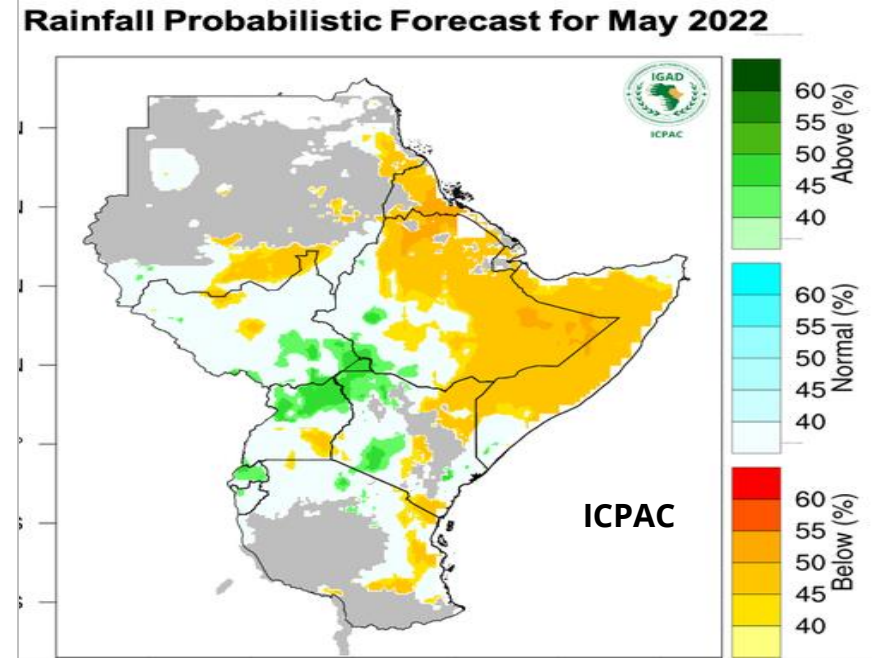
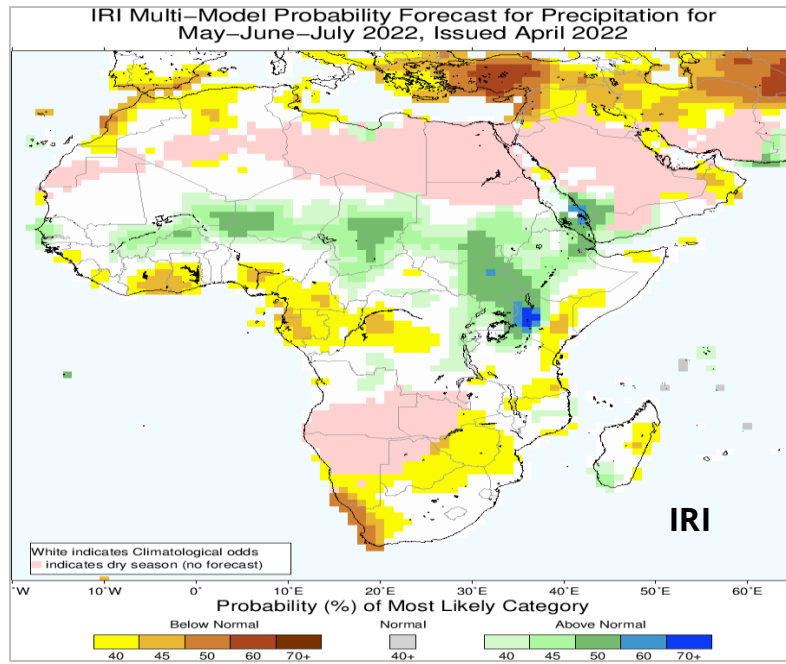
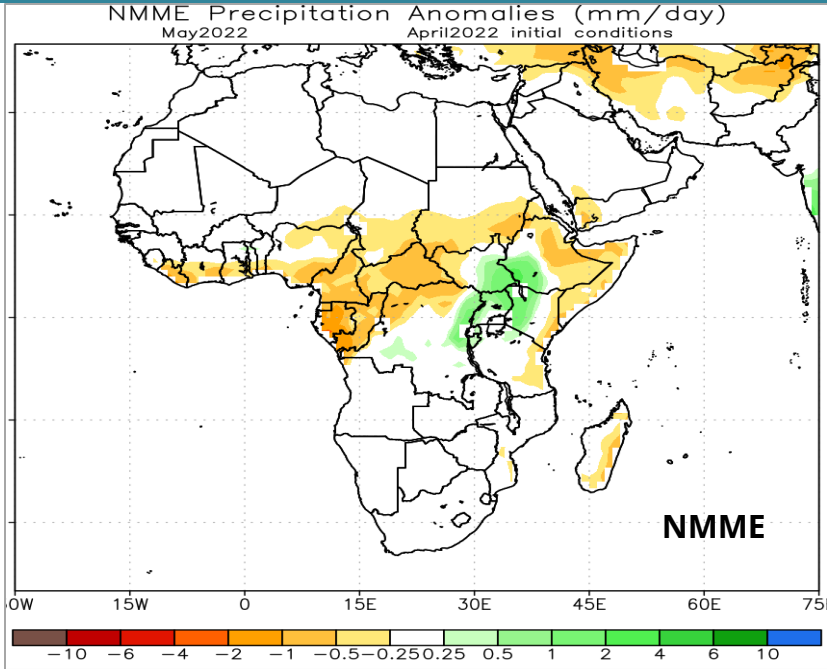
Cropping status

- In the marginal agricultural areas of Kenya, the cropping status is broadly under watch status. However, the received rains, even though below-average, will allow for crop establishment.
- In Somalia, it is reported that crop planting started in some southern areas in April after the onset of rains while in Bakool, parts of Bay, Gedo, Galgaduud and Mudug, planting was yet to start due to insufficient or no rains. Moreover, there is the challenge of high inputs cost and reduced labour supply.
- The water levels in Juba and Shabelle rivers are rising following rains in Ethiopia highlands but irrigated agriculture remain insignificant.
- There is likelihood of below-average seasonal harvests in June/July period due to delayed planting, inadequate moisture, reduced acreage under crops, and socio-economic challenges.

Soil moisture

- Most cropping areas in Belg producing areas of Ethiopia, Rift Valley and coastal Kenya, and southern Somalia had inadequate soil moisture in March (Map on left) following prolonged dry conditions, high land surface temperatures and delayed start of the seasonal rains.
- This was a limitation in areas where crop planting and establishment normally takes place in February-March such as the Belg producing areas of Ethiopia, the Rift Valley and marginal agricultural areas of eastern and coastal Kenya. Unless the moisture condition improves significantly as the rains progresses, seasonal cropping will be greatly affected.

Climate Outlook for the Month of May 2022 and Beyond



Rainfall forecast for May or May or May-July 2022 season by NMME (upper left), IRI (Upper centre), ICPAC (upper right), ECMWF (lower left) and UK Met Office (Lower right);

Climate Outlook for May 2022 and Implications

- The regional climate forecast for May by ICPAC points to below-average rains in most of southeast Ethiopia, Somalia and parts of northeast Kenya. Similarly, global models point towards a below-average rainfall in some of these areas in May or over May-July period. Land surface temperature will be above-average in most of the drought affected areas. This means that the overall below-average rains and high surface temperatures will continue impacting negatively across the region.
- In the short-term, the cumulative seasonal rains will provide some relief to the current drought through rangeland regeneration and water replenishment. However, the inadequate regeneration of rangelands will lead to earlier than normal vegetation and water deterioration in near future. This implies that some areas will continue experiencing the effect of the drought.
- The livestock body condition will also improve due to availability of grazing resources, which will to some extent improve household access to consumption products. However, livestock recovery and production will likely be compromised given that it takes several favourable seasons for livestock to breed and restock. The worst will be households that have lost their livestock assets through deaths as they will continue facing consumption gaps.
- While the start of rains is allowing for agricultural households to initiate crop planting both in the marginal areas of Kenya and Somalia, below-average rains in May could limit the late planted crops from reaching maturity. While irrigated agriculture along Juba and Shabelle rivers is not yet significant, water availability from the rising water levels could enable irrigated crops attain maturity. Nevertheless, the June-July harvests in both marginal agricultural areas of Kenya and Somalia are likely to be below-average for another consecutive season, further aggravating the food insecurity and malnutrition.

Data Sources:

Rainfall: CHIRPS, Climate Hazards Group, UCSB

Vegetation: MODIS NDVI, EOSDIS-NASA

Water points status: USGS/USAID/Fews Net Water Viewer

Temperature: ECMWF ERA5-Land data

Rainfall forecast:

- European Centre for Medium-Range Weather Forecasts (ECMWF),
- UK Met Office,
- North American Multi-Model Ensemble (NMME),
- International Research Institute (IRI) for Climate and Society at Columbia University
- IGAD Climate Prediction and Applications Centre (ICPAC)



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