

An Analysis of the Impacts of Ongoing Drought across the Eastern Horn of Africa

2020 - 2022 Period



vam
food security analysis



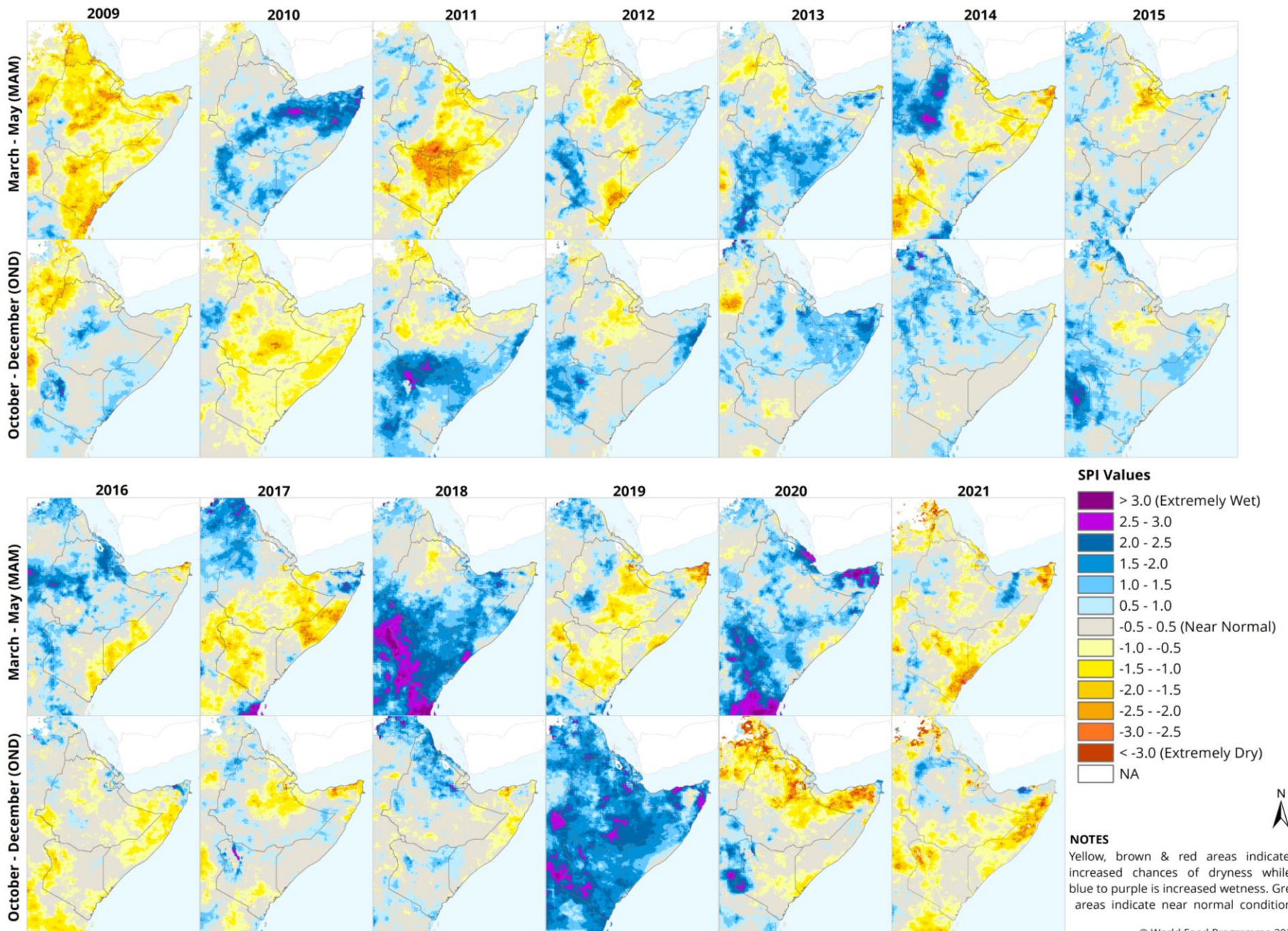
Research, Analysis and Monitoring (RAM) Unit
World Food Programme, Regional Bureau Nairobi

January - February 2022

Highlights

- Over the last one year, parts of the eastern Horn of Africa have experienced moderate to severe drought conditions following three consecutive poor rain seasons with significant impact on crop and livestock production, vegetation and water resources, as well as soil moisture.
- As of January 2022, the worst affected areas (and experiencing the driest conditions since 1981) were the southern pastoral areas of Ethiopia, northwest Kenya, and large swarths of south-central Somalia.
- **Approximately 13 million** people are expected to face severe acute food insecurity in the drought-stricken areas of the eastern HoA in the first quarter of 2022. Agro-pastoralists in marginal areas and pastoralists are the most hit, having lost significant herds and livestock productivity.
- Deyr crop harvests are projected to drop by 60-70% below long-term average in southern Somalia and in marginal agricultural areas in Kenya.
- The drought has triggered high food price inflation, reaching levels witnessed during the 2010/11 and the 2015/16 droughts.
- Over 2022Q1, the region will experience warmer-than-normal temperatures particularly over Ethiopia, Djibouti, north-eastern Kenya, and southern Somalia which will continue worsening the current drought conditions.
- The available rainfall forecasts as of early January 2022 (NMME, IRI, ECMWF, UK Met Office) for March-May season are not conclusive and provide contrasting information. It is key to note that even if an improvement in rainfall condition is realised, it will not have an immediate positive impact on the current dire food insecurity levels given that many pastoralists in the worst affected areas have lost most of their herds while for farmers, any reprieve will only occur around August.
- WFP HQ and RB RAM teams are monitoring the situation; and will jointly provide updates when the regional concurrence on the March-May 2022 forecast will be available.

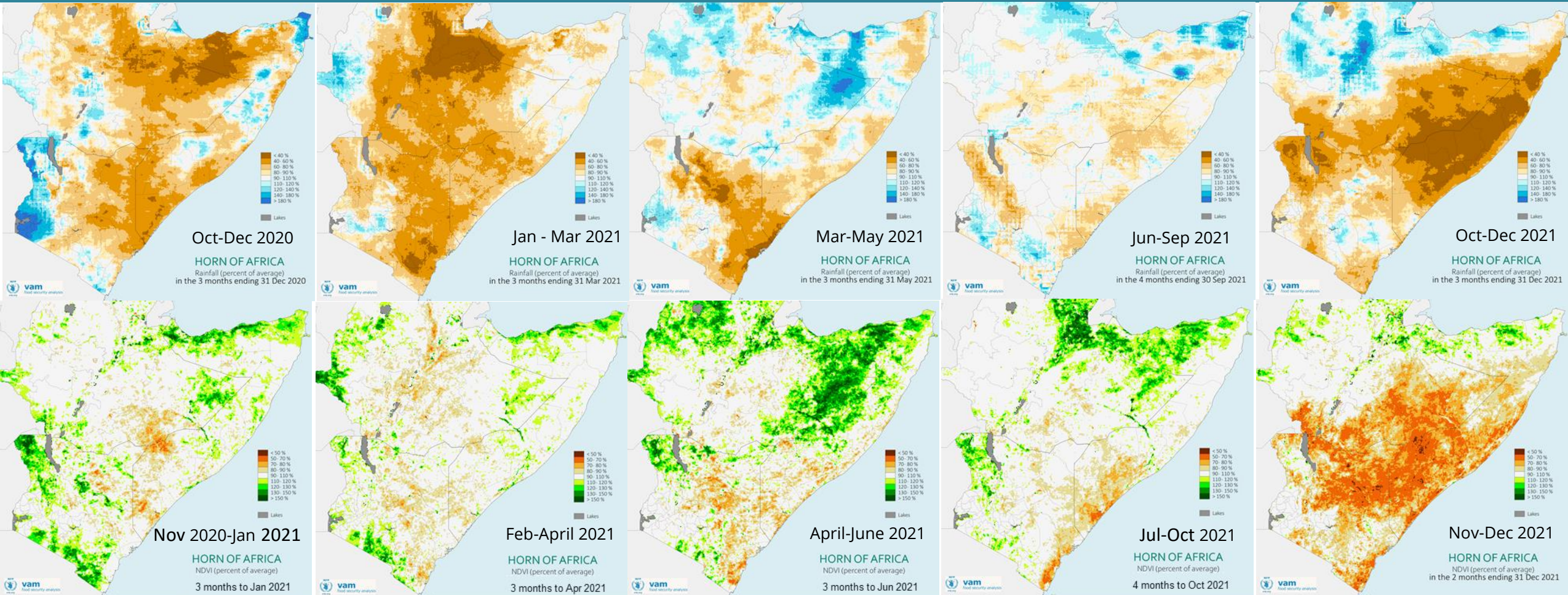
An Overview of Meteorological Conditions across the Eastern Horn of Africa (2009 – present)



- Severe drought events occurred in 2008/2009, 2010/2011 and 2016/2017.
- The 2013-2015 marked a period of relative calm with no major drought incidence.
- However, from 2016-2021, 9 of the 12 rainfall seasons have exhibited mild to severe drought conditions affecting some geographic areas.
- In addition to an increase in the frequency of droughts, there has also been 3 exceptionally wet seasons (MAM 2018, OND 2019 and MAM 2020) that resulted in massive flooding across the region.
- Currently, drought conditions prevail in the HoA, the worst affected areas being; south-central Somalia, pastoral areas of Kenya, and southern and southeast Ethiopia following 3 consecutive poor seasons since late 2020.

Seasonal Standardised Precipitation Index (SPI) for the period 2009-2021 (Source: CHIRPS, CHG, UCSB).

Rainfall & Growing (NDVI) Conditions in Drought Years: 2020 to 2021

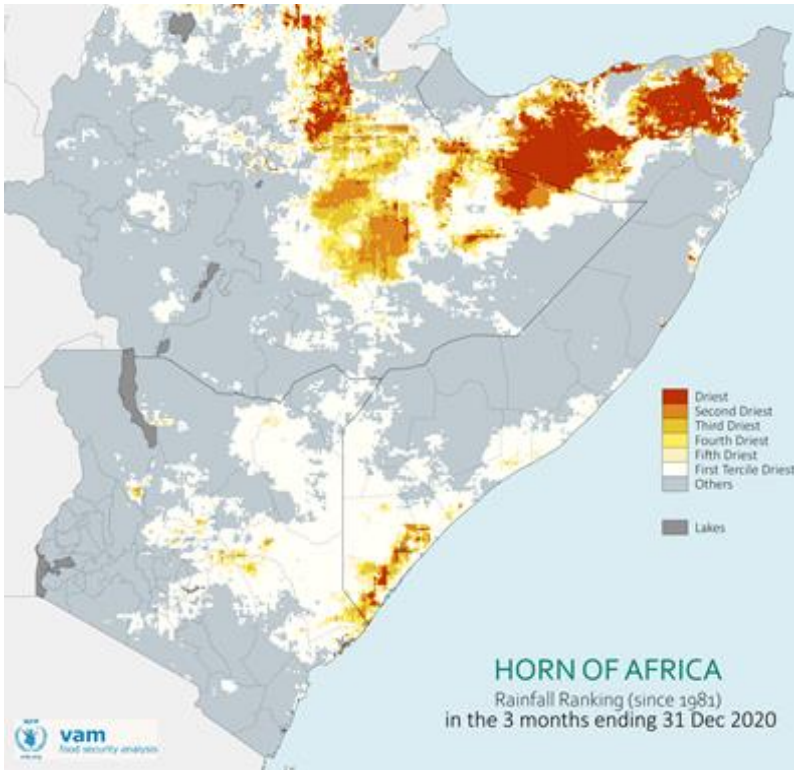


Seasonal rainfall anomaly for OND 2020, MAM & OND 2021 as a percentage of the 20-year average (top). Brown shades indicate below-average rainfall; blue shades indicate above-average seasonal rainfall (Source: CHIRPS, CHG, USCB). Average vegetation conditions for the indicated period with a month lag phase to the rainfall season (bottom). Green shades indicate better-than-normal vegetation while shades of orange to red, below-average situation (MODIS, NDVI).

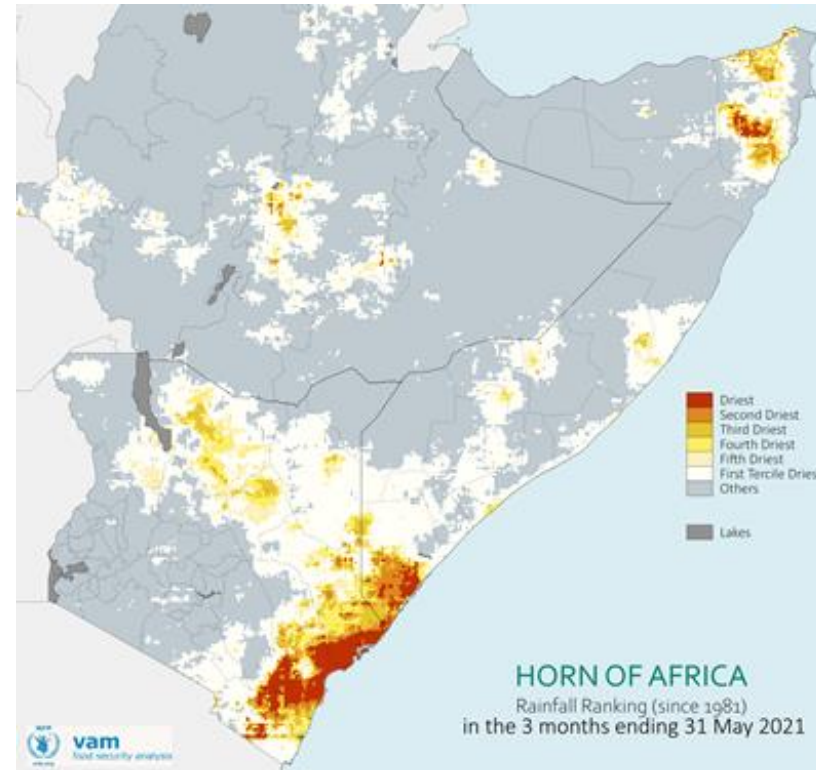
- Up-to early 2020, the weather conditions were favorable which helped improve the vegetation to near-normal or above-average conditions. However, there has been a near constant state of low rainfall since mid-2020 for the South and Eastern parts of the Horn of Africa. For example, the March-May 2021 rains performed well in the northern sector greatly improving the vegetation in southeast Ethiopia and northern Somalia. But during this same period, insufficient moisture in eastern Kenya and south-central Somalia limited meaningful rangeland regeneration and crop development. The negative impacts continued through the hot and dry June-Sept period. The Oct-Dec short rains were significantly low to have an impact on pasture and vegetation.
- As a result, both the agricultural production and livestock resources have been very badly affected. There is possibility of continued deterioration over the Jan-March 2022 period due to seasonally dry and hot weather.

Driest Conditions During a Cropping Season since 1981

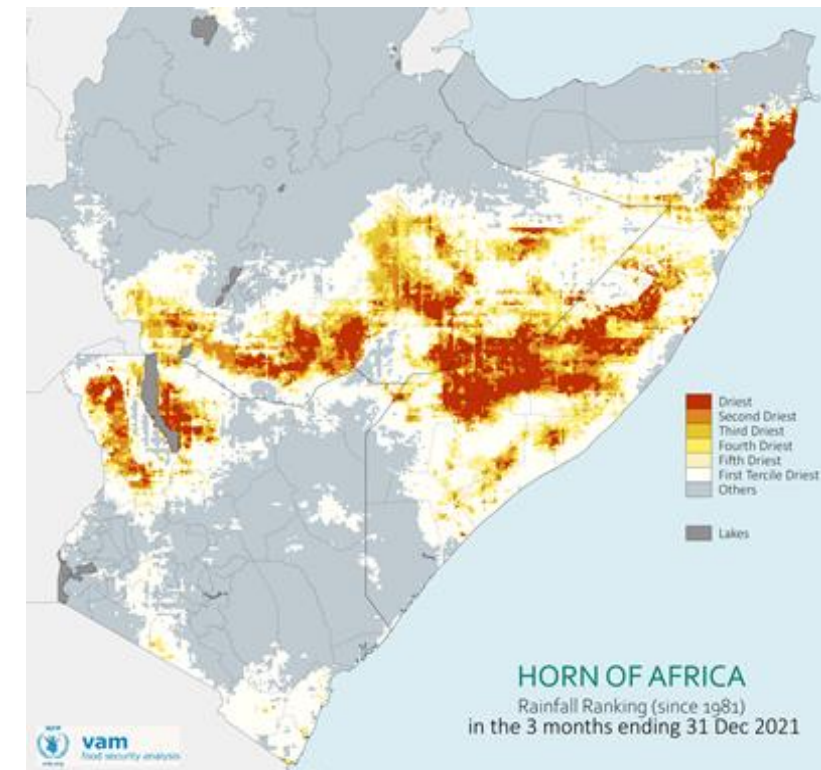
Oct-Dec 2020



Mar-May 2021



Oct-Dec 2021

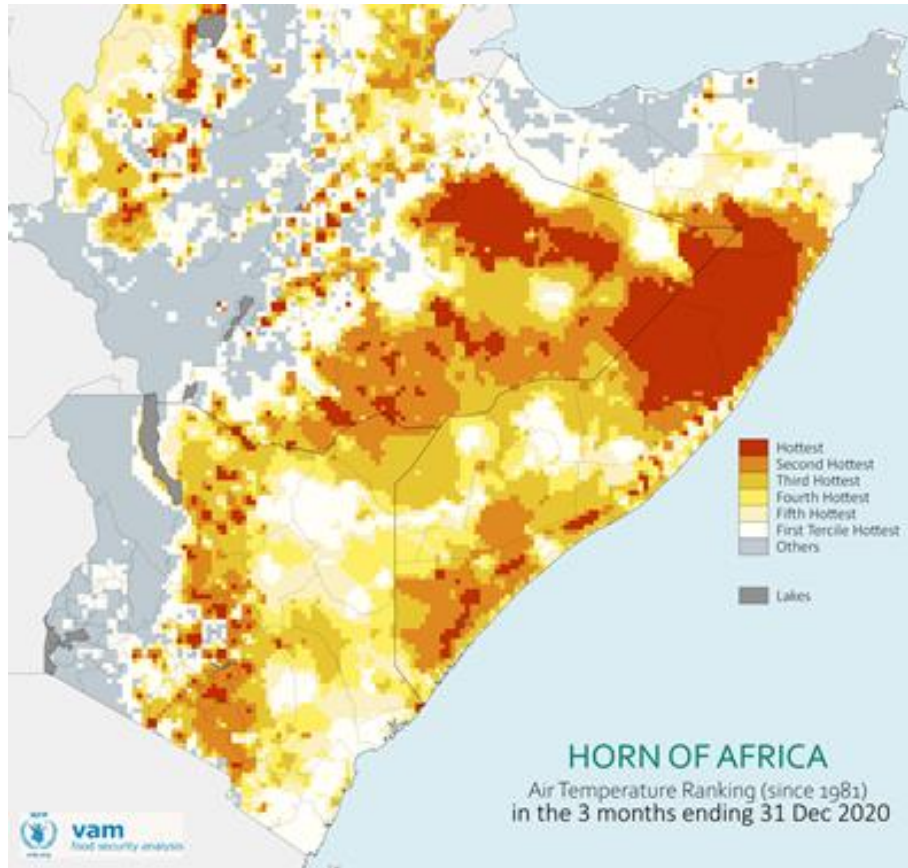


Seasonal rainfall ranking since 1981 with areas in red to dark red shades indicating the driest conditions over that particular season (Source: CHIRPS, CHG, UCSB).

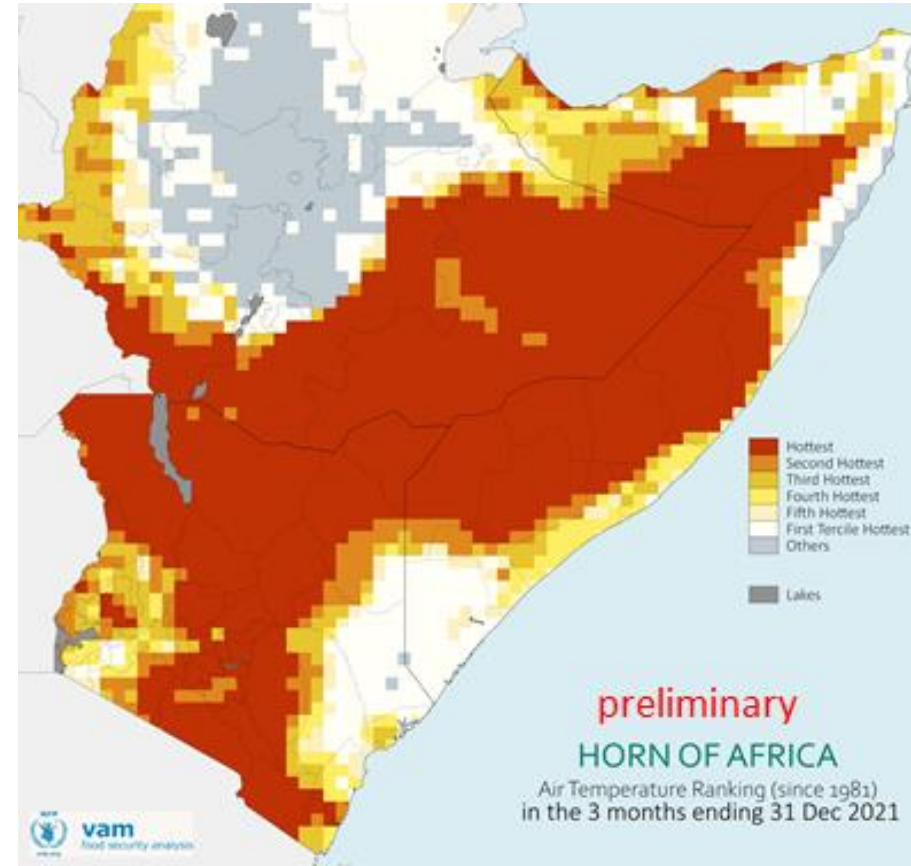
- Upon analysing seasonal rainfall for the period 1981 – 2021, it is seen that in the last 3 cropping seasons, several areas in the eastern HoA have experienced the driest conditions.
- Between March and May 2021, the driest conditions since 1981 were experienced along the Coastal areas of Kenya, and parts of southern and northeast Somalia.
- By the end of 2021, large areas covering the southern areas of Ethiopia, northwest Kenya and south-central Somalia exhibited the driest conditions since 1981. This indicates a worsened situation than the seasons before and underlines the severity of the current situation in the Horn.
- As can be seen from the maps – the area facing driest conditions (both in severity and acreage) has increased drastically by end of 2021.

Hottest Seasonal Temperatures since 1981

Oct-Dec 2020



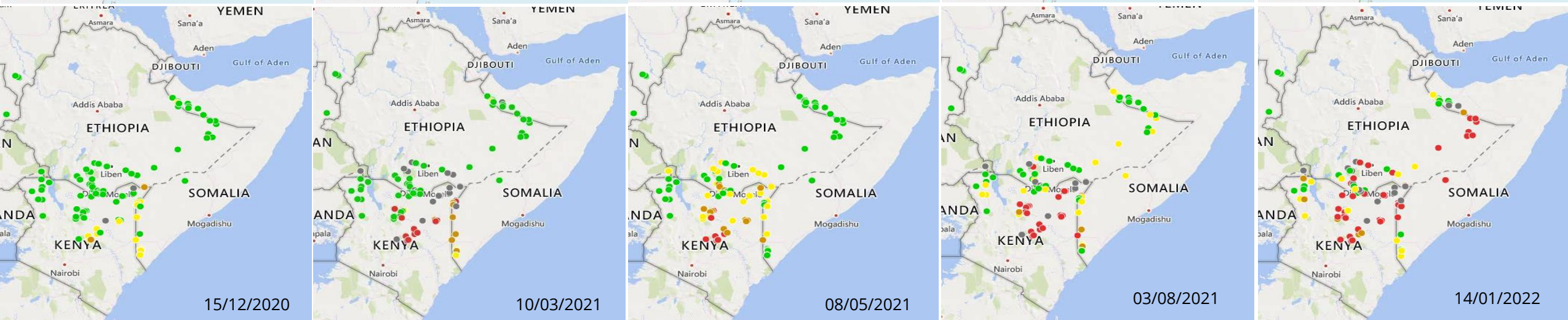
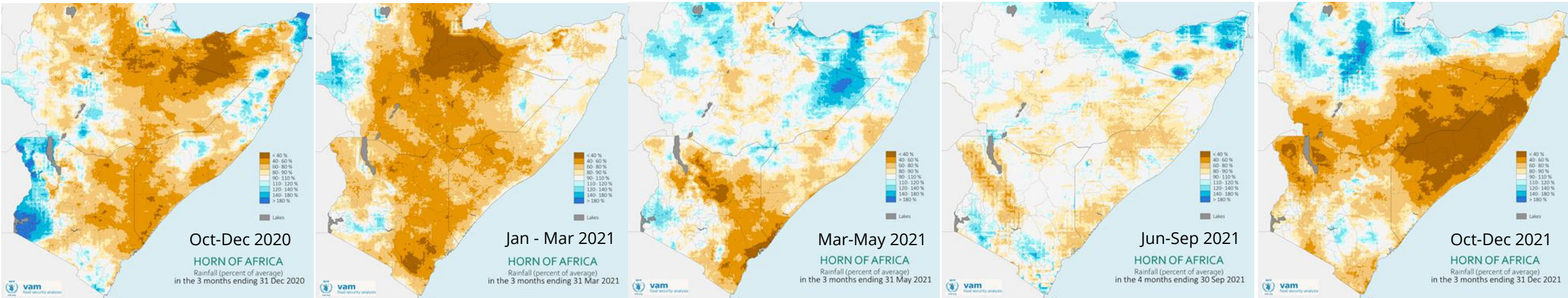
Oct-Dec 2021



Average seasonal temperature ranking since 1981 for the period Oct-Dec 2020 on the left (Source: ECMWF ERA5-Land data) and Oct-Dec 2021 (Source: ECMWF ERA5 preliminary data) with dark red shades indicating areas with the hottest temperature conditions during that season.

- Similarly, and equally worrying, the Average Seasonal Temperatures show that the Oct-December seasons 2021 has been the hottest since 1981. For instance, during the Oct-Dec 2020, only parts of central Somalia and southeast Ethiopia recorded the hottest temperatures. Preliminary data indicate that since 1981 many areas of Somalia, Kenya, and southern and southeast Ethiopia faced the hottest temperatures over Oct-Dec 2021 period. This signals a worsened situation than by end of last year.
- The high temperatures worsens the effect of below-average rains through increased evapotranspiration leading to faster deterioration of vegetation (pastures and browse) and depletion of water resources depended upon by livestock, humans and wildlife in many pastoral and agropastoral areas.

Drought Conditions Impacting on Water Resources



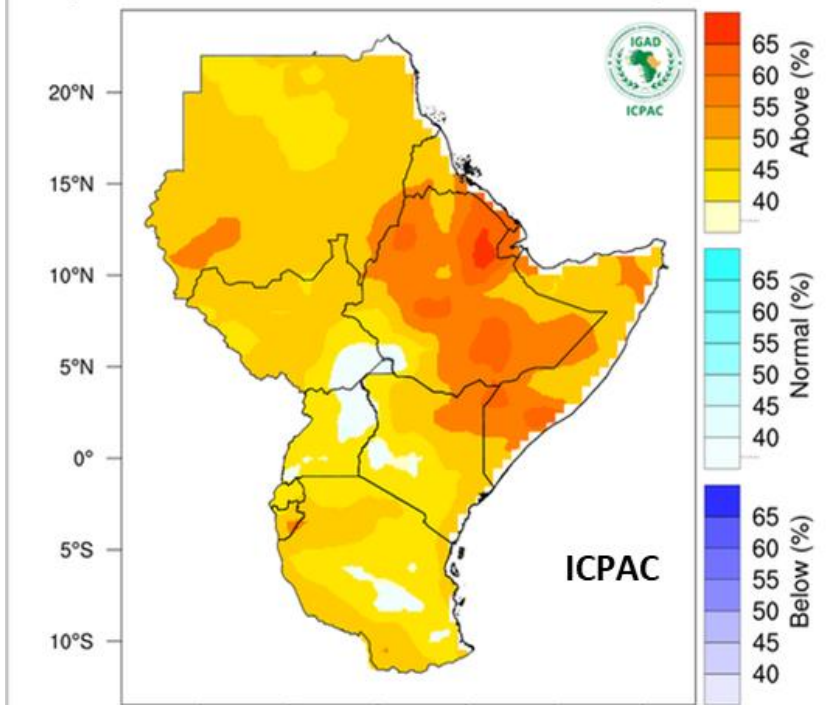
Seasonal rainfall anomaly for OND 2020, MAM 2021 and OND 2021 as a percentage of average (top) (Source: CHIRPS, CHG, UCSB).
Status of surface water points according to Fews Net Water Monitoring System (bottom) (Source: USGS/USAID/Fews Net Water Viewer).



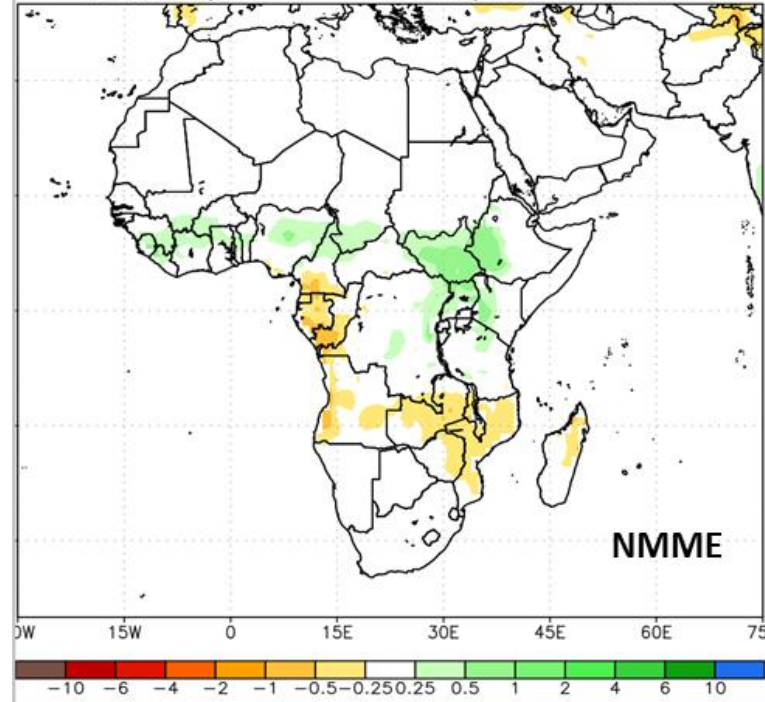
- By end of 2020, most water points had sufficient water levels given the previous favourable rainfall seasons in 2019 and 2020. However, the two rainy seasons in 2021 have not adequately replenished the water points in northeast Kenya, southern and southeast Ethiopia and Somalia. As a result, most are nearly-dry or seasonally dry, limiting the availability of water in these areas.

Contrasting Information on March-May 2022 Climate Outlook

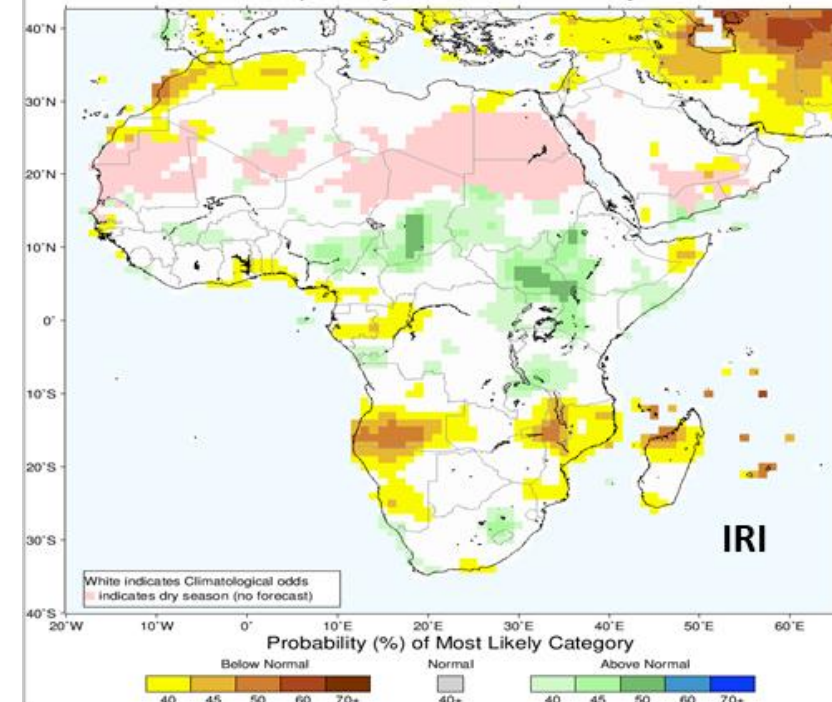
Temperature Probabilistic Forecast for January-March 2022



NMME Precipitation Anomalies (mm/day) Mar2022-May2022 January2022 initial conditions



IRI Multi-Model Probability Forecast for Precipitation for March-April-May 2022, Issued January 2022

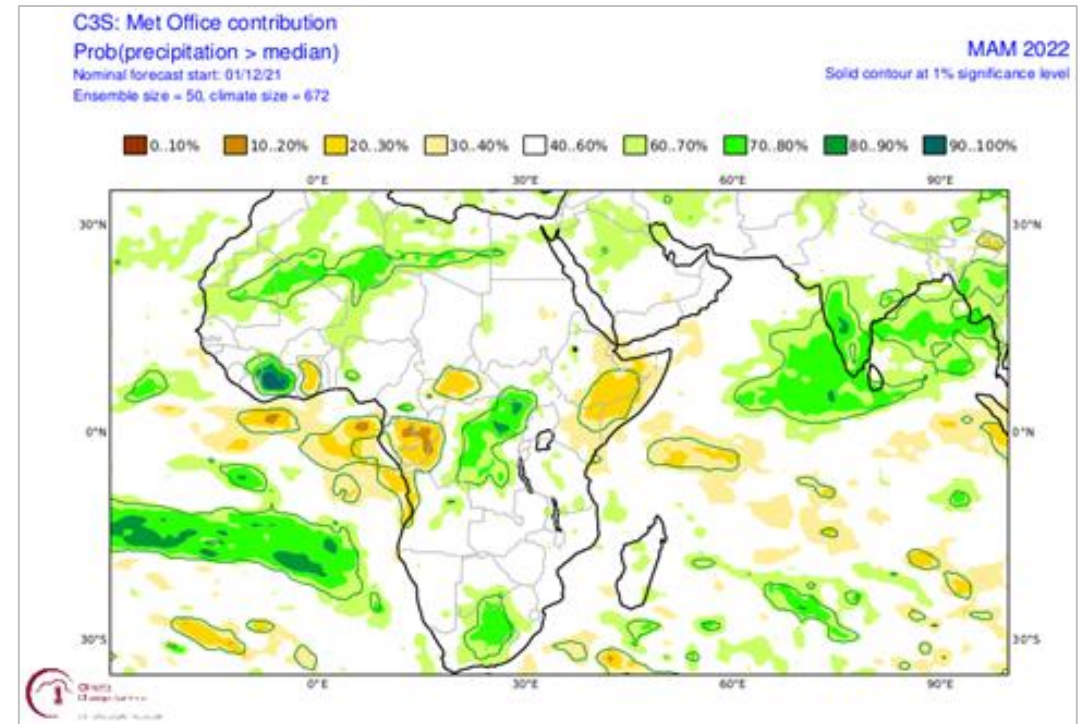
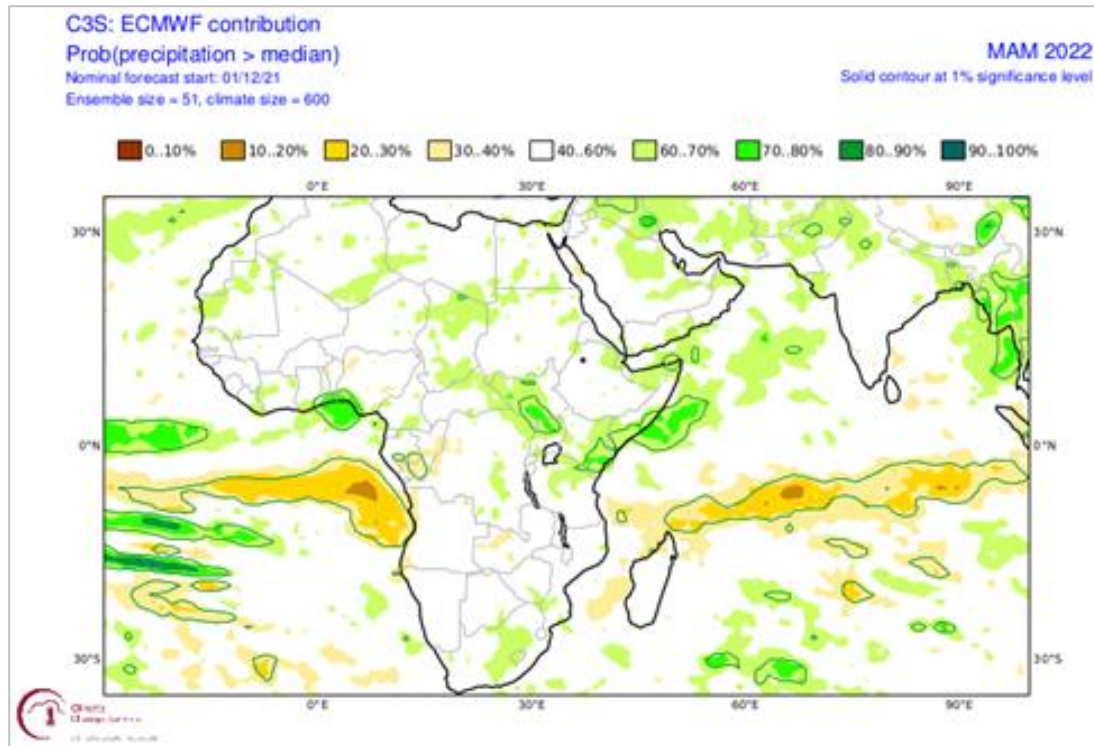


Jan-March 2022 seasonal temperature forecast by ICPAC (left), and March-May seasonal rainfall forecast by NMME (centre) and IRI (right): Green shades for precipitation forecast indicates likelihood of above-normal rains, white shades the likelihood of near-normal conditions, and yellow/light orange to dark orange shades the likelihood of below-average rains

The regional IGAD lead institution on climate forecasting (ICPAC) projects **warmer-than-normal temperatures between January and March 2022** over Ethiopia, Djibouti, north-eastern Kenya, and southern Somalia between January and March 2022. Warmer-than-normal temperatures will continue worsening the current drought conditions and consequently the humanitarian situation unless appropriate responses are maintained or scaled up.

The forecasts for the March-May rainfall season are not conclusive and currently provide contrasting information. Both the NMME and IRI indicate possibility of enhanced seasonal rains in the western areas of the region (Uganda, South Sudan, western Ethiopia, western Kenya), which could trigger flooding in flood prone areas as experienced in past extremely wet seasons. In the eastern horn currently affected by droughts, the forecasts range from slight improvement to near-normal conditions (NMME) to above-normal rains in central Somalia and depressed rains in northeast Somalia (IRI).

Contrasting Information on Climatic Outlook: March-May 2022 (conti..)



March-May 2022 Seasonal rainfall forecast by ECMWF (left) and UK Met Office (right): Green shades indicates likelihood of above-normal rains, white shades the likelihood of near-normal conditions, and orange to dark orange shades the likelihood of below-average rains

- It is worth noting that even rainfall forecasts by the European forecasting agencies published on C3S data store present contrasting information for the eastern Horn of Africa. The forecast by the European Centre for Medium-Range Weather Forecasts (ECMWF) indicates the likelihood of a favourable situation with above-normal rains while UK Met Office shows a likelihood of depressed rains in the currently drought affected areas.
- WFP (HQ and RBN) will continue monitoring the situation and follow up the regional March-May season forecast scheduled for release in early February.

Impacts of the drought conditions on food security and livelihoods



Depleted forage in Marsabit county, Kenya by end of 2021 (source: KFSSG)



Emaciated livestock in Isiolo county, Kenya by end of 2021 (source: KFSSG)

Reduced crop production:

- The inadequate rainfall performance and high temperatures since late 2020 resulted in inadequate soil moisture that grossly affected crop development during the growing seasons particularly in 2021.
- In Somalia, the worst seasonal harvests on record in recent years are expected. [UNOCHA](#) reported reduced production by more than 70 per cent in 90% of the areas assessed. [FSNAU/FEWSNET](#) projected the Deyr cereal harvests will be historically low, at around 30-40 percent of the long-term average, only comparable to the failed Deyr seasons of 2016 and 2010 the preceded the two most severe droughts in the last 10 years. OCHA [assessment](#) indicate over 80 per cent had exhausted their food stocks in South-Central Somalia.
- Similarly, in Kenya marginal agricultural areas, maize production during the March-May season was estimated at 50 percent below-average while pulses declined by 60-90 percent of average. At the same time, during the Oct-Dec season, significant below-average production is expected in the December-February harvests.

Deteriorated vegetation impacting on forage and livestock conditions:

- The combined effect of high temperatures and low soil moisture in several areas across Somalia, Kenya and southern Ethiopia have led to inadequate rangeland regeneration and faster depletion of livestock grazing resources.
- Given the dry weather and high temperatures over Jan-March 2022, further deterioration of vegetation (pastures and browse) is expected before the next rains in March.

Impacts of the drought conditions on food security and livelihoods

Reduced milk availability, poor livestock body conditions and high livestock deaths:

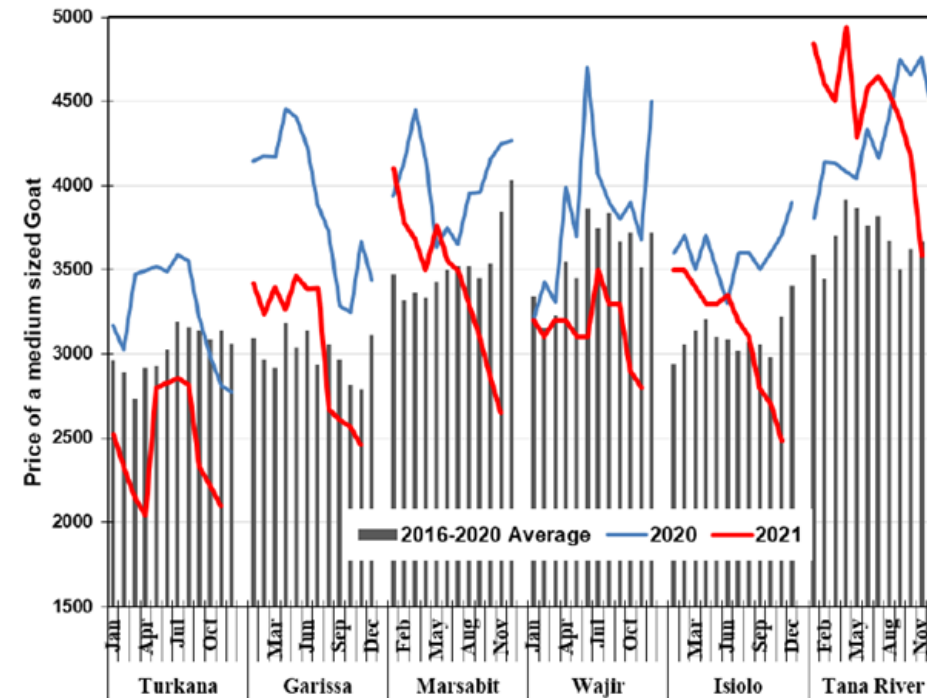
- Due to pasture and water shortages, livestock body conditions are poor to fair, milk production is limited to none, and atypical livestock deaths are ongoing in Ethiopia ([FEWSNET](#)), Somalia and Kenya.
- In Somalia, milk production has halted in worst-affected communities and with low supplies, the prices of milk are high. In Kenya, the average daily milk production (0.85 lts/hh) has declined by 42 percent compared to long term average.
- FSNAU/FEWSNET estimates that livestock deaths and off-take are occurring on a scale comparable to that recorded during 2016/2017 in the most affected areas in Southern Somalia. In Kenya, 15 counties have reported 1.5 million livestock deaths in the last three months alone because of drought.

- According to FAO, over [220,500](#) livestock, predominately cattle, have reportedly died in worst-drought affected areas in Southern Ethiopia, reducing the herd sizes to half the baseline levels. An [FAO](#) rough estimation had put the number at 68,000 in November, but this more than tripled in just one month in December 2021.
- Increased livestock deaths will continue eroding the livelihood base of already vulnerable populations.

Reduced livestock prices:

- Livestock prices have reduced in many drought affected areas in Somalia (10-23% y-o-y), Kenya and Ethiopia. In Kenya, retail goat prices across the affected counties were 18 percent below the long-term average while trending steadily downwards from July 2021. The decline in prices is attributed to the high market supply and worsening body conditions because of deteriorated rangeland resources. Livestock prices are expected to decline further and affect income and food access from markets. Households have extremely limited income options leading to accelerated livestock sales at low prices.

Goat prices have reduced significantly in the worst affected counties in Kenya



Source: KFFSG/
GOK/WFP SRA Mid-
season Assessment
report (2021)

Impacts of the drought conditions on food security and livelihoods

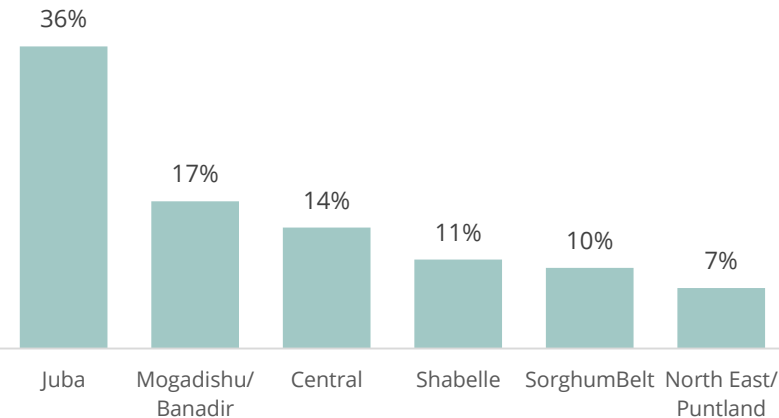


Dead livestock in Tana River county, Kenya (source: KFSSG)

Deteriorated water resources and associated problems:

- The surface water resources used by pastoralists and agro-pastoralists for human and livestock consumption have significantly deteriorated across northern Kenya, southern and southeast Ethiopia, and in Somalia with some of them being nearly dry or seasonally dry conditions.
- A rapid assessment conducted by [UNOCHA](#) in Somalia in December 2021 found that access to water had diminished as the boreholes and shallow wells in most locations have dried up.
- Water prices have spiked despite increased water trucking. In southern Somalia, water prices are 10-36% higher than the same time last year. Water shortages were also reported across most of the southern pastoral areas of in Ethiopia where moderate to extreme drought conditions persists.
- The livestock trekking distances in search of water and pastures has tremendously increased. In Kenya livestock trek nearly double the normal 6kms to water points on average and farthest in Marsabit Count
- Coupled with water shortage for human consumption, the need for water trucking is pushing the water prices higher especially in Somalia where prices are already high.
- Cases of water-borne diseases such as cholera will escalate as people rely on unsafe drinking waters. Similarly, livestock-wildlife concentration around available water sources will increase competition and possible disease transmission.

y-o-y % increase in water prices in Somalia



Source: WFP

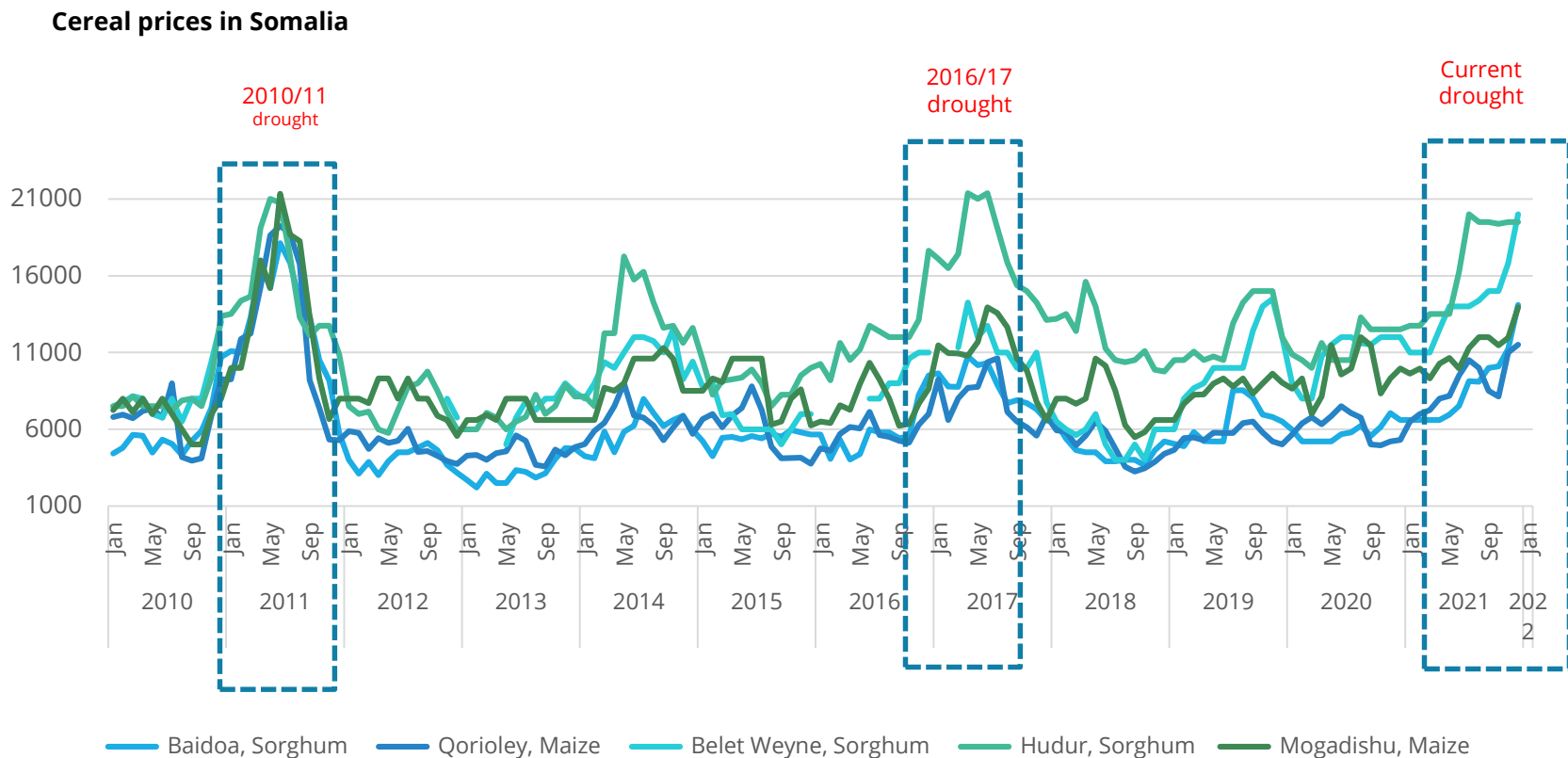
Increased competition over resources and conflicts:

- Inter-and-intra community conflicts over grazing and watering resources have been reported in several areas in Kenya (Laikipia, Turkana, Tana River, Wajir, Isiolo). Incidences of conflicts will likely escalate especially in the most drought affected areas.

Impacts of the drought conditions on food security and livelihoods

Food prices reaching previous drought levels in Somalia

- Due to poor crop production and depleted household stocks have resulted in very high food prices in the worst affected areas.
- In Southern Somalia, the current drought in addition insecurity related causes have resulted in a very sharp increase in maize and sorghum prices from July 2021, rising by 50-120 percent above the 5-year average and 19-66% above the same period last year, catching up with levels observed during the 2016/2017 drought and 2011 famine.
- In the drought-stricken markets in Kenya, prices for food commodities were above the long-term averages by 15-25 percent across most market with maize price increasing steadily across the south-eastern marginal agricultural areas due to diminishing household stocks.

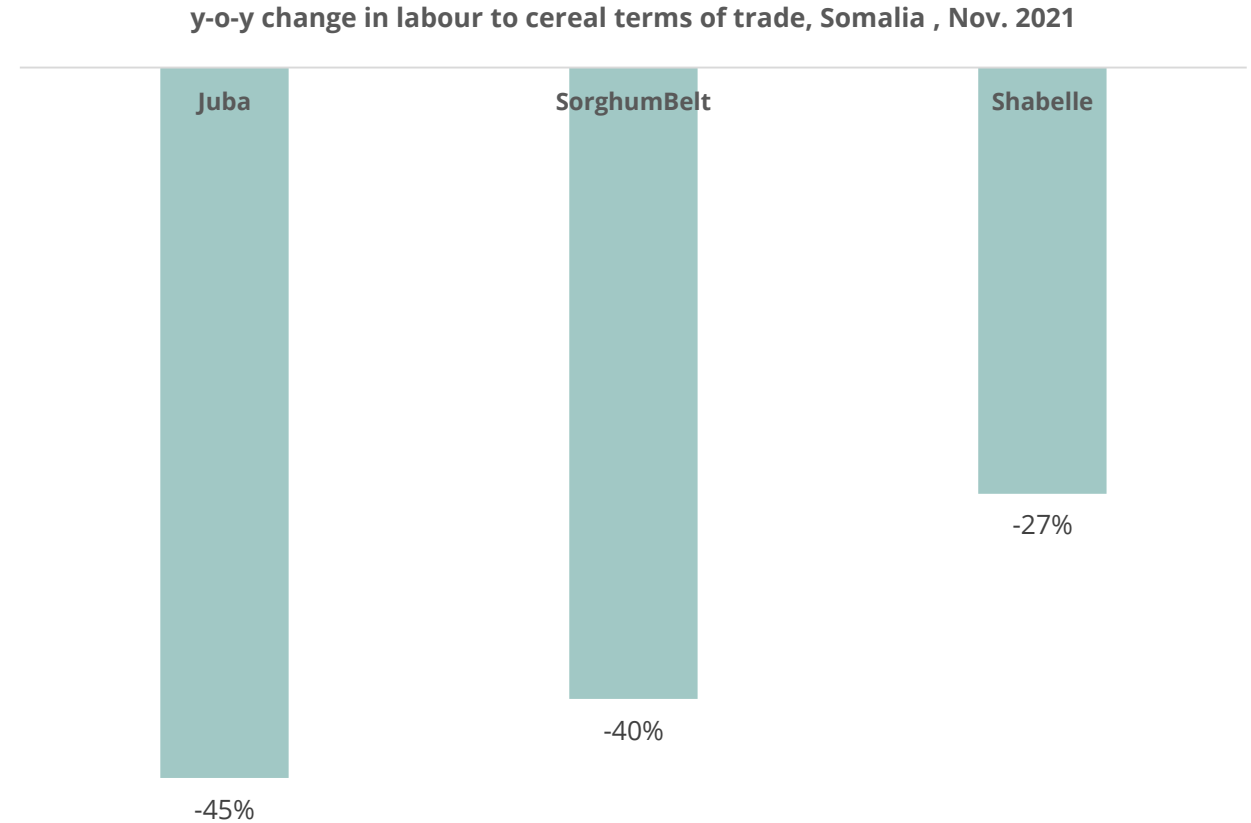


Source: WFP

Impacts of the drought conditions on food security and livelihoods

Reduced household purchasing power

- Economic access to food from markets in drought affected areas has deteriorated because of low and declined purchasing power of livestock keepers and casual labourers following reduced agricultural labour opportunities, increased cereal prices and low livestock prices.
- In Somalia, considerable erosion of household purchasing power is evidenced in all rural southern zones in which terms of trade labour to cereal reduced by 27-45% on average. The decline in goat to cereal ToT was more pronounced and wider (24%-54%) in the same zones.
- In Kenya, terms of trade deteriorated since July 2022 and remained unfavourable when compared to the 5-year average across most of the pastoral and agro-pastoral markets, attributed to below average goat prices in most of the counties due to poor to fair goat body conditions and reduced demand in the livestock markets.



Source: WFP

Impacts of the drought conditions on food security and livelihoods

Increased displacement and destitution

- Drought was the leading cause of displacement in Somalia in 2021 followed by conflict and floods. [169,000](#) people have been displaced in Somalia in search of food, water and pasture because of drought, with many people moving to larger towns to look for work while pastoral migration across the border into Ethiopia and Kenya increased.
- An FAO/IGAD assessment in January 2021 found that 80 percent of livestock in cross-border areas were migrating in search of food and water. New IDP sites are being established to cater for increased displacement e.g. Wajid town. Makeshift shelters have emerged on the outskirts of Mogadishu and Baidoa.

Food security outlook

- Food security conditions in drought-hit areas are alarming – poor families have nearly stretched their coping capacities. The number of people facing severe food insecurity in the drought affected areas in Kenya, Somalia and Ethiopia is estimated at 13 million through March 2022.
- In the pastoral areas, declining rangeland resources are expected to further decimate livestock prices and productivity below average, lowering household milk availability and income from livestock and milk sales.
- In the drought affected agricultural areas, food insecurity is expected to remain high, due to low household food availability from the minimal household food stocks.
- Food prices are expected to remain higher than average while household purchasing power will be significantly reduced.
- An extended drought period will increase livestock migration and displacement and worsen the water crisis and likely result in higher number of livestock deaths.

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, ECMWF ERA5 data (prelim)

Temperature forecast: IGAD Climate Prediction & Applications Centre (ICPAC)

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.

Market prices: NDMA SRA, FSNAU, WFP, FAO



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