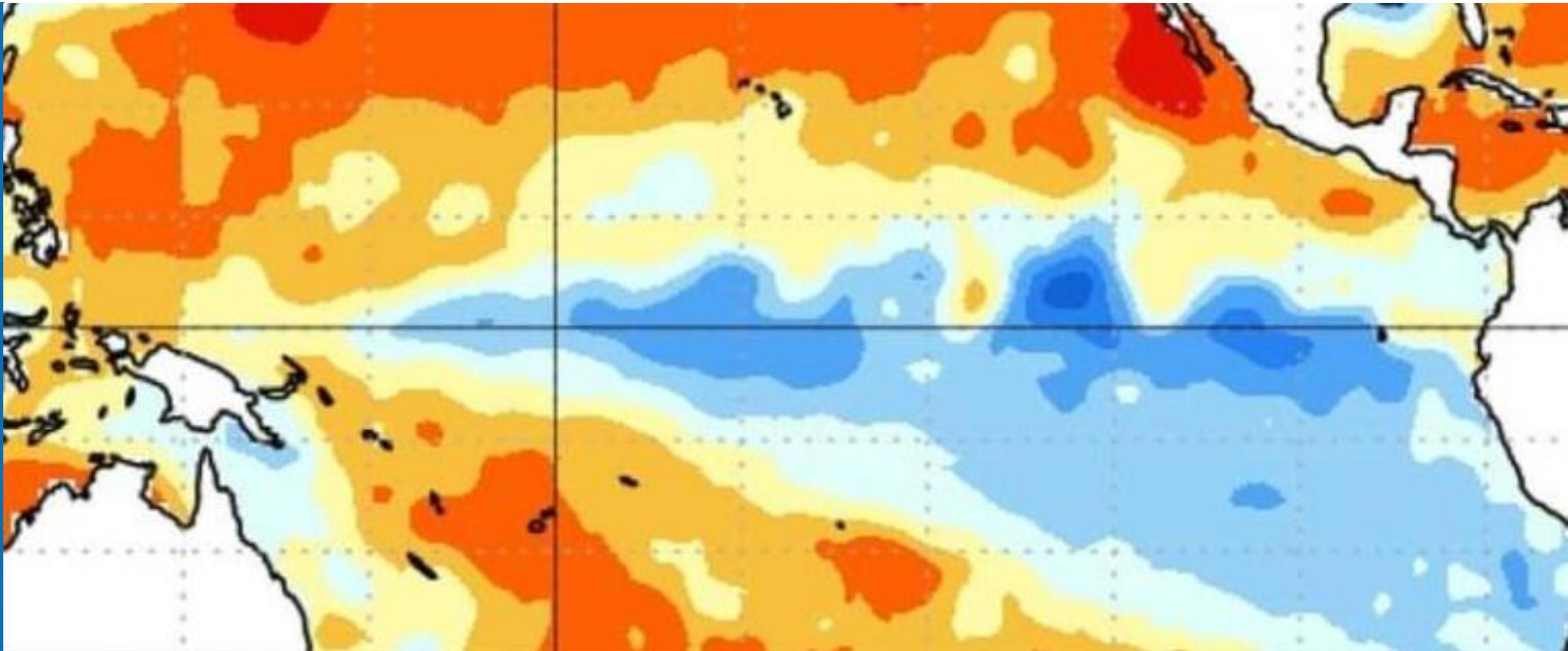




World Food Programme



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LIVES

# Global Climate Context of the Ukraine War

Rogério Bonifacio, Giancarlo Pini, Sebastian Boeck

Climate and Earth Observation Team, WFP Research, Assessment and Monitoring Division

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# Summary

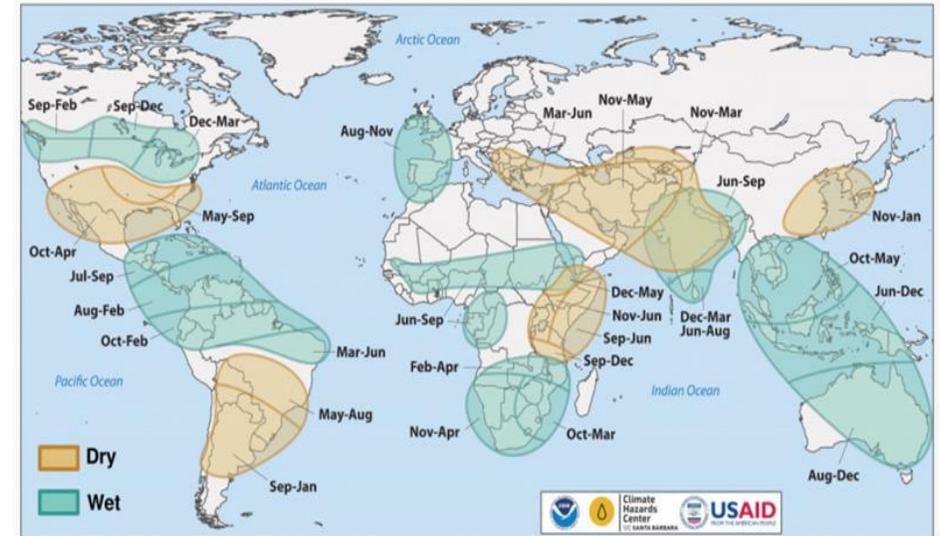
- The invasion of Ukraine by Russian forces has far reaching consequences for food security across areas of the globe geographically very far from the conflict location, given that both countries are major producers of key agricultural commodities.
- On the climate front, unusual features are coming into play that can interact in many ways with the consequences of the Ukraine War, lingering pandemic effects and protracted conflict situations and either lead or aggravate major humanitarian crisis.
- Recent global climate features have been driven by two back-to-back La Niña events that started in late 2020 and which may extend into a third consecutive one, lasting until early 2023, according to latest forecasts, something that has only happened twice in the last 75 years.
- Many of the climate events we see being played out across the globe since late 2020 are typical of La Niña seasons, such as the 4 consecutive dry seasons in Horn of Africa, dryness across Europe, Maghreb and the Middle East, tropical storms across Southern Africa, though their persistence and extent may be unusual. A third La Niña may see the same broad patterns repeating themselves for another year, in some places intensifying what are already humanitarian catastrophes.
- Parts of the Horn of Africa (Somalia, eastern Kenya and southeast Ethiopia) are now likely to endure a fifth drought season in a row in late 2022 – the devastation of pastoralist livelihoods will be felt for years as livestock herds take years to rebuild, while the impacts of severe food insecurity and starvation will be felt in the long term.
- Besides the features consistent with La Niña patterns, climate variability has thrown up features that translate into critical hazards with major humanitarian implications – the severe multi-year drought in parts of Madagascar and a protracted landscape-transforming flood event in South Sudan are two examples of long-lived hazard events that may well last beyond the current La Niña and its potential follow-up.
- This report covers the recent impacts of the first La Niña and provides an outlook for the likely impacts of the current one and scenarios for a third one. After a global overview, details are provided in detail for each WFP region, highlighting countries where the situation is of greatest concern.

# In the Shadow of La Niña

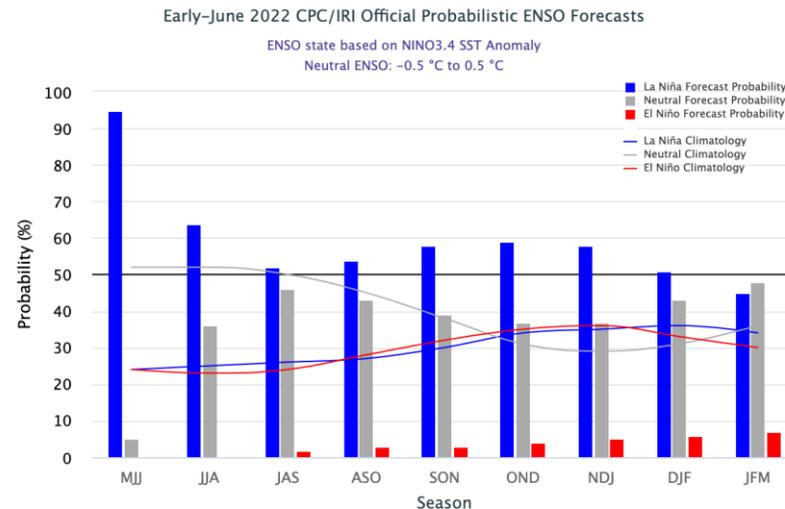
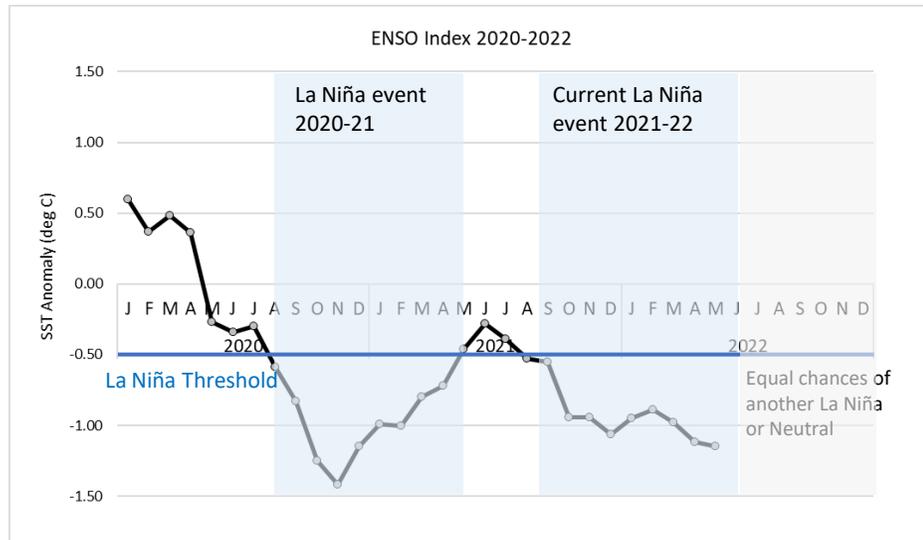
Global weather conditions in the inter-tropical areas of the globe, have been dominated by La Niña patterns since mid 2020. We are now in the later stages of the second of two back-to-back La Niña events: the first lasted from September 2020 to May 2021 and the second and current one has started in September 2021.

The current La Niña conditions strengthened from February and are now expected to last into the northern hemisphere Summer. There are now higher chances of La Niña conditions (close to 60%) towards late 2022, raising the possibility of a third La Niña in a row, something that only happened twice since 1950.

La Niña conditions have diverse impacts on the growing seasons across the globe. Typically, they lead to drier than average conditions in Eastern Africa and South America and wetter than average seasons in Southern Africa and Southeast Asia and Indonesia. However, these are general tendencies and actual conditions vary from event to event, which is detailed in the following region-specific sections.



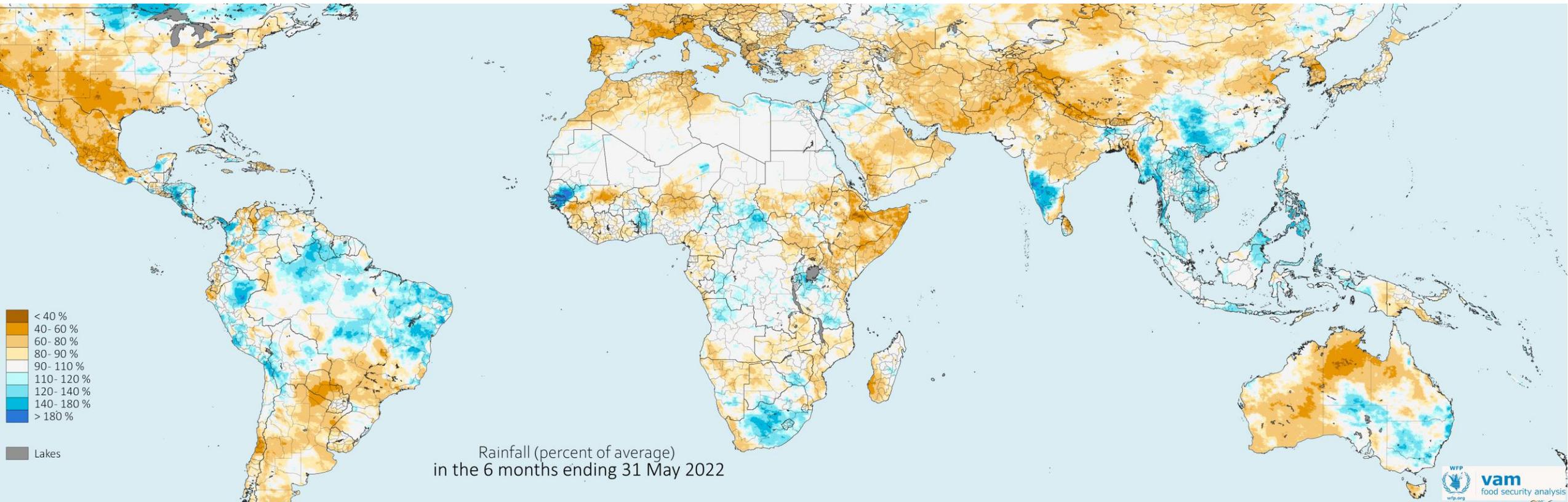
Broad outline of typical rainfall patterns during La Niña events and typical time frames for the indicated variation. Green for enhanced rainfall, brown for decreased rainfall.



Far Left: Time series 2020-2022 of ONI (Oceanic Niño Indicator, an anomaly in Pacific sea surface temperature). Generally, La Niña conditions are in place when the indicator is below  $-0.5^{\circ}\text{C}$ .

Left: ENSO phase forecast – blue bars, probability of a La Niña event, red bars probability of an El Niño event, grey bars probability of neutral conditions.

# Recent Global Conditions



*Rainfall from December 2021 to May 2022 as a proportion of the long-term average. Blue shades for above average rainfall, orange shades for below average rainfall.*

The patterns of near-global rainfall for the six months ending in May 2022 (covering most of winter rainfall in the northern hemisphere as well as the most recent rainfall season in East and Southern Africa) conform to the broad picture of global La Niña influences: we see widespread drier than average conditions spread across the northern hemisphere from the USA to Europe and North Africa and affecting a vast area from the Middle East to Central Asia.

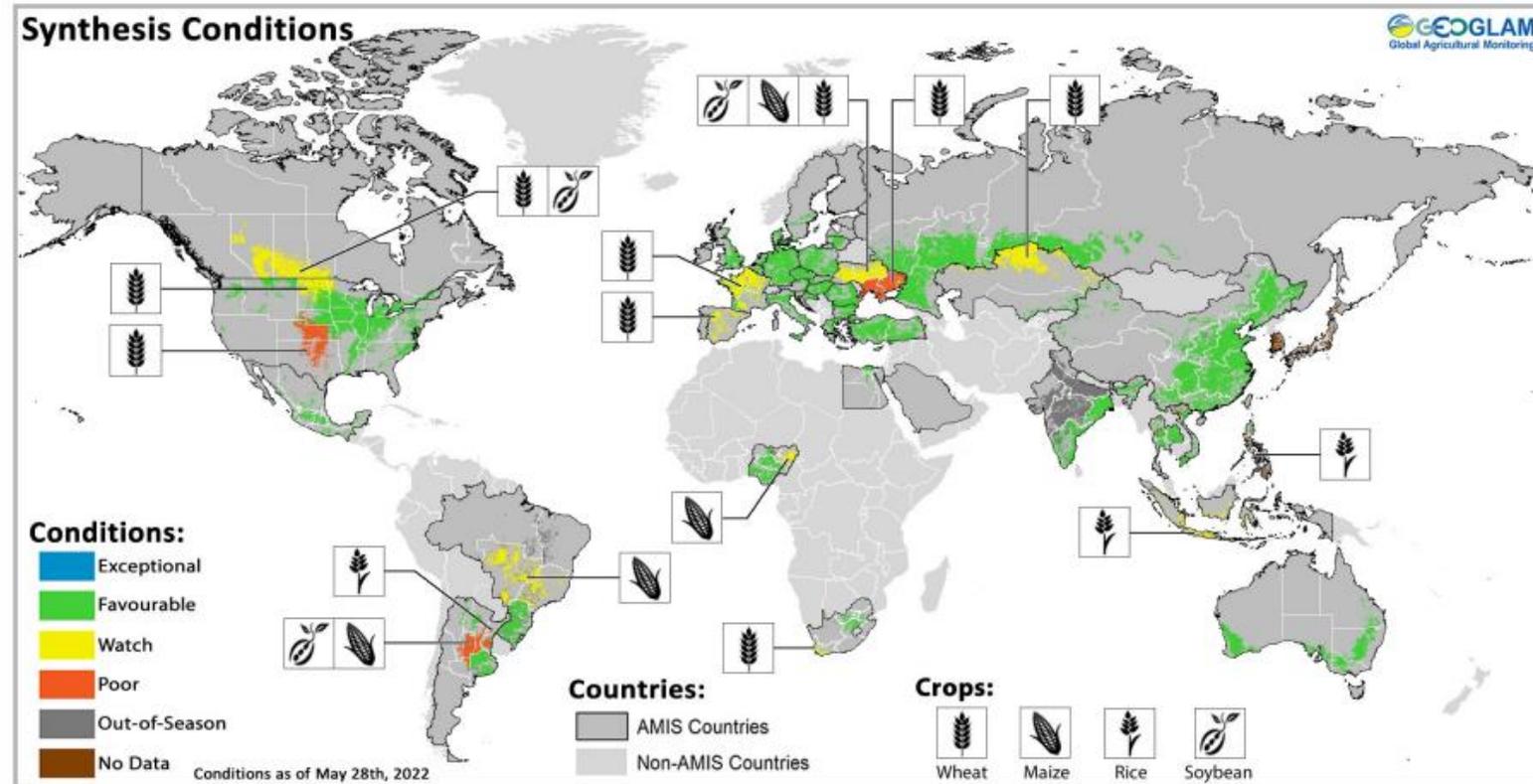
In the African continent, the drier than average conditions in East Africa typical of La Niña events are also evident. Contrary to the usual tendencies, most of Southern Africa saw predominantly drier than average conditions during this period.

In South America, dryness is also evident in the large agricultural regions of southern Brazil and northern Argentina.

Patterns in India, Southeast Asia and West Africa for the moment are of little relevance since this period contributes little rainfall to the seasonal totals.

# Main Cereal Producers

## Perspectives for producing countries (AMIS, June 2022)



AMIS crop condition and production perspectives map for large cereal producers.

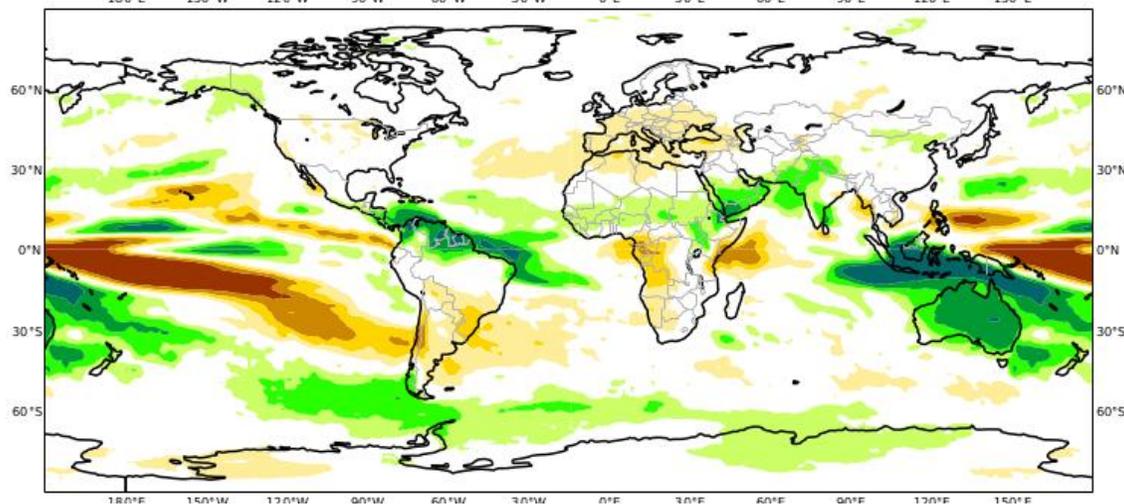
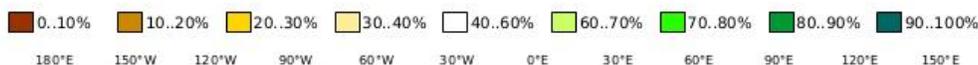
According to the latest AMIS Crop Monitoring Report, at the end of May, conditions are generally favourable for maize, rice, and soybeans while mixed for wheat. In the northern hemisphere, wheat conditions are mixed in western Europe (good in central and eastern areas, unfavourable over Spain, France and Ukraine (additional to conflict impacts) as well as the US, and Canada.

In the southern hemisphere, harvesting of maize continues in Brazil and Argentina; unfavourable prospects for maize and soybean in Argentina and Brazil. Rabi rice harvest is wrapping up in India. Single season and early-season rice development continues in China. In Southeast Asia, sowing of wet-season rice is beginning in the northern countries while dry-season rice sowing is delayed in Indonesia.

# Outlook for 2022

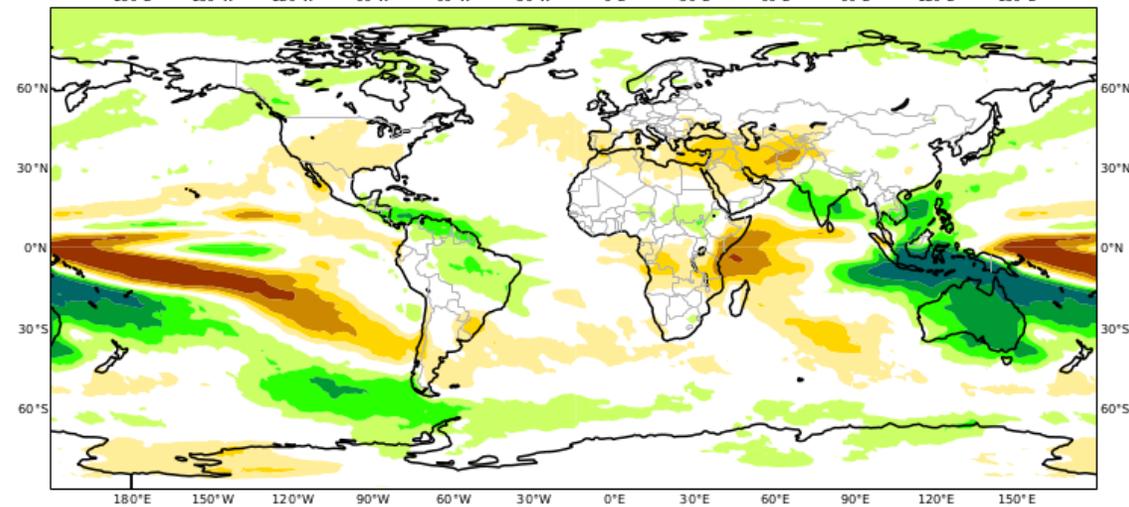
## Multi-System Probability > Median

## July-September 2022



## Multi-System Probability > Median

## September-November 2022



Global seasonal rainfall forecasts for July-September 2022 (left) and September-November 2022 (right). Green shades for wetter than usual conditions, orange shades for drier than usual conditions.

Seasonal forecasts for the July-September and September-November period conform broadly to typical La Niña patterns:

Above average rainfall is forecast across West Africa, leading to a generally favourable outlook for crop production. The tendencies for a wetter than average season are stronger for Sudan, South Sudan and Ethiopia. While this represents favourable conditions for small holder rainfed agriculture, riverine flooding in Sudan may lead to crop losses in irrigated perimeters, while in South Sudan it will aggravate the protracted flooding situation.

For Somalia and neighbouring regions, forecasts point to persistent below average rainfall until November: this means that the intermediate rainfall season that usually benefits southern coastal areas in July-August should underperform. For the rainfall season of October-December, forecasts and the likely persistence of La Niña conditions, configure a fifth consecutive poor season in the Horn of Africa.

For Asia, perspectives are favourable with enhanced rainfall expected during the Monsoon season except for the Philippines and the southern of Myanmar.

Below average rainfall is expected to affect a broad area extending from Europe, across the Middle East to Central Asia from mid 2022 until November and beyond. Drier than average conditions may affect crop production in Europe. Perspectives for the coming agricultural season (late 2022) in the wider Middle East and Afghanistan are not favourable and may add to the consequences of below par production in the past two seasons.

Drier than average conditions have affected the southern regions of South America in the last main growing season. Under La Niña conditions through late 2022 – early 2023, the next growing season is also likely to be affected by rainfall deficits, besides issues related to scarcity or high price of inputs.

# Eastern Africa

*Devastating droughts and long lasting floods*

# Eastern Africa

## La Niñas and widespread drought

La Niña events are closely associated with drier than average conditions from September to May in the Horn of Africa, frequently extending to western Kenya and Uganda and with wetter than average conditions from May to September in Sudan and north and central Ethiopia.

The two consecutive La Niñas have conformed to type. The map to the top shows the pattern of the 18-month cumulative rainfall from October 2020 to March 2022, a period covering these two events: yellow to orange and red shades represent areas affected by moderate to very intense droughts extending across most of Somalia, southern Ethiopia, parts of Kenya and Uganda. In contrast, blue shades highlight areas of above average rains extending from Sudan to northern Ethiopia and Somaliland.

These persistent La Niña conditions led to a repetitive sequence of drought shocks in October-November-December (OND) 2020, March-April-May (MAM) 2021, and OND 2021, and finally to the record-breaking failure of the 2022 MAM rainy season.

The map below right shows the 40+ years historical rank of MAM seasons in East Africa. Across most of Ethiopia and Somalia, and parts of Kenya, the 2022 MAM rainfall deficits were exceptionally intense, with most of the region experiencing record low, or close to record low, rainfall (red to yellow in the map).

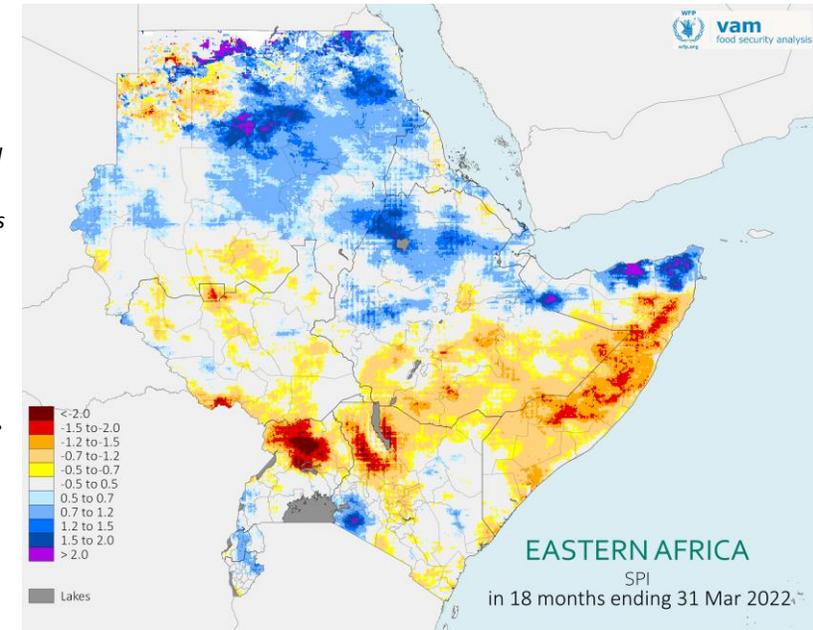
La Niña conditions are now likely to remain in place until late 2022 and beyond. This third consecutive La Niña raises the possibility of drought conditions across the Horn of Africa continuing at least until early 2023.

At the current stage there is a broad consensus from meteorological expert on a concrete risk that the October-December 2022 (OND) rainy season could also fail leading to an unprecedented 5 dry seasons in a row. Should these forecasts materialize, the already severe humanitarian emergency in the region would deepen even further.

*Standard Precipitation Index (SPI) for the 18 month rainfall from October 2020 to March 2022 in Eastern Africa. The SPI expresses how far you are from the long-term average rainfall in terms of standard deviations.*

*Negative values in yellow to brown shades correspond to below average rainfall, positive values in blue shades correspond to above average rainfall.*

*SPI values correspond to frequency of occurrence: e.g. values below -1.5 (above +1.5) correspond to dry (wet) conditions that on average should be registered once every 15 years.*



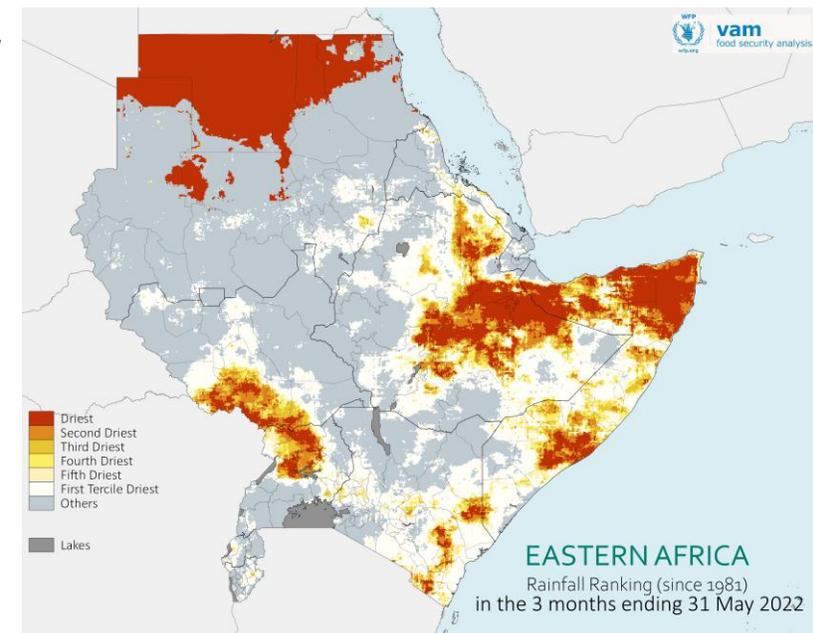
*March to May 2022 rainfall Eastern Africa expressed as historical ranks:*

*Red: driest ever March-May period on record (since 1981)*

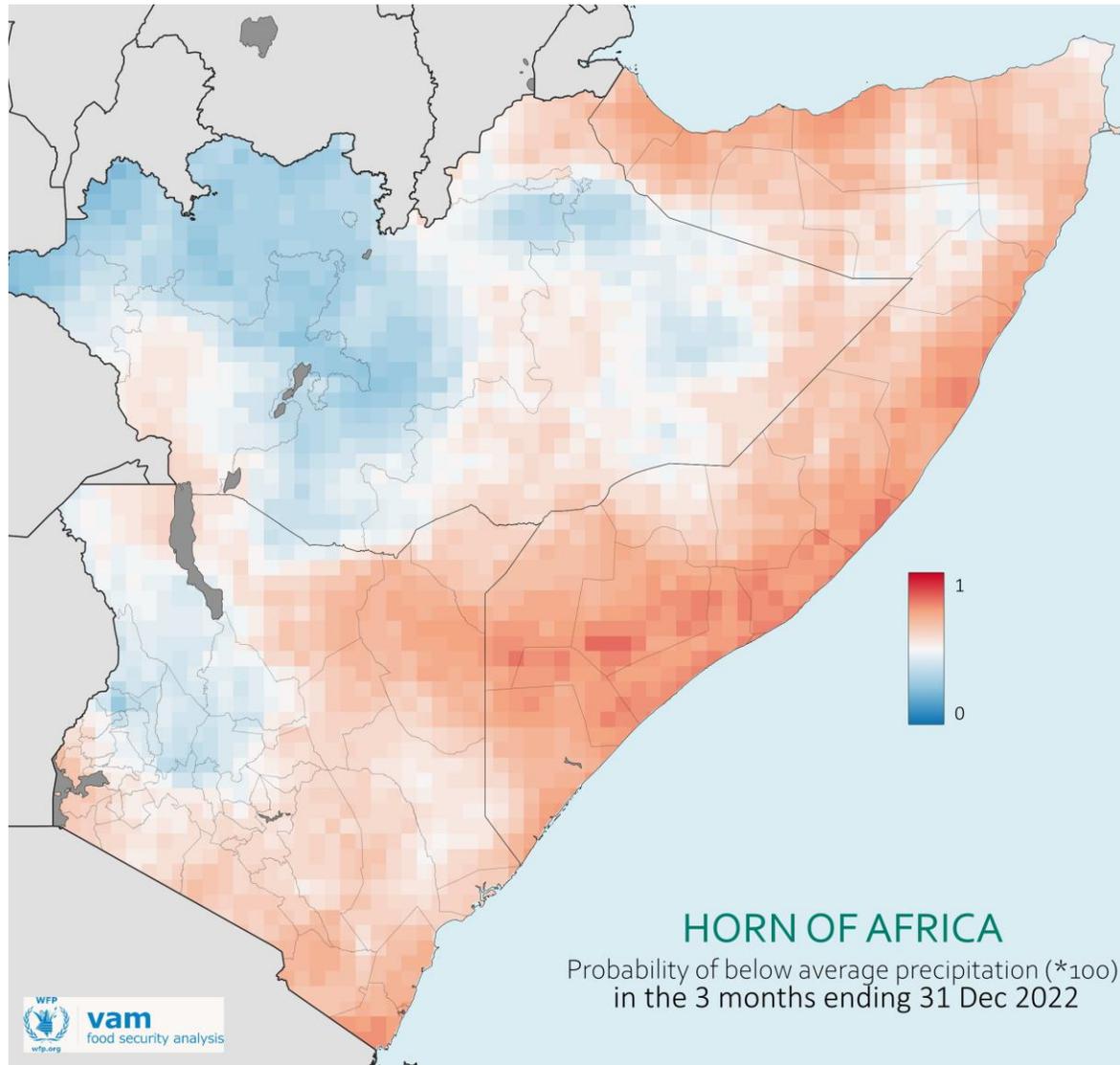
*Orange: second driest ever March-May period on record (since 1981)*

*(...)*

*White: March-May period rainfall below average (lower tercile of the distribution)*



# Eastern Africa



## Late 2022: A Grim Outlook for East Africa

La Niña conditions are now more likely than not to remain in place until late 2022 and beyond. A third consecutive La Niña would most likely mean drought conditions across the Horn of Africa continuing at least until early 2023.

The latest seasonal forecasts uniformly point to a maintenance of drier than average conditions throughout the rest of 2022. The short intermediate rainfall period that should benefit coastal southern Somalia in mid 2022 is unlikely to materialize.

More seriously, the consensual view of the seasonal forecasts (the map left shows the probability of drier than average conditions in the Horn of Africa during October to December 2022) and meteorological experts is that there is a serious risk of failure of the October-December 2022 rainfall season compounded by much warmer than average temperatures.

For Somalia, this would lead to an unprecedented five droughts in a row and a catastrophic humanitarian situation. Serious impacts are likely to be felt in southeastern Ethiopia and eastern Kenya.

*Probability of below average rainfall for the period October-December 2022  
Blue shades for low probability, red shades for high probability.*

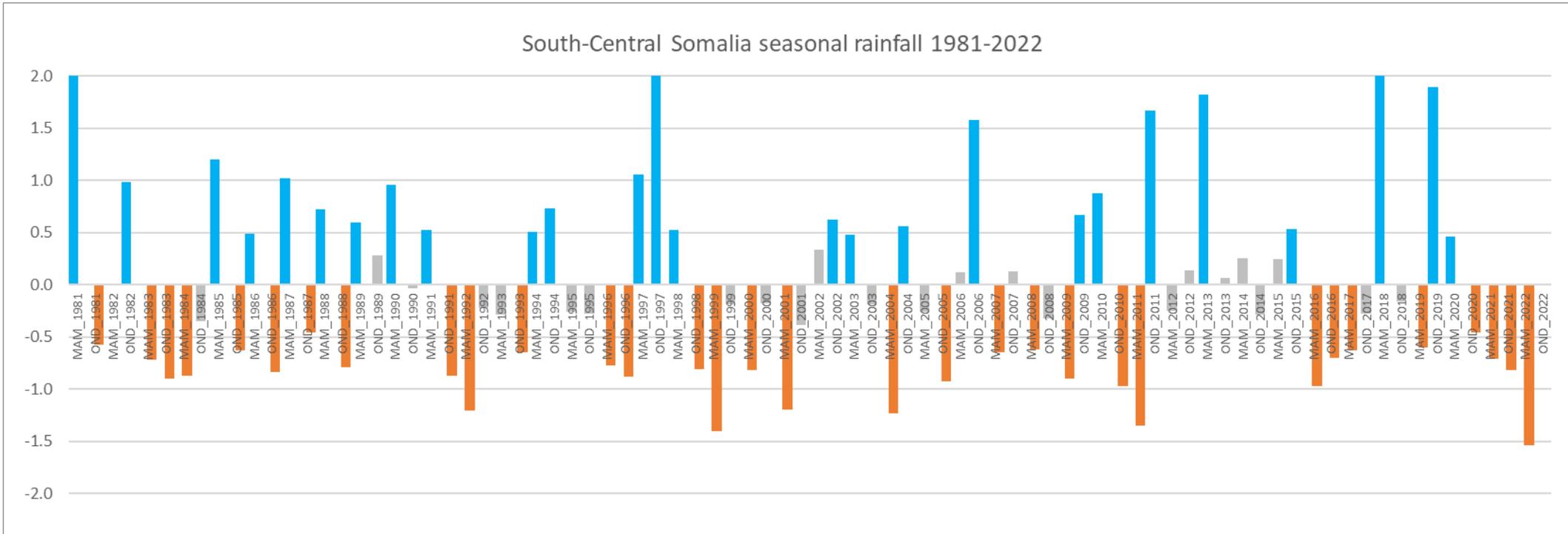
# Eastern Africa

## Somalia

The country has been hit particularly hard by the extended La Niña, with drought conditions affecting the last four seasons (OND 2020, MAM 2021, OND 2021 and MAM 2022) – see chart below. The last season just ended in May 2022 has been one of the driest in the recent record and follows three poor performing rainfall seasons.

The impacts of these consecutive seasonal rainfall deficits have been compounded by very high air temperatures, which reached record levels in late 2021. The combination of moisture deficits and high temperatures led to very low levels of vegetation cover in the more productive regions of the country. The severe drought in the season just ended led to further major crop and livestock losses and depleted water resources right before the onset of the long dry season approaches.

As mentioned, the outlook for the following season of Oct-Dec 2022 is very negative, given the current tendencies and the fact that in Somalia, the October-December season is the most La Niña sensitive. A catastrophic humanitarian situation looms.



*Rainfall in central-southern Somalia (Juba to Galgaadud) for all Short Rains and Long Rains seasons since early 1981 expressed as a standardized anomaly (number of standard deviations off the long-term mean).*

*Blue bars for wetter than average seasons, orange bars for drier than average seasons.*

*Note the unique four consecutive seasons at the end of the time series. A fifth drought is now on the cards for this region.*

# Eastern Africa

## Ethiopia

The humanitarian situation in northern (and central) Ethiopia is dominated by the continuing conflict. In these regions, La Niña events are usually associated with suitable conditions for crop development, and this has been the case since late 2020. However, the best that can be said is that the climate factors are unlikely to add to the impacts of the ongoing conflict.

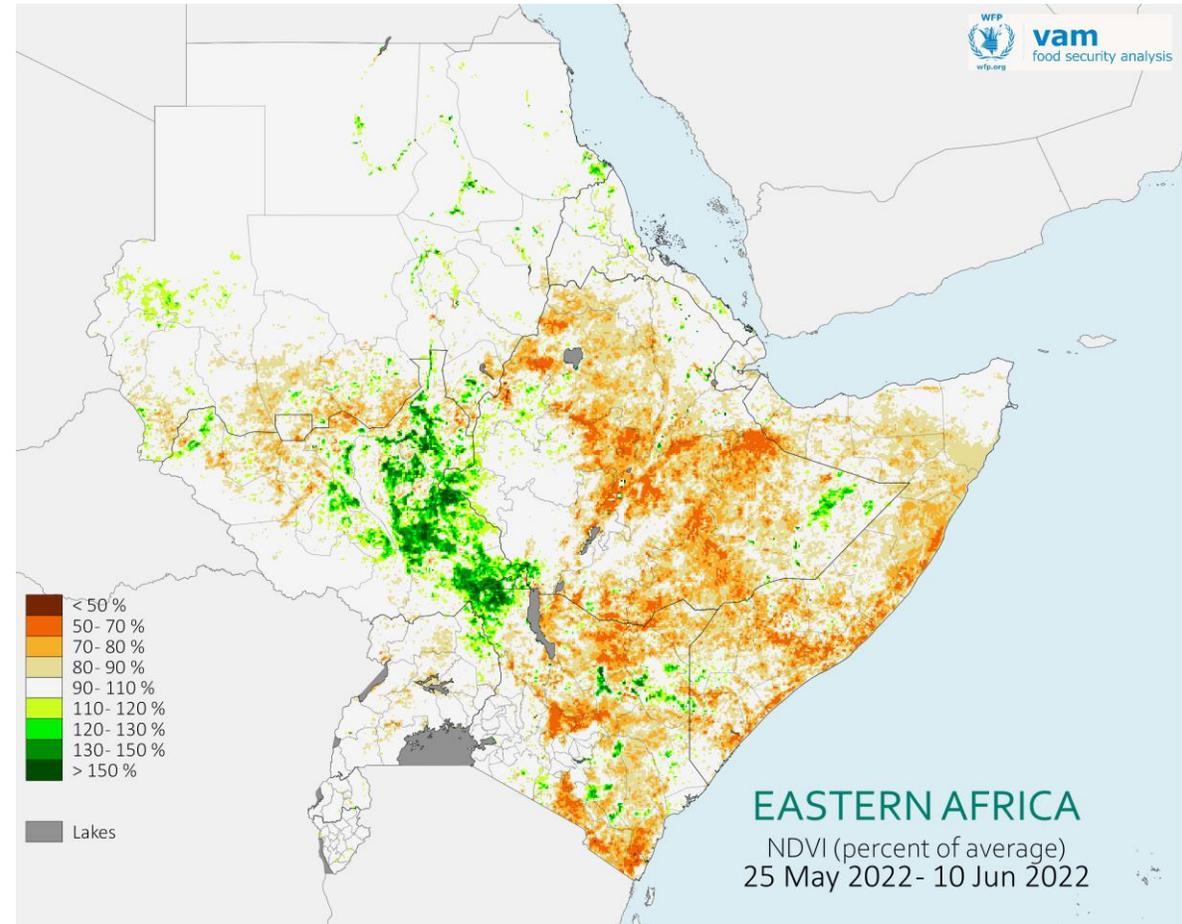
Current rainfall deficits are affecting the Belg cropping season and significant impacts on crop production are now likely. While providing only a small proportion of national crop production, this season is significant in these regions as it provides the first break in the lean season.

Southeast and southern areas of the country (eastern Oromia and Somali regions), in La Niña terms are more aligned with Somalia and northeast Kenya. As a result, they have also experienced droughts in the previous rainfall seasons. These dry conditions have also extended to southwestern areas (SNPP).

Here, pastoralist communities are being severely affected by the resulting lack of pasture and water resources, as satellite data reveals extensive impacts on vegetation across very large areas of the country. This will worsen during the long dry season lasting until October. The evidence from La Nina indicators and seasonal forecasts points to further impacts from a poor rainfall season of October-December 2022.

## Kenya

The arid and semi-arid regions of Kenya are in a similar situation to the one prevailing in neighbouring regions of Ethiopia and Somalia, though without such extreme persistence of drought conditions. However, the rainfall season just ended in eastern areas was very dry and vegetation data indicates very severe degradation of pasture and water resources in areas of pastoral livelihoods and agricultural areas in southern and central regions.



*Vegetation index early June 2022 for Eastern Africa as a proportion of the long-term average. Green shades for above average vegetation, orange shades for below average vegetation.*

*Note generalized below average vegetation cover across most of the region, except in recent flooded areas of South Sudan and along the Nile river. At this stage of the season, vegetation status reflects drought impacts of previous seasons – poor rains in May would lead to further degradation.*

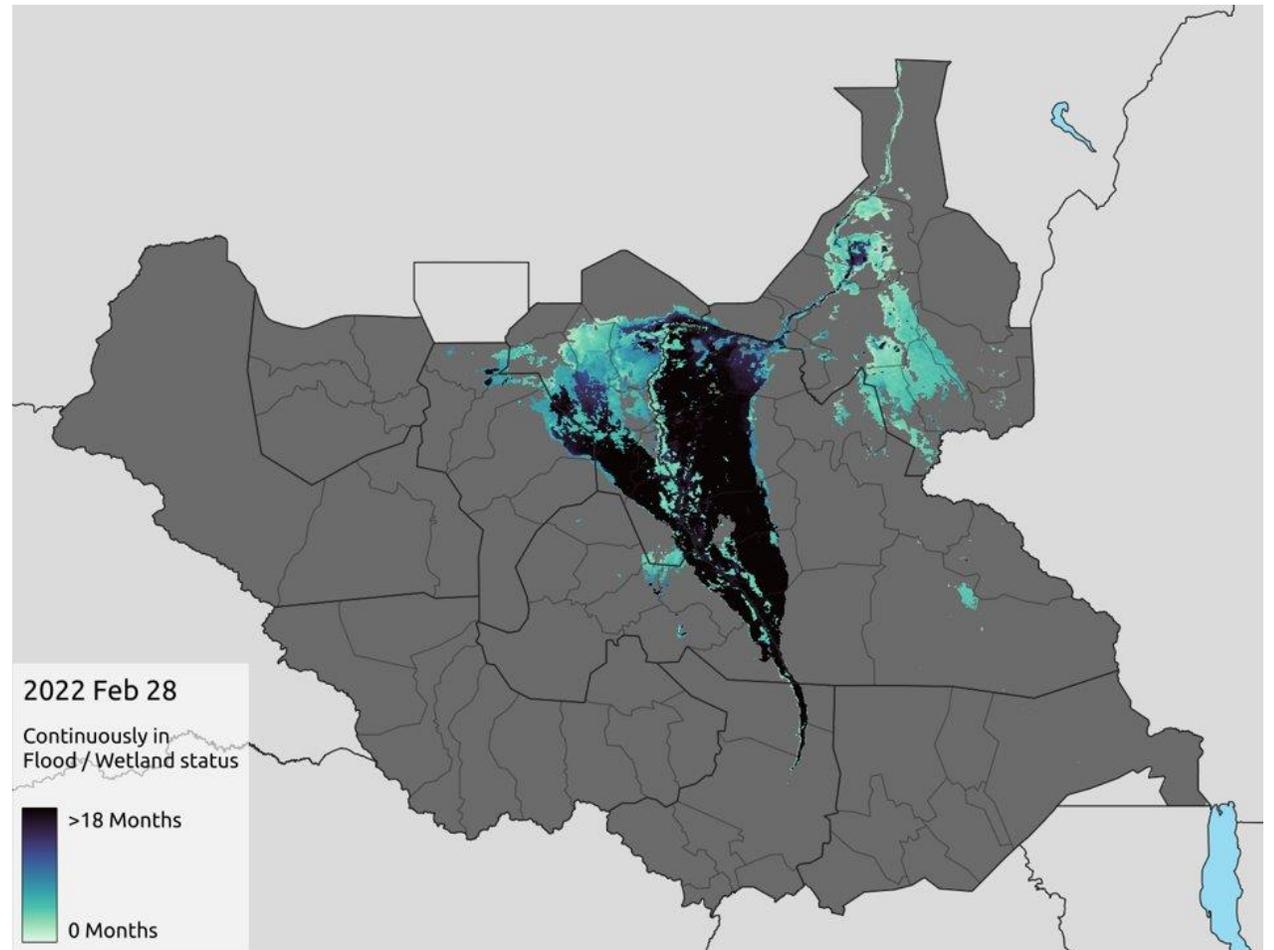
# Eastern Africa

## South Sudan

The country is in the grip of a multi-year large scale flood event, unrelated to the two La Niña events. This is instead driven by overflows from the Great Lakes that started in late 2019 as a result of consistently above average rainfall during most of the 2010s in the upper reaches of the Nile catchment.

After a 2021 season marked by the breaking of another record in flood extent, drought events in the southeast, population displacements and outbreaks of conflict in major crop producing areas, South Sudan is facing a record cereal gap of over 540,000MT to address the food needs of its population during 2022, an increase of 16% relative to 2021.

Perspectives for the coming growing season are unfavourable: seasonal forecasts for the core phase (July-September) of the rainfall season now under way indicate wetter than average conditions across most of the country. This will make an additional contribution to the flood extent that may continue to be fed by the Great Lakes overflow. Continued instability, conflict, and possible expansion of drought patterns into the southeast regions of the country are unlikely to lead to significant improvements in the food availability for 2023 and increase the number of people in need of assistance.



*Flood extent in South Sudan in February 2022. Dark blue shades represent areas permanently flooded since September 2020; lighter blue shades areas flooded from mid-2021. No significant reduction in flood extent is expected during 2022.*

# Eastern Africa

## Uganda

In 2021, the country registered the driest season of the past 40 years affecting crop production particularly in the food insecure and vulnerable areas of eastern Uganda (Karamoja).

In the current season, the crop growth has generally been delayed in the north and centre due to early-season dryness in March as well as generally below-average rainfall performance that have delayed planting and led to crop failures. However, late-planted crops in the north may benefit from forecast above-average June through September rainfall. In Karamoja, rainfall conditions have recently improved but localized flooding and waterlogging could negatively impact crops. As consequence overall aggregate cereal production is likely to be below-average for bimodal areas.

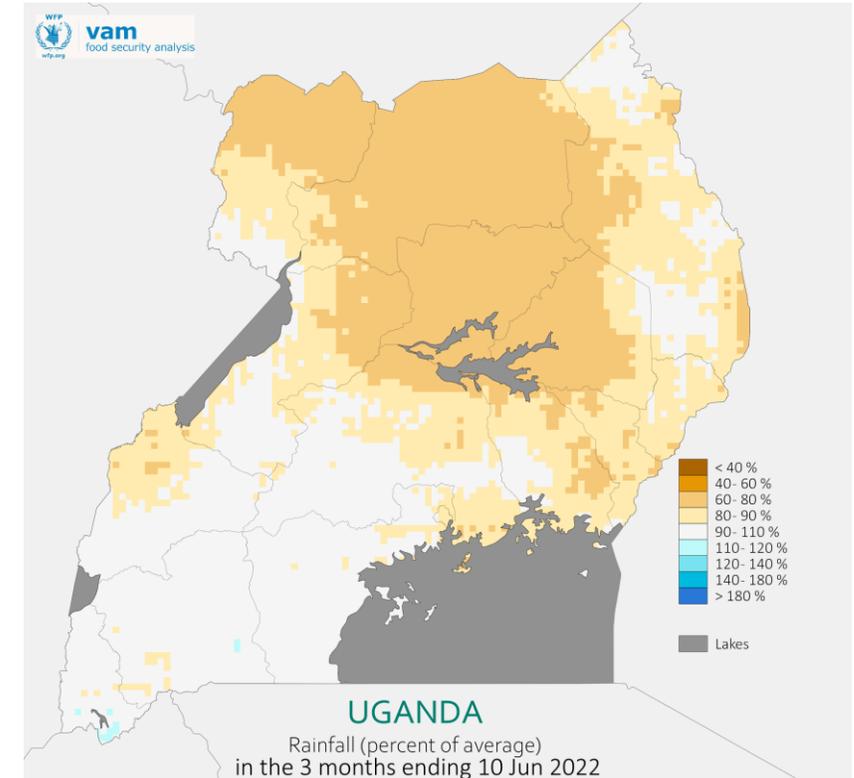
## Sudan

Cereal production in 2021 was estimated at 30% below the average of the last 5 years due to unfavorable weather conditions, pests and diseases, shortages of inputs, and the difficult macroeconomic situation (very high inflation since early 2021). The estimated import requirements for 2022 stand at around 2.5million tonnes for wheat and sorghum, 35% above the five-year average.

Sudan attempts to buy cereals on the global market could be made difficult by the weakening of the national currency and the war in Ukraine. Sudan is dependent on wheat imports from the Black Sea region and about 50% of its wheat came from Russia last year.

La Nina events usually result in above average rainfall across most of the country. Expectations from seasonal forecasts conform to this pattern: wetter than average conditions are predicted by all seasonal forecasts produced by international institutions.

This is likely to lead to flooding along riverine areas with loss of cropland and population displacements. In rainfed areas, favourable climatic conditions for crop development are expected, but this potential may be limited by shortage of inputs.



*Rainfall in the 3 months ending June 10<sup>th</sup> as a proportion of the long-term average. Blue shades for above average rainfall, orange shades for below average rainfall.*

# Southern Africa

*Unusual rainfall patterns for a La Nina season*

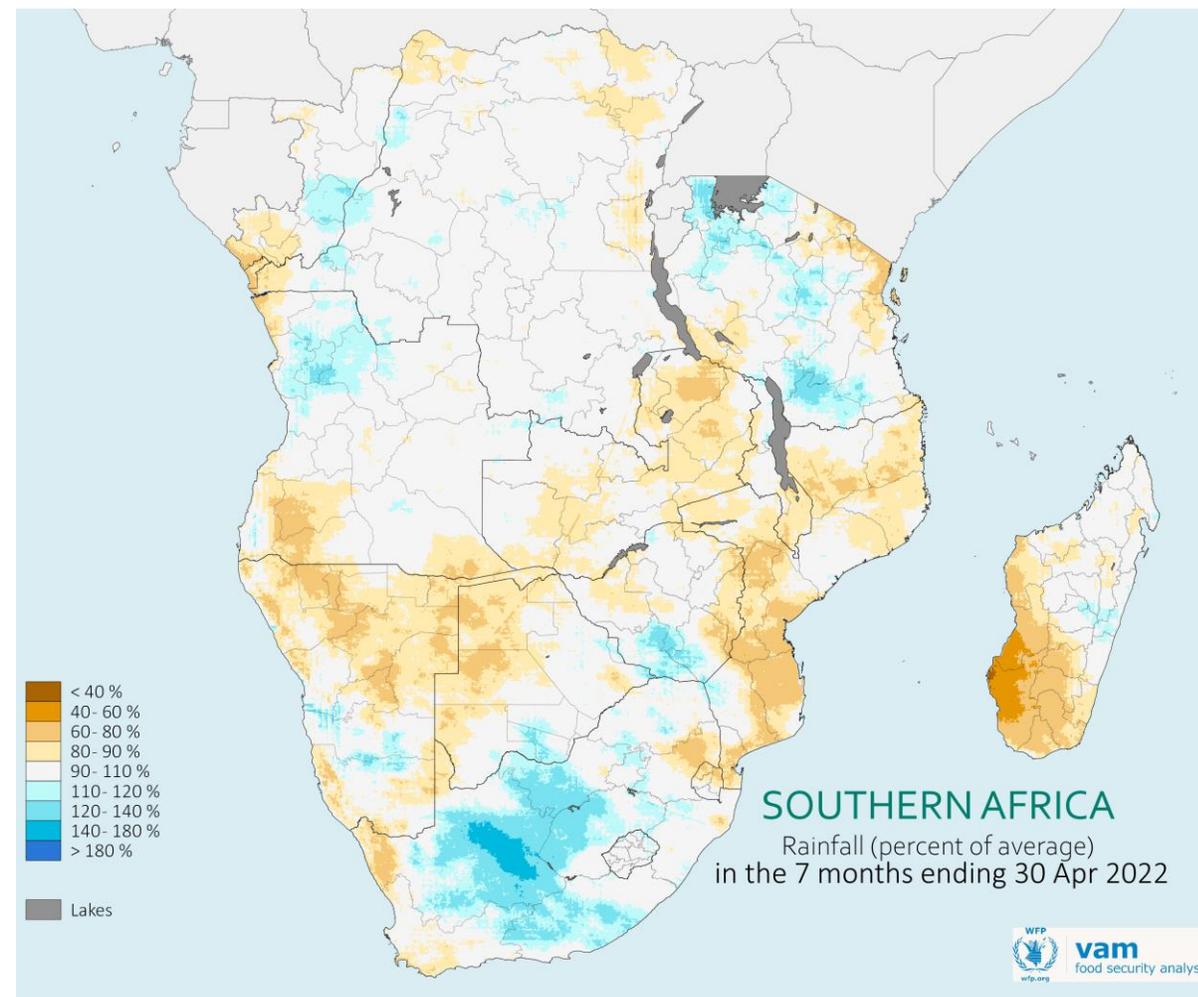
# Southern Africa

In Southern Africa, La Niña events are usually associated with above average rainfall and better than average crop production. All historical regional bumper crops occurred under La Niña seasons.

However, in the past few years, La Niña seasons have been more variable with drought events occurring across the region. The 2021-22 season in fact, ended with a predominantly drier than average tendency, in spite of a number of tropical storms crossing Madagascar, Mozambique and Zimbabwe.

Hence, cereal production in most countries is expected to be below-average, reflecting the impacts of rainfall deficits at the start of the season in November and December 2021, tropical storms and cyclones between January and March 2022 and a severe flash drought in February. Most affected will be Madagascar, Mozambique and Zimbabwe, with localized severe impacts.

However, regional stocks are still healthy, while the major producer South Africa has enjoyed a good season and good maize production is expected. Hence, requirements from deficit countries should be covered, though maize prices will likely remain elevated in line with international prices.



*Rainfall from October 2021 to April 2022 for Southern Africa as a proportion of the long-term average. Blue shades for above average rainfall, orange shades for below average rainfall.*

*Note extensive below average rainfall most of the region except for areas of South Africa and Tanzania.*

# Southern Africa

## Madagascar

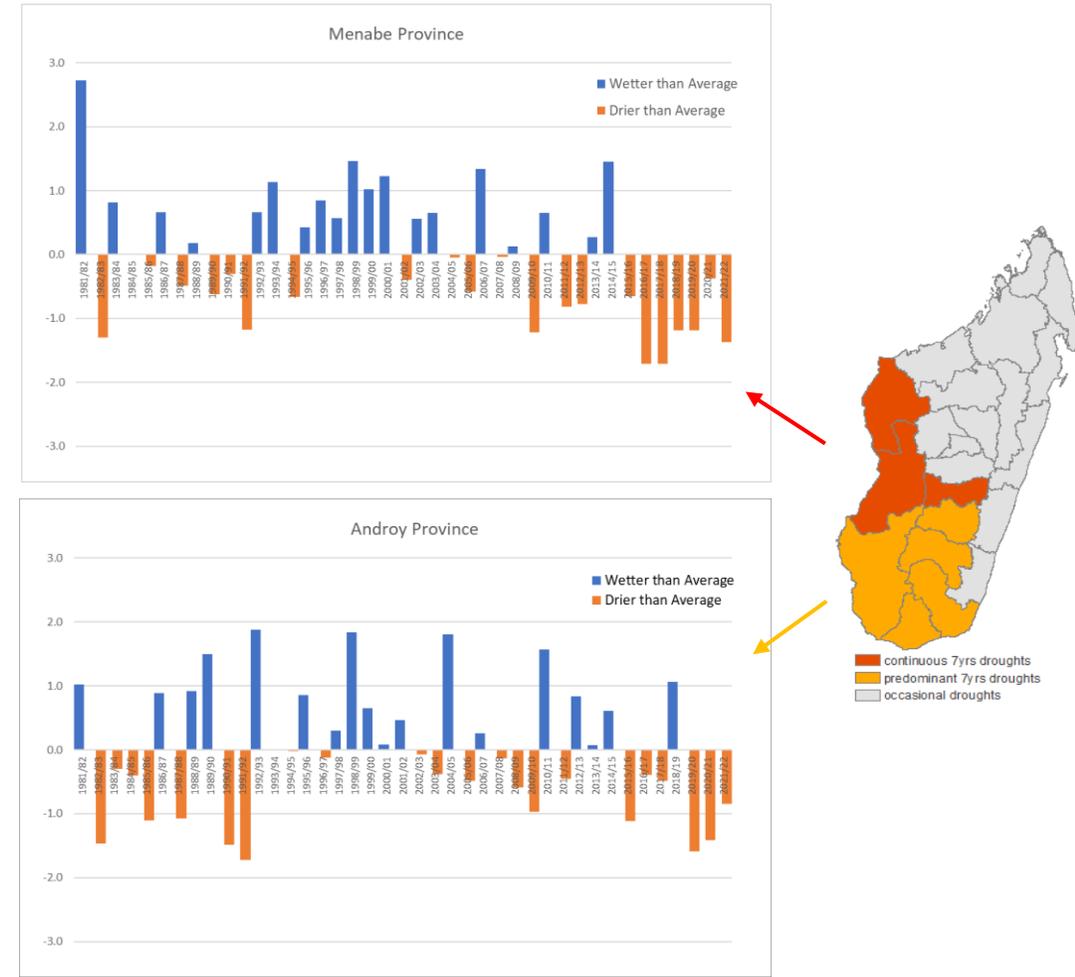
The south and western regions of Madagascar entered an extended, multi-year drier than average cycle in the season of 2015-16 during which they have been hit by droughts of varying severity nearly every season since.

This is evidenced in charts showing October-March rainfall anomalies (deviations from average) for the provinces of Menabe (west) and Androy (south) since 1981 till now. Two major areas can be identified: a western region, where drier than average conditions have gone on uninterrupted for the past seven years (shown in red in the map inset) and a southern region (shown in orange in the same map) where this extended dry period was broken by a single good season in 2018-19.

These patterns are not ENSO influenced, as both El Niño and La Niña events have occurred during the time-scales involved; and they are not unique to Madagascar: multi-year cycles of drier or wetter than average conditions with durations of anywhere from five to ten years have been observed for other countries in the region (Mozambique, Zimbabwe, Namibia) in the past 40 years. It is unclear what drives these medium-term cycles, so it is difficult to provide an outlook regarding the behaviour for next season. This will be unrelated to whether a third La Niña occurs or not.

The rainfall season that is now ending is part of this tendency: severe rainfall deficits in the west and south of the country, led yet again to significant impacts on crop production and pasture resources. While this situation has lasted for about seven years, the past three years have been particularly harsh for the south-central areas of the country (orange areas in the map): total rainfall over the last three seasons has been the driest in the available record (since 1981).

These problems are compounded by the impacts of a succession of cyclones and tropical storms (Batsirai, Emnati, Anna) that hit the country in 2021-22. For some of the drought affected areas, tropical storms may have provided the bulk of the rainfall and such intense rains are of reduced usefulness for crops and pasture.



Seasonal rainfall in the Menabe (top) and Androy (bottom) provinces of Madagascar, expressed as a standardized anomaly (number of standard deviations off the long-term mean). Blue bars for wetter than average seasons, orange bars for drier than average seasons.

Note the recent continuous sequence of drier than average seasons in both provinces (except for 2018-19 in Androy) illustrating the drier multi-year cycle now affecting these regions. Red provinces have a similar sequence to Menabe, orange provinces a similar sequence to Androy. In grey, provinces without a marked dry multi-year cycle.

# Southern Africa

## Zimbabwe

After a drier than average early season (October-December) in the northern provinces and a wetter than usual early season in the south, the country endured nearly six weeks of extremely low rainfall from early February which affected maize-growing regions during the flowering and grain-filling stages. Some areas of the country registered one of the driest Februarys on record. This flash drought led to significant losses in rainfed maize production across the country. A bumper crop in the previous season, good regional stocks and average regional productions will cushion some of the impacts of the maize production shortfall. Much improved rains from late March, although too late to benefit crops, led to good pasture conditions and water availability.

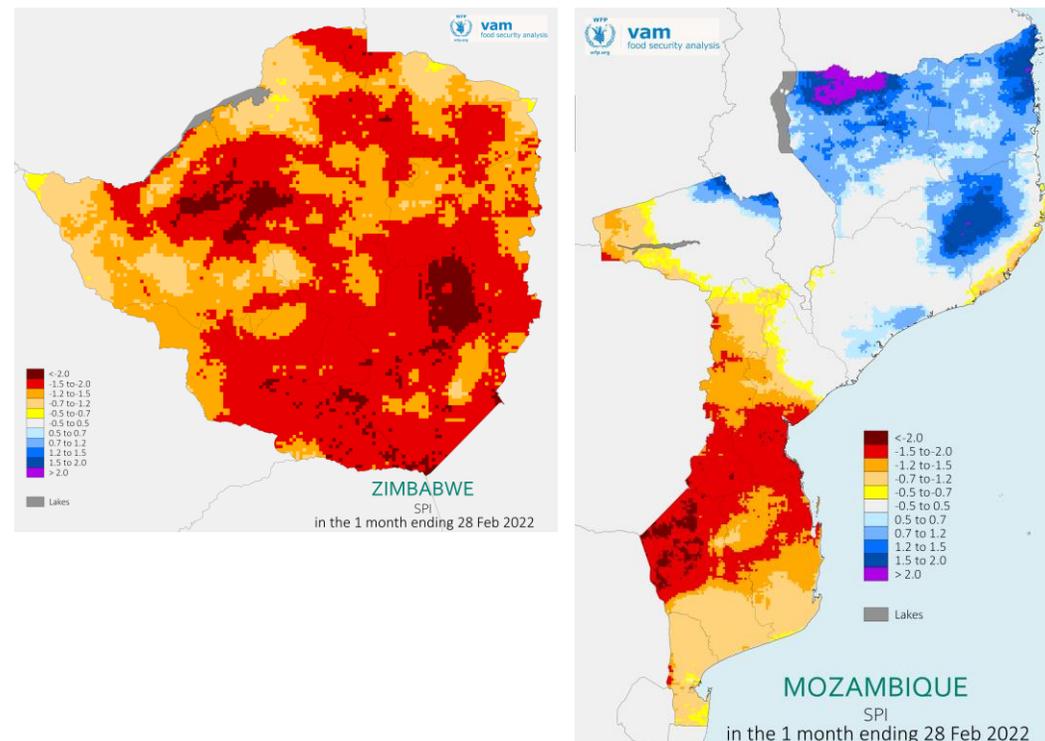
## Mozambique

The northern regions of the country endured the driest beginning of the season (October-December) on record (since 1981), in common with most of Tanzania – while a drier than average start of the season is typical of La Niña seasons in these regions (they are more aligned with East African rainfall patterns during this early stage), conditions were totally unprecedented. Fortunately, a reversal of rainfall patterns from January onward, brought a good recovery in crop and livestock conditions.

After a favourable start, southern and central regions were hit by the same flash drought that affected Zimbabwe – this led to significant losses in maize crop production. Further losses have resulted from the impact of tropical cyclone Gombe and tropical storms that crossed the country.

## Namibia / Angola

Central and southwestern Angola and neighbouring areas of Namibia faced an extreme drought in the season of 2020-21, in places the driest on record since 1981. The current season started with drought conditions across these regions, that lasted until early January 2022; a degree of recovery in rainfall brought some improvement but not enough to prevent impacts on crop production. In the western areas of the border between the two countries, conditions remained poor, with a second drought season in a row.



*Standard Precipitation Index (SPI) for the February 2022 rainfall in Zimbabwe (left) and Mozambique (right). The SPI expresses how far you are from the long-term average rainfall in terms of standard deviations.*

*Negative values in yellow to brown shades correspond to below average rainfall, positive values in blue shades correspond to above average rainfall.*

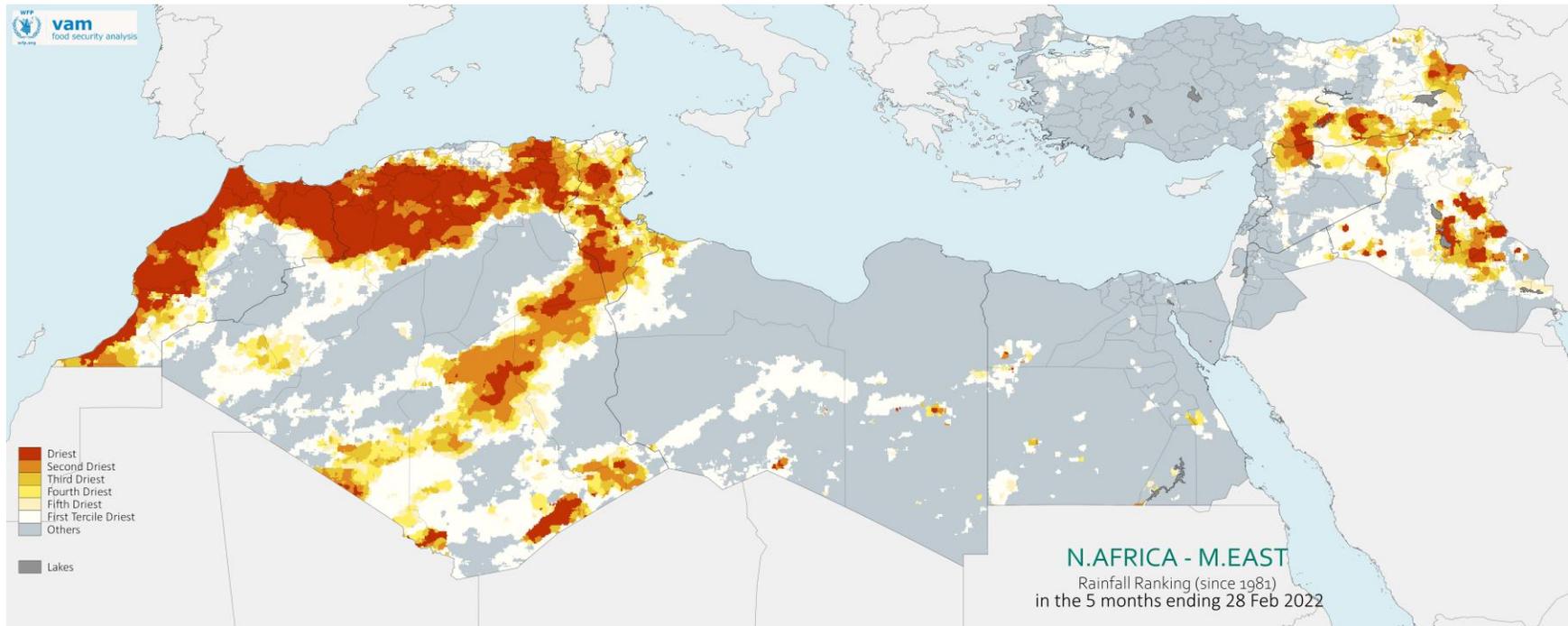
*SPI values correspond to frequency of occurrence: e.g. values below -1.5 (above +1.5) correspond to dry (wet) conditions that on average should be registered once every 15 years. Note widespread very dry conditions across most of Zimbabwe and affecting southern Mozambique.*

*In February, the staple maize crop is at its most sensitive to water deficits, as it reaches its flowering and grain filling stage.*

# Middle East and North Africa

*Widespread drought patterns*

# North Africa and Middle East



*October 2021 to February 2022 rainfall for the Middle East and North Africa (MENA region) expressed as historical ranks:*  
*Red: driest ever Oct-Feb period on record (since 1981)*  
*Orange: second driest ever Oct-Feb period on record (since 1981)*  
*(...)*  
*White: Oct-Feb period part of the driest tercile (third of the length of the available record (40+ years))*

The impact of La Niña events on rainfall in Northern Africa is usually quite limited, though in the Middle East they are associated with drier than average conditions from November to June. Winter and spring rainfall in the Middle East are both required for the good development of winter crops (mostly wheat) and for ensuring water for irrigation in the Tigris-Euphrates basin.

The previous rainfall season (2020-21) was one of the poorest of the last 40 years in Turkey, Iraq and Syria. The current rainfall season has also developed along a similar vein, with significant rainfall deficits in eastern Turkey, Syria, Iraq and Iran. Though not necessarily linked to the La Niña events, Northern Africa's grain belt suffered one of the worst droughts in the last 40 years this season.

Most of the countries in the region are among the largest global cereal importers and highly dependent on Ukraine/Russia for cereal and sunflower oil supplies. As consequence they are very exposed to the impact of an increase in food prices. Moreover, most of these countries heavily subsidize cereal and the cost of this policy can become unsustainable for national finances. A major downturn in regional cereal production will only increase this vulnerability. Since seasonal forecasts for late 2022 indicate below average rainfall for this region, this is an increasing likely scenario.

# North Africa and Middle East

## Morocco/Algeria/Tunisia

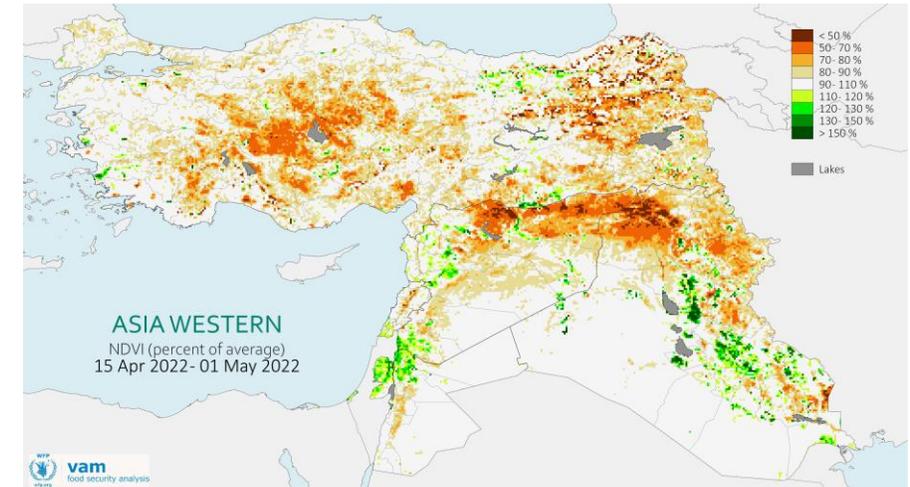
A record winter drought in these countries will lead to a much-reduced cereal crop as the majority of the winter wheat production is rainfed. Drier than average conditions affected the agricultural season from the very onset, and cumulative rainfall during the crop growing period was about half of the long-term average. While Morocco is the most affected country, most of Algeria and Tunisia also endured very dry conditions, leading to an enhanced regional cereal deficit. Rainfall improved from mid-March in Morocco and Algeria, too late to allow a recovery in crop conditions but providing some relief in pastoral areas.

## Syria

Last year, Syria reported a large production decline with wheat and barley production more than 50 percent below average due to erratic rains, prohibitively expensive inputs and lack of fuel to operate irrigation pumps. This season was again affected by drier than average conditions, though the situation improved slightly in the first quarter of this year. However, vegetation cover is severely below average across most of the wheat producing northern and northeastern regions of the country, providing strong evidence of another season with very low cereal production, through the combined impacts of weather and lack of inputs. Next growing season is likely to be also affected by rainfall deficits.

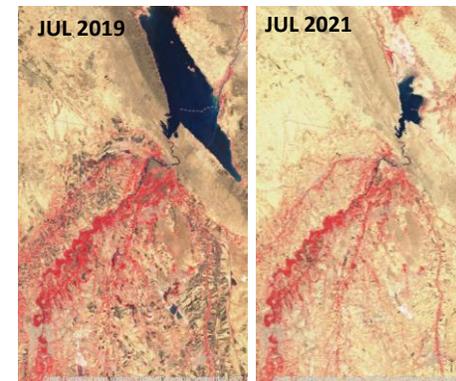
## Iraq

Low rainfall and high temperatures led to a reduced crop production from the 2021 harvest of winter cereals in the northeast of the country. The current rainfall season started poorly but subsequent improvements seem to have made little difference, as satellite data indicates very poor vegetation development in most of the northern Governorates. The country is also facing extreme water shortages in the main reservoirs – the satellite image on the right shows a very sharp decline in the extent of the Hamrin reservoir and a corresponding decrease in planted area in the surroundings. This led Iraq to significantly reduce the area of irrigated crops this season in order to prioritize drinking water over irrigation. Vegetation deficits over irrigated areas in the southeast provide corroborating evidence.

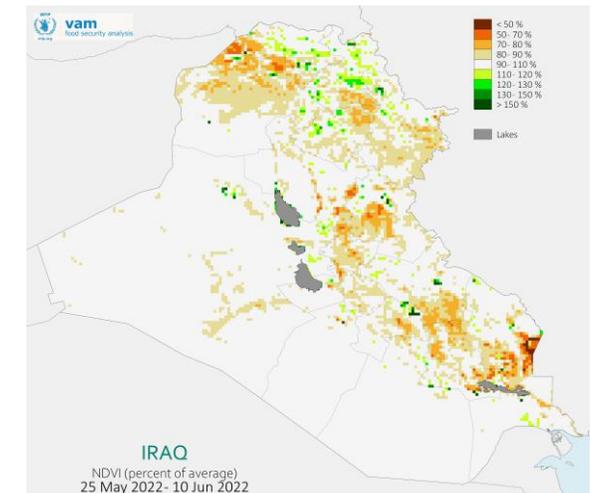


Vegetation index at end of April 2022 for the Middle East region as a proportion of the long-term average. Green shades for above average vegetation, orange shades for below average vegetation.

## Hamrin Lake (Iraq)



False colour composite for the Lake Hamrin region. Note the dramatic decrease in surface water extent in two years. Vegetation in this type of image shows up in red shades

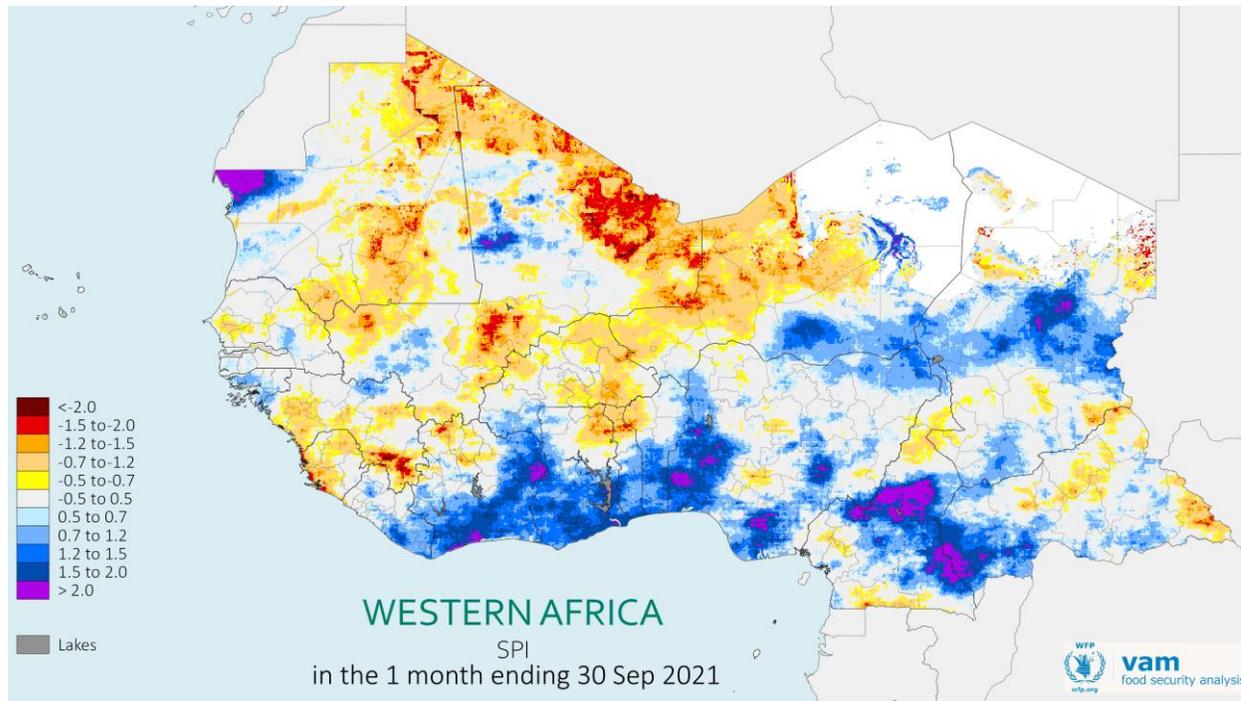


Vegetation index in early June 2022 for Iraq as a proportion of the long-term average. Green shades for above average vegetation, orange shades for below average vegetation. Note below average vegetation over major irrigated regions.

# West Africa

*Pockets of drought and insecurity*

# West Africa



According to the latest “Cadre Harmonisé (CH)”, a record number of 38.3 million people are projected to face severe food insecurity in coming lean season of 2022, if appropriate humanitarian measures are not implemented. The deterioration of the food security situation in 2022 mainly stems from high food prices, protracted conflicts and rising insecurity, particularly in the Liptako-Gourma and the wider Lake Chad region.

*Standard Precipitation Index (SPI) for the September 2021 rainfall in West Africa. The SPI expresses how far you are from the long-term average rainfall in terms of standard deviations. Negative values in yellow to brown shades correspond to below average rainfall, positive values in blue shades correspond to above average rainfall.*

*SPI values correspond to frequency of occurrence: e.g. values below -1.5 (above +1.5) correspond to dry (wet) conditions that on average should be registered once every 15 years.*

*Note drier than average conditions from central Mali across western Niger and northern Burkina Faso during a key stage of crop development.*

Last year’s harvests resulted in a regional aggregate cereal output close to the five-year average due to good production in the coastal countries. However, in the Sahelian countries and north of Nigeria, an uneven distribution of rainfall and dry spells during critical crop development stages and conflict disruptions resulted in below-average yields particularly in Niger and Mauritania resulting in outputs 40 and 30 percent below the average, respectively. Up to 10 percent below average production has been officially estimated in Burkina Faso, Chad and Mali. Pasture conditions and forage production was also hampered in these regions.

In terms of cereal imports, the caloric contribution of Ukraine and Russia is relatively small. Most of the calories consumed in the region come from local production, Europe, and Asia (<https://www.ifpri.org/blog/west-africa-faces-mixed-food-security-impacts-russia-ukraine-conflict>). Just part of wheat grain and flour are imported from Ukraine and Russia and mostly used in urban context.

# West Africa

In West Africa, ENSO linkages are not very pronounced, though broadly La Niña tends to be associated with average to wetter than average conditions in most of the region during the core rainfall period (July-September) and a slight tendency for drier than average starts of the season.

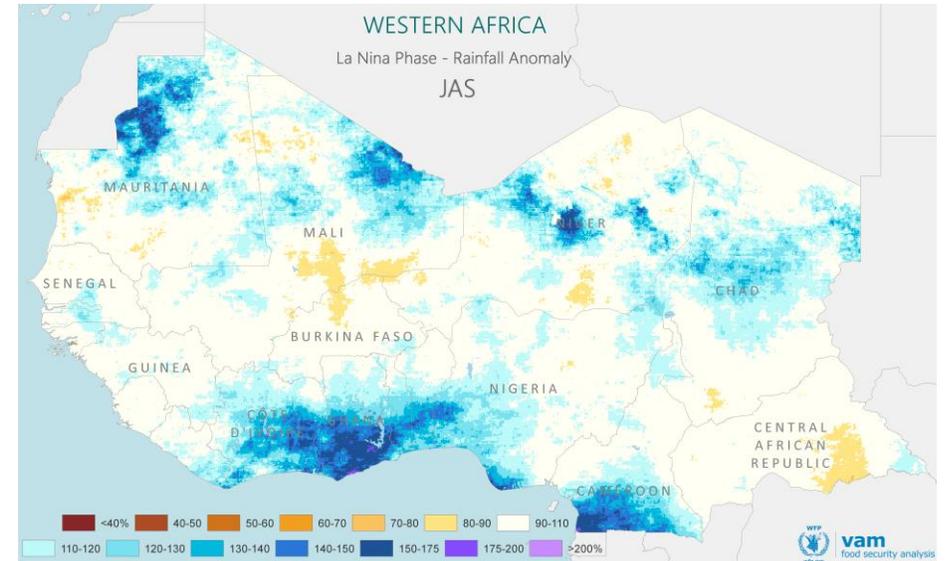
Seasonal forecasts provide a better indication of what to expect during this year's rainfall season. The consensual indications across a wide range of different forecasts are for near normal conditions in the early phase of the season and above average rainfall for the core period of July-September for the Sahelian region and near normal conditions in the southern areas of the Gulf of Guinea countries. This gives good prospects for crops, but also an increased risk of localized flooding in the Sahel.

However, in the more drought prone areas of the Sahelian region, a short growing period is always vulnerable to episodes of dryness or poor rainfall distribution, and the permanent threats to crop development from conflict flare-ups, moderate any optimistic outlook.

## Niger

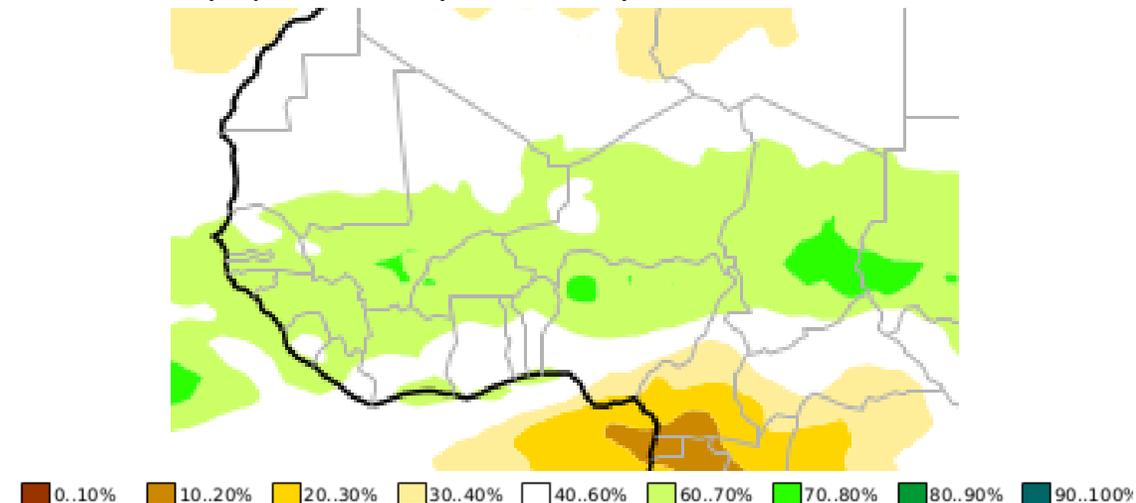
Given a major shortfall in crop production in the previous season, good performance during the coming cropping season is of great importance for Niger. While the broad outlook is favourable close monitoring is required due to the sensitivity of crop production to even minor disruptions in rainfall patterns. Potential conflict impacts in the west and southeast regions of the country will remain a cause for concern

Elsewhere, conflict and instability are expected to continue to impact agricultural activities and affect crop yields in northeastern Nigeria, northern Burkina Faso, the Central African Republic, Lac region in Chad, central Mali, and southwestern Cameroon.



La Niña rainfall anomaly for the July to September period – mean JAS rainfall in La Niña seasons vs neutral seasons. Blue shades for La Niña seasons wetter than Neutral seasons, orange shades for La Niña seasons drier than Neutral seasons.

## July-Sept. 2022: Multi-System Probability Rainfall > Median



Seasonal rainfall forecasts for May-July 2022 (left) and July-September 2022 (right) in West Africa. Green shades for wetter than usual conditions, orange shades for drier than usual conditions.

**Asia**

*Unfavourable scenarios for Central Asia*

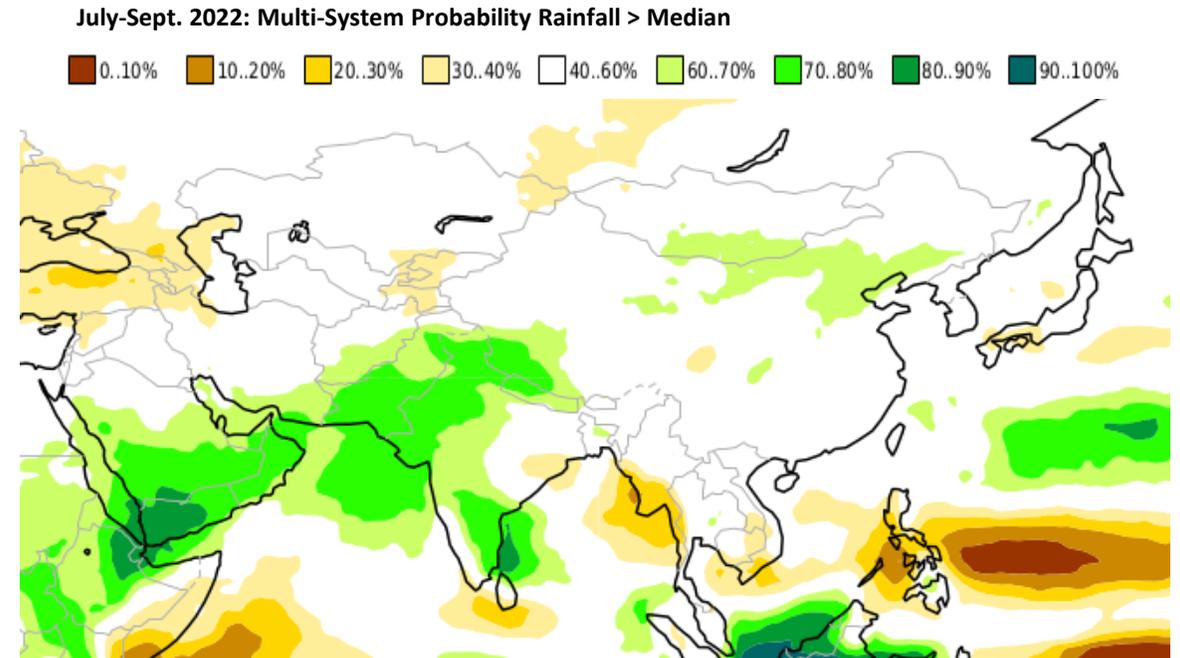
# Asia

In central Asian countries (Afghanistan, Kyrgyzstan, Tajikistan) and Pakistan, La Niña events are associated with drier than average conditions in winter and spring. Reduced rainfall and thinner snowpacks (that provide deferred water to snowmelt driven irrigation systems) usually lead to lower cereal production.

In 2021, crop production in Central Asian countries was indeed below average with drops in cereal production of -24% in Afghanistan, -34% in Kyrgyzstan and -14% in Kazakhstan. With the current growing season developed under La Niña conditions, expectations are for another poor harvest. Kyrgyzstan and Tadjikistan are the countries of the region with greater dependency on Russia as a share of the imported calories and as such are those more vulnerable to disruption of cereal flows from that producer.

The influence of La Niña events on the Indian and South-East Asian summer monsoon is poorly defined, given that ENSO events are usually weakest during the northern hemisphere summer. Currently, seasonal forecasts indicate a favourable monsoon season for the Indian subcontinent and normal conditions for southeast Asia, with possible drier than average conditions in Myanmar and the Philippines.

In contrast, La Niña influence on the main rainfall season (September-April) in the Indonesian-Australian region is much more pronounced, usually resulting in much wetter than average seasons. Favourable crop production expectations are tempered by increased risk of floods and landslides.



*Seasonal rainfall forecasts for July-September 2022. Green shades for wetter than usual conditions, orange shades for drier than usual conditions.*

*Note widespread drier than average conditions forecast for a region from Turkey to southern Kazakhstan for this period and a wetter start to the monsoon season in India.*

# Asia

## Afghanistan

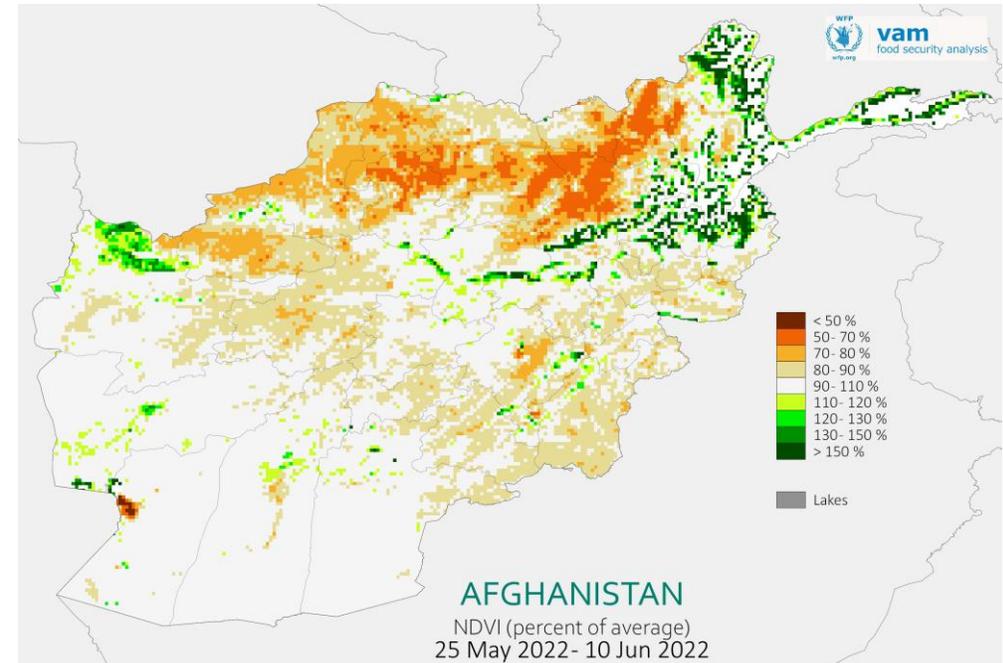
The current winter cropping season has been characterized by drier than average conditions with many areas registering half of the usual rainfall in the first months of 2022. Snow water volumes reached record lows in the basins feeding northern, and northeastern areas. The combination of poor spring rainfall and reduced snow melt leads to expectations of below average production both from winter wheat and spring crops, with possible further impacts on pasture.

Recent satellite data shows below average vegetation levels across most northern wheat production areas and recent estimates from FEWSNET show crop losses across most Governorates, in particular the northern ones more dependent on snowmelt.

Therefore, Afghanistan will face a second consecutive below average harvest. If La Niña conditions continue into late 2022 and beyond, Afghanistan faces a possible scenario of a third consecutive poor agricultural season.

*Vegetation index at end of May 2022 for Afghanistan as a proportion of the long-term average. Green shades for above average vegetation, orange shades for below average vegetation. Note below average vegetation cover in northern wheat planting areas.*

*Above average vegetation in central areas has to do with unusual absence of snow (and hence appearance of vegetation), not with favourable conditions*

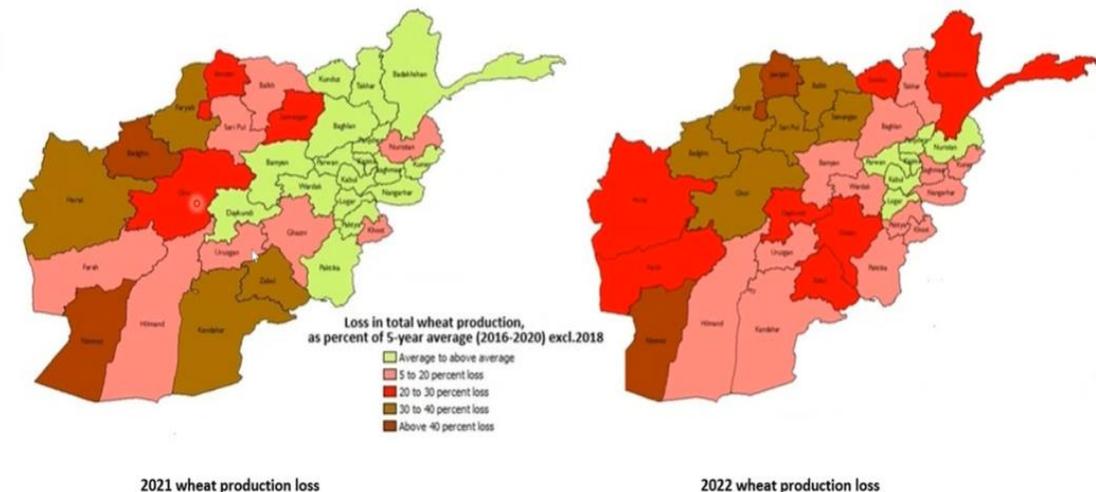


## Kyrgyzstan

In Kyrgyzstan, the current season developed under similar seasonal conditions to Afghanistan. Significant rainfall deficits lasted from early October until late February and after a wetter than average March, drier than average conditions returned in April. In May the conditions have slightly improved, but seasonal forecasts point to below-average rainfall until September. If this turns out to be the case, the outlook for this season will be unfavorable.

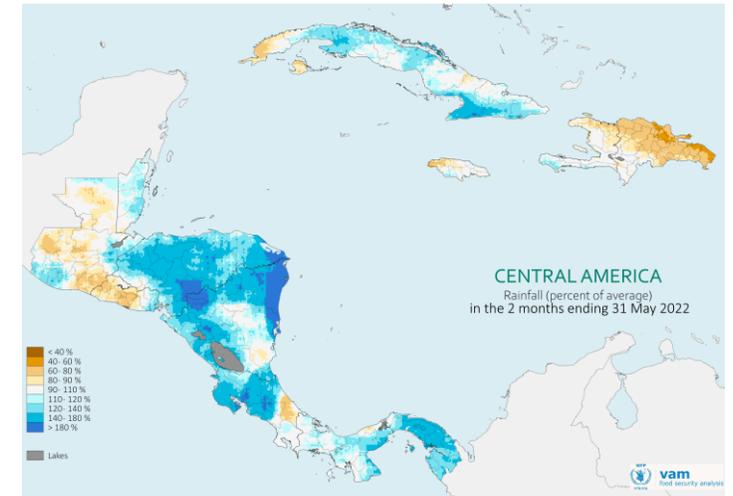
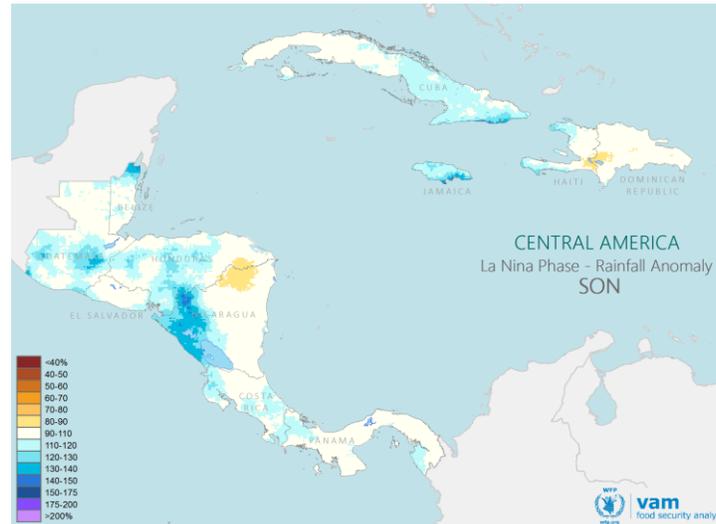
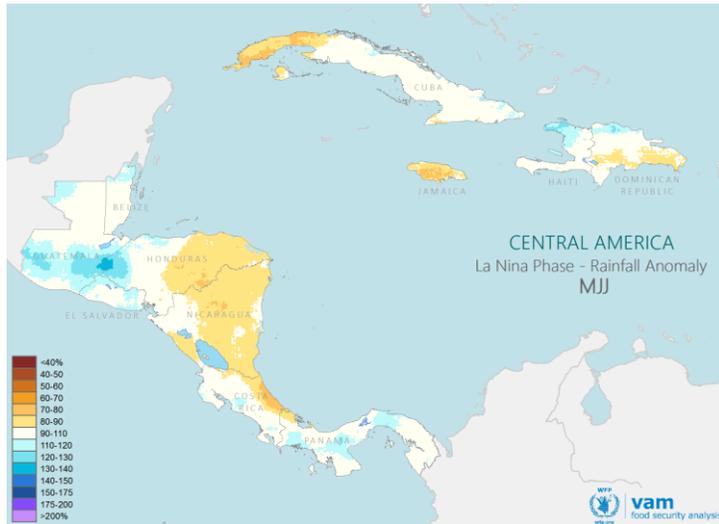
*Estimated wheat production loss in Afghanistan*

*Source FEWSNET*



**Central America**

# Central America and Caribbean



Current Primera season rainfall (April-May 2022)

Blue shades for La Nina seasons wetter than Neutral seasons, orange shades for La Nina seasons drier than Neutral seasons.

La Nina rainfall anomaly for the May to July (left) and September to November (right) periods for Central America.

La Nina anomaly: mean rainfall in La Nina seasons vs neutral seasons for a specific period. Blue shades for La Nina seasons wetter than Neutral seasons, orange shades for La Nina seasons drier than Neutral seasons.

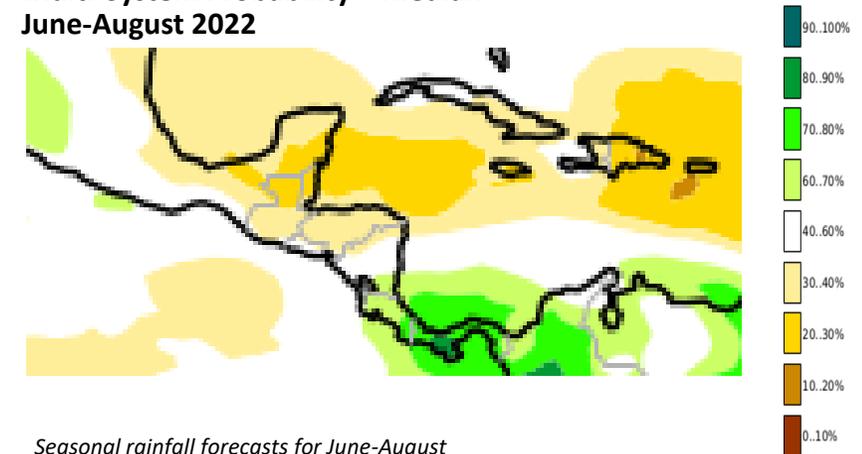
In Central America, La Niña episodes have a weak association with rainfall patterns, with a lot of variability between past events. Broadly there is a tendency for drier conditions in the Primera cropping season and wetter than average conditions in the Postrera cropping season (see maps above). La Niña is also associated with a more active hurricane season in the Caribbean.

Central American countries had a favourable crop production season, with amounts close or above the average. However, this was not the case in Cuba and in Haiti, where the 2021 crop production dropped by 25% and 16% respectively relative to the 5-year average.

In the continental areas, current condition for the Primera season 2022 shows generalized good rainfall with some dry hotspots in Guatemala and El Salvador but forecast until end of August indicate a prevalence of drier than average conditions across most of the region.

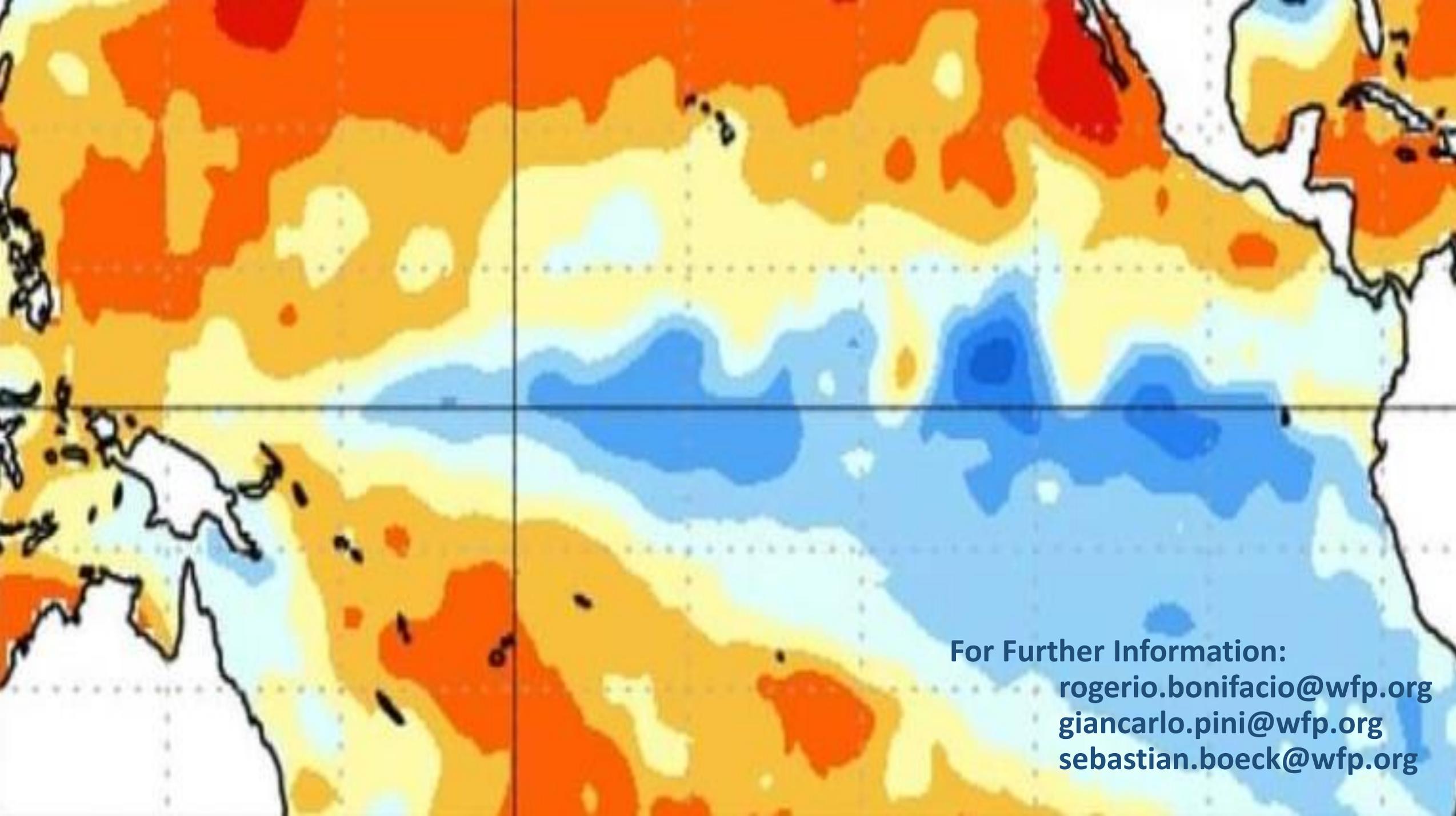
Western Cuba and Haiti are the most concerning, as main season crop production may be affected by persistent dry conditions.

## Multi-System Probability > Median June-August 2022



Seasonal rainfall forecasts for June-August

Green shades for wetter than usual conditions, orange shades for drier than usual conditions.



**For Further Information:**  
[rogerio.bonifacio@wfp.org](mailto:rogerio.bonifacio@wfp.org)  
[giancarlo.pini@wfp.org](mailto:giancarlo.pini@wfp.org)  
[sebastian.boeck@wfp.org](mailto:sebastian.boeck@wfp.org)