

El Nino Outlook: 2023-24

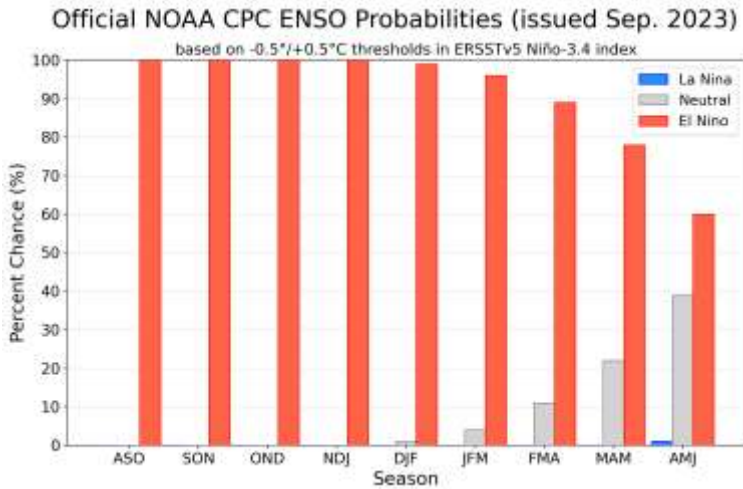
Climate and Earth Observation Unit, Research, Assessment and Monitoring Division

September 2023

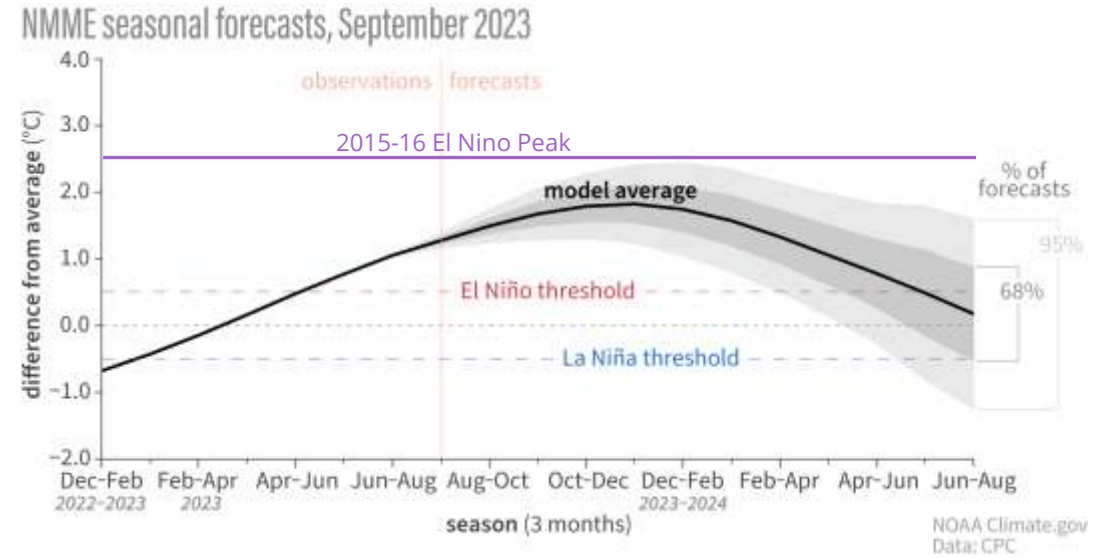
Summary

- An El Niño has been officially declared in June 2023, and is likely to peak by late 2023 – early 2024 and weaken around the second quarter of 2024. There is currently a 70% chance of a strong El Niño event. This El Niño is so far conforming to typical patterns, which stronger El Niños tend to do. [Slides 3-4](#)
- Historically, El Niño events have led to decreased precipitation among WFP countries in Southern Africa, Central America and the Caribbean, Indonesia, the Philippines, Asia and SE Asia, Western Africa, Sudan, and Ethiopia. In many of these countries the reduction in precipitation has led to decreased production of key food crops. From the major global producers, annual all cereal production shows little ENSO influence. [Slides 5-7](#)
- The current season in West Africa has been broadly favorable, with a few areas showing below average or inconsistent rainfall. In East Africa, the season was more variable, with favorable rainfall in the early season prior to the main El Niño development, followed by dry conditions from mid-July affecting Ethiopia in particular. [Slides 8-10](#)
- In Central America and Caribbean, the season has mostly been drier than average across the region, and conditions have worsened from June-August. Initial conditions for the second season have been unfavorable, and near normal conditions forecast for October-December are unlikely to improve perspectives of a drop in staple food crop production, with Corridor Seco populations being most at risk. Drier than average conditions are expected in NW South America until March 2024. Drier than average conditions are forecast for Bolivia during this period. [Slides 11-14](#)
- In Southern Africa, difficulties are expected for the coming season. Parts of the region have experienced drought last season which also ended earlier in Zimbabwe. This will connect to a drier early season across most of the region, except for some areas (Tanzania) that typically enjoy above average rainfall. Based on historical data, the expectation is for an unfavourable core season in 2024 across most of the region leading to crop production shortfalls and reduced pasture availability. Areas of most concern include populations affected by tropical storm Freddy and localized drought. [Slides 15-17](#)
- In the Horn of Africa, the previous March-May 2023 season was largely favorable, and the October-December rainfall is nearly certain to be much wetter than average. This will lead to favorable crop and pasture development, helping the recovery from the succession of droughts from 2020 to 2022. Flood risk is also a concern, but mostly the benefits of improved crop and pasture overcome flood impacts. [Slides 18-20](#)
- In Asia and SE Asia, the current monsoon season has been variable across the region, but the core months of July and August were very dry across India, Bangladesh, Myanmar and Thailand. This will lead to production drops in main season staple crops and to unfavourable conditions for second season crops. Forecasts for late 2023 indicate dry conditions in southern India, the Philippines, Indonesia, and the Pacific which are likely to extend into the first quarter of 2024. [Slides 21-24](#)
- The coming rainfall season is forecasted to be average across North Africa and wetter than average in the Middle East and Central Asia from October to March. This will lead to improvements in crop production, after the poor performance of the past La Niña influenced seasons. This will be particularly relevant for Afghanistan. [Slides 25-27](#)

El Niño: Current Status



NOAA Climate Prediction Center forecast for each ENSO categories for the next 9 overlapping 3-month periods. Blue bars show the chances of La Niña, gray bars the chances for neutral, and red bars the chances for El Niño



September 2023 climate model forecasts for the best known El Niño indicator (Pacific sea surface temperature anomaly) from the North American Multi-Model Ensemble (NMME). The black line shows the model forecast average; darker (lighter) gray envelope shows the range of 68% (95%) of all model forecasts. The maximum level of this indicator for the big El Niño of 2015-16 is shown as purple line (near the top of the plot)

What is the current status of the El Niño?

After a triple La Niña event, that ended in early 2023, an El Niño has been officially declared in June 2023, as all criteria for the event have been met. It is a near certainty this El Niño will continue through 2023 and 80% probability it will remain active until about April 2024.

How long is it likely to last?

Based on current forecasts and typical behaviour, we expect this El Niño to peak by the end of 2023 – early 2024 and weaken around the second quarter of 2024, decaying back to neutral conditions after that.

How intense is it likely to be?

Available forecast data and the unusually high likelihoods of its onset, point to an intense El Niño. As things stand, there is a 71% chance of a strong event and 30% of a very strong event (NASA ENSO). In the 22 events recorded since 1950, 9 have been strong (or worse), and 5 were very strong. Stronger El Niño events make some weather extremes more likely, but these can occur even in weaker episodes.

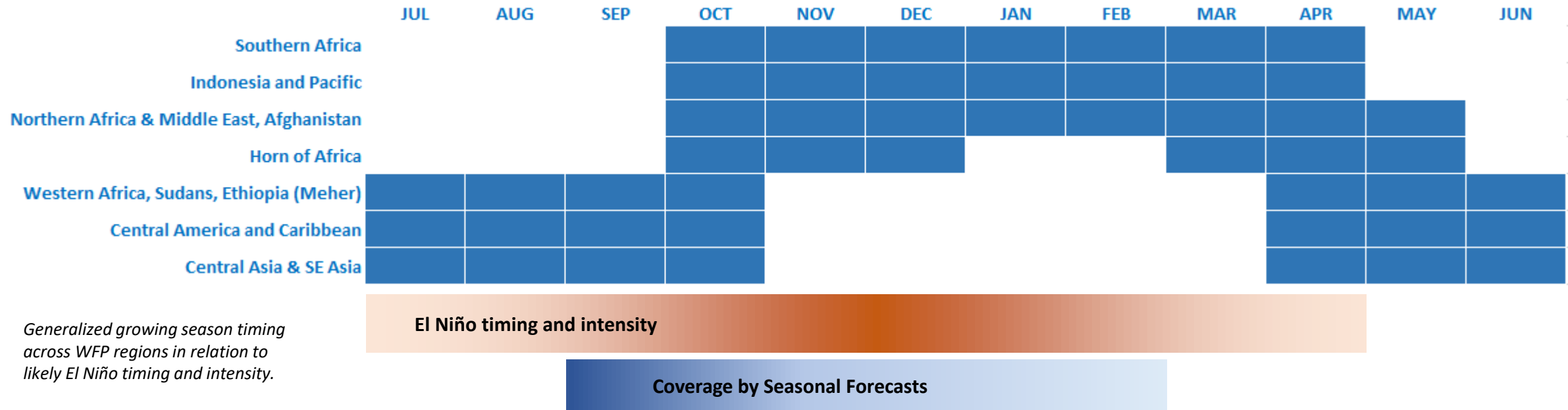
What else do we need to consider?

Stronger El Niño events tend to conform more to typical patterns, meaning these have a higher likelihood of occurring. So far, 2023 global precipitation patterns have shown quite a good match with typical El Niño patterns. There are doubts about whether the current exceptionally warm global oceans might have an unforeseen effect on El Niño impacts, but so far this has not been the case.

What is certainly expected is that the El Niño will have a significant impact on global mean temperatures. These have already reached record levels during the recent La Niña events which typically have a moderating effect, hence record global temperatures during this El Niño are very likely.

The influence of other atmospheric circulation features will also be felt. For instance, specific patterns of sea surface temperatures in the Indian Ocean (the Indian Ocean Dipole) should further enhance precipitation amounts in East Africa in late 2023. [SLIDE 3](#)

El Niño and the Growing Seasons



Southern Africa (DRY): The growing season overlaps with the main El Niño development. Traditionally, this leads to drought conditions across most of the region

East Africa (WET): Both the Oct-Dec and March-May seasons in East Africa are influenced by El Niño, though impacts are far more pronounced in the former.

Central America and Caribbean (DRY): El Niño brings drier and warmer conditions to Central America and parts of the Caribbean during the main crop season.

Indonesia and Philippines (DRY): Typically, El Niño brings much drier than average conditions to Indonesia and to a lesser degree to the Philippines.

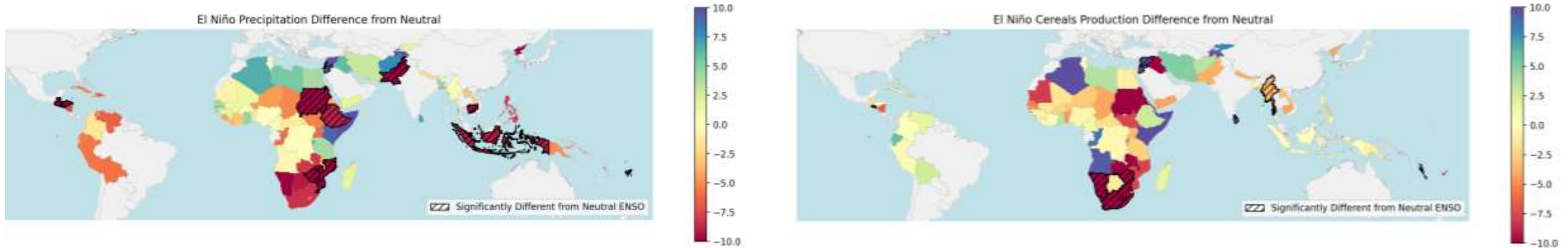
Asia and SE Asia, Western Africa, Sudans and Ethiopia (DRY): usually, the cropping season develops during the developing phase of the El Niño. Impacts are fairly variable from event to event with ill-defined expectations - conditions need to be monitored as they evolve.

Northern Africa, Middle East and Afghanistan (WET): El Niño typically brings wet conditions during the winter-spring main cropping season.

WFP Global Overview



El Niño influence on Precipitation and Cereal Production in WFP Countries



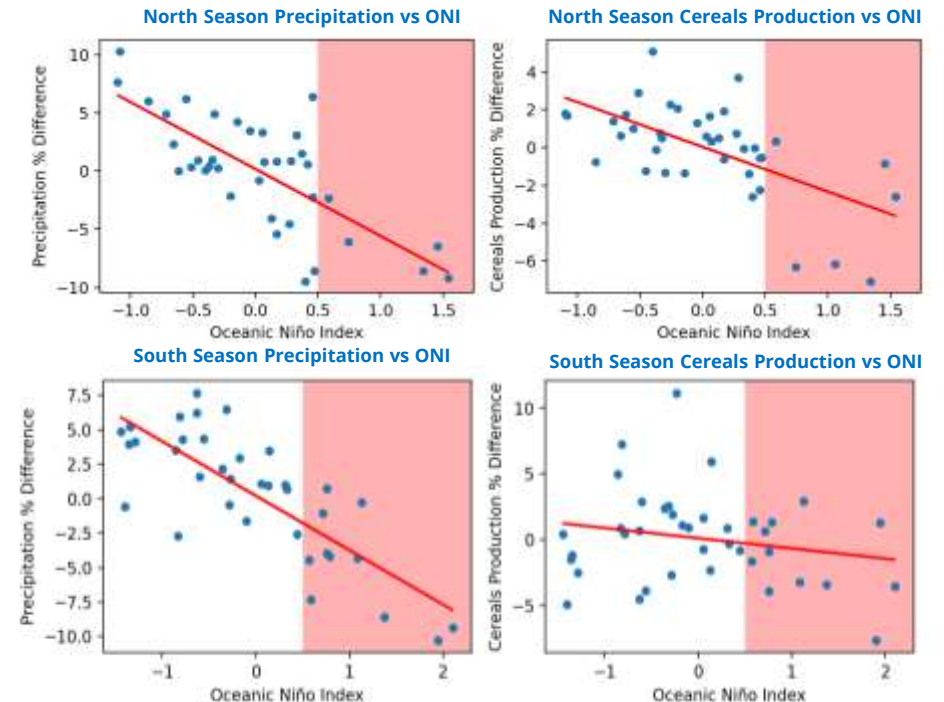
Above: Historical El Niño precipitation (Left) and cereal production (Right) anomaly off the 5 year mean. Blue/green shades (orange/red shades) for above (below) average performance during El Niño.

An historical analysis has been conducted to examine the impact of El Niño on precipitation and cereal production at the national level for WFP countries.

Last 40+ years total precipitation was aggregated over croplands for the crop growing season of each country, and precipitation during El Niño years was compared to that of the neutral phase.

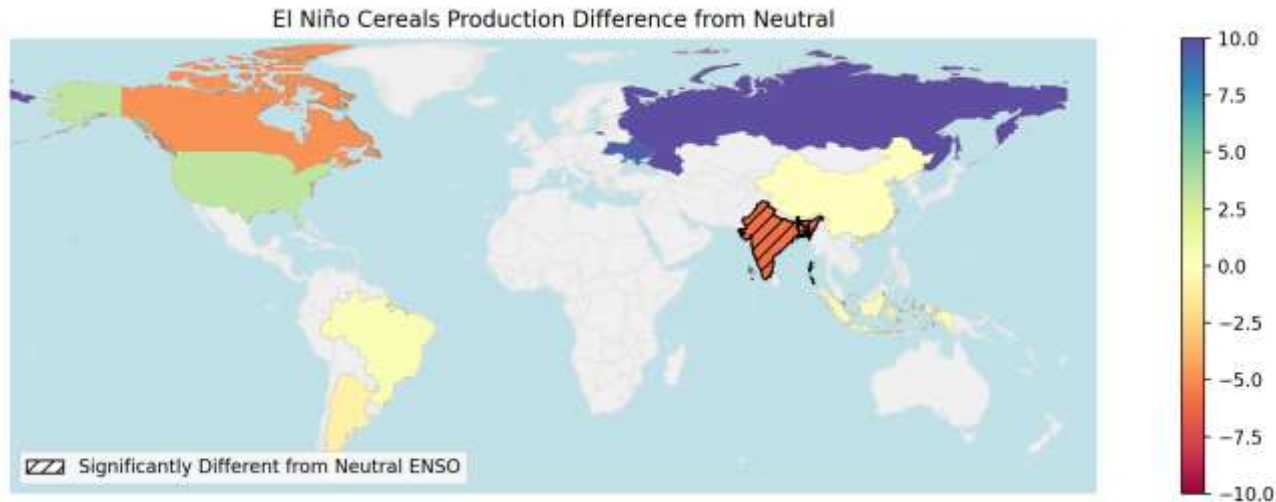
For many countries, El Niño has historically caused a decrease in precipitation. This is especially true in India and SE Asia, Southern Africa, and Central America. This decrease in precipitation is associated with reduced cereals yields and production.

In contrast, in North Africa and Middle East, the Greater Horn of Africa, there is generally an increase in precipitation during El Niño. This is associated with increased cereal yields and production in these countries. In Somalia and Kenya this mostly comes from major improvements in the short rains season (Oct-Dec).



Historical El Niño precipitation (Left) and cereal production (Right) anomaly vs ONI during the April-October crop growth season (Center) and October-April crop growth season (Below) SLIDE 6

El Niño influence on All-Cereals Production (Top 10 Producing Countries)



An analysis has been conducted to examine the historical impact of El Niño on cereal production at the national level for the top 10 cereals producing countries.

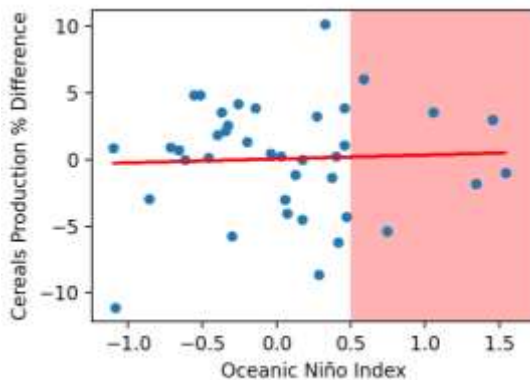
The 10 major cereals producing countries examined here include China, USA, India, Russia, Brazil, Argentina, Indonesia, Canada, Ukraine and Bangladesh.

The analysis is split by growing season: the North season considers ONI from April-October, and the South season considers from October-April of the following year.

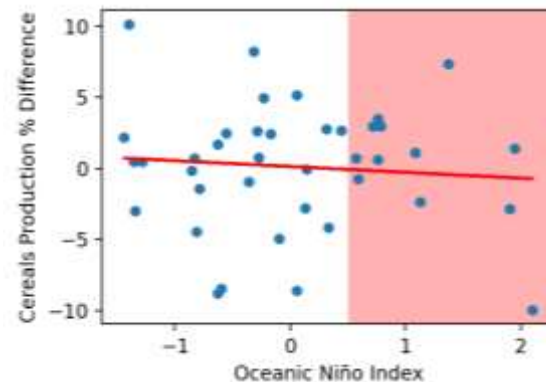
Over all 10 countries, there is little impact on all-cereal production during El Niño, as indicated by the relationships between ONI and production in the plots. However, different countries experience different impacts during El Niño.

Over India and Bangladesh, there is a significant decrease in all-cereal production during El Niño. There is also a decrease for Canada, though not as strong. For Russia and Ukraine, there is a strong increase in cereals production, and a slightly weaker increase for the USA. For all-cereal production in Brazil, China, Indonesia, and Argentina, there is not a strong difference between the neutral ENSO phase and El Niño.

North Season Cereals Production vs ONI



South Season Cereals Production vs ONI



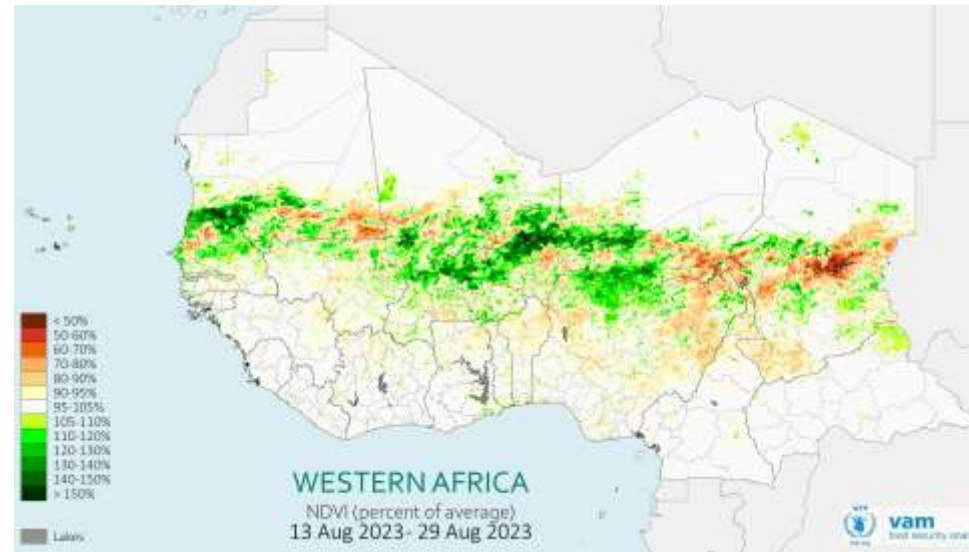
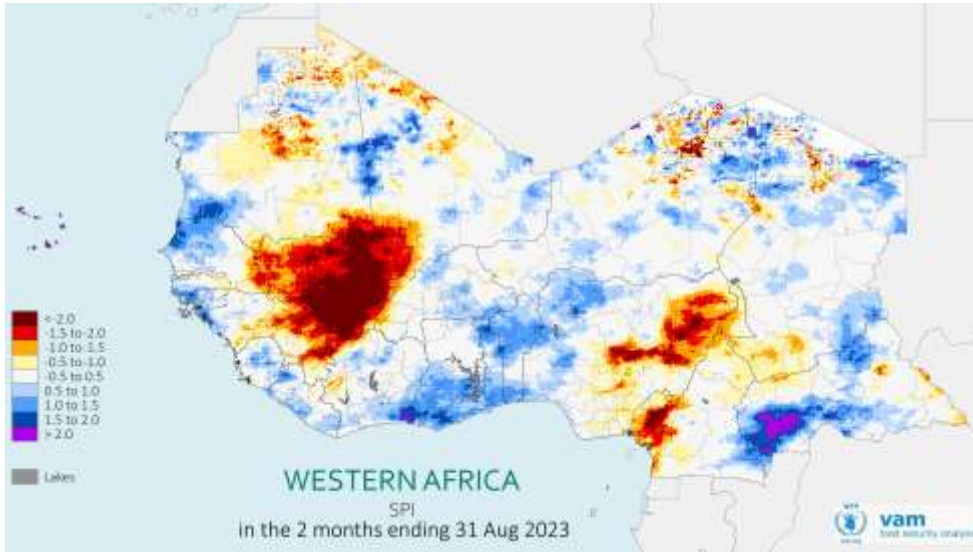
Above: Historical El Niño cereal production anomaly off the 5 year mean for top 10 producing countries. Blue/green shades (orange/red shades) for above (below) average production during El Niño.
 Below: Historical El Niño cereal production anomaly vs ONI for top 10 producing countries during the April-October crop growth season (Below Left) and October-April crop growth season (Below Right)

West and East Africa



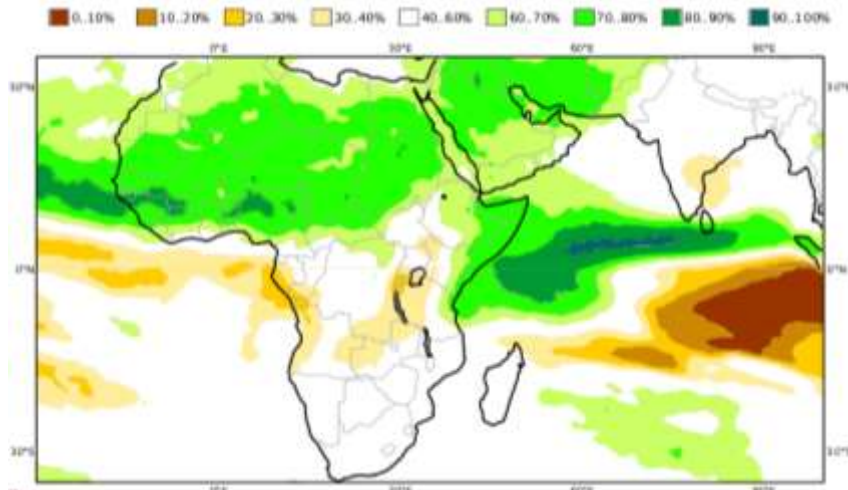
World Food Programme

West Africa: Current Situation and Outlook



Above: SPI (a rainfall anomaly) for July-August 2023. Blue shades (red shades) for wetter (drier) than average conditions.
Below: NDVI in late August as a percent of the long term average. Green shades (orange shades) for above (below) average vegetation.

ECMWF Precipitation Forecast October 2023 (Issued September 2023)



Seasonal forecast for October 2023 probability of above median rainfall.
Green (orange) shades for above (below) median

West Africa in general has benefited from favorable rainfall conditions, that allowed for timely sowing and development of crops.

In the past three months, very few areas have been affected by persistent below average rainfall, apart from southwest Cameroon and parts of eastern Nigeria and southern Chad. However, rainfall in some areas has been fairly irregular with heavy rains alternating with dry spells on time scales of about one month.

As a result, we see favourable vegetation development across the region with the exception of localized areas of deficient vegetation health, such as in central Chad, NE Nigeria and eastern Niger and eastern Mauritania.

These conditions were broadly well forecast by seasonal forecasting systems which predict a continuation of these patterns until the end of the season in October.

Note that this seasonal performance is significantly better than what would have been expected from past performance during previous El Nino seasons.

East Africa: Current Situation and Outlook

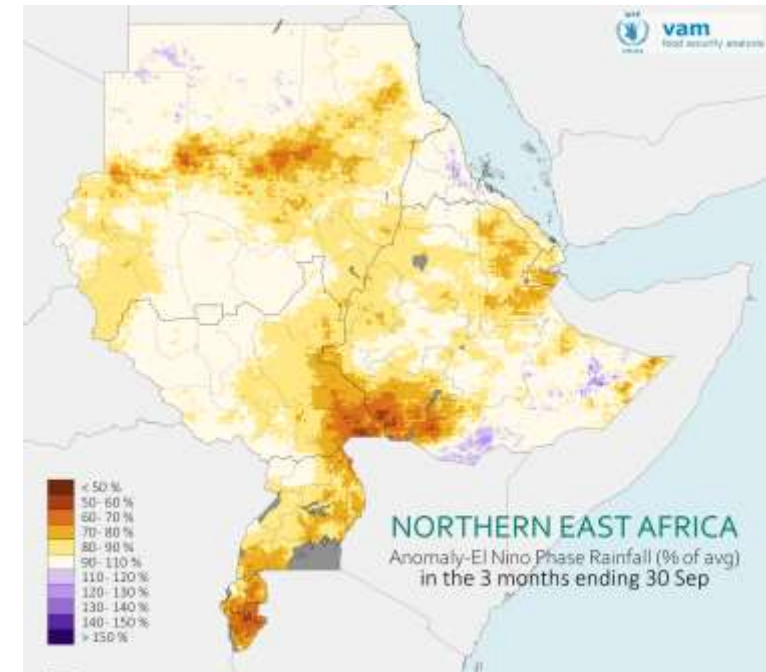
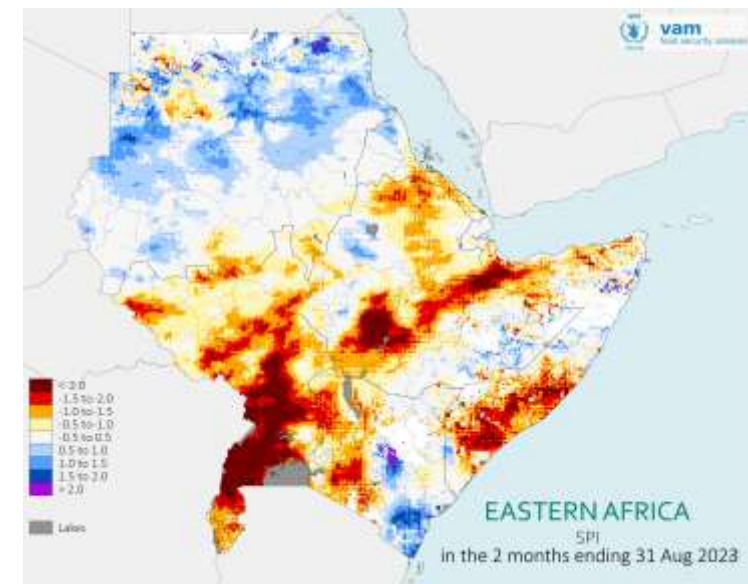
Across Sudan, South Sudan and Ethiopia, this season has had variable performance. In the early stages of the season, conditions tended to above or on average: Ethiopia registered plentiful Belg rains. However, May was very dry across South Sudan, impacting early crops in the south and planting in the rest of the country. After overall good rains in June, conditions turned drier than average from mid-July, in particular across South Sudan, in Ethiopia from southwest to the Afar region and over most of Uganda. Rainfall performance in September improved across most of the region but where the growing season is in its closing stages this comes too late. Currently main areas of concern include:

- South Sudan, specifically in Central and Eastern Equatoria.
- In Ethiopia, areas of SNPRR and central Oromia are enduring pronounced rainfall deficits, also extending to northeastern areas.
- In Uganda, dry conditions affected mainly western areas (Karamoja) and northern areas. Elsewhere, dryness has mostly coincided with the seasonal rainfall minimum, but is now delaying the onset of the second growing season.

As the El Nino influence switches to enhanced rainfall of the Short Rains period (Oct-Dec) areas with a second season during this period will benefit and some recovery is possible for long development or late planted crops.

These patterns were very well captured by seasonal forecasts issues already by April and are consistent with typical El Nino patterns for the July-September period. No full spatial coincidence should be expected, but areas of dryness have been typical in South Sudan and Ethiopia in the past El Ninos. Sudan is the only region with a significant departure from typical El Nino patterns in that it largely enjoyed normal rainfall conditions.

Areas such as Somalia, Kenya and SE Ethiopia are dealt with in the Horn of Africa section, but are expected to enjoy good October-December rains as a result of typical El Nino influences.



Above: SPI (a rainfall anomaly) for July-August 2023. Blue shades (red shades) for wetter (drier) than average conditions.

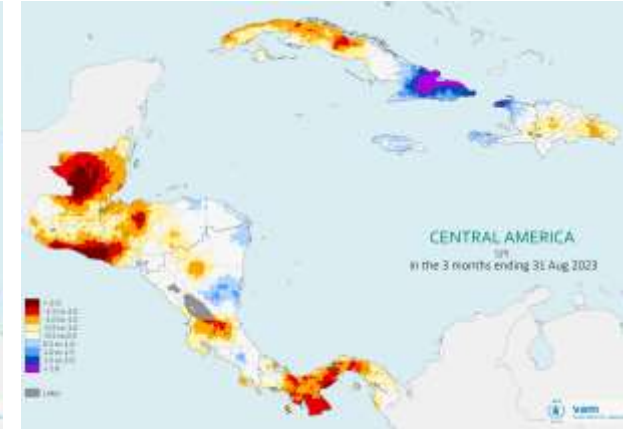
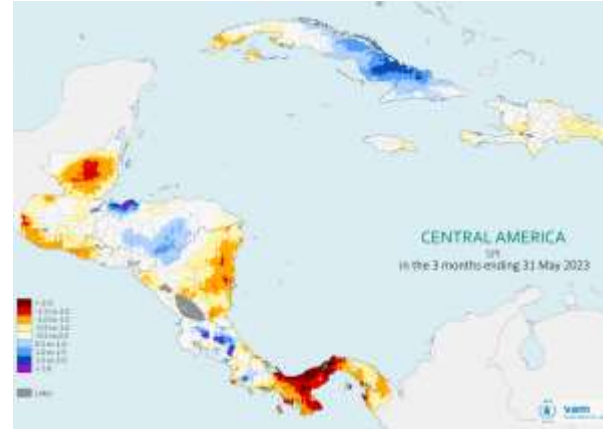
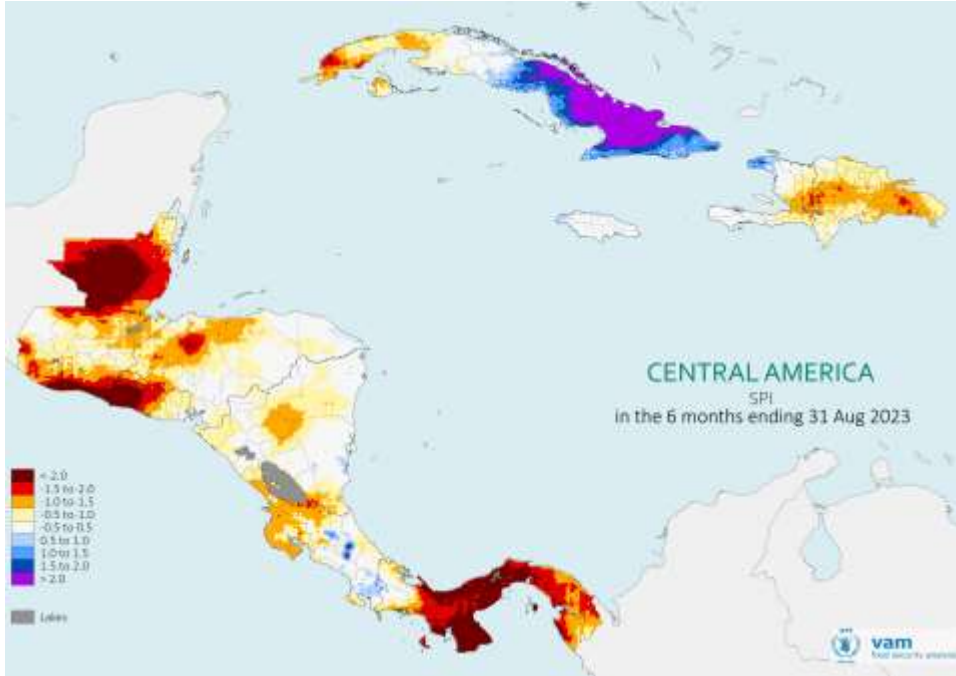
Below: Historical El Nino rainfall anomaly for July-September. Purple shades (brown shades) for above (below) average rainfall during El Nino. SLIDE 10

Central America & Caribbean (Southern America)



World Food Programme

Central America: Current Situation and Outlook

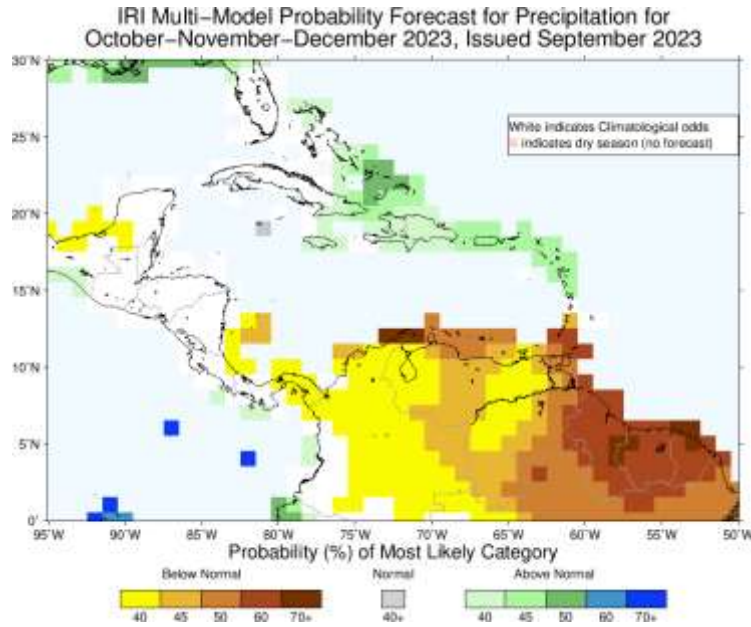


SPI (a rainfall anomaly) for March-August 2023 (Left), March-May 2023 (Center) and June-August 2023 (Right). Blue shades (red shades) for wetter (drier) than average conditions.

Central America and parts of the Caribbean have been enduring typical El Niño impacts: so far, the rainfall season has been fairly poor, with drier than average conditions affecting most of the region since April. Very dry conditions have been dominant across Guatemala, El Salvador, Honduras and western Cuba, and this has worsened during June-August. Nicaragua, Costa Rica and Panama, have also been affected but more in the earlier stages of the season. Haiti and the Dominican Republic have also endured drier than average conditions, in spite of heavy rains and floods in June.

These below average and irregular rains have been accompanied by above-average temperatures, leading to poor outlooks for crop production from the first cropping cycle (*De Primera* season). Initial conditions for the second cycle (*De Postrera* season) are also unfavourable. Worst affected areas will be the *Corridor Seco* (Dry Corridor) areas, which have been subject to recurring droughts in the past few years.

Central America: Outlook for Late 2023



Left: Seasonal forecast for October-December 2023 probability of above median rainfall. Green/blue (yellow/red) shades for above (below) median

Right: Historical El Niño rainfall anomaly for October-December. Purple shades (brown shades) for above (below) average rainfall during El Niño.

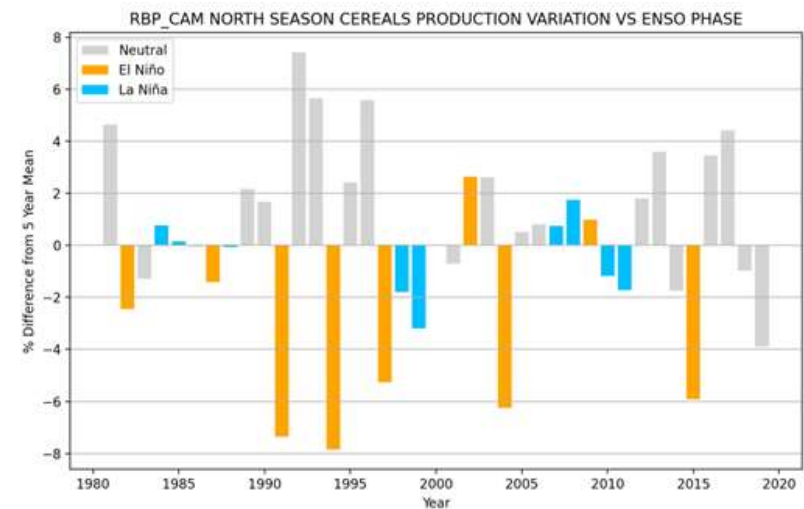
Below: variations in all cereal production off the 5 year mean for Central America, colour coded according to ENSO phase.

The outlook for October-December 2023 from most available forecasts is of near average conditions across Central America. Favourable rainfall is forecasted for most of the Caribbean islands. If the forecasts verify, this would provide acceptable conditions for third cycle and off-season crops, though in the areas worst affected by earlier drought, soil moisture levels will be a limiting factor.

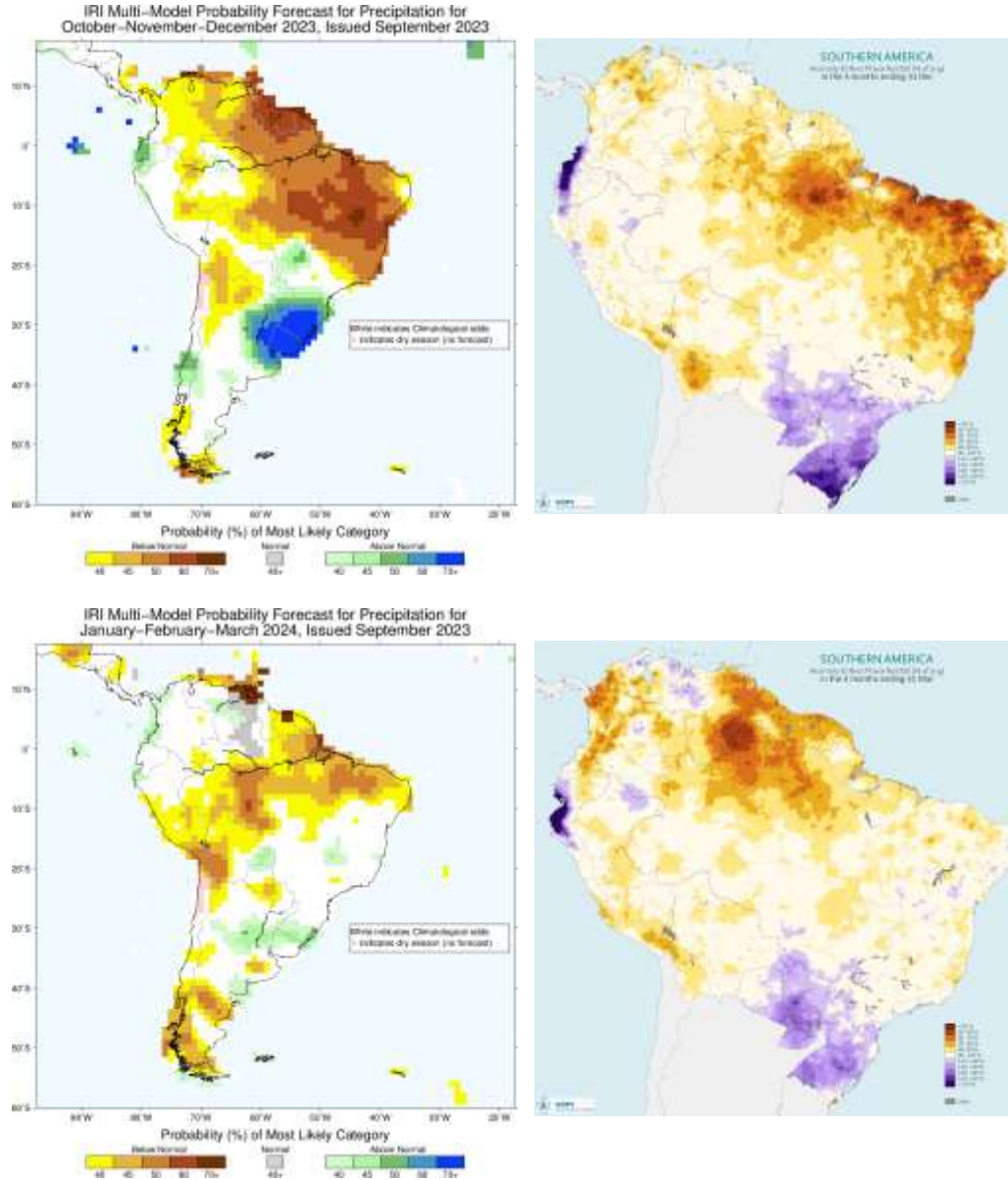
This will depart from the typical rainfall patterns during El Niño seasons for the latter part of the year: the historical data shows moderately drier than average conditions across the region (including Cuba, Hispaniola and Jamaica) and there's still a chance of a continuation of the drier than average patterns well into late 2023.

In regional terms, and based on historical data, we see that El Niño seasons tend to have a negative impact on cereal production – the regional all-cereal production shows that most strong drops from the 5 year average occur during El Niño affected seasons. A similar tendency is expected for pulses (beans), the other major staple crop of the region.

Considering the way the season has evolved, regional-scale decreases in staple food production may be expected, particularly hitting vulnerable populations in the wider Corridor Seco region.



Southern America: Outlook for Late 2023-Early 2024



The outlook for October-December 2023 and January-March 2014 closely corresponds to the historical pattern of El Niño's impact on rainfall distribution

In Brazil, a significant portion of the country, excluding the central-southern states, is projected to have below-average rainfall particularly in the last quarter of 2023. This region encompasses some of the major maize production areas, such as Mato Grosso, where early season dryness may lead to delayed planting. In contrast, the southern states are expected to experience above-average rainfall. The second part of the season shows likely average rainfall conditions in most of the productive areas.

In Bolivia, the primary season commences in October, and there is an expectation of below-average rainfall during the planting and early growth phases. Dry conditions are expected to continue until March 2024

Similarly, below-average rainfall until the end of 2023, is anticipated in the northern part of the continent including Venezuela, parts of Colombia, and Guyana. However, it's worth noting that these regions are transitioning away from their main rainfall seasons.

Drier than average conditions are expected in NW South America until March 2024. Drier than average conditions are forecast for Bolivia during this period.

Left: Seasonal forecast for October-December 2023 (above) and January-March (below) probability of above median rainfall. Green/blue (yellow/red) shades for above (below) median
Right: Historical El Niño rainfall anomaly for October-December (above) and January-March (below). Purple shades (brown shades) for above (below) average rainfall during El Niño.

Southern Africa

Southern Africa: El Niño Outlook

In Southern Africa, El Niño typically brings drier than average conditions to most of the region. However, different areas are affected at different times and in different ways. These typical El Niño impacts can be mapped in detail based on more than 40 years of historical data, focusing on two key periods of the October-April season: October-December, early (planting) season and January-March, core season.

October-December:

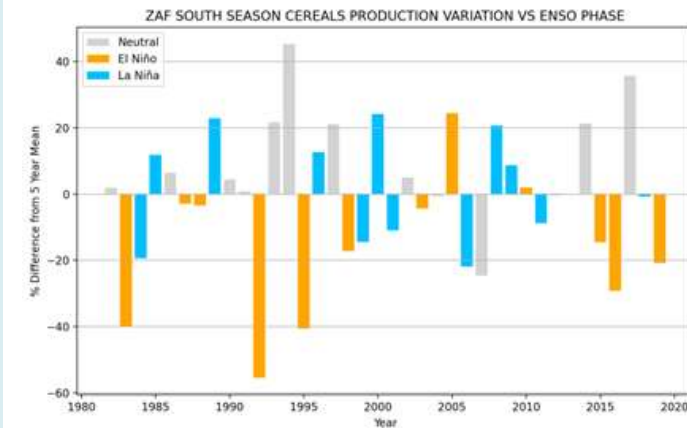
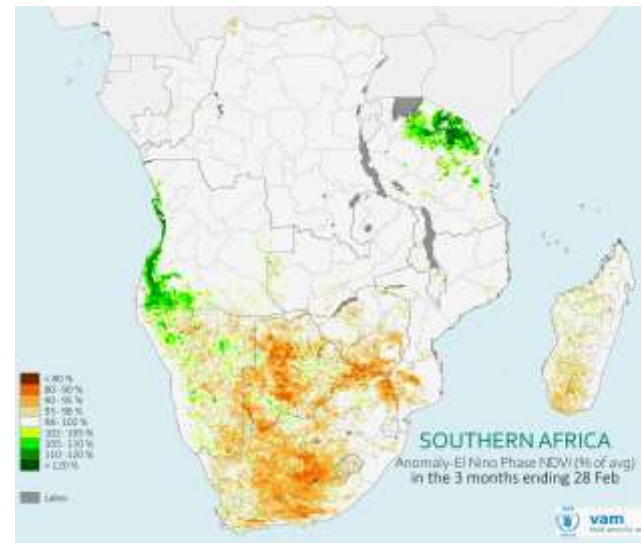
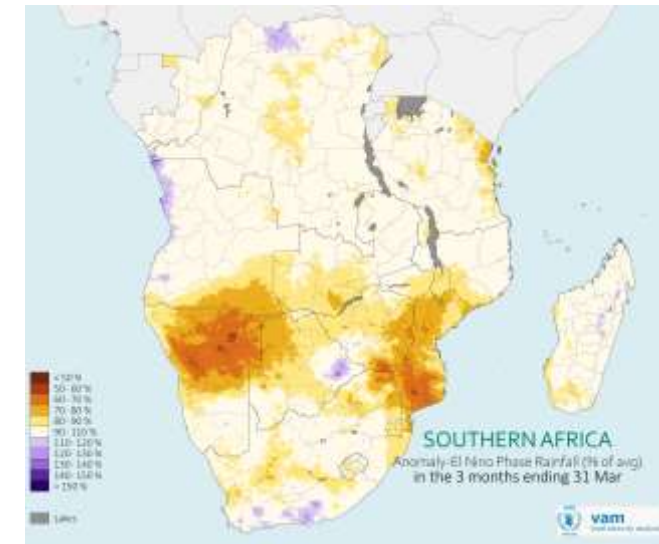
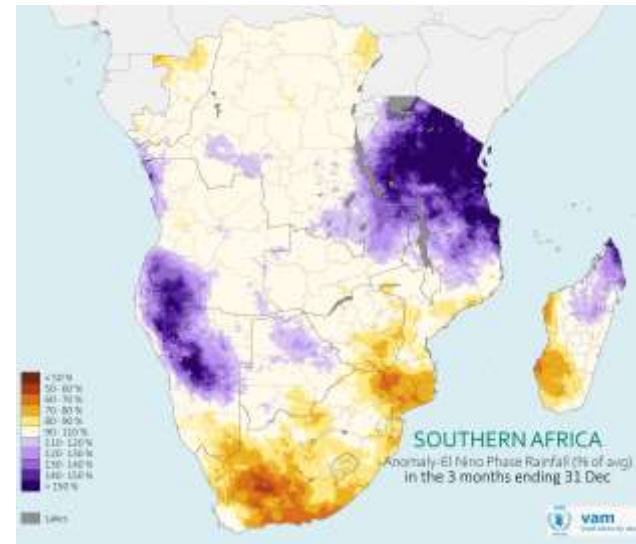
El Niño typically leads to above average rainfall in Tanzania, northern Mozambique, northern Zambia and northern Madagascar: these areas are more aligned with East African rainfall patterns which El Niño tends to enhance. Wetter than average conditions in this period are also typically seen in SW Angola and northern Namibia. In contrast, drier than average conditions tend to affect most of South Africa, Lesotho, Swaziland, southern Mozambique and eastern Zimbabwe as well as southwest Madagascar.

January to March:

During this period and the rest of the season, drier than average conditions become dominant across the region. Impacts are more severe along a belt extending from the northern half of Namibia and SE Angola across Botswana, Zambia and Zimbabwe into most of Mozambique. Usually impacts are stronger in Namibia, eastern Zimbabwe and southern Mozambique.

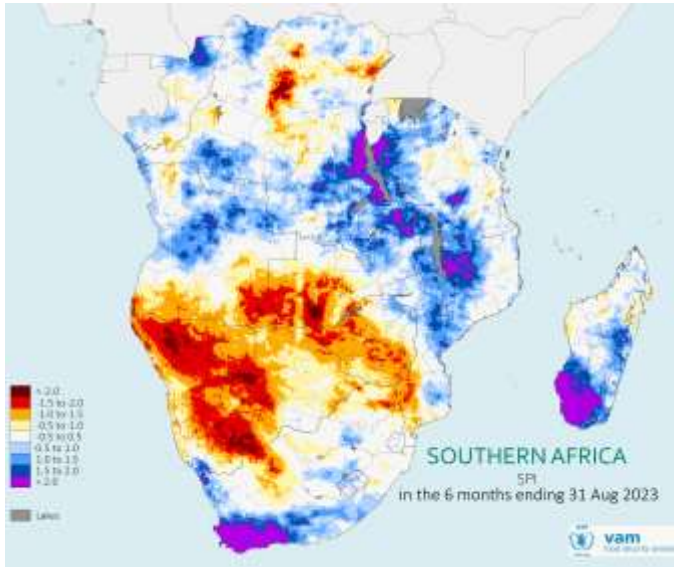
Key areas of concern are eastern Zimbabwe, southern Mozambique as they tend to be affected by rainfall deficits during both periods. Together with southern Malawi, these areas also suffered from Tropical Storm Freddy in early 2023.

These dry tendencies extend to South Africa's maize producing regions: indeed historical production data shows that drops in cereal production off the 5 year mean mostly occur in El Niño influenced seasons. This year should be no different though the region has considerable stocks after a succession of record production in the past few years.



Above: Historical El Niño rainfall anomaly for October-December (Above Left) and January-March (Above Right). Purple shades (brown shades) for above (below) average rainfall during El Niño. Below Left: Historical El Niño NDVI anomaly in December-February as a percent of the long term average. Green shades (orange shades) for above (below) average vegetation. Below Right: variations in all cereal production off the 5 year mean for South Africa, colour coded according to ENSO phase.

Southern Africa: Forecasts for 2023-24

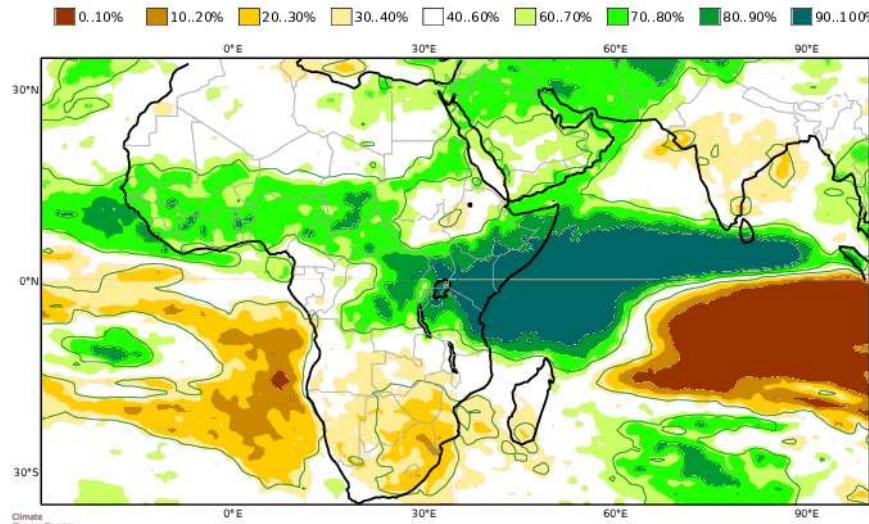


*SPI (a rainfall anomaly) for March-August 2023
Blue shades (red shades) for wetter (drier) than average conditions.*

Seasonal forecasts already cover part of the Southern Africa growing season and provide a first perspective on the actual rainfall pattern. The latest forecasts for October-December rainfall indicate drier than average conditions in Zimbabwe, southern half of Mozambique, southern Madagascar and most of South Africa, Botswana and Namibia.

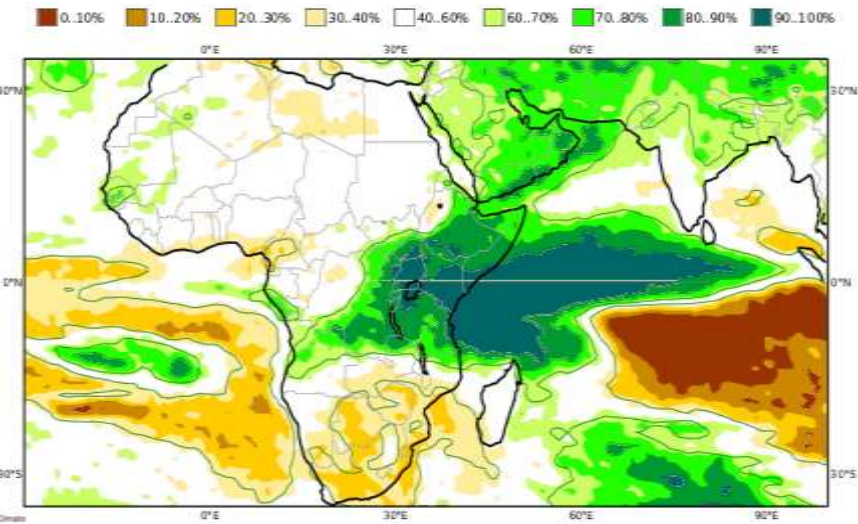
A drier than average early season of 2023-24 is coming after a severe drought in Namibia and southern Angola and an earlier than usual end of the 2022-23 rainfall season in Zimbabwe (and parts of Mozambique) – see areas in orange/reds in the map above left. These regions are already stressed even before the expected below average rains of the coming season.

ECMWF Precipitation Forecast October – December 2023; Issued September 2023



Seasonal forecast for October-December 2023 (Center) and December 2023-February 2024 (Right) probability of above median rainfall. Green (orange) shades for above (below) median

ECMWF Precipitation Forecast December-February 2023; Issued September 2023



For December-February, these patterns mostly remain in place. For both periods, there is good agreement between the expectations of El Niño impacts based on historical data and these seasonal forecasts. This may relate to the fact that strong El Niño events tend to conform to type more than weak events.

Considering this information, the coming season is likely to lead to drops in cereal production at regional scale. Poor vulnerable rural populations dependent on rainfed maize that have endured dry spells and tropical storm impacts in the previous season are at greatest risk of food insecurity towards the second half of 2024.

The areas of greater concern are southeast Zimbabwe, southern Mozambique, southern Malawi, Lesotho.

Horn of Africa

Horn of Africa: El Nino Outlook

The region under analysis, which includes Somalia, Kenya, and Southern Ethiopia, experiences a bimodal rainfall seasonality with two distinct seasons: one in October-December and another in March-May. The previous rainfall season was good across the region, in places almost exceptional.

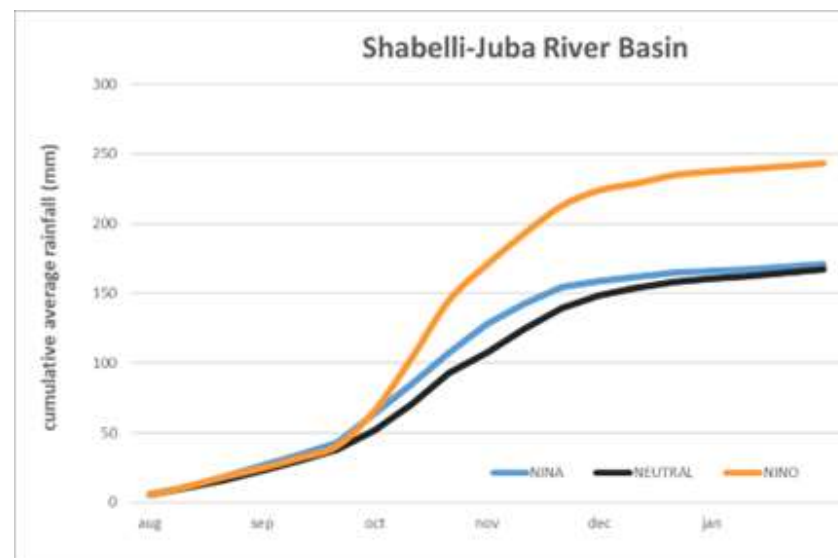
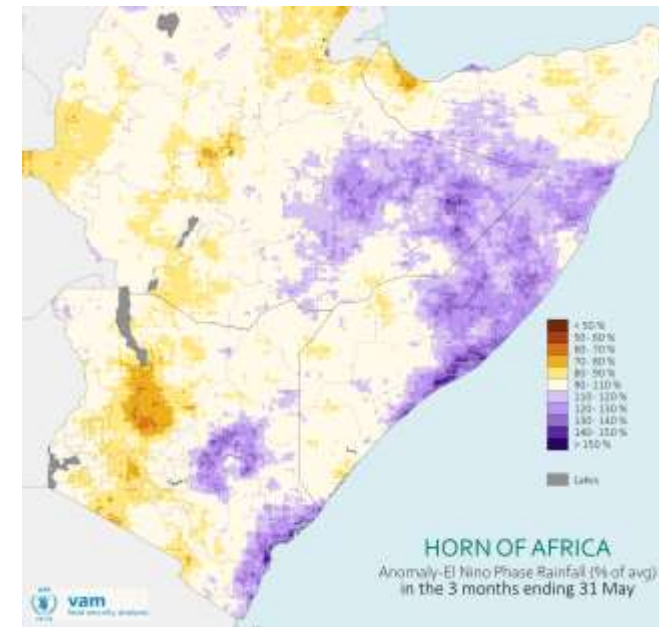
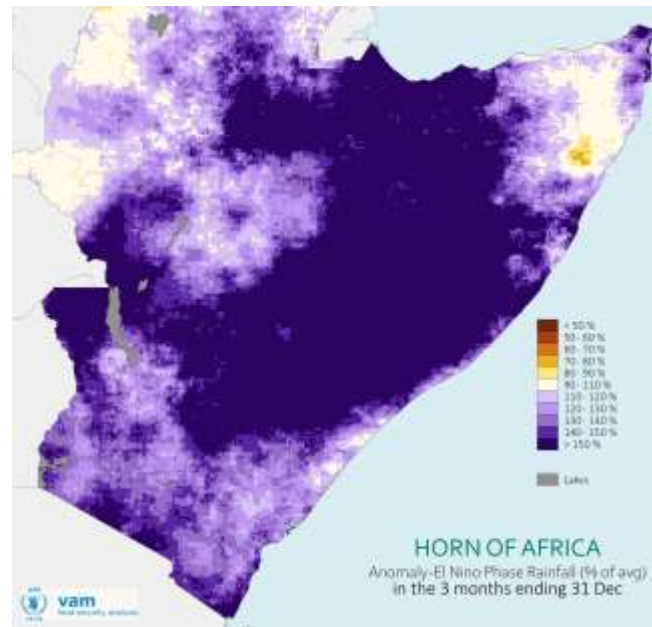
Typically, based on the past 40+ years of data, during the October-December season in El Niño years, the region experiences much wetter than average conditions (map left above). This tendency is everywhere in the region but it is more intense in SE Ethiopia, central Somalia and Somaliland.

For pastoral or agro-pastoral populations, outlooks of abundant pasture and water, are very favourable, contributing to some recovery in livestock assets. Agricultural livelihoods will do well, in spite of localized issues with water logging.

This region is also influenced by other patterns of tropical sea surface temperature. One such pattern, is described by an index number, the Indian Ocean Dipole, IOD. When the IOD turns positive, it makes very heavy rains more likely across the region in this period. When this occurs in simultaneous with an El Niño, there is an increased likelihood of above average rainfall and events of extreme rainfall.

Given this combinations, the possibility of significant flooding in parts of the region cannot be ruled out, particularly along the Shabelle Basin (SE Ethiopia-Somalia-NE Kenya) – see chart right. Very heavy rains may also lead to further increases in the level of the Great Lakes, which will be reflected in further flooding in South Sudan from mid 2024.

For the March to May season of 2024, ex-ante expectations based on the historical data, indicate that the tendency for wetter than average conditions is maintained across SE Ethiopia and central Somalia, offering further support to pastoral livelihoods. However, in western Kenya, El Niño favours drier than average conditions in this period (map right above).



Above: Historical El Niño rainfall anomaly for October-December (Left) and March-May (Right). Purple shades (brown shades) for above (below) average rainfall during El Niño.

Below: Historical rainfall over the Shabelle Basin according to ENSO phase

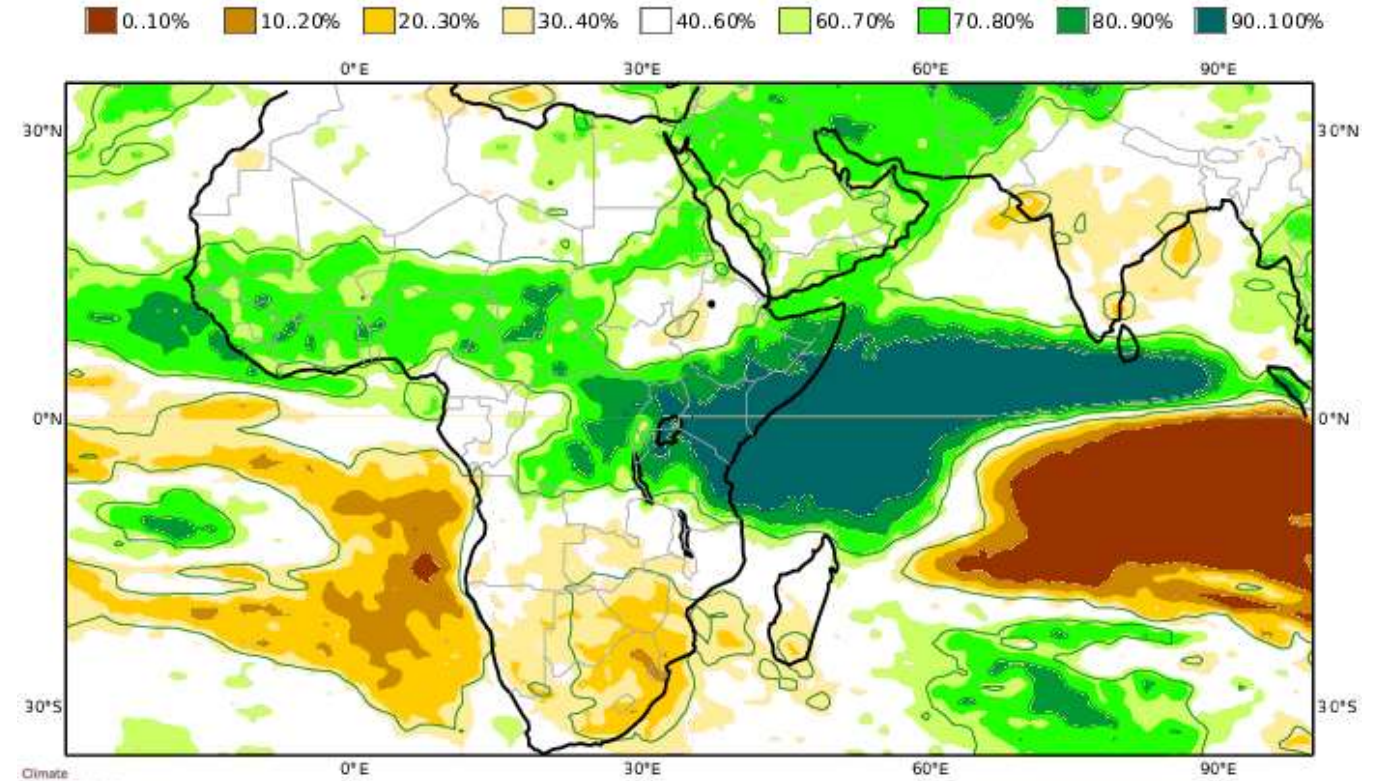
Horn of Africa: Forecasts end of 2023

For the last three months of 2023, all forecasts converge on the same outlook: October-December rainfall much higher than average across the region all the way to southern Tanzania, with longer than usual duration. This is a typical El Nino pattern, so forecasts and the historical analysis are very well aligned.

The latest forecasts for the IOD show that it should reach high positive values around the time of the El Nino peak, and the impacts of this combination are also reflected in the intensity of the forecast.

Hence, both historical data and forecasts point to a much wetter season of October-December 2023 across the region with a high degree of certitude.

ECMWF Precipitation Forecast October – December 2023; Issued September 2023



*Seasonal forecast for October-December 2023 probability of above median rainfall.
Green (orange) shades for above (below) median*

Asia, South East Asia and the Pacific



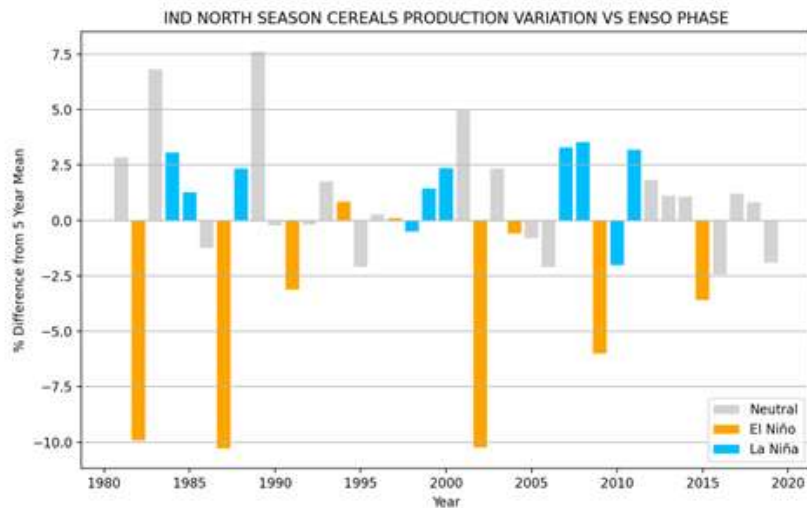
World Food Programme

Asia and SE Asia: Current Situation and Outlook

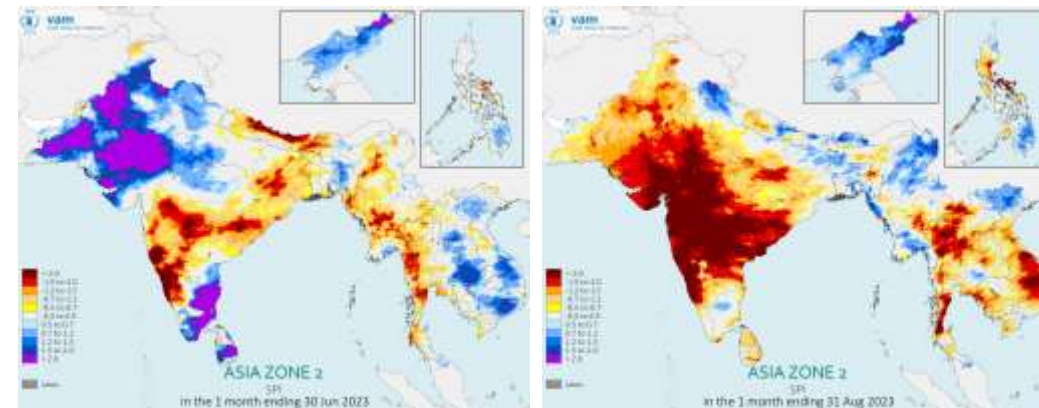
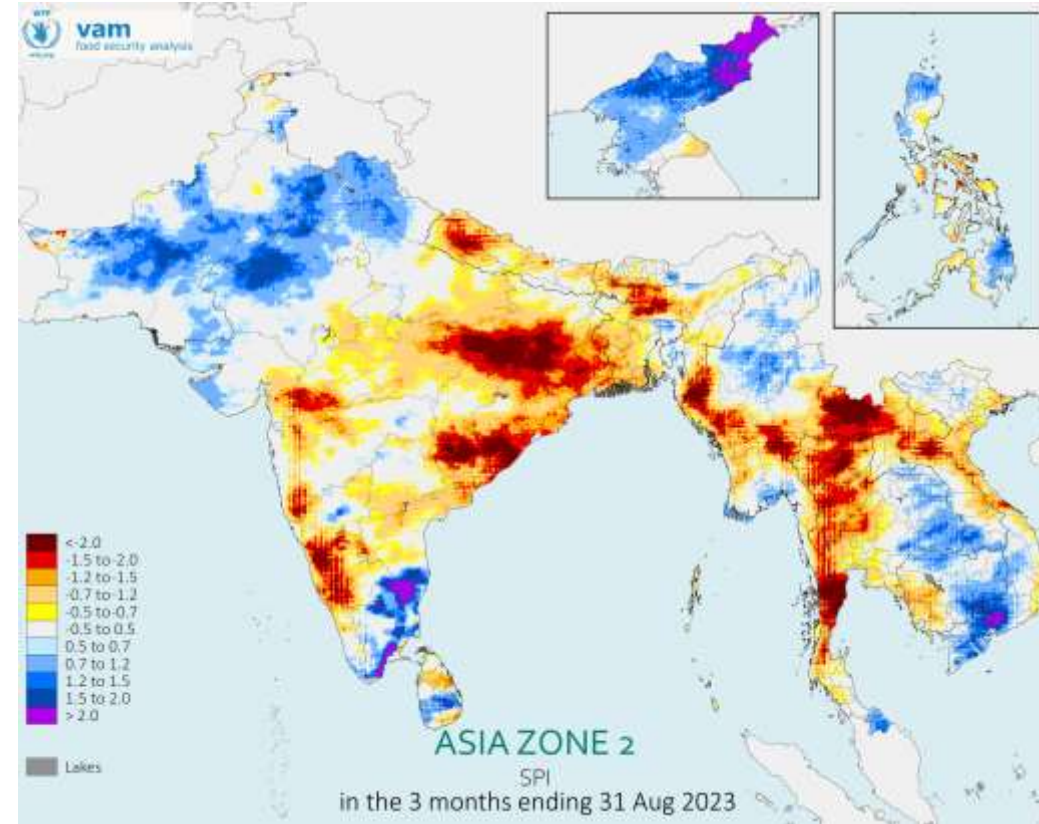
The current monsoon in Asia has had variable performance across the region. There have been notable areas of much drier than average conditions affecting most of India, parts of Nepal, Myanmar, Thailand, parts of Lao PDR and Vietnam. These conditions intensified during July and August – in India, August was one of the driest on record for the past 43 years. Other areas such as Pakistan, DPRK, NW India, registered much above average rainfall – however, most of this was concentrated in June and July.

The dry conditions will lead to impacts on crop production in the affected regions. In India, there will be a drop in Kharif rice production (main season, accounts for about two thirds of the annual total). For 2023 as a whole, a drop of 3% in rice production may be expected (USDA). Other monsoon season crops, such as maize and soybean, are also affected, particularly maize. This is in agreement with typical El Niño impacts on cereal production in India which have led in the past to significant drops in all cereal production (off the five year mean). These drops have become smaller in the past two events, including a small 2.5% drop in the last intense El Niño of 2015-16. There are similar concerns for Thailand rice production with USDA estimating a 7 percent drop relative to last year.

Note that these negative impacts on production apply to both main season and off-season (late 2023 – early 2024): monsoon rainfall deficits will lead to decreased soil moisture levels in the off season, while continued drier than usual conditions and hotter than average temperatures will pose additional difficulties by increasing water demand.



Right: SPI (a rainfall anomaly) for June-August 2023 (above), July (lower left) and August (lower right). Blue shades (red shades) for wetter (drier) than average conditions.
Left: variations in all cereal production off the 5 year mean for India, colour coded according to ENSO phase.



Asia and SE Asia: Seasonal forecasts

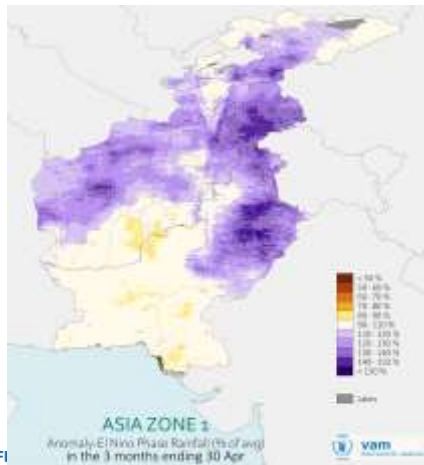
For late 2023, seasonal forecasts indicate wetter than average conditions across central Asia and in the later part of the season in India and SE Asia. Only the southern half of India and the more southern and eastern areas (southern Thailand, southern Cambodia, central Vietnam) receive significant rainfall in the last quarter of the year. This feeds off-main season crop production which can be a significant proportion of the annual total.

Forecasts indicate India is likely to see moderately lower than average rainfall and enhanced temperatures to add to lower than average soil moisture reserves. This implies less than favourable conditions for off-season crop production (secondary rice and maize and main season wheat). For SE Asia, the situation is less clear as different forecasts show some disagreement. Initial soil moisture conditions, likely high temperatures and reservoir levels do not favour improved crop production. Favourable rainfall would help if it materializes but currently there is uncertainty regarding the most likely outcome.

In Central Asia, forecasts consistently indicate higher or much higher than normal precipitation for late 2023 and early 2024. This will bring about a degree of recovery from the past few seasons characterized by drier than average conditions due to the prolonged La Nina episode that ended in early 2023. This is particularly welcome for Afghanistan which is coming out from 3 consecutive drought affected seasons.

As indicated on the map on the left, El Niño typically results in favorable effects on precipitation, resulting in above-average rainfall conditions in the majority of Central Asian countries.

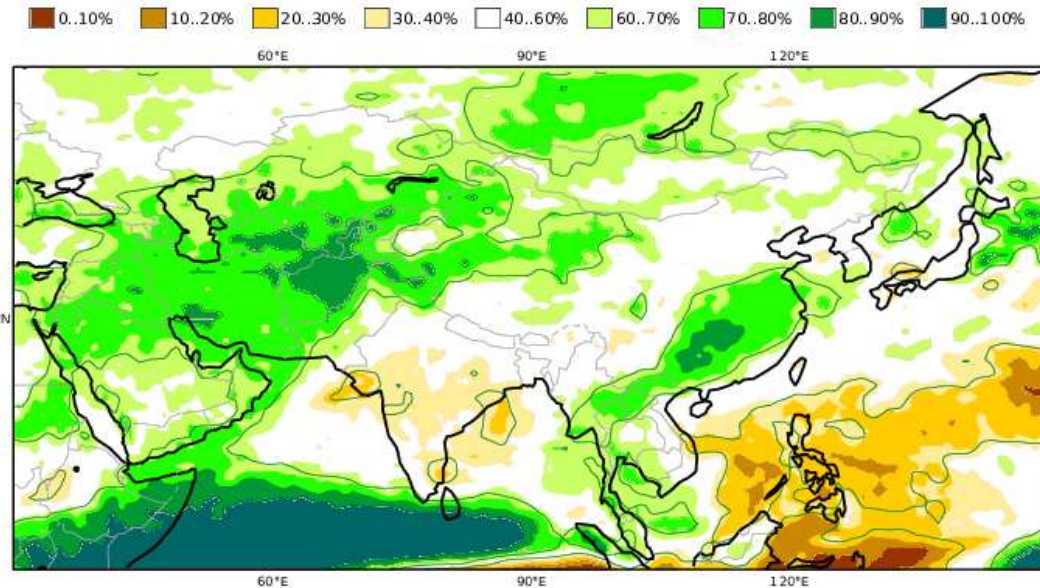
Historical El Niño rainfall anomaly for February –April. (Purple shades (brown shades) for above (below) average rainfall during El Niño.



Seasonal forecast for October-December 2023 (Above) and December 2023-February 2024 (Below) probability of above median rainfall. Green (orange) shades for above (below) median

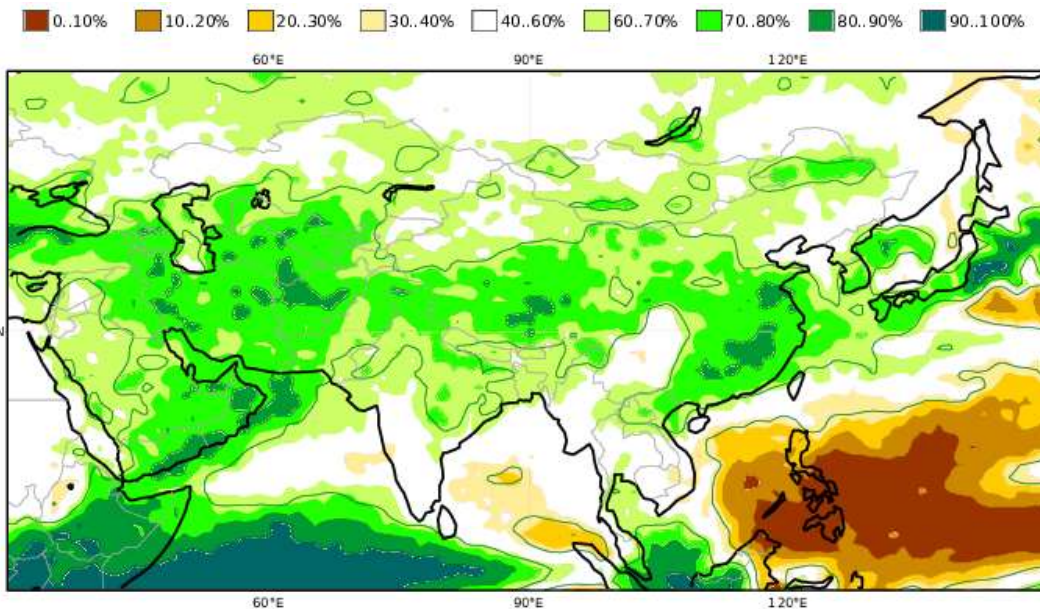
ECMWF Precipitation Forecast

October – December 2023; Issued September 2023



ECMWF Precipitation Forecast

December-February 2023; Issued September 2023



Indonesia and Pacific: Seasonal forecasts

The upcoming rainfall season starting in October is anticipated to be much drier than average through most of its duration and across most of the region.

This region has the most well defined ENSO impacts in the globe. This is very evident in the historical data which show dominant drier than average conditions across the region during El Nino seasons especially from October to December but continuing until March at more moderate levels.

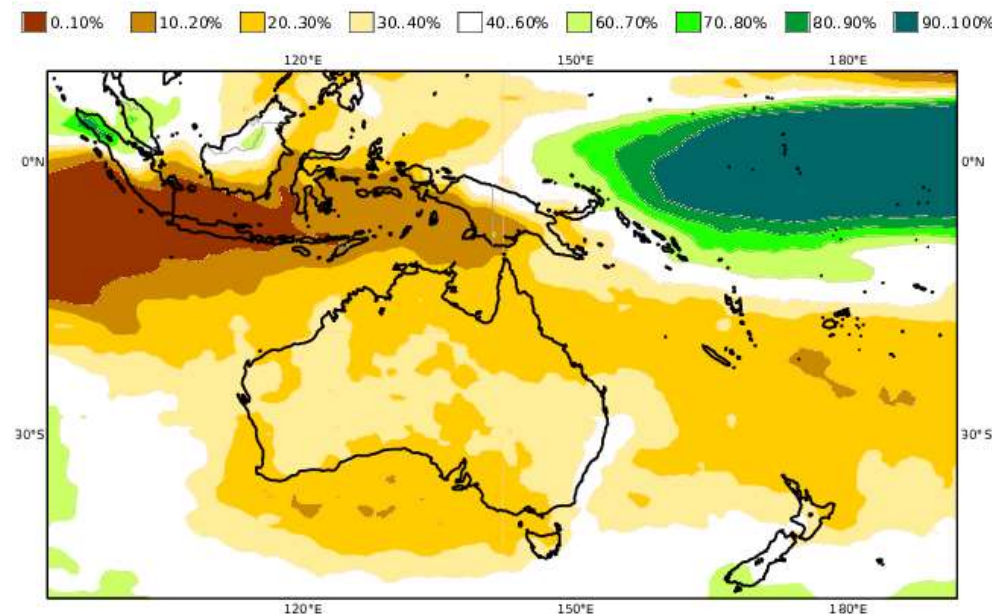
All seasonal forecasts confirm the outlook from the historical data. Most of the seasonal forecasts agree on below-average rainfall for both October to December. This will affect Indonesia, the Philippines, PNG and East Timor with pronounced rainfall deficits in the first period leading to delayed planting and unfavourable conditions for early crop development. Rainfall deficits will extend into January to March 2024, covering most of the same areas but possibly sparing Indonesian Borneo, Celebes and northern New Guinea. For the Philippines, this period may see even more pronounced drier than average conditions, relevant for the southern part of the country (off season elsewhere).

Drier than average conditions are also expected for some Pacific nations. The Solomon Islands may see near normal (Oct-Dec) or wetter than average conditions (Jan-Mar) but all territories to its south (Fiji, Vanuatu, Tonga) will most likely experience drier than average conditions during the two periods. To its North (e.g. Nauru, Tuvalu), wetter than average conditions will prevail.

Seasonal forecast for October-December 2023 (Above) and December 2023-February 2024 (Below) probability of above median rainfall. Green (orange) shades for above (below) median

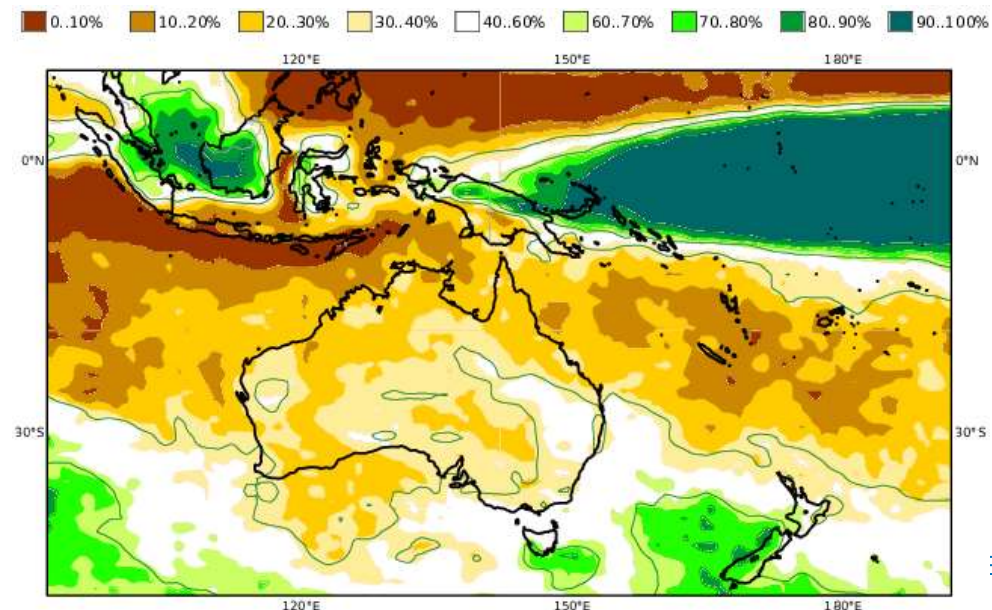
ECMWF Precipitation Forecast

October – December 2023; Issued September 2023



ECMWF Precipitation Forecast

December-February 2023; Issued September 2023



North Africa and the Middle East



World Food Programme

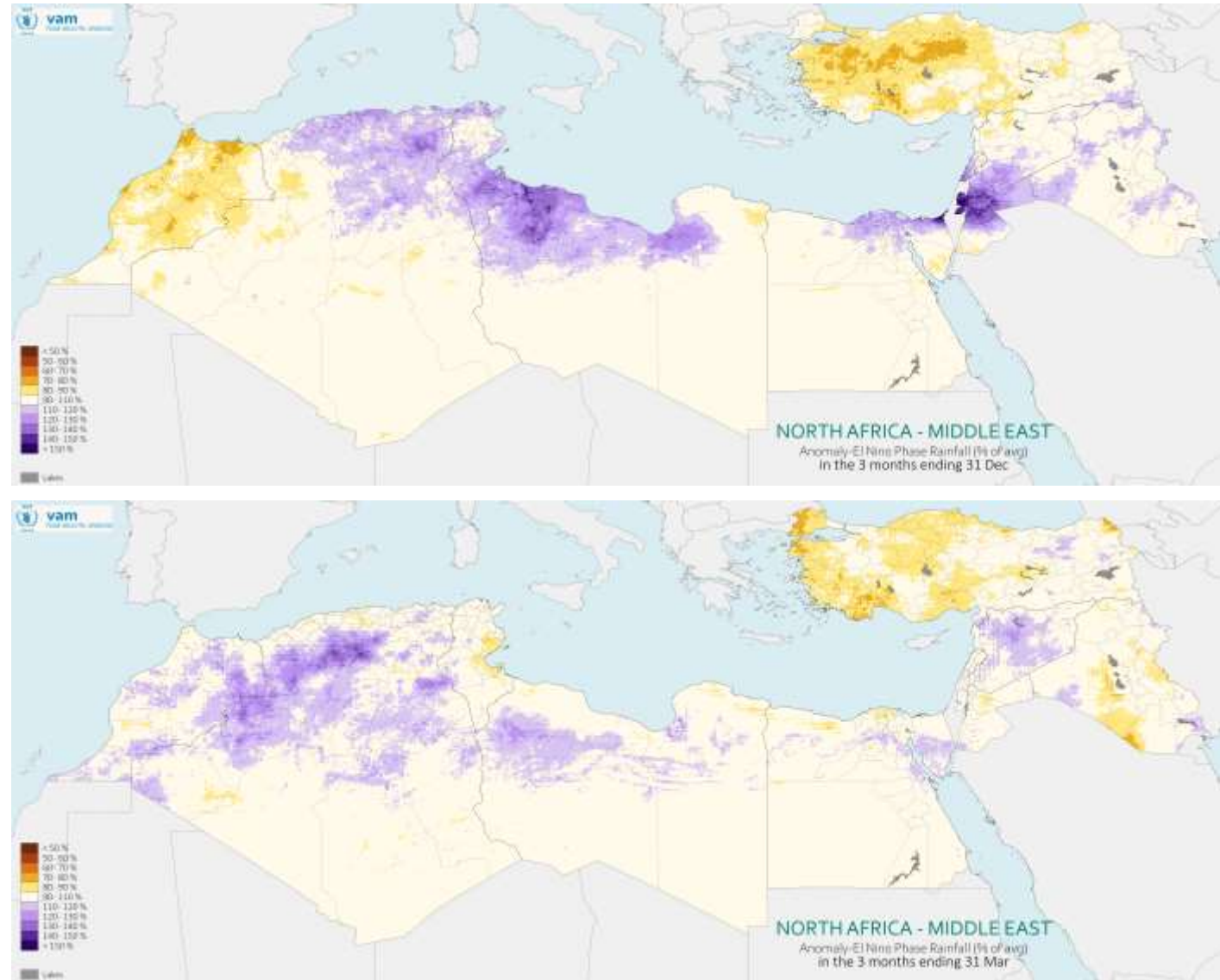
North Africa and the Middle East : El Niño Outlook

To evaluate the influence of El Niño on seasonal rainfall, we have compared the typical rainfall during El Niño seasons to that of neutral seasons.

In this region, the rainy season typically spans from October to April, divided into two subperiods: October-December and January-March.

Overall, El Niño tends to bring positive impacts on rainfall, leading to above-average conditions in most countries.

However, specific regions, such as Morocco during the first part of the season, and western Turkey, are expected to experience dry conditions despite the El Niño influence.



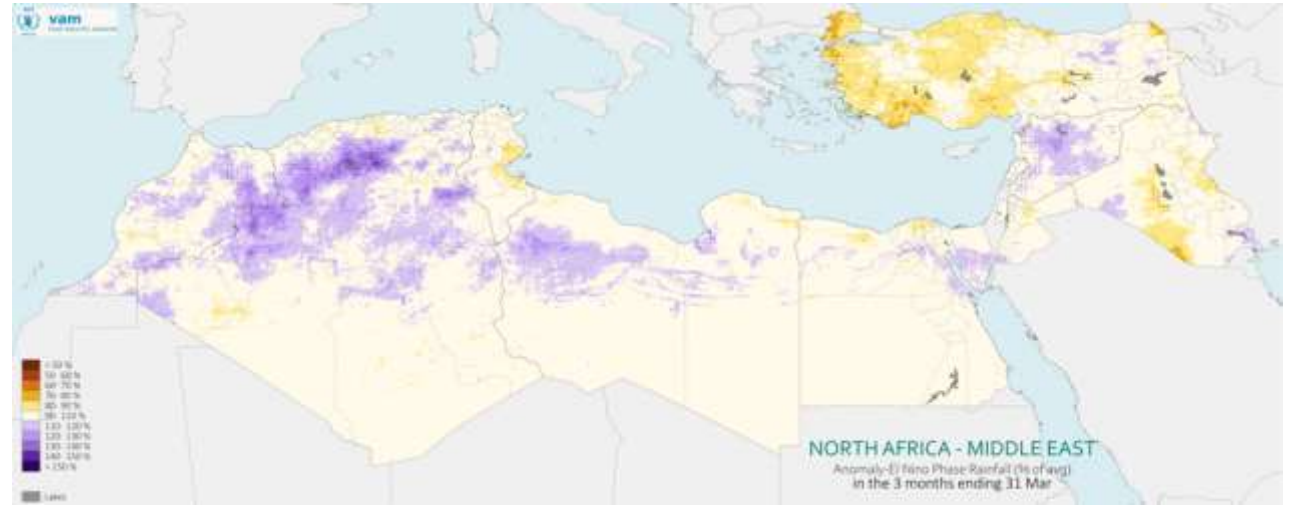
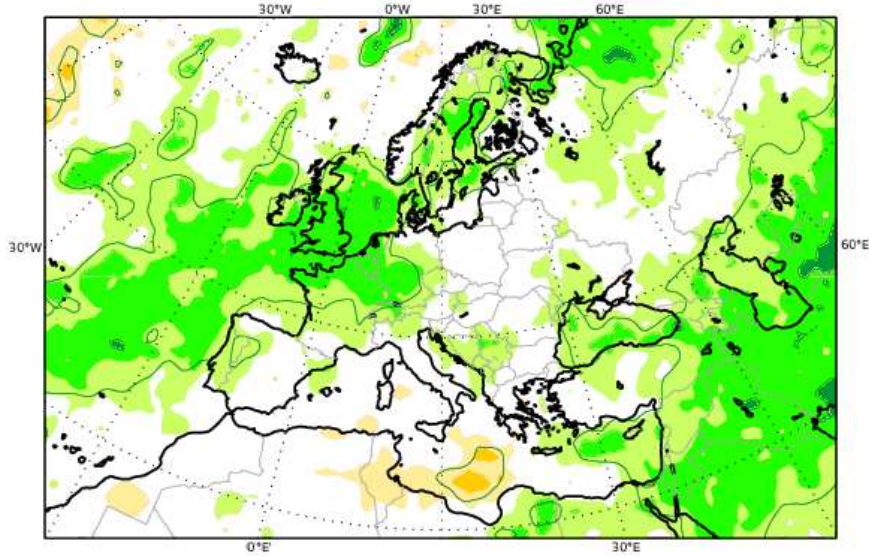
Historical El Niño rainfall anomaly for October-December (Above) and January-March (Below). Purple shades (brown shades) for above (below) average rainfall during El Niño.

North Africa and the Middle East: Forecasts for 2023-2024 season

ECMWF Precipitation Forecast

October – December 2023; Issued September 2023

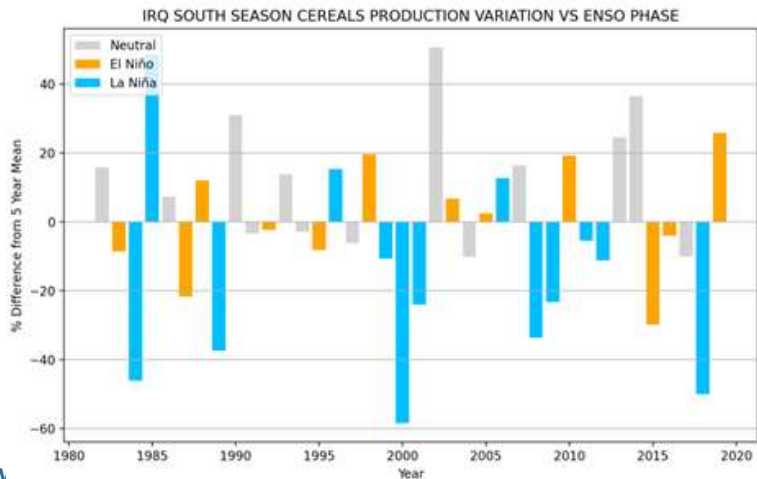
0..10% 10..20% 20..30% 30..40% 40..60% 60..70% 70..80% 80..90% 90..100%



For the upcoming rainfall season (from October), most forecasts indicate on average rainfall across North Africa and wetter than average conditions over all of the Middle East (and Central Asia). These are in agreement with the typical El Niño patterns clearly indicated in historical data.

For early 2024, the expectation is for a continuation of wetter than average patterns in the Middle East region and on average conditions in North Africa. Historical data presents a more favourable rainfall outlook for North Africa.

Overall, prospects for crop production are favourable or at any rate expected outcomes should be much better than the previous year's La Niña influenced poor crop production (as an example, historically, negative deviations in cereal production in Iraq are far more associated with La Niña).



Above Left: Seasonal forecast for October-December 2023 probability of above median rainfall.

Green (orange) shades for above (below) median

Above Right: Historical El Niño rainfall anomaly for January-March.

Purple shades (brown shades) for above (below) average rainfall during El Niño.

Left: variations in all cereal production off the 5 year mean for Iraq, colour coded according to ENSO phase.



The End



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