

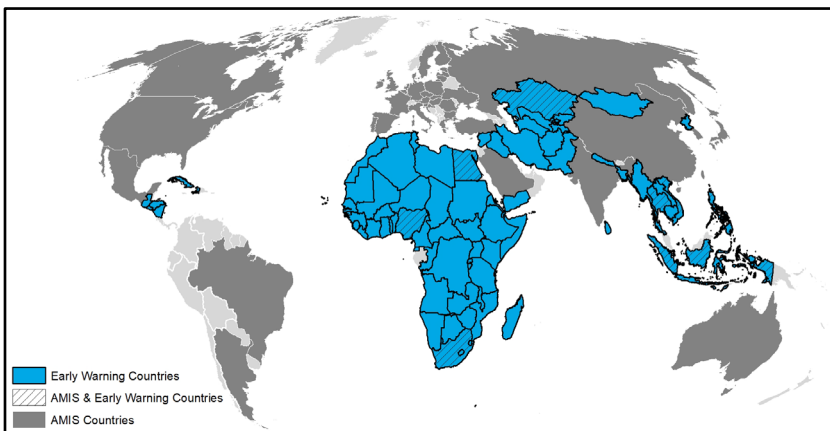


Crop Monitor

EARLY WARNING

Overview:

In **East Africa**, planting of *Belg* season maize is underway in Ethiopia, and planting of main season cereals is underway in the south of the region. Conditions are generally favourable except in areas experiencing delayed rainfall onset, including in much of Ethiopia and southwestern Uganda. In **West Africa**, harvesting of both main and second season cereals mostly finalized in January under favourable conditions, with the exception of conflict-affected regions. In the **Middle East and North Africa**, dry conditions since the beginning of the season have impacted wheat development in most west and central areas of North Africa, and poor conditions have resulted in Morocco and Algeria. Conversely, good rainfall outcomes have generally benefitted crop biomass in the Middle East. In **Southern Africa**, conditions remain mixed as El Niño-induced dry and hot weather continues to degrade cropping prospects, and a severe dry spell in February across many areas has recently led to poor conditions in parts of Zimbabwe, Zambia, Malawi, and Mozambique. In **Central and South Asia**, Winter Wheat continues to develop under mixed conditions with prevailing dry concerns in most areas despite El Niño typically being associated with above-average precipitation for the region. In **Southeast Asia**, conditions are mostly favourable for wet-season rice in the south and dry-season rice in the north, except in Thailand and the Philippines where extremely low precipitation has resulted in drought damage. In **Central America and the Caribbean**, end of season conditions were mixed for *Segunda/Postrema* season cereals as yields in smallholder and subsistence producing areas were impacted by erratic rains and high temperatures. In Haiti, dry and hot weather continue to impact *Hiver* season bean crops, though recent enhanced rainfall may improve yield prospects.



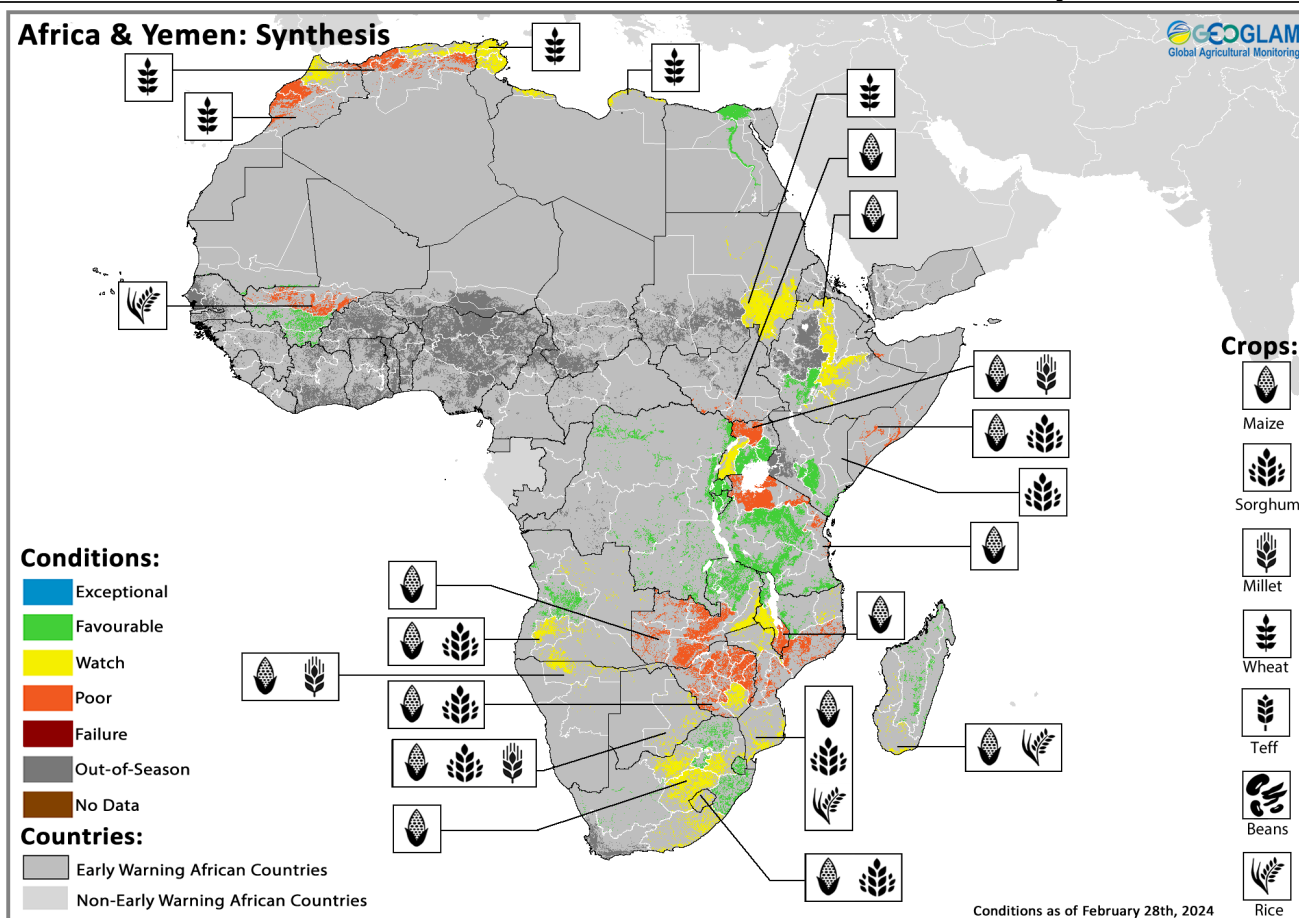
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GEOGLAM Crop Monitor for Early Warning

Crop Conditions at a Glance

based on best available information as of February 28th



Crop condition map synthesizing information for all Crop Monitor for Early Warning crops as of February 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Regions that are in other than favourable conditions are labeled on the map with a symbol representing the crop(s) affected.**

EAST AFRICA: Delayed rainfall onset is impacting *Belg* season planting in Ethiopia. In the south of the region, planting and development of main season cereals is just beginning under generally favourable conditions. Forecast wetter than normal weather through May is expected to positively impact main season crops in the south but increases the risk of flooding in low-lying and riverine areas.

WEST AFRICA: Harvesting for the 2023/24 cropping season finalized last month under mostly favourable conditions as the season's weather outcomes were generally conducive to crop growth.

MIDDLE EAST & NORTH AFRICA: Wheat continues to develop under mixed conditions. Severe drought has impacted crops in North Africa, and yield prospects in Algeria and Morocco are poor. Conversely, good rainfall outcomes in the Middle East have resulted in average to above-average crop biomass in Syria, Iraq, and Iran.

SOUTHERN AFRICA: Main season cereals are developing under mixed conditions as El Niño induced dry and hot weather continues to negatively impact crops. Following rainfall improvements across many areas in December and January, a severe and extended dry spell in February has impacted crops across central parts of the region, and little

to no rainfall recovery is expected (See Regional Outlook Pg. 9). Poor yield prospects have resulted in parts of Zimbabwe, Zambia, Malawi, and Mozambique, and concern remains across most areas of the region.

CENTRAL & SOUTH ASIA: Winter Wheat is in vegetative to reproductive stage for harvest from March, and conditions remain mixed with prevailing dry concerns in many areas. However, recent rains have improved yield prospects in Afghanistan, and forecast average to above-average rains through May could improve crop conditions in other areas (See Regional Outlook Pg. 11).

SOUTHEAST ASIA: In the south, wet-season rice continues to develop under favourable conditions with good yields expected. In the north, conditions are mixed for dry-season rice due to a shortage of irrigation water and drought damage in parts of Thailand and the Philippines.

CENTRAL AMERICA & CARIBBEAN: Harvesting of *Segunda* season maize crops and *Postretera* season bean crops mostly finalized in January under mixed conditions as crops in smallholder and subsistence-producing areas were impacted by erratic rainfall distribution and high temperatures that affected normal crop development. However, national level production is generally expected to be near-normal as crops in larger producing areas were able to adequately recover.

Global Climate Outlook: Two-week forecast of areas of above or below-average precipitation

The two-week forecast (Figure 1) indicates a likelihood of above-average precipitation over the US southeast, central Columbia, northeast and southern Brazil, southern Peru, Portugal, southeast Kenya, the Russian Federation, central and southern Kazakhstan, central Uzbekistan, central Turkmenistan, southeast China, northeastern Indonesia, northern Papua New Guinea, and western and southeast Australia.

There is also a likelihood of below-average precipitation over the Prairies in Canada, the Pacific Northwest and Texas in the US, Mexico, Guatemala, Honduras, Cuba, Haiti, the Dominican Republic, northeast Venezuela, Guyana, Suriname, French Guiana, northern and central Brazil, central Peru, northern Bolivia, Chile, central and southern Argentina, Norway, Finland, Estonia, Croatia, Bosnia and Herzegovina, Serbia, southwest Romania, Bulgaria, Kosovo, Greece, western Türkiye, southern Iraq, Liberia, southern Nigeria, eastern Cameroon, southern Chad, the Central African Republic, South Sudan, southern Ethiopia, southern Somalia, northern Kenya, Uganda, the northern Democratic Republic of Congo, southern Angola, western Zambia, northeastern Mozambique, Botswana, Namibia, western South Africa, northern Madagascar, northeastern Afghanistan, Pakistan, India, Nepal, Bhutan, northwestern China, Mongolia, Thailand, northern Laos, Cambodia, southern Viet Nam, the Philippines, western Malaysia, western Indonesia, and northeastern Australia.

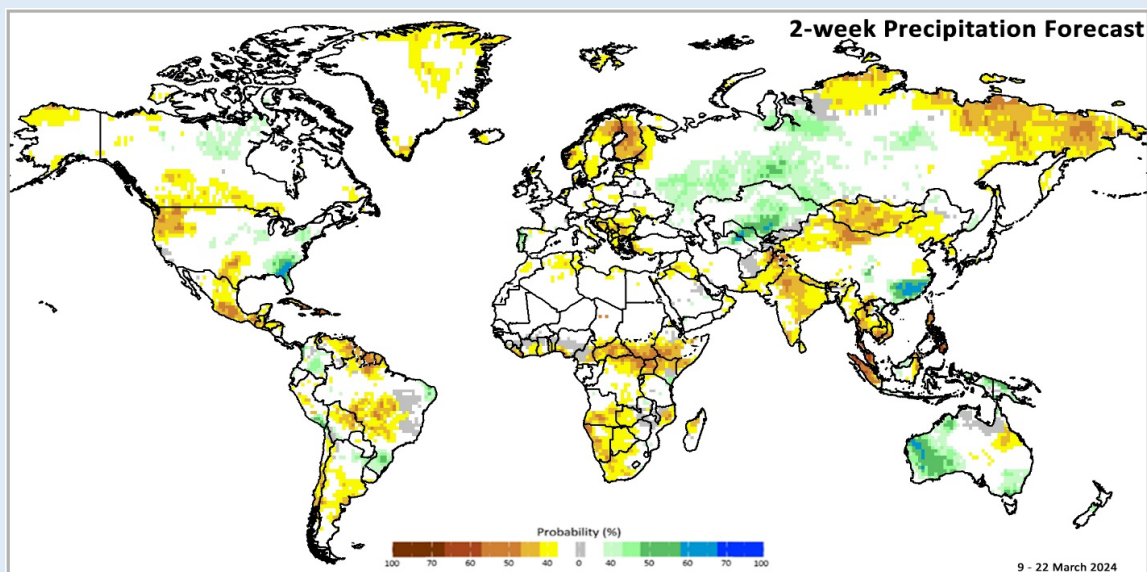


Figure 1: IRI SubX Precipitation Biweekly Probability Forecast for 9 – 22 March 2024, issued on 1 March 2024. The forecast is based on statistically calibrated tercile category forecasts from three SubX models. Source: [IRI Subseasonal Forecasts Maproom](#)

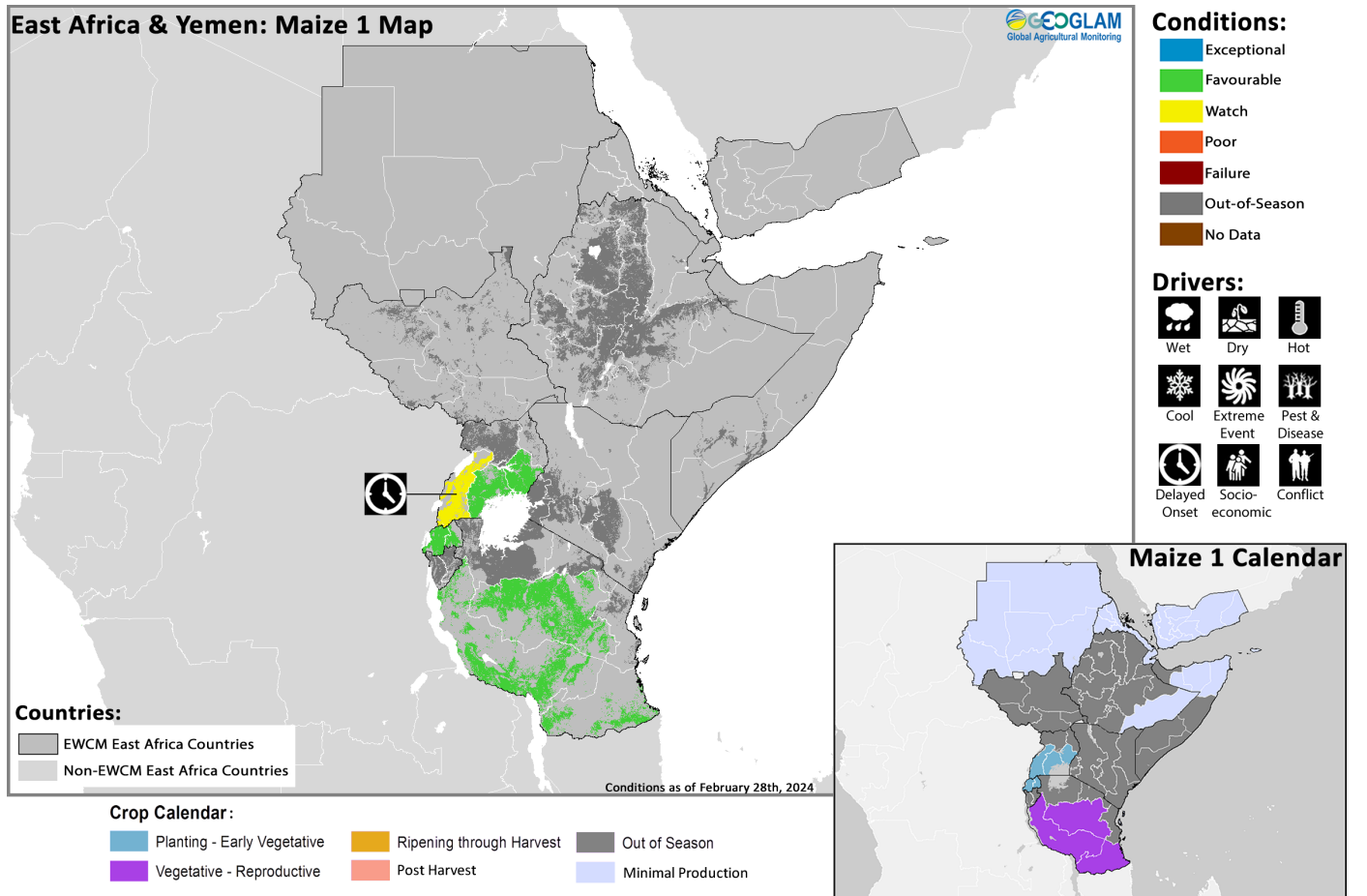
Climate Influences: El Niño event is weakening and is expected to transition to neutral ENSO conditions by June and a La Niña event may develop later this year

The ongoing El Niño event has started to weaken, and neutral ENSO conditions are likely by April to June (79% chance). A La Niña event may develop soon thereafter. There is a 68% chance of La Niña conditions by July to September 2024, based on the CPC/IRI forecast. While long-range ENSO forecasts made at this time of year have less skill, it is notable that there may be a quick shift to a persistent La Niña. The strong and impactful 2023–2024 El Niño was preceded by three years of La Niña conditions and associated multi-year droughts, especially in eastern East Africa.

Globally, record-high temperatures for January reflected the influences of the strong 2023–2024 El Niño and climate change. February temperatures have also been exceptionally warm. El Niño impacts on precipitation may also continue, such as in Southern Africa, Southeast Asia, the northern Maritime Continent, and portions of northern South America, where below-average precipitation tends to occur.

Source: UCSB Climate Hazards Center

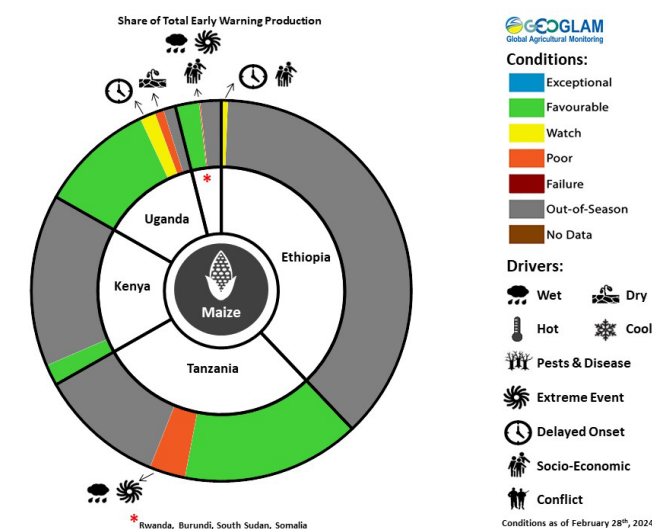
East Africa



Crop condition map synthesizing Maize 1 crop conditions as of February 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Conditions that are other than favourable are labeled on the map with their driver.**

Across northern East Africa, harvesting of main season cereals finalized last month with mostly poor conditions due to a combination of early season dryness, subsequent enhanced rains and residual flooding from October, and impacts of conflict and related socio-economic challenges in affected areas. Wheat crops are developing in **Sudan**, and while agro-climatic conditions are favourable, ongoing insecurity continues to negatively impact field access and farmers’ ability to carry out normal agricultural activities. In **Ethiopia**, planting of *Belg* season maize crops is just beginning for harvest from June, and a delayed rainfall onset is impacting most areas.

Across southern East Africa, harvesting of second season maize is mostly complete in **Rwanda, Burundi, Kenya, and Somalia** under mixed conditions. In bimodal areas of **Kenya**, end of season conditions are Favourable for Short Rains maize crops despite previous concerns regarding flooding and river overflows in eastern areas. In **Somalia**, conditions are generally poor for *Deyr* season cereals due to extensive flooding this season. However, off-season crops as well as other crops that were planted after flood recession will be harvested into early March, and yields for those crops are expected to be favourable. Planting and development of main season cereals is underway in bimodal eastern and coastal areas of **Kenya, Uganda, Rwanda, and the United Republic of Tanzania** under mostly favourable conditions, except in northeastern **Kenya** due to residual flooding impacts and in western **Uganda** due to a delayed rainfall onset.



For detailed description of the pie chart please see description box on Pg. 15.

Wetter than normal conditions are expected across the Greater Horn through May, particularly in western **Kenya** and cross-border areas of **Ethiopia, Kenya, and Uganda**, according to the IGAD Seasonal Forecast. The rains are generally expected

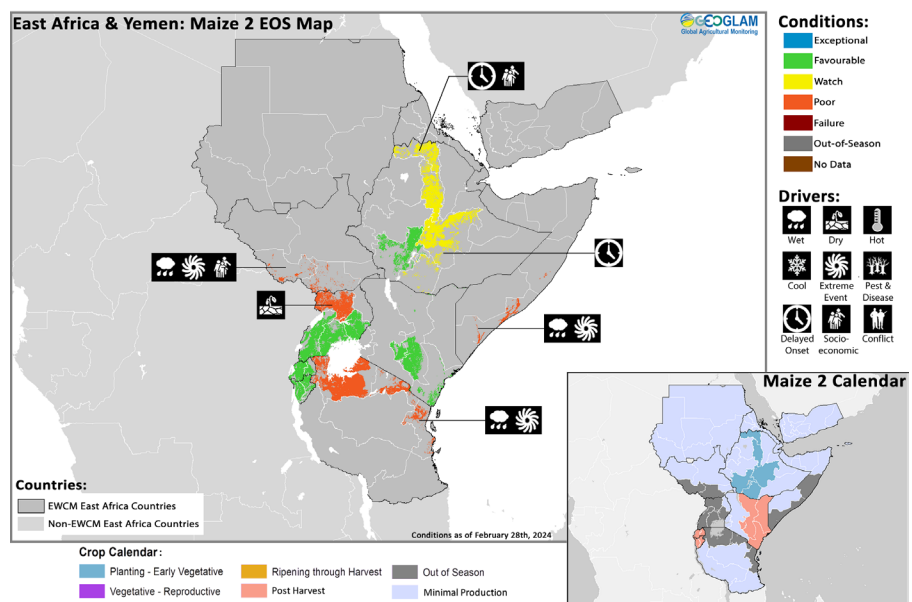
to positively impact agricultural outcomes. However, increased rainfall received during October to December 2023 in combination with the forecast continuation of wet conditions heightens the risk of flooding in low lying and riverine areas. The wet conditions also heighten the risk of crop pests and disease, including the breeding and spread of Desert Locusts which are currently reported in some locations such as northwestern **Somalia**. Additionally, warmer than normal conditions are expected across the region that will increase water loss through evapotranspiration.

Northern East Africa & Yemen

In **Sudan**, wheat crops are in vegetative to reproductive stage for harvest from March, and while agro-climatic conditions are generally favourable, there is concern regarding ongoing conflict and related socio-economic challenges. A recent expansion of fighting in the southeast is further disrupting agricultural activities in the country's breadbasket as the region typically accounts for more than half of the nation's overall cereal production and serves as the primary location for national grain storage. The attacks have disrupted the typical harvesting period for sorghum and millet, further exacerbating the expectations of below-average cereal production. Furthermore, irrigation activities for Winter Wheat have been affected in Gezira, which is responsible for 40 to 50 percent of wheat production. The ongoing conflict is significantly limiting the country's ability to produce its own food, leading to widening import deficits, according to the February [FEWS NET Alert](#). In **South Sudan**, harvesting of second season maize and sorghum crops finalized in January under poor conditions as early season dryness impacted crops in unimodal areas. In **Ethiopia**, planting of *Belg* season maize crops is just beginning, and there is some concern regarding delayed rainfall onset in most *Belg* growing areas, apart from the southwest. While rainfall onset typically begins in February, the rains are yet to materialize. However, residual soil moisture should be adequate for initial planting and crop emergence. Additionally, lingering insecurity and related socio-economic concerns continue to disrupt lives and livelihoods and influence production outcomes in northern Ethiopia.

Southern East Africa

In **Somalia**, *Deyr* season yields are generally expected to be below-average due to extensive flooding this season, which reportedly affected over fifty percent of croplands. However, off-season crops as well as other crops that were planted after flood recession will be harvested through the end of February into early March, and production for those crops is expected to be above-average due to abundant soil moisture. In **Kenya**, harvesting of Long Rains cereals finalized in the minor producing bimodal areas, as well as in the unimodal central region, under favourable conditions. Last month, there was concern regarding heavy rainfall since early November that impacted the eastern part of the country with flooding and river overflows, though crops have since recovered, and near-average yields are expected. However, the wet conditions experienced during January when crops were nearing the harvesting stage may result in post-harvest losses and could influence the availability of household stocks and food security. Planting of main season cereals is now underway in the northeast with some concern for residual flooding impacts in combination with forecast above-normal precipitation in March that may affect planted crops in riverine areas. In **Uganda**, harvesting of second season maize finalized in January under generally favourable conditions, except in the north where persistent dryness impacted final yields. Planting of first season maize and millet is underway in bimodal areas, and planting conditions are generally favourable following above-average soil moisture levels in January. There is minor concern in parts of the west that experienced below-average rains in February, but increased precipitation is expected in the coming weeks and is likely to improve conditions. In **Rwanda**, harvesting of Season A maize crops, which comprise 60 percent of total annual maize production, finalized under favourable conditions. Planting of Season B maize crops, which comprise 40 percent of total annual maize production, is just beginning under favourable conditions. In **Burundi**, harvesting of Season A maize crops, which comprise 35 percent of total annual maize production, finalized under favourable conditions. In northern bimodal areas of the **United Republic of Tanzania**, harvesting of *Vuli* season maize finalized in early February under poor conditions as a result of heavy rainfall and flooding that impacted cropping activities. *Masika* season cereals continue to develop for harvest from May, and conditions have been upgraded to favourable as crops were able to recover from prior heavy rains and resultant flooding. Planting of *Vuli* season sorghum crops is just beginning under favourable conditions. In unimodal areas of the centre and south, *Msimu* season cereals continue to develop under favourable conditions.

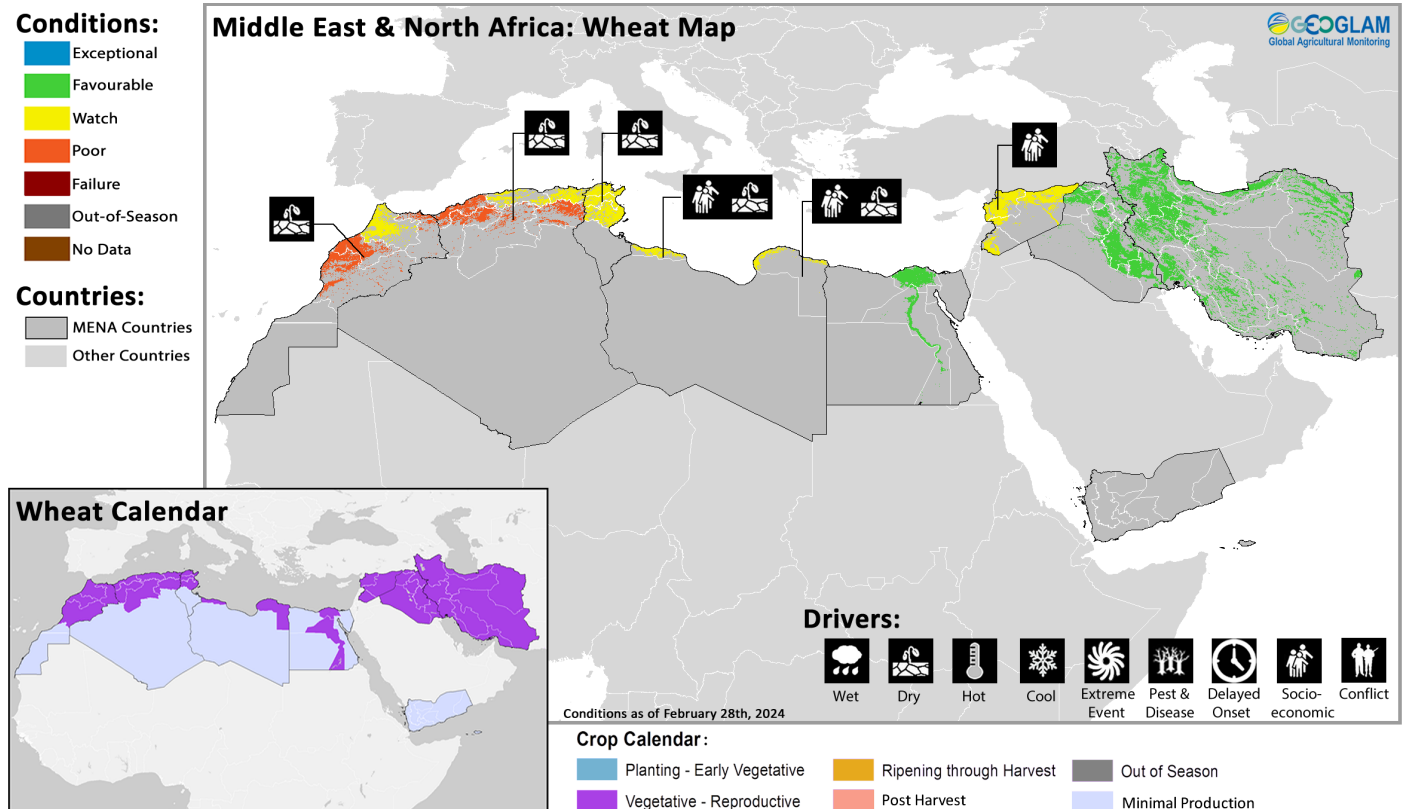


*Crop condition map synthesizing Maize 2 end of season (EOS) conditions as of February 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Conditions that are other than favourable are labeled on the map with their driver.***

West Africa

In West Africa, harvesting of both main and second season cereals mostly finalized last month under favourable conditions, with the exception of conflict-affected regions, as this season's weather outcomes were generally conducive to crop growth. Along the Sahel, harvesting of main season rice finalized in February in **Mali**, and harvesting of second season rice is now underway in **Mali** and **Mauritania** under favourable conditions, except in the conflict-affected region of central **Mali**. Land preparation is underway for the 2024/25 cropping season, and planting will begin next month in **Liberia, Cote d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon,** and the **Central African Republic**.

Middle East & North Africa

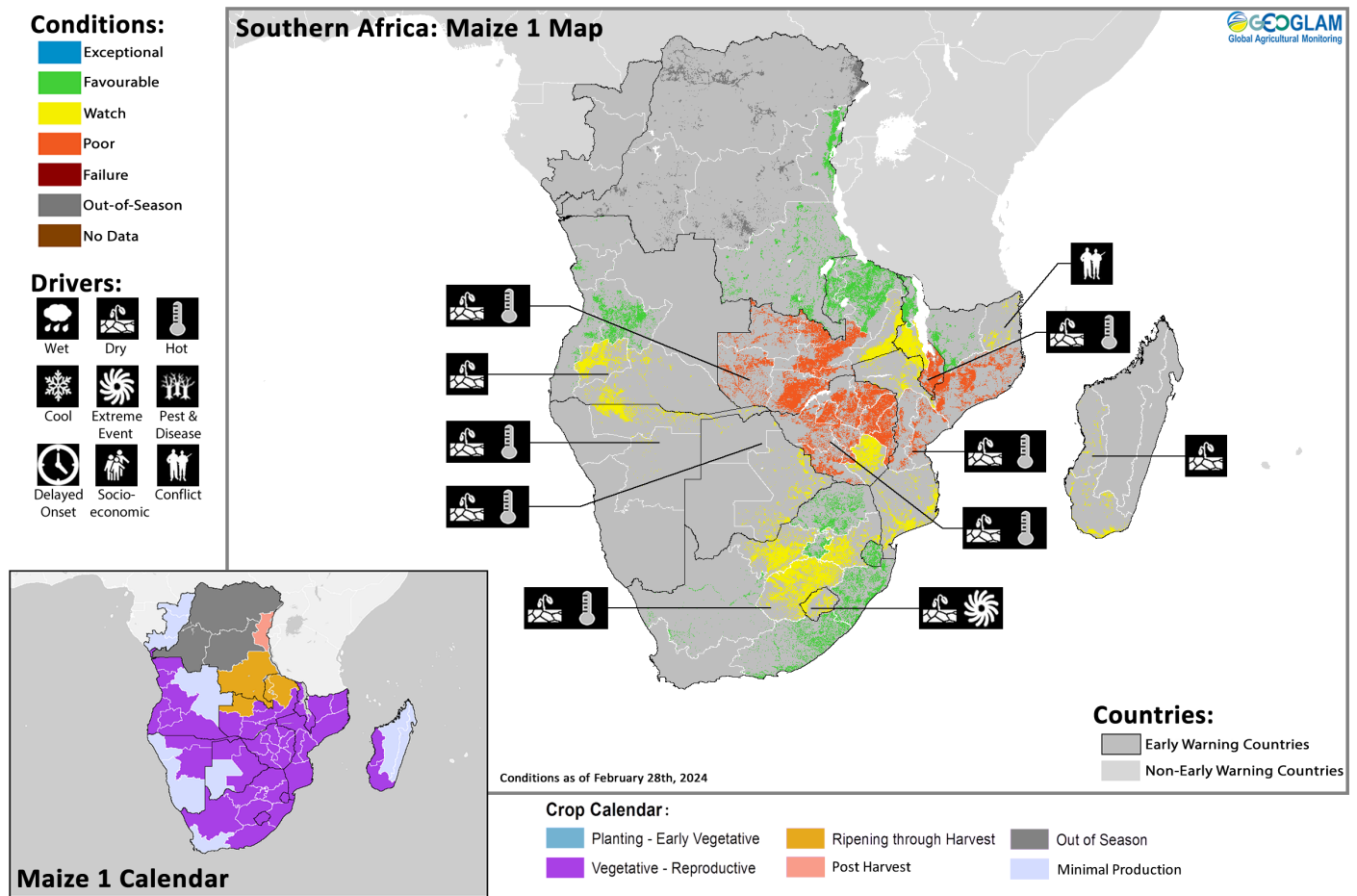


Crop condition map synthesizing wheat conditions as of February 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Crops that are in other than favourable conditions are labeled on the map with their driver.**

In the Middle East and North Africa, wheat continues to develop under mixed conditions for harvest from April. In North Africa, dry weather outcomes have impacted most west and central areas since the beginning of the season, and conditions have been downgraded to poor across most of **Algeria** and **Morocco** as crops have been affected by severe drought and are now unlikely to recover. Concern remains in northern areas of **Morocco** and **Algeria** and across **Tunisia** and **Libya** where dry conditions have impacted crops; however, in these areas, there is still time in the season for potential recovery. In **Egypt**, above-average temperatures and rainfall outcomes during the beginning of 2024 benefitted crop growth. Conditions remain favourable, and yields are relatively stable for the country as cereals are grown on irrigated fields along the Nile.

In the Middle East, agro-climatic conditions remain generally favourable as good rainfall outcomes from early in the season have been conducive for healthy crop development. In **Iran**, despite a strong rainfall deficit that affected the country in December and the southern half of the country in January, overall conditions are favourable, and crop biomass is average to above-average, particularly in the west and north and with the exception of Fars and Bushehr in the south. In **Iraq** and **Syria**, crop biomass is above-average. Additionally, in **Syria** and **Libya**, socio-economic challenges related to protracted conflict continue to influence production outcomes.

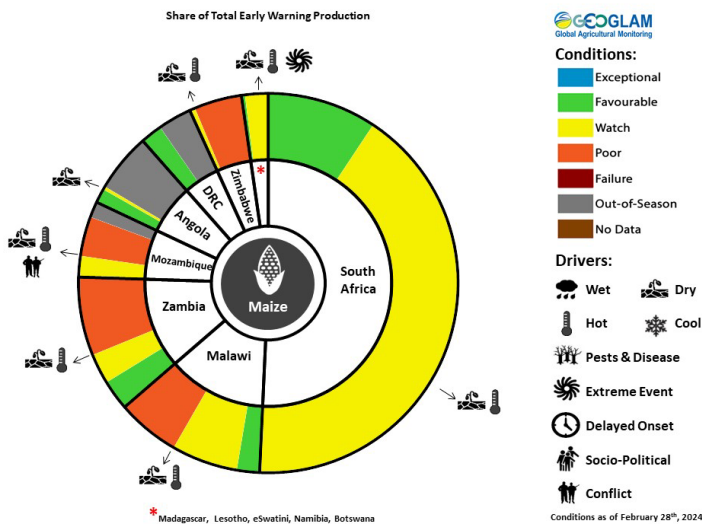
Southern Africa



Crop condition map synthesizing Maize 1 conditions as of February 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Crops that are in other than favourable conditions are labeled on the map with their driver.**

In Southern Africa, harvesting of main season cereals is just beginning in **Angola** and **Zambia** while crops continue to develop in **Namibia, Botswana, Zimbabwe, Mozambique, Malawi, Madagascar, South Africa, Lesotho, and eSwatini** for harvest from March. Crop conditions are mixed as El Niño-induced dry and hot weather continues to impact much of the region with expanding areas of concern. Conditions have been downgraded to watch in eastern **Angola**, eastern **Zambia**, southeastern **Zimbabwe**, central **Malawi**, western **Mozambique**, central-northern **South Africa**, and **Lesotho**, and conditions have been downgraded to poor in most of **Zimbabwe**, central and western **Zambia**, southern **Malawi**, and central **Mozambique**. Following a prolonged dry spell in November, average to above-average rainfall from mid-December through early to mid-January prompted enhanced agricultural activities, including planting and replanting efforts, application of agricultural inputs, and weeding across north and central areas of the region. Conversely, a record dry spell of close to 40 days impacted several areas of the region during the middle of the cropping season, culminating in the lowest rainfall received for the late-January to February timeframe in the last 40 years and resulting in permanent crop wilting in parts of **Zimbabwe, Zambia, Malawi, and Mozambique**. The extreme drought situation is driven by both a considerable rainfall deficit as well as an increase in water demand, likely influenced by high temperatures, which is imposing severe water stress on crops. Forecast rainfall through March is expected to be below-average in most central and southern areas of the region with a likely severe negative impact to the remainder of the cropping season and little chance of recovery (See Regional Outlook Pg. 9). In addition to near-term concerns for reduced crop production, there is also a concern for the potential of long-lasting impacts on seed availability in the region if widespread failure occurs.

In **Angola**, overall conditions are mixed with generally conducive weather outcomes in the west while the south and east have experienced below-average seasonal rainfall and deteriorating soil moisture, along with periods of localized flooding. In the southeast, erratic rainfall is affecting crop development in parts of Cuando Cubango and Cunene where localized flooding occurred in river valley areas. Crops are stunted in parts of eastern Huila, western Cuando Cubango, and southwestern Cunene, and final outcomes are uncertain. In **Zambia**, the government declared a natural disaster on February 29th regarding the El Niño induced drought crisis and expected impacts to agriculture following five consecutive weeks without rain during the critical development period (See Regional Outlook Pg. 9). According to official estimates, the country has lost 1 million hectares out of 2.2 million hectares planted. In **Zimbabwe**, planting was completed later than normal in January due to a delayed rainfall onset, particularly in the west. Additionally, following beneficial rains from mid-December through January, a severe dry spell from the end of January through February impacted most



For detailed description of the pie chart please see description box on Pg. 15.

distribution and a dry spell in February, particularly in the major producing centre where planting delays by up to three weeks occurred in Sofala and Zambezia provinces and where yields are expected to be below-average. Despite precipitation improvements in December and January, rainfall deficits are present in some areas, particularly in Zambezia, and high temperatures are further degrading conditions and leading to crop wilting. In the moderate producing north, conditions are mixed with concern in Cabo Delgado province where continued insecurity and localized flooding events have adversely impacted land and input access. In the minor producing south, below-average rainfall and a severe dry spell in February have impacted crop development. El Niño induced dry conditions are expected to continue through March in central and southern parts of the country, with likely negative impacts to cropping outcomes (See Regional Outlook Pg. 9). In **South Africa**, conditions have been downgraded to watch in the main maize producing provinces of Free State, Mpumalanga, North West, and Eastern Cape as dry and hot weather outcomes since mid-January have negatively impacted maize crops, which are currently in the sensitive pollination and kernel development stages. Rainfall outcomes through the end of February will be critically important to prevent further damage; however, forecasts indicate hot and dry conditions are likely to continue through early March (See Regional Outlook Pg. 9). Elsewhere, conditions remain generally favourable as wet conditions during December and early January have resulted in near-average cumulative rainfall amounts. In the Northern Cape where crops are irrigated, water resources are sufficient due to the wet conditions received over the interior. In **Lesotho**, conditions have been downgraded to watch as a result of mixed rainfall performance. Dry conditions in November 2023 were followed by heavy rainfall and strong winds from late December through early January that resulted in crop damage. Mid-February marked a return to below-average rainfall performance which is expected to continue into March. Cumulative rainfall amounts remain generally average despite low precipitation and high temperatures recorded in February, but there is concern regarding whether crops will reach maturity before the onset of frost. In the **Democratic Republic of the Congo**, harvesting of main season cereals is nearing completion in the east while planting and development of second season maize is underway in the centre, southeast, and north, and conditions remain generally favourable despite recent erratic rainfall received in the north. In the east, protracted conflict continues to disrupt household access to cultivated areas for harvesting activities.

regions, including the main producing northern areas, and resulted in crop wilting and severe water stress across much of the country. February and March are typically critical months for crop development, and yield potential has deteriorated across many areas due to a combination of the late planting activities, the severe dry spell, and above-average temperatures. Recovery is unlikely at this point as forecasts indicate below-average rains are expected to continue through March (See Regional Outlook Pg. 9). Conversely, there are some areas where crop recovery is still possible, including in irrigated areas as well as in the Eastern Highlands where conditions are wetter. In central and southern **Malawi**, the country is experiencing an extended dry spell of over a month between January and February, resulting in severe moisture stress for crops in key developmental stages and likely crop losses before harvest. Crops in the south are unlikely to recover, and total production is expected to be below-average. In **Mozambique**, concern remains across much of the country due to a delayed rainfall onset followed by erratic rainfall

Regional Outlook: Extended dry spell in February severely impacted crops in the centre and north, and dry conditions are forecast to continue across most areas

Rainfall conditions in the last month- a critical time for crop development- were consistently below-average in central and southern parts of the region. Preliminary data indicate many central areas had one of the [driest Februaries on record](#) during a severe, lengthy dry spell that began in late January. February 2024 precipitation totals are less than 30% of average in northeastern Botswana, throughout Zimbabwe, southern Zambia, and west and southern Mozambique and are less than 60% of average in southeastern Angola, southern and central Zambia, northeastern Namibia, Botswana, central and southern Mozambique, southern Malawi, and southern, central, and northeastern South Africa (Figure 1-left). The seasonal precipitation anomaly generally shows the same dry patterns, with rainfall totals 45-70% of average in Angola, Namibia, Botswana, South Africa, Zambia, Zimbabwe, Mozambique, and southern Malawi (Figure 1-middle-left). In addition to reduced rainfall, [Crop Explorer](#) indicates excessive heat during this period, further exacerbating the dry conditions by increasing atmospheric demand. Severe impacts have already been reported, particularly in previously high production zones in Zambia and Zimbabwe. Rainfed maize experienced delayed (and in some cases, failed) starts, followed by dry conditions in January-February, leading to severe moisture stress and potential for widespread crop failure. Zambia declared the drought as a national disaster and emergency on Feb. 29th.

Unfortunately, the 15-day (Figure 1-middle-right) and 3-month forecasts (Figure 1-right) indicate a high likelihood of continued below-normal conditions. During the first half of March, rainfall totals could be 50+ mm below-average in Zambia, and 25+ mm below-average in Angola, Namibia, Botswana, Zimbabwe, northern South Africa, and Mozambique, worsening already dry conditions. The short-term forecast indicates wet, above-average rainfall is expected in Madagascar and to a lesser extent in parts of the northern coast of Mozambique (Figure 1-middle-right). The remainder of the season is likely to be drier-than-normal (Figure 1-right) and hotter-than-normal, according to WMO, NMME, and C3S probabilistic forecasts for March to May.

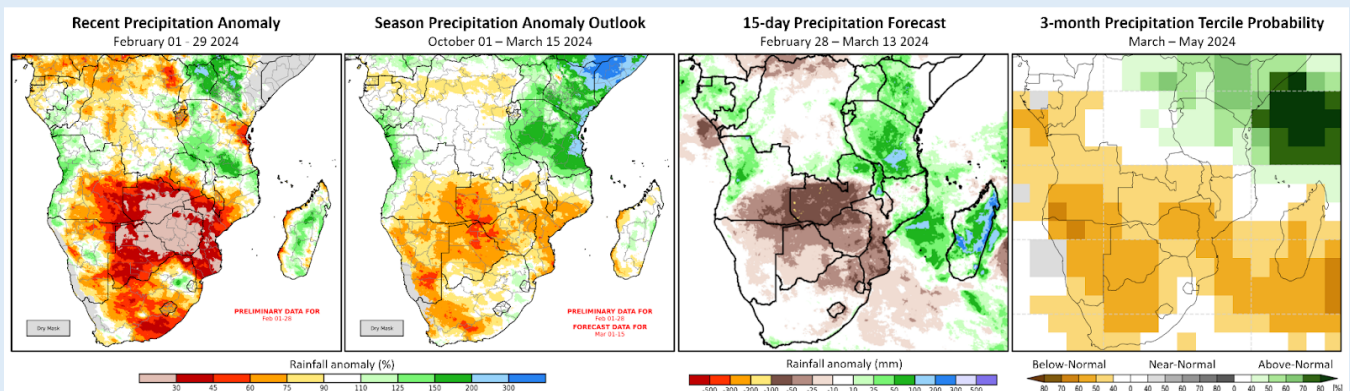
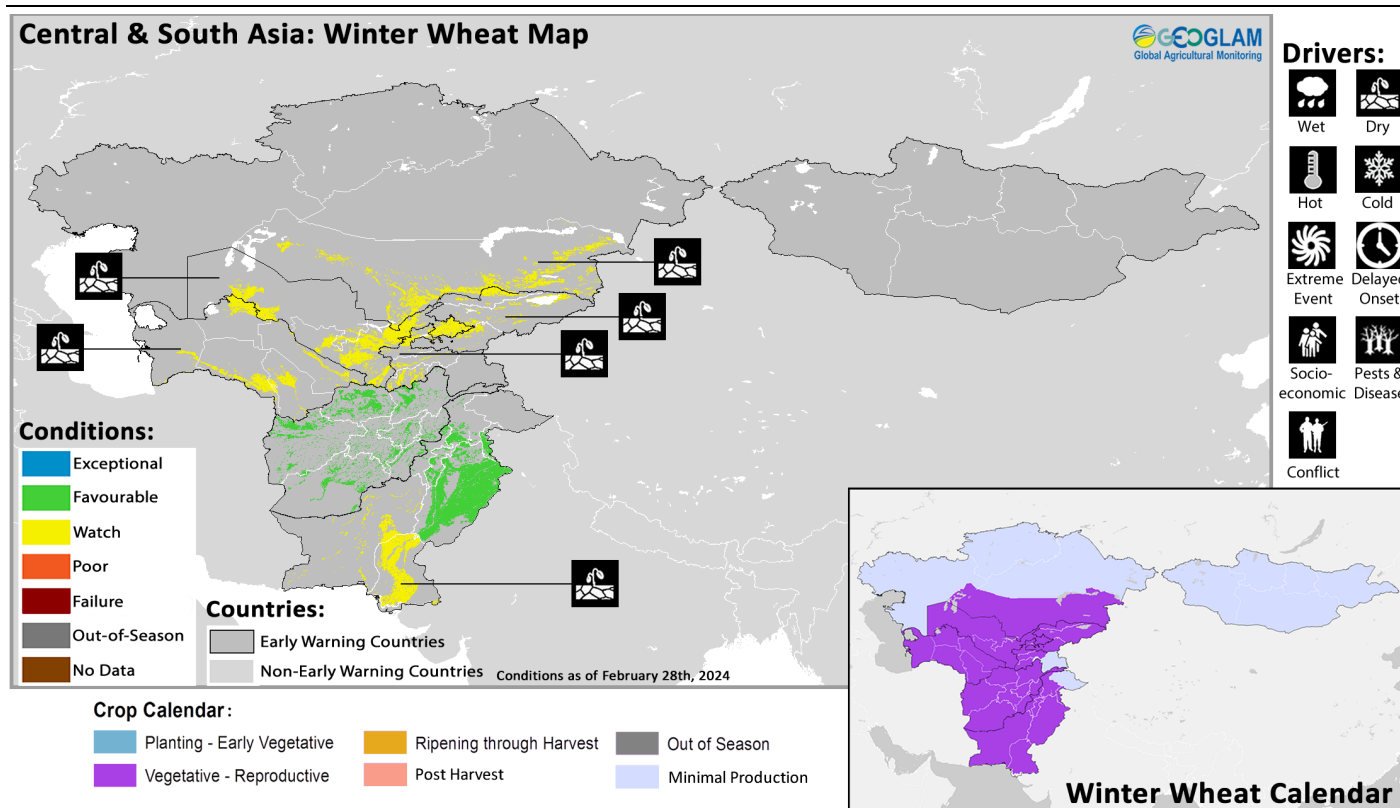


Figure 1. Recent rainfall anomaly, an outlook for October 1st to February 5th, a 15-day rainfall anomaly forecast, and a 3-month probabilistic precipitation forecast. The left and middle-left panels are CHC Early Estimates, which compare current precipitation totals to the 1981-2022 CHIRPS average for respective accumulation periods. These show the percent of average precipitation for Feb. 1st to 29th, 2024 (left), using CHIRPS Prelim for Feb. 1st to 28th, and for Oct. 1st to Mar. 15th (middle-left), using a CHIRPS-GEFS forecast for Mar. 1st - Mar. 15th. From *CHC Early Estimates*. Middle-right: A 15-day CHIRPS-GEFS (unbiased GEFS) forecast from February 28th, with values indicating how the forecast compares to the CHIRPS average for this period. Right: WMO probabilistic forecasts for MAM 2024 precipitation, based on models initialized in February, from the *WMO Lead Centre Long-Range Forecast Multi-Model Ensemble*.

Source: UCSB Climate Hazards Center

Central & South Asia



Crop condition map synthesizing Winter Wheat conditions as of February 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Crops that are in other than favourable conditions are labeled on the map with their driver.**

In Central and South Asia, Winter Wheat continues to develop under mixed conditions. There are prevailing dry concerns in **Turkmenistan, Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan**, and southern **Pakistan**. Conversely, conditions have improved to favourable in **Afghanistan** due to recent rainfall improvement from storm activity, although cumulative seasonal precipitation remains slightly below-average for most areas (See Regional Outlook Pg. 11). Spring Wheat planting is underway in **Afghanistan**, and planting will begin in March in **Tajikistan**. Forecasts near to above-average precipitation from late February through May in most areas could potentially result in improved Winter Wheat conditions and adequate soil moisture for Spring Wheat planting, but close monitoring is required (See Regional Outlook Pg. 11).

In **Afghanistan**, most provinces experienced delayed rainfall onset from the beginning of the season in October through late January, followed by average to above-average February precipitation that mitigated deficits and enhanced soil moisture levels in most areas, particularly in the northeast, centre, east, west, and central highlands, benefitting areas that were previously stressed (See Regional Outlook Pg. 11). While the recent rains have improved current vegetation conditions in most areas, the total area under Winter Wheat cultivation is below-average due to low precipitation and soil moisture levels from November 2023 through January 2024 that resulted in stress for both rainfed and irrigated standing crops. In the higher elevations of the north and northeast, the area under Winter Wheat cultivation has been reduced by at least 50 percent due to below-average precipitation during the planting stage. Overall, the success of the current crop seasons, including both rainfed wheat and downstream irrigated wheat, depends on the timeliness and coverage of precipitation outcomes during the coming months. Some southern areas of the northeast are expected to experience below-normal precipitation at the end of May, which will negatively impact rainfed wheat crops in all affected districts. Additionally, after four consecutive months of prolonged higher than average temperatures, the country experienced a cold snap from late February that will likely continue into early March. The switch to below-average temperatures will negatively impact standing crops, including wheat and orchard crops, and increases the risk of winterkill in areas where snow water volumes are currently reduced, leaving crops vulnerable to cold temperatures. However, temperatures are expected to return to warmer than normal levels during the coming weeks (See Regional Outlook Pg. XX). Planting of Spring Wheat is just beginning in some areas of the country under favourable conditions as the enhanced precipitation in February is allowing farmers to adequately prepare their fields. Areas in the northeast, north, and centre are still preparing their fields or are waiting for the snow to recede and soil moisture levels to improve, and planting activities are expected to be delayed by at least two weeks. Areas of the south and east have already completed planting. In **Pakistan**, adequate soil moisture levels at the beginning of the season in combination with high wheat flour prices resulted in an above-average sown area. Despite well below-average rainfall and high temperature outcomes during December and January, vegetation conditions in the major wheat producing areas remain favourable as crops are primarily irrigated. Conversely, the low rainfall amounts negatively impacted crop emergence and development in some minor producing rainfed areas, including northern Punjab, southwestern Balochistan, and southeastern Sindh, which together are known as the *Barani* areas and make up 10 percent of production. Cropping

outcomes will depend on rainfall performance through April, which is forecast to be near to above-average (See Regional Outlook Pg. 11). Furthermore, increased rains are needed to replenish reservoirs that will provide irrigation for main season crops from May.

Regional Outlook: Below-average rainfall and low snow water volumes remain across much of the region with some improvement in Afghanistan due to enhanced precipitation from late February

[October to early February precipitation conditions](#) were well-below average throughout the region, with much of Iran, Afghanistan, northern Pakistan, Tajikistan, and Kyrgyzstan experiencing less than 60% of average precipitation. Mid-February (Feb 16-25) conditions were 10-50 mm (>150%) above average in central and eastern Afghanistan, and average elsewhere, providing some reprieve from the dry conditions, although to-date season totals are still well-below average (Figure 1-left).

Storm activity improved snow water equivalent (SWE) conditions in portions of north, west, and southern Afghanistan, bringing March 3rd SWE totals to above-average levels in these areas (Figure 1-middle-left). SWE was well-below average in northeastern and central Afghanistan, eastern and northwestern Tajikistan, and central Kyrgyzstan. Regionally, SWE substantially increased from record-low values in February to [still very low values](#) that are similar to last year in early March. The storms reportedly killed 39 people and 14,000 livestock in [Afghanistan](#), and 37 people in Pakistan's Khyber Pakhtunkhwa province.

Season-to-date conditions are quite concerning. In addition to the overall below-normal precipitation so far, temperatures have been several degrees warmer than average during the past several months, with recent storms being the exception. After cold temperatures during the next two weeks, models predict temperatures will most likely be warmer than normal. Regionally, higher winter and spring temperatures could melt snow more quickly, increasing the chances of early flooding and loss of seasonal snowpack. This would disturb agricultural activities and impact standing crops. Increased temperatures and humidity may also contribute to pests and disease in cropped areas. Irrigated crops in downstream areas with limited surface water for irrigation could also be impacted. Unfortunately, farmers in such areas are using groundwater as an easy and cheap substitute to the surface water.

There is some guarded optimism for above-normal precipitation in the next 1-3 months. Short-term, 15-day forecasts (Figure 1-middle-right) indicate expected above-average precipitation in the central and southern parts of the region, including 25-100mm positive anomalies in southeastern Iran, southeastern Turkmenistan, Afghanistan, and along the Afghanistan-Pakistan border. The forecast also indicates a potential for excessively wet conditions (> 100 mm anomalies) in Jammu and Kashmir, raising concerns for potential flooding events. Elsewhere in the region, including central Iran, western Turkmenistan, central and western Tajikistan, and southern Pakistan precipitation is expected to be near average. Longer-term, 3-month forecasts show a fairly weak signal, but above-normal precipitation is expected in the east, including northeast Afghanistan, northern Pakistan, eastern Tajikistan, and Kyrgyzstan (Figure 1-right). This anticipated above-average precipitation and normal distribution of Spring (March to May) rains could positively impact Spring Wheat cultivation.

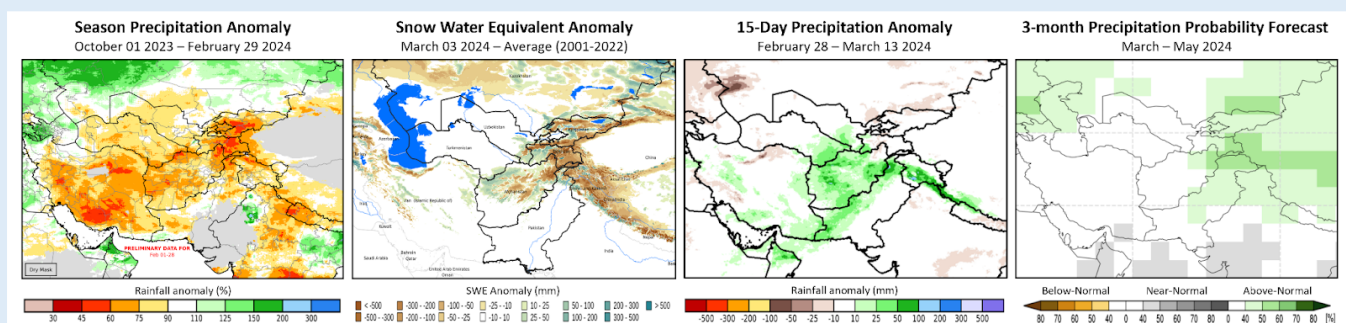
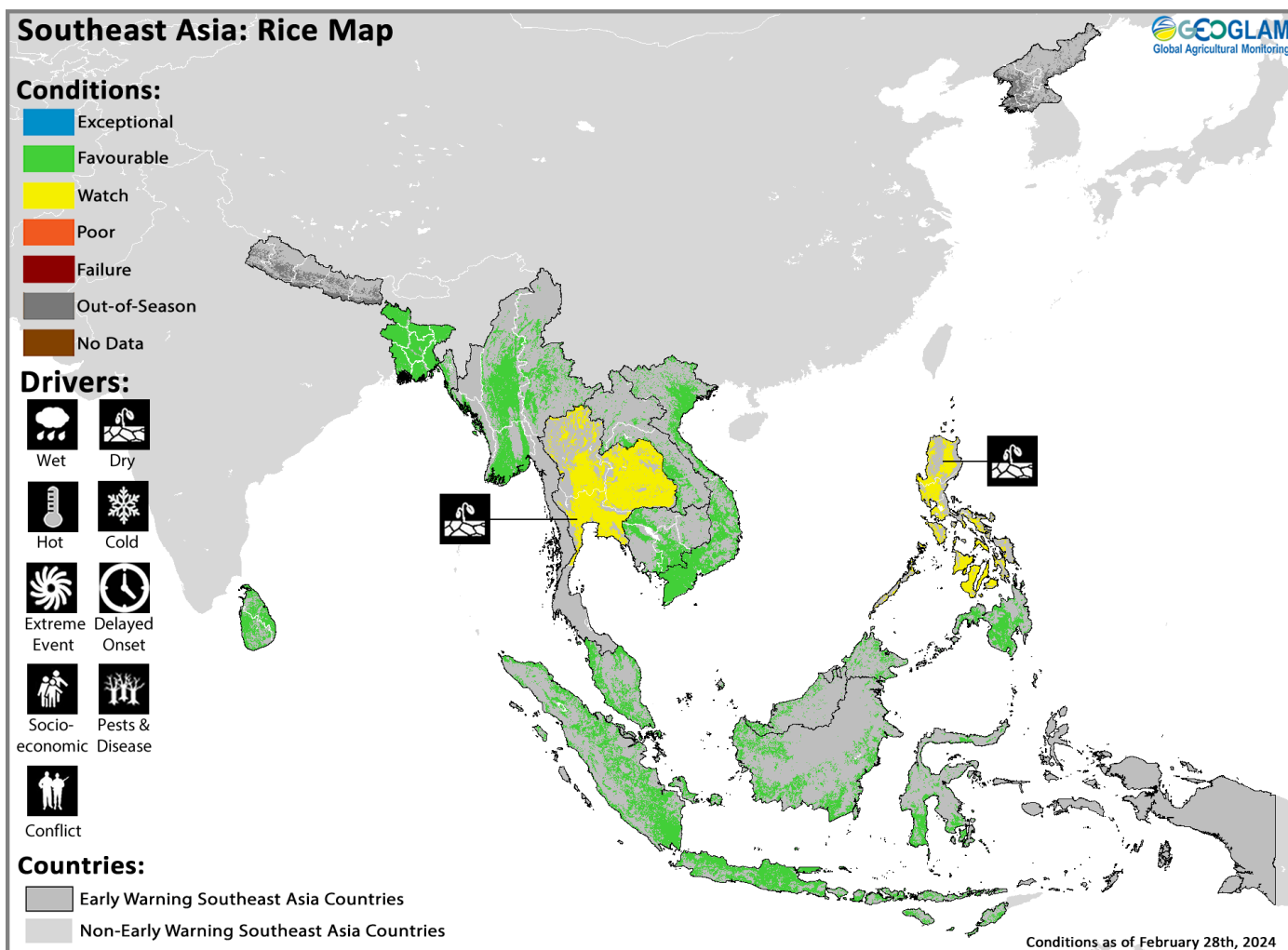


Figure 1. Season precipitation anomaly, snow-water equivalent anomaly, a 15-day precipitation forecast anomaly, and a 3-month probabilistic precipitation forecast. The left panel is a CHC Early Estimate, which compares current precipitation totals to the 1981-2022 CHIRPS average for respective accumulation periods. This panel shows the percent of average precipitation for Oct. 1st 2023 to Feb. 29th, 2024 (left), using CHIRPS Prelim for Feb. 1st to 28th. From [CHC Early Estimates](#). Middle-left: Snow water equivalent (SWE) anomaly for Mar. 3rd, 2024, compared to the 2001-2022 average for the same date, from [NASA/USGS/FEWS NET](#). Middle-right: A 15-day CHIRPS-GEFS (unbiased GEFS) forecast from Feb. 28th, 2024, with values indicating how the forecast compares to the CHIRPS average for this period. Right: WMO probabilistic forecasts for MAM 2024 precipitation, based on models initialized in February, from the [WMO Lead Centre Long-Range Forecast Multi-Model Ensemble](#).

Source: UCSB Climate Hazards Center

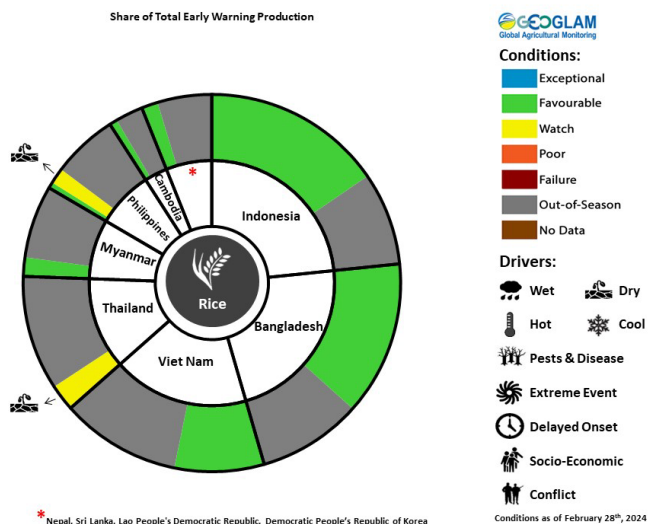
Southeast Asia



Crop condition map synthesizing rice conditions as of February 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Crops that are in other than favourable conditions are labeled on the map with their driver.**

In southern Southeast Asia, including **Indonesia, Malaysia, and Brunei**, planting of wet-season rice is nearing completion. Conditions are favourable for earlier planted crops in the vegetative to early generative stages due to adequate irrigation water supply, and harvesting activities are underway in some areas with good yields expected. In northern Southeast Asia, including **Myanmar, Thailand, Laos, Cambodia, Viet Nam, and the Philippines**, crops are mainly in the seeding to early growing stage, and conditions are mixed as extremely low precipitation has resulted in drought damage in parts of **Thailand** and the **Philippines**. The region’s total planted area of dry-season rice may decrease compared to last year due to a shortage of irrigation water. Elsewhere in Southeast Asia, including **Nepal, Bangladesh, and Sri Lanka**, conditions remain generally favourable.

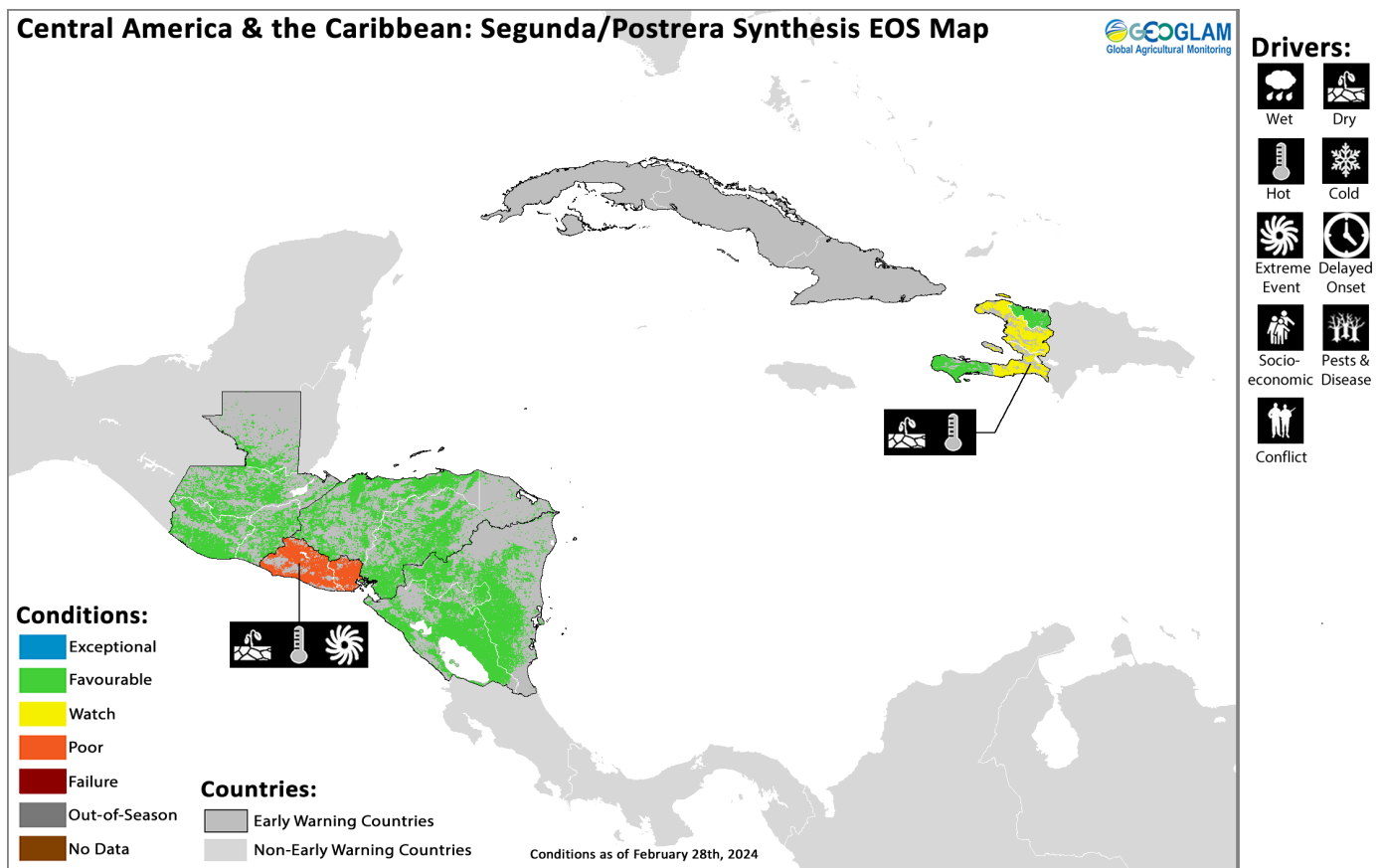
In **Indonesia**, planting of wet-season rice is nearing completion with a total planted area of 4.7 million hectares, which is 14.8 percent lower than the last wet season. Conditions are favourable for earlier planted crops in the vegetative to early generative stages due to adequate irrigation water, particularly in the north. Increased rainfall received from late January to mid-February also benefitted rice growth. February marks the second month of harvesting, and progress is slightly slower than the previous year but with good yields due to sufficient sunlight during the growing period. In **Timor-Leste**, maize planting is currently underway, and there is concern due to early season dryness between October and early January that caused some farmers to forego planting and negatively impacted crop development. Conversely, conditions are favourable for rice planting, which



* Nepal, Sri Lanka, Lao People's Democratic Republic, Democratic People's Republic of Korea
For detailed description of the pie chart please see description box on Pg. 15.

is expected to reach a near-average level. In **Malaysia**, planting of wet-season rice finished in February with a final planted area of approximately 360 thousand hectares, which is slightly lower than the last wet season. Conditions are favourable with an expected yield of 4.4 tons per hectare. Additionally, land preparation is underway for dry-season rice, and planting will begin in March with a national planting plan of approximately 264 thousand hectares. In **Brunei**, wet-season rice is growing under favourable conditions. About 30 percent of irrigated areas and 5 percent of rainfed areas have been harvested, and current dry conditions are conducive for harvesting work. In the **Philippines**, dry-season rice is in the young panicle forming to heading stage, and conditions have been downgraded to watch in most regions due to extremely low rainfall received since the end of 2023, except in Mindanao where conditions remain favourable. Harvesting outcomes may be lower than last year due to below-normal precipitation expected through the end of the season. In **Thailand**, planted area of dry-season rice is about 1.4 million hectares and is expected to decrease due to a lack of irrigation and natural water resources. However, the expectation of a high paddy price has prompted some farmers to expand their plantings beyond the national irrigation plan. Crops are mostly in the young panicle forming to grain filling stages, and concern remains due to the water shortages as well as high temperatures that could lead to damage during panicle development and spikelet formation. Both yield and production are expected to be lower than the previous year. In northern **Viet Nam**, planting of dry-season (winter-spring) rice is now underway, and planting progress is slower than in 2023 because of below-average rains in the north and centre as well as some southern areas. Conditions in these areas will need to be monitored closely for potential yield declines. In the south, dry-season (winter-spring) rice is in the early growing stage under favourable conditions. However, some provinces primarily in the Mekong River Delta were planted earlier and have harvested 92 thousand hectares. In **Laos**, planted area of dry-season rice has reached 90 percent of the national plan, with a final area estimated to be 97 thousand hectares and higher than last year. Crops are mainly in the seeding and tillering stages under favourable conditions due to rainfall received in all regions during the second half of January which provided sufficient water for irrigation. In **Myanmar**, planting of dry-season rice has reached 820 thousand hectares accounting for 78 percent of the national plan, and progress is slightly faster than last year due to higher availability of irrigation water and conducive weather. Additionally, over 80 percent of the total area designated for planting direct-seeded rice has been utilized. Crops are now in the tillering to panicle forming stages under favourable conditions. In **Cambodia**, planted area of dry-season rice is around 817 thousand hectares, which is 23 percent higher than last year due to a high paddy price. Crops are in the heading to harvesting stage under mostly favourable conditions, and 263 thousand hectares have been harvested with an estimated yield of 4.6 tons per hectare. However, a minor water deficit in some provinces during the second half of February damaged 0.73 percent of the planted area. In **Sri Lanka**, harvesting of *Maha* season rice, which accounts for 70 percent of annual production and is mostly irrigated, as well as *Maha* season maize is now underway and will finalize in March, and conditions remain favourable throughout the country. In **Nepal**, wheat crops are in vegetative to reproductive stage for harvest from mid-March while planting of main season maize is just beginning, and agro-climatic conditions remain favourable to support normal crop development. In **Bangladesh**, *Boro* season rice, winter season maize, and wheat crops are all in the vegetative to reproductive stage for harvest from March, and overall conditions remain favourable. Land preparation is underway for summer season maize and *Aus* season rice crops, and planting will begin in March.

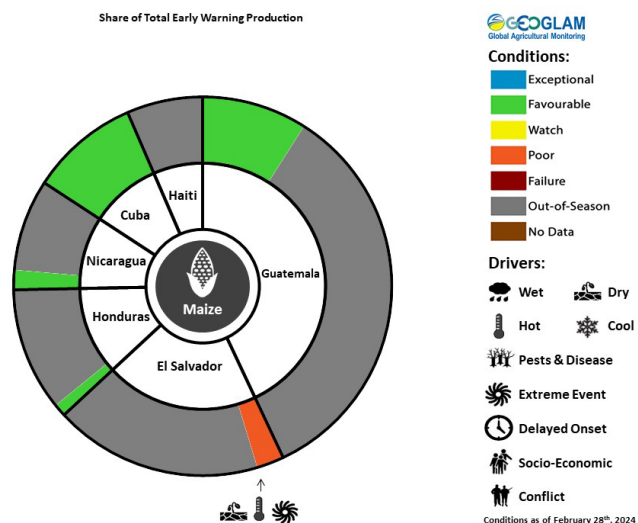
Central America & Caribbean



Crop condition map synthesizing Segunda (Maize 2) and Postera (Beans 2) end of season (EOS) conditions as of February 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Conditions that are other than favourable are labeled on the map with their driver.**

In Central America, harvesting of *Segunda* season maize crops and *Postera* season bean crops mostly finalized in January in **El Salvador, Guatemala, Honduras, and Nicaragua**. End of season conditions were mixed as crops were impacted by erratic and below-average rainfall and high temperatures that affected normal development, particularly in smallholder and subsistence farming areas that experienced yield reductions. Additionally, yields in **El Salvador** are expected to be below-average due to prolonged dry and hot conditions as well as impacts of Tropical Storm Pilar in late October. Elsewhere, final conditions were favourable as yields in major producing areas were able to rebound from the inconducive weather, and these areas were able to achieve average to slightly below-average production outcomes. Overall, despite generally near-normal cropping outcomes at the national scales, poor outcomes for small and medium scale producers will have regional food security implications.

In **Guatemala**, weather inconsistencies and resultant resowing efforts resulted in staggered *Postera* crop harvests. High prices of agricultural inputs combined with irregularities in this season's agricultural activities also resulted in generally higher production costs. In **Nicaragua**, *Apante* season bean crops, which account for about 35 percent of annual bean production, are in the vegetative to reproductive stage for harvest from March, and prospects have improved from previous concerns regarding irregular rainfall distribution and high temperatures. Aggregate red bean production is expected to be above-average, according to official estimates; however, low rainfall outcomes in February could reduce yields to slightly below-average levels. In **Honduras**, harvesting of second season rice crops continues under favourable conditions and will be concluded in April. As of



For detailed description of the pie chart please see description box on Pg. 15.

mid-February, vegetation conditions in the major producing provinces of Colón and Atlántida were above-average. In **Haiti**, harvesting of second season rice is just beginning under mixed conditions. Concern remains in the centre and southeast due to previous dry and hot weather. Conversely, conditions in the northeast and southwest have been upgraded to favourable due to recent rainfall improvement. Additionally, *Hiver* season bean crops are in vegetative to reproductive stage for harvest in March, and concern remains as low cumulative rainfall since the start of the season has resulted in below-average vegetation conditions as of late February for parts of Artibonite, Centre, and West. However, increased rains in recent weeks have benefitted crop development with marginal losses reported. Land preparation for *Printemps* season cereals is underway, and planting will begin in March. In **Cuba**, planting of main season maize continues while second season rice crops are now in the vegetative to reproductive stage, and abundant rains received in February have contributed to favourable crop conditions.

Pie Chart Description: Each slice represents a country's share of total regional production. The proportion within each national slice is colored according to the crop conditions within a specific growing area; grey indicates that the respective area is out of season. Sections within each slide are weighted by the sub-national production statistics (5-year average) of the respective country. The section within each national slice also accounts for multiple cropping seasons (i.e. spring and winter wheat) and are a result of combining totals from multiple seasons to represent the total yearly national production. When conditions are other than favourable icons are added that provide information on the key climatic drivers affecting conditions.

Information on crop conditions in the main production and export countries can be found in the Crop Monitor for AMIS, published March 7th, 2024.

i Sources and Disclaimers:

The Crop Monitor assessment is conducted by GEOGLAM with inputs from the following partners FEWS NET, JRC, WFP, ARC, AFSIS, MESA, ICPAC, FAO GIEWS, Applied Geosolutions and UMD. The findings and conclusions in this joint multi-agency report are consensual statements from the GEOGLAM experts, and do not necessarily reflect those of the individual agencies represented by these experts. More detailed information on the GEOGLAM crop assessments is available at www.cropmonitor.org

Appendix

Crop Conditions:

Exceptional: Conditions are much better than average* at time of reporting. This label is only used during the grain-filling through harvest stages.

Favourable: Conditions range from slightly lower to slightly better than average* at reporting time.

Watch: Conditions are not far from average* but there is a potential risk to final production. The crop can still recover to average or near-average conditions if the ground situation improves. This label is only used during the planting-early vegetative and the vegetative-reproductive stages.

Poor: Crop conditions are well below-average. Crop yields are likely to be 10-25% below-average. This is used when crops are stunted and are not likely to recover, and impact on production is likely.

Failure: Crop conditions are extremely poor. Crop yields are likely to be 25% or more below-average.

Out of Season: Crops are not currently planted or in development during this time.

No Data: No reliable source of data is available at this time.



"Average" refers to the average conditions over the past 5 years.

Note: In areas where conflict is a driver of crop condition, crop conditions are compared to the pre-conflict average rather than the average conditions over the past 5 years. In areas where conflict is protracted and based on expert analysis on a case by case basis, crop conditions will be compared to the average conditions over the past five years.

Drivers:

These represent the key climatic drivers that are having an impact on crop condition status. They result in production impacts and can act as either positive or negative drivers of crop conditions.

Wet: Higher than average wetness.

Dry: Drier than average.

Hot: Hotter than average.

Cool: Cooler than average or risk of frost damage.

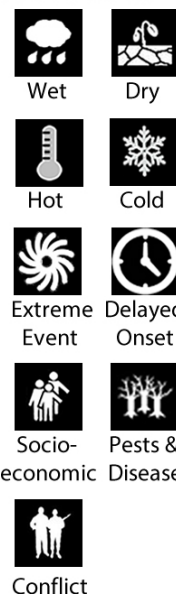
Extreme Events: This is a catch-all for all other climate risks (i.e. hurricane, typhoon, frost, hail, winterkill, wind damage, etc.)

Delayed-Onset: Late start of the season.

Pest & Disease: Destructive insects, birds, animals, or plant disease.

Socio-economic: Social or economic factors that impact crop conditions (i.e. policy changes, agricultural subsidies, government intervention, etc.)

Conflict: Armed conflict or civil unrest that is preventing the planting, working, or harvesting of the fields by the farmers.



Crop Season Nomenclature:

In countries that contain multiple cropping seasons for the same crop, the following charts identifies the national season name associated with each crop season within the Crop Monitor for Early Warning.

| MENA | | | | |
|---------|------|----------------|--------------------------|---------------|
| Country | Crop | Season 1 Name | Season 2 Name | Season 3 Name |
| Egypt | Rice | Summer-planted | Nili season (Nile Flood) | |

| East Africa | | | | |
|-----------------------------|---------|---------------------------|---------------------------|---------------|
| Country | Crop | Season 1 Name | Season 2 Name | Season 3 Name |
| Burundi | Maize | Season B | Season A | |
| Ethiopia | Maize | Meher Season (long rains) | Belg Season (short rains) | |
| Kenya | Maize | Long Rains | Short Rains | |
| Somalia | Maize | Gu Season | Deyr Season | |
| Somalia | Sorghum | Gu Season | Deyr Season | |
| Uganda | Maize | First Season | Second Season | |
| United Republic of Tanzania | Maize | Long Rains | Short Rains | |
| United Republic of Tanzania | Sorghum | Long Rains | Short Rains | |

| West Africa | | | | |
|---------------|-------|---------------|---------------|---------------|
| Country | Crop | Season 1 Name | Season 2 Name | Season 3 Name |
| Benin | Maize | Main season | Second season | |
| Cameroon | Maize | Main season | Second season | |
| Cote d'Ivoire | Maize | Main season | Second season | |
| Ghana | Maize | Main season | Second season | |
| Mauritania | Rice | Main season | Off-season | |
| Nigeria | Maize | Main season | Short-season | |
| Nigeria | Rice | Main season | Off-season | |
| Togo | Maize | Main season | Second season | |

| Southern Africa | | | | |
|----------------------------------|-------|---------------|---------------|---------------|
| Country | Crop | Season 1 Name | Season 2 Name | Season 3 Name |
| Democratic Republic of the Congo | Maize | Main season | Second season | |
| Mozambique | Maize | Main season | Second season | |

| Southeast Asia | | | | |
|----------------------------------|------|---------------------|----------------------------|---------------|
| Country | Crop | Season 1 Name | Season 2 Name | Season 3 Name |
| Bangladesh | Rice | Boro | Aman | |
| Cambodia | Rice | Wet season | Dry season | |
| Indonesia | Rice | Main season | Second season | |
| Lao People's Democratic Republic | Rice | Wet season | Dry season | |
| Myanmar | Rice | Wet season | Dry season | |
| Philippines | Rice | Wet season | Dry season | |
| Sri Lanka | Rice | Maha | Yala | |
| Thailand | Rice | Wet season | Dry season | |
| Viet Nam | Rice | Wet season (Autumn) | Dry season (Winter/Spring) | |

| Central & South Asia | | | | |
|----------------------|-------|----------------|----------------|---------------|
| Country | Crop | Season 1 Name | Season 2 Name | Season 3 Name |
| Afghanistan | Wheat | Winter-planted | Spring-planted | |
| Kazakhstan | Wheat | Winter-planted | Spring-planted | |
| Kyrgyzstan | Wheat | Winter-planted | Spring-planted | |
| Tajikistan | Wheat | Winter-planted | Spring-planted | |


Crop Season Nomenclature:

In countries that contain multiple cropping seasons for the same crop, the following charts identifies the national season name associated with each crop season within the Crop Monitor for Early Warning.

| Central America & Caribbean | | | | |
|-----------------------------|-------|---------------|---------------|---------------|
| Country | Crop | Season 1 Name | Season 2 Name | Season 3 Name |
| Cuba | Rice | Main season | Second season | |
| El Salvador | Beans | Primera | Postrera | |
| El Salvador | Maize | Primera | Segunda | |
| Guatemala | Beans | Primera | Postrera | Apante |
| Guatemala | Maize | Primera | Segunda | |
| Haiti | Maize | Main season | Second season | |
| Honduras | Beans | Primera | Postrera | |
| Honduras | Maize | Primera | Segunda | |
| Nicaragua | Beans | Primera | Postrera | Apante |



Global Agricultural Monitoring

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