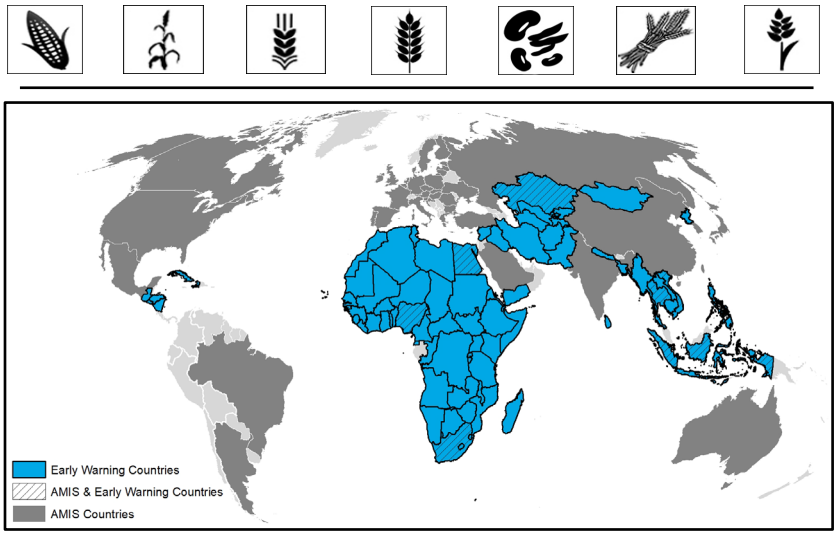
Crop Monitor EARLY WARNING

Overview:

In **East Africa**, conditions have improved for *Belg* season cereals in Ethiopia due to enhanced rains. In the south, planting of main season cereals continues under mixed conditions due to ongoing dryness in some areas with improvement in central Kenya. Mixed rainfall conditions are forecast during May to September (See Regional Outlook Pg. 6). In **West Africa**, planting of main season cereals is underway in the south of the subregion while harvesting of second season rice is nearing completion in the north, and conditions are generally favourable except in conflict-affected areas. In the **Middle East and North Africa**, wheat crops continue to develop under mixed conditions, and crops are unlikely to recover from persistent dryness in parts of Morocco, Algeria, Tunisia, Syria, and Iraq. In **Southern Africa**, harvesting of main season cereals is nearing completion under mixed conditions due to persisting dryness as well as the impacts of Tropical Cyclone Freddy in February and March. In **Central and South Asia**, there has been an improvement in winter wheat crop development from the previous month due to improved precipitation amounts, except in Turkmenistan, Uzbekistan, and parts of Afghanistan where concern remains for continuing dry conditions. Planting of spring wheat is now underway under favourable conditions. In **Southeast Asia**, harvesting of dry-season rice is nearing completion in the north while planting of dry-season rice is underway in Indonesia. Overall conditions are favourable, and crops in South Viet Nam have recovered from previous flood water presence. In **Central America and the Caribbean**, planting of *Primera* season cereals is underway, and there is some concern due to dry and hot conditions that are forecast to continue in the coming months (See Regional Outlook Pg. 15).

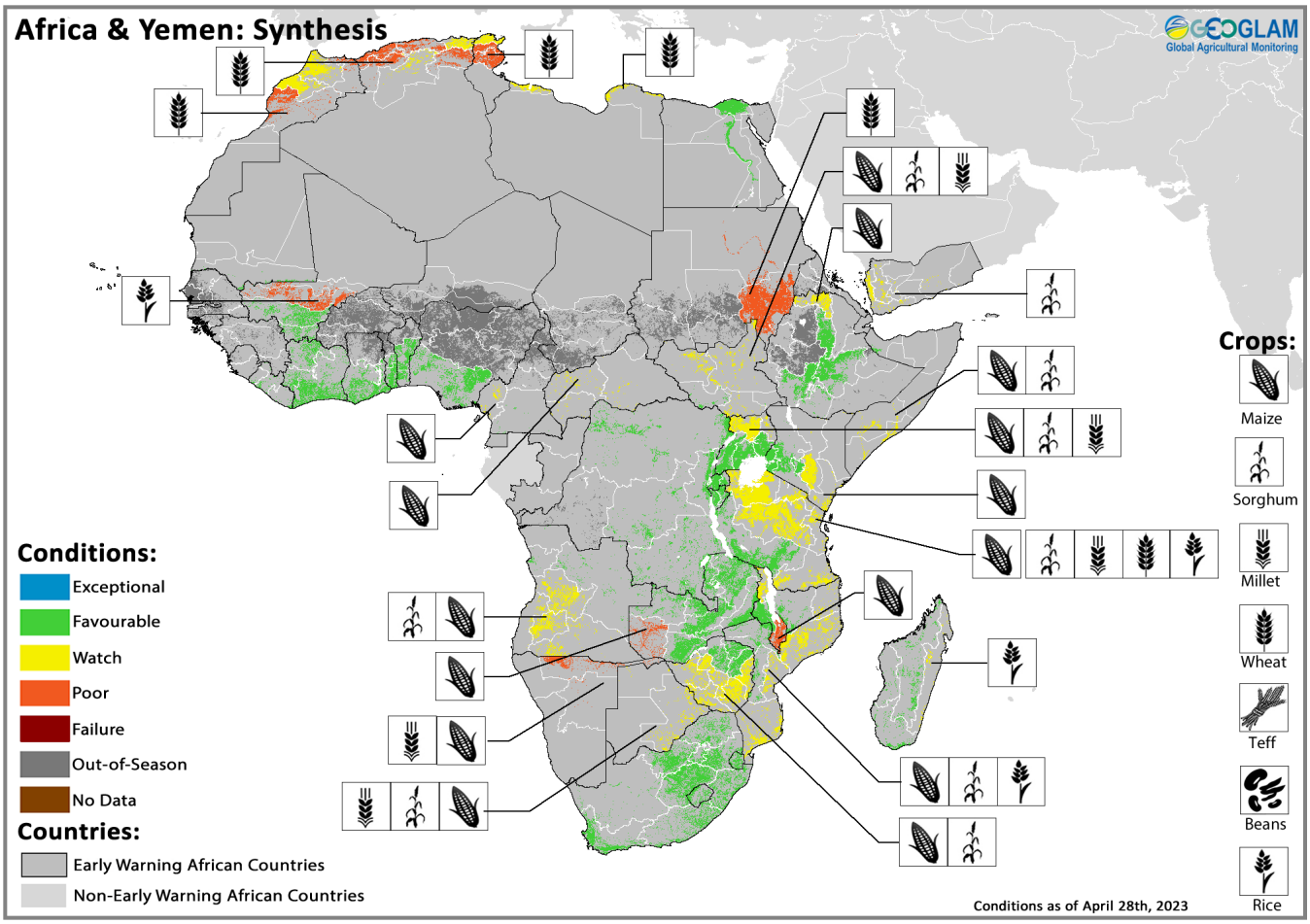


Contents:

GEOGLAM Crop Monitor for Early Warning

Crop Conditions at a Glance

based on best available information as of April 28th



Crop condition map synthesizing information for all Crop Monitor for Early Warning crops as of April 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: In the north, harvesting of wheat crops finalized under poor conditions in Sudan while planting and development of main season cereals is underway in South Sudan and Yemen under mixed conditions. In Ethiopia, conditions for *Belg* season cereals have improved due to enhanced rains. In the south, planting of main season cereals continues under mixed conditions due to ongoing dryness with some improvement in central Kenya. The projected development of El Niño and a positive IOD may lead to mixed rainfall outcomes with higher than usual rainfall in parts of eastern Kenya and Somalia and drier than average conditions possible across western Kenya, Uganda and parts of Ethiopia (See Climate Influences Pg. 3 and Regional Outlook Pg. 6).

WEST AFRICA: Planting of main season cereals is underway in the south of the subregion while harvesting of second season rice is nearing completion in Mali and Mauritania. Agro-climatic conditions are favourable for crop development. However, conflict continues to impact parts of Mali, Cameroon, and the Central African Republic.

MIDDLE EAST & NORTH AFRICA: Harvesting of wheat crops has started from late April, and conditions are mixed as crops are unlikely to recover from persistent dryness in south and northeastern Morocco, most of Algeria and Tunisia, northeastern Syria, and northwestern Iraq. Elsewhere, conditions are generally favourable.

SOUTHERN AFRICA: Harvesting of main season cereals is nearing completion under mixed conditions due to persisting dryness in parts of Angola, Namibia, Botswana, Zambia, Zimbabwe, Malawi, Mozambique, and Madagascar as well as impacts from the passage of Tropical Cyclone Freddy in parts of Malawi and Mozambique.

CENTRAL & SOUTH ASIA: Winter wheat crops are mostly in the vegetative to reproductive stage with harvesting underway in Pakistan, and there has been an improvement in conditions from the previous month due to enhanced precipitation in recent weeks. However, concern remains in Turkmenistan, Uzbekistan, and parts of Afghanistan due to continuing dry conditions. Planting of spring wheat is now underway under favourable conditions.

SOUTHEAST ASIA: Harvesting of dry-season rice reached its peak in April in the north, and overall conditions are favourable as crops in South Viet Nam have recovered from previous flood water presence. In Indonesia, planting of dry-season rice is now underway with favourable growing conditions due to sufficient irrigation water supply.

CENTRAL AMERICA & CARIBBEAN: Planting of *Primera* season cereals is underway in Guatemala and Honduras under generally favourable conditions except in the main producing northern region of Guatemala due to dry and hot conditions, and forecasts indicate that dry and hot conditions are likely to continue through the rest of the cropping season (See Regional Outlook Pg. 15). Concern remains in Haiti and Cuba due to below-average rainfall and vegetation conditions.

Global Climate Outlook: Two-week Forecast of Areas with Above or Below-Average Precipitation

The two-week forecast (Figure 1) indicates a likelihood of above-average rainfall over the western US, northeast Mexico, central Brazil, northeast Ukraine, southcentral in the Russian Federation, Sierra Leone, Liberia, southern Côte d'Ivoire, western Gabon, Eritrea, Djibouti, eastern Ethiopia, northern Somalia, western Yemen, Afghanistan, and central Pakistan.

There is also a likelihood of below-average rainfall over the Prairies in Canada, the northern Great Plains and the Midwest in the US, southern Mexico, Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, the Dominican Republic, northern Columbia, Venezuela, Guyana, central and southern Brazil, southern Chile, Serbia, Bulgaria North Macedonia, Iraq, Kenya, Tanzania, central Angola, northern Zambia, northern Madagascar, southern Botswana, central South Africa, southern and eastern Kazakhstan, Siberia in the Russian Federation, Mongolia, China, eastern India, Bangladesh, Myanmar, Thailand, Laos, northern Viet Nam, and Java in Indonesia.

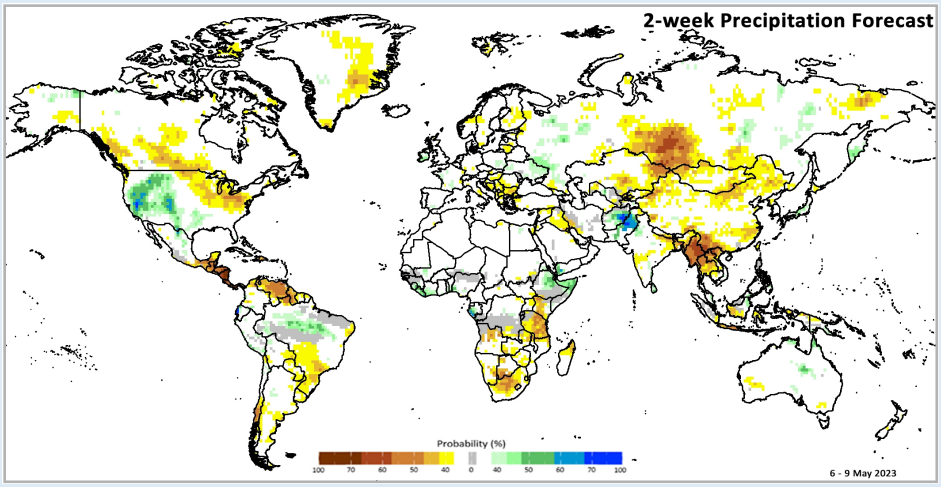


Figure 1: *IRI SubX Precipitation Biweekly Probability Forecast for 6 – 19 May 2023, issued on 28 April 2023. The forecast is based on statistically calibrated tercile category forecasts from three SubX models. Source: IRI Subseasonal Forecasts Maproom*

Climate Influences: ENSO currently in neutral state with a likelihood of El Niño and positive IOD conditions developing during mid to late 2023

The El Niño-Southern Oscillation (ENSO) is currently in a neutral state. El Niño conditions are forecast to develop during the next several months. There is a 62% chance of El Niño during May-June-July with increasing chances afterwards until a 86% chance during October-November-December, according to the IRI/CPC forecast.

El Niño events can have widespread, global impacts. These tend to enhance rainfall in Central Asia, southern North America, south-eastern South America, southern Europe, eastern and southern East Africa, and southern and eastern China. Drier-than-average conditions tend to occur in Central America, the Caribbean, northern South America, parts of western and northern East Africa, Southern Africa, India, Northern China, the Maritime Continent, and Australia.

Positive Indian Ocean Dipole (IOD) conditions may also develop during June to September, according to the Australian Bureau of Meteorology forecast. Positive IOD conditions can enhance El Niño-related drying influences in Australia and the Maritime Continent, and wetting influences during the East Africa short rains. *Source: UCSB Climate Hazards Center*

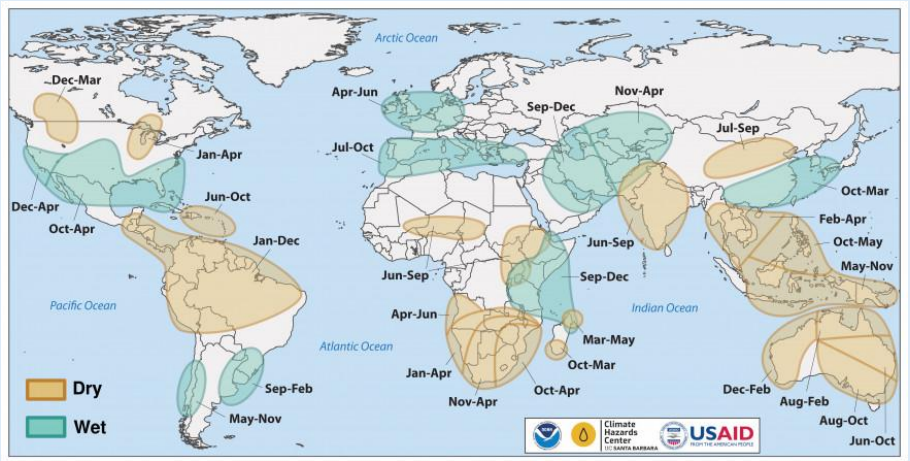
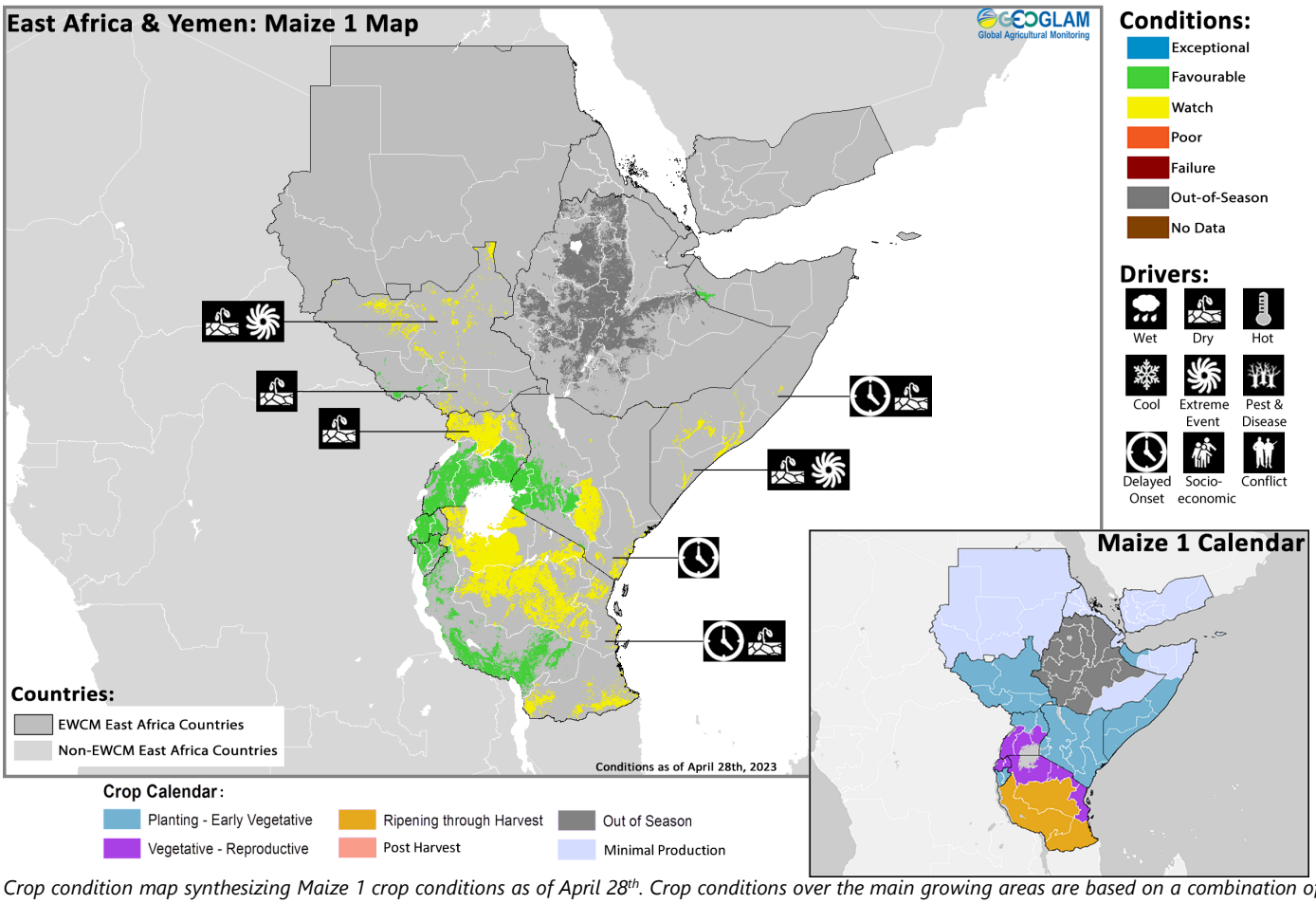


Figure 1. Areas of dry and wet conditions during El Niño phase of ENSO. Source: NOAA & CHC & FEWS NET

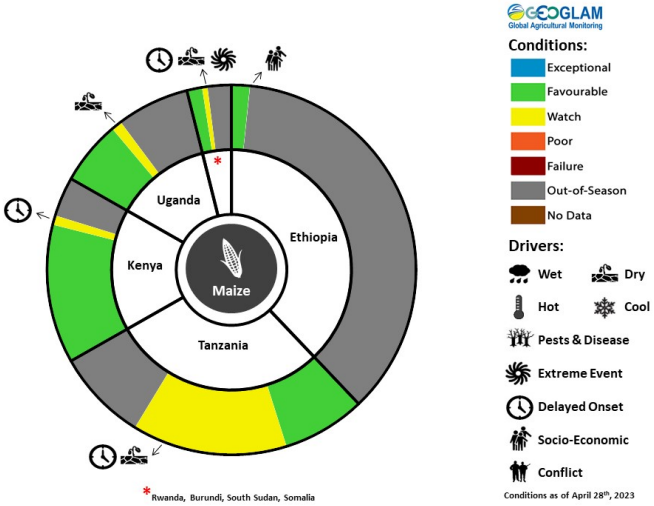
East Africa



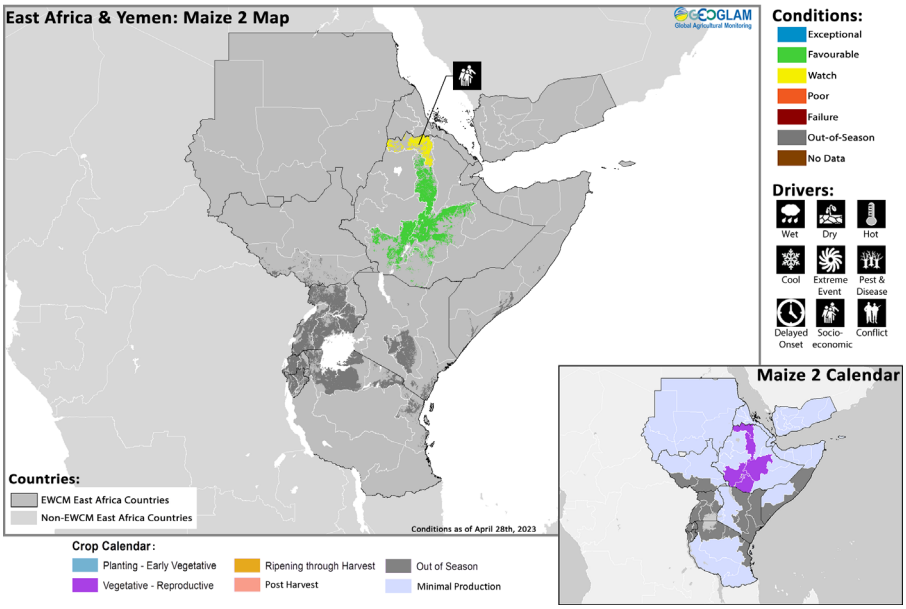
Crop condition map synthesizing Maize 1 crop conditions as of April 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. ***Conditions that are other than favourable are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

Across the north of the subregion, harvesting of wheat crops finalized in **Sudan** under poor conditions due to reduced plantings in favour of other crops. Planting of main season cereals is underway in **South Sudan** and **Yemen** under mixed conditions due to below-average rainfall performance and lingering flood water presence in parts of **South Sudan** as well as ongoing conflict and socio-economic challenges in **Yemen**. In **Ethiopia**, *Belg* season cereals continue to develop for harvest from June, and conditions have improved from the previous month due to enhanced rainfall.

Across the south of the subregion, planting of main season cereals is now underway in **Kenya**, **Rwanda**, **Burundi**, **Uganda**, **Somalia**, and the **United Republic of Tanzania** under mixed conditions. Compounded effects of the previous consecutive dry seasons and delayed rainfall onset continue to impact crops in east and coastal areas of **Kenya**, while delayed rainfall onset and dry conditions are impacting crops in northern **Uganda**, **Somalia**, and parts of the **United Republic of Tanzania**. Conversely, conditions remain generally favourable in unimodal major agricultural areas of **Kenya**, **Rwanda, Burundi**, central and southern **Uganda**, northwest and western **Somalia**, and southwestern areas of the **United Republic of Tanzania**, and recent rainfall has resulted in crop improvement in central **Kenya**. Forecasts indicate the likelihood for above-average rainfall in east and northern areas in May, and the likelihood for above-average rainfall between September and December has increased due to the projected development of an El Niño event and potential impact from a positive Indian Ocean Dipole (See Climate Influences Pg. 3 and Regional Outlook Pg. 6).



For detailed description of the pie chart please see description box on Pg. 16.



Crop condition map synthesizing Maize 2 conditions as of April 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.***

Northern East Africa & Yemen

In **Ethiopia**, *Belg* season maize crops are in vegetative to reproductive stage for harvest from June, and conditions have improved from the previous month due to enhanced rainfall. However, heavy precipitation since the beginning of March has also caused widespread flooding and river overflows in many areas, particularly in Somali region located in the southeast. Additionally, residual socio-economic challenges related to the prior conflict situation continue to impact agricultural activities in Tigray region. Land preparation is underway for *Meher* season cereals, and planting will begin in May. May to September rainfall is forecast to be below-average in the southwest and above-average in the northwest and southeast (See Regional Outlook Pg. 6). In **Sudan**, harvesting of wheat finalized under poor conditions with an estimated 30 percent decrease in production compared to the previous year due to reduced plantings in favour of legumes and spices. Planting of main season millet and sorghum crops will begin in June. However, the recent breakdown of security sector reform negotiations between two Sudanese leaders has led to an eruption of conflict since April 15, disrupting trade and markets and resulting in critical food shortages that are likely to worsen during the June to September lean season period. In **South Sudan**, planting of first season cereals is now underway with mixed conditions due to a combination of below-average precipitation and lingering flood waters. Parts of Warrap and Lakes states located in the northwest have experienced below-average rains, which may delay planting. In the northeast, some areas have experienced below-average rainfall while soils remain inundated in other areas due to flooding in the previous season. In the Central Equatoria region located in the south, there is concern regarding below-average rainfall in some areas. In Western Equatoria located in the southwest, rainfall has been slightly below-average in localized eastern areas bordering Central Equatoria. In **Yemen**, planting of sorghum crops continues under favourable agro-climatic conditions. However, socio-economic challenges relating to conflict continue to impact agricultural activities.

Southern East Africa

In **Uganda**, first season cereals continue to develop in central and southern bimodal rainfall areas under favourable conditions due to near-average cumulative rains in March and April with good soil moisture. Planting is now underway in the north with some concern as below-average rains in the last month may affect planting activities. Additionally, land preparation is underway for second season maize crops in the north, and planting will begin in May. Below-average rainfall is forecast for much of the country through September, particularly in the north (See Regional Outlook Pg. 6). In **Kenya**, planting of Long Rains cereals is underway in all regions. In bimodal minor agricultural areas, recent rains have improved crop prospects in the centre while compounded effects from the previous consecutive dry seasons and delayed rainfall onset continue to impact parts of the east and coast. In unimodal major agricultural areas, planting activities began in April under favourable conditions. This year's March to May rainfall season commenced with unusually heavy precipitation, resulting in flash floods across the country's north and southern regions. However, forecasts indicate May to September rainfall will be mixed with below-average rainfall possible in the main producing west and above-average rainfall possible in the east (See Regional Outlook Pg. 6). In **Rwanda**, Season B maize crops continue to develop under favourable conditions, and harvesting will begin in June. In **Burundi**, planting of Season B maize and rice crops continues under favourable conditions for harvest from July. Rainfall has been generally favourable since February; however, some households faced challenges in accessing farming inputs due to high prices, which may lead to lower production at the household level. In **Somalia**, planting of *Gu* season maize and sorghum crops is now underway with concern in south and central areas that have not received adequate rains. Elsewhere, planting conditions are mostly favourable with good rains received, though pockets of below-average vegetation are evident in some western areas, and the increased rains resulted in flooding downstream along the Shabelle River. Forecasts indicate the likelihood for above average May to September rainfall (See Regional Outlook Pg. 6). In northern bimodal areas of the **United Republic of Tanzania**, *Masika* season cereals and *Vuli* season sorghum crops continue to develop for harvest from May, and concern remains due to delayed rainfall onset as well as ongoing dry conditions that are forecast to continue in the northwest through September (See Regional Outlook Pg. 6). In central and southern unimodal areas, *Masika* season cereals are in vegetative to reproductive stage, and conditions are mixed with favourable conditions in the southwest and concern elsewhere due to persistent dryness.

Regional Outlook: Mixed April rainfall with above-average precipitation expected in May across most areas

During recent weeks, rainfall conditions were mixed across the region. April 1st to 25th rainfall totals were above-average in eastern equatorial areas, as well as in central and northeastern Ethiopia, Rwanda, Burundi, and portions of northeastern and southern Tanzania. Rainfall was below-average in central and northern Uganda, southwestern South Sudan, and portions of western Kenya, southern Ethiopia, and central Somalia (Figure 1-left).

Rainfall totals for April 1st to May 10th will likely be average to above-average in most areas (Figure 1-middle). That outlook considers the wet conditions in many locations during March and April, and forecasted average to above-average rainfall from late April to early May. Large rainfall surpluses, 150% of average or higher for March 1st through April 25th, are indicated by CHIRPS final and preliminary (April 1st to 25th) data in northwestern and northeastern Kenya, southwestern and northwestern Somalia, Eritrea, and central and northeastern Ethiopia. In eastern Tanzania and southeastern Kenya, March rainfall was below-average but recent rains improved conditions.

There are elevated risks of flooding during the next one to two weeks, associated with forecasted wetter-than-average conditions in parts of Kenya, Ethiopia, and Somalia. Heavy rains recently produced flash flooding in northern and central portions of Kenya, and increased river levels have flooded areas along the Shabelle River in Somalia. Heavy, intense rainfall is possible in central and southern-central Ethiopia, in some southwestern, central, and coastal areas in Kenya, and in coastal southwestern Somalia. The bias-corrected GEFS predicts rainfall totals of 75 mm to more-than 150 mm in some of these locations from April 27th to May 1st.

Mixed rainfall conditions are forecast during May to September. During May, there are increased chances for drier-than-average conditions in western and southern areas of the region, and average to above-average rainfall in most eastern and northern areas, based on the IRI SubX probabilistic forecast for May 6th to 26th. Rainfall deficits are likely to be an ongoing concern through September for cropping areas in western Kenya, Uganda, southwestern Ethiopia, southern South Sudan, and Rwanda. The WMO forecast indicates there are 40% to higher-than 60% chances of below-normal May to September rainfall in these areas, while wetter-than-normal conditions may occur in Sudan, northern South Sudan, northwestern Ethiopia, eastern Kenya, Somalia, and northeastern Tanzania (Figure 1-right).

Associated with the forecast development of an El Niño event, and possible influence of a positive Indian Ocean Dipole, there are elevated chances of above-average rainfall during September to December (See Climate Influences Pg. 3). The long-range NMME forecast for September to November is indicating increased chances of above-normal rainfall in eastern areas, as well as in some northern areas of the region.

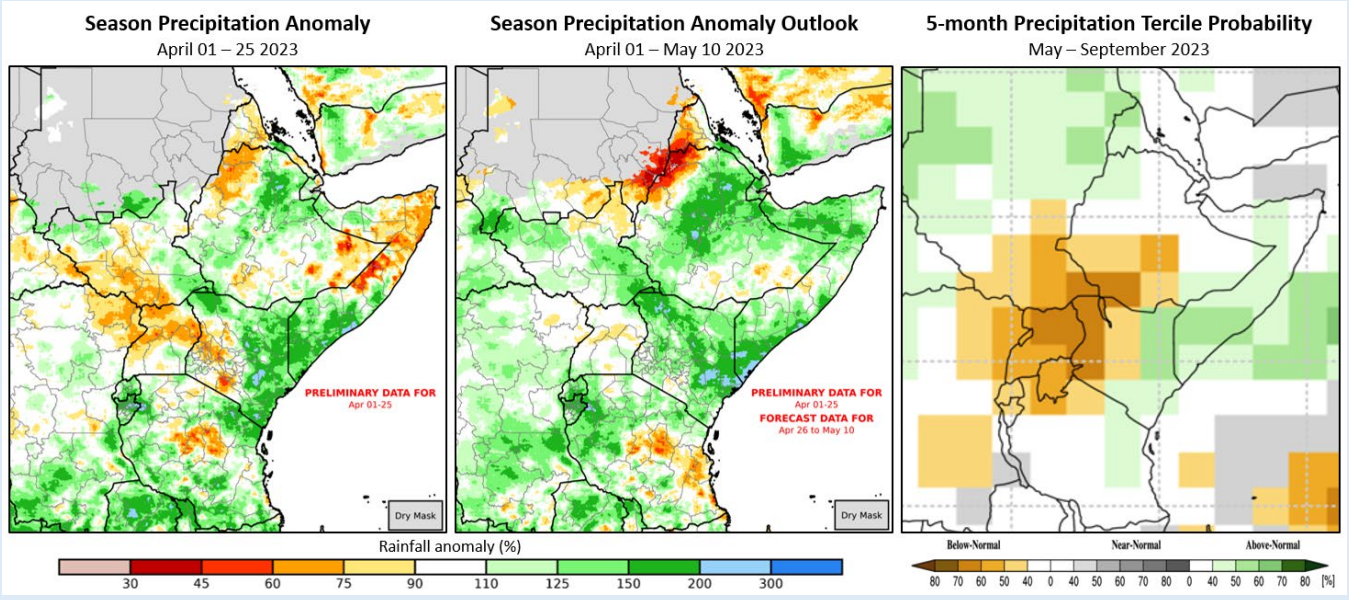
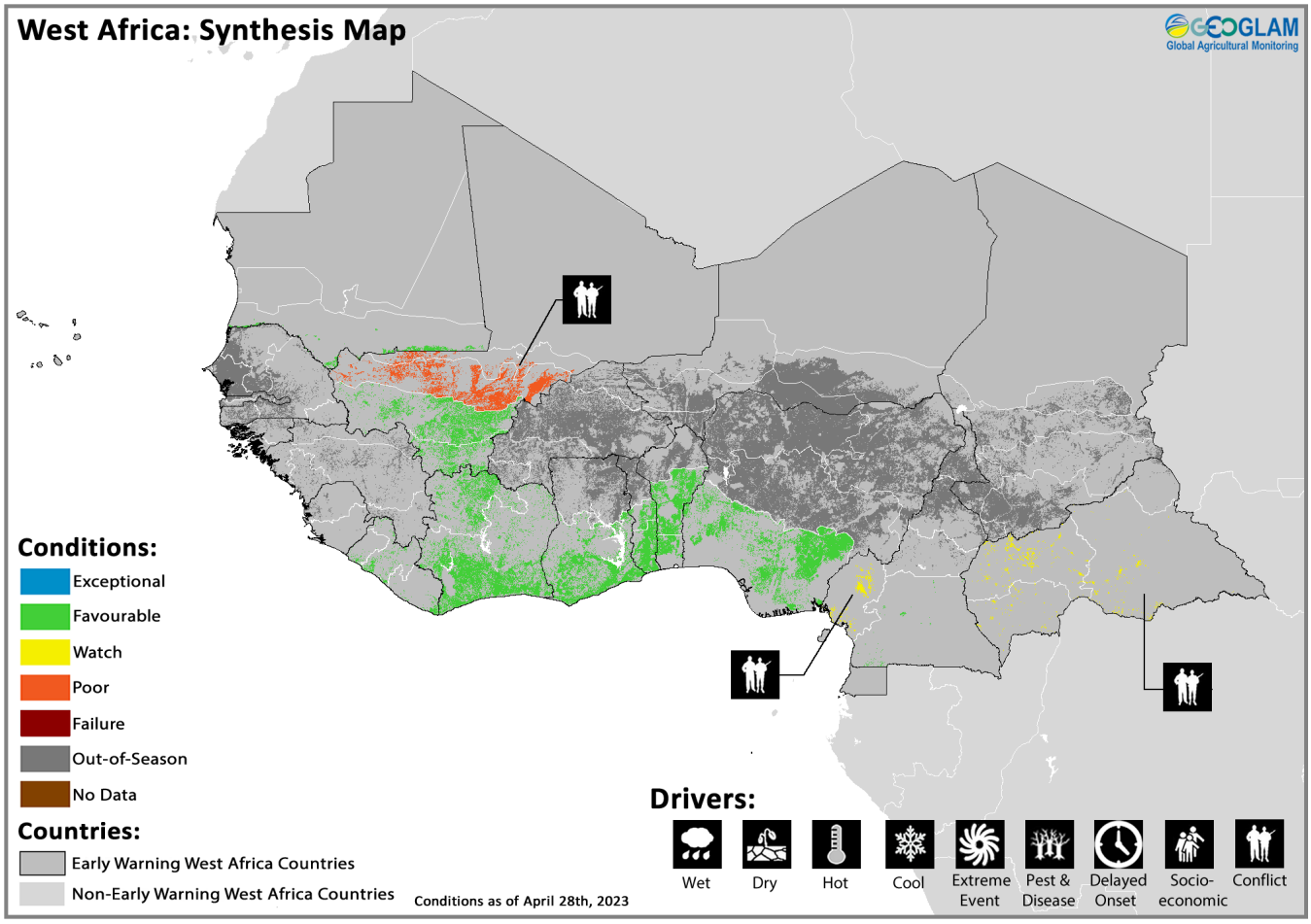


Figure 1. A recent rainfall anomaly, a seasonal rainfall anomaly outlook, and a probabilistic rainfall forecast. *The left and middle panels are CHC Early Estimates, which compare current precipitation totals to the 1981-2022 CHIRPS average for respective accumulation periods. These show the percent of average precipitation for Apr. 1st to 25th, 2023 (left), and for Apr. 1st to May. 10th (middle). Both panels use CHIRPS Prelim for Apr. 1st to 25th. The middle panel also includes a CHIRPS-GEFS forecast for Apr. 26th - May. 10th. The right panel is a WMO probabilistic forecast for May-to-September 2023 precipitation, based on models initialized in April. This image is from the WMO Lead Centre Long-Range Forecast Multi-Model Ensemble. Source: UCSB Climate Hazards Center*

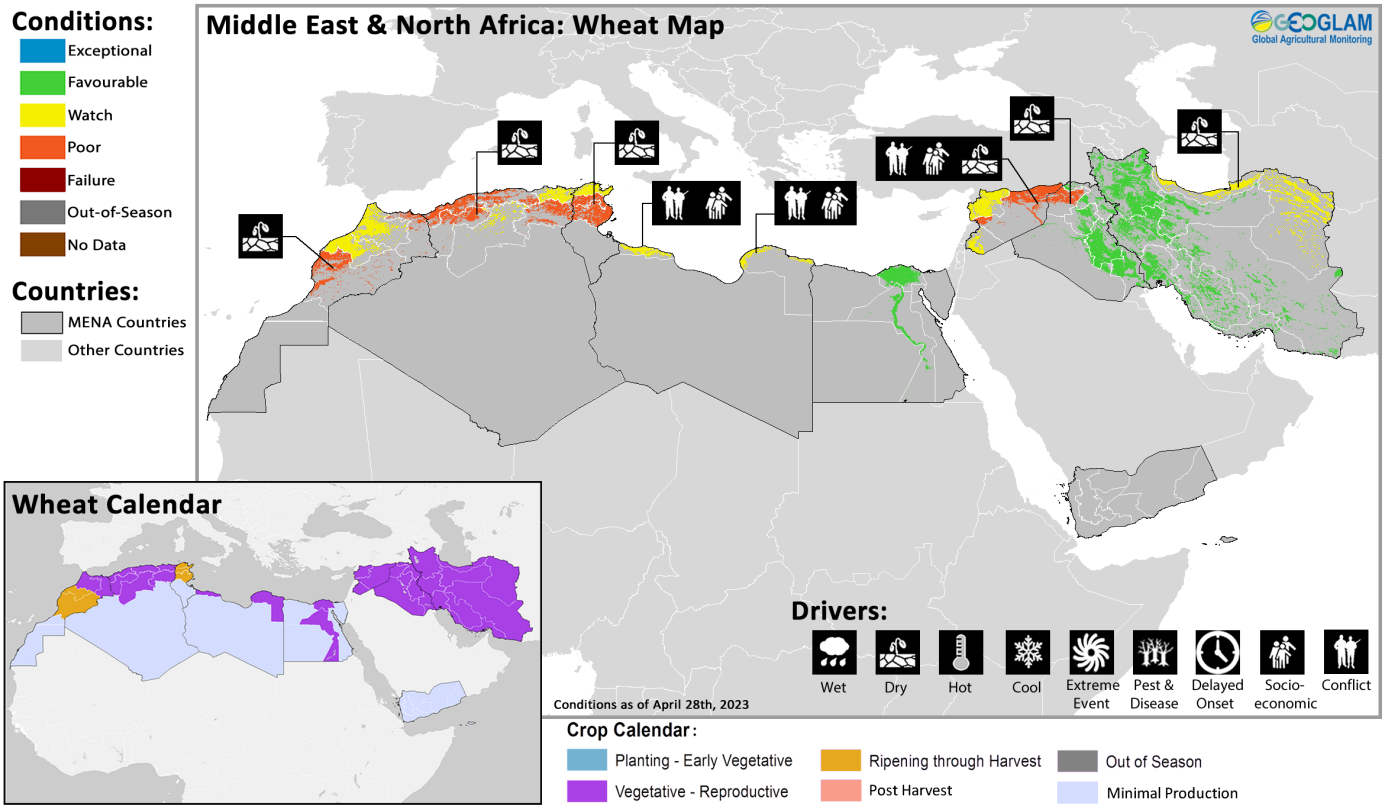
West Africa



Crop condition map synthesizing crop conditions as of April 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 south of the subregion, planting of main season maize and rice is now underway in central and eastern **Liberia**, southern **Cote d'Ivoire**, **Ghana**, central and southern parts of **Benin** and **Togo**, southern **Nigeria**, and the **Central African Republic**. Planting of second season maize is also underway in southern **Cameroon**. In the north of the subregion, harvesting of second season rice finalized in **Mali** and is nearing completion in **Mauritania**. Agro-climatic conditions remain favourable throughout the subregion. However, agricultural activities in central **Mali**, southwestern **Cameroon**, and the **Central African Republic** continue to be impacted by persistent conflict. According to the CHIRPS preliminary rainfall totals from March 1 to April 15, the southern part of the subregion from eastern **Sierra Leone** to the **Central African Republic** has received precipitation ranging from 50mm to 300mm, with localized areas receiving more than 300 mm in southern **Liberia**, **Cote d'Ivoire**, and southwest and southeastern **Cameroon**.

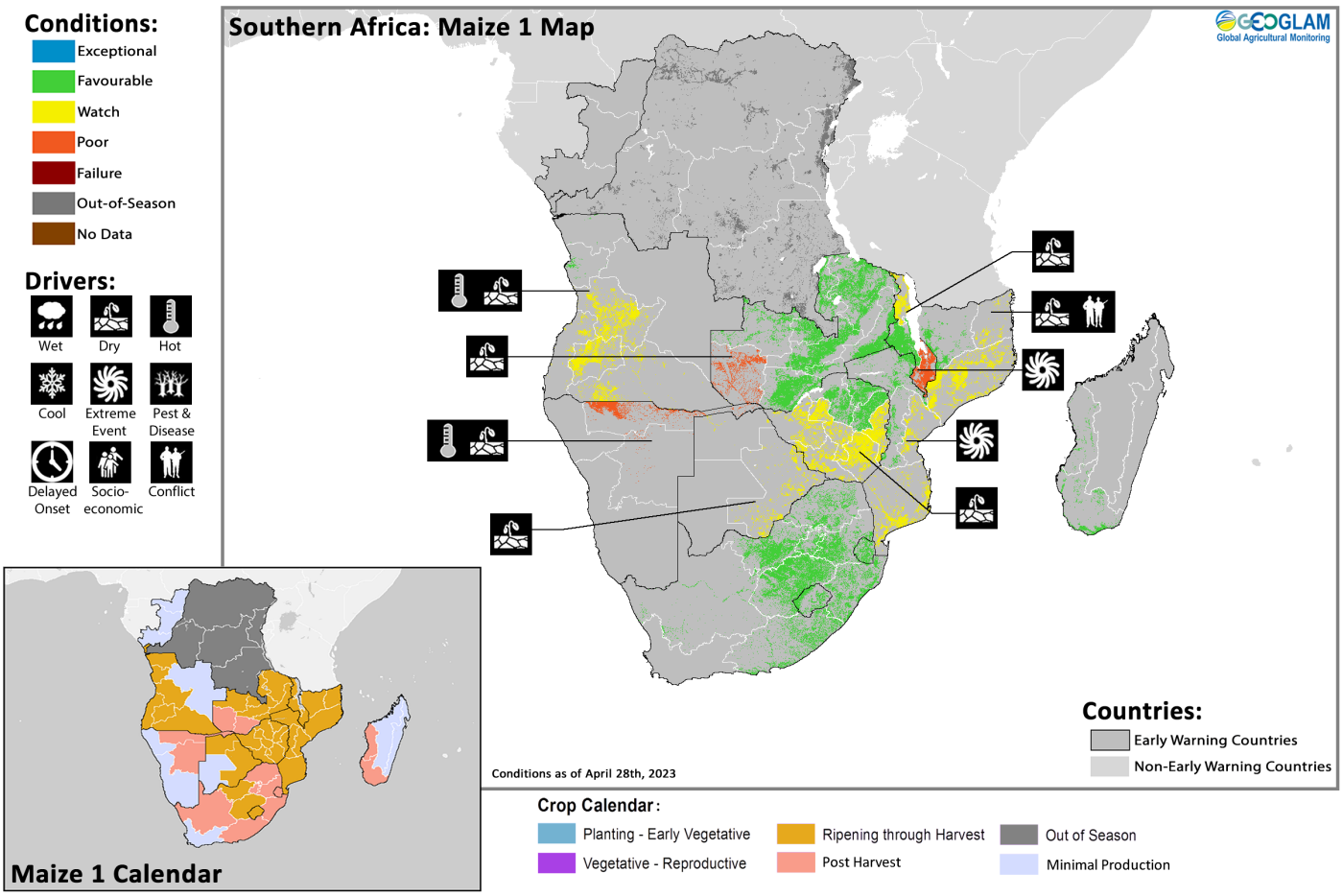
Middle East & North Africa



Crop condition map synthesizing wheat conditions as of April 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.***

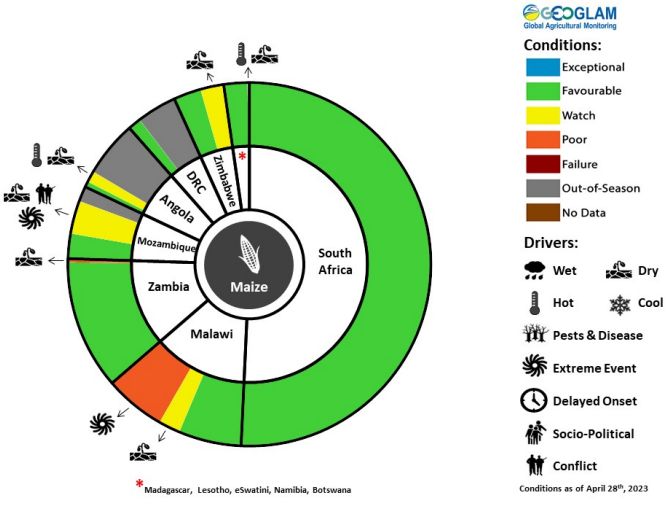
In the **Middle East and North Africa**, wheat crops continue to develop under mixed conditions, and harvesting is underway in some areas. Crops are unlikely to recover from persistent dryness in south and northeastern **Morocco**, most of **Algeria** and **Tunisia**, northeastern **Syria**, and northwestern **Iraq**. In **Morocco**, below-average rainfall since the start of the season, except in December and February, combined with above-average temperatures since March have resulted in below-average biomass in the south (Marrakech, Souss, and Tadla Azizal) and east (Oriental). A delayed start to seasonal rains has also resulted in accelerated maturation of winter cereals in the centre (Chaouia, Rabat, and Doukala-Abda). Conversely, in the northeast, biomass of winter cereals is close to average (Tanger-Tetouan and Taza) to above-average (Gharb) due to irrigation use. As a result, production of winter cereals at the national level is expected to be below the five-year average but higher than the previous year. In **Algeria**, long dry spells in January and February were followed by well below-average rainfall in March and April. As a result, winter cereal yields are expected to be well below-average in most wilayas except for a few regions in the northeast from Jilel to El Tarf. In **Tunisia**, total seasonal rainfall has been the lowest in the last 22 years for nearly all regions. The severe dry conditions have had a negative impact on winter crop biomass, resulting in poor yield expectations in all areas except for Bizerte and Kebili due to irrigation use. In **Egypt**, conditions remain favourable for irrigated crops. Land preparation is underway for maize crops, and planting will begin in May. In **Syria**, weather outcomes have been generally more conducive to crop production this year than the previous two years. However, ongoing conflict and related socio-economic challenges continue to impact cropping activities and outcomes. Crop biomass has improved in the northwestern regions of Aleppo, Raqqa, and Idleb, in the northeastern region of Hassakeh, and in the southern regions of Dara and As Suweida, though pockets of below-average biomass are present in some areas due to failed rainfed crops. In **Iraq**, conditions remain favourable thanks to well above-average rainfall since October except for areas in the north, including parts of Ninewa, Erbil, and to a lesser extent Dahuk and Sulaymaniyah. Below-average yields are expected in the southern half of Ninewa governorate where rainfed crops have failed. In **Iran**, conditions are generally average to above-average except in the northeastern regions of Golestan and Khorasan and in parts of Esfahan and Hamedan where dry conditions or lack of irrigation water are impacting crop development. Land preparation is underway for rice crops, and planting will begin in May.

Southern Africa



Crop condition map synthesizing Maize 1 conditions as of April 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.***

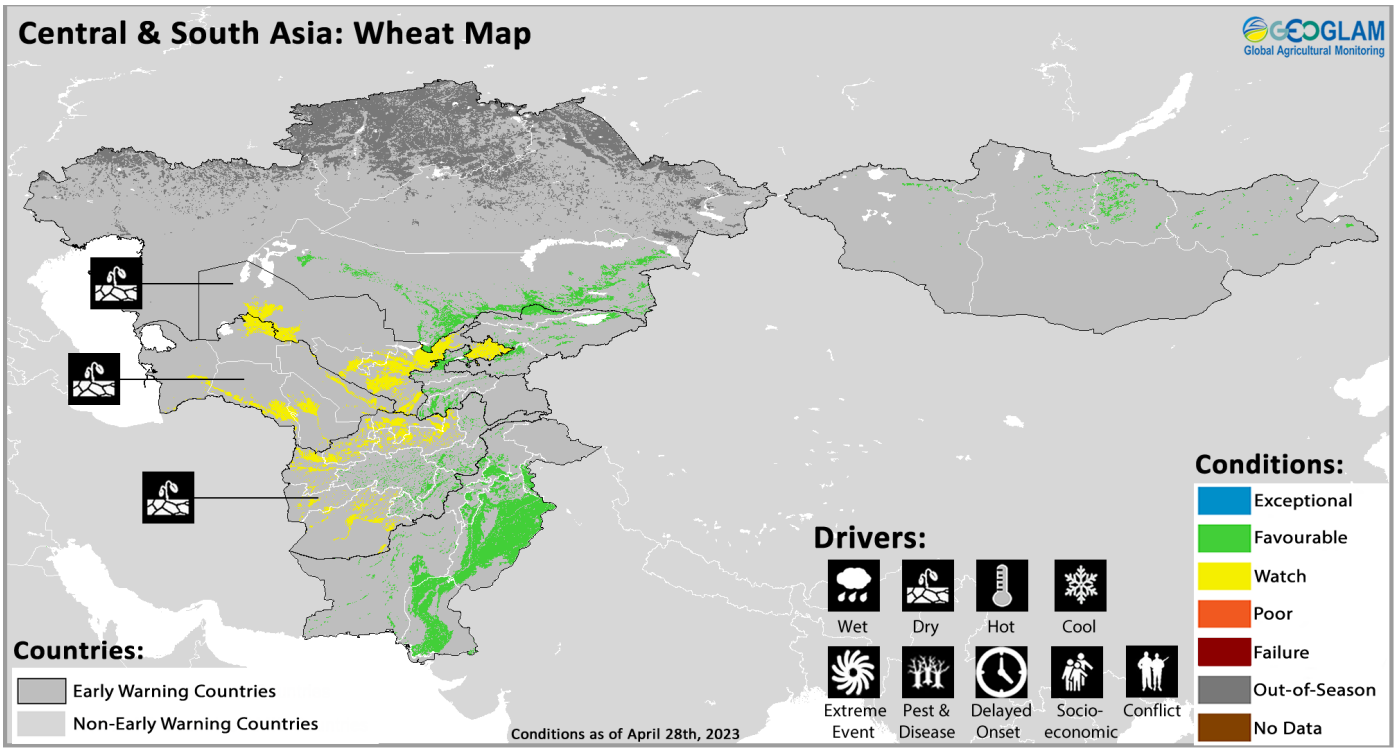
In Southern Africa, harvesting of main season cereals is nearing completion in all regions, including **Angola**, **Namibia**, **Botswana**, **Zambia**, **Zimbabwe**, **Malawi**, **Mozambique**, **Madagascar**, **South Africa**, **Lesotho**, and **eSwatini**. Overall conditions remain mixed as favourable conditions are present in **South Africa** and other parts of the subregion, while persisting dry conditions are a continuing concern in **Angola**, **Namibia**, **Botswana**, western **Zambia**, southern **Zimbabwe**, northern **Malawi**, northeastern **Mozambique**, and eastern **Madagascar**. Additionally, impacts from the passage of Tropical Cyclone Freddy remain a concern in the Southern Region of **Malawi** and parts of **Mozambique**. Crops in eastern **Angola** have improved from previous dry concerns, and crops in **Madagascar** and Manica, Niassa, and Tete Regions of **Mozambique** have improved from previous concerns regarding the impacts of Tropical Cyclone Freddy. In **Angola**, the season's rainfall conditions have been mixed, with some areas experiencing below-average cumulative rainfall and a dry spell in February. Although there has been much-needed improvement in rainfall in March and April, the seasonal totals remain below-average. Additionally, some southern areas have received little to no rainfall in the past month, with abnormally high temperatures expected in the coming week. These factors have resulted in one of the driest seasons in 40 years for many areas. As a result, below-average production prospects are expected in Namibe, Benguela, Cunene, Cuando Cubango, and to a lesser extent Huila province. In **Namibia**, dry conditions and above-average temperatures persisted in April, worsening conditions for most parts of the country that are experiencing one of the driest seasons in 40 years. This is expected to result in significant production declines, with large crop losses expected due to some of the lowest rainfall on record. In **Botswana**, northern areas have been significantly impacted by dry and hot conditions for most of the season, with most areas receiving less than 60 percent of average rainfall. Some areas have recorded the driest season in 40 years. In **Zambia**, conditions remain generally favourable; however, maize crops in the west are unlikely to recover from persistent dry



For detailed description of the pie chart please see description box on Pg. 16.

conditions that affected the grain-filling stage of crop development, and heavy rainfall from March into early April resulted in flash flooding in localized areas. Land preparation is underway for winter wheat crops, and planting will begin in May. In **Zimbabwe**, production is expected to be near-normal in the north. Conversely, much of the south has not received significant rains since mid-February, indicating a potential early cessation of rainfall. In the Southern Region of **Malawi**, crops are unlikely to recover from significant flood damage from the passage of Tropical Cyclone Freddy in March. Some farming households have planted additional short cycle crops in the moisture rich soils following the flooding. In the Central Region, above-average rainfall recorded from March to early April benefitted crop development. Rains subsided in mid-April and harvesting activities will begin for mature crops. In the Northern Region, although the March to April rainfall improved precipitation totals, the dry conditions in January and February may impact crop production and final yields in Karonga district. In **Mozambique**, despite near-average seasonal rainfall totals, erratic rainfall and extended periods of dryness have impacted crop development in the northeast, and ongoing conflict continues to impact cropping activities in Cabo Delgado. Additionally, the passage of Tropical Cyclone Freddy in February and March had a significant impact on Sofala province, with an estimated 52,545 hectares of crops affected, as well as in Zambezia province. However, farming households in previously flooded areas are likely to participate in a second crop planting with the resulting moisture rich soils, and national production is expected to be near-average. In **South Africa**, harvesting of main season maize crops is nearing completion under favourable conditions as wet conditions during early summer and February were sufficient to support above-normal production. Recent dry conditions have been supportive of ripening and harvesting. Current indications point to potentially the second largest maize crop on record, according to the April 14 FAO Food Price Monitoring Analysis. Planting of winter wheat crops is now underway, and wet conditions during the summer over the winter rainfall region have been advantageous for maintaining adequate soil moisture levels. However, the upcoming rainy season in these areas will play a critical role in determining seasonal outcomes. While agro-climatic conditions remain favourable in **Lesotho**, production is expected to be slightly below-average as high prices of seeds and fertilizers resulted in reduced planted area.

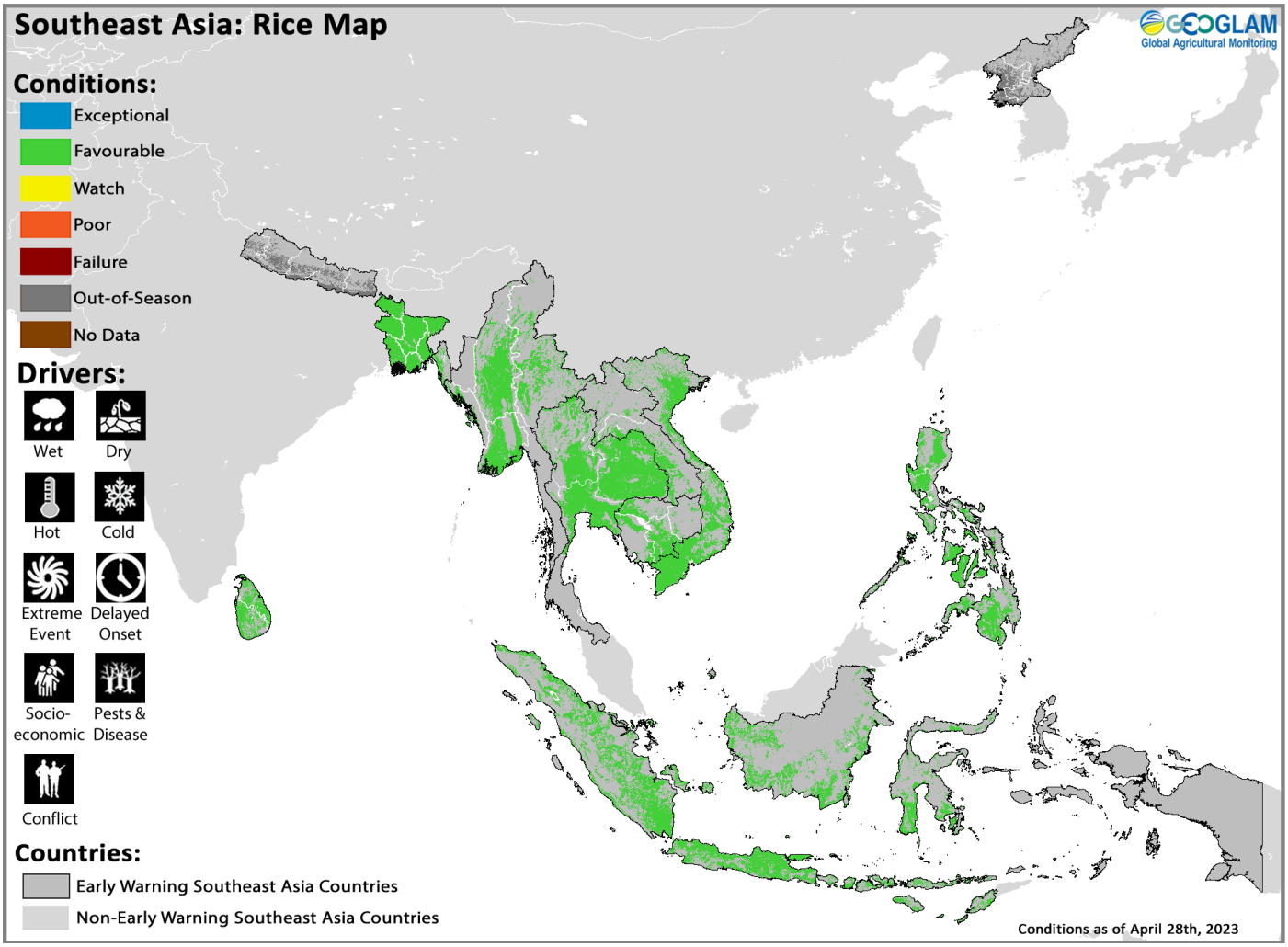
Central & South Asia



Crop condition map synthesizing wheat conditions as of April 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.***

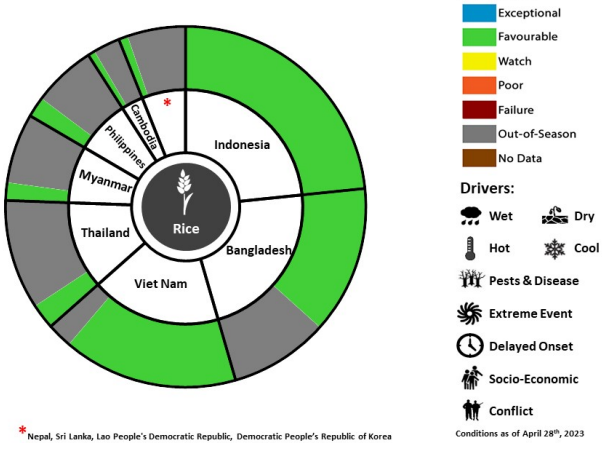
In Central and South Asia, harvesting of *Rabi* season wheat crops continues in **Pakistan** under favourable conditions. Elsewhere, winter wheat crops continue to develop for harvest from May, and there has been a significant improvement in conditions from the previous month due to enhanced precipitation in recent weeks. Crops in southern **Kazakhstan**, **Kyrgyzstan**, **Tajikistan**, and central and eastern parts of **Afghanistan** have improved from previous dry conditions, while concern remains in **Uzbekistan**, **Turkmenistan**, and north, west, and southern **Afghanistan**. Planting of spring wheat is now underway in **Afghanistan**, **Tajikistan**, **Kyrgyzstan**, southern **Kazakhstan**, and **Mongolia** under favourable conditions. In northern **Kazakhstan**, land preparation for spring wheat crops is underway, and planting will begin in May. In **Afghanistan**, much of the country has experienced two consecutive years of drought conditions. According to the April 21 FEWS NET Seasonal Monitor, most areas experienced below-average precipitation and widespread below-average snow depth conditions from October 2022 to April 2023, with some central and northeastern areas receiving near-average precipitation. However, there was some above-average snow depth in isolated areas due to average to above-average precipitation in late March and early April. The recent rains have resulted in improved production prospects in the centre and east while dry conditions remain a concern for both irrigated and rainfed wheat crops in the north, west, and south. Furthermore, as a result of the recent ban on poppy cultivation, the land that was previously used for growing poppy has now been repurposed to cultivate wheat. This extra wheat production will likely increase overall production, which is expected to be close to the five-year average at the national scale. At the regional scale, production is expected to be slightly below-average in the north and west and near-average in the south. Below-average precipitation is most likely from March through May in the country's west, northwest, north, and northeastern areas, while near-average precipitation is expected in some isolated areas in the central, south, and eastern areas. Additionally, El Niño is expected to develop in May-July 2023 and persist into 2024, favouring above-average precipitation for the 2023-2024 wet season (See Climate Influences Pg. 3).

Southeast Asia



Crop condition map synthesizing rice conditions as of April 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.***

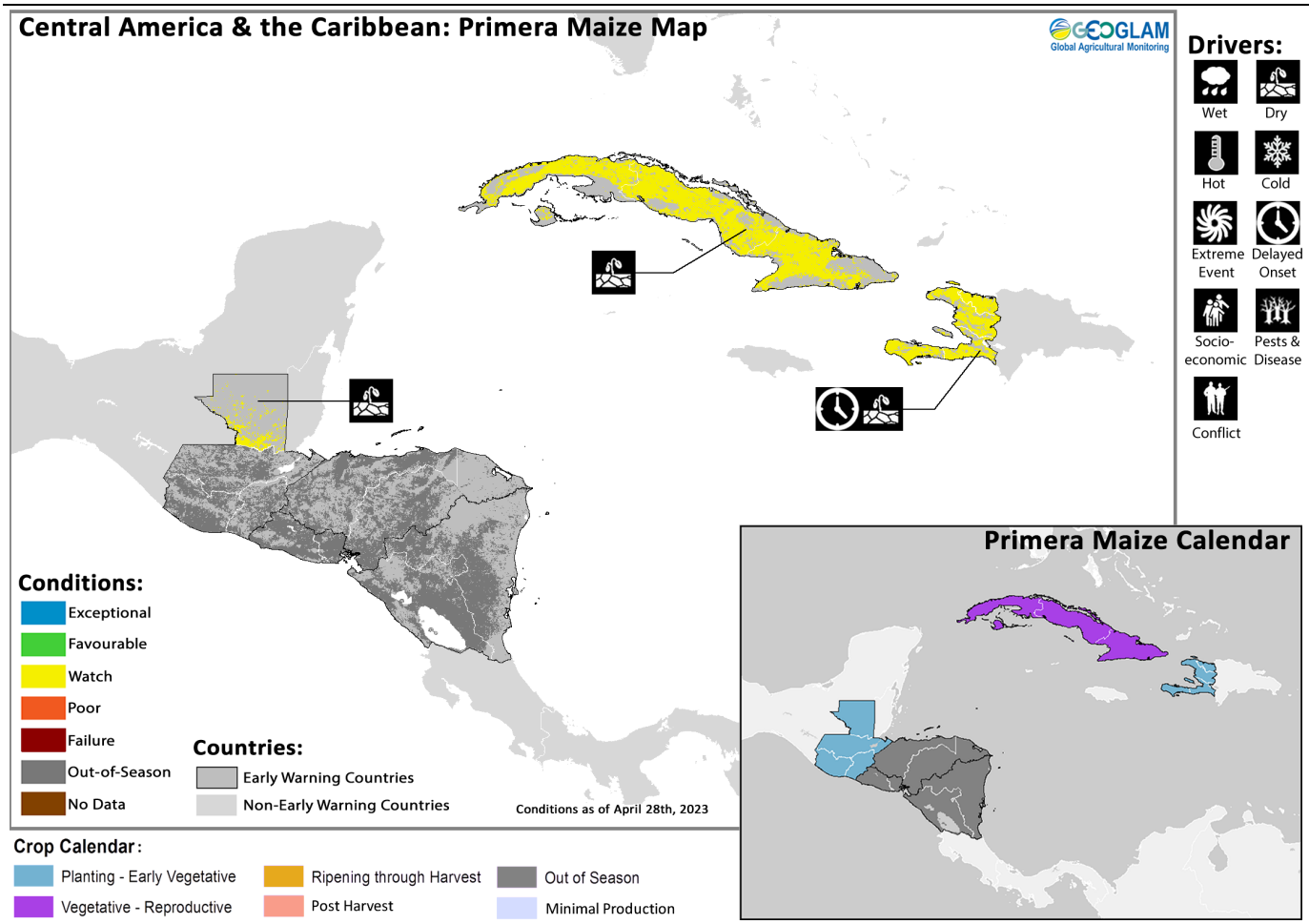
In northern Southeast Asia, April is the peak month for harvesting of dry-season rice, and overall conditions are favourable as crops in South **Viet Nam** have recovered from slowly receding flood waters and resulting pests and diseases. Total harvested area is estimated to increase compared to the previous year due to sufficient irrigation water supply, and yields are generally good due to moderate rainfall and sunlight received. In **Indonesia**, harvesting of wet-season rice is continuing under favourable conditions, albeit at a slower pace than last year. Sowing of dry-season rice is beginning with good irrigation water levels, particularly in the south. However, the planted area is still low as farmers are still preparing the land after harvesting. Several areas have entered the dry season, including northern Sumatra, eastern Java, and the Southeast Nusa region, while most areas are still experiencing moderate to high rainfall. In the **Philippines**, dry-season rice harvesting is more than halfway complete under favourable conditions due to average to above-average rainfall. More than half of the planted area has been harvested, and yield is similar to the previous year's level over the same period. In **Thailand**, harvesting of dry-season rice is progressing with good yields. Planted area is 1.9 million hectares, which is 47 percent higher than the national plan due to sufficient irrigation water supply and the high paddy price, and 70 percent of the planted area has been harvested. However, the government has requested farmers to limit the use of agricultural water during March and April and has issued warnings regarding potential drought damage due to forecasts of reduced rainfall and water shortages in late June and early July. In **Viet Nam**, conditions are favourable for dry-season rice (winter-spring rice) across the country as harvesting continues in the South. The



For detailed description of the pie chart please see description box on Pg.16.

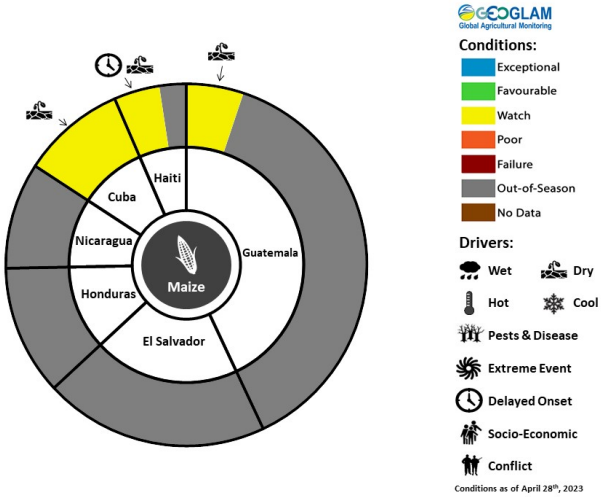
harvested area has reached 1.08 million hectares out of 1.88 million hectares planted. The yield of harvested rice is 7.1 tons per hectare, which is 1.8 percent higher than the previous year's yield due to favourable weather and lower fertilizer prices. Sowing of wet-season (summer-autumn rice) is beginning in the Mekong River Delta earlier than last year with a current sown area of 0.29 million hectares. In **Laos**, harvesting of dry-season rice continues under favourable conditions with abundant irrigation water supply, and the harvested area has reached about 19 percent of the planted area of 96 thousand hectares. As a result of stable weather conditions, the final dry-season rice yield is estimated to increase compared to the previous year, which was 4.5 tons per hectare. In **Myanmar**, planting of dry-season rice is now complete with a planted area of 0.99 million hectares accounting for about 93 percent of the national plan of 1.06 million hectares. The discrepancy is due to a shortage of irrigation water that affected about 70 thousand hectares of crops. Additionally, over 400 thousand hectares have been harvested mainly in the Delta region, accounting for 41 percent of the total planted area, with a yield of 4.98 tons per hectare, which is slightly higher than the previous year's yield. In **Cambodia**, harvesting of dry-season rice is nearing completion with an estimated yield of 4.68 tons per hectare, which is slightly higher than the previous year. As the rainy season begins in some areas, farmers are beginning to plough the rice fields surrounding the Tonle Sap lowland area in preparation for planting during the wet season. In **Sri Lanka**, harvesting of *Maha* season maize and rice crops finalized in March under poor conditions due to high prices and low availability of agricultural inputs, particularly fertilizer. *Maha* season maize production is forecast to be at least 10 percent below the five-year average, and *Maha* season rice production is forecast to be at least 20 percent below the five-year average. Planting of *Yala* season maize and rice crops is now underway with favourable conditions for the start of the season. Despite the high prices of agricultural inputs, there has been an improvement in their availability for the 2023 *Yala* crops. This improvement is expected to result in an increase in the planted area, leading to a much-needed recovery in the agricultural sector. In **Nepal**, harvesting of winter wheat continues into the second month while planting of maize crops continues for harvest from August, and overall conditions are favourable. In **Bangladesh**, harvesting of both *Boro* and *Aus* season rice crops is now underway while planting of wheat crops continues for harvest from June, and overall conditions are favourable. In the **Democratic People's Republic of Korea**, planting of main season maize crops began in April under favourable conditions, and rainfall is expected to be close to average in May and June and above-average in July and August.

Central America & Caribbean



Crop condition map synthesizing Primera Maize conditions as of April 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 second season rice crops finalized in April under favourable conditions. Planting of *Primera* season cereals is now underway in **Guatemala** and **Honduras**, and dry conditions are impacting planting activities in the main producing northern region of **Guatemala**. Land preparation is underway in **El Salvador** and **Nicaragua**, and planting will begin in May. While recent rainfall over the Pacific has helped alleviate dry soil conditions, high temperatures continue to contribute to elevated evapotranspiration rates. As a result, a delay in sowing activities is anticipated, particularly in the Dry Corridor region. According to recent forecasts, drier and hotter than average conditions are likely to affect much of the region through July (See Regional Outlook Pg. 15). In **Guatemala**, planting is delayed in most regions as farmers are still waiting for the rains to begin, except in localized northern regions where the soil moisture conditions are sufficient for planting due to the high elevation. In **Nicaragua**, harvesting of *Apante* season bean crops finalized in March under favourable conditions. According to the March FAO GIEWS Country update, aggregate red bean production is estimated at an above-average level of 220,000 tonnes due to increased plantings in response to strong export demand. In **Haiti**, limited planting of *Printemps* season cereals is underway with continuing concern due to a combination of irregular rainfall distribution, elevated temperatures, and limited precipitation over the past two months. Despite a recent increase in rainfall over the last two weeks, the vegetation has not shown signs of recovery, and additional precipitation will be necessary to improve the overall conditions. Sowing activities, which usually take place in late February, have mostly been delayed as a result of limited soil moisture. In **Cuba**, main season maize and rice crops are in vegetative to reproductive and early harvesting stage, and planting of second season rice crops is now underway. While vegetation conditions have generally improved due to increased rainfall in March, conditions remain below-average in some north and southern areas.



For detailed description of the pie chart please see description box on Pg.16.

Regional Outlook: Drier than average conditions and high temperatures are expected to impact the region through July

Conditions have been mainly drier than average, with irregular distribution of rainfall and high temperatures. Rainfall increased during late April to start the Primera rains in the Pacific areas of Central America. This recent rainfall improved dry soil conditions, however, high temperatures have increased evapotranspiration. A delay in sowing activities is expected, especially in the dry corridor area. Rainfall deficits are observed in the Pacific coast, central, and northern portions of Guatemala, Belize, northern and eastern Honduras, northeastern Nicaragua, and Haiti, as well as in southern Central America, according to preliminary CHIRPS data for April 1st to April 25th (Figure 1 top-left).
In Haiti, despite an increase in rainfall in the last two weeks, overall dry conditions and high temperatures have had negative impacts on the growing season in many areas, based on reports of delayed sowing and below-average NDVI for mid-late April. Substantially higher and consistent rainfall is required to improve vegetation conditions.

Dry conditions are expected to return during the next two weeks across the region, according to the GEFS forecast from April 27th. This could worsen issues related to delayed cropping activities and poor vegetation health. If forecast dry conditions occur, April 1st to May 10th rainfall totals may be only around half of typical amounts in southern and central Haiti, Belize, portions of coastal and central Guatemala, coastal El Salvador, and in most areas of Honduras, Nicaragua, and southern Central America, based on preliminary and forecast data (Figure 1 top-right).

Drier and hotter-than-normal conditions may continue to impact the region for the remainder of the season. WMO, C3S, and NMME multi-model forecasts predict 40% to 60% chances of below-normal rainfall for May to July in many areas (Figure 1 bottom-left), and higher-than 70% chances of above-normal temperatures across the entire region. High temperatures can increase the chances of heat stress and accelerate soil moisture losses, even under average rainfall conditions.

The forecast development of an El Niño event during the next several months raises concerns that there could be an extended period of suppressed rainfall conditions affecting the region, including a possible longer and more severe "mid-summer drought" period than usual. The chances of El Niño conditions between July 2023 and January 2024 are around 80%, according to the April CPC/IRI forecast (See Climate Influences Pg. 3). While outcomes historically vary, models are predicting elevated chances of below-normal rainfall across Central America from May through September to October 2023 (Figure 1 bottom-left and right).

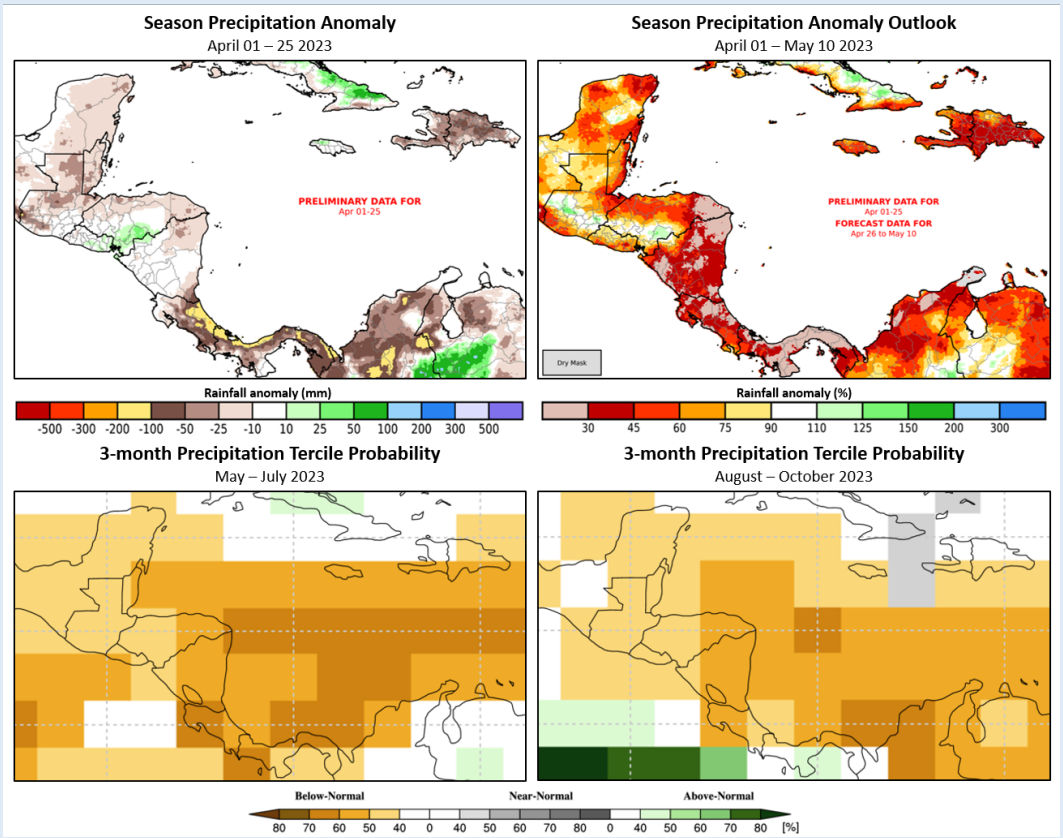


Figure 1. *Season precipitation anomalies with (top-right) and without forecasts (top-left) and WMO probabilistic forecasts for May to July (MJJ) 2023 (bottom-left) and August to October (ASO) 2023 (bottom-right). The top two panels are CHC Early Estimates, which compare current precipitation totals to the 1981-2022 CHIRPS average for respective accumulation periods. These show the anomaly (mm) of Apr. 1st to 25th, 2023 (top-left), and the percent of average precipitation for Apr. 1st to May. 10th (top-right). Both panels use CHIRPS Prelim for Apr. 1st to 25th. The top-right panel also includes a CHIRPS-GEFS forecast for Apr. 26th - May. 10th. The bottom two panels are WMO probabilistic forecasts for May-to-July 2023 precipitation (bottom-left) and August-to-October 2023 precipitation (bottom-right), based on models initialized in April. Images are from the WMO Lead Centre Long-Range Forecast Multi-Model Ensemble. Source: UCSB Climate Hazards Center*

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

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 May 4th, 2023.

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 & Carribean				
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

GEOGLAM
Global Agricultural Monitoring

www.cropmonitor.org
@GeoCropMonitor

Prepared by members of the GEOGLAM Community of Practice, coordinated by the University of Maryland Center for Global Agricultural Research and funded through NASA Harvest.

GEO GROUP ON EARTH OBSERVATIONS

The Crop Monitor is a part of GEOGLAM, a GEO global initiative.

Cover Photo by: Kara Mobley

Contributing partners

*EC contribution is provided by the Joint Research Centre of the European Commission