

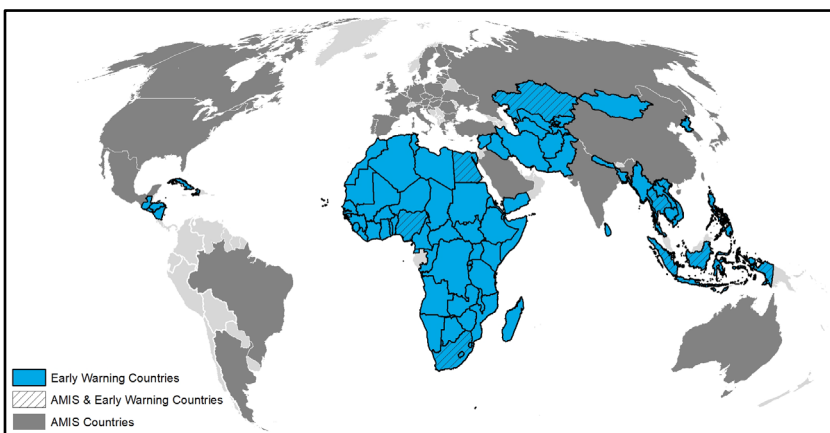


Crop Monitor

EARLY WARNING

Overview:

In **East Africa**, concern remains for the planting of *Belg* season (Short Rains) maize crops in Ethiopia and Long Rains cereals in Kenya due to delayed rainfall onset and a possible fourth consecutive poor rainy season (See Regional Outlook Pg. 6). However, main season cereals in parts of the United Republic of Tanzania and Uganda have recovered from previous dryness. In **West Africa**, conditions are generally favourable for land preparation and early planting of main season cereals except in regions impacted by persisting conflict. In the **Middle East and North Africa**, winter wheat crops continue to develop under mixed conditions as dryness persists in parts of Morocco, Algeria, Tunisia, Syria, and Iraq. In **Southern Africa**, harvesting of main season cereals is underway under mixed conditions as persistent dryness and recent dry spells continue to impact many parts of the subregion, and there is concern in areas impacted by the passage of several tropical storms. In **Central and South Asia**, winter wheat crops are developing under mixed conditions as dry conditions are forecast to continue through May in most areas (See Regional Outlook Pg. 14). Planting of spring wheat crops is underway in Afghanistan and Tajikistan. In **Southeast Asia**, overall conditions are favourable for harvesting of dry-season rice in the north and harvesting of wet-season rice in Indonesia. In **Central America and the Caribbean**, harvesting of *Apante* season bean crops finalized in Nicaragua under favourable conditions while below-average yields resulted for second season rice and third season beans in Haiti. Land preparation and early planting for *Primera* season cereals is underway.



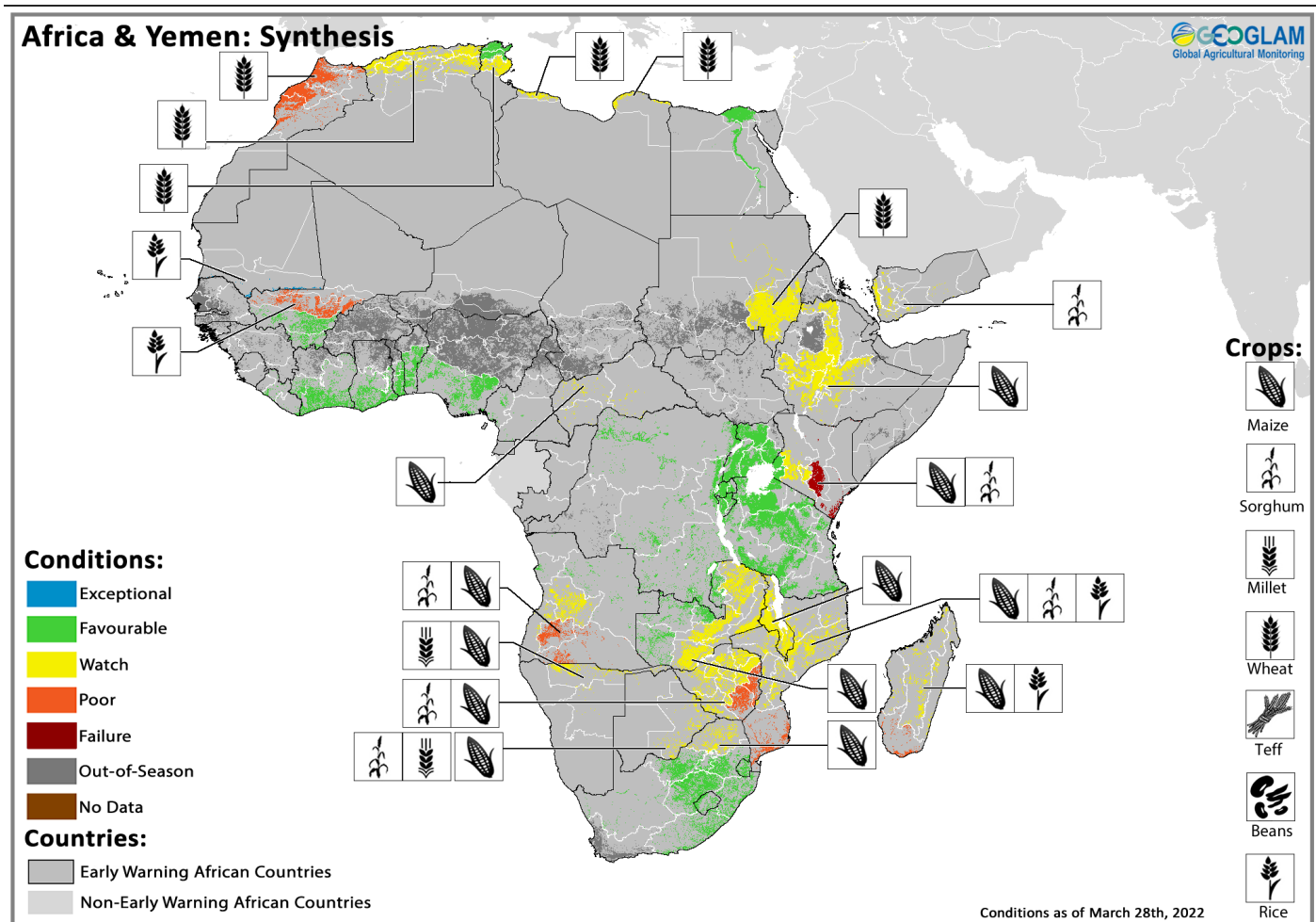
Contents:

- Conditions at a Glance.....2
- Global Climate Outlook; Climate Influences.....3
- East Africa & Yemen; Regional Climate Outlook.....4
- West Africa.....7
- Middle East & North Africa; Regional Climate Outlook.....8
- Southern Africa; Regional Climate Outlook.....10
- Central & South Asia; Regional Climate Outlook.....13
- Southeast Asia.....15
- Central America & Caribbean.....16
- Appendix – Terminology & Definitions.....17

GEOGLAM Crop Monitor for Early Warning

Crop Conditions at a Glance

based on best available information as of March 28th



Crop condition map synthesizing information for all Crop Monitor for Early Warning crops as of March 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, planting of *Belg* season (Short Rains) maize crops continues in Ethiopia with concern due to the delayed and below-average *Belg* rains. In the south, there is concern for planting of Long Rains cereals due to a delayed and below-average start to the rains and a possible fourth consecutive poor rainy season forecast for parts of the subregion (See Regional Outlook Pg. 6).

WEST AFRICA: Land preparation and early planting of main season cereals is now underway with the onset of seasonal rains in March, and agro-climatic conditions are generally favourable. However, concern remains in the Central African Republic due to ongoing conflict, and second season rice crops in Mali are unlikely to recover from dry conditions and persisting conflict.

MIDDLE EAST & NORTH AFRICA: Winter wheat crops continue to develop under mixed conditions due to ongoing dry conditions in several regions as well as ongoing conflict and socio-economic challenges in Libya and Syria. Dry conditions are forecast to continue through much of the subregion through June (See Regional Outlook Pg. 9).

SOUTHERN AFRICA: Harvesting of main season cereals is underway under mixed conditions as persistent dryness has

resulted in below-average yields in parts of Angola, Madagascar, Mozambique, and Zimbabwe and continues to cause concern in many parts of the subregion. There is also concern in parts of Mozambique and Malawi impacted by the passage of Tropical Storm Ana, Tropical Depression Dumako, and Tropical Cyclone Gombe.

CENTRAL & SOUTH ASIA: Winter wheat crops continue to develop under mixed conditions with ongoing concern in parts of Afghanistan, Turkmenistan, and Uzbekistan due to persistent dryness, and below-average rainfall is forecast to continue across the subregion through May (See Regional Outlook Pg. 14).

SOUTHEAST ASIA: Harvesting of dry-season rice is underway in the north while harvesting of wet-season rice continues in Indonesia, and overall conditions are favourable despite water shortages in some localized areas.

CENTRAL AMERICA & CARIBBEAN: Harvesting of *Apante* season bean crops finalized in Nicaragua under favourable conditions while harvesting of second season rice crops is nearing completion in northern Honduras. Land preparation and early planting for *Primera* season cereals is underway.

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 Great Lakes region of North America, southern Mexico, Cuba, Guatemala, Costa Rica, Panama, western Colombia, western Ecuador, southeastern Brazil, northern Europe, central Russian Federation, Sierra Leone, Liberia, Angola, Namibia, western South Africa, Mozambique, Malawi, Cambodia, southern Viet Nam, and the Philippines.

There is also a likelihood of below-average rainfall over a large portion of the central and southeast US, northern Mexico, Venezuela, northeast Brazil, Uruguay, central Argentina, southern Chile, southeast Spain, Italy, Greece, Turkey, southern Russian Federation, Morocco, Algeria, Syria, Iraq, Georgia, Armenia, Azerbaijan, Iran, Saudi Arabia, Yemen, Eritrea, Ethiopia, Somalia, eastern Kenya, northeast Tanzania, southwest Madagascar, southern Kazakhstan, Uzbekistan, Kyrgyzstan, Turkmenistan, Tajikistan, Afghanistan, northern and central Pakistan, northern and northeast India, Bangladesh, northern Myanmar, northern and southeast China, southern Japan, Indonesia, and western and northern Australia.

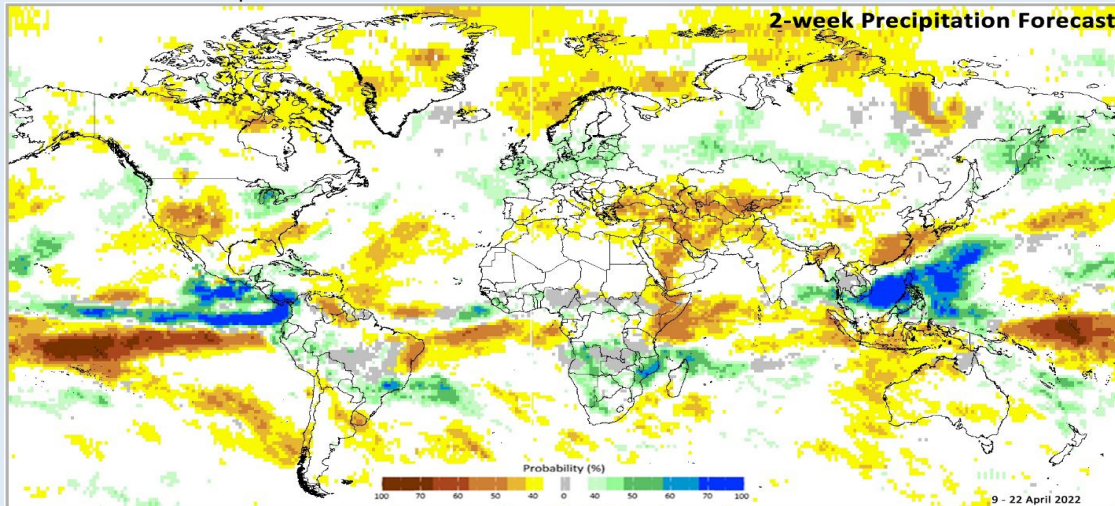


Figure 1: IRI SubX Precipitation Biweekly Probability Forecast for 9-22 April 2022, issued on April 1st, 2022. The forecast is based on statistically calibrated tercile category forecasts from three SubX models. Source: [IRI Subseasonal Forecasts Maproom](https://www.iri.columbia.edu/our-work-and-services/forecasts/subseasonal/)

Climate Influences: La Niña event present and expected to continue through June

The El Niño-Southern Oscillation (ENSO) is currently in the La Niña phase and is expected to remain as La Niña until at least June (80% chance) or July (65% chance) according to IRI/CPC. La Niña or ENSO-neutral conditions are equally likely after that.

La Niña conditions typically increase the chances of below-average precipitation in parts of East Africa, Central and Southern Asia, southern South America, the southern United States, and northern Mexico. There are elevated risks of a two-year sequence of dry conditions in these regions, associated with La Niña conditions last year and this year. La Niña conditions typically increase the chances of above-average precipitation in parts of Southeast Asia, Australia, India, Southern Africa, Central America, and northern South America.

Source: UCSB Climate Hazards Center

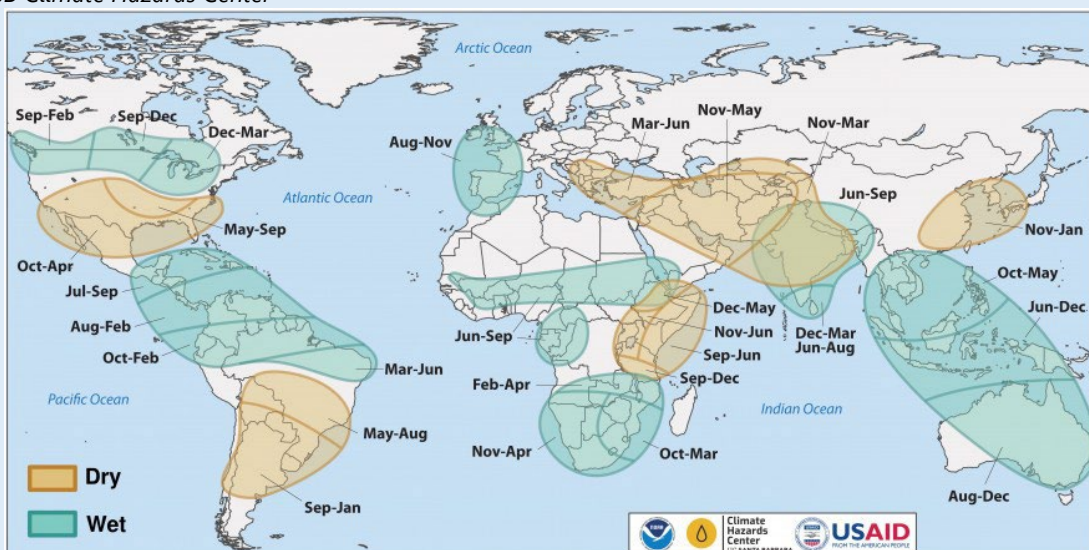
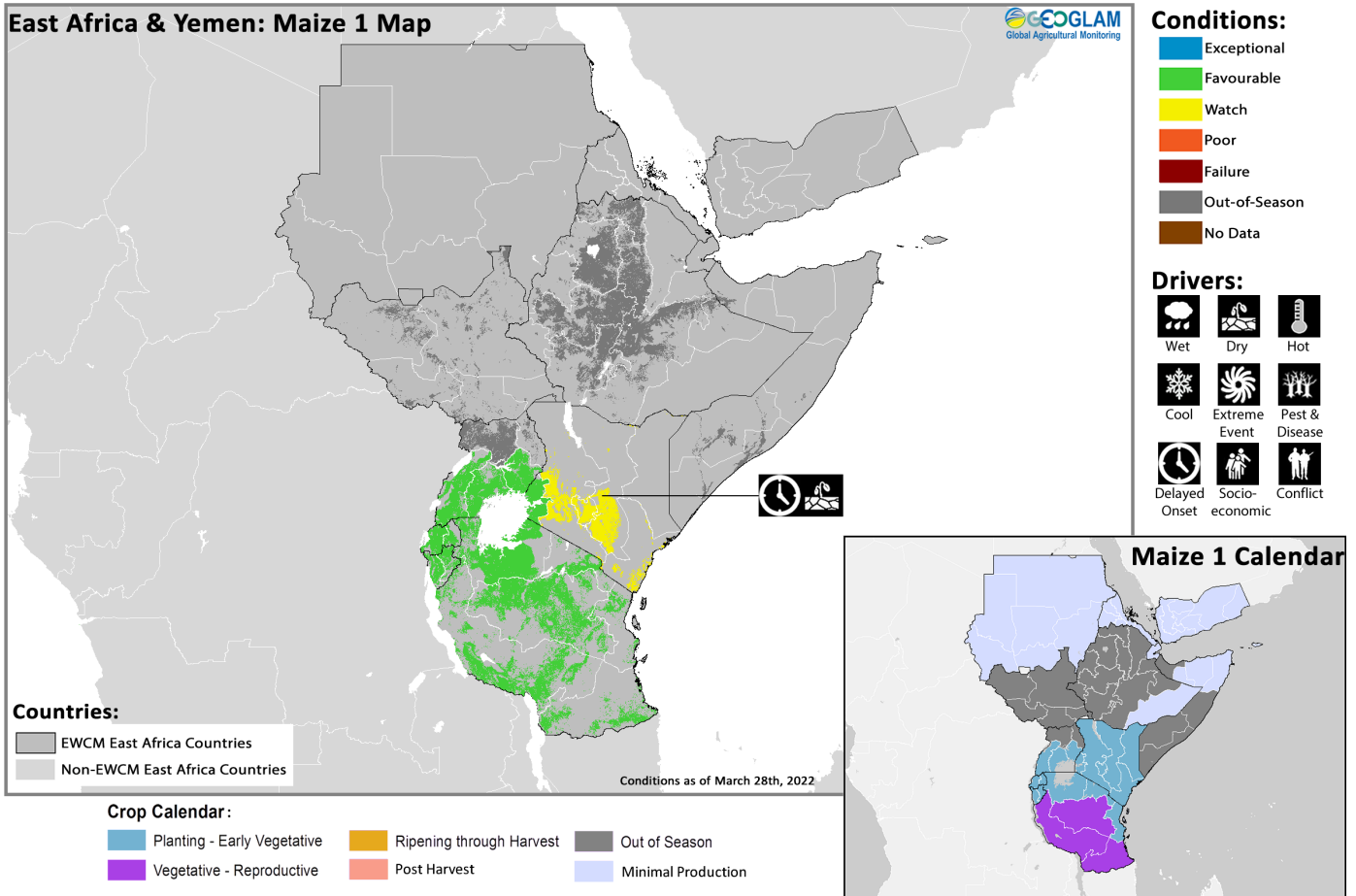


Figure 1. Timing of wet and dry conditions related to La Niña <https://fews.net/la-ni%C3%B1a-and-precipitation>. Source: NOAA & CHC & FEWS NET

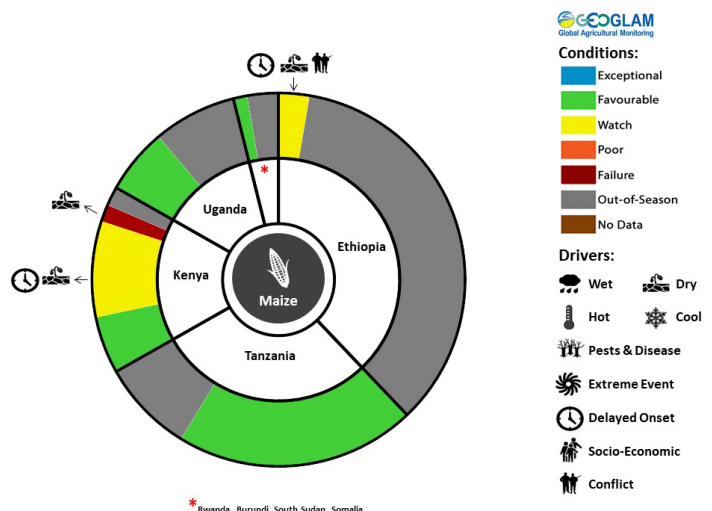
East Africa & Yemen



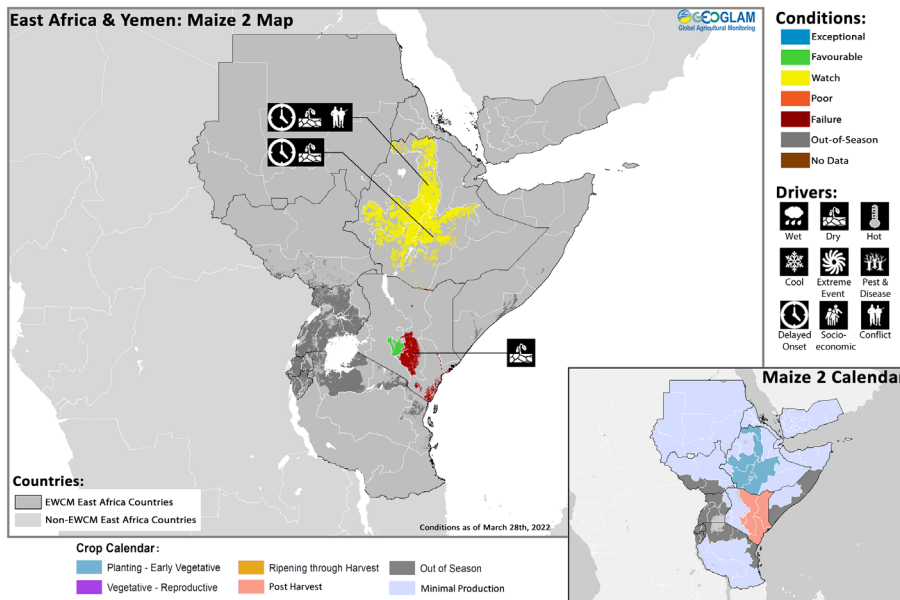
Crop condition map synthesizing Maize 1 crop conditions as of March 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Conditions that are other than favourable are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

In the north of the subregion, harvesting of winter wheat crops is underway in **Sudan** with ongoing concern due to persistent dry conditions and socio-economic challenges impacting agriculture. Planting of main season sorghum has begun in **Yemen**, and there is concern as ongoing conflict and socio-economic challenges are likely to impact the agricultural growing season. In **Ethiopia**, planting of *Belg* season (Short Rains) maize crops is underway, and there is concern due to the delayed onset and below-average *Belg* rains in many areas as well as ongoing conflict in the north. Land preparation for main season cereals is underway in the equatorial southern areas of **South Sudan**, and planting will begin in April.

In the south of the subregion, harvesting of Short Rains maize crops finalized in **Kenya**, and crops in the marginal bimodal areas have failed due to a third consecutive poor rainy season. Planting and development of main season cereals is underway in the **United Republic of Tanzania**, **Burundi**, **Kenya**, **Rwanda**, and **Uganda**. While conditions in the **United Republic of Tanzania** and eastern **Uganda** have improved from previous dryness, concern remains in **Kenya** due to the delayed onset and below-average mid-March through mid-June Long Rains. Elsewhere, conditions are favourable, and land preparation for main season cereals is underway in **Somalia**. Severe La Niña-induced droughts continue to impact large parts of the Horn of Africa, with many areas receiving less than half of their typical March rainfall amounts. If forecasts of the average to below-average March to May rainy season materialize, it could result in a fourth consecutive below-average rainfall season (See Regional Outlook Pg. 6).



For detailed description of the pie chart please see description box on Pg. 17.



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

impact yields. In **Yemen**, planting of main season sorghum crops began in March for harvest from September, and ongoing conflict and socio-economic challenges, including high cost of agricultural inputs, are likely to impact seasonal outcomes. However, the recent two-month ceasefire has the potential to improve agricultural livelihoods and the economic situation in the long term.

Southern East Africa

In **Uganda**, planting of first season maize and millet crops is underway, and conditions in the east have improved from previous dryness due to rains received from February through March. However, rising water levels in Lake Victoria may result in some localized flooding. In **Kenya**, harvesting of Short Rains maize crops finalized under failure conditions in marginal bimodal areas in the southeast and coast and favourable conditions in the unimodal central region. Overall, Short Rains cereal output is estimated to be 50 percent below-average and has resulted in a third consecutive season of below-average output. In marginal producing coastal areas, where maize production contributes less than 10 percent of total production, the harvest largely failed as severe dryness resulted in below-average planted area, failed germination, and crop wilting. Planting of Long Rains maize and sorghum crops is now underway in bimodal and minor producing northeast, coastal, and eastern regions as well as unimodal central, West, and Rift Valley regions, and there is concern in most areas as delayed rainfall onset and continued drought conditions are impacting planting activities. Dry conditions are forecast to continue into June in coastal and eastern areas (See Regional Outlook Pg. 6). Furthermore, fuel shortages from late March may impact the transportation of fertilizer and seed across the country; however, the government has enacted fertilizer subsidies that may counteract the negative impacts of fuel shortages. In **Rwanda** and **Burundi**, planting of main Season B maize and rice crops has begun under generally favourable conditions. However, there is some concern due to below-average rainfall in some localized areas of eastern **Rwanda** as well as pockets of dryness in southwestern **Burundi**. Additionally, limited input access may reduce seasonal cropping in **Burundi**, and localized areas may be affected by rising water levels in Lake Tanganyika combined with seasonal rains. In the **United Republic of Tanzania**, planting and development of *Masika* season cereals in bimodal northern areas and *Msimu* season cereals in unimodal central and southern areas continued in March for harvest from April, and crops have improved from previous dry conditions. While seasonal onset was delayed in the northeast and east, wetter conditions in the final week of March were recorded in the northwest (See Regional Outlook Pg. 6).

Northern East Africa & Yemen

In **Ethiopia**, planting of *Belg* Season (Short Rains) cereals continues with concern due to the delayed and below-average February through May *Belg* rains as well as persisting conflict in the north. Following three consecutive failed rainy seasons since late 2020, much of the south and southeast and a few areas in the southwest are experiencing prolonged drought, particularly in southern Oromia, southern SNNP, Southwest, and Somali regions. Forecasts of continued dryness through June in some areas may worsen conditions (See Regional Outlook Pg. 6). Additionally, as of mid-March, only 4,000 tonnes of the required 49,000 tonnes of improved seed are available ahead of the *Meher* planting season in May in Tigray Region. In **Sudan**, harvesting of winter wheat crops began in March and will finalize in April, and there is ongoing concern as dry conditions and socio-economic challenges are likely to

Regional Outlook: Poor start to the MAM rains and below-average rainfall forecast through mid-April across most of East Africa

Conditions were mainly drier-than-average during recent weeks, when seasonal rains would typically be building in equatorial and northern areas (Figure 1- far-left). Until late March, only a few days of substantial rain were recorded, resulting in the rapid growth of early season rainfall deficits. Overall, many areas received half or less than half of their typical March rainfall amounts, including Kenya, northeastern and eastern Tanzania, southwestern, central, and northeastern Ethiopia, and portions of southern South Sudan and southern Somalia. Low and inconsistent rainfall has delayed season onset by at least 20 days in northeastern Tanzania and portions of southern and central Kenya. Most of Ethiopia's Belg season areas received below-average rainfall between February and mid-March (see [Ethiopia Monitoring Report](#)). During the final week of March, wetter conditions were recorded in Uganda, western Kenya, and northwestern Tanzania. Episodic rainfall was received in central and southeastern Ethiopia and in portions of eastern Kenya and southern Somalia between March 23rd and 26th.

Below-average rainfall is forecast for March 29th to April 12th across most of the region (Figure 1-left-middle). Dry conditions will likely persist into late April in central and northern Ethiopia, most of Somalia, and coastal Kenya, according to SubX forecasts for [April 9th-22nd](#) and [April 16th-29th](#). Across eastern areas, ICPAC and WMO forecast elevated chances of below-normal rainfall through June (Figure 1- right-middle and far-right). These forecasts are consistent with the drying impacts from many recent La Niña events. There is an 80% chance that La Niña will continue through June 2022, and "Western V" sea surface temperatures are very likely to be exceptionally warm. Such conditions have been [associated](#) with the increased frequency of below-normal March-May rains in the eastern Horn (see CM4EW August 2021 to March 2022 Seasonal Forecast Alerts).

The poor start to seasonal rainfall, pessimistic short-range forecast, and dry long-range climate outlook are concerning for many areas with prevailing early season dryness. Inconsistent or delayed March-to-May rains can increase risks of seed losses and low yields, particularly in marginal areas. Many of these areas have already experienced sequential droughts in 2020 and 2021. A [third consecutive season](#) with poor rainfall in late 2021 was followed by abnormally hot land surface temperatures into late March. NDVI data indicate highly stressed vegetation conditions going into this season, with November 2021 to February 2022 NDVI being near the lowest of the 20-year record in many of these areas. A fourth below-average season [would acutely worsen the food security situation](#) in southern and south-eastern Ethiopia and the arid and semi-arid regions of Kenya and Somalia. Poor rains in more humid Belg growing areas of Ethiopia could impact areas that experienced a poor [2021 Belg Season](#) and/or exceptionally low March-October "[long](#)" rains.

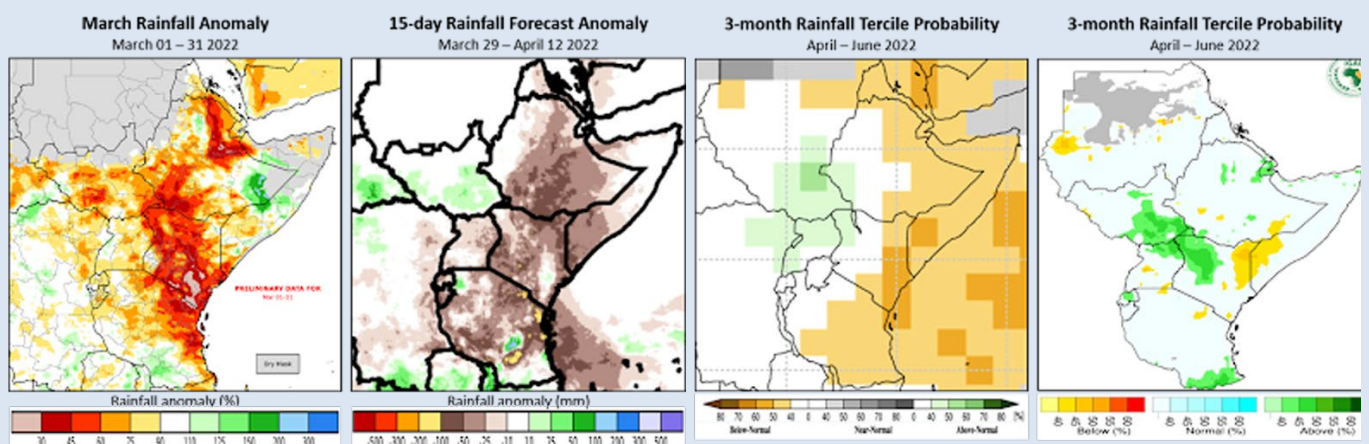
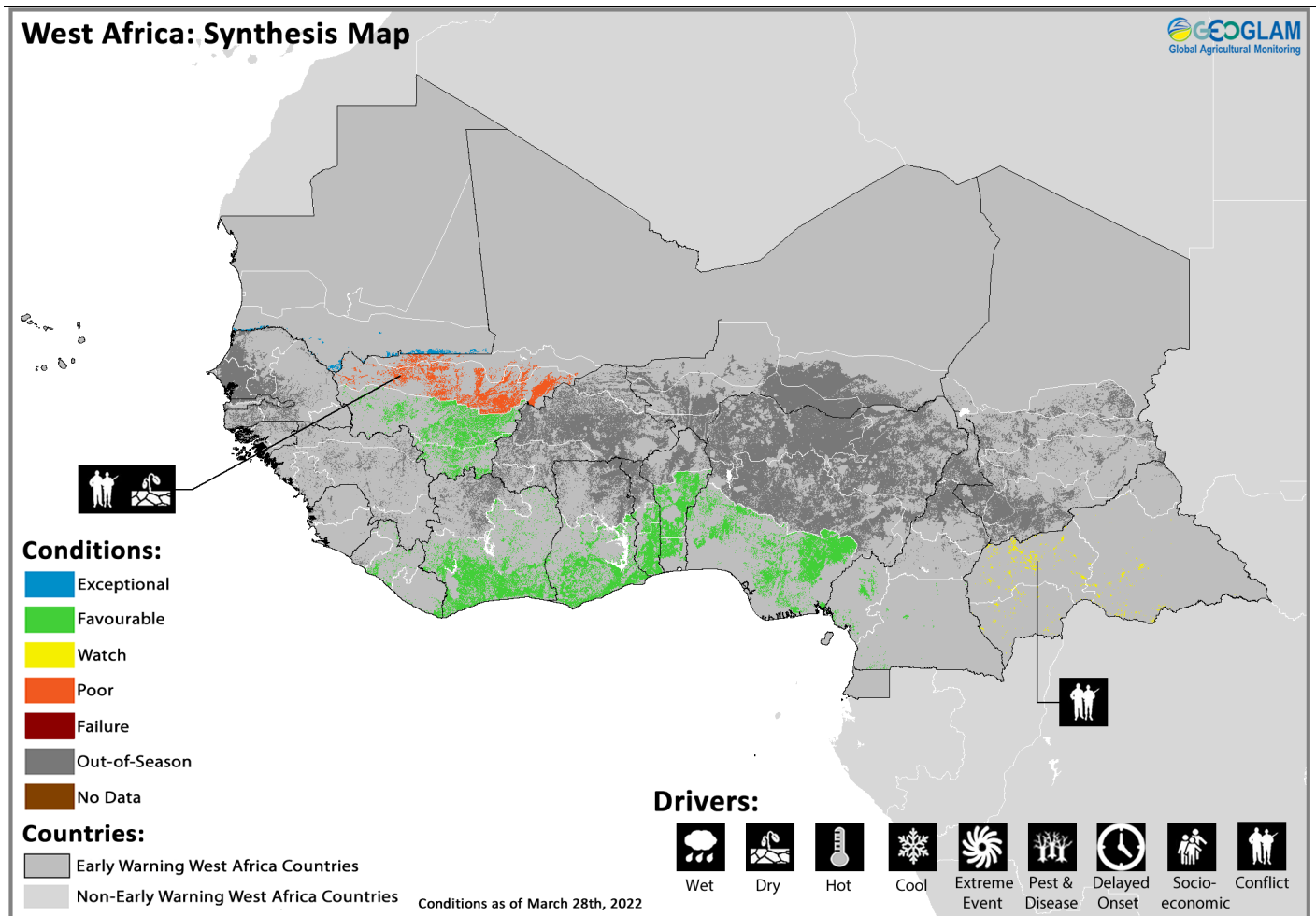


Figure 1. March 2022 rainfall anomaly, a 15-day rainfall anomaly forecast, and a 3-month rainfall probability forecast. The far-left panel shows the seasonal rainfall performance, represented as a percent of the 1981-2021 CHIRPS historical average, for March 2022 based on preliminary CHIRPS data. The left-middle panel shows a 15-day CHIRPS-GEFS (unbiased GEFS) forecast from March 29th, with values indicating how the forecast compares to the CHIRPS average for this period. The right-middle panel is a WMO probabilistic forecast for April-to-June 2022 precipitation, based on models initialized in March. From the WMO Lead Centre Long-Range Forecast Multi-Model Ensemble. The far-right panel is an IGAD Climate Prediction and Applications Centre (ICPAC) probabilistic forecast for April-to-June 2022 precipitation.

Source: UCSB Climate Hazards Center

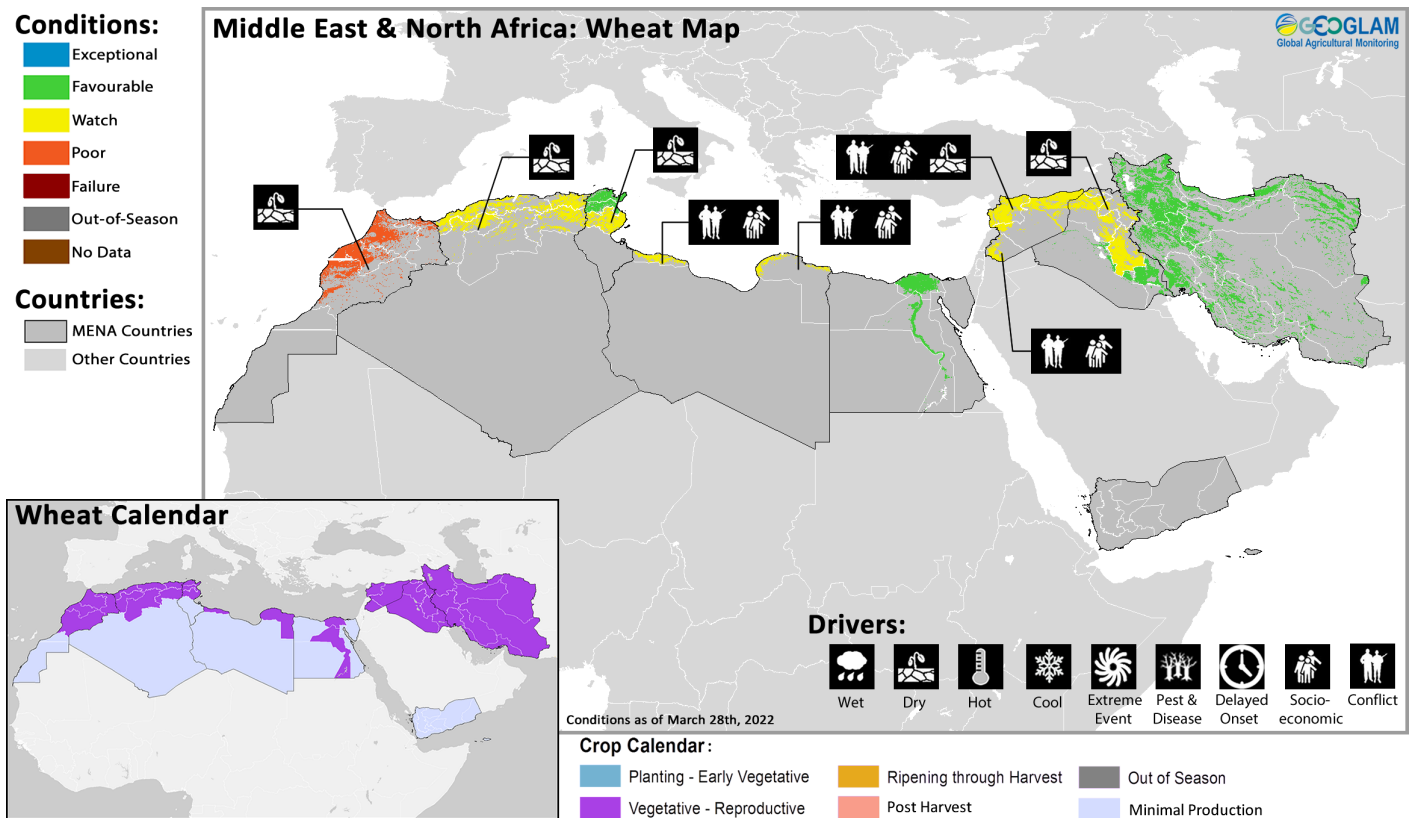
West Africa



Crop condition map synthesizing crop conditions as of March 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 West Africa, land preparation and early planting of 2022 main season cereals began in March with the onset of seasonal rains. Planting in southern Sahelian regions will begin in April as the rains progress northwards. Harvesting of second season rice crops is nearing completion in **Mali** and **Mauritania** while planting of second season maize crops has begun in southern **Cameroon**. Agro-climatic conditions are generally favourable throughout the subregion. However, in **Mali**, second season rice crops are unlikely to recover, and concern remains in the **Central African Republic** due to persisting conflict. In **Mali**, insecurity has resulted in reductions in cultivated area, especially in the "Office du Niger" zone in the north of the Segou region and near river valley areas in Mopti and Gao regions. Additionally, destruction of crops and agricultural equipment has been recorded in this area of Segou region. According to the Office du Niger, 11,466 hectares were abandoned due to insecurity, and 115,471 hectares of cultivated crops were not able to be harvested due to restricted access to mature plots. Furthermore, poor rainfall in Gao, Tombouctou, and Mopti regions contributed to below-average yields. The 2021 aggregate rice production is officially estimated at 2.4 million tonnes, about 20 percent lower than the five-year average. In the **Central African Republic**, slightly delayed rainfall onset and below-average precipitation levels in the West region led to below-average vegetation conditions in the second dekad of March. However, increased precipitation levels at the end of the month benefited soil moisture levels with a positive impact on crops. Additionally, ongoing conflict continues to disrupt farmers' access to agricultural inputs and fields across the country and is likely to impact 2022 crop production. In **Mauritania**, favourable weather and market conditions supported an expansion of the planted area, and the 2021 production was officially estimated at about 400,000 tonnes, nearly 50 percent above the five-year average, reflecting higher yields.

Middle East & North Africa



Crop condition map synthesizing wheat conditions as of March 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, winter wheat crops continue to develop under mixed conditions due to ongoing dry conditions in several regions as well as persisting conflict and socio-economic challenges in **Libya** and **Syria**. In North Africa, cumulative rainfall amounts were estimated to be only 60 percent of average during the November 2021 and January 2022 planting window in **Morocco**, western coastal **Algeria**, and central **Tunisia**. As such, below-average yields are likely in **Morocco**, and there is ongoing concern in **Algeria** and central **Tunisia** due to persistent dry conditions and despite above-average rainfall in recent weeks in **Morocco** and northern **Algeria**. Additionally, heavy rainfall in late March impacted the northwest, centre, and central-west regions of **Tunisia**, including Siliiana, Kairouan, Gafsa, Sidi Bouzid, Jendouba, Beja, El Kef, and Kasserine governorates, resulting in flooding, infrastructure damage, and potential crop damage. However, below-average rainfall is forecast to continue for coastal regions of **Morocco**, **Algeria**, **Tunisia**, and **Libya** through June (See Regional Outlook Pg. 9). In **Egypt**, conditions are favourable for wheat, and land preparation for summer-planted rice crops is underway for planting in April.

In the Middle East, rainfall deficits from onset to mid-December 2021 were followed by above-average precipitation in late December 2021 and early January 2022. However, pockets of dryness continued in parts of northern **Syria** and in parts of north and eastern **Iraq**. In **Syria**, biomass of rainfed crops remains below-average in the north despite good rainfall from late February through late March. The below-average biomass is also partially due to limited availability of agricultural inputs. Despite rainfall improvements in the north and east of **Iraq** in early March, crop biomass is below-average in Ninewa and Dahuk governorates in the north and Sulaymaniyah and Diyala governorates in the east. Due to the low water reservoir level of the Mosul dam in Ninewa and Dahuk governorates as well as the greatly reduced Hamrin lake area in Diyala governorate and Dukan lake area in Sulaymaniyah governorate, the Iraqi government decided to halve the sown area of crops. In **Iran**, near-average cumulative precipitation from January has resulted in average crop biomass despite irregular rainfall distribution. Additionally, good precipitation in early March in the northwest further benefitted crops.

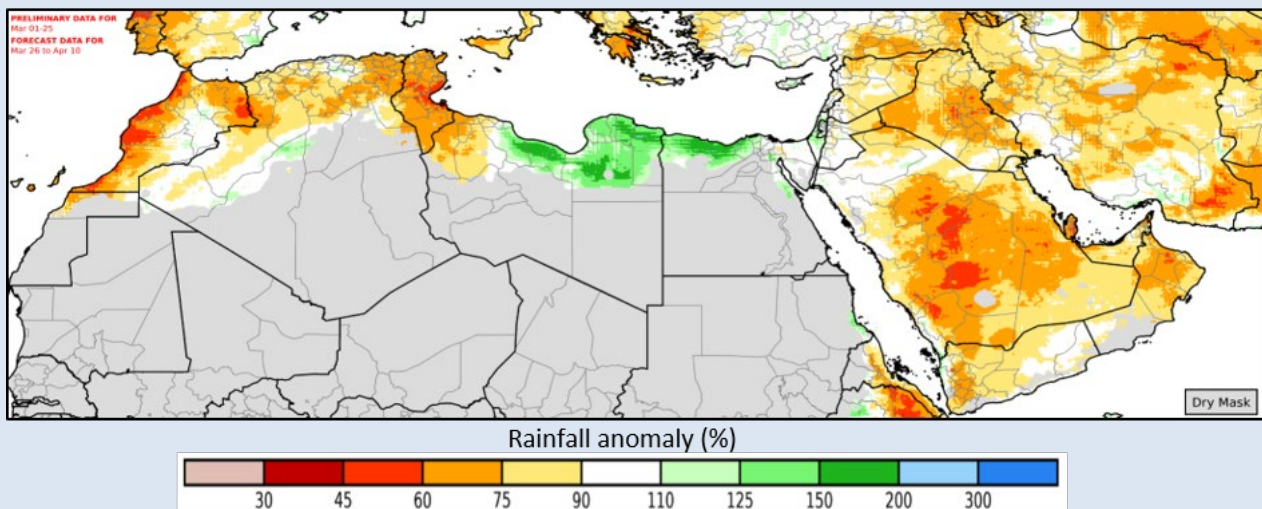
Regional Outlook: Increased chances of drier than average conditions across MENA from April to June

During recent weeks, rainfall was above-average in Morocco, northern Algeria, and Syria. Rainfall was below-average in southern Tunisia, northwestern Libya, coastal Egypt, and in the Middle East. In Morocco and Algeria, these wet conditions moderately improved seasonal totals. However, earlier dry conditions were severe across western North Africa, and November to late-March totals are ~75% of average to less than 60% of average in many areas (Figure 1-top). In northeastern Algeria, southern Tunisia, and portions of Morocco, season-to-date totals currently rank [among the lowest on record](#). Season-to-date surpluses in Libya and Egypt are mainly attributed to a wet December and January. In the Middle East, generally drier-than-average conditions have prevailed since November, except for episodic, above-average rainfall in December, January, and March.

During the first week of April, above-average rainfall is likely in coastal Morocco and northwestern Algeria, according to GEFS and ECMWF forecasts. There are increased chances of drier-than-average conditions across the MENA region during April-May-June (Figure 1-bottom). WMO and SubX models indicate relatively high confidence for dry conditions in the Middle East during April.

November to April Rainfall Anomaly Outlook

November 01 2021 – April 10 2022



3-month Rainfall Tercile Probability

April – June 2022

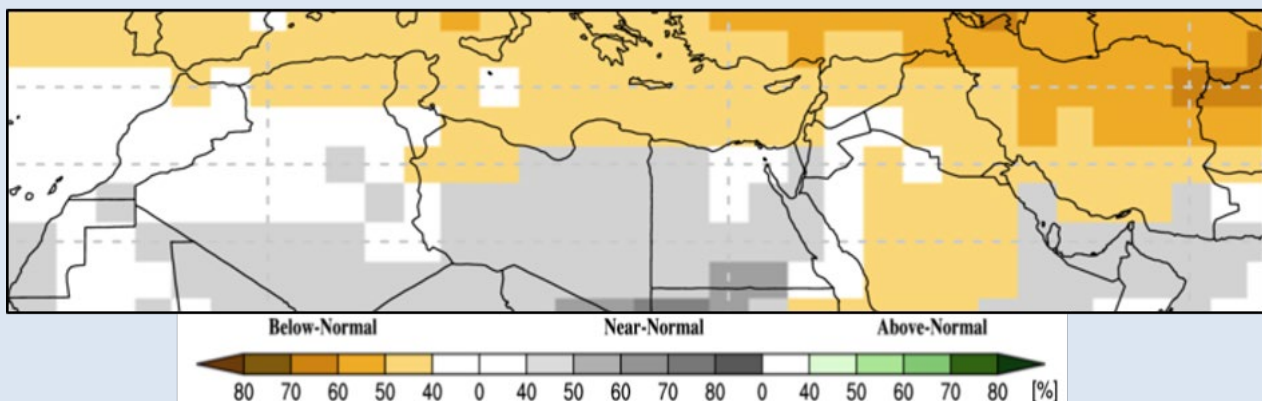
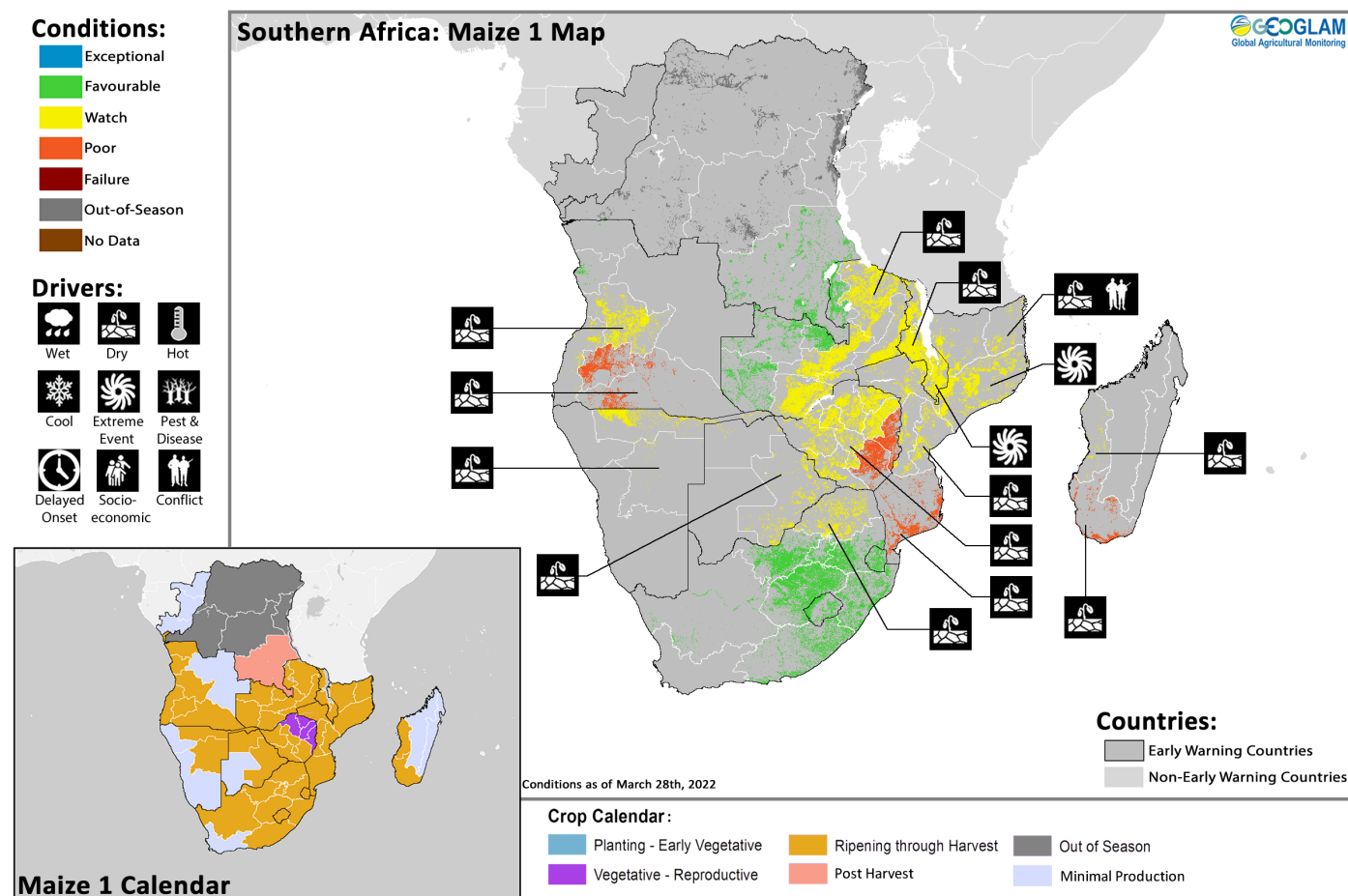


Figure 1. November-to-April 10th rainfall anomaly outlook and a 3-month rainfall probability forecast for April-May-June 2022. The top panel is a CHC Early Estimate, which compares the outlook for November 1st, 2021 - April 10th, 2022 rainfall amounts to the 1981-2021 CHIRPS average. This outlook uses CHIRPS final data through February, preliminary data for March 1st-25th, and a forecast for March 26th-April 10th. The bottom panel is the WMO probabilistic forecast for April-to-June 2022 precipitation, based on models initialized in March. From [WMO Lead Centre Long-Range Forecast Multi-Model Ensemble](#). Source: Climate Hazards Center

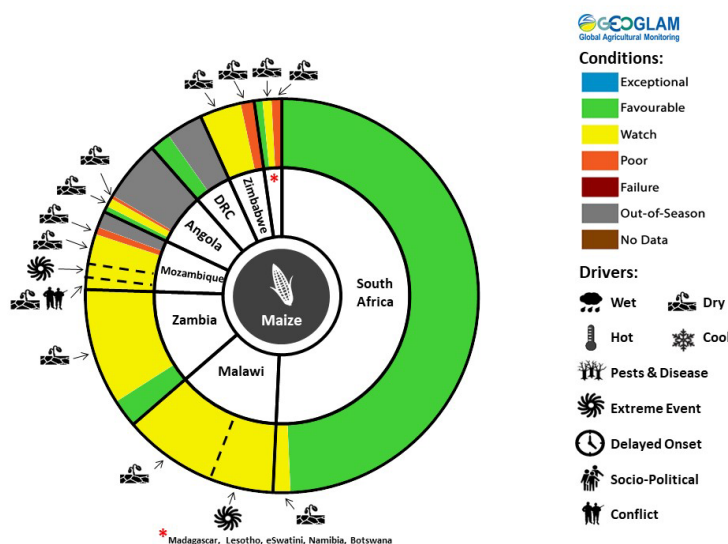
Southern Africa



Crop condition map synthesizing Maize 1 conditions as of March 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 underway or about to start across **Angola, Botswana, eSwatini, Lesotho, Madagascar, Malawi, Mozambique, Namibia, South Africa, Zambia, and Zimbabwe**. Overall conditions are mixed, with dryness reducing yield prospects in southern provinces of **Angola**, southern **Madagascar**, southern **Mozambique**, and east and southeastern **Zimbabwe**, while erratic rainfall continues to cause concern in central-west and southwestern **Angola, Botswana**, east, central, and western **Madagascar, Malawi, Mozambique**, northern **Namibia**, parts of **Zambia**, and **Zimbabwe**. Dry conditions are forecast to continue in parts of western **Angola**, central **Mozambique**, and **Madagascar** through May (See Regional Outlook Pg. 12). In addition to the rainfall deficit, the passage of Tropical Storm Ana in late January, Tropical Depression Dumako in February, and Tropical Cyclone Gombe in early March raises further concern for harvests in central **Mozambique** and southern **Malawi** due to cropland and infrastructure damage. Conditions remain mostly favourable throughout north and eastern areas of **Angola**, the **Democratic Republic of Congo, eSwatini, Lesotho**, most of **South Africa**, and parts of **Zambia**. Land preparation for winter wheat crops is underway in **Lesotho, South Africa, Zambia, and Zimbabwe**, and planting will begin in April.

In **Angola**, conditions in southern areas of Huila and southern provinces are poor with little chance for improvement due to below-average seasonal rainfall totals. Despite heavy rainfall received in the last week of March in the southwest, the rains are likely too late in the season for substantial crop recovery (See Regional Outlook Pg. 12). Additionally, conditions have degraded in the central-west, and concern remains in the southwest due to erratic and irregular rainfall distribution. While conditions in the central and northern provinces remain favourable, erratic rainfall over the past month may impair conditions. In **Botswana**, concern remains as below-average rainfall in February likely had a significant negative impact on crop development despite some rainfall improvement in March. In **Madagascar**, despite an increase in seasonal rainfall totals in February owing to the passage of several extreme weather events, long-term moisture deficits persist in the southwest, and below-average yields are expected. Additionally, concern remains in the west due to well below-average December 2021 through February 2022 rainfall. While crops in affected areas benefited from increased rainfall from the passage of Tropical Depression Gombe in early March, concern remains in the centre and east due to delayed rainfall onset, and below-normal rainfall is forecast to return to much of the country through May (See Regional Outlook Pg. 12). In **Malawi**, concern remains in the centre and north due to uneven rainfall distribution and dry conditions along with Fall Armyworm which has been reported across much of the country. Additionally, concern remains in the south due to previous damage from Tropical Storm



For detailed description of the pie chart please see description box on Pg. 17.

Ana in January and Tropical Depression Dumako in February as well as potential damage from the passage of Tropical Cyclone Gombe in early March. Despite increased rainfall from the three tropical storms, rainfall in the south remains below-average as of late March (See Regional Outlook Pg. 12). In **Mozambique**, crops in the south are unlikely to recover, particularly in Inhambane and Gaza provinces, and concern remains throughout the country as below-average rainfall over most areas since January has resulted in large seasonal moisture deficits, resulting in drought in southern areas. There is also ongoing concern in Cabo Delgado province due to the conflict as well as in the centre of the country as Severe Tropical Cyclone Gombe made landfall on March 11th over the coastal area of central Nampula Province. The storm resulted in widespread flooding, displacement, and infrastructure damage and has compounded the impacts from Tropical Storm Ana in January and Tropical Depression Dumako in February. According to national reports, Gombe heavily affected Nampula and Zambezia provinces as well as Niassa, Cabo Delgado, and Tete provinces to a lesser

extent. Conversely, the increased rainfall may benefit crop conditions over Sofala province. In **Namibia**, concern remains in the north due to below-average rainfall since the start of the season (See Regional Outlook Pg. 12). In **South Africa**, conditions remain favourable over most areas as normal to above-normal rainfall across most of the summer grain producing region in combination with near-normal temperatures during late summer benefitted maize crops. While some concern remains in the northeast due to uneven rainfall distribution, official yield projections are average to above-average. In **Zambia**, dry conditions are impacting crop development in northeast, east, southeast, and central areas due to suppressed rainfall during February and early March despite recent rainfall improvements from mid-March. Conversely, conditions remain favourable in the northwest, west, and southwest. In **Zimbabwe**, crop conditions are below-average throughout the country due to a generally uneven distribution of seasonal rains. In particular, crop conditions are poor in the east and southeast, largely reflecting a four-dekad long dry spell from February to March. In the **Democratic Republic of the Congo**, harvesting of main season maize finalized in the southeast while harvesting of both main and second season cereals continues throughout the country, and overall conditions are favourable. Planting of second season maize crops is underway in the north and east under favourable conditions, and harvesting will begin in June. While rainfall amounts have been mostly adequate and well distributed from December 2021, forecast below-average rainfall in central-western areas through May could negatively impact yields (See Regional Outlook Pg. 12). Additionally, heavy rainfall on March 16th resulted in flash flooding in South Kivu province in the eastern part of the country.

Regional Outlook: Wetter than normal conditions likely to continue across parts of South Africa and Botswana in April and May while drier than normal conditions forecast to continue in parts of Angola, Mozambique and Madagascar

During late-February to mid-March, drier-than-average conditions affected Zimbabwe, central Zambia, southern Malawi, western and southern Mozambique, southern Madagascar, southwestern Angola, and portions of northeastern South Africa (Figure 1-left). During this period atypically long, 3+ week dry spells occurred in eastern Zimbabwe, southern Mozambique, and southern Madagascar. This timing of dry conditions would have been unfavorable for crops in reproductive growth stages, and would be of particular concern where below-average and poorly distributed seasonal precipitation (Figure 1-middle) already raised concerns about low crop production prospects. In the final week of March, one such area received heavy rainfall– southwestern Angola– but these rains are likely too late in the season for substantial positive impacts to crops. Also during recent weeks, above-average rainfall further increased seasonal rainfall surpluses in southern Botswana and western-central South Africa. October-to-March 2021/2022 rainfall totals are among the wettest on record in these areas.

Forecasts indicate that wetter-than-normal conditions are likely to continue in South Africa and southern Botswana during April and May (Figure 1-right). Forecast increased chances for drier-than-normal conditions in western Angola, central-southern Mozambique, and Madagascar indicate seasonal deficit areas within these regions are unlikely to recover. As of March 31st, forecast two-week rainfall is very similar to the April-May WMO forecast, and additionally predicts above-average rainfall in portions of Namibia, southeastern Angola, Malawi, and northwestern Mozambique (not shown).

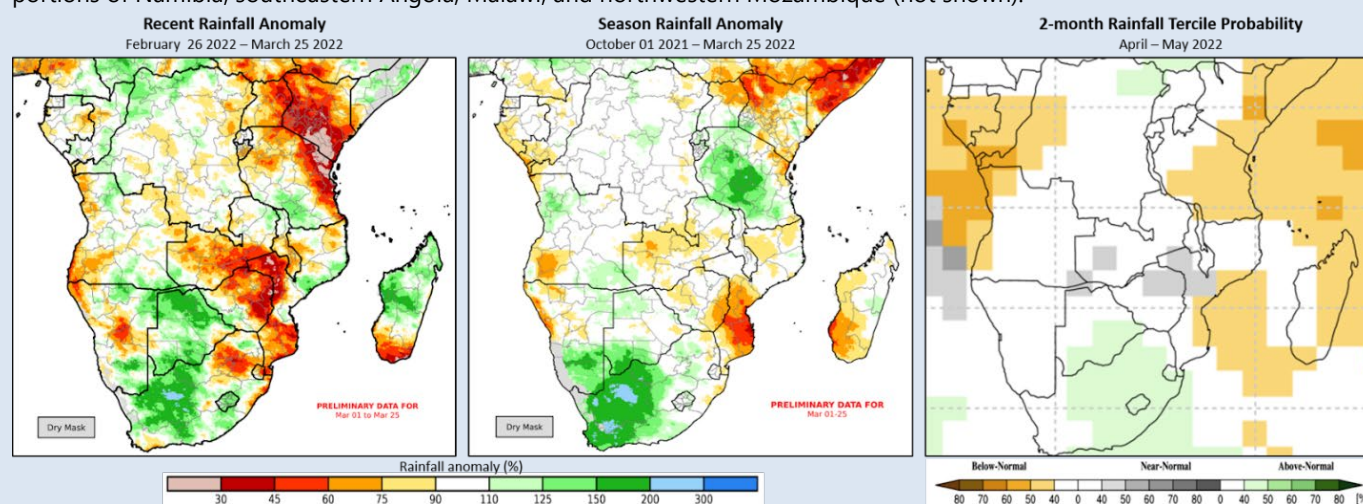
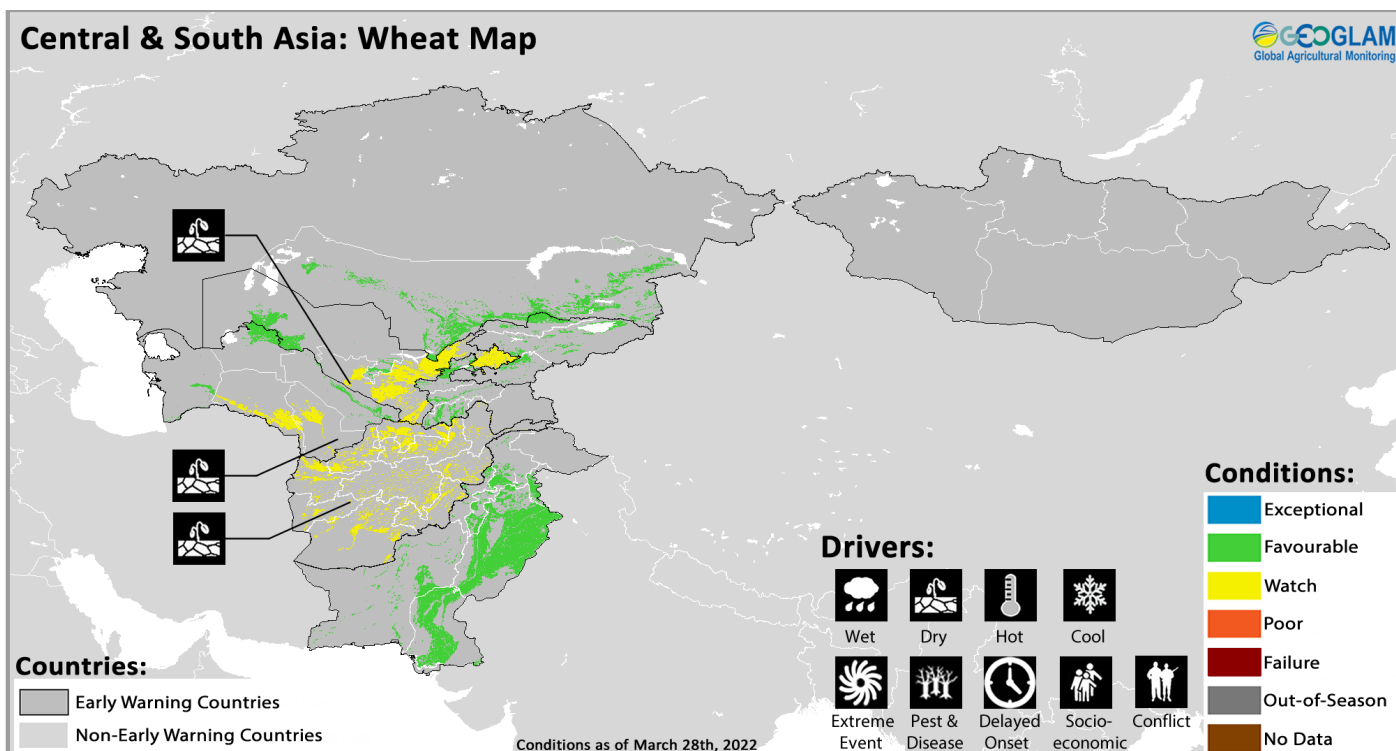


Figure 1. A recent rainfall anomaly, a seasonal rainfall anomaly, and a 2-month rainfall probability forecast. The left and middle panels show rainfall performance, represented as a percent of the 1981-2021 CHIRPS historical average, for February 26th, 2022 to March 25th, 2022 and October 1st, 2021 to March 25th, 2022. The right panel is a WMO probabilistic forecast for April-to-May 2022 precipitation, based on models initialized in March. From the [WMO Lead Centre Long-Range Forecast Multi-Model Ensemble](#).

Source: UCSB Climate Hazards Center

Central & South Asia



Crop condition map synthesizing wheat conditions as of March 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 winter wheat crops is underway in **Pakistan** while crops continue to develop in **Afghanistan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, and Kazakhstan** for harvest from May. Conditions are mixed as concern remains in **Afghanistan**, Ahal and Mary provinces in **Turkmenistan**, and highlands and plains regions in **Uzbekistan** due to persistent dryness. Additionally, forecast below-average rainfall through May is likely to worsen already below-average seasonal precipitation totals across the subregion (See Regional Outlook Pg. 14). Planting of spring wheat crops has begun in **Afghanistan** and **Tajikistan** for harvest from July, and there is concern in **Afghanistan** due to forecasts of dry conditions combined with low snow water volumes. Land preparation is underway in **Kazakhstan, Kyrgyzstan, and Mongolia**, and planting activities will begin in April.

In **Pakistan**, planted area has reached an above-average level of 9 million hectares, prompted by high domestic prices and government support programs. However, limited availability of fertilizers and irrigation water supply in some areas may impact final yields. Land preparation for main season maize crops is underway, and planting will begin in mid-April. In **Afghanistan**, above-average precipitation from late February to mid-March improved soil moisture conditions, supporting healthy vegetative growth of mostly irrigated winter wheat and benefitting normal sowing of mostly rainfed spring wheat. From October 2021 to March 2022, cumulative precipitation remained below-average in southwest, north, central highlands, and northeastern areas, and below-average and record low snow water volumes persist in many basins throughout the country. Additionally, La Niña conditions are expected to bring drier and hotter than normal conditions in the coming months and are likely to extend the severe drought into a second year (See Regional Outlook Pg. 14). Forecasts of dry conditions combined with low snow water volumes may increase the risk of spring wheat crop stress during the critical flowering stage in April and May. In **Kyrgyzstan**, vegetation conditions remain favourable. Snow cover in mountainous areas since late November 2021 secured moisture reserves to be used for irrigation during the June through September summer months. In **Tajikistan**, vegetation conditions have benefitted from abundant rainfall in March, including in the main producing Khatlon province. In **Turkmenistan**, vegetation conditions improved in March, particularly in Charzhou province; however, they remain below-average in some southern areas of Mary and Ahal provinces. In **Uzbekistan**, abundant rainfall in March has benefitted growing conditions in most parts of the country and resulted in improved vegetation conditions, except in some areas of the southeastern highlands and plains regions where below-average NDVI values persist.

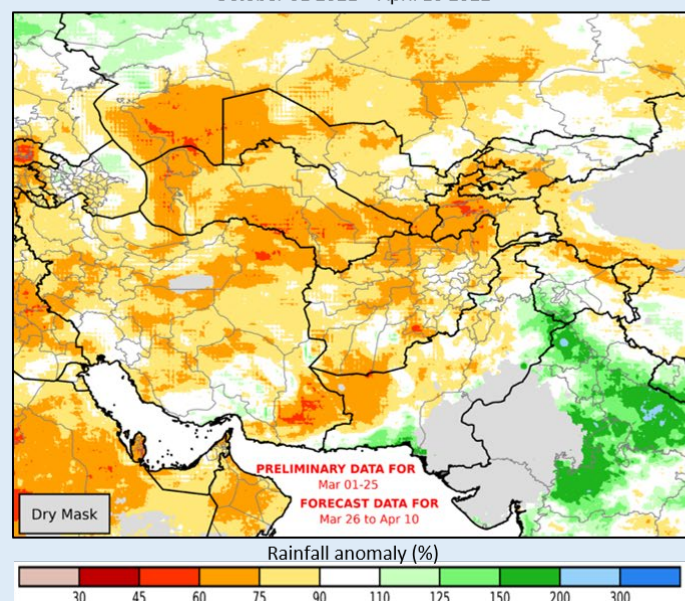
Regional Outlook: Elevated chances for below-normal April to May precipitation across much of Central Asia

During recent weeks, precipitation was average across most areas, and above-average in southern Kazakhstan, eastern Uzbekistan, Kyrgyzstan, central Tajikistan, and portions of central-northern Afghanistan. Precipitation was below-average in portions of southern and eastern Afghanistan. Figure 1-left shows percent of average precipitation for October 1st, 2021 to April 10th, 2022 with forecast amounts from March 26th. Cumulative precipitation for October to March remains below-average across most areas, and is likely to continue to be drier than average into late April, based on the SubX forecasts for [April 9th-22nd](#) and April [16th-29th](#).

There are elevated chances of below-normal April and May precipitation across the region (Figure 1-right) and below-normal June precipitation in Tajikistan, Kyrgyzstan, and southern Kazakhstan, based on forecasts from several multi-model ensembles and expectations for La Niña conditions through at least May. Warmer-than-normal spring and summer temperatures are also anticipated. According to the [Afghanistan Seasonal Monitor](#), snow water content is largely below-average and at record-low levels in Kokcha-Ab-I-Rustaq, Kunduz, Khulm, Ghazni, Shamal, and Kabul basins. The warm and dry outlook for coming months indicates increased risks of moisture and heat stress during spring wheat flowering and looming water supply issues for irrigated crops.

October to April Season Precipitation Anomaly Outlook

October 01 2021 – April 10 2022



2-month Precipitation Tercile Probability

April – May 2022

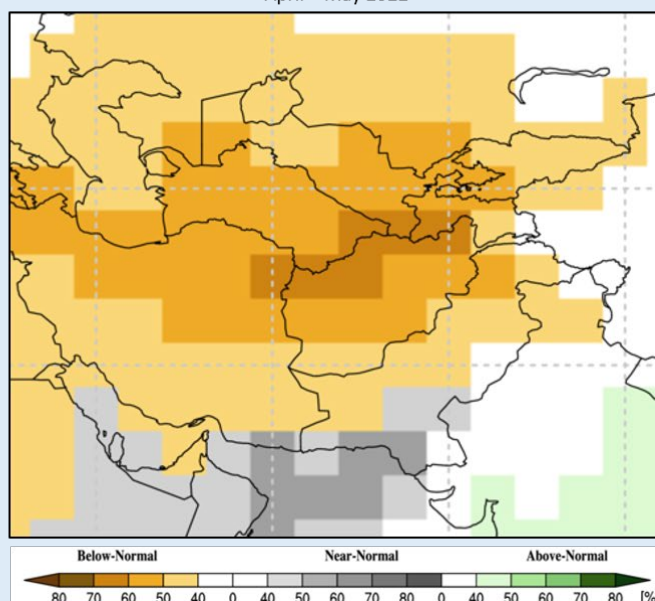
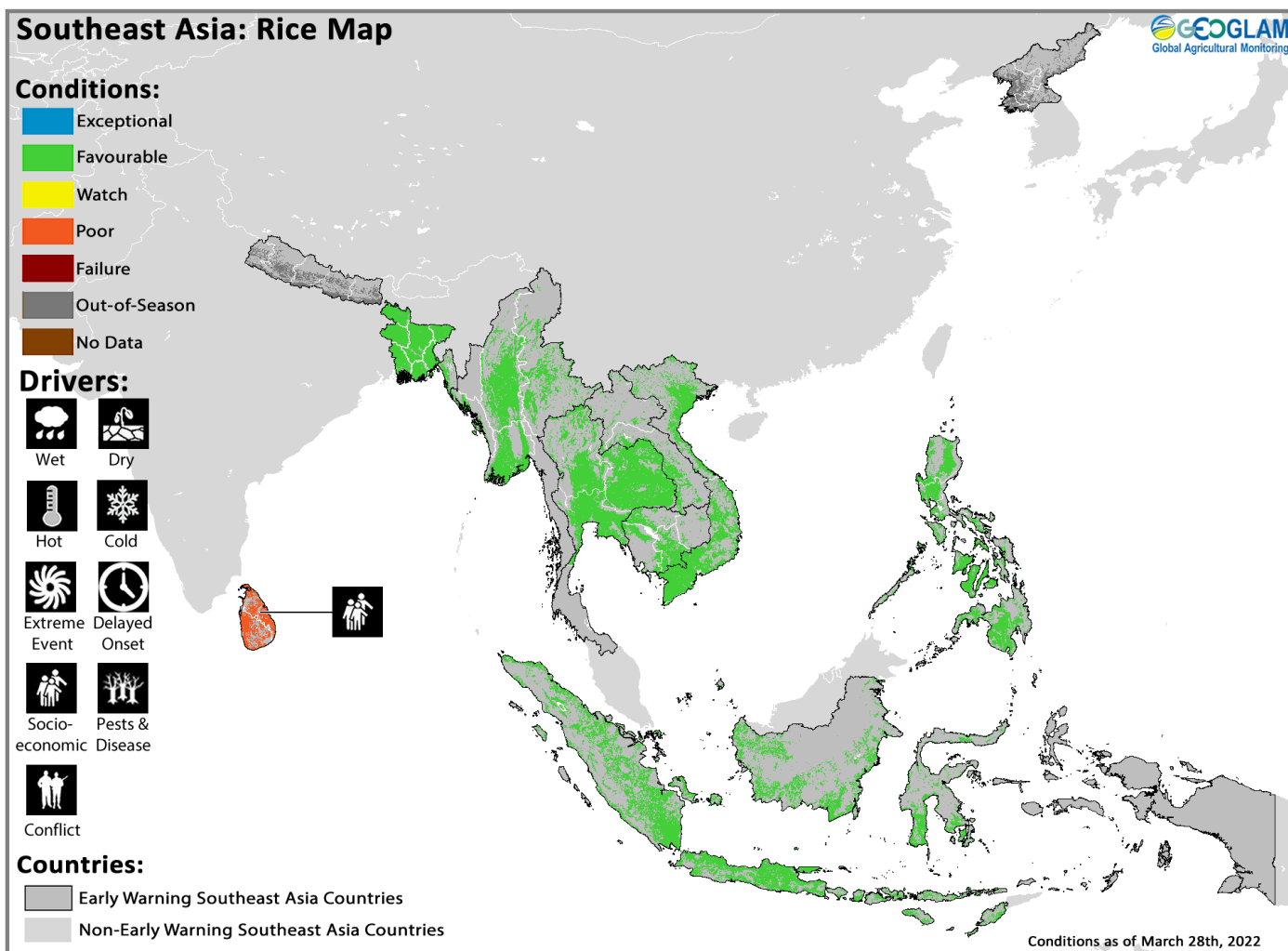


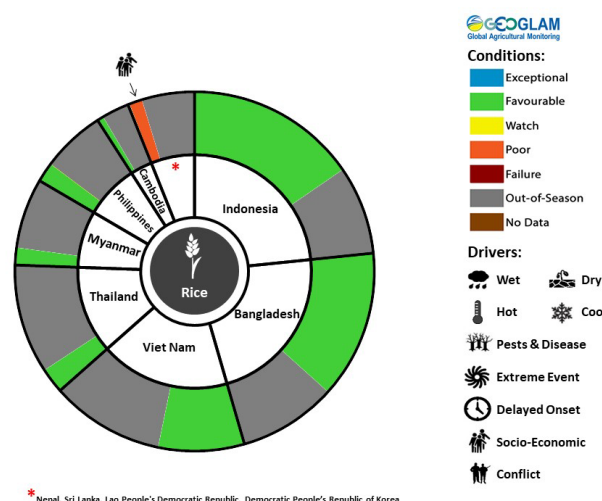
Figure 1. October-to-April 10th precipitation anomaly and a 2-month precipitation probability forecast for April-May 2022. The left panel is a CHC Early Estimate, which compares the outlook for October 1st, 2021 - April 10th, 2022 precipitation totals to the 1981-2021 CHIRPS average. This outlook uses CHIRPS final data through February, preliminary data for March 1st-25th, and an unbiased GEFS forecast for March 26th to April 10th. The right panel is the WMO probabilistic forecast for April-to-May 2022 precipitation, based on models initialized in March. From the [WMO Lead Centre Long-Range Forecast Multi-Model Ensemble](#). Source: Climate Hazards Center

Southeast Asia



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

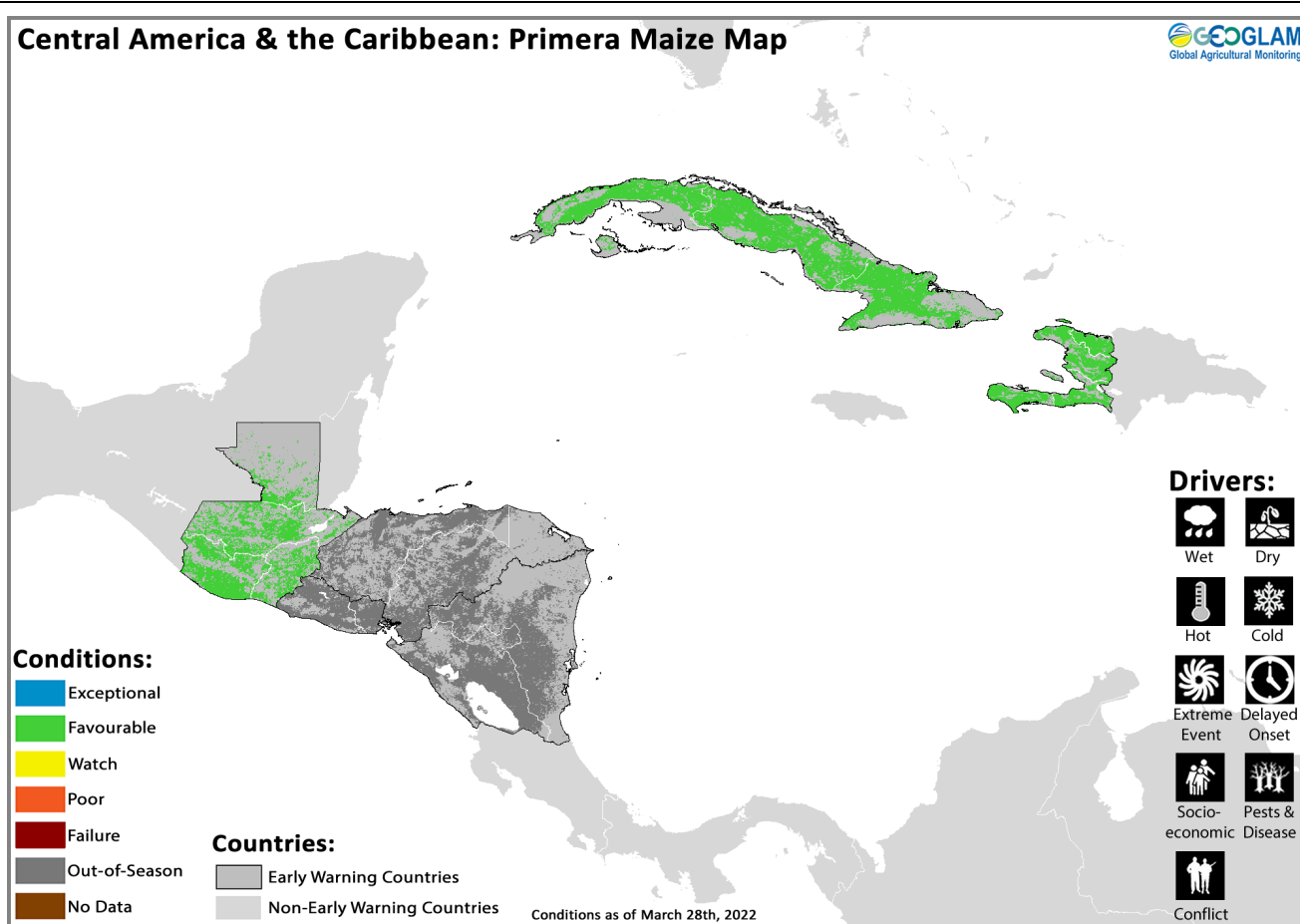
In northern **Southeast Asia**, harvesting of dry-season rice is underway, and harvested area is expected to increase slightly compared to average due to stable weather conditions throughout the season. Overall conditions are favourable despite water shortages in some localized areas. In **Indonesia**, wet-season rice continues to be harvested with good yields, owing to ample rainfall and sunlight during the growing season. Total sown area is 6.8 million hectares, 8.8 percent higher than the last wet season, and is expanding due to intensive rainfall from late February to mid-March. Current harvested area is 3.3 million hectares. In the **Philippines**, dry-season rice planted from November to December 2021 is currently in the maturing to harvesting stage, and harvesting is halfway complete with average yields. In **Thailand**, dry-season rice is in the grain filling and harvesting stage with an expected slight increase in yields compared to last year due to ample rainfall during the season. The total sown area is increased compared to last year's level, and total production is also forecast to increase due to the expansion of planted area as well as sufficient irrigation water supply and despite some minor drought damage in the Northern region in February. In **Viet Nam**, winter-spring rice (dry-season) is in the early vegetative stages in the north. Total sown area is 0.74 million hectares, and growing conditions are normal. Harvesting has begun in the south with initial yields of 6.8 tons per hectare, an increase compared to last year's level. The harvested area has reached 0.32 million hectares out of 1.9 million hectares planted. In **Laos**, dry-season rice is in young panicle forming stage under favourable conditions. Planted area has reached 90,000 hectares and 96 percent of the national planting plan, and growing



For detailed description of the pie chart please see description box on Pg. 17.

conditions are slightly better than the previous year due to rainfall received at the end of February. In **Myanmar**, planting of dry-season rice is nearing completion and will reach the national planting plan of 0.97 million hectares by the end of March. Growing conditions are favourable, and 60,000 hectares of dry-season rice accounting for 7 percent of the total planted area has been harvested, mainly in the Delta region. Of the harvested crops, yield is 4.3 tons per hectare and slightly higher than the previous year. In **Cambodia**, final planted area of dry-season rice reached 639,000 hectares, a 1.5 percent decrease from the previous year. Growing conditions are favourable, and 70 percent of the planted area has been harvested with a yield of 4.50 tons per hectare, slightly higher than the previous year. In **Sri Lanka**, harvesting of *Maha* season maize and rice crops finalized in March under poor conditions. While planted area is estimated to be near the previous year's above-average level due to high prices and favourable weather conditions at planting, shortages and high prices of agricultural chemicals resulted in their reduced application and negative yield impacts in most parts of the country. Official estimates indicate below-average *Maha* season rice production. Land preparation for *Yala* season rice crops is underway, and planting will begin in April. In **Bangladesh**, *Boro* season rice crops are in vegetative to reproductive stage under favourable conditions for harvest from mid-April, and output is expected at an above-average level. In **Nepal**, harvesting of winter wheat crops has begun under favourable conditions due to above-average rainfall from May to September that provided ample irrigation water supply as well as favourable weather conditions since the beginning of October. Additionally, planted area is estimated at an above-average level, driven by strong local demand. Planting of main season maize crops continues under favourable conditions for harvest from August. Above-average planted area and yields are expected to result in above-average production.

Central America & Caribbean



Crop condition map synthesizing *Primera* season maize conditions as of March 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 *Apante* season bean crops finalized in **Nicaragua** under favourable conditions. Harvesting of second season rice crops is nearing completion in northern **Honduras** under favourable conditions, and harvesting activities will finalize in April. Land preparation for *Primera* season cereals has started early in parts of the region, notably in **Guatemala** and **Honduras**, and early sowing is underway in some areas of **Guatemala**, including parts of Sololá, Quetzaltenango, and San Marcos departments due to early rainfall onset and sufficient soil moisture levels. In **Haiti**, harvesting of second season rice and third season bean crops finalized under poor conditions due to previous rainfall deficits followed by heavy rainfall that resulted in flooding and river overflow in parts of the Nord, Nord-Est, Nippes, and Centre departments. Planting of main season cereals has begun under favourable conditions, and harvesting activities will begin in June. In **Cuba**, main season maize and rice crops continue to develop under favourable conditions for harvest from April. Near-average precipitation during February and the first two dekads of March contributed to favourable vegetation conditions despite some pockets of dry areas observed in the minor producing western region. Land preparation of second season rice crops is underway, and planting will begin in April.

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 slice 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 April 7th, 2022.

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



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.



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

Contributing partners



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