Overview:

In East Africa, harvesting of main season cereals is nearing completion in the south with concern in areas impacted by persistent dry conditions, flash floods, protracted conflict, and socio-economic challenges. Belg season maize crops in Ethiopia finalized under poor conditions. In West Africa, harvesting of main season maize is underway in the south while planting and development continues in the north, and conditions are generally favourable except in regions affected by new and persisting conflicts. In the Middle East and North Africa, harvesting of winter wheat crops finalized under mixed conditions as persistent dryness and above-average temperatures resulted in well below-average yields in parts of Syria and Iraq and below-average yields in parts of Iran, Algeria, Morocco and marginal producing areas of Tunisia. In Southern Africa, winter wheat crops are in vegetative to reproductive stage for harvest from September, and conditions are generally favourable. In Central and South Asia, there is considerable concern for both winter and spring wheat crops as persistent drought conditions has resulted in below to well below-average yields in many areas, particularly in Afghanistan. In northern Southeast Asia, overall conditions for wet and dry-season rice are favourable with some concern in localized mainland areas impacted by droughts and floods. In Central America and the Caribbean, harvesting of main/Primera season cereals is underway under generally favourable conditions except in parts of Haiti where dry conditions and hot weather are impacting crops.

Contents:

Conditions at a Glance.........................................................2
Global Climate Outlook; Climate Influences .........................3
Desert Locust Update; Seasonal Forecast Alert.....................4
East Africa & Yemen; Regional Climate Outlook...................6
West Africa..........................................................................9
Middle East & North Africa.................................................10
Southern Africa...................................................................11
Central & South Asia..........................................................12
Southeast Asia; Regional Climate Outlook .........................13
Central America & Caribbean; Regional Climate Outlook........16
Appendix – Terminology & Definitions...............................18
The Crop Monitor for Early Warning is a part of GEOGLAM, a GEO global initiative. www.cropmonitor.org
Global Climate Outlook: 30-day Forecast of Areas with Above or Below-Average Precipitation

The 30-day precipitation forecast indicates a likelihood of above-average rainfall over the southeastern US, coastal Mexico, Guatemala, Belize, Nicaragua, Costa Rica, Panama, eastern Venezuela, Guyana, Suriname, French Guiana, northern Brazil, southern Chile, parts of the Sahel, southeastern Germany, northwestern Austria, western Belarus, southeastern Finland, northwest and southern parts of the Russian Federation, northwestern Iran, northern Mongolia, eastern China, Taiwan, the Democratic People’s Republic of Korea, the Republic of Korea, parts of India, western Sri Lanka, Bangladesh, northwestern Myanmar, southern Thailand, southern Philippines, Malaysia, Indonesia, Papua New Guinea, Tasmania, and southern New Zealand. There is also a likelihood of below-average rainfall in central Canada, parts of the US Midwest, the Dominican Republic, Colombia, northeastern Peru, central Chile, western Bolivia, Uruguay, southern Brazil, Sierra Leone, southwestern Cameroon, central Italy, Bosnia and Herzegovina, Montenegro, western Serbia, western Bulgaria, eastern parts of the Russian Federation, central and western China, southern Japan, parts of India, Nepal, Myanmar, southern Laos, parts of Cambodia, Viet Nam, and central and northern Philippines.

Climate Influences: La Niña Watch issued and negative IOD event is currently underway

Neutral El Niño–Southern Oscillation (ENSO) conditions are present and are expected to continue into September. A La Niña event will potentially develop during the September-to-November season and last through early 2022 (62% chance for October to December; 66% to 54% chance for November to March). The IRI/CPC has issued a La Niña Watch.

A negative Indian Ocean Dipole (IOD) event is underway. Negative IOD conditions are expected to continue through November or December, according to the Australia Bureau of Meteorology forecast (96% to 63% chance for August to December). Negative IOD conditions typically increase the chances of above-average rainfall in parts of southern and eastern Australia and other regions during August to December, and below-average rainfall in parts of East Africa from September to December.

Source: UCSB Climate Hazards Center
Desert Locust Update: Swarms in Ethiopia likely to continue north to northern Ethiopia, Sudan, and Eritrea where wetter than normal conditions are expected

From June through early July, swarms continued to be reported in parts of northern Ethiopia, northwestern Somalia, and Djibouti. Hoppers have also been reported in northwestern regions of Somalia where they are breeding and where reproductive activities are underway, and adults have been reported in parts of eastern Sudan. Locust presence poses a risk to crops in parts of Ethiopia, Sudan, and Somalia where swarms were present during the critical main season cereal planting period.

As of late July, a few small immature swarms persist in northwestern Somalia. In Ethiopia, swarms are likely to be present in Afar region where above-average rains since mid-July allowed them to mature, and some early egg-laying may have occurred. There is a risk to Meher season crops in Ethiopia as forecast high rainfall in July and August could give rise to new swarms from late September. A few swarms may also continue to the northern Ethiopian highlands where they could move to Sudan and Eritrea for breeding. Additionally, control operations in Tigray and Afar are likely to be negatively impacted by on-going conflict in Tigray, and locust numbers could increase. Some swarms may also be present in southern Djibouti where recent rainfall was received.

In Yemen, good rains in July will likely allow for a generation of summer breeding and the formation of small hopper bands in the interior.

From July 29th through August 12th, wetter than normal conditions are expected in parts of northern Ethiopia, Eritrea, Djibouti, South Sudan, Sudan, and western Yemen (See Regional Outlook Pg. 8). The availability of green vegetation will continue to be suitable for locusts in northern parts of the subregion that receive above-normal rainfall. Additionally, wind movement is likely to favour north-east and northwest locust movement from northern Ethiopia and Eritrea north to Eritrea, eastern Sudan, Yemen, and Saudi Arabia.

Figure 1. Desert Locust Situation Threat, July 22-28 2021. Source: FAO DLIS
**Seasonal Forecast Alert: Third consecutive below-average rainfall season likely across eastern East Africa during OND 2021**

After poor October-November-December (OND) 2020 and March-to-May (MAM) 2021 rainy seasons, long-lead pessimistic rainfall forecasts are indicating an alarming possibility for a third poor rainfall season in eastern East Africa during OND 2021. In areas of eastern and southern Ethiopia, eastern Kenya, and southern Somalia that were impacted by sequential dry seasons during 2020-2021 (See Crop Monitor for Early Warning February 2021 and July 2021 reports. Ethiopia 2021 Belg Report), multiple international and regional forecasting centers indicate that OND 2021 precipitation is likely to be below-normal again. The WMO forecast from July (Figure 1- top left) identifies a 40-to-60% chance for below-normal OND 2021 rainfall in these areas and elsewhere. The downscaled 3-month lead forecast from ICPAC also shows a similar pattern (Figure 1-top right). The NMME also predicts most-likely below-normal rainfall in this region (See East Africa Regional Outlook Pg. 8). In areas that strongly depend on OND rains, a poor OND 2021 outcome could mean a long wait before the next chance for a substantial harvest in early 2022. Forecast OND 2021 sea surface temperature conditions in both the equatorial Pacific and equatorial Indian Ocean resemble patterns known to suppress rainfall in East Africa during OND. There are indications for coinciding La Niña and negative Indian Ocean Dipole (IOD) events. Very warm conditions are forecast for the equatorial western and eastern Pacific and Indian Oceans where substantial warming trends have occurred in recent decades. Extremely warm conditions in these areas can amplify both climate modes. Warm equatorial west Pacific OND temperature predictions have been a robust feature of recent strong gradient La Niñas and associated East Africa OND droughts. Sea surface temperature forecasts from dynamical climate models anticipate these conditions (Figure 1-middle). The IOD is currently in a moderate negative state, according to the latest analysis from July 28th. Australia Bureau of Meteorology multimodel forecasts indicate the IOD event will continue at least mid-way through the OND 2021 season. While ENSO conditions are currently neutral, CPC/IRI has issued a La Niña Watch due to indications from some models and observations that a La Niña event will develop from September to November and continue into early 2022 (62% chance for OND 2021).

A statistical forecast for OND 2021 precipitation for eastern East Africa, based on NMME-forecasts of OND sea surface temperatures (Figure 1-right), identifies a range of probable outcomes, from average to below-average precipitation, with the most-likely outcome being moderate drought conditions. The model predicts a standardized precipitation index (SPI) value around -1 for OND 2021, which is more severe than in OND 2020 (SPI ~ -0.8). The statistical framework draws on well-established relationships between regional precipitation and SST gradients related to the IOD, ENSO, and a La Niña-like Pacific SST gradient. The latter gradient incorporates western Pacific influences, which has amplified eastern East Africa drought impacts during many recent La Niña-like events. Many recent dry OND seasons have been associated with strong-gradient La Niñas, and prior FEWS NET research has shown that such events are associated with an elevated risk of sequential OND and MAM droughts. Emergent climate conditions will need to be closely monitored since the arrival of a strong-gradient La Niña, combined with poor 2020 and 2021 OND/MAM outcomes, could set the stage for three or even four consecutive poor seasons in eastern East Africa.

![WMO Forecast for OND 2021 Precipitation](image1)

**Figure 1. Top Left-** WMO probabilistic forecast for October-November-December (OND) 2021 precipitation, based on models initialized in July. The overlay shows the importance of OND rainfall to annual totals. Base image from WMO Lead Centre Long-Range Forecast Multi-Model Ensemble. Top right-- ICPAC's downscaled probabilistic forecast for October-November-December (OND) 2021 precipitation. Image from ICPAC. Bottom left-- NMME sea surface temperature anomaly forecast for OND 2021, based on models initialized in early July. Image from CPC_NMME forecasts. Bottom right-- Scatterplot of predicted and observed Eastern East Africa OND Standardized Precipitation Index (SPI) values. The statistical model forecast uses July-initialized NMME forecasts for 1999 to 2021 OND sea surface temperatures for predictor regions. The overall R-squared of the regression is 0.45. The red circle shows the regression forecast for OND 2021. Past seasons, or “analogs,” that are similar to the current situation (orange circles) can be used for assessing historical impacts and comparison to updated forecasts. More details are provided in a [Climate Hazards Center Blog](https://www.climinhaz.org). Source: UCSB CHC
Across the north of the subregion, harvesting of main season cereals is underway in South Sudan while planting and development continues in Ethiopia, Sudan, Yemen, Djibouti, and Eritrea. There is concern in parts of eastern Sudan and northern South Sudan impacted by continued flooding as above-average rainfall amounts since late April led to excessive streamflow in the Blue and White Nile, Atbara, and Sobat-Pibor-Akobo river basins in western Ethiopia, eastern Sudan, and northern South Sudan. This resulted in localized riverine floods and elevated the risk of flooding in other nearby areas. Elsewhere in Sudan as well as in Djibouti and Eritrea, planting conditions are favourable. Additionally, conflict and socio-economic issues continue to impact agricultural activities across South Sudan, Yemen and Tigray region in Ethiopia. In Ethiopia, harvesting of Belg season (Short Rains) maize crops finalized under poor conditions as delayed rainfall onset, dry conditions throughout the season, and conflict impacted yield. Meher season (Long Rains) cereals continue to develop under generally favourable conditions except in Tigray region due to protracted conflict. In the south of the subregion, harvesting of main season cereals is wrapping up in Uganda, the United Republic of Tanzania, Burundi, Kenya, Rwanda, and Somalia. Overall conditions are mixed as crops in northeastern Kenya and Somalia are unlikely to recover from persistent dryness throughout the season. Additionally, heavy rainfall and flash flooding impacted crops in parts of Somalia and northeastern Uganda, and there is continued concern in parts of coastal and eastern Kenya and northern coastal United Republic of Tanzania impacted by dry conditions. Elsewhere, conditions are generally favourable.
In Ethiopia, harvesting of *Belg* season (Short Rains) maize crops finalized in July, and final yields are below-average due to delayed rainfall onset and poor rainfall performance throughout the season as well as ongoing conflict in Tigray region. *Meher* season (Long Rains) cereals are developing under generally favourable conditions except in Tigray region where protracted conflict and ongoing socio-economic challenges continue to disrupt agricultural activities and livelihoods. The conflict-induced loss of the previous main *Meher* season harvest and production inputs has severely impacted food security and nutrition as an estimated 90 percent of the harvest was lost. Since the onset of conflict, local food production has drastically declined as farmers no longer have access to productive assets such as seeds or tools due to looting. Farmers have also lost their sources of credit and cannot access seed markets. In Sudan, planting of main season millet and sorghum crops continued in June for harvest from November. An early onset of the June to September rainy season in May was followed by above-average rainfall through mid-June, resulting in rainfall surpluses over most cropping areas. However, in late July, flash floods impacted parts of South Darfur, Kassala, White Nile, and River Nile states, causing concern for crops in the east. Forecast above-average seasonal rains are likely to benefit crop yields but also increases the risk of flooding in low-lying and riverine areas (See Regional Outlook Pg. 8). Additionally, planted area and yields are likely to be adversely affected by fuel shortages and high prices of agricultural inputs that continue to inflate transportation and production costs. The removal of fuel subsidies in June will further inhibit farmers access to fuel, negatively impacting irrigated crops that account for half of aggregate cereal output. In

**Southern East Africa**

In bimodal areas of Uganda, harvesting of first season maize crops finalized in July while harvest of millet crops is underway, and overall conditions are favourable. In unimodal areas, first season maize and millet crops are in vegetative to reproductive stage, and conditions are favourable except in Karamoja region where excess rainfall in Moroto, Kotido, and Amudat districts is impacting crop development. Conversely, in the southwest, poor rains in some areas are likely to result in localized production shortfalls for the first season harvest in affected areas. In the northwest, planting of second season maize crops continued under favourable conditions for harvest from mid-October. Elsewhere, land preparation is underway for second season maize crops, and planting will begin in August.
In **Kenya**, harvesting of *Long Rains* maize crops is underway, and conditions are favourable in main producing unimodal areas of the west, Rift Valley, and centre. Conversely, there is concern for crops in minor producing bimodal areas of the east, northeast, and southern coast as delayed rainfall onset and dry spells may impact crops and reduce production. Following the below-average *Long Rains* season from March to May, the overall June through August (JJA) season will likely be characterized by rainfall concentrated over the western region while the coastal strip and remaining areas will mostly remain dry (See Regional Outlook Pg. 8). In **Somali**, harvesting of *Gu* season maize and sorghum crops is underway and will finalize in August, and crops are unlikely to recover due to dry conditions throughout the season as well as flash flooding in some areas. In central and southern areas, delayed onset of seasonal rains in late April impacted planting activities and germination. In early May, above-average precipitation benefitted crop development but also resulted in localized crop losses and displacement due to flash flooding. Then in mid to late-May, erratic and below-average rainfall was followed by an early cessation of seasonal rains. Dry conditions in May adversely affected both rainfed and irrigated cropping conditions as low water levels along the Juba and Shabelle rivers limited irrigation water availability. Consequently, planted area and yield were affected in the main producing areas, and overall *Gu* season production is projected to be 20 to 40 percent below-average. In **Burundi** and **Rwanda**, conditions remain favourable for the continued harvesting of main *Season B* crops to be finalized in August. In the **United Republic of Tanzania**, harvesting is nearing completion for *Masika* season cereals in northern bimodal areas and for *Msimu* season rice in central and southern unimodal areas, and conditions are generally favourable except along the northern coast where below-average and erratic rains continue to impact crops. However, sorghum crops may be less impacted as they are typically more resilient to dry conditions.

**Regional Outlook: Above-normal rainfall expected in northern areas through August while drier than average conditions are forecast for parts of the south.**

Wetter-than-average conditions affected northern areas of the region in recent weeks while drier-than-average conditions affected portions of central-southwestern Ethiopia, Uganda, and Kenya’s northern Rift Valley. Rainfall surpluses were widespread in Sudan and in northern Ethiopia, with some areas receiving amounts more than 150 percent of average. Preliminary estimates for June 26th to July 25th show amounts that are 50 mm to over 100 mm above-average in portions of central and eastern Sudan and in northern Ethiopia (Figure 1-left). In South Sudan, most areas received either average or above-average rainfall amounts. Wetter-than-average conditions are forecast to continue in many northern surplus areas during July 29th to August 12th, according to the unbiassed **GEFS** forecast from July 29th (Figure 1-middle). Drier-than-average conditions are forecast for Uganda, western Kenya, and for portions of southwestern and central Ethiopia and southeastern South Sudan. The SubX ensemble forecast (not shown) indicates mainly near-average rainfall over the next 30 days. Some models forecast recurring above-average rainfall in portions of northern Ethiopia, Sudan, and South Sudan.

July **WMO** and **NMME** forecasts for August to September generally agree that normal to above-normal rainfall is likely to continue in the northern areas. They also indicate above-normal rainfall in Uganda and western Kenya. Central and southeastern Ethiopia, central and eastern Somalia, and northeastern Tanzania will likely be hotter than normal (not shown).

There are heightened risks for a third consecutive below-average rainfall season in eastern areas, and corresponding successive poor agricultural production prospects for the eastern Horn (See Seasonal Forecast Alert Pg. 5). Long-range forecasts show increased chances of below-normal October-to-December rainfall in these areas (Figure 1-right). This is consistent with increased chances of a La Niña event (62% chance for La Niña, according to the CPC/IRI July official forecast) and for the currently active negative Indian Ocean Dipole event to continue into that season (~90% chance for October-November, according to the Australia Bureau of Meteorology).

*Figure 1. Recent rainfall anomaly, a 15-day forecast anomaly, and a 3-month forecast probability. The left panel is a CHC Early Estimate, which compares June 26th to July 25th, 2021, rainfall amounts to the 1981-2020 CHIRPS average. The middle panel the unbiased GEFS 15-day forecast anomaly for July 29th to August 12th, 2021, from July 29th. The right panel is a 3-month NMME probabilistic rainfall forecast for August to October, 2021, based on July 2021 initial conditions. The forecast probability is calculated as the percentage of all 79 NMME ensemble members that fall in a given tercile (above/below/near-normal). White color indicates there is no dominant category across the model forecasts. NMME image from the NOAA CPC Climate Forecasts.*

*Source: UCSB Climate Hazards Center*
Crop condition map synthesizing information as of July 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, harvesting of main season maize is underway in southern Benin, southern Ghana, eastern Liberia, Nigeria, and Togo while planting and development of main season sorghum continued in Benin, Cameroon, Cape Verde, the Central African Republic, Cote d’Ivoire, Gambia, Ghana, Guinea-Bissau, Liberia, Nigeria, Senegal, Sierra Leone, and Togo. Additionally, planting and development of second season cereals is underway in Cameroon and central Nigeria. In the north of the subregion, planting and development of main season cereals is underway in Burkina Faso, Chad, Mali, and Mauritania. Throughout the subregion, conditions are generally favourable except in Far North and Southwest regions in Cameroon, Lac region in Chad, the Central African Republic, northern Burkina Faso, northeastern Nigeria, and central Mali where conflict continues to disrupt agricultural activities as well as in southwestern Niger where a deteriorating security situation is disrupting agricultural livelihoods. Increased rainfall in May and June improved crop prospects for first season cereals in Benin, Ghana, and Togo while in Chad, recent above-average rains led to localized flooding across Tandjilé, Mandoul, Ennedi-Ouest, N’Djamena, and Batha regions. In Nigeria, timely rainfall onset and sufficient precipitation in May and June benefited crop germination and development across much of the country. However, concern remains in the northeast as conflict and socio-economic concerns continue to constrain access to fields and agricultural inputs. In Niger, a deteriorating security situation in the southwestern regions of Tillaberi and Tahoua has increased the number of displaced persons in 2021, further disrupting agricultural livelihoods and activities for the current agricultural season.
In the Middle East and North Africa, harvesting of winter wheat crops finalized across the subregion. In North Africa, persistent dry and hot conditions throughout the season resulted in below-average yields in Algeria, northeastern Morocco, and in marginal producing areas of southwestern Tunisia. In Morocco, dry and hot conditions impacted yields in the northeast while final yields were near-average in the northwest. In Algeria, above-average temperatures and drought throughout the season resulted in below-average yields in most areas except for the northeast where yields are near-average. In Tunisia, below-average vegetation conditions throughout most of the season due to drought resulted in below-average yields in marginal producing southwestern areas as rainfall at the end of the season was too late for crops to recover. However, this is not expected to have a large impact on national production, and elsewhere in the country, yields are near-average. In Libya, final yields are near-average, although production is limited due to protracted conflict and socio-economic challenges. In Egypt, main season maize and summer-planted crops continue to develop under favourable conditions for harvest from September. Planting of Nili season (Nile Flood) crops began in July under favourable conditions, and harvest will begin in December.

In the Middle East, persistent dry conditions and hot weather resulted in below-average yields in parts of Iran, northeastern Iraq, and southwestern Syria and well below-average yields in northwestern Iraq and parts of Syria. Additionally, conflict and socio-economic challenges impacted final yields throughout Syria despite favourable weather conditions in the southwestern tip of the country. In Iraq, erratic and below-average precipitation resulted in below-average yields in rainfed areas of the north and northeast and well below-average yields in main producing Nineveh governorate and parts of Dahuk, Erbil, Sulaymaniyah, and Salah Al Din provinces. In Syria, dry conditions resulted in below-average yields in northwestern governorates and well below-average yields in parts of Raqqa, Aleppo and Deir-zor. Despite favourable agro-climatic conditions in Quinetra, Dara’aa, and Sweida governorates in the southwest, protracted conflict and socio-economic challenges impacted yields throughout the country. In Iran, final production is expected to be near-average in parts of the northwest and other areas and below-average in Golestan and Khorasan provinces in the northeast, Fars province in the south, and Zanjan, Kordestan, Kermanshah, Hamedan, Markazi, Esfahan, and Lorestan provinces throughout the country due to irregular distribution of rainfall, including a strong dry spell during April across all regions and during May in the west as well as high temperatures since early April. The country-wide heatwave accelerated the senescence of winter cereals in most regions, shortening grain filling, and increased water evaporation in dams, aggravating water shortages for irrigation.
Winter wheat crops are in vegetative to reproductive stage in Lesotho, South Africa, Zimbabwe, and Zambia for harvest from September, and conditions are generally favourable. In the Western Cape of South Africa, which produces the majority of the country’s rainfed wheat crop, rainfall is near-average, and yields are likely to be above-average. Conversely, crops in the minor producing Eastern Cape are unlikely to recover as dry conditions over large parts of the region will negatively impact dry-land and irrigated cultivation. Additionally, there is concern in the Free State region as additional rains will be needed in spring for dry-land production. Elsewhere in the country, earlier summer rains are likely to support irrigation water availability for mostly irrigated crops. Overall, planted area is slightly higher than the previous year, and yields are expected to remain near to above-average; however, yields are also expected to decrease from last year’s record high.

In Southern Africa, land preparation and planting of 2021/2022 main season cereals will begin in September. In the Democratic Republic of Congo, planting and development of main season cereals is underway while harvesting of second season maize crops is nearing completion, and overall conditions are favourable. While agro-climatic conditions have been conducive for crop growth, conflict continues to disrupt agricultural activities.
Central & South Asia

In Central and South Asia, harvesting of winter wheat crops continued in Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan to be finalized in August. Overall conditions are mixed as crops in parts of west and southern Afghanistan have failed, and crops in central Afghanistan, southern Kazakhstan, Turkmenistan, and south, southeast, and central east Uzbekistan are unlikely to recover from persistent dryness throughout the season. There is also concern in northern Kyrgyzstan due to dry conditions. In many areas from central Turkmenistan to eastern Kazakhstan, seasonal precipitation since April has ranked as the driest or second driest in 40 years. Seasonal precipitation totals were less than 75 percent of average in many areas and around 50 percent of average in worst affected areas. Additionally, seasonal temperatures were above-average across the region. Areas in southern and western Kazakhstan recorded record high temperatures during a July heatwave. Conversely, conditions remain favourable in east and northeastern Afghanistan, central and southern Kyrgyzstan, Tajikistan, west and northern Turkmenistan, and parts of Uzbekistan, and yields are likely to be near-average. In Uzbekistan, crops in parts of the south, southeast, and central east are unlikely to recover from irregular temperatures and dry conditions from December 2020 through May 2021, excluding March. However, vegetation conditions in the far eastern Namangan, Fergana, and Andijan regions remain average. Additionally, in Navoiy region of the central north, crop growth appears to be delayed, and biomass is below-average. In Kyrgyzstan, below-average precipitation since late-May decreased soil moisture levels, and below-average temperatures in key wheat producing regions in the north and northwest may impact winter wheat yields. In Turkmenistan, prospects for winter crops are below-average in the eastern Mary, Lebap, and Ahal regions as low rainfall since January, with the exception of March, as well as erratic temperatures throughout most of the season and possibly reduced irrigation have likely impacted crop development. In Tajikistan, weather conditions have been generally favourable throughout the season, resulting in near-average vegetation conditions. In Afghanistan, winter wheat yield is expected to be below-average across the country with significant yield declines across most of the north, south, and west, though yields in the

Crop condition map synthesizing Winter Wheat information as of July 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.

Crop condition map synthesizing Spring Wheat conditions as of July 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.
northeast will be near-average. Significant reductions are expected for rainfed wheat production, which is concentrated in the northern rainfed belt and accounts for the majority of wheat grown in the country. Irrigated wheat production is also likely to be impacted, particularly in the west and south, though not as significantly as rainfed wheat. In **Pakistan**, planting of *Kharif* (summer) rice crops is underway under favourable conditions supported by adequate irrigation water supplies due to rainfall and melting of snow in the northern areas, and harvest will begin in October. Planted area is forecast to be close to the previous year’s high level.

Harvesting of spring wheat crops is underway in **Afghanistan** while crops continue to develop in **Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan,** and **Turkmenistan**. There is concern in parts of central and northeastern **Afghanistan, Kazakhstan, northern Kyrgyzstan,** and eastern **Turkmenistan** where dry conditions are impacting crop development, and below-average production is likely in north, south, and western **Afghanistan**. Conversely, conditions are favourable in central and southern **Kyrgyzstan, Mongolia, Tajikistan,** and central **Turkmenistan**. In **Kazakhstan**, there is concern across much of the country as below-average rainfall and warmer than average temperatures since May negatively affected soil moisture levels and resulted in below-average vegetation conditions, including parts of the main producing Kostanay and Akmola provinces in the north. As such, additional precipitation is needed to sustain yields. In **Kyrgyzstan**, low precipitation and soil moisture levels from late-May in the north could reduce spring wheat output. In **Mongolia**, growing conditions are favourable and have benefitted from average to above-average precipitation since the start of the season in April. Irrigated supplies are reported to be adequate, and 2021 planted area is estimated to be close to 430,000 hectares.

### Southeast Asia

**Southeast Asia: Rice Map**

Conditions:
- Exceptional
- Favourable
- Watch
- Poor
- Failure
- Out-of-Season
- No Data

Drivers:
- Wet
- Dry
- Hot
- Cold
- Extreme Event
- Delayed Onset
- Socio-economic
- Pests & Disease
- Conflict

Countries:
- Early Warning Southeast Asia Countries
- Non-Early Warning Southeast Asia Countries

*Crop condition map synthesizing rice conditions as of July 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, wet-season rice crops are mostly in tillering to grain filling stage, and overall conditions are favourable due to sufficient rainfall, though there is some concern in localized areas impacted by droughts and floods. Total planted area is expected to slightly increase from the previous year due to stable weather conditions, and harvesting of early-planted crops is underway. In **Indonesia**, conditions for dry-season rice crops have improved from the previous month due to sufficient rainfall received in late June. While planting progress remains delayed due to the protracted wet-season, rainfall in late June benefitted early
crop growth, and harvesting of early-planted crops is underway. In the Philippines, wet-season rice crops planted in April and May are now in the maturing stage, and growing conditions have improved from the previous month due to good weather and sufficient rainfall from the second half of June through the first half of July. While some northern provinces experienced a tropical depression in the first week of July, no crop damage has been reported. However, from July 22nd, Typhoon Fabian brought heavy rainfall and flooding to some regions, and further monsoon rains are expected to persist in southern regions through August (See Regional Outlook Pg. 15). In Thailand, wet-season rice crops are in the tillering stage under favourable conditions due to sufficient rainfall received from April to July. Planted area is expected to expand due to favourable weather conditions and high paddy prices, and the Government is expected to implement an income insurance program for wet-season rice production. Growing conditions have improved from the previous year, and production is expected to increase. In northern Viet Nam, summer-autumn (wet-season) rice is in seedling to tillering stage, and growing conditions are favourable due to better irrigation preparation compared to the previous year. In the south, summer-autumn (wet-season) rice is in young panicle forming to grain filling stage under favourable conditions, and harvesting of early-planted crops has begun in the Mekong River Delta. In lowland areas of Laos, wet-season rice is in tillering to young panicle forming stage under favourable conditions due to good weather conditions and sufficient irrigation water supply for paddy growth. Planted area has progressed to 780,000 hectares accounting for 101 percent of the national production plan. While some northern provinces experienced flooding from heavy rainfall in early June, no damage has been reported. In upland areas, wet-season rice crops are in young panicle forming stage under favourable conditions. In Myanmar, wet-season rice crops are in tillering stage under favourable conditions as monsoon weather benefitted planting activities. Planted area has reached 1.6 million hectares, accounting for 26 percent of the national plan, and planting progress is slightly faster compared to the previous year. In Cambodia, wet-season rice is in flowering to grain filling stage under favourable conditions, and some areas have begun harvesting activities. Planted area has reached 2.26 million hectares, accounting for 87 percent of the national plan. Planting progress is slightly faster than the previous year due to good precipitation received at the beginning of the rainy season. However, drought conditions occurred in localized areas of the northwest, accounting for 1.4 percent of planted area. In Sri Lanka, Yala season maize and rice crops continue to develop under generally favourable conditions for harvest from August, and planted area is expected to be above the five-year average. Some small localized damage occurred to paddy crops due to flooding in June and July, but the impact was minimal. In Bangladesh, planting of Aman season rice crops continued in July under favourable conditions for harvest from mid-November. In Nepal, main season maize crops continue to develop under favourable conditions for harvest from August. Planting of main season rice crops continued in July for harvest from November, and overall conditions are favourable. In the Democratic People’s Republic of Korea, main season cereals, which account for 90 percent of annual output, are developing under favourable conditions for harvest from August. Favourable weather conditions since April benefitted planting activities and have led to above-average vegetation conditions. A heatwave in July across the country recorded temperatures at above the 10-year maximum; however, no crop damage has been reported.
Regional Outlook: Above-average rainfall forecast to continue across the south in August while below-average rainfall is forecast in parts of Myanmar, Laos, Vietnam, and the Philippines

Wetter-than-average conditions affected southern areas of the region as well as in northwestern Thailand and central Myanmar in recent weeks, while drier-than-average conditions affected northern Myanmar, eastern Thailand, Cambodia, Vietnam, and the North Kalimantan region of Indonesia. Preliminary estimates for June 26th to July 25th (Figure 1-left) show substantial rainfall deficits in central Vietnam where drier-than-average conditions have prevailed since May. Portions of the Sulawesi region of central Indonesia received 150 to over 200 percent of average rainfall over the past month.

Forecasts indicate that a similar regional pattern can be anticipated for the next month. The SubX forecast from July 29th (Figure 1-middle) indicates above-average rainfall across most of Indonesia as well as in central Malaysia and southern Thailand. Below-average rainfall is forecast in western and central-southern Myanmar, southeastern Laos, central Vietnam, and in the central Philippines.

Forecasts for September-to-November rainfall indicate increased chances of wetter-than-normal conditions in most southern and eastern areas, from Thailand to the Philippines, and into Indonesia. Particularly for southeastern areas of the region, WMO (Figure 1-right) and NMME multimodel ensemble forecasts suggest relatively high confidence in this long-lead outlook.

Figure 1. Recent rainfall anomaly, a 30-day rainfall forecast anomaly, and a 3-month rainfall forecast probability. The left panel is a CHC Early Estimate, which compares June 26th to July 25th, 2021, rainfall amounts to the 1981-2020 CHIRPS average. The middle panel is a 30-day forecast rainfall anomaly from July 29th. The image shows the average of five Subseasonal Experiment (SubX) model forecasts from that day. The anomaly is based on the 1999 to 2016 model average. Skill assessments of SubX can be accessed here. The right panel is a probabilistic forecast for most-likely September-October-November 2021 rainfall tercile from the WMO Lead Centre for Long-Range Forecast Multi-Model Ensemble, based on July conditions. White color indicates that there is no dominant category across the model forecasts.

Source: UCSB Climate Hazards Center
In Central America, harvesting of Primera season maize and bean crops commenced in Guatemala while crops continue to develop in El Salvador, Honduras, and Nicaragua for harvest from October. Overall, conditions are favourable as recent rainfall has reduced previous deficits, and forecast average to above-average rainfall is likely to be sufficient for normal crop development through the remainder of the season (See Regional Outlook Pg. 17). In Nicaragua, recent rainfall has resulted in favourable conditions despite reduced accumulation in some areas earlier in July. In Guatemala, crop development is normal despite previous rainfall deficits in the southeast. In Honduras, crops are developing under favourable conditions despite previous rainfall deficits, and land preparation is underway for Segunda season maize and bean crops for the start of planting in August.

In the Caribbean, harvesting of main season cereals continued in Haiti and Cuba while planting and development of second season cereals is underway. In Haiti, erratic and below-average rainfall in combination with high temperatures are impacting crop development despite the passage of Hurricane Elsa in early July which brought heavy rains. Land preparation of second season maize and bean crops is underway, and planting will begin in August. In Cuba, harvesting of main season maize crops continued in July and will finalize in November, and conditions are favourable. However, production is expected to be below-average due to a decrease in planted area as well as dry conditions from April to May that affected late-planted crops. Second season rice crops are in vegetative to reproductive stage for harvest from October, and conditions are favourable. From July 4th to 6th, Tropical Storm Elsa brought torrential rains to the country, resulting in localized crop losses. However, agricultural production was not severely
affected, and increased water levels in reservoirs are expected to provide sufficient irrigation water supply for irrigated paddy crops. Forecast average July to September precipitation amounts are likely to benefit yields throughout the country; however, an expected above-average Atlantic hurricane season from June to November could result in flooding and crop damage (See Regional Outlook Pg. 17).

**Regional Outlook: Average rainfall is forecast for the region in August with the possibility of some areas of above-average rainfall in southern Guatemala**

Drier-than-average conditions affected Belize, western and central El Salvador, eastern Honduras, northeastern Nicaragua, and portions of Guatemala and Haiti in recent weeks, while wetter-than-average conditions affected southwestern Honduras and western Nicaragua. Figure 1-left shows preliminary estimates for June 26th to July 25th (Figure 1-left) percent of average rainfall. The GEFS probabilistic forecast from July 29th (Figure 1-right) indicates mixed conditions across the region during July 30th to August 5th. Above-average rainfall is forecast for central Guatemala, eastern Belize, and portions of western and eastern Honduras. The SubX 30-day forecast from July 29th (See Climate Influences Pg. 3) indicates mainly average rainfall in the region and the possibility of above-average rainfall in southern Guatemala. Some models indicate above-average rainfall in Nicaragua, Honduras, and El Salvador, but there is a low level of agreement.

For September-to-November rainfall, long-range forecasts from the NMME (Figure 1-bottom) and the WMO (not shown) indicate that normal or above-normal rainfall is likely for most areas of the region.

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**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.

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**Information on crop conditions in the main production and export countries can be found in the Crop Monitor for AMIS, published August 5th, 2021.**
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

<table>
<thead>
<tr>
<th>Country</th>
<th>Crop</th>
<th>Season 1 Name</th>
<th>Season 2 Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>Rice</td>
<td>Summer-planted</td>
<td>Nili season (Nile Flood)</td>
</tr>
</tbody>
</table>

### East Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>Crop</th>
<th>Season 1 Name</th>
<th>Season 2 Name</th>
<th>Season 3 Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>Maize</td>
<td>Season B</td>
<td>Season A</td>
<td></td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Maize</td>
<td>Meher Season (long rains)</td>
<td>Belg Season (short rains)</td>
<td></td>
</tr>
<tr>
<td>Kenya</td>
<td>Maize</td>
<td>Long Rains</td>
<td>Short Rains</td>
<td></td>
</tr>
<tr>
<td>Somalia</td>
<td>Maize</td>
<td>Gu Season</td>
<td>Deyr Season</td>
<td></td>
</tr>
<tr>
<td>Somalia</td>
<td>Sorghum</td>
<td>Gu Season</td>
<td>Deyr Season</td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>Maize</td>
<td>First Season</td>
<td>Second Season</td>
<td></td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td>Maize</td>
<td>Long Rains</td>
<td>Short Rains</td>
<td></td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td>Sorghum</td>
<td>Long Rains</td>
<td>Short Rains</td>
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</tr>
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### West Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>Crop</th>
<th>Season 1 Name</th>
<th>Season 2 Name</th>
<th>Season 3 Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>Maize</td>
<td>Main season</td>
<td>Second season</td>
<td></td>
</tr>
<tr>
<td>Cameroon</td>
<td>Maize</td>
<td>Main season</td>
<td>Second season</td>
<td></td>
</tr>
<tr>
<td>Cote d’Ivoire</td>
<td>Maize</td>
<td>Main season</td>
<td>Second season</td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>Maize</td>
<td>Main season</td>
<td>Second season</td>
<td></td>
</tr>
<tr>
<td>Mauritania</td>
<td>Rice</td>
<td>Main season</td>
<td>Off-season</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>Maize</td>
<td>Main season</td>
<td>Short-season</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>Rice</td>
<td>Main season</td>
<td>Off-season</td>
<td></td>
</tr>
<tr>
<td>Togo</td>
<td>Maize</td>
<td>Main season</td>
<td>Second season</td>
<td></td>
</tr>
</tbody>
</table>

### Southern Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>Crop</th>
<th>Season 1 Name</th>
<th>Season 2 Name</th>
<th>Season 3 Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Democratic Republic of the Congo</td>
<td>Maize</td>
<td>Main season</td>
<td>Second season</td>
<td></td>
</tr>
<tr>
<td>Mozambique</td>
<td>Maize</td>
<td>Main season</td>
<td>Second season</td>
<td></td>
</tr>
</tbody>
</table>

### Southeast Asia

<table>
<thead>
<tr>
<th>Country</th>
<th>Crop</th>
<th>Season 1 Name</th>
<th>Season 2 Name</th>
<th>Season 3 Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>Rice</td>
<td>Boro</td>
<td>Aman</td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>Rice</td>
<td>Wet season</td>
<td>Dry season</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>Rice</td>
<td>Main season</td>
<td>Second season</td>
<td></td>
</tr>
<tr>
<td>Lao People’s Democratic Republic</td>
<td>Rice</td>
<td>Wet season</td>
<td>Dry season</td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td>Rice</td>
<td>Wet season</td>
<td>Dry season</td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>Rice</td>
<td>Wet season</td>
<td>Dry season</td>
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</tr>
<tr>
<td>Sri Lanka</td>
<td>Rice</td>
<td>Maha</td>
<td>Yala</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>Rice</td>
<td>Wet season</td>
<td>Dry season</td>
<td></td>
</tr>
<tr>
<td>Viet Nam</td>
<td>Rice</td>
<td>Wet season (Autumn)</td>
<td>Dry season (Winter/Spring)</td>
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</tr>
</tbody>
</table>

### Central & South Asia

<table>
<thead>
<tr>
<th>Country</th>
<th>Crop</th>
<th>Season 1 Name</th>
<th>Season 2 Name</th>
<th>Season 3 Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>Wheat</td>
<td>Winter-planted</td>
<td>Spring-planted</td>
<td></td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>Wheat</td>
<td>Winter-planted</td>
<td>Spring-planted</td>
<td></td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>Wheat</td>
<td>Winter-planted</td>
<td>Spring-planted</td>
<td></td>
</tr>
<tr>
<td>Tajikistan</td>
<td>Wheat</td>
<td>Winter-planted</td>
<td>Spring-planted</td>
<td></td>
</tr>
</tbody>
</table>

*The Crop Monitor for Early Warning is a part of GEOGLAM, a GEO global initiative. [www.cropmonitor.org](http://www.cropmonitor.org)*
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<th>Season 2 Name</th>
<th>Season 3 Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cuba</td>
<td>Rice</td>
<td>Main season</td>
<td>Second season</td>
<td></td>
</tr>
<tr>
<td>El Salvador</td>
<td>Beans</td>
<td>Primera</td>
<td>Postrera</td>
<td></td>
</tr>
<tr>
<td>El Salvador</td>
<td>Maize</td>
<td>Primera</td>
<td>Segunda</td>
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<tr>
<td>Guatemala</td>
<td>Beans</td>
<td>Primera</td>
<td>Postrera</td>
<td>Apante</td>
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<tr>
<td>Guatemala</td>
<td>Maize</td>
<td>Primera</td>
<td>Segunda</td>
<td></td>
</tr>
<tr>
<td>Haiti</td>
<td>Maize</td>
<td>Main season</td>
<td>Second season</td>
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<tr>
<td>Honduras</td>
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<td>Primera</td>
<td>Postrera</td>
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<tr>
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<td>Primera</td>
<td>Segunda</td>
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<tr>
<td>Nicaragua</td>
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<td>Postrera</td>
<td>Apante</td>
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The Crop Monitor is a part of GEOGLAM, a GEO global initiative.

Cover Photo by Christina Justice

Contributing partners

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