

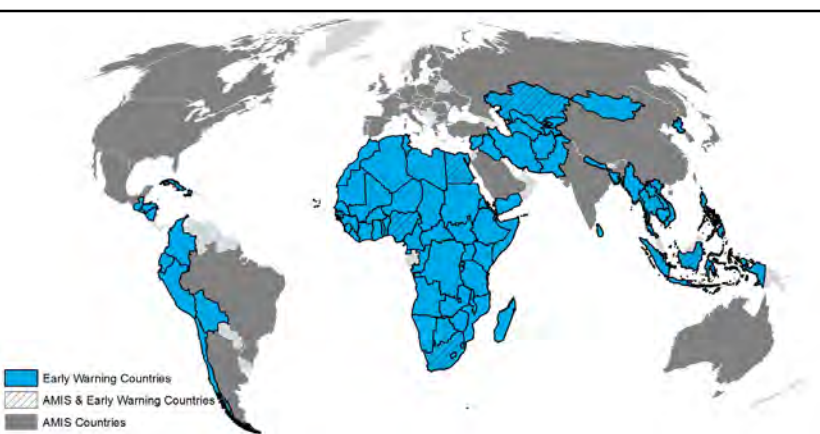


# Crop Monitor

## EARLY WARNING

### Overview:

In **East Africa**, early onset and above-average seasonal rains have been beneficial to planting activities for main season cereals across the south of the region but has further protracted the desert locust outbreak as well as caused widespread flooding across the region. In **West Africa**, planting of main season maize continued across the south of the region and conditions are favourable. In **North Africa**, harvesting of winter wheat crops is underway and below-average production is expected in Morocco as well as parts of Algeria and Tunisia due to early season dryness. In the **Middle East**, harvest has started for winter crops and conditions are generally favourable due to good rainfall throughout the season. In **Southern Africa**, harvesting of main season crops is ongoing and production prospects are generally favourable except for central and eastern areas of the region where below-average production resulted due to a delayed onset of the rains and dry conditions. In **Central and South Asia**, planting of spring wheat began in April under favorable conditions. Winter wheat, to be harvested between June and August, is currently in vegetative to reproductive stages across the region and under favourable conditions. In northern **Southeast Asia**, harvest is underway for dry-season rice and yields are estimated to be below-average in Thailand, Myanmar, and the Philippines due to poor precipitation throughout the growing season and shortage of irrigation water. In **Central America** and **the Caribbean**, land preparation and early planting is underway for the *Primera* season cereals and some dry conditions are present on the Caribbean coast.



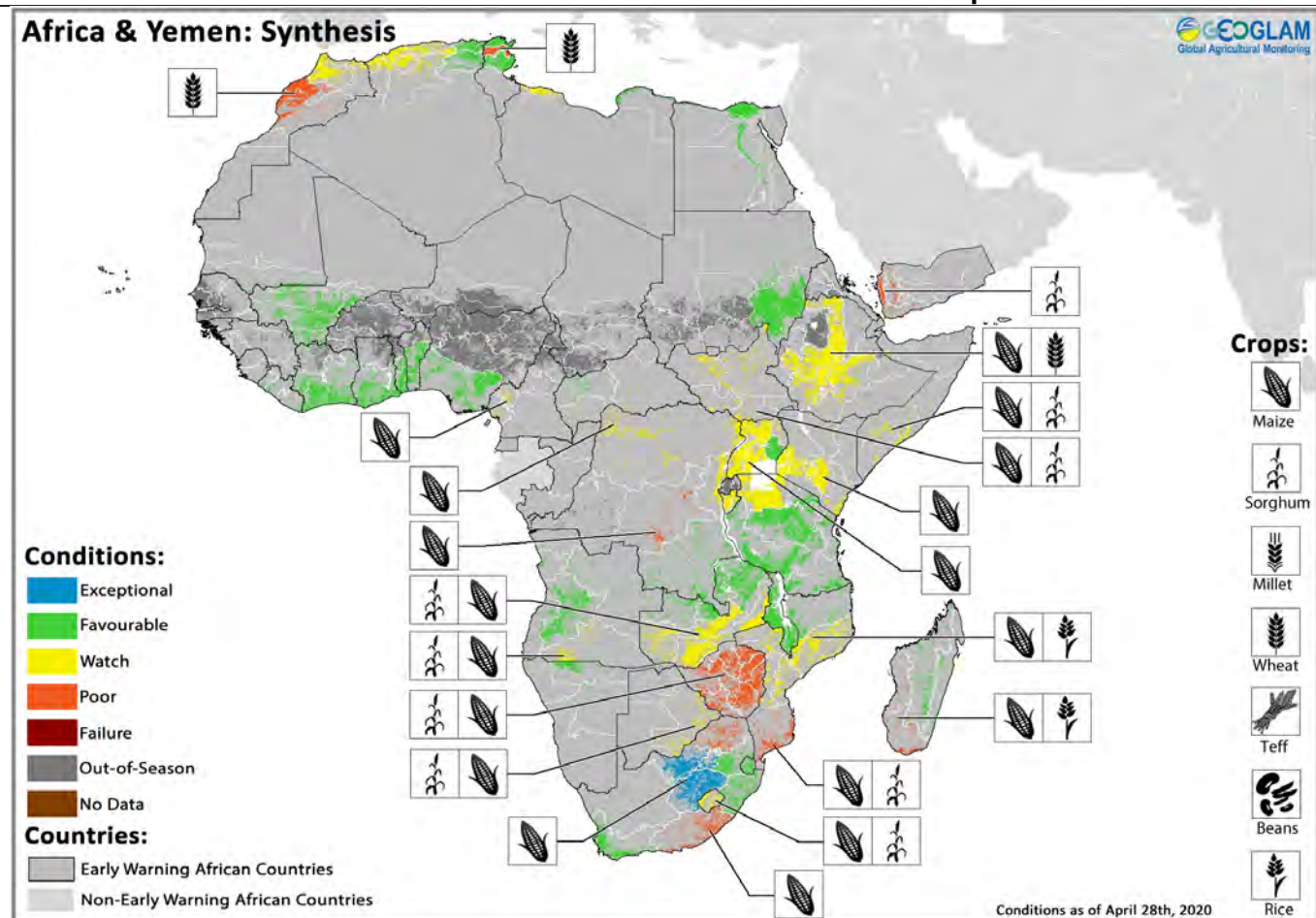
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# GEOGLAM Crop Monitor for Early Warning

## Crop Conditions at a Glance

based on best available information as of April 28<sup>th</sup>



Crop condition map synthesizing information for all Crop Monitor for Early Warning crops as of April 28<sup>th</sup>. 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 of the region, prospects are uncertain for *Belg* crops in Ethiopia, to be harvested from June in central and eastern areas, due to desert locusts. In central and southern areas of the region, well above-average rains since February have benefited planting and early development of main season crops. The abundant rains, which are expected to continue through May (See Regional Outlook Pg. 7) boosting cereal yields, have also resulted in widespread flooding, are likely to result in localized crop losses, and have created a conducive environment for the persistence of the desert locust outbreak, which is posing significant threat to crops.

**WEST AFRICA:** Across the south of the region, planting activities for main season maize are continuing under favourable conditions.

**MIDDLE EAST & NORTH AFRICA:** Harvest has started for wheat crops and below-average production is expected in parts of Morocco, Algeria, and Tunisia due to early season dryness and high temperatures. In the Middle East, while rainfall has been generally favourable, conflict continues to impact agricultural activities in Syria and Iraq.

**SOUTHERN AFRICA:** Harvesting of main season crops is ongoing and production prospects are generally favourable

except for central and eastern areas of the region where below-average yields are expected in Zimbabwe, southern Madagascar, and southern Mozambique.

**CENTRAL & SOUTH ASIA:** Planting of spring wheat began in April and conditions are favourable due to average rainfall since January. Conditions remain favourable for 2019/2020 winter wheat and harvest is expected to start in June.

**SOUTHEAST ASIA:** Harvest is underway for dry-season rice in the north of the region and yields are estimated to be below-average in Thailand, Myanmar, and the Philippines due to poor precipitation throughout the growing season and shortage of irrigation water. In Indonesia, wet-season rice yields are estimated to have reduced from the previous year due to prolonged drought. Below-average rains are expected to continue in May across the north, while the south will benefit from above-average rainfall (See Regional Outlook Pg. 15).

**CENTRAL AMERICA & CARIBBEAN:** Land preparation and early planting is underway for the *Primera* season cereals. On the Caribbean side of Guatemala, Honduras, and northern Nicaragua, rainfall deficits over the last three weeks may delay the start of the season in some areas; however, rainfall improvements are expected in May (See Regional Outlook Pg. 17).

**Alert: COVID-19 poses a significant threat to food security and may disrupt agricultural production in vulnerable countries.**

The COVID-19 pandemic continues to pose a critical threat to food security, with the largest impacts foreseen among already vulnerable populations. Global food insecurity is expected to increase significantly in 2020 due in large part to the measures put in place by governments to stem the spread of the virus through quarantine and movement restrictions which have, in turn, restricted access to income-earning activities, resulting in negative impacts on poor households and their ability to purchase food.

The pandemic is affecting all levels of the food system. While global supply chains are operating at near-normal levels and food markets remain well balanced, localized disruptions and price spikes are adversely impacting food markets in several countries.

For more economically vulnerable countries, movement restrictions and quarantine measures are hindering food logistics, disrupting food transport and processing, and impacting supply chains; thus affecting the availability of food. Additionally, in response to the COVID-19 pandemic, port of entry restrictions could affect humanitarian distribution points, delaying food assistance imports and delivery. COVID-19 restrictions are also likely to disrupt agricultural production in some areas, through labour supply shortages and impeding farmers' access to inputs, which could result in declines in yields and production.

The GEOGLAM Crop Monitor community will be monitoring crop conditions with a view to providing sufficient early warning to allow for appropriate actions in case of any production shortfalls that could further aggravate the prevailing difficult situations in many countries.

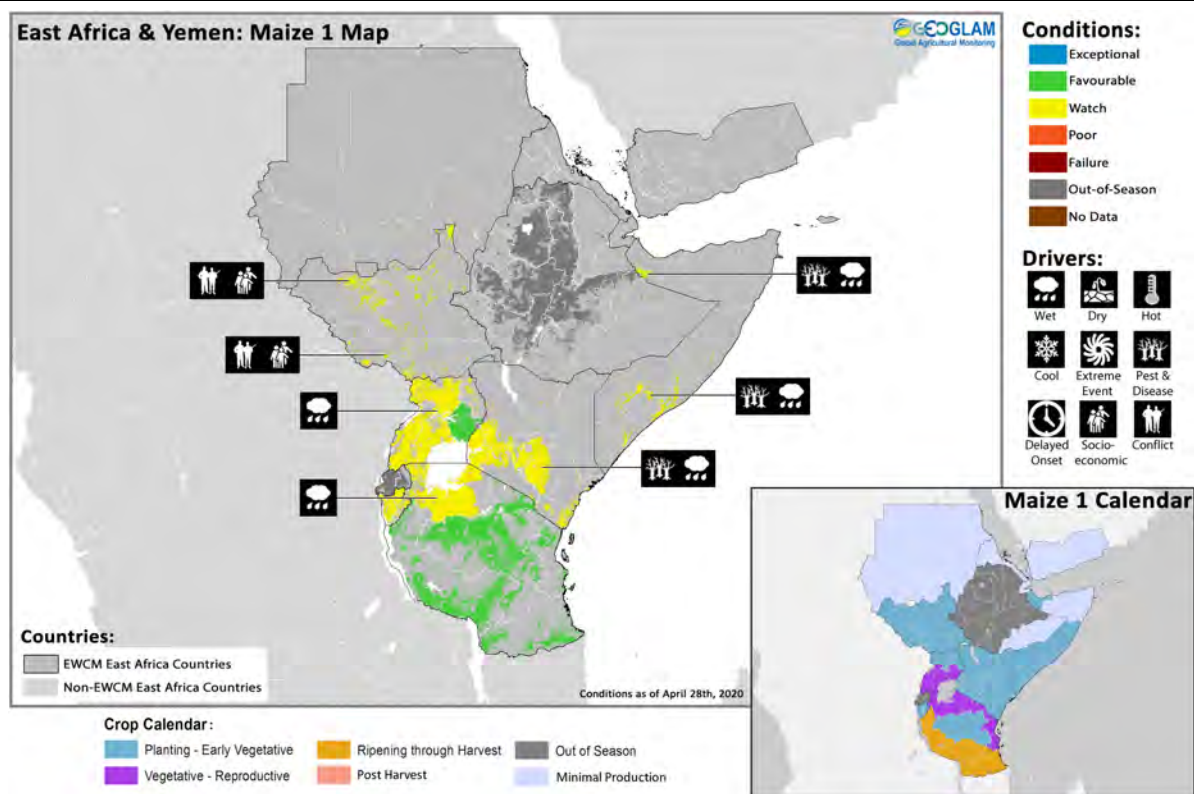
Resources: <https://fscluster.org/coronavirus>; <http://www.fao.org/2019-ncov/en/>; <https://fews.net/global/alert/april-27-2020>; <https://www.ifpri.org/covid-19>; <https://insight.wfp.org/covid-19/home>

**Global Climate Outlook: ENSO neutral conditions likely to continue through Summer 2020**

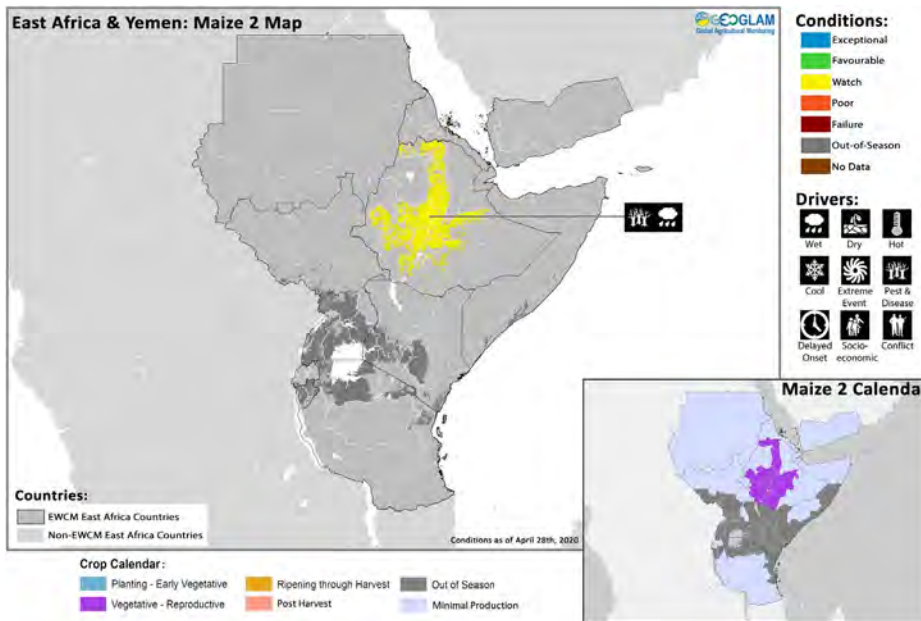
El Niño-Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD) conditions are currently neutral and are expected to remain neutral through the northern hemisphere summer. However, there is an elevated chance of La Niña or La Niña-like climate arising by October. Such conditions are associated with the combined influence of abnormally cool equatorial East Pacific sea surface waters and abnormally warm sea surface waters in the western Pacific. La Niña or La Niña-like conditions during October-December typically reduce rainfall in East Africa, Central Southwest Asia, southern Brazil and central Argentina, and increase rainfall in Southern Africa, Australia, and eastern Brazil.

Source: UCSB Climate Hazards Center

**East Africa & Yemen**



Crop condition map synthesizing Maize 1 conditions for the current March-April-May (MAM) rainy season, as of April 28<sup>th</sup>. 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.**

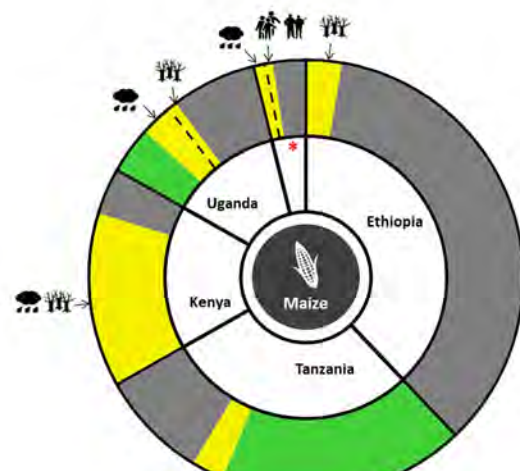


Crop condition map synthesizing Maize 2 information as of April 28<sup>th</sup>. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Crops that are in other than favourable conditions are labeled on the map with their driver.**

over some affected areas. In addition, the above-average rains have also protracted the desert locust outbreak, which remains a significant concern in **Somalia**, central and northern **Kenya**, southern **Ethiopia**, eastern **Uganda**, southern **South Sudan**, and **Yemen**. There is significant risk for main season crops as locust swarms are present close to main producing areas of West and Rift Valley **Kenya** and *Belg* producing areas in **Ethiopia**, and crop damage could lead to worsening food insecurity. Compounding these concerns, the COVID-19 outbreak could also affect food access as border closures and restrictions have created barriers to trade, particularly in countries that depend on staple food imports and may result in price spikes.

In **Ethiopia**, prospects are uncertain for second season *Belg* crops to be harvested in June due to desert locust presence over the *Belg* cropping areas. Yield reductions are expected in some areas due to pest damage. In April, desert locust hopper bands continued to form in the southern parts of SNNPR and Oromia regions. Immature and mature swarms from southern Somalia were present in the south, and some swarms were also seen in the northern areas. Forecasts indicate that hopper bands and swarms will continue to form in the southern regions coupled with cross-border movement from Somalia and Kenya. Recent rains in the Ogaden and eastern areas are likely to increase breeding, and winds from the south could carry swarms into central and northern areas. Furthermore, unusually wet conditions are expected to increase swarms in June and July, coinciding with the *Belg* season harvest. Above-average rains have also resulted in floods across parts of the country; however, damage has mainly been focused on livestock and infrastructure with no damage to main season crops reported. In **Sudan**, harvest concluded for winter wheat, and production prospects are favourable. In response to the devaluation of Sudan's currency, fuel shortages, and below-average 2019 cereal production, national prices of staple foods increased significantly in March, limiting the purchasing power of households and decreasing food access. Furthermore, transport restrictions from COVID-19 could also limit farmers' access to agricultural inputs and output markets. In **Kenya**, planting of the main *Long Rains* cereal crops continued in April under generally favourable conditions due to abundant rainfall since March. However, heavy rainfall has also caused flooding and landslides in the western and south eastern counties, and according to the Red Cross, an estimated 30,000 people have been displaced since March. In addition, there is continuing concern for main season crops due to the increasing desert locust outbreak as more swarms mature in central and northern areas, and some egg-laying and hatching began. Currently, locusts are largely outside of the main southwestern producing areas and crop losses from desert locust impacts are mainly expected in south eastern marginal agriculture and agropastoral areas. In **Uganda**, planting continued for main season cereal crops under generally favourable conditions,

Across the north of the region, there is some concern for *Belg* season crops in **Ethiopia**, to be harvested in June due to desert locust presence, while in **Sudan**, harvest has completed for wheat crops and final yields were favourable. In the south of the region, the early onset of rains and above-average rainfall since February promoted land preparation and planting activities for the March to May season across **Somalia, Kenya, Tanzania, South Sudan, Rwanda, and Burundi**. The January to March rainfall period was one of the wettest the region has seen since 1981, and above-average rainfall is expected to continue across much of the region through May (See Regional Outlook Pg. 7). However, abundant rains also resulted in widespread flooding across many areas. Although this may benefit crops in the longer term, it is expected to have resulted in localized crop losses and replanting will be necessary



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



except in the east and Karamoja where there is ongoing concern for desert locusts. In March, mature swarms were seen in northeastern districts and near the South Sudanese border. Additional swarms are likely to arrive from western Kenya, and hopper bands are likely to develop in the northeast where successful egg-laying may have occurred. Heavy rains and severe flooding occurred at the start of May over the western and northern regions causing damage and population displacement. While in Eastern Uganda, due to persistent above-average rainfall, Lake Victoria water levels have increased significantly in recent weeks and have flooded the surrounding areas. In **South Sudan**, planting is underway for main season cereal crops and planted area is expected to be higher than in the previous year; however, poor availability of inputs is likely to impact planting activities. There is also concern due to the desert locust outbreak, which crossed the border from Uganda in March and moved through Jonglei and Western Equatoria. Although the swarms arrived when harvests were complete, potential new swarms in May and June could pose significant risk for main season crops. Damage to crops and pasture-land could further exacerbate food insecurity in the coming months. Additionally, movement restrictions in response to the COVID-19 pandemic have reduced maize imports from Uganda in March, causing significant price hikes for staple food products. Port of entry restrictions could affect humanitarian distribution points, delaying food assistance imports and delivery. Further decline in trade volumes along with a decrease in household purchasing power is likely to put upward pressure on market prices and could affect access to agricultural inputs. The start of the lean season combined with the simultaneous delay in food imports and aid could significantly deteriorate food security outcomes worse than previously anticipated. In **Somalia**, planting began for *Gu* season cereals, and there is continued concern for further desert locust breeding as second-generation adults are laying eggs that will result in several hopper bands throughout the country. Seasonal rains have begun in breeding areas, and above-average rains are expected to facilitate the development of new swarms in June and July. Additional swarms are likely to enter southern and central areas from Kenya; however, crop losses may be limited on a national scale as the main producing areas are not likely to be affected. Heavy rains at the end of April have caused river levels to increase considerably along the Shabelle and Juba resulting in riverine flooding along the Juba river. Heavy rain also caused flash flooding across Bay, Bakool and Puntland causing damage and population displacement. It is expected that while crop losses will be locally significant, flood damage will be limited on the national scale as main production areas of southern Bay, Lower Shabelle, and Middle Shabelle, which account for up to 70 percent of *Gu* cereal production, lie outside of the potential flooded area. However, crop losses from desert locusts combined with localized flood losses may result in overall below average harvests for the 2020 *Gu* season. Above-average rainfall is expected to continue into May, increasing risk of flooding across the country (See Regional Outlook Pg. 7). In the **United Republic of Tanzania**, planting of the main *Masika* crop over bimodal cropping areas commenced in March and overlapped with the extension of *Vuli* cropping season. Heavy rainfall since February has resulted in flooding across many areas, with the most recent flood incidences at the end of April over the north in Arusha and Kilimanjaro. Conditions are generally favourable for the *Masika* cropping season, except in Mara, Mwanza, and Simiyu due to waterlogging from earlier flood incidences. The forecast for continuing above-average rains will likely cause further flood damage and waterlogging, particularly over lowland areas. The risk of desert locust swarms entering from bordering countries is low due to southerly winds. Harvest began in April for *Msimu* season maize crops in the main producing southeast and southwest regions. Production prospects are favourable, except in parts of Morogoro regions due to floods and waterlogging. In **Burundi**, planting activities continued for Season B maize and main season rice under favourable conditions. The overflow of the Ruzizi River continues to flood surrounding areas, and the floods have displaced 34,905 people in Mutimbuzi of Bujumbura Rural province. The combined impact of floods and COVID-19 could lead to an increase in prices for staple foods and further impact livelihoods as 80 percent of the population is reliant on agriculture. In **Rwanda**, Season B crops for harvesting in July are favourable due to above-average rains throughout the season. Heavy rains and storms caused landslides and flash floods in March and April, displacing populations and causing localized damage to cropped areas. In **Yemen**, planting activities continued for main season sorghum with mostly favourable weather conditions; however, torrential rains have caused flooding since late March, particularly in the southern region including Lahj, Aden, Abyan, Taizz, Al Dale'e, Al Mahrah, and Hadramaut governates. The floods have damaged infrastructure and water networks, and in Al Sawm, Hajr, Mayfa, and Brom districts, crops were damaged and livestock was lost. The heavy rains are also expected to protract the desert locust outbreak, causing further breeding and band formation along the southern coast, in the interior near Marib, in Wadi Hadhramaut, and on the eastern plateau. These concerns from floods and desert locust are compounded by the ongoing conflict which continues to debilitate agricultural activities and livelihoods by limiting the availability of inputs and constraining access to fields.

**Alert: Desert locust swarms continue to form across East Africa with significant concern over Kenya, Ethiopia and Somalia.**

Significant concern remains for the ongoing desert locust outbreak and potential impact in the Horn of Africa and Yemen. Despite control operations, climatic conditions continue to promote breeding and development of second-generation hoppers. The highest concern remains for areas with agro-pastoral farming as rangelands are thus far the most impacted. Widespread rainfall for the second consecutive month in April promoted crop growth, and while most crops are still in early vegetative to reproductive growth stages, new swarm formation in June and July will coincide with the beginning of harvests. Ongoing locust development and spread is threatening agricultural production most prominently in **Ethiopia, Kenya, Somalia** and to a lesser extent in **Sudan, Eritrea, Djibouti, Uganda, and South Sudan**. Southerly winds are expected to impact swarm movement away from the main cropping areas in the south of the region and towards areas in the north and northeast, particularly towards northeastern South Sudan, central and eastern Ethiopia, and southern Eritrea. Ground and aerial control operations are underway to mitigate the spread, and there are efforts underway to prevent slowdown in the supply of pesticides and motorized sprayers as a result of COVID-19 restrictions and reductions in air freight operations. In **Kenya**, widespread rains fell during the second dekad of April, and hopper bands formed immature swarms that matured in northern and central countries. Locust are expected to concentrate in the northern and central regions of Turkana, Marsabit, Samburu, Isiolo, and Mandera where hatching and band formation will result in new immature swarms beginning in June. In **Ethiopia**, rainfall occurred in southern and northern areas in April, and immature swarms formed in the southern regions of SNNPR, Teltele, and Oromiya. As these swarms mature, hopper band formation in May will give rise to new swarms starting in mid-June in SNNPR, Oromia, and Ogaden. Swarms are expected to move from south to central and northern to eastern areas. A few swarms may cross into adjacent areas of south and western lowlands of Eritrea. In **Somalia**, widespread rains fell during the second and third dekads in April, and locusts were present on the northwest coast with reports of early hopper groups on the Ethiopian border in the northwest and scattered adults along the central areas. Breeding on the coast and plateau is expected to result in small swarms in June, and further development from recent rains is likely in northeast, centre, and southern areas. Additional swarms may also enter northern areas from Ethiopia. In **Sudan**, mature adults were present along the coast and interior, and swarms may arrive from the Arabian Peninsula and East Africa in mid-June. In **South Sudan**, immature and mature swarms arrived in the southeast from Uganda and continued to Eastern Equatoria. Locusts are projected to move to northeastern areas, and additional swarms from bordering countries could arrive and move northwards. The country's climatic and ecological conditions make it highly suitable for further invasion. In **Uganda**, immature and mature swarms were reported in the northeast where egg-laying may have occurred, which may give rise to hopper bands. Additional swarms are likely to enter in the northeast from Kenya as winds move from south to northeast. In **Yemen**, widespread heavy rainfall promoted breeding on the southern coast and interior. Swarms are likely to form starting in mid-June with continued breeding along the Red Sea coast.

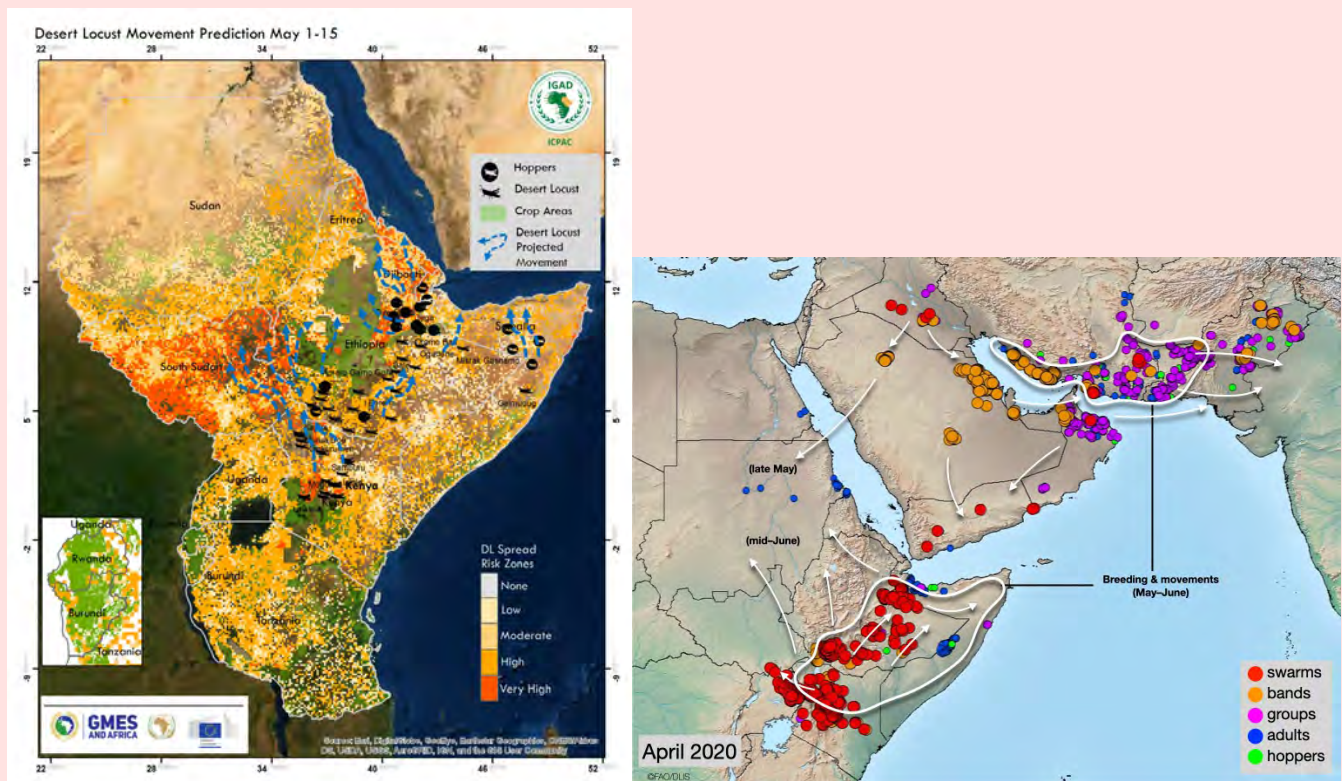


Figure 1. Desert locust risk and movement prediction for May 1-15. Source: IGAD ICPAC (left). Desert locust current presence and threat as of April, 2020. Source: FAO/DLIS (right)

**Regional Outlook: Above-average rainfall expected to continue across much of the region through May.**

After one of the wettest January-March stretches since 1981, rainfall dropped off significantly in April with deficits exceeding 100mm (25-70% of the historical average) in southeastern and northwestern Tanzania, Burundi, Rwanda, the D.R.C., Uganda, South Sudan, western Ethiopia, and parts of Kenya. This dry spell came as southern parts of the region were beginning to plant for the March-to-November long-rains season, and thus there may be planting delays in the aforementioned areas. April rainfall was average to above-average in north central Tanzania, eastern Ethiopia, and northern Somalia.

The 15-day forecast (not shown) indicates a return to above-average rainfall across much of the region, with the exception being South Sudan and western Ethiopia. Figure 1-middle shows how this anticipated rainfall could affect the April anomaly. While rainfall deficits of 50-100mm below-average may be experienced in parts of Tanzania and Uganda, rainfall is expected to be average to above-average in northeastern Tanzania, Kenya, eastern Ethiopia, and Somalia. The 30-day forecast indicates this rainfall pattern is likely to continue through May, with additional precipitation expected across northern Tanzania, Burundi, Rwanda, Uganda, Kenya, southern Ethiopia, and Somalia (Figure 1-right).

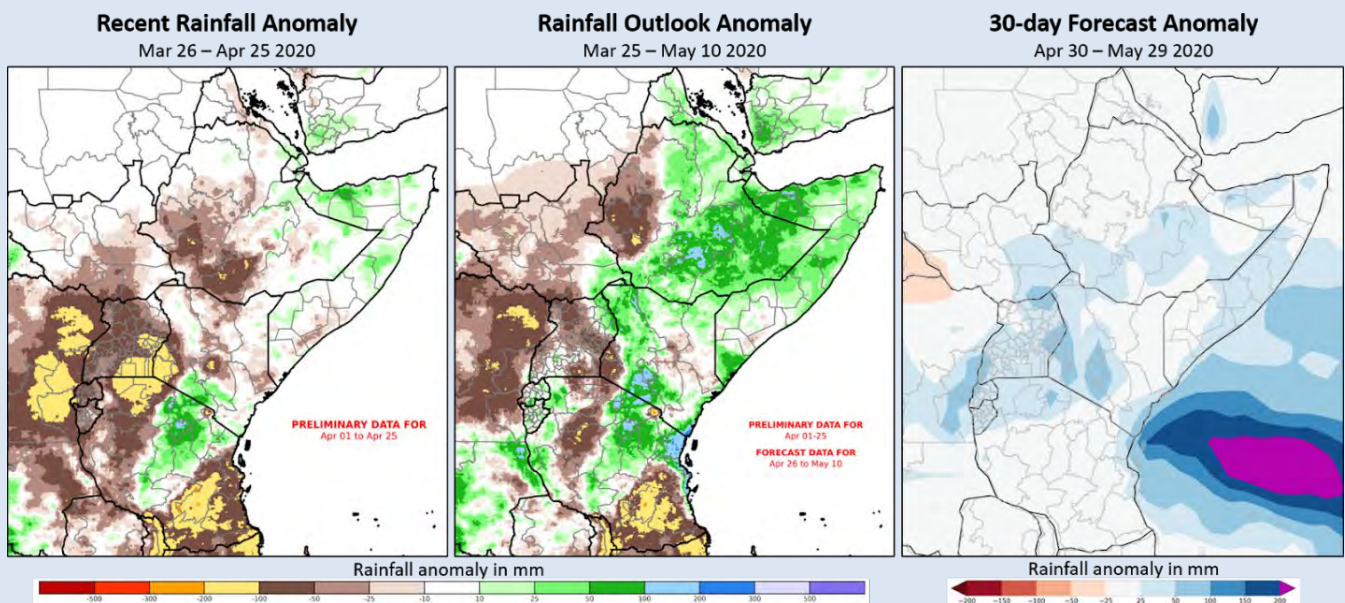
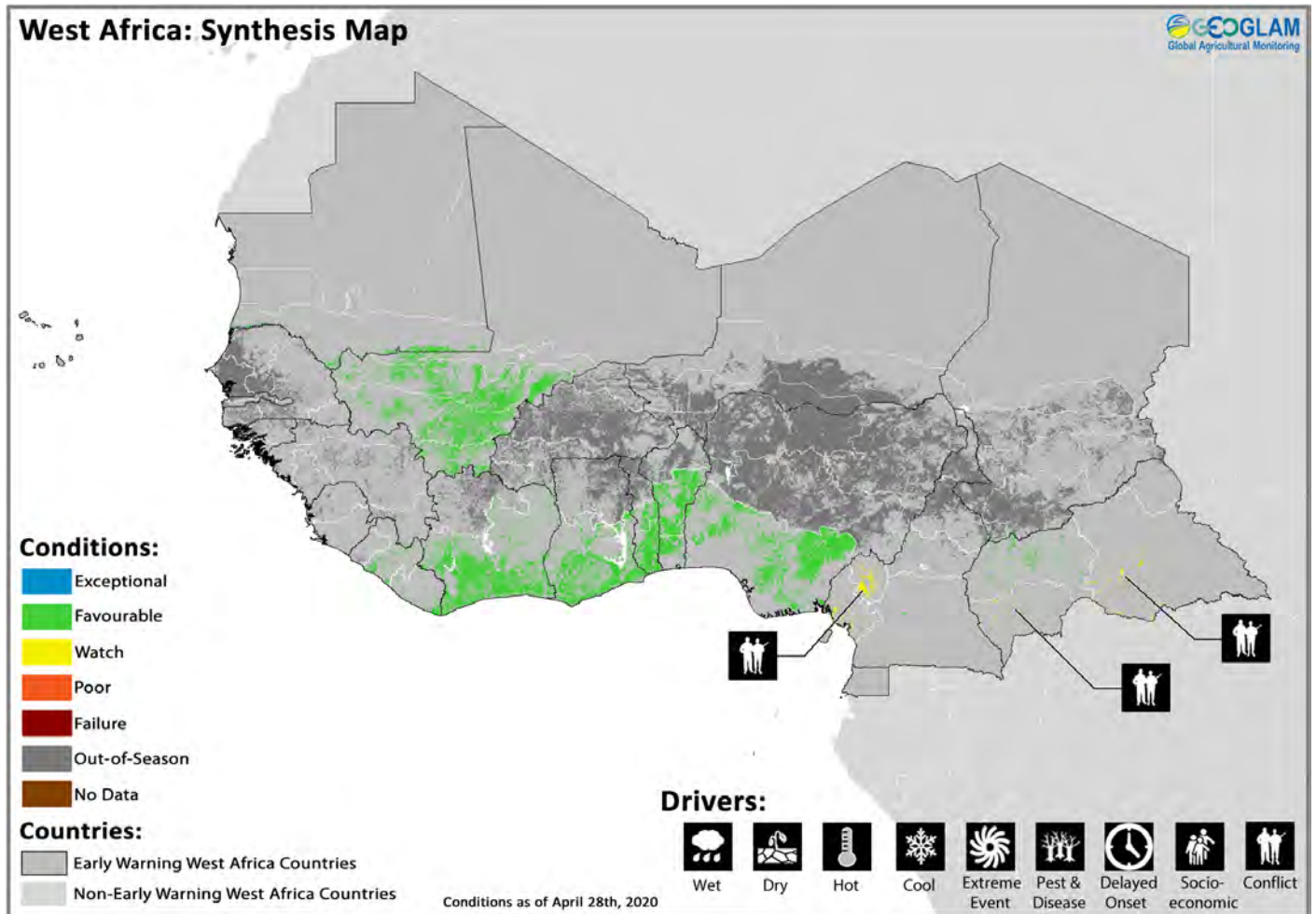


Figure 1. Estimated and forecast rainfall since March 26<sup>th</sup> and a 30-day forecast. All three maps depict rainfall in terms of the difference from average. The left panel is the UCSB Climate Hazards Center Early Estimate for March 26<sup>th</sup> to April 25<sup>th</sup>, based on final CHIRPS for the last pentad of March and preliminary CHIRPS for April 1<sup>st</sup> to 25<sup>th</sup>. The middle panel is an extended outlook. It shows how the post-March 26<sup>th</sup> anomaly will change if the 15-day unbiased GEFS forecast from April 26<sup>th</sup> materializes. These compare 2020 rainfall amounts to the 1981-2019 CHIRPS average. On the right is a 30-day forecast from April 30<sup>th</sup>. The image shows the average of four 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 at <http://cola.gmu.edu/kpegiion/subx/index.html>.

Source: UCSB Climate Hazards Center

## West Africa

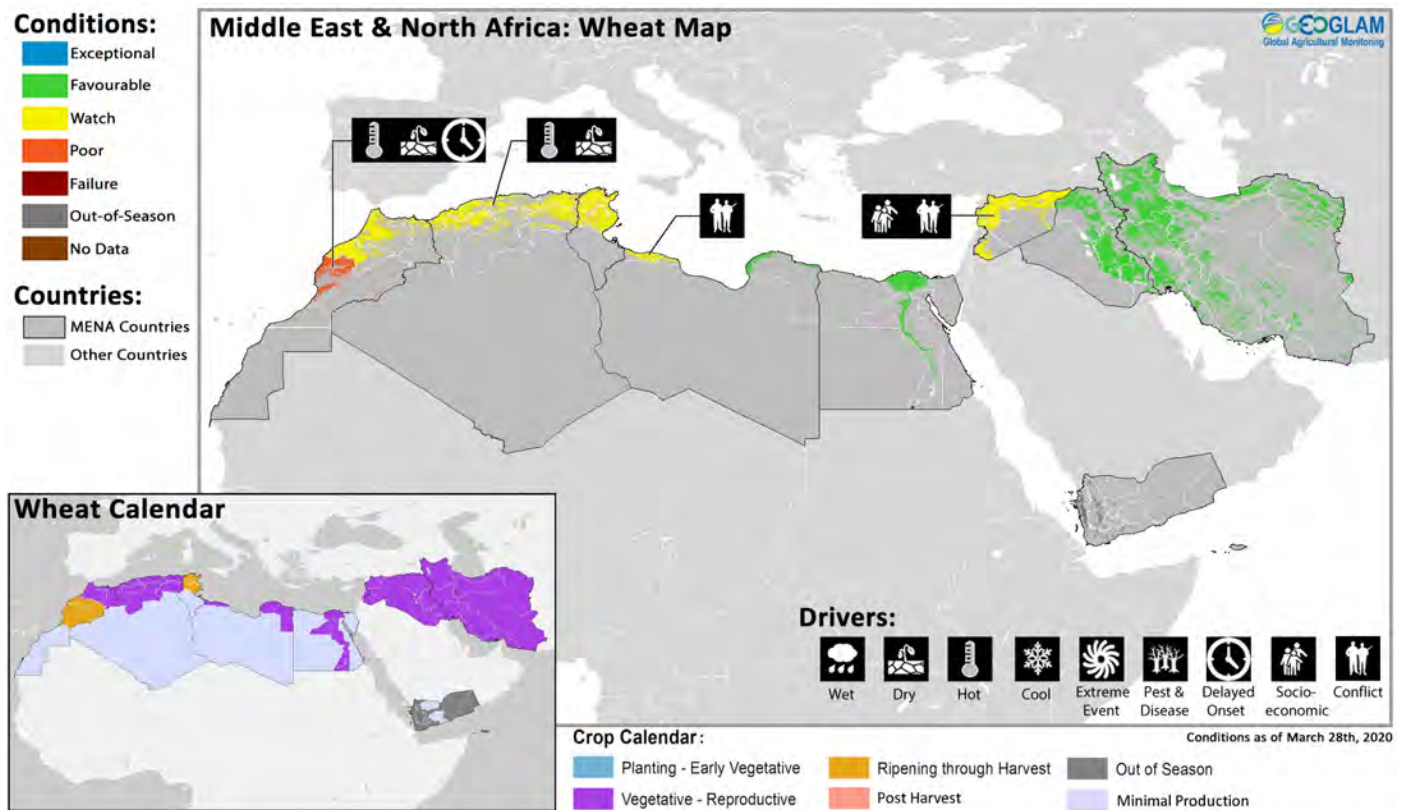


Crop condition map synthesizing information as of April 28<sup>th</sup>. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Crops that are in other than favourable conditions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

Harvesting of irrigated rice crops is complete in **Mali**, and final production was favourable due to sufficient water supply. In southern **Mauritania**, harvest is ongoing for off-season rice under favourable conditions. Across the south of the region in **Benin, Cameroon, the Central African Republic, south Cote d'Ivoire, south Ghana, Liberia, and Togo**, planting activities for main season maize are continuing under favourable conditions, except in southern **Cameroon** and the **Central African Republic** where ongoing conflict continues to impact agricultural activities. Southern areas of **Ghana, Togo, and Benin** experienced some rainfall deficits in April, but it is still early in the season with the full onset of the rains expected in May. The impacts of COVID-19 in combination with the start of the lean season across the region and ongoing conflict in some areas could significantly increase the number of people at risk of food insecurity. In **Nigeria**, COVID-19 movement restrictions and declining oil prices are restricting income and market access.



## Middle East &amp; North Africa



Crop condition map synthesizing information as of April 28<sup>th</sup>. 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, harvest has started for winter wheat crops and conditions are generally favourable due to good rainfall throughout the season which is expected to continue through May (See Regional Outlook Pg. 10). In **Iran**, heavy rainfall in April resulted in flooding in 18 provinces, possibly impacting crops in Sistan and Baluchistan, Hamedan, Kermanshah, and West Azerbaijan provinces; however, the floods are not expected to have a significant impact on final production. There is some concern due to desert locusts which laid eggs in March and April over the southern coast in southern Khuzestan, Bushehr, Fars, and western Hormozgan provinces, and hoppers are now forming in small groups and bands. Swarms were also seen along the southwest coast and hatching and band development is likely along the southwest and southeast coast and subcoastal areas, but control operations are ongoing. In **Iraq**, conditions are favourable for winter wheat due to sufficient precipitation from December. However, desert locust swarms were spotted in Basrah, Al Muthanna, and Thiqr governates, and southerly winds may cause additional swarms to appear in Al Muthanna province. Control operations are ongoing. In **Syria**, from the agrometeorological point of view, production prospects for winter wheat are good, but economic conditions stemming from conflict restrict input availability.

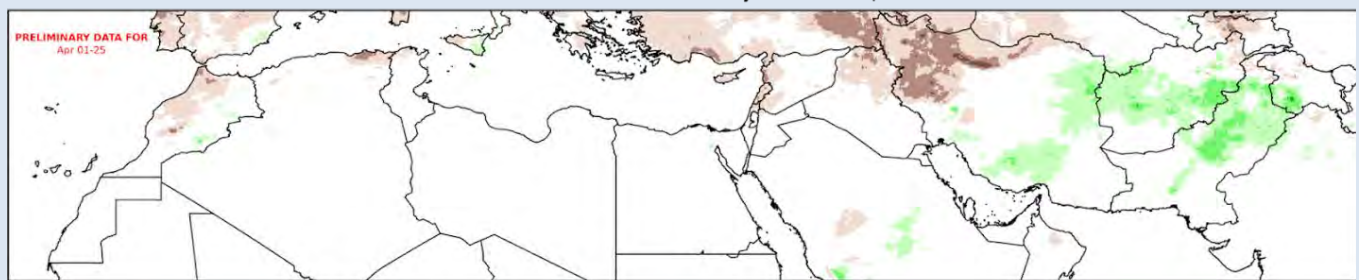
In North Africa, harvesting of winter wheat crops will begin this month and below-average production is expected in Morocco as well as parts of Algeria and Tunisia due to early season dryness. Improved rainfall in March helped reduce rainfall deficits in some parts of Tunisia and Algeria but was insufficient for crop recovery in areas worst affected by early deficits. In **Morocco**, persistent dry conditions since the beginning of December have affected wheat crops, particularly in the main producing Marrakech-Safi and Casablanca-Settat regions. In the southwest, crop conditions appear worse than in the drought affected 2019 season, which does not bode well for upcoming harvest in May. Total cereal production is estimated to have reduced by 50 percent compared with the average, and yields are estimated to be close to 20 percent below-average. In **Algeria**, a dry spell in February was followed by improved rainfall in the second half of March, which was beneficial for cereal crops in the northeast but was insufficient for crop recovery in western and central areas. Concern remains for wheat crops in the western regions of Mascara, Sidi Bel Abbes, and Tiaret where below-average rainfall in autumn and rainfall deficits since February have affected crop development, and yield prospects are below-average. In contrast, the eastern regions of Bouira, Mila, and Guelma received above-average rainfall in autumn and March, which has benefitted crop growth. Overall, national yields are expected to be average to slightly below-average. In **Tunisia**, conditions for wheat crops are near to above-average, except in drought affected areas of Siliana and Le Kef, which account for a combined 20 percent of national cereal production. Northern and central parts of the country are still affected by significant rainfall deficits which may negatively affect national yields. In **Libya**, crop conditions remain favourable with good rains throughout the season. However, ongoing conflict continues to have a negative impact on agricultural activities. In **Egypt**, planting began for summer-planted rice under favourable conditions, and preliminary production forecast is estimated at 9 million tonnes, similar to last year's average level.

***Regional Outlook: Average to below-average rainfall is expected through the start of May in North Africa, while above-average rains are expected in the Middle East.***

April rainfall resembled the same trends seen since late December: below-average precipitation in northwestern Africa (particularly Morocco, northern Algeria, and northern Tunisia), and average to above-average rainfall in northern Libya, northern Egypt, and the Middle East (Figure 1-top). Correspondingly, as winter wheat ripening and harvesting begins, prospects are dismal in the west (particularly in Morocco) and favorable in eastern north Africa and the Middle East.

Short term (15-day) forecasts for the end of April through the first dekad of May indicate a continuance of average to below-average rainfall across northern Africa, potentially resulting in April-to-mid-May deficits exceeding 50mm (< 80 % of the historical mean) in Morocco and northern Algeria (Figure 2-bottom). Above-average rainfall is expected to continue in the Middle East, providing favorable conditions for winter wheat (currently in the ripening stage). Longer-term forecasts for the remainder of May and beyond are inconclusive.

**1-Month Recent Rainfall Anomaly: March 26 – April 25 2020**



**Rainfall Outlook Anomaly: March 26 – May 10 2020**

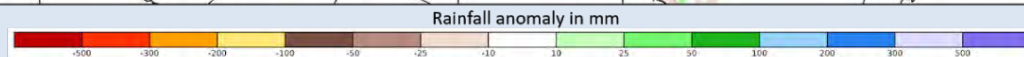
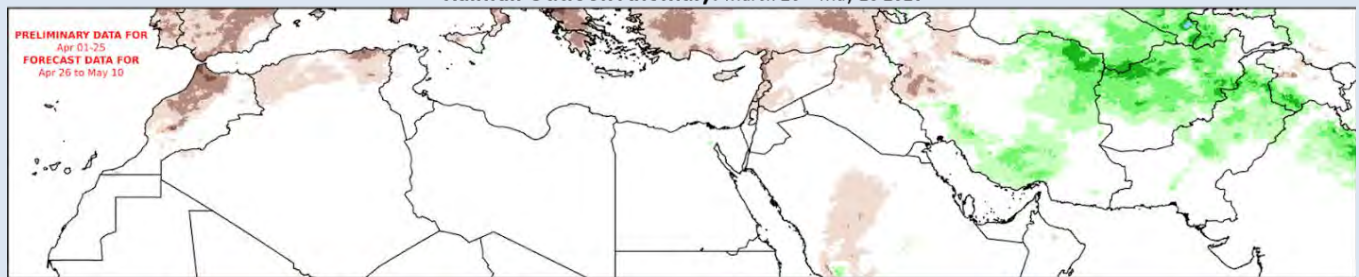
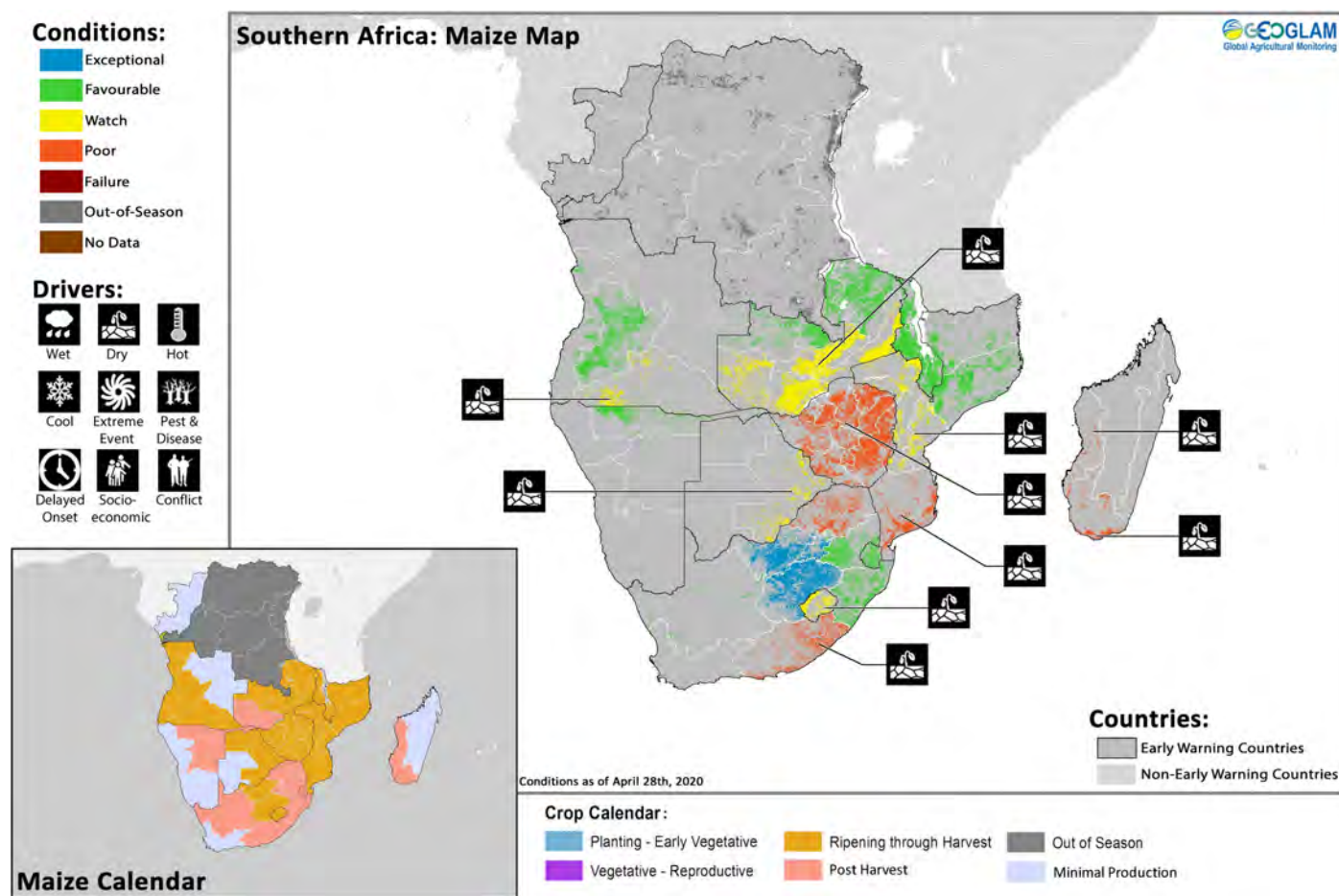


Figure 1. Both maps are Climate Hazards Center Early Estimates depicting recent rainfall as a difference from the 1981-2019 CHIRPS average. The top panel is the estimated rainfall from March 26<sup>th</sup> to April 25<sup>th</sup>, based on final CHIRPS for the last pentad of March, and preliminary CHIRPS for April 1<sup>st</sup> to 25<sup>th</sup>. The bottom panel is an extended outlook. It shows how the post-March 25<sup>th</sup> rainfall anomaly will change if the 15-day GEFS forecast from April 26<sup>th</sup> materializes.

Source: UCSB Climate Hazards Center

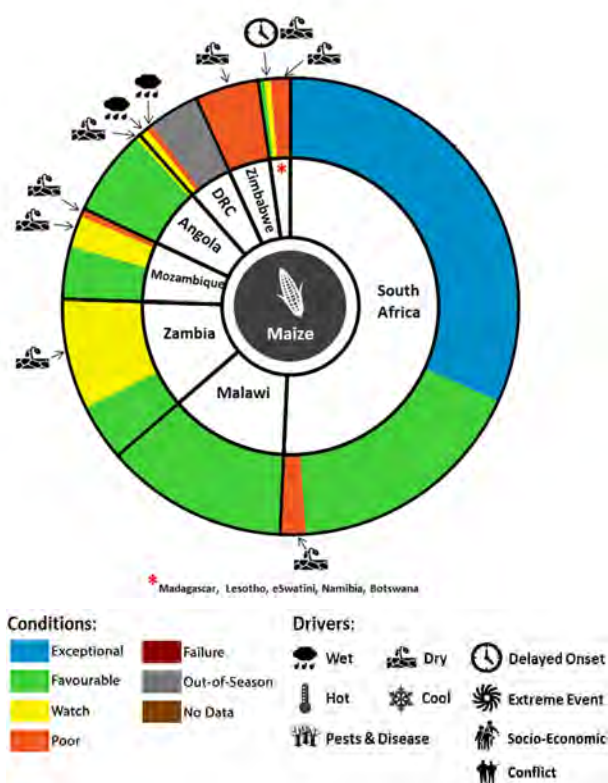
## Southern Africa



Crop condition map synthesizing information as of April 28<sup>th</sup>. 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.**

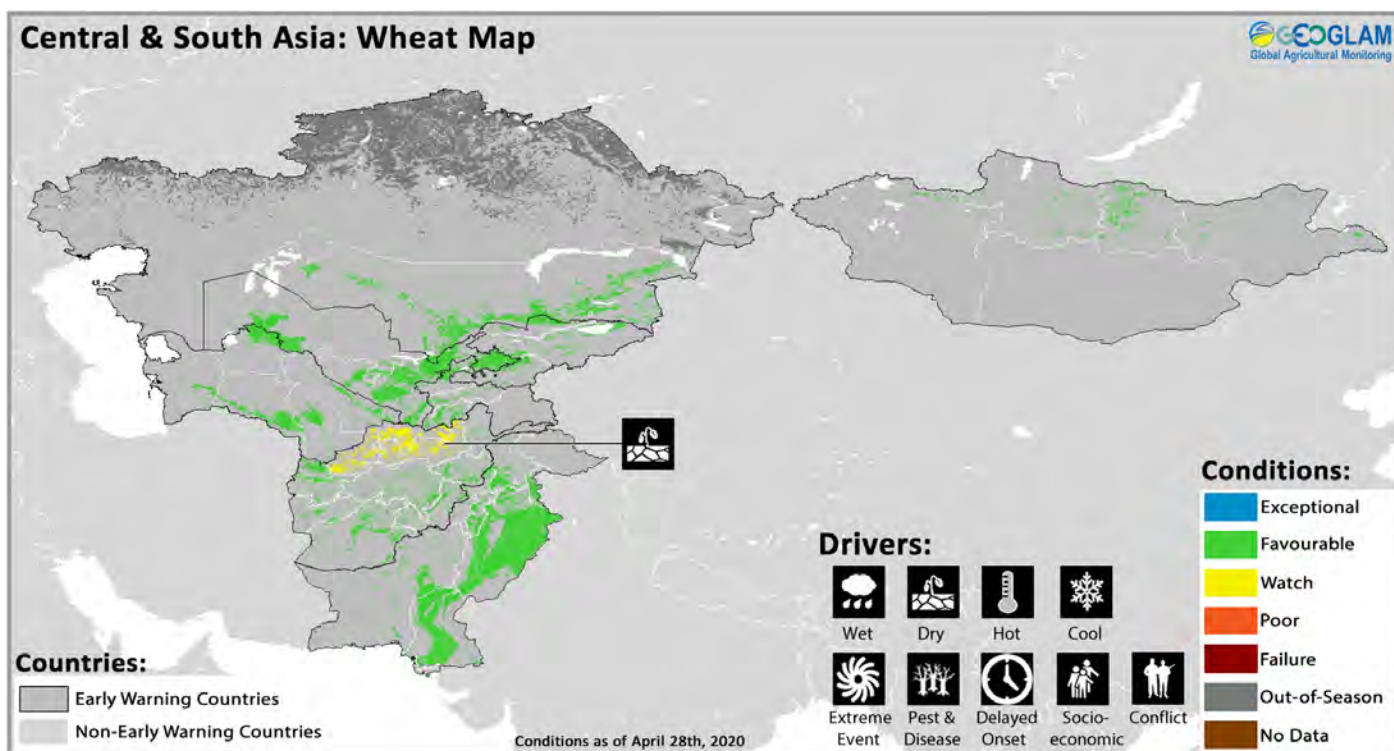
In Southern Africa, harvesting of main season crops is ongoing and production prospects are generally favourable except for central and eastern areas of the region where below-average yields are expected following a late start to the season. Severe dry spells in December and February to March resulted in an early cessation of seasonal rainfall and led to permanent wilting of late-planted crops. Below-average yields are expected in **Zimbabwe**, southern **Madagascar**, and southern **Mozambique**. After the driest October-December rainfall period since at least 1981, rainfall improved in some regions from late January to mid-February, partly offsetting deficits in main producing areas of **South Africa** and **Zambia** where near-average yields are expected. In the northeast and other areas, heavy rains caused flooding and destruction of crop fields. The ongoing conflict in the **Democratic Republic of Congo** and socio-economic challenges in **Zimbabwe** will further threaten food security in these areas. COVID-19 restrictions may also drive up food insecurity and result in an early start to the lean season in **Mozambique**, **Zimbabwe**, and the **Democratic Republic of Congo**. Furthermore, movement restrictions in response to COVID-19 are limiting access to the informal labour sector, which may limit food access and lead to acute food insecurity. In **Zimbabwe**, the season started with a delayed onset of rains followed by rainfall in early February. However, from late-February a continuation of dry conditions exacerbated by high temperatures effectively marked an early end of the rainfall season, and decreased crop prospects, particularly in central areas. Harvesting of main season maize crops is underway in Manicaland, Mashonaland Central, Mashonaland East, and Mashonaland West, and below-average yields are expected due to below-average rainfall during key parts of the season. In Matabeleland South, mid-February to mid-April rainfall was more than 30 percent below-average. Harvesting of main season sorghum crops has concluded, and although planted area increased as some farmers turned to more drought-tolerant crops, overall crop prospects are below-average due to excessive moisture deficits and above-average temperatures for much of the season. In **Mozambique**, uneven rainfall distribution throughout the season led to significant crop failure across the country, particularly in the southern region where harvests are expected to be below the five-year average. Harvest is underway and below-average yields are expected, except in the north where damage to crops was minimal, and overall production is expected to be average to above-average. In **Angola**, harvesting of main season maize crops is continuing under generally favourable conditions with average to above-average rainfall, except in the south where erratic and uneven distribution of rainfall throughout the season has led to moisture stress. In **Zambia**, harvesting of main season cereals is ongoing and after a delayed start to the season, improved rainfall from mid-January benefitted crops in the northwest and northeast. Over the main producing south, rainfall was erratic and unevenly distributed and yield reductions are expected. Concern remains in the west, central,

Copperbelt, and east due to persistent dry conditions and below-average rainfall, and yield reductions are possible. In **Botswana**, harvest is continuing for main season cereals and while conditions are generally favourable in the main producing east, concern remains in the north due to a dry spell from February to March which may have resulted in some yield reductions. In **eSwatini**, harvest is complete for main season maize crops, and conditions are generally favourable as improved rainfall in late March to mid-April benefitted late-planted crops. Despite early-season dryness and decreased planted area, near-average cumulative rainfall is expected to result in average crop production. In the **Democratic Republic of Congo**, planting is ongoing for second season crops in the East and completed in the North, and harvest is underway for main season crops in central and Katanga areas. Persistent heavy rainfall in March and April has created concern for waterlogging in most areas, caused widespread flooding in the East over South Kivu, Bukavu, and Uvira, resulted in infrastructure and crop damage, and displaced more than 77,000 people. In Katanga, the above-average rainfall has been beneficial to crops, but yields are likely to be impacted by the presence of FAW. Ongoing conflict and other socio-economic factors are also likely to disrupt agricultural activities throughout the region. Recent attacks in North Kivu and Ituri provinces displaced more than 35,000 people. Maniema province has also experienced an escalation of violence, resulting in displacement of 47,000 people. Staple food price increases in the east and west will also decrease household purchasing power. In **Lesotho**, there is concern for main season maize crops due to a delay in the onset of rains that led to a decrease in planted area. Harvest is delayed to May, and while good distribution of rainfall since January has benefitted crops, yields are expected to be below-average. For late planted crops, harvest is delayed to June and crops could be affected by frost. In **Malawi**, harvest is continuing for main season maize crops and in the central and northern regions, average yields are expected due to adequate rainfall, and production is expected to be average to above-average. In the southern region, there is concern for crop losses due to below-average rainfall during the rainy season and moisture deficits, particularly in parts of Nsanje and Chikwana. In **Madagascar**, harvesting is nearing completion in the south and below-average production is expected due to below-average seasonal rainfall, particularly in coastal areas, resulting in reduced water availability and crop losses. However, in northwestern areas, above-average rainfall was received causing localized flooding in Melaky. There is concern in central and western regions due to some dry conditions, while in the east, crop prospects are favourable as crop damage from Cyclone Herold in March was minimal. In **Namibia**, harvesting of main season cereals is nearing completion and while below-average rainfall in the north west has contributed to abnormal dryness and yield reductions, national production prospects remain near-average due to good rains over the past three months across the rest of the country. Fall Armyworm and African Migratory Locusts have been reported in the Zambezi region and will likely have a localized impact on final yields. In **South Africa**, beneficial rains since December are likely to result in a bumper harvest across the main cereal-producing provinces, while in the Eastern Cape and Limpopo, yield reductions are possible due to early season dryness.



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

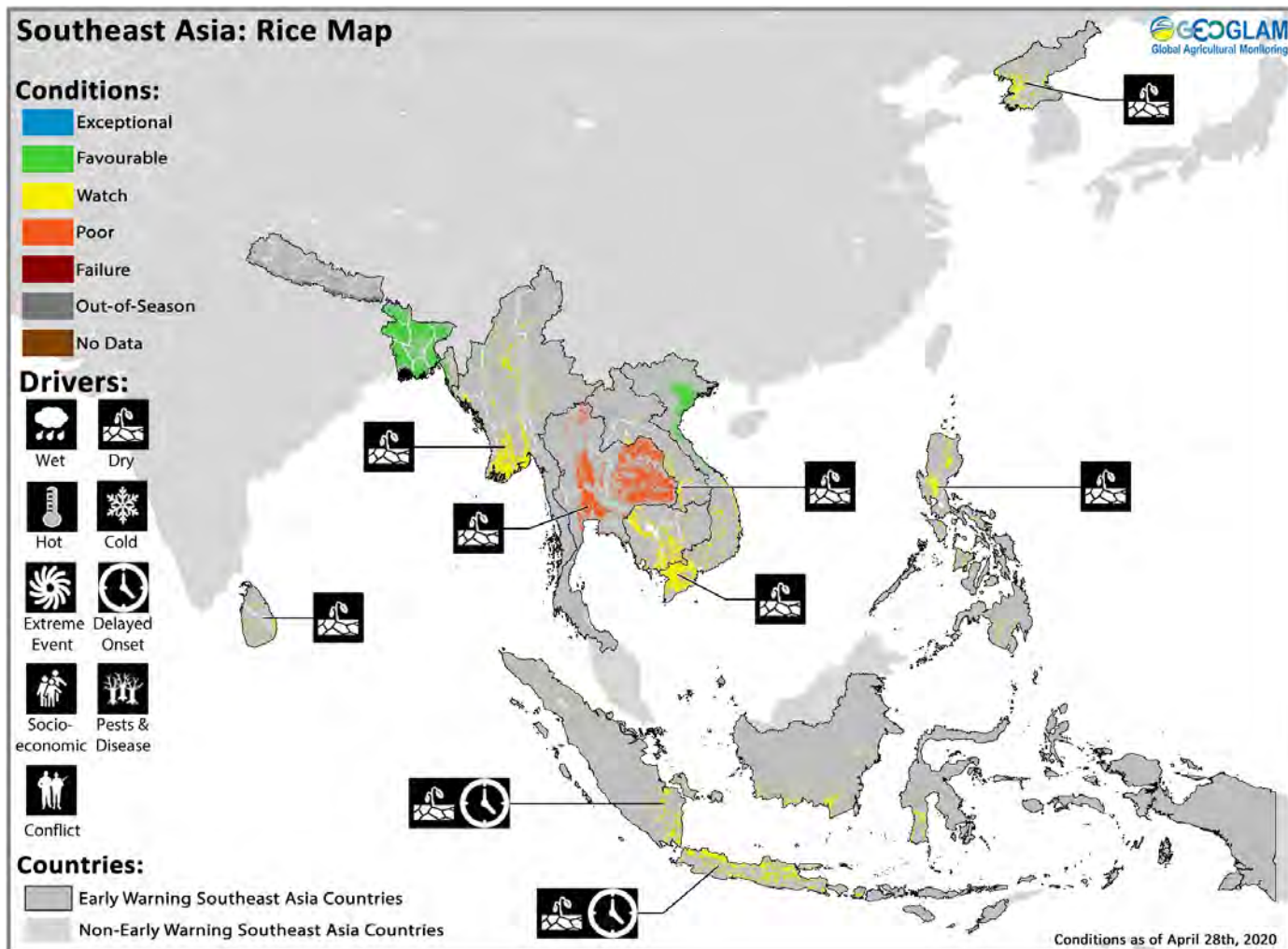
## Central & South Asia



Crop condition map synthesizing information as of April 28<sup>th</sup>. 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.**

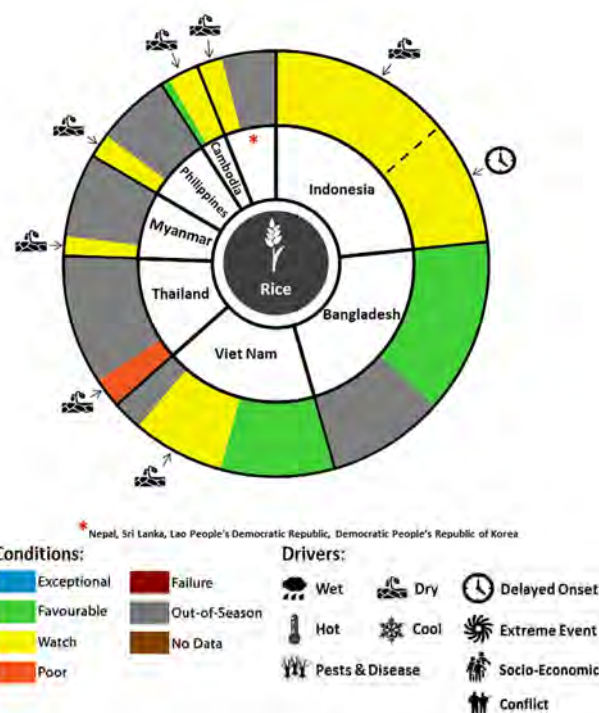
Across Central Asia, planting of spring wheat began in April under favorable conditions. Winter wheat, to be harvested between June and August, currently is in vegetative to reproductive stages across the region and under favourable conditions. In **Uzbekistan** and south of **Kazakhstan**, March was particularly dry; however, winter cereal conditions remain favourable. In **Afghanistan**, widespread above-average precipitation from late March through mid-April benefitted winter wheat crops, which are ready for harvesting in eastern Afghanistan. Irrigated and rain fed wheat conditions are above-average across the country except in a few places in northern Afghanistan where rain fed wheat conditions are slightly below-average. Planting of second season wheat will begin following the harvest. The recent rains reduced most of the precipitation deficits present from the early 2019/20 winter wet season in many of the northern provinces. As of April 20, cumulative precipitation is near or above-average across the country except in Badakhshan province where the precipitation is around 80 percent of normal. Despite the recent above-average precipitation, the snow depth anomalies remained below-average in the north and northeast and above-average in central and southern Afghanistan. Similarly, snow water volumes are at near-average levels in most basins across Afghanistan except in northeast basins where they are close to record minimum. Heavy precipitation from late March has led to floods in Faryab, Badghis, Ghor, Baghlan, Takhar, Badakhshan, and Parwan provinces and has resulted in loss of life and damage to property due to landslides in Badakhshan and Ghor provinces. The combination of above-average temperatures, overly saturated soils, and forecast of heavy precipitation in the first week of May further increases the risk of floods and landslides in the country. On the other hand, the overly saturated soil conditions will not only be beneficial in land preparation and planting of second crop during late May, but will also cater to the crop and rangeland evapotranspirative needs in the coming months. In **Mongolia**, land preparation and early planting of the 2020 wheat crop has started under favourable conditions. The Government announced in March plans to support wheat producers in light of the COVID-19 pandemic through the distribution of agricultural inputs at subsidized prices. In **Pakistan**, harvesting of the 2020 *Rabi* wheat crop started in March and production prospects are average, although slightly below the previously expected bumper harvest. Rainfall has been good throughout the season benefitting crop development; however, in March and April, unseasonal weather caused localized damage to standing crops in parts of Punjab. In addition, concern remains in parts of the main producing provinces of Punjab and Sindh due to the outbreak of desert locusts. While the government undertook measures to keep the threat under control, abundant rains in April supported vegetation conditions that may support locust breeding and could cause damage to late-planted wheat crops.

Southeast Asia



Crop condition map synthesizing rice conditions as of April 28<sup>th</sup>. 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, harvest is underway for dry-season rice. Yields are estimated to be below-average in **Thailand, Myanmar,** and the **Philippines** due to poor precipitation throughout the growing season and shortage of irrigation water. However, in southern **Vietnam** where sufficient irrigation water was available during the growing stage, yields are expected to be average. Wet-season rice planting started in April in **Cambodia** and south **Vietnam** and planted area is low due to below-average precipitation, which is expected to continue across much of the region through May (See Regional Outlook Pg. 15). In **Indonesia**, harvesting of wet-season rice continues into the fourth month with a harvested area 2.8 percent higher than last year, while yields are estimated to be lower than last year due to the prolonged drought. Sowing of dry-season rice is delayed by the extension of the agricultural work of wet-season rice much later than usual however, planting operations may benefit from above-average rainfall expected across much of the country in May (See Regional Outlook Pg. 15). In the **Philippines**, harvesting of dry-season rice is about half-way complete with a 3.7 percent decrease in harvested area compared to last year, and below-average yields are expected as most regions experienced moisture stress due to insufficient irrigation water supply during the reproductive stage. In **Thailand**, dry-season rice harvest is ongoing under poor conditions due to insufficient water, hot weather, and damage from pests in the northern region. A shortage of irrigation water and rainfall during the season resulted in



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

a reduction of sown area by two-thirds compared to last season, and rice production is expected to decrease significantly compared to last year. In **Viet Nam**, harvesting of dry-season rice (winter-spring) is ongoing under mixed conditions in the south due to saltwater intrusion. In the north, conditions are favourable with the total sown area in line with average. Wet-season (summer-autumn) sowing is beginning in the south under favourable conditions. In **Laos**, harvesting of dry-season rice is ongoing and production is estimated to be below last year at around 360 thousand tons with a yield of 4 tonnes per hectare due to poor rains and water shortages received during the planting and growing stages. In **Myanmar**, planting of dry-season rice has reached 81 percent of the national plan of 1.1 million hectares. Harvest has begun in the south and yields are higher than last year at 4.82 tonnes per hectare. Hot temperatures in April are not expected to have any adverse effects on crop growth or harvest. In **Cambodia**, harvesting of dry-season rice is complete and yields were slightly below last year at 4.4 tonnes per hectare. Current planted area of wet-season rice is limited to 11 thousand hectares as a result of drought conditions in the previous season. In **Sri Lanka**, harvest is complete for main *Maha* rice crop and production was normal despite dry conditions from January to March and due to earlier average to above-average precipitation received between October and January, which is a critical period for crop development. Planting of the minor *Yala* rice crop is underway; however, dry conditions remain from the earlier dry spell and there are some concerns over low water levels in the irrigation reservoirs. In **Bangladesh**, harvest will start at the end of April for *Boro* wheat and rice crops and conditions are generally favourable. In **Nepal**, harvest has started in the south for the 2019/2020 wheat crop and will continue in the north until June. Prospects for production are favourable as precipitation amounts were near-average over most of the country, and the snow coverage during winter months has been adequate to protect crops from winterkill. Planting of the 2020 maize crop is progressing under favourable conditions. In the **Democratic People's Republic of Korea**, planting has started for the main cropping season under dry conditions due to little to no rainfall since February.

**Regional Outlook: Below-average rains are forecast to continue in northern Southeast Asia through May while above-average rains are expected in Indonesia.**

April rainfall was substantially below-average across the entire region (Figure 1-left), with deficits of 25-100mm across Myanmar, Laos, Thailand, Cambodia, Vietnam, and northern Philippines, and deficits of 100-350mm in Malaysia and Indonesia (< 50% of the historical average).

Short- and medium-term forecasts predict below-average rainfall will continue in the northern half of the region through May, while some recovery is expected in the south. If the 15-day forecast indicating below-average rainfall materializes, negative anomalies for March 26<sup>th</sup> to May 10<sup>th</sup> could exceed 50 mm across Laos, Thailand, Cambodia, Vietnam, and the northern Philippines (Figure 1-middle), and the 30-day forecast for the month of May indicates these deficits are likely to increase (Figure 1-right). In Malaysia and Indonesia, above-average rainfall is expected through May, which will benefit development of the second rice season. Rainfall forecasts beyond May are inconclusive.

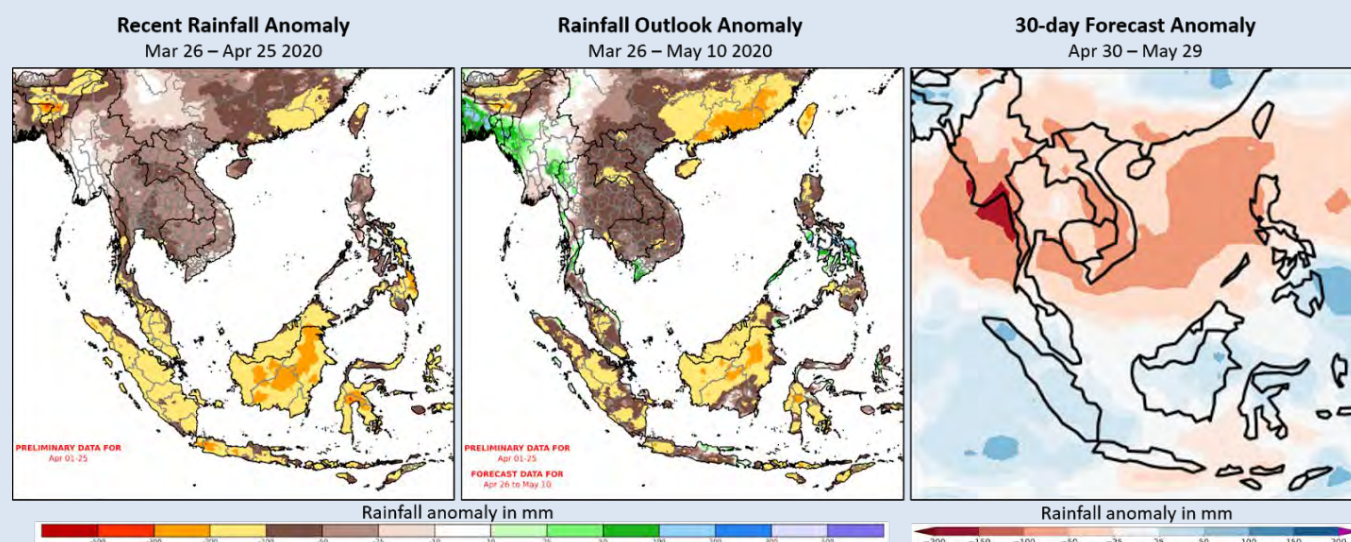
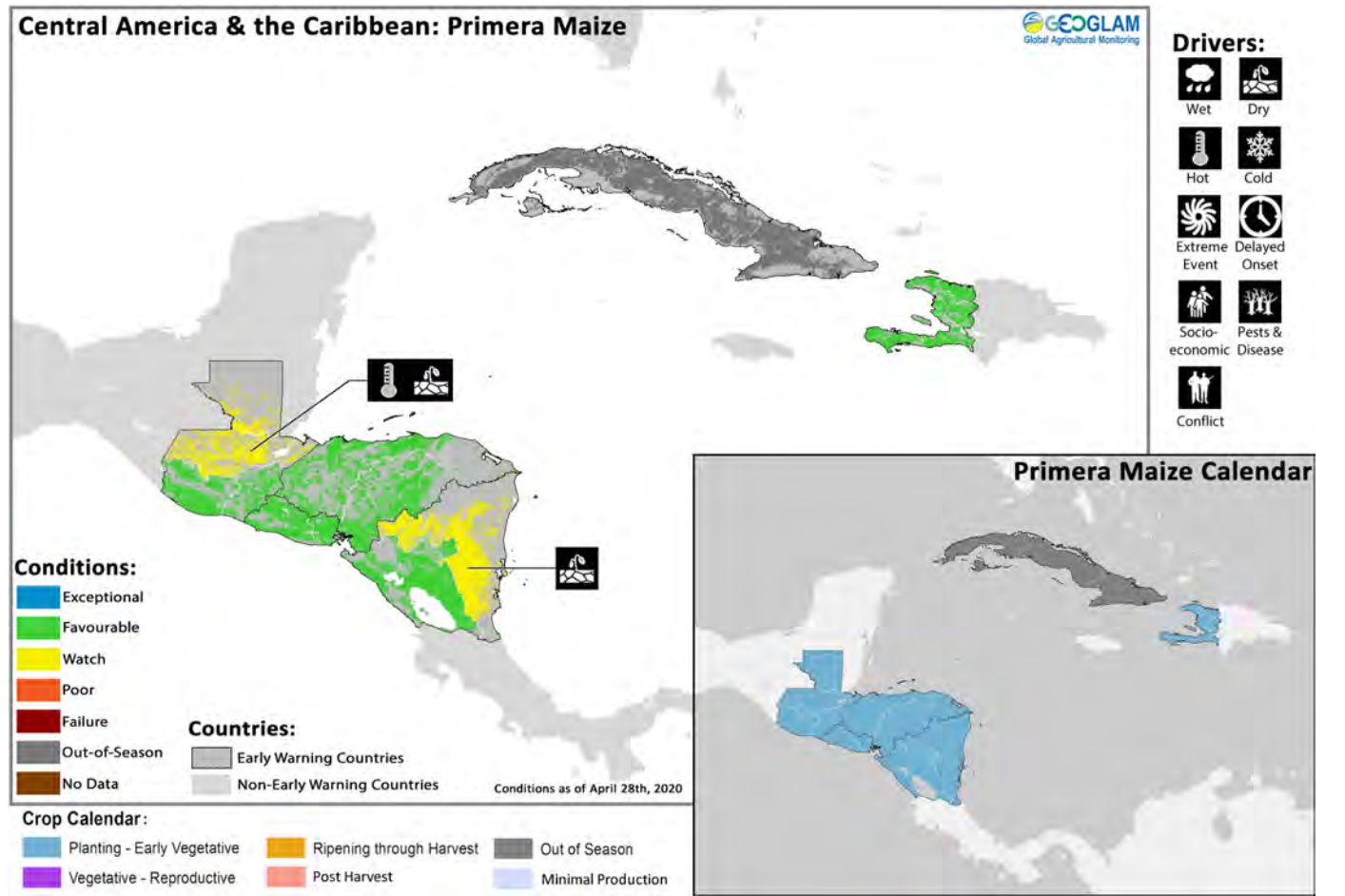


Figure 1. Estimated and forecast rainfall since March 26<sup>th</sup> and a 30-day forecast. All three maps depict rainfall in terms of the difference from average. The left panel is the UCSB Climate Hazards Center Early Estimate for March 26<sup>th</sup> to April 25<sup>th</sup>, based on final CHIRPS for the last pentad of March and preliminary CHIRPS for April 1<sup>st</sup> to 25<sup>th</sup>. The middle panel is an extended outlook. It shows how the post-March 26<sup>th</sup> anomaly will change if the 15-day unbiased GEFS forecast from April 26<sup>th</sup> materializes. These compare 2020 rainfall amounts to the 1981-2019 CHIRPS average. On the right is a 30-day forecast from April 30<sup>th</sup>. The image shows the average of four 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 at <http://cola.gmu.edu/kpegon/subx/index.html>.

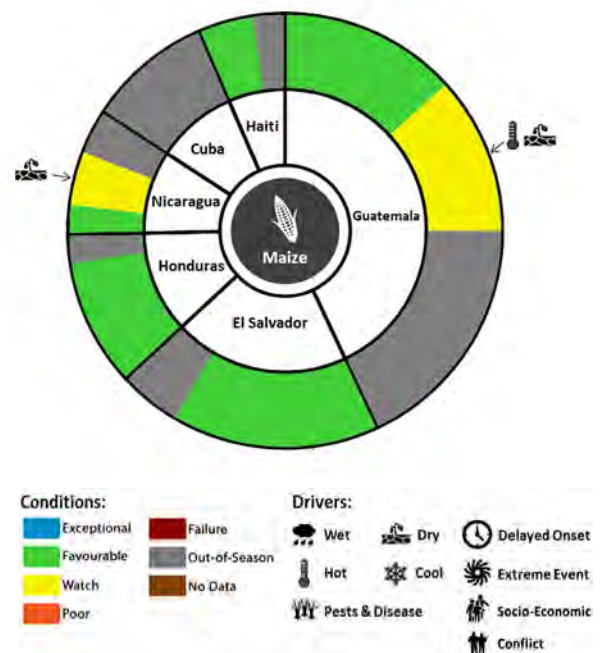
Source: UCSB Climate Hazards Center

Central America & Caribbean



Crop condition map synthesizing information as of April 28<sup>th</sup>. 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 and the Caribbean, land preparation and early planting is underway for the *Primera* season cereals across parts of the region. However, the effects of the COVID-19 pandemic on food access in the Dry Corridor remains a key concern. In **Guatemala**, residual moisture and the early onset of *Primera* rains has allowed early planting activities to begin in the departments of Sololá, Quetzaltenango, San Marcos, and Huehuetenango. Recent rainfall in Chiquimula, Zacapa, and Jutiapa favors the planting activities that will start in late April to early May according to field information. COVID-19 restrictions are exacerbating food insecurity, especially in eastern Guatemala, which was badly affected by 2019 drought. Restrictions have impacted household access to food due to reduced income, but the import of food products remains stable and recent national staple grain harvests are meeting local demand. In **El Salvador, Honduras, and Nicaragua**, land preparation is underway for the start to the *Primera* season with normal onset in May (See Regional Outlook Pg. 17). On the Caribbean side of Guatemala, Honduras and northern Nicaragua, rainfall deficits over the last three weeks may delay the start of the season in some areas. Also, recent high temperatures increased the risk of forest fires. In **Haiti**, normal distribution of rainfall has been observed, except in some localized areas of Nord-Ouest, Nord-Est, Centre, and Grand Anse departments where rainfall deficits and irregular distribution may impact main season maize and rice crops. In **Cuba**, second season rice harvest is underway and conditions are favourable, despite the seasonally low precipitation from November to February. However, there is concern for main season rice which started planting in April and has been affected by dry conditions. In addition, ongoing COVID-19 mitigation measures are further straining water supply.



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



**Regional Outlook: Above-average rains expected in the first half of May across much of the region.**

April rains in Central America were below-average across much of the region with deficits of 25-50 mm across the entire region, equating to less than 50% of the average rainfall, and deficits exceeding 100 mm below-average in eastern Cuba and Haiti.

Short-term forecasts (not shown) indicate above-average rainfall is expected across most of the region for the first half of May; the exceptions are in Nicaragua and Haiti, where rainfall is expected to continue to be well below-average. Figure 1-left indicates how this anticipated rainfall could impact the April deficits. While precipitation totals in areas of northern Guatemala, coastal Honduras, eastern Nicaragua, and central Cuba may recover to 5-75mm above average (<125% of average), most of the region is expected to remain average to below average. The areas of greatest concern are southwestern Honduras, western Nicaragua, eastern Cuba, and Haiti (<75% of average). The 30-day forecast (Figure 1-middle) indicates rainfall will likely continue to be average to below-average for the remainder of May. Longer-term forecasts suggest above-average rainfall is likely for the month of June in Guatemala, western Honduras, and western Nicaragua (Figure 1-right). Elsewhere in the region, the long-term forecasts are inconclusive (colored white). Although still very early in the season, this delayed start to the rains comes on the heels of [five consecutive years of poor Primera season yields](#), which has resulted in considerable food insecurity in the region.

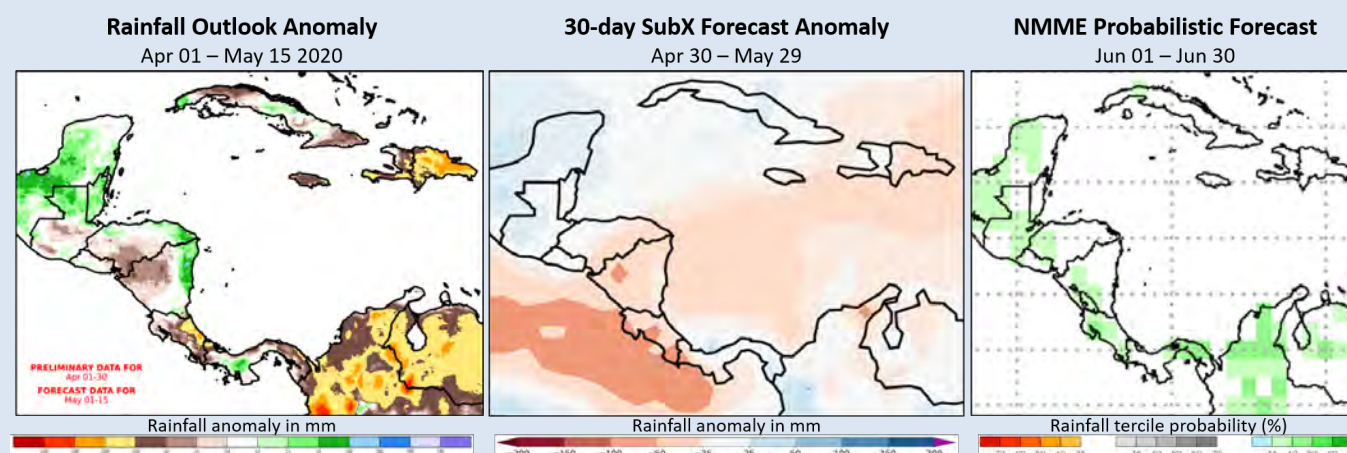


Figure 1. Estimated and forecast rainfall since April 1<sup>st</sup>. The left and middle maps depict rainfall in terms of the difference from average. The left panel is the extended outlook for April 1<sup>st</sup> to May 15<sup>th</sup>. This Climate Hazards Center Early Estimates are based on preliminary CHIRPS for April, and the 15-day unbiased GEFS forecast from May 1<sup>st</sup>. This graphic compares 2020 rainfall amounts to the 1981-2019 CHIRPS average. The middle panel is a 30-day forecast from April 30<sup>th</sup>. The image shows the average of four 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 at <http://cola.gmu.edu/kpegiion/subx/index.html>. The right panel is the NMME probabilistic forecast for the month of June based on April conditions.

Source: UCSB Climate Hazards Center.

**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 May 7<sup>th</sup>, 2020.**

# 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.*



## 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



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Cover Photo by Kris Lasko

### Contributing partners



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