

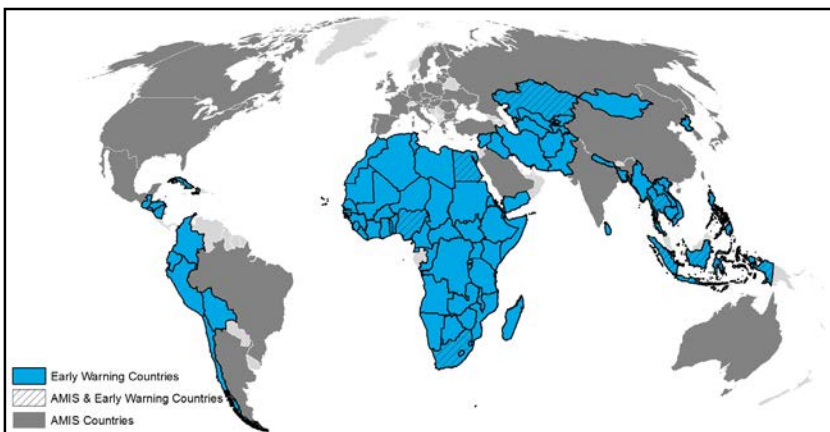


Crop Monitor

EARLY WARNING

Overview:

In **East Africa**, land preparation and planting is underway for *Belg* cereals in Ethiopia and planting of long rains cereal crops across the rest of the region will start next month. There is significant concern due to the presence and potential impact of desert locusts. In **West Africa**, crops are out of season except for secondary rice crops in Mali and Mauritania, which are under favourable conditions due to sufficient rainfall. In **North Africa**, there is concern for wheat crops in parts of Morocco, Algeria, and Tunisia due to high temperatures and rainfall deficits. In the **Middle East**, while rainfall has been favourable, conflict continues to impact agricultural activities in Syria and Iraq. In **Southern Africa**, while rains in February improved rainfall deficits and caused flooding in some areas, there is continuing concern for main season cereals across areas of Zimbabwe, Zambia, Mozambique, Madagascar, Namibia, and parts of Botswana where recent rainfall was not enough to counteract previously dry conditions. In **Central and South Asia**, precipitation since January has improved previously dry conditions across the west of the subregion and winter wheat conditions are favourable. In **Southeast Asia**, planted area of dry season rice is reduced due to the lack of irrigation water and natural water resources following poor precipitation during the 2019 wet-season and continuing rainfall deficits. In **Central America** and the **Caribbean**, *Apante* season beans and winter rice crops, to be harvested in mid-March, are favourable due to sufficient rains.



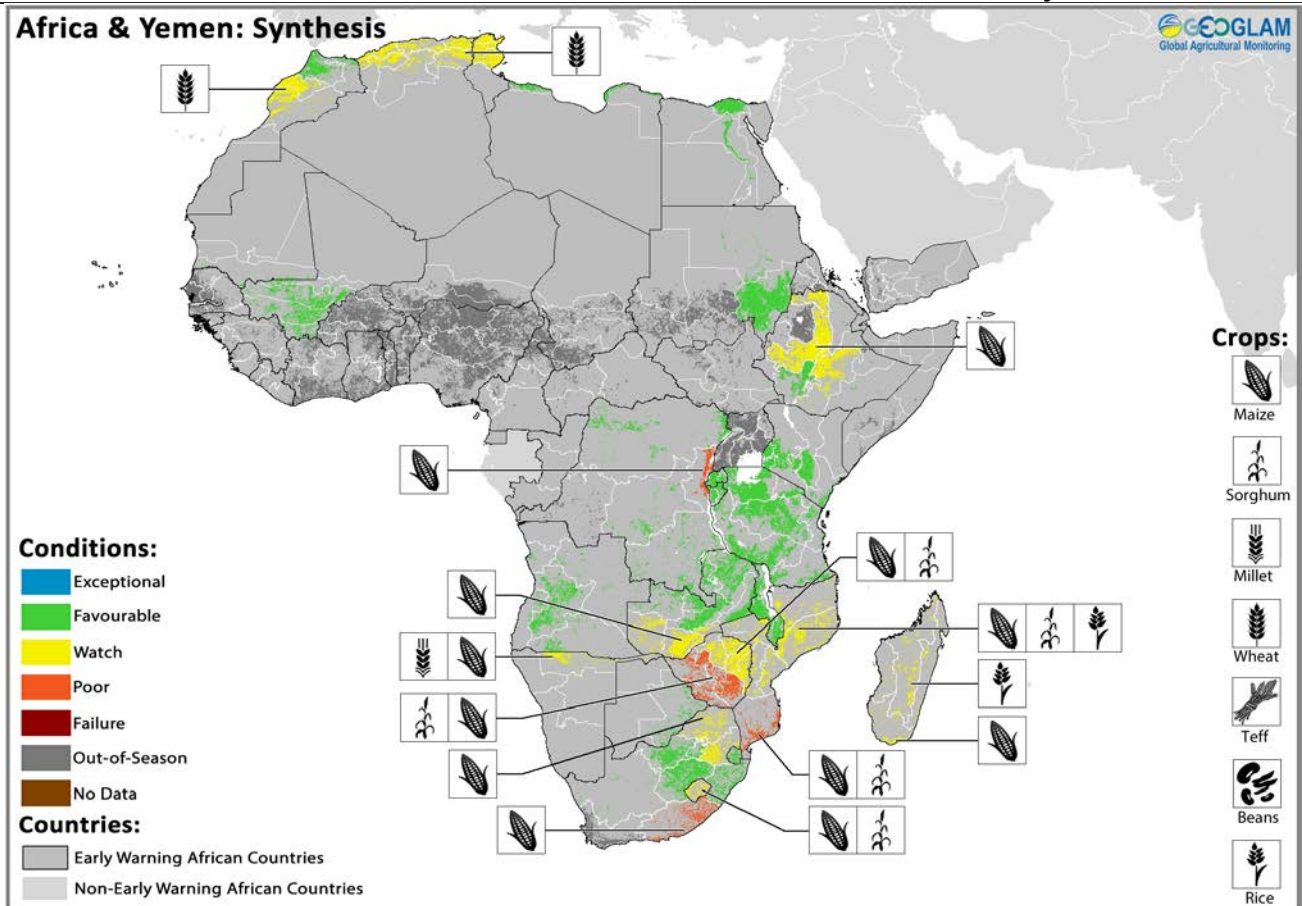
Contents:

| | |
|---|----|
| Conditions at a Glance..... | 2 |
| Global Climate Outlook..... | 3 |
| East Africa & Yemen; Alert; Regional Climate Outlook..... | 3 |
| West Africa..... | 7 |
| Middle East & North Africa; | 7 |
| Southern Africa; Regional Climate Outlook | 8 |
| Central & South Asia | 11 |
| Southeast Asia; Regional Climate Outlook | 12 |
| Central America & Caribbean..... | 14 |
| Appendix – Terminology & Definitions..... | 15 |

GEOGLAM Crop Monitor for Early Warning

Crop Conditions at a Glance

based on best available information as of February 28th



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

EAST AFRICA: Land preparation and planting of *Belg* cereals in Ethiopia started in February and there are already concerns due to the presence and potential impact of desert locusts. Main season cereals in the high producing southern highlands of Tanzania are favourable; however, above-average rains in January and February caused flooding in some regions, which may worsen if the above-average rainfall forecast for March materializes (See Regional Outlook Pg. 6). Desert locusts continue to be a significant threat to the region and breeding is currently underway in Kenya, Ethiopia, and Somalia and new swarms are forming (See Alert pg. 5).

WEST AFRICA: Crops are generally out of season except for secondary rice crops in Mali and Mauritania, which are under favourable conditions due to good irrigation water availability.

MIDDLE EAST & NORTH AFRICA: Wheat crops are in vegetative to reproductive stages and there is concern in parts of Morocco, Algeria, and Tunisia due to high temperatures and below-average rainfall. In the Middle East, while rainfall has been favourable, conflict continues to impact agricultural activities in Syria and Iraq.

SOUTHERN AFRICA: There is continuing concern for main season cereals due to dry conditions since the start of the season across Zimbabwe, Zambia, Mozambique, Madagascar, Namibia,

and parts of Botswana and South Africa. Following one of the driest October-December periods since 1981, improved rainfall in February across central parts of the region benefitted crop conditions; however, across some areas, rainfall came too late and permanent crop wilting occurred. Below-average rainfall is forecast for March through April over early deficit rainfall areas, which could worsen deficits and damage late-planted crops (See Regional Outlook Pg. 10).

CENTRAL & SOUTH ASIA: Conditions for 2019/2020 winter cereals are favourable and precipitation since January has improved previously dry conditions across the west of the subregion.

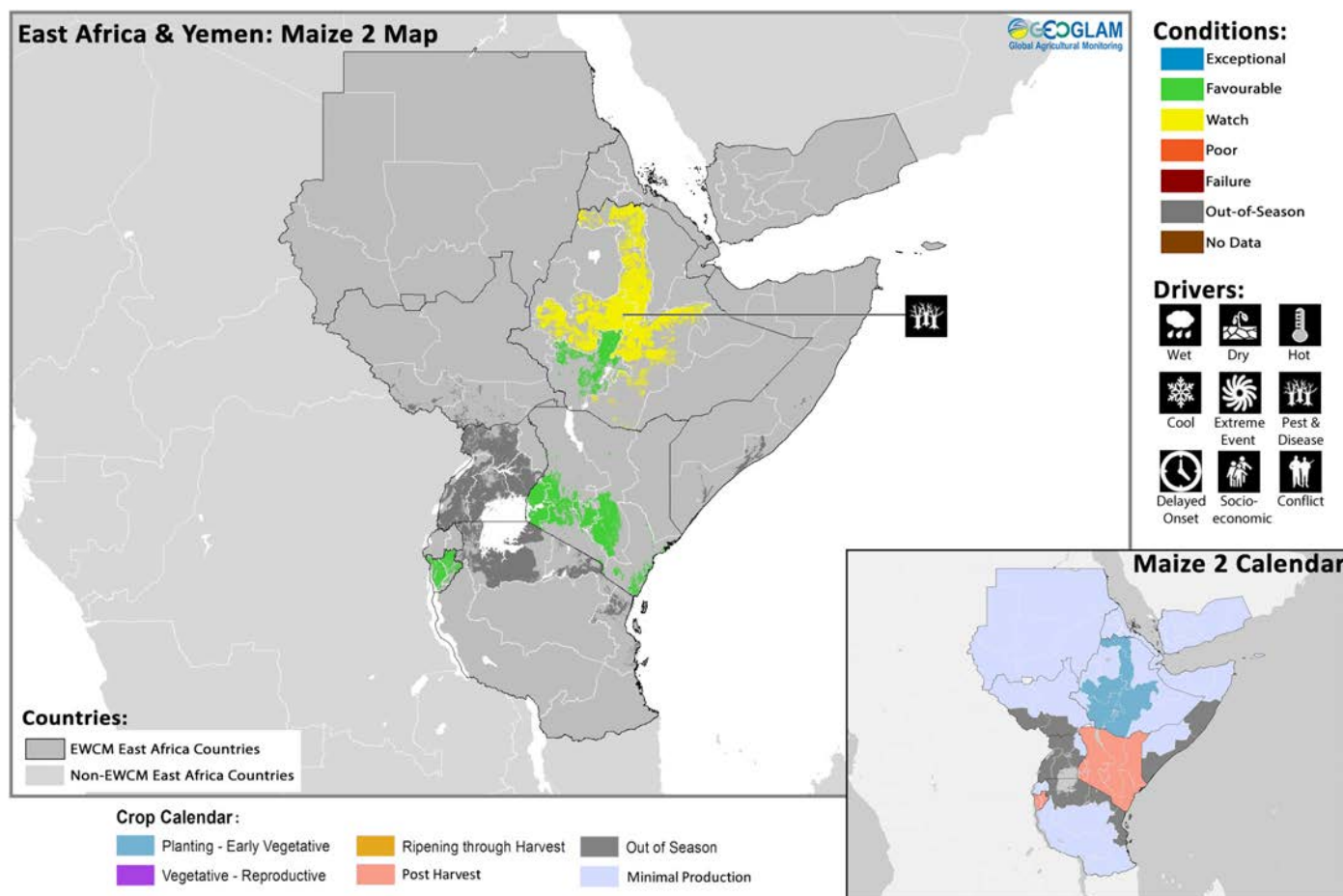
SOUTHEAST ASIA: In northern Southeast Asia, planted area is estimated to have decreased across the region, except in Vietnam, due to the lack of irrigation water and natural water resources following poor precipitation during the 2019 wet-season and continuing below-average precipitation. Forecasts indicate below-average rainfall patterns may continue across the north of the region through March while Indonesia may experience above-average rains (See Regional Outlook Pg. 13).

CENTRAL AMERICA & CARIBBEAN: *Apante* season beans and winter rice crops, to be harvested in mid-March, are in vegetative to reproductive stages and conditions are favourable due to sufficient rains.

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

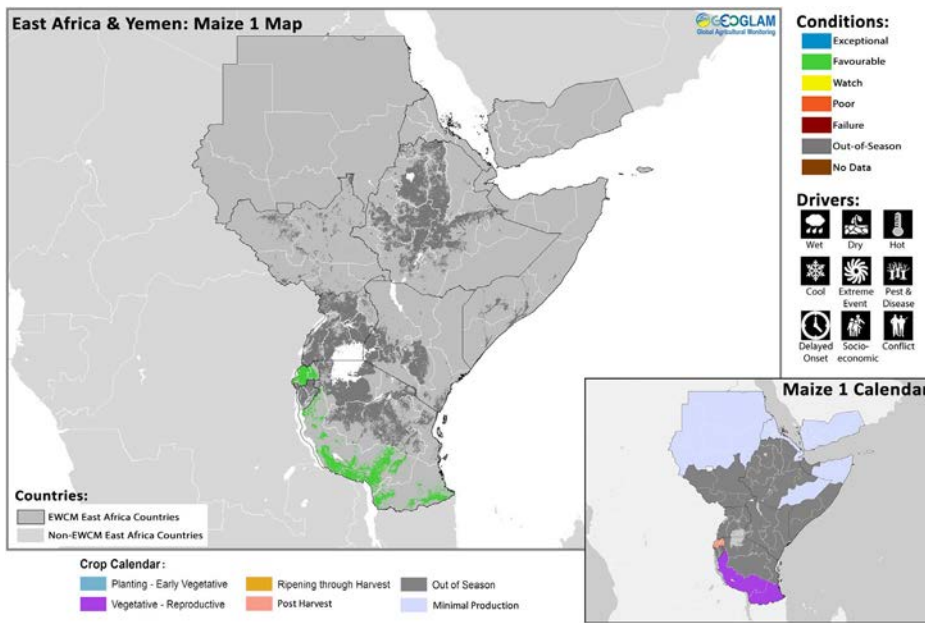
El Niño-Southern Oscillation (ENSO) conditions are neutral and will most likely remain neutral through June 2020.

Source: UCSB Climate Hazards Center

East Africa & Yemen

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

Across the north of the region, including in **Eritrea, Ethiopia, Sudan**, and central and northern **South Sudan**, harvest finished in December for main season cereals and final yields were generally favourable due to abundant rains throughout the season except in Sudan, South Sudan, and parts of Ethiopia. Main season cereals are now out of season in the north. Since November, a severe desert locust outbreak has affected the region with critical situations in Kenya, Ethiopia, and Somalia where the outbreak first took hold and where widespread breeding is now underway. From these three countries, locusts have spread and have now been reported in Djibouti, Eritrea, South Sudan, Uganda, Tanzania and as far south as the Democratic Republic of Congo (the first time sighted here since 1944) and further spread is expected (See Alert Pg. 5). Above-average March April May (MAM) rains are forecast for the region (See Regional Outlook Pg. 6) which could protract the outbreak and cause further spread. Desert locusts are endangering food supplies in the region and there is significant concern for food security. In **Ethiopia**, planting of the secondary *Belg* season started in February and there is concern due to the potential impacts of desert locusts on *Belg* cereal crops. Desert locusts are of severe concern in Ethiopia with widespread presence across Somali, Oromia, and SNNPR regions and to a lesser extent in East Amhara and Tigray. With the outbreak likely to remain in the region through June, *Belg* cereal crops are at significant risk. In **Sudan**, winter wheat is currently in vegetative to reproductive stages. According to the findings of the 2019 [Annual Crop and Food Supply Assessment Mission](#), the wheat output is forecast at 30 percent above-average, as prevailing market prices have encouraged farmers to expand plantings. By contrast, the coarse grains (sorghum and millet) harvest concluded in December and yields are estimated at well below-average levels. An erratic temporal distribution of the June-September seasonal rains has been the main driver of the cereal production shortfall, with prolonged dry spells in July causing crop wilting. Abundant rains during the remainder of the cropping

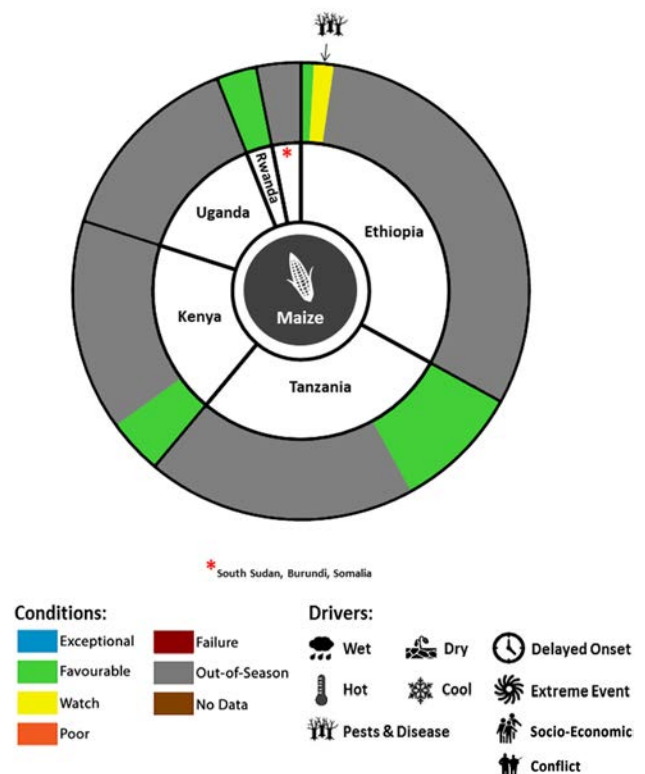


Crop condition map synthesizing information as of February 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Crops that are in other than favourable conditions are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

livestock losses in 2019. Desert locusts have been reported along the South Sudan border with Kenya and Uganda and if locusts persist and continue to spread into the country, an already vulnerable food security situation is likely to deteriorate. In the **United Republic of Tanzania's** southern highlands, *Msimu* maize crops are in vegetative to reproductive stages under favourable conditions and harvest is expected to start in May. However, heavy rains and flooding since late January have affected Iringa and Lindi regions. Flooding continued and, in some cases worsened, through the start of February, particularly in Mwanza, Morogoro, and Manyara. Flood damage may worsen if the above-average rainfall forecast for March materializes (See Regional Outlook Pg. 6).

In central and southern parts of the subregion, including Burundi, southeastern Kenya, Rwanda, central and southern Somalia, Uganda, and bimodal rainfall areas of the United Republic of Tanzania, harvest of second season crops completed in January and early February and crops are now generally out of season until the full onset of the March April May (MAM) rains. In **Kenya**, early planting of the long rains cereal crop started in February due to abundant rainfall received prior to the start of the MAM rains. While meteorological conditions are favourable, there is increasing concern due to the desert locust outbreak with the highest locust presence in the north and central areas, as well as the major producing west and rift valley regions. In **Somalia**, harvesting of secondary season 2019 *Deyr* crop was concluded in January. Despite substantial flood-induced crop losses in riverine maize growing areas, the cereal output is estimated at about 35 percent above-average as the abundant seasonal rains boosted yields. Desert locust breeding is underway in the northeast of Somalia and while damages to pasture have so far been limited and localized to central regions, there is significant concern for the start of the main *Gu* season in April as the outbreak is expected to continue through June and the affected area is expected to increase. In **Uganda**, planting is expected to start in March for first season cereals and there is increasing concern due to the desert locust outbreak as mature desert locust swarms have reached the northeast from adjacent areas of western Kenya. In **Burundi**, harvest of 2020 A season cereals, representing 35 percent of national production, finished in February and average to above-average yields resulted with some localized crop losses due to excess moisture and flooding. In **Rwanda**, crops are now out of season following an average A season maize crop harvest in January. Land preparation and planting of B season cereals started in February under favourable conditions.

season triggered widespread floods and resulted in substantial crop losses. Severe infestations of birds, rats, and insects further reduced yields. Overall, the aggregate 2019 cereal production is estimated at about 5.9 million tonnes, 33 percent below the 2018 bumper harvest and 15 percent below the average of the previous five years. After declining by five to ten percent at the start of the 2019 harvest between September and October, sorghum and millet prices resumed their increasing trend. Prices surged by 40 to 80 percent between October 2019 and February 2020, reaching new record highs, up to twice the already high levels of one year earlier. In **South Sudan**, planting of main season crops in the south will start in March. While the security situation has generally improved, food insecurity is still of concern due to the impacts of conflict and widespread flooding from October to December 2019 across the east and north, which caused significant crop and



For detailed description of the pie chart please see description box on pg. 14.

Alert: Desert locust breeding is underway in Kenya, Ethiopia and Somalia and new swarms are forming

The desert locust outbreak in East Africa remains alarming with the highest concern in **Kenya, Ethiopia and Somalia** where widespread breeding is underway and new swarms are forming. Rainfall forecasts for the next two weeks indicate wet conditions are expected to continue across much of the region and the seasonal March April May (MAM) rains are forecast to be above-average (See Regional Outlook Pg. 6). The above-average rains are expected to support desert locust breeding and development and potentially increase their spread across the region. A protracted outbreak through June is likely, which could cause significant damage to main season crops. Apart from the main hotspots of Kenya, Ethiopia, and Somalia, desert locusts are present in **Eritrea, South Sudan, Uganda**, with sightings reported in northern **Tanzania** and as far south as the **Democratic Republic of Congo**, where it is the first time desert locusts have been sighted since 1944.

In **Ethiopia**, swarms continue to mature and breed over Oromia and SNNPR regions and cross border movements are reported between Somalia and Kenya. Planting of the secondary *Belg* crop is underway and locust breeding and development may benefit from the onset of the rains in March, putting *Belg* crops at high risk. In **Somalia**, locusts are present and breeding is underway in the northwest and northeast. Some swarms may be moving south towards northeast Kenya. In **Kenya**, breeding is taking place in the north and central counties and immature swarms have started to form in the past few days. Early planting of long rains crops started in February in parts of western Kenya due to above-average and out of season rainfall through the start of the year. These early planted crops are at risk of damage from desert locusts. At the end of February, desert locust swarms crossed the border into northeast **Uganda** and southern **South Sudan**. The seasonal MAM rains are forecast to be above-average, which may protract the outbreak and damage is likely to occur for main season crops across the region if forecasts materialize.

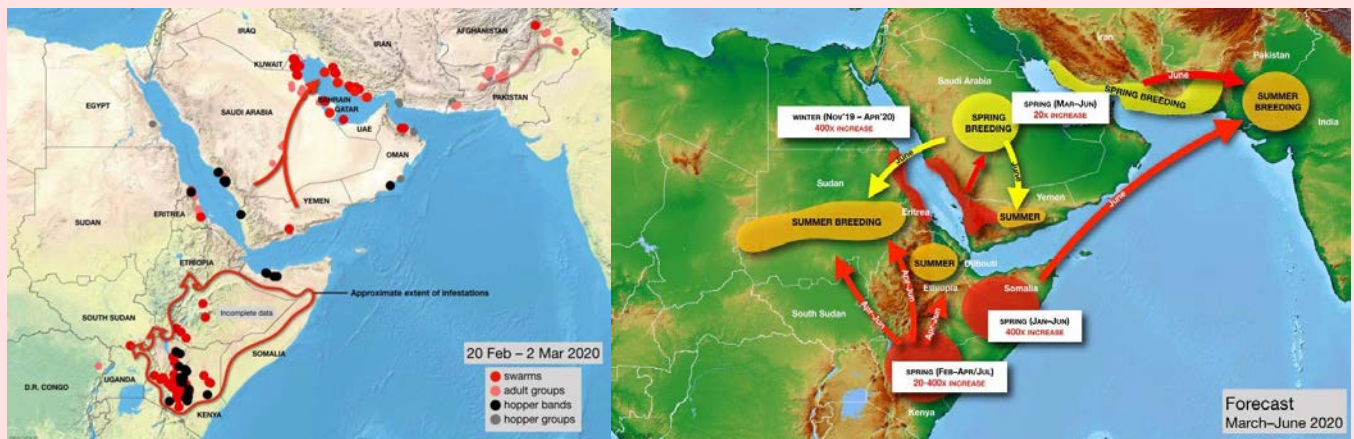


Figure 1. Desert locust current presence (left) and potential spread (right) as of March 2nd 2020.

Source: FAO/DLIS

Regional Outlook: Wet conditions are expected to continue into March across southern East Africa

Late January to late February was atypically wet in equatorial and southern areas of the region, both in terms of rainfall amounts and the number of days with rain. Affected areas were throughout Tanzania, in northeastern Zambia, in western and southern Kenya, parts of Uganda, and in southwestern Ethiopia (Figure 1-left).

Forecasts are showing wetter than average conditions through March in these areas. According to the two-week forecast issued on February 26th, surpluses could grow by large amounts in the Lake Victoria region, southern Kenya, much of Tanzania, and northeastern Zambia. If this occurs, January 26th to March 10th totals could be 100 mm to 300 mm above typical amounts in those areas (Figure 1-middle). The 30-day SubX model forecast (Figure 1-right) provides more indication that the recent wetter than average conditions could continue, particularly in Tanzania and southern Kenya. The 30-day forecast includes several models that show wet conditions continuing in mid- and late-March. One contributing factor for the enhanced rains may be warmer than normal sea surface temperatures that have persisted for months off the East Africa coast. According to seasonal forecasts released in early February, those warm temperatures may remain in place for several more months.

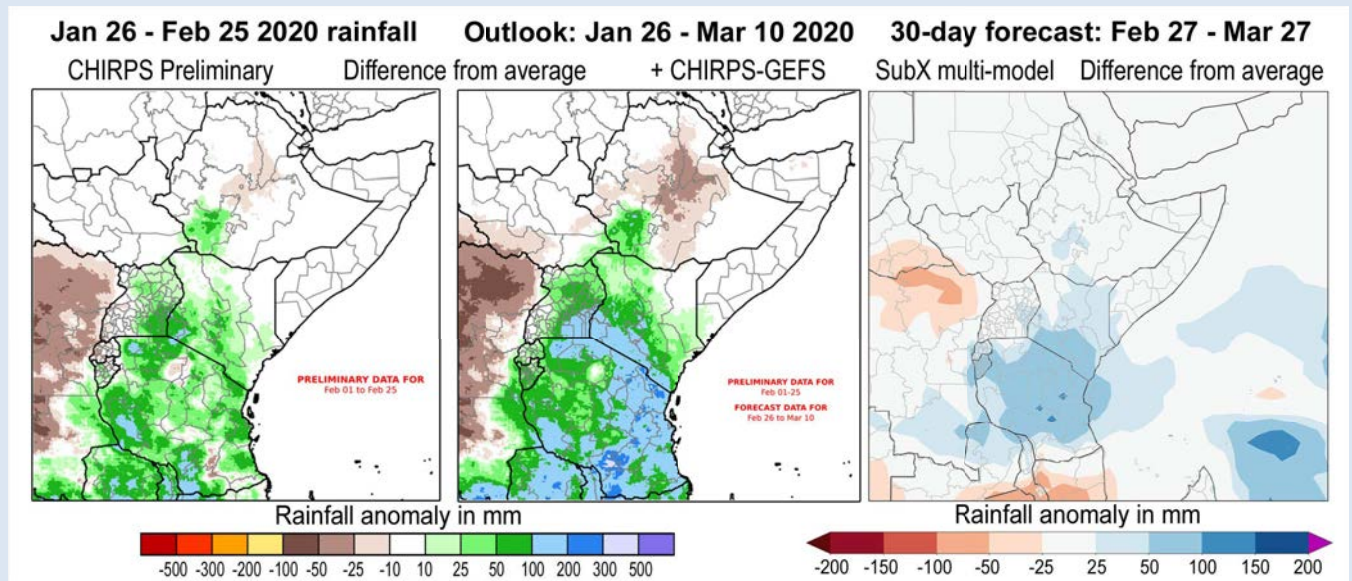


Figure 1. Estimated and forecast rainfall since January 26th and a 30-day forecast. All three maps depict rainfall in terms of the difference from average. On the left is the UCSB Climate Hazards Center Early Estimate for January 26th to February 25th, based on final CHIRPS for January and preliminary CHIRPS for February 1st to 25th. The middle panel is an extended outlook. It shows how the post-Jan 26th anomaly will change if the 14-day unbiased GEFS forecast from February 26th materializes. These compare 2020 rainfall amounts to the 1981-2019 CHIRPS average. On the right is a 30-day forecast from February 27th. The image shows the average across four Subseasonal Experiment (SubX) model forecasts available on 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>.

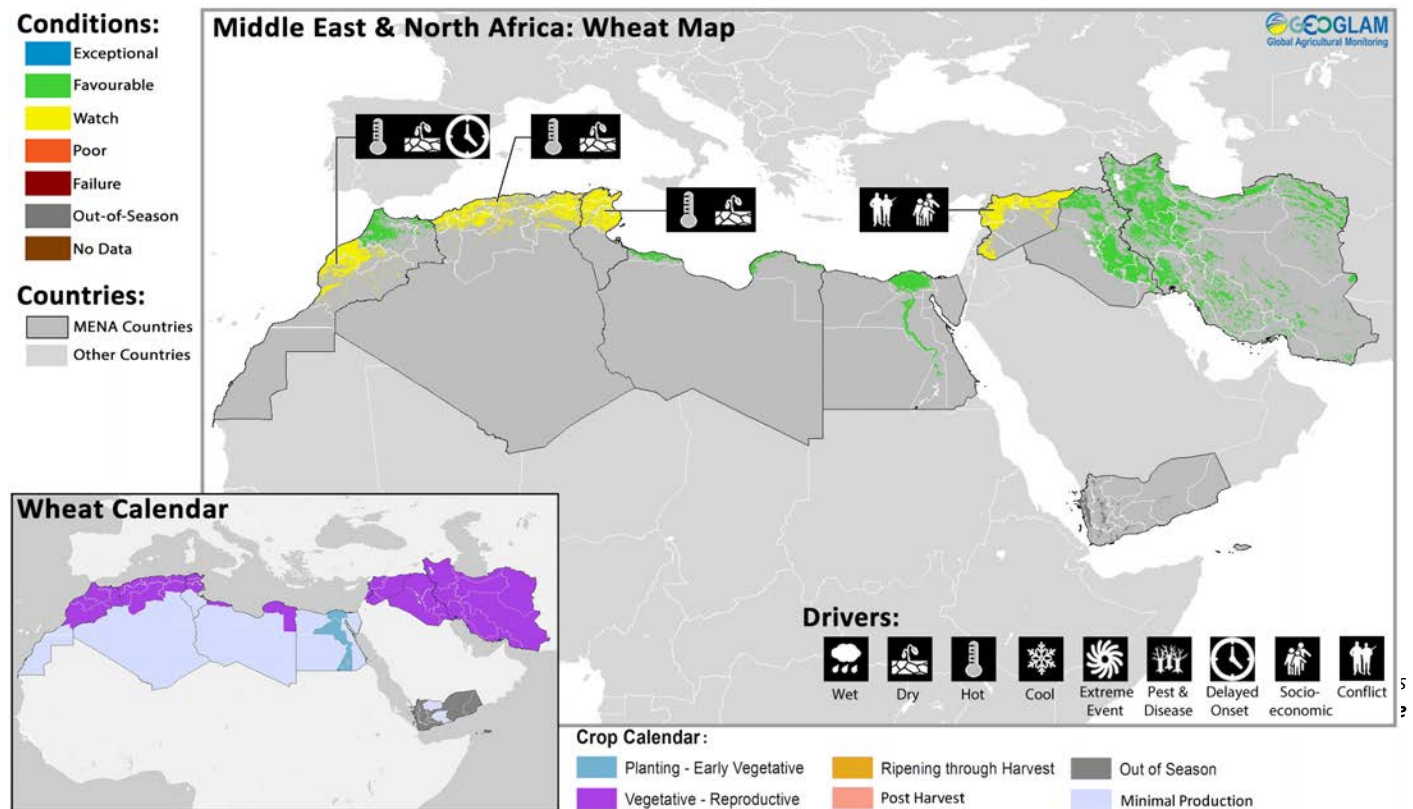
Source: UCSB Climate Hazards Center

West Africa

Main season crops are now out of season across the region following mostly favourable harvests in December 2019. In **Mali** and **Mauritania**, harvest started in March for second season rice crops and production prospects are favourable due to irrigation water availability that has resulted from last season's sufficient rainfall.

In pastoral areas of **Mali**, **Niger**, **Burkina Faso** and **Chad**, the low availability of pasture has been aggravated by conflict-related insecurity, which hinders livestock movements. Below-average pasture levels remain a concern in western **Mauritania** and northern Senegal for the third consecutive year.

Middle East & North Africa



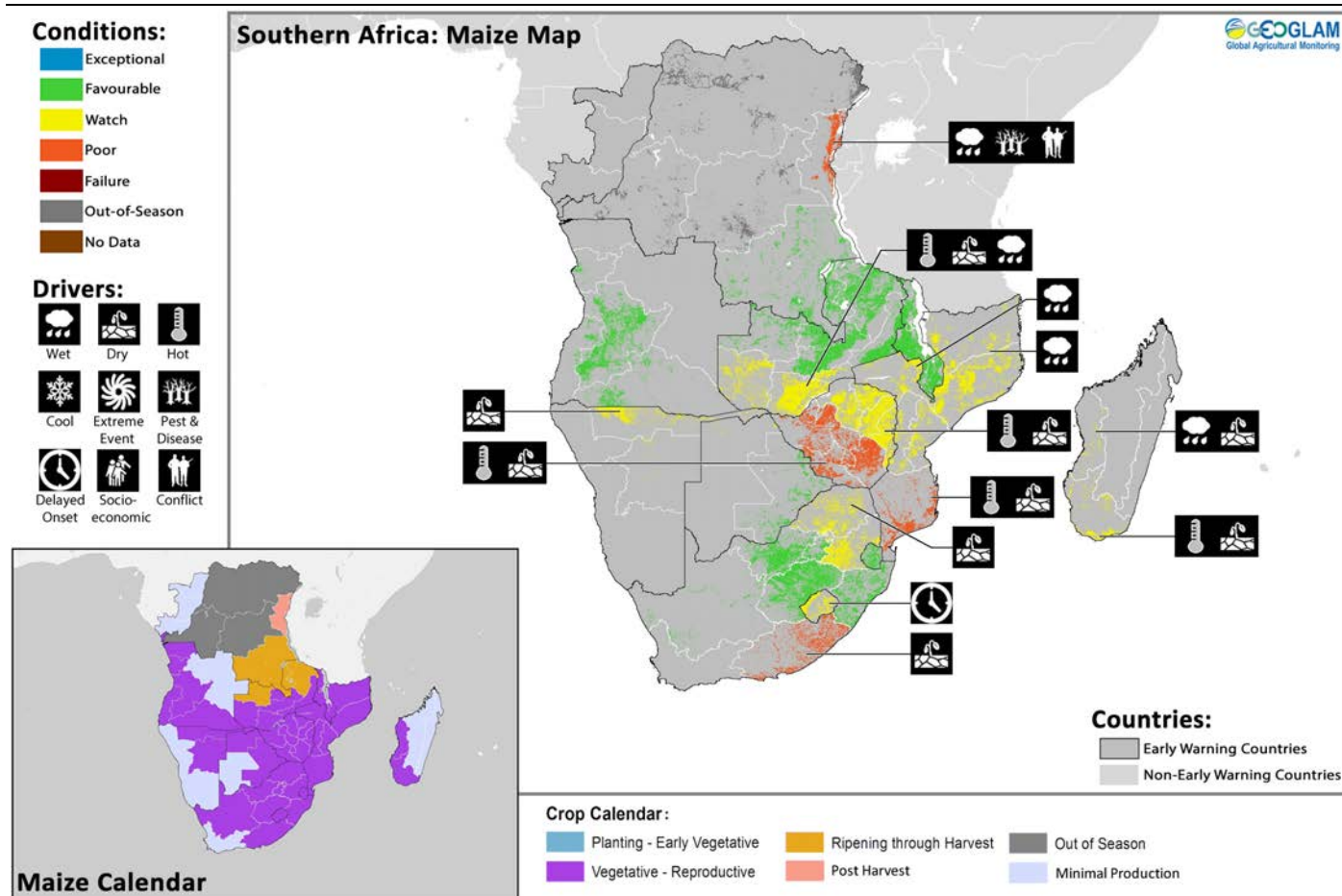
Crop condition map synthesizing information as of February 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Crops that are in other than favourable conditions are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

In North Africa, wheat crops are in vegetative to reproductive stages and there is concern for crops in parts of Morocco, Algeria, and Tunisia due to high temperatures and below-average rainfall. In central and southern **Morocco** where dryness at the start of the season delayed planting, further deterioration of rainfall in late January and February and exceptionally high temperatures in February have caused low planted areas and low crop performance. Over the past 30 days, rainfall across the country was 50 percent below normal and mean temperatures were two to three degrees above average. In northern and oriental Morocco, despite a significant decrease in rainfall and high temperatures, there is no visible negative effect on vegetation conditions. Across northern **Algeria**, conditions were hot and dry during late-January and February with rainfall up to 70 percent below average. In Algeria's northwest, southwest, and southcentral regions, these hot and dry conditions led to a significant deterioration of wheat crop conditions. Across the rest of the country where early-season conditions were favourable, this dry spell has not yet had a clear effect on vegetation conditions but could imply an early end of an otherwise positive season. In **Tunisia**, rainfall was up to 70 percent below-average in the last 30 days, leading to a drop in crop conditions across the northern regions following a good start of the season. In the southcentral region, vegetation conditions are still above-average despite poor rainfall and high temperatures in February. In **Libya**, conditions remain favourable with good rains throughout the start of the season. However, continued military operations in Tripoli are expected to have a negative impact on agricultural activities. In **Egypt**, conditions for irrigated winter cereals are favourable due to near-average temperatures in February.

In the Middle East, wheat crops are in vegetative to reproductive stages and conditions are favourable. Vegetation conditions remain average to above-average, including in the few areas in eastern Syria and northern Iran where rainfall has been below-average in recent months. However, in **Syria** and **Iraq**, conflict and socio-economic factors continue to impact agricultural production. In northwest **Syria**, the conflict situation has worsened and according to UN OCHA, the current crisis is the worst this region had

experienced since the start of the conflict in 2011 causing record population displacement to areas further north and west and impacting agricultural practices. In **Iran**, conditions for winter wheat are favourable; however, desert locusts swarmed the country's southwest coast in late February and control operations are underway. More desert locust swarms may be expected due to southerly winds favouring their movement.

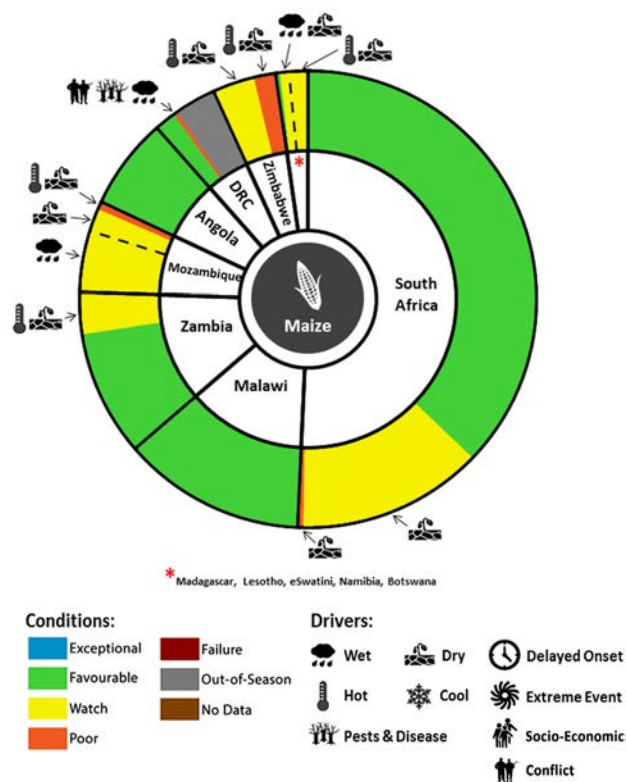
Southern Africa



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

In Southern Africa, harvest of main season crops is expected to start in late March and there is continuing concern due to dry conditions since the start of the season across Zimbabwe, Zambia, Mozambique, Madagascar, Namibia, and parts of Botswana and South Africa. Following one of the driest October-December periods since 1981, improved rainfall in January and February across central parts of the region benefitted crop conditions in some areas. The moderate to high rainfall received in most areas resulted in significant improvements in seasonal rainfall totals, which were well below-average a month ago, but are now near normal to slightly below-normal in many areas. However, for many crops in southern **Zimbabwe** and southern **Mozambique**, the rains came too late to save crops from permanent wilting. Despite overall improvement in vegetation conditions after the January and February rainfall, seasonal accumulation remains below-average in a number of areas including parts of **Namibia** and southern **Zimbabwe**. Forecasts indicate below-average rains for the rest of March and start of April over early deficit rainfall areas (See Regional Outlook Pg. 10). If below-average rains materialize, this could damage late-planted crops that followed the above-average January and February rainfall and may result in further crop losses. The lean season, which ordinarily lasts from October to March, could last longer than expected, as many farmers have either lost their crops or will not be able to harvest and food security is a concern. In **Zimbabwe**, conditions remain poor for maize and sorghum crop across the Masvingo and Matabeleland regions, with decreased planted area and poor seed germination. Poor rainfall and high temperatures further increased moisture stress and permanent wilting resulted in many areas. Mid-January rains in Masvingo facilitated replanting where resources were available. Replanting in mid-January has presented some limited chances of slightly improved harvests if the current rains extend until April. However, short term forecasts indicate that dry conditions are expected over the next few weeks and may mark the cessation of seasonal rains (See Regional Outlook pg. 10). Moderate to heavy mid-January rains in the Matabeleland regions caused flash flooding in some areas including the district of Hwange. Rains fell again in early February, and while they were generally beneficial, flash floods resulted in Binga district in Matabeleland province and parts of Manicaland province. The Midlands region received improved rainfall in February but

temperatures remained high in the first dekad and conditions remain below-average. In Zimbabwe's Manicaland and Mashonaland regions, average to above-average rains received in February may still be beneficial to crop recovery and vegetation indices show slight improvements in vegetation conditions. However, crop prospects remain below-average due to the effects of previous dry spells and the decreased planted area. In southern **Mozambique**, conditions remain poor after insufficient and erratic seasonal rainfall through January resulted in crop losses and replanting attempts. Abnormally high temperatures have persisted over the past months, further exacerbating moisture stress. Improved rains since the second dekad of January are likely too late to benefit many crops, which have wilted beyond recovery. In Mozambique's Manica province, households have attempted replanting, however, there is concern replanted crops will not reach maturity in time. In Sofala province, dry and hot conditions in December and early January caused crop wilting. Then, heavy rains in the second dekad of January caused widespread flooding over agricultural lands and damage to infrastructure. Above-average rainfall since early January in Tete has also caused flooding, affecting over 1,400 people in the province. In the North and Central regions, heavy rainfall in December and January caused flood damage to agricultural lands in lowland areas. In **Angola**, maize and sorghum conditions remain favourable despite below-average rains in some areas over the past month. Good rains were received in Coastal and Highland provinces over the past month except in areas in the northwest Highlands where rainfall was below-average over the past two dekads. In the north and northwest, rains were below-average for much of January; however, vegetation indices show average conditions. In southern Angola, rains were below-average in the past month; however, conditions remain favourable. For sorghum crops in the east, conditions are generally favourable with patches of below-average conditions, particularly in the southern half of the province. There is concern for maize and millet crops in northern **Botswana** as rainfall has been below-average in recent dekads along with above-average temperatures, leading to increased evapotranspiration and crops are experiencing extended moisture stress and wilting in some areas. In east Botswana, rainfall in late January was below-average and temperatures were above normal. However, conditions remain borderline to favourable due to sufficient rainfall received since December. Conditions are worse in the northern and northeastern areas. In **eSwatini**, rainfall has been average- to above-average from the start of season. In east **Democratic Republic of Congo**, despite average rainfall through much of the season, the affects of flooding, fall armyworm and conflict will likely result in a below-average harvest. In **Lesotho**, the late onset of rains affected planted area and the late planted crops are reported to be behind schedule. However, improved rainfall and temperatures in past dekads have been beneficial to crop development. In **Malawi**, conditions are favourable due to good rains from the start of the season, although there is concern in southern Malawi due to heavy rains in mid-January, which flooded some agricultural lands in Nsanje, Chikwawa, and Phalombe. In **Madagascar**, the northern half of the country saw widespread flooding from heavy rainfall in the past month, destroying rice fields. In contrast, extended drought conditions have persisted in the south for much of the season thus far, with poor rainfall and high temperatures in the last two months negatively impacting vegetation conditions, mostly in Androy, Anosy, and Astsimo-Andrefana. In addition, fall armyworm detected in much of the area may also have an impact on final yields. In **Namibia**, there is concern for maize and millet crops due to ongoing dry conditions. In the central area, below-average rainfall and high temperatures over the past months have negatively affected vegetation conditions and irrigation activity. Dam levels are critically low due to consecutive seasons of poor rainfall. In the north, dry conditions over the past month have negatively affected crop development as the irrigation water supply is decreased. Fall armyworm has also been reported in the regions of Zambezi, Oshana, and Oshikoto. In **South Africa**, favourable weather conditions continue to support a very good maize crop over most parts. Recent dry conditions in the northeast may have a negative impact on production there, but some rain is expected over the area in the coming weeks. Current estimates for area planted are above the five-year average.



For detailed description of the pie chart please see description box on pg. 14.

Regional Outlook: Below-average rainfall forecast for March across central and south Southern Africa

During the past 30 days, the Southern Africa had mixed rainfall patterns with some of the largest surpluses in southwestern and eastern Angola, Zambia, Tanzania, northern Malawi, northern and western Mozambique and in parts of central and northeastern South Africa (Figure 1-left). Areas with below-average rainfall in the past 30-days include northern Namibia, eastern Mozambique, much of Madagascar and northeastern South Africa. Reports indicate that improved rainfall conditions since January allowed for better growing conditions and replanting in parts of Zimbabwe where poor October to December rains posed challenges for earlier crop growth. In mid-February, drier than normal conditions affected southwestern Angola and northwestern Namibia, central and southern Mozambique and parts of Zimbabwe and eastern South Africa.

Short and medium-term forecasts indicate that average to below-average conditions are likely to continue in central and southern areas of the region. Forecasts through March 10th show moderate to high probability of below-normal rainfall in Angola, southern Zambia, Botswana, Zimbabwe, southern Malawi, Mozambique and Madagascar. During this period, southern DRC, northeastern Zambia, northern Malawi, southern Tanzania (including Lindi), and northern Madagascar are forecast to receive above-average rainfall, which may increase risk of flooding. Figure 1 (middle) depicts how this would impact January 26th to March 10th rainfall totals.

Longer-term forecasts, such as the 30-day SubX forecast (Figure 1-right) and NMME and WMO seasonal forecasts issued in early February (not shown) also portray a drier than average March to April in some earlier deficit areas. While there is considerable uncertainty, models tend to show most agreement in Madagascar, Mozambique, southern Malawi, central Zambia, parts of Zimbabwe, southwestern Angola and western Namibia. Replanting in Zimbabwe in mid-January presented some limited chances of slightly improved harvests, but predicted average to below-average rainfall for the remainder of the season would reduce chances for crop recovery in these areas.

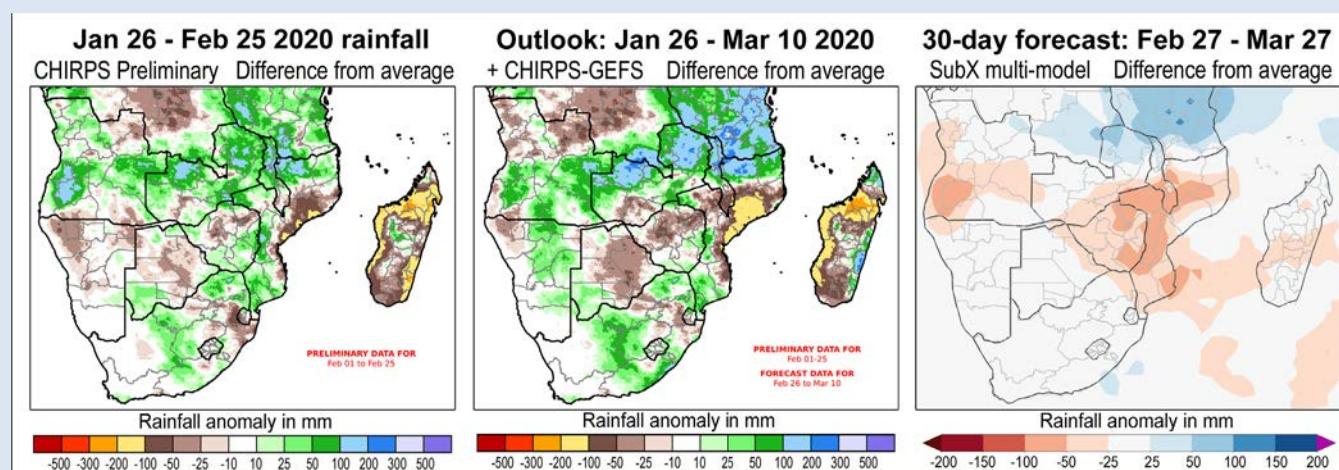
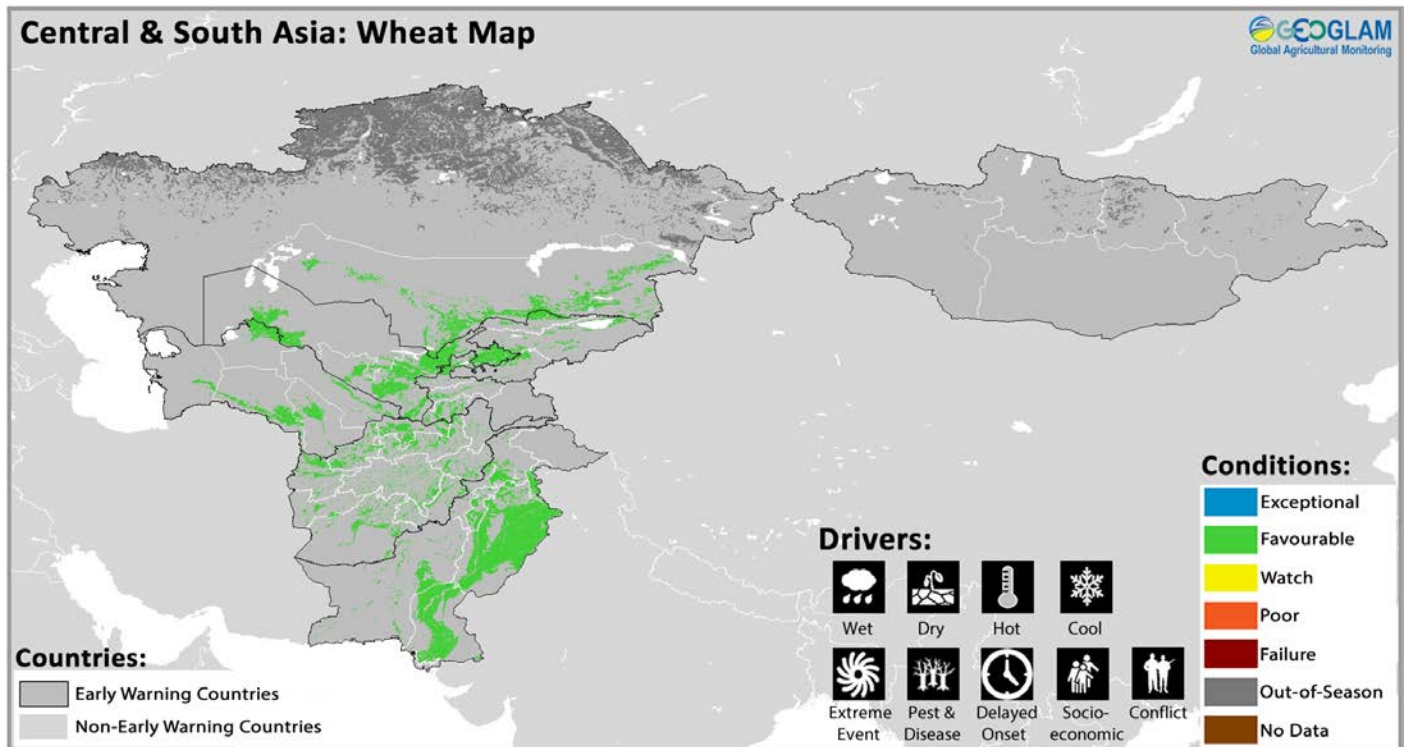


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Source: UCSB Climate Hazards Center

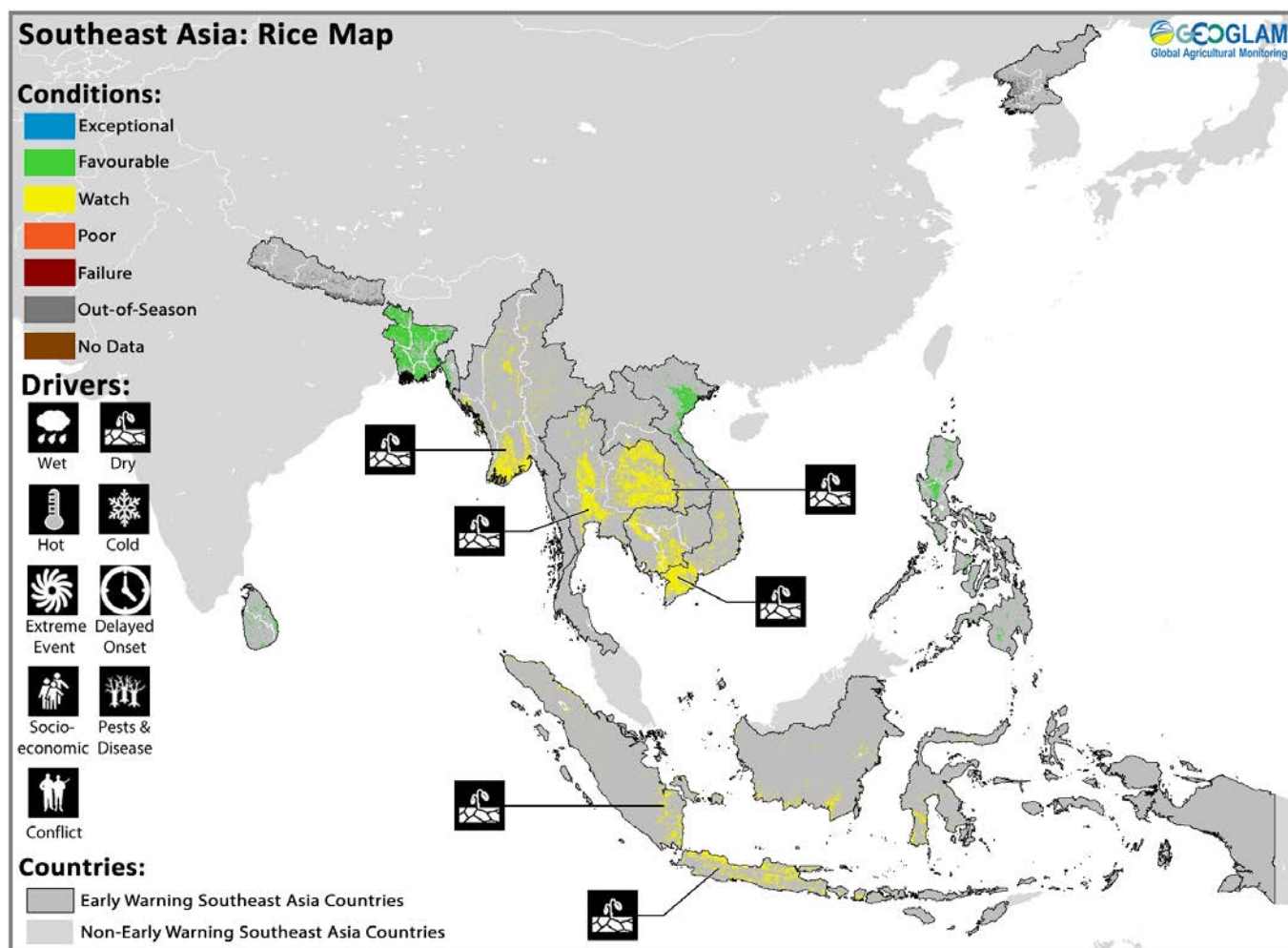
Central & South Asia



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

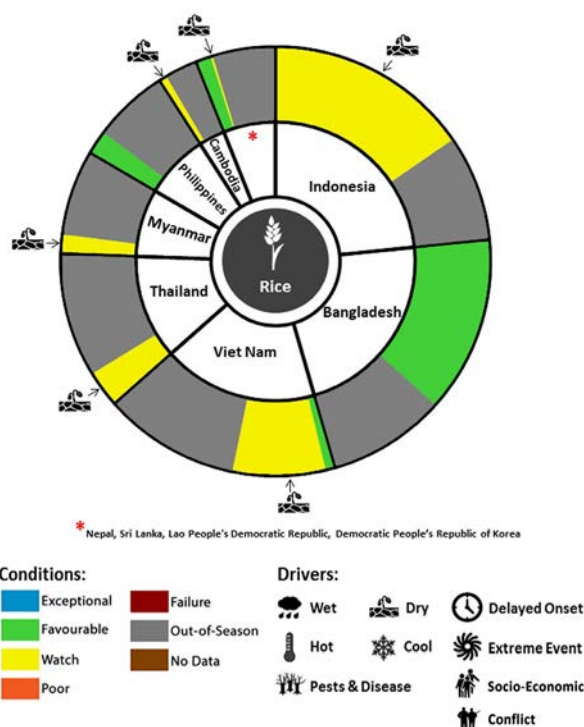
In Central Asia, planting of winter cereals, to be harvested between June and September, finalized in November 2019 under overall favourable weather conditions. Improved precipitation since January helped to improve soil moisture levels and benefitted winter crops, particularly in the western parts of the subregion that experienced drier than average conditions between October and December. However, as the cropping season is still in its early stages, the rainfall performance in the coming months will be crucial to determine the winter cereal production. In the eastern part of the subregion, precipitation in November and December brought adequate snow volumes in mountainous areas of **Kyrgyzstan** and **Tajikistan**. The snow is crucial to ensure moisture reserves for crop development and a source for the Amu Darya River, which provides water for the irrigated fields in Tajikistan, Uzbekistan, and Turkmenistan in the summer period from June to August. In **Kazakhstan's** southern and southeastern winter wheat-producing regions, average temperatures during the second dekad of February were about three degrees above normal and precipitation was above-average, creating satisfactory conditions for the dormancy of winter crops. Thick snow coverage is present in these areas, protecting crops from winterkill. In the south of the country, frequent thaws alternating with nighttime negative air temperatures may damage poorly developed winter wheat crops. In **Afghanistan**, irrigated winter wheat crops are under dormancy stage and planting of spring wheat has not yet begun. Across the country, precipitation was below-average in February. However, areas that received above-average precipitation from October through January were not adversely affected by the February deficits. The persistence of below-average precipitation during February has increased the precipitation deficits in the northern areas bordering Turkmenistan, Uzbekistan, and Tajikistan and cumulative seasonal precipitation is 70 percent of the average. Snow water volumes are below average in all basins across the country except for the southern basins of Helmand, Arghandab, and Ghazni. The area planted for winter wheat is average across much of the country, except in northern areas where the planted area is below average. In northern provinces, farmers are awaiting the spring rains to plant spring wheat in March and April. The above-average temperature together with below-average precipitation during February does not bode well for crops and pastures in the northern areas of the country for the upcoming spring agricultural season. In **Pakistan**, conducive weather conditions and adequate supplies of agricultural inputs are expected to lead to a near-average 2020 wheat output, which will be harvested in April. Concerns exist for wheat crops in parts of the main producing province of Punjab, along the border with India, where the majority of wheat is cultivated. In **Mongolia**, according to the Mongolian National Agency for Meteorology and Environmental Monitoring, fifty percent of the country is at risk of extreme winter weather (dzud) which may impact livestock and vulnerable herder populations.

Southeast Asia



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

In northern Southeast Asia, most of the dry-season rice is in the growing stage, and planted area is estimated to have decreased except for Vietnam due to the lack of irrigation water and natural water resources following poor precipitation during the 2019 wet-season and continuing below-average precipitation. Forecasts indicate below-average rainfall patterns may continue across the north of the region through March while Indonesia may experience above-average rains (See Regional Outlook Pg. 13). In **Indonesia**, an increase in rainfall is supporting the expansion of wet-season rice sowing. However, harvesting of earlier sown crops is continuing under watch conditions due to the prolonged drought reducing yields compared to last year. In the **Philippines**, conditions are generally favourable for dry-season rice despite minimal rainfall received over the past month. However, moisture stress may impact final yields. Plantings for the November to December period are in the young panicle to heading stage. In **Thailand**, dry-season rice conditions remain under watch due to the continued shortage of available water for irrigation and some pest outbreaks in the northern region. The total sown area has strongly decreased in the centre-north compared to last year due to the dry conditions. In **Viet Nam**, sowing of the main irrigated rice (winter-spring rice) is beginning in the north under favourable conditions with an expected increase in total sown compared to last year owing to warm weather and better irrigation preparation. In the south, sowing is complete, and sowed area is comparable to last year. Conditions remain



For detailed description of the pie chart please see description box on pg. 14.

under watch with damaging saltwater intrusion continuing as harvest begins in some provinces. In **Laos**, dry-season rice planting has reached 83 percent of the national plan of 90 thousand hectares, and crops are in tillering stage. Water shortages are present due to little to no rainfall received and low water supply for irrigation; however, crop damage remains minimal. In **Myanmar**, dry-season rice planting has reached 65 percent of the total national plan of 1.1 million hectares, and there is concern due to water shortages. Planting in the Delta areas has reached 100 percent of the national plan, but in other irrigated areas, less than 20 percent of the national plan has been achieved. Specifically, the Rakhine state has not yet been planted due to scarcity of water storage in dams and reservoirs. In **Cambodia**, dry-season rice is in vegetative to reproductive stage, and the planted area has reached 576 thousand hectares. The average yield is estimated to be slightly lower than last year at 4.22 tonnes per hectare, and the final planted area may be reduced due to dry conditions and low water supply for irrigation. In areas with access to water supply, growing conditions are generally favourable; however, some areas farther away from irrigation sources in the lowland areas of the Mekong have already been damaged due to low water supply. In **Sri Lanka**, harvest will complete in March for the main *Maha* rice and maize crops and despite dry conditions in the past month and an early cessation of rainfall, good rains through the start of the season have resulted in favourable production prospects. In **Bangladesh**, planting of the main *Boro* rice crop, which accounts for 55 percent of annual output, is complete, and conditions are generally favourable. In **Nepal**, planting of the 2020 maize crop started in February and conditions are favourable.

Regional Outlook: Below-average rains are forecast to continue in northern Southeast Asia through March while above-average rains in Indonesia may improve rainfall deficits

The extended outlook for January 26th to March 10th rainfall, based on preliminary data through February 25th and the two-week forecast issued on February 26th, depicts average to below average rainfall in northern areas of Southeast Asia and average to above-average rainfall in southern Indonesia (Figure 1-left). Northern coastal Indonesia, Malaysia, the Philippines, and parts of southern Thailand may have deficits of 50 mm to higher than 100 mm during this period. This is in part due to anticipated below average rainfall during the two week forecast period. Several models show agreement for this near term dry signal. Some of the longer-range forecasts indicate this pattern may persist throughout March and April. The 30-day SubX forecast shows March rainfall totals as being mainly suppressed in southern Thailand and the Philippines (Figure 1-middle). In April, northern region areas of Thailand, Cambodia, Vietnam, and Laos may also see drier than normal conditions, according to international model forecasts issued in early February (Figure 1-right).

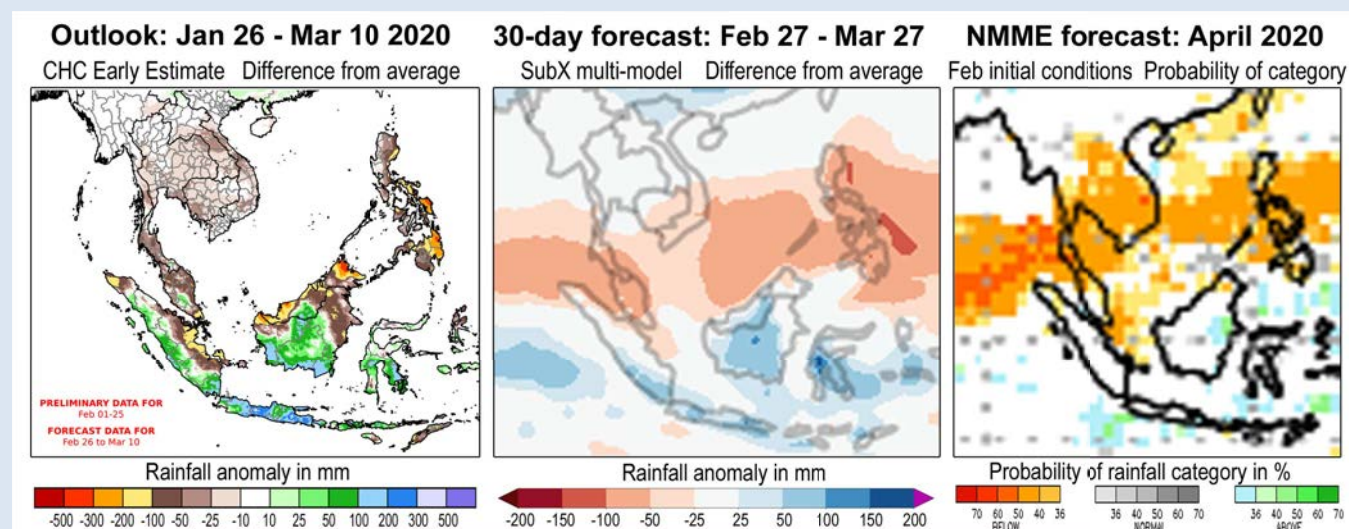
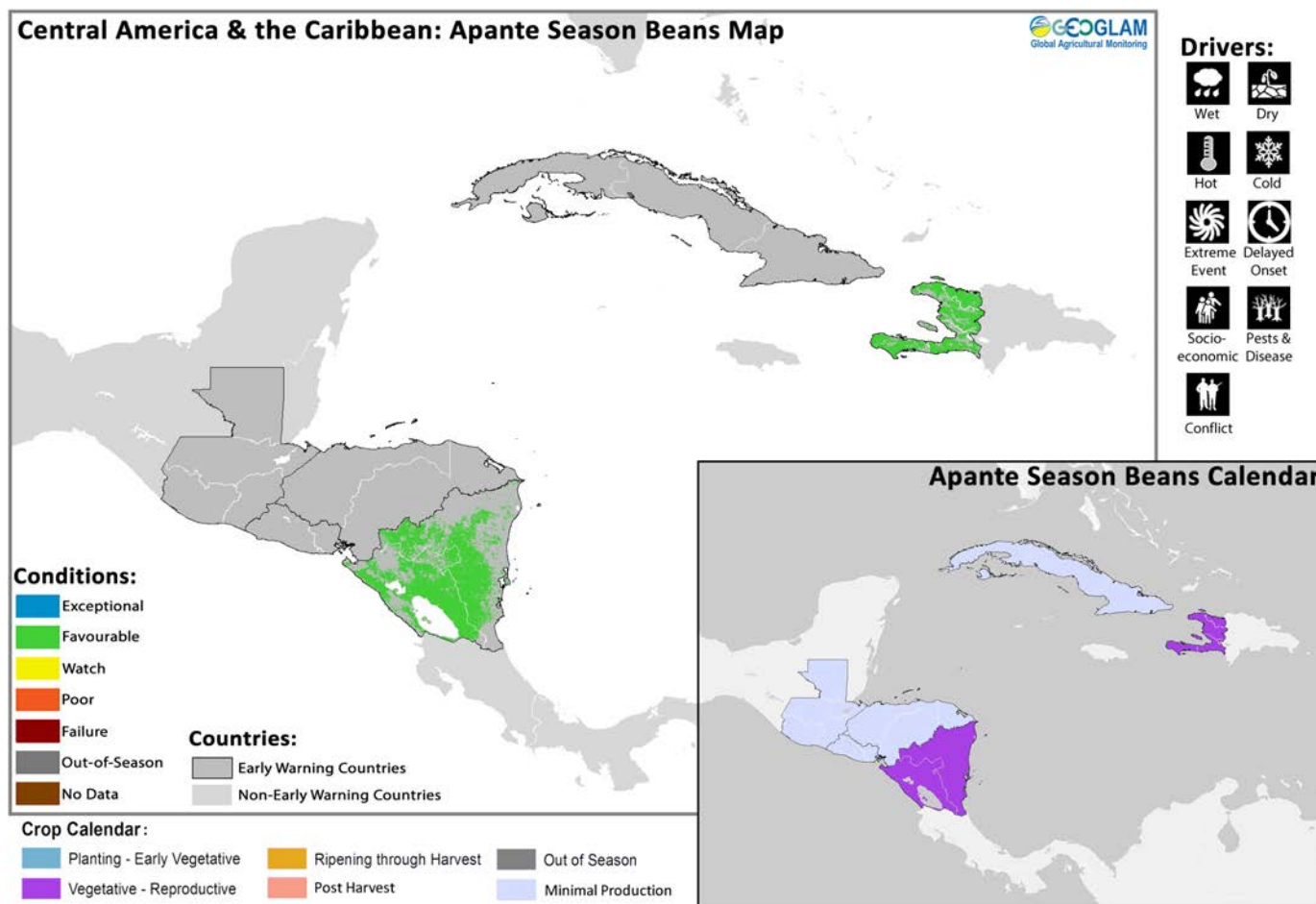


Figure 1. Estimated and forecast rainfall since January 26th and forecasts for March and April 2020. Left and middle maps show rainfall in terms of the difference from average. On the left is an extended outlook for January 26th to March 10th. This UCSB Climate Hazards Center Early Estimate is based on final CHIRPS for January, preliminary CHIRPS for Feb 1st to 25th, and the 14-day unbiased GEFs forecast from Feb 26th. The anomaly is based on the 1981-2019 CHIRPS average. The middle panel a 30-day forecast from February 27th. The image shows the average across four Subseasonal Experiment (SubX) model forecasts available on 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/kpejion/subx/index.html>. The right panel shows the North American Multi Model Ensemble (NMME) probabilistic rainfall forecast for April 2020, released in early February 2020. Orange/red and green colors indicate the dominant tercile category (below-normal or above-normal) forecast by the NMME models, with the individual model forecasts judged according to their respective hindcasts. Color intensity shows corresponding probability of the forecast. White color indicates where there is disagreement amongst models as to the most-likely tercile category. Original images are available at www.cpc.ncep.noaa.gov. Source: UCSB Climate Hazards Center

Central America & Caribbean



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

In Central America and the Caribbean, *Apante* season beans and winter rice crops, to be harvested in mid-March, are in vegetative to reproductive stages and conditions are favourable due to good rains during the season. In **Nicaragua**, *Apante* bean crops, planted in late December and early January, show average to above-average vegetative conditions due to good rains since December. In **Haiti**, normal precipitation since December has been favourable for bean and rice crops across the country. In **Honduras**, rice crops are developing under generally favourable conditions and in **Cuba**, below-average rainfall in January and February contributed to slightly dry conditions, though without major impact on winter rice crops.

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 March 5th 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 Christina Justice

Contributing partners



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