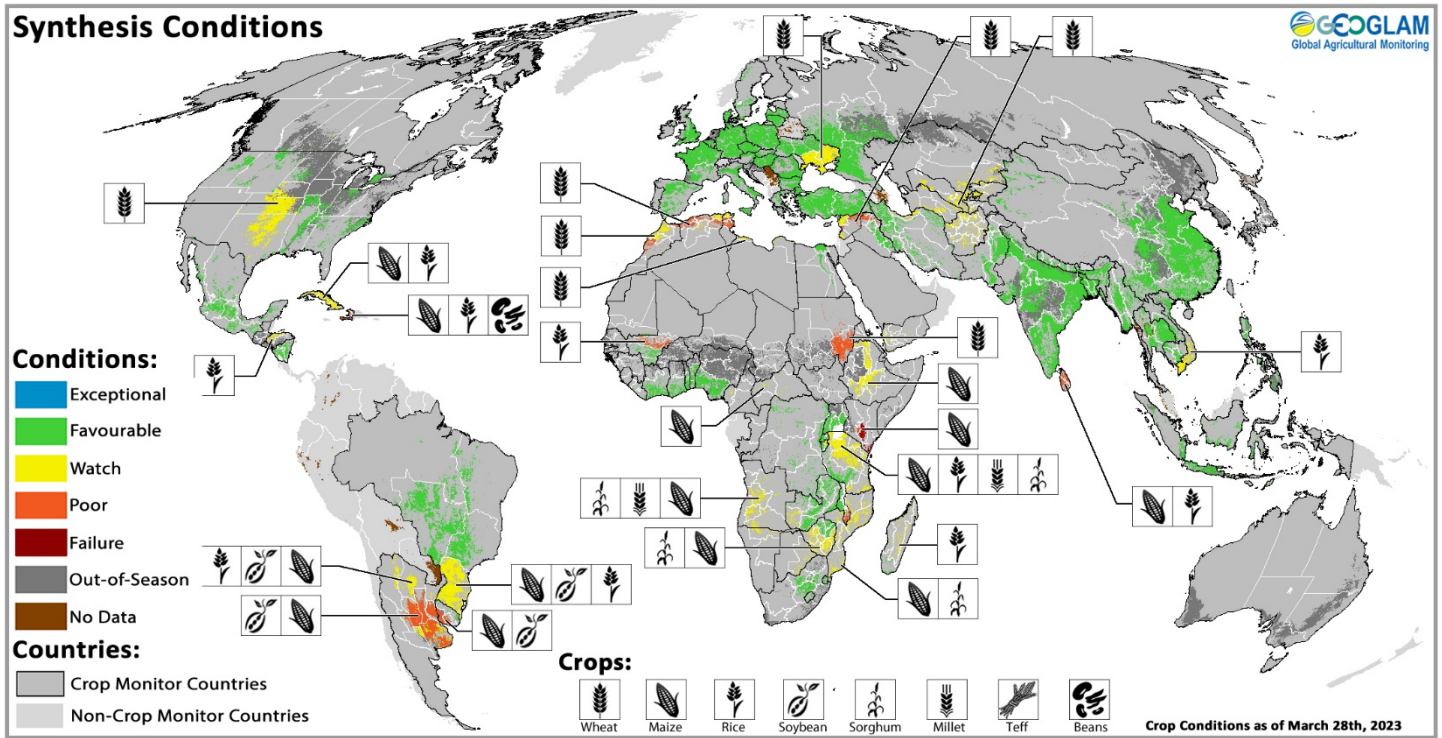


GEOGLAM Global Crop Monitor

Synthesized from the Crop Monitor for AMIS, the Crop Monitor for Early Warning, and direct submissions from individual countries.



Crop condition map synthesizing information for all Crop Monitor crops as of March 28th. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, and 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.**

	Wheat	Maize	Rice	Soybean	Legend:
Current Conditions					Positive
Compared to last month					Better
Compared to last year					Worse

See Appendix I for detailed methodology description

Global Crop Overview

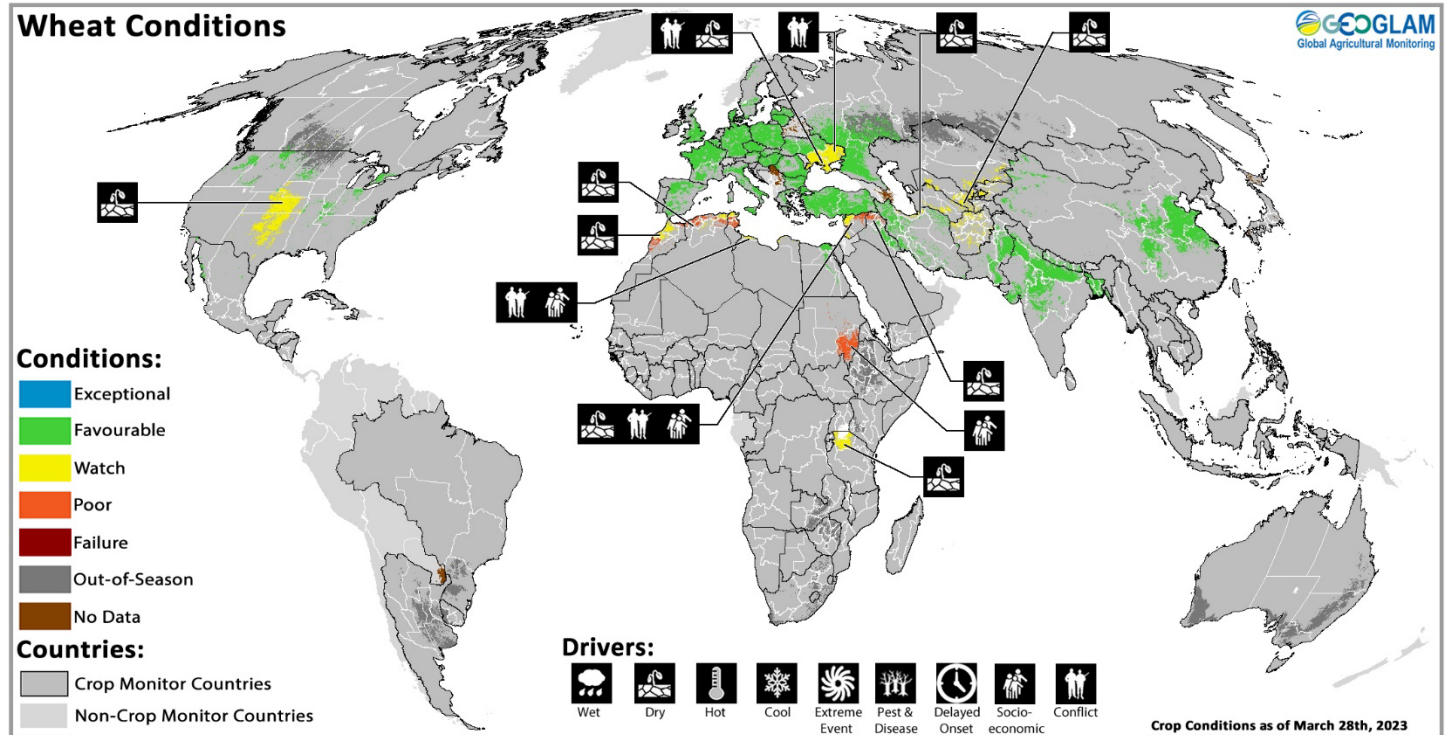
Global crop conditions at the end of March are positive for wheat and rice, while mixed for maize, and negative for soybeans. For **wheat**, conditions are generally favourable except for in the US, Ukraine, MENA, and Central Asia. For **maize**, conditions are mixed in the Caribbean, southern South America, East Africa, and Southern Africa. For **rice**, overall conditions are generally favourable except for in southern Viet Nam, the Caribbean, South America, and parts of Sub-Saharan Africa. For **soybeans**, hot and dry conditions continue to reduce yields in South America. The remaining crops are covered in the [CM4EW](#) publication.

Global Climate Influences

The El Niño-Southern Oscillation (ENSO) is currently in a neutral state. ENSO neutral conditions are expected through July. El Niño conditions may develop during the latter half of 2023, with a 61% chance of El Niño during August-September-October, according to the IRI/CPC forecast. For further details see page 6.

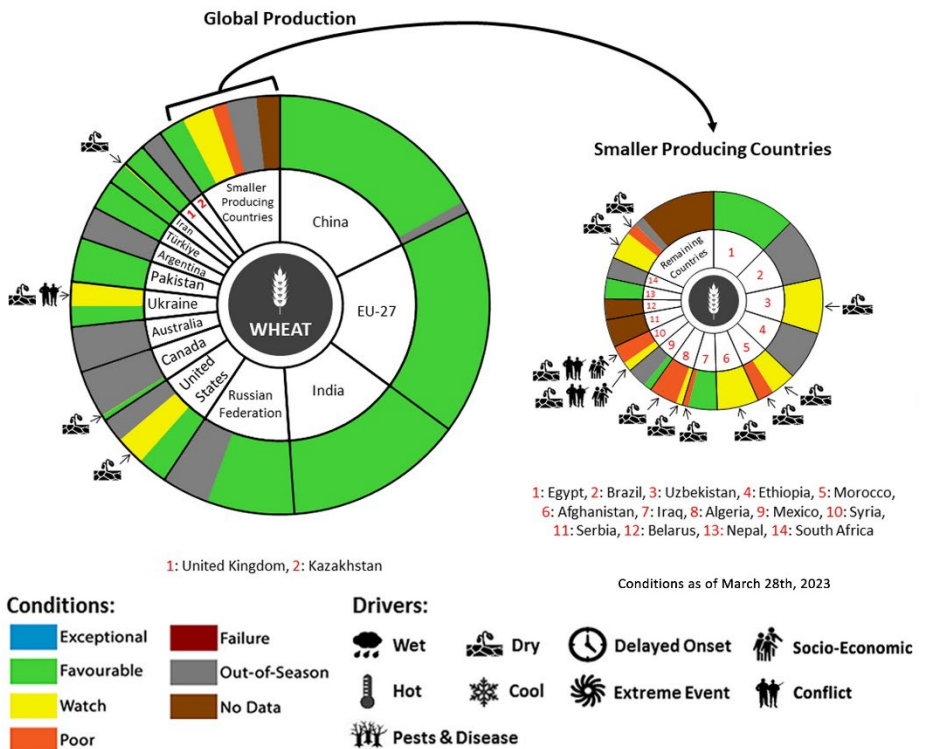
Source: UCSB Climate Hazards Center

WHEAT



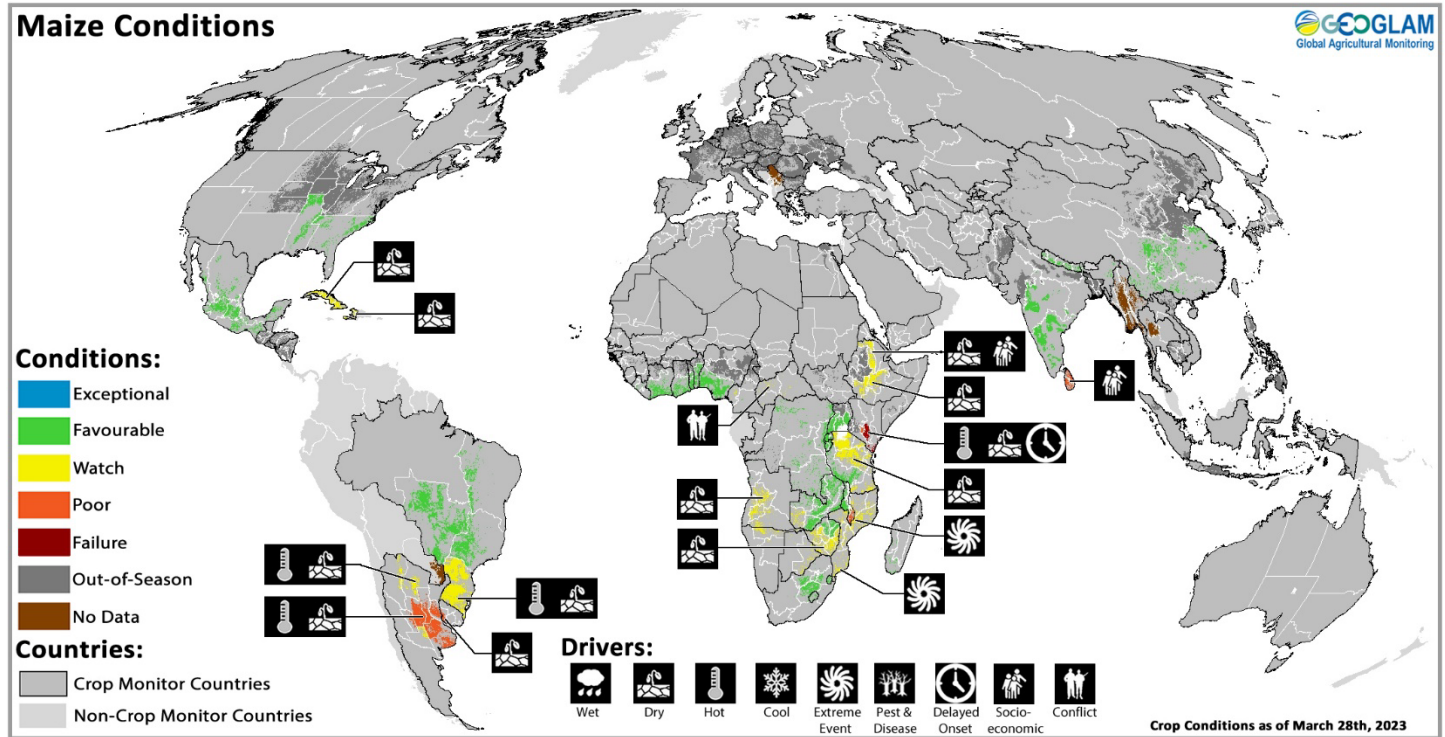
Wheat crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Conditions are based upon information as of March 28th.

In **North America**, dry soil conditions remain in many areas of the US across the central and southern Great Plains as crops begin to break out of dormancy. In Canada, winter wheat conditions are generally favourable. In Mexico, sowing is wrapping up under favourable conditions. In **Europe**, conditions are generally favourable in the EU, albeit heterogeneous due to a mix of rainfall patterns and temperatures. In the UK, conditions are favourable. In Türkiye, conditions are generally favourable, albeit with delayed crop development due to late autumn sowings, two cold spells, and overall low soil moisture. In Ukraine, conditions are generally favourable away from the war zones with winter wheat regrowth beginning 2-3 weeks earlier than average; however, dry conditions have developed and have begun to impact crops in southern Odessa. In the Russian Federation, conditions have improved with sufficient rainfall over the past month, particularly in the Southern Caucasus. In **Central Asia**, concern remains for winter wheat development in southern Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, and Afghanistan due to the ongoing impacts of persistent dryness and high temperatures. In **South Asia**, winter wheat is under generally favourable conditions in India with harvest progressing in Madhya Pradesh and Rajasthan. Recent heavy rainfall with hailstorms resulted in localized damage in several states. In Pakistan, harvesting is beginning under favourable conditions. In Nepal, harvesting is ongoing under favourable conditions. In **East Asia**, winter wheat is under favourable conditions in China. In **MENA**, below-average yields are expected in parts of Morocco, Algeria, Tunisia, northeastern Syria, and northern Iraq due to persistent dry conditions. In Iran, recent rainfall has improved conditions in the central-western region. In **Sub-Saharan Africa**, harvest is ongoing in Sudan under poor conditions. In Tanzania, concern remains over dry conditions.



For detailed description of the pie chart, please see box on page 5.

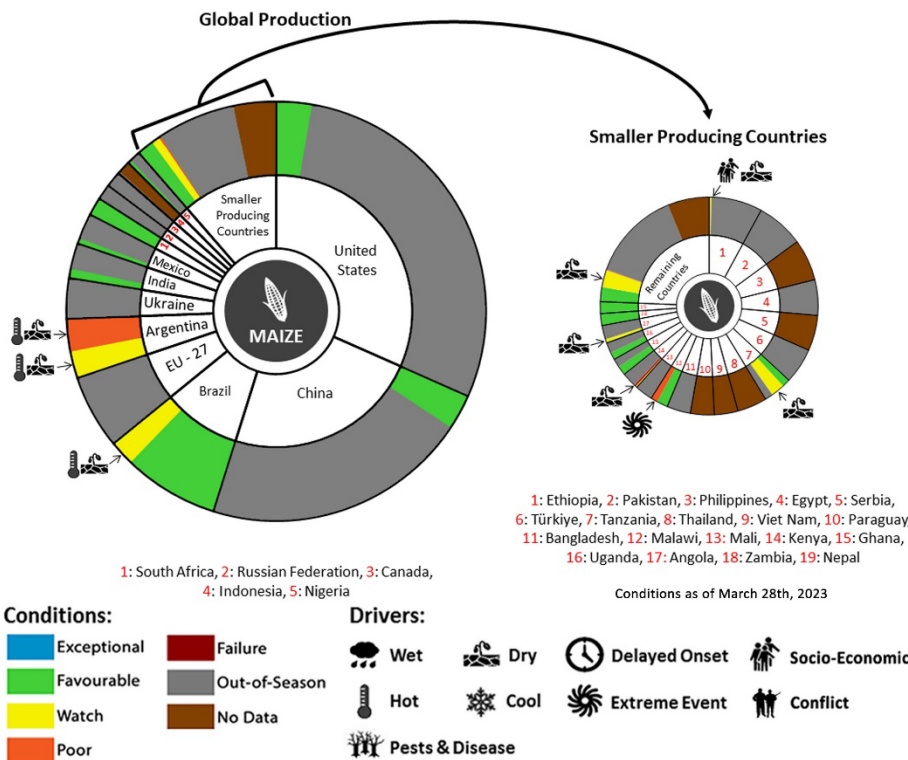
MAIZE



Maize crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Conditions are based upon information as of March 28th.

In **South America**, harvest is ongoing in Brazil for the spring-planted crop (smaller season) under generally favourable conditions, except in Rio Grande do Sul due to a lack of rain and high temperatures throughout the season. Sowing is wrapping up for the summer-planted crop (larger season) at a slower pace than the last season due to a slight delay in soybean harvesting. In Argentina, harvesting of the early-planted crop (typically larger season) is ongoing with significantly reduced yields reported in the central agricultural areas due to the prolonged drought and high temperatures. The late-planted crop (typically smaller season) is now showing uneven development and reductions in the yields are expected. In Uruguay, conditions are poor due to the prolonged drought. In **Central America & the Caribbean**, conditions are favourable in Mexico for the autumn-winter crop (smaller season) as harvest begins. In Cuba, concern remains for the main season crops due to continuing dry conditions. In Haiti, dry conditions are impacting the sowing of the *Printemps* season crops. In **North America**, sowing is beginning in the US. In **East Asia**, sowing has begun

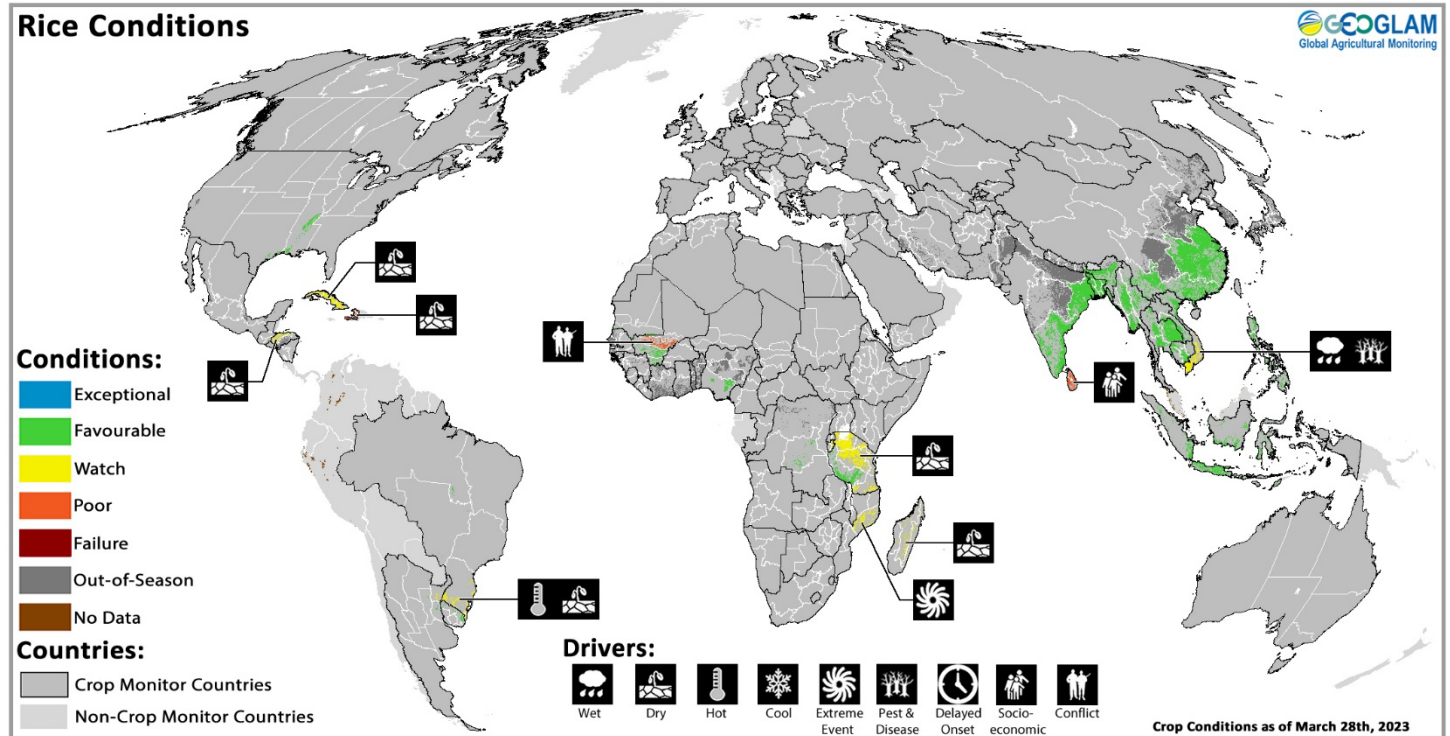
for the spring-planted crop in China. In **South Asia**, conditions are favourable in India for the *Rabi* crop. In Sri Lanka, harvesting of *Maha* season crops is wrapping up under poor conditions. In **East Africa**, concern remains for *Belg* season cereals in Ethiopia. Sowing of the main season crop is now underway in Kenya, Rwanda, Burundi, Uganda, and Tanzania with concern in Kenya and parts of Tanzania due to continuing dry conditions. Conditions are favourable in Burundi and the southwest of Tanzania and have improved in Rwanda and Uganda. In **West Africa**, sowing of the main season crop is beginning in the south under favourable conditions except in conflict-affected areas of the Central African Republic and Cameroon. In **Southern Africa**, harvesting is underway, and conditions remain mixed due to persisting and, in some cases, extreme dryness in parts of Angola, Namibia, Botswana, and Zimbabwe. Tropical Cyclone Freddy's passage in February and March, resulted in large crop losses in Madagascar, Mozambique, and southern Malawi. In South Africa, conditions are generally favourable.



For detailed description of the pie chart, please see box on page 5.

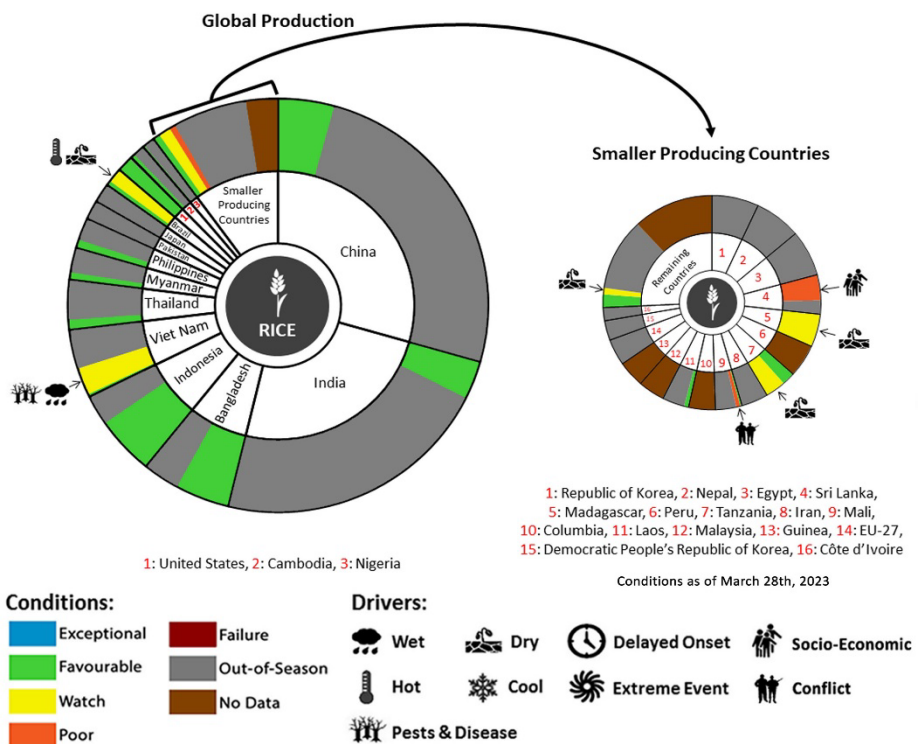
* Assessment based on information as of March 28th

RICE



Rice crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Conditions are based upon information as of March 28th.

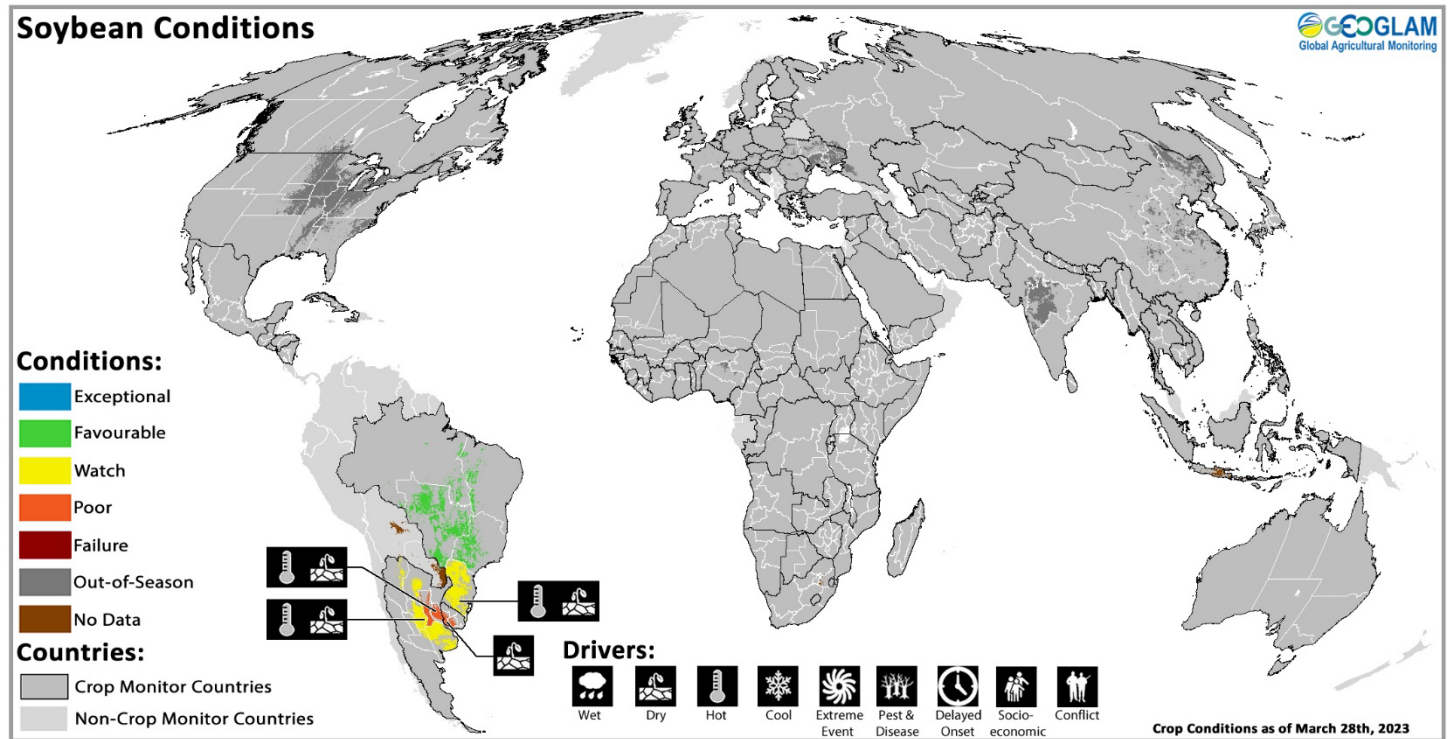
In **East Asia**, sowing is beginning in China for the early-planted crop under favourable conditions. In **South Asia**, conditions are favourable in India for the *Rabi* crop with recent excess rainfall providing ample irrigation waters. In Bangladesh, both *Boro* and *Aus* season rice crops continue to develop under favourable conditions for harvest from mid-April. In Sri Lanka, harvesting of *Maha* season crops is wrapping up under poor conditions due to limited access to agrochemicals during the growing season. In **Southeast Asia**, dry-season rice (winter-spring rice) is harvesting in the South of Viet Nam under mixed conditions due to slow receding flood waters and reduced solar inputs from foggy weather. In the North of Viet Nam, dry-season rice (winter-spring rice) is under favourable conditions. In Thailand, harvesting of dry-season rice is ongoing with generally good yields. In the Philippines, dry-season rice sown from November to December is beginning to be harvested under favourable conditions owing to average to above-average rainfall. In Laos, sowing of dry-season rice is nearing completion. In Myanmar, conditions are favourable, and harvesting of early-planted crops has started mainly in the delta region. In Cambodia, harvesting is continuing under favourable conditions. In Indonesia, sowing of wet-season rice is wrapping up with an increase in total sown area compared to last year. Harvesting of earlier sown wet-season rice is progressing much faster than last year with good yields. In the **Americas**, sowing is beginning in the US. In Cuba, main-season crops are impacted by dry conditions. In Haiti, harvesting of second-season rice is wrapping up. In Honduras, harvesting is ongoing for the second season rice crop. In Brazil, harvesting is continuing with concerns in the south due to the drought. In Argentina, harvest has started with normal yields. In Uruguay, harvesting is ongoing. In **Sub-Saharan Africa**, conflict remains an issue in Mali while dry conditions are an issue in Madagascar, Tanzania, and Mozambique.



For detailed description of the pie chart, please see box on page 5.

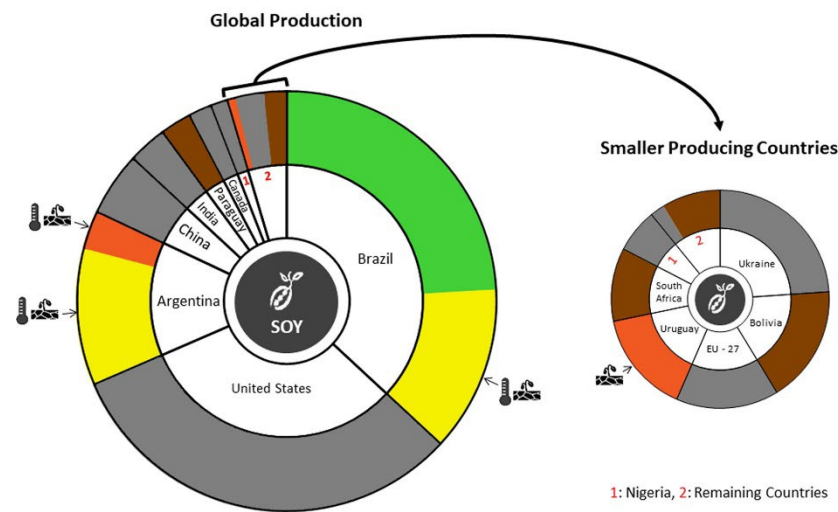
* Assessment based on information as of March 28th

SOYBEAN



Soybean crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Conditions are based upon information as of March 28th.

In **South America**, harvesting is progressing in Brazil with estimated good yields in the Central-West, Northeast, Southeast, and North regions. However, the lack of rain and high temperatures throughout the season remains a concern in the Rio Grande do Sul state. In Argentina, a general lack of rainfall in the central agricultural areas, an early mid-February frost in the west, and temperatures above-average over the last thirty days have affected the early-planted crop's (larger season) yields and heavily impacted the harvestable area of the late-planted crop (smaller season). The most affected regions are Santa Fe, northern Buenos Aires, and Entre Ríos where most of the planted area is concentrated. In Uruguay, the prolonged drought has significantly reduced yields of both the first and second crops.



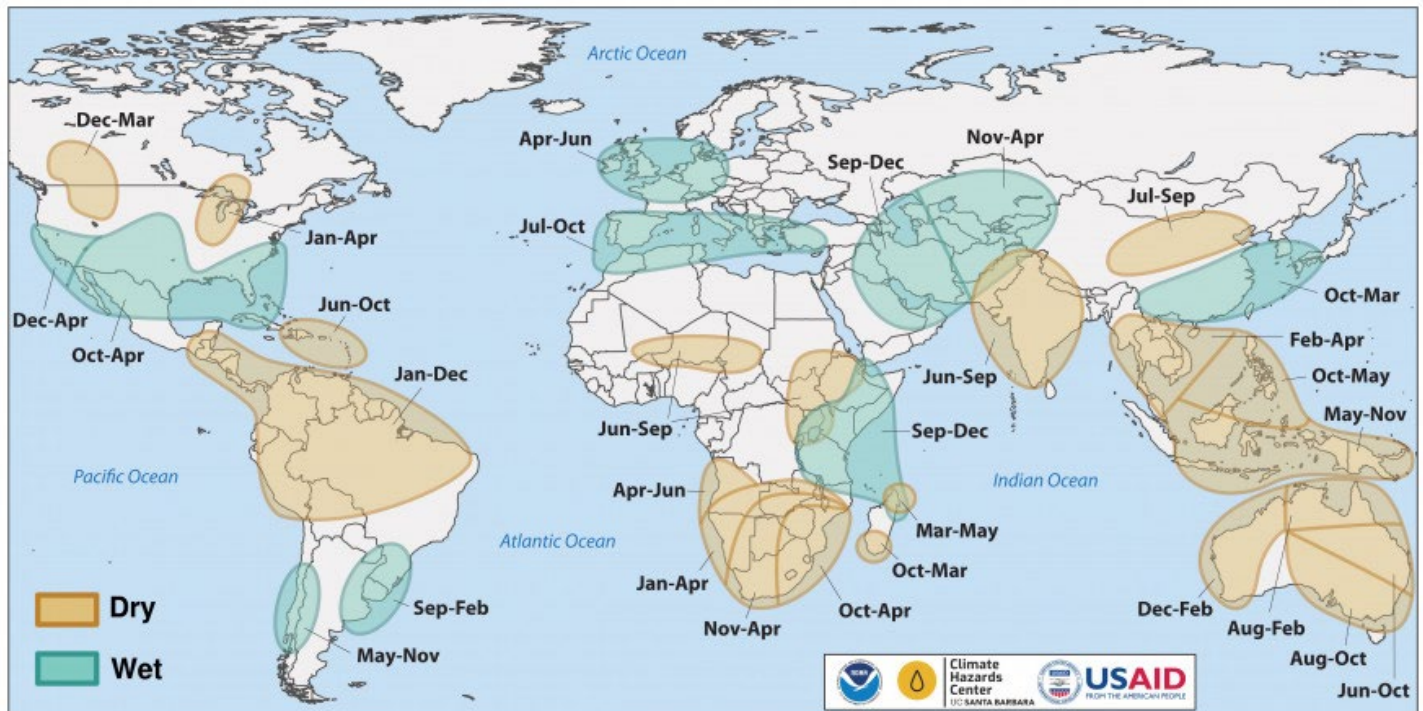
Pie Chart Description: Each slice represents a country's share of total Global production (5-year average). Main producing countries (representing 90-95 percent of production) are shown individually, with the remaining 5-10 percent grouped into the "Smaller Producing Countries" category. The proportion within each national slice is coloured according to the crop conditions within a specific growing area; grey indicates that the respective area is out of season. Sections within each slide are weighted by the sub-national production statistics (5-year average) of the respective country. The section within each national slice also accounts for multiple cropping seasons (e.g., spring and winter wheat). When conditions are other than 'favourable', icons are added that provide information on the key climatic drivers affecting conditions.



Global Climate Influences

The El Niño-Southern Oscillation (ENSO) is currently in a neutral state. ENSO neutral conditions are expected through July. El Niño conditions may develop during the latter half of 2023, with a 61% chance of El Niño during August-September-October, according to the IRI/CPC forecast. While long-range forecasts made at this time of year can be unreliable, El Niño events can have widespread, global impacts. Should El Niño materialize, average to above-average rains could occur in Central Asia, southern North America, south-eastern South America, southern Europe, eastern East Africa, and southern and eastern China. Average to drier than average conditions could occur in Central America, the Caribbean, northern South America, Southern Africa, the Maritime Continent, and Australia.

Source: UCSB Climate Hazards Center



Location and timing of likely above- and below-average precipitation related to El Niño events. Based upon observed precipitation during 22 El Niño events since 1950, wet and dry correspond to a statistically significant increase in the frequency of precipitation in the upper and lower thirds of historical values, respectively. Statistical significance at the 95% level is based on the resampling of precipitation during neutral El Niño-Southern Oscillation conditions. Source: [FEWS NET & NOAA & CHC](#)

Regional Outlooks

In **North America**, the two-week forecast (Figures 1 & 2) indicates potential areas of below-average precipitation in western Prairies in Canada and over the western Northern Great Plains in the US. Areas of above-average precipitation are possible over the southeast and Delta regions of the US. During the same time, temperatures are likely to be below-average across most of Canada along with over the northern Great Plains and the Pacific Northwest in the US. Above-average temperatures are possible in Florida and along the Gulf of Mexico of the US. The long-term April-May-June 2023 forecast (Figures 3 & 4) shows possible below-average precipitation across the US Southwest. During the same time, temperatures are likely to be above-average across all of North America. For further details, see the [CM4AMIS](#) Regional Outlook for the United States.

In **Central America & the Caribbean**, the two-week forecast (Figures 1 & 2) indicates likely below-average precipitation across most of the Dominican Republic, Guatemala, Honduras, Nicaragua, Costa Rica, and Panama. During the same period, temperatures are not likely to be either below or above-average. The long-term April-May-June 2023 forecast (Figures 3 & 4) suggests a likely similar pattern of below-average precipitation across Guatemala, Honduras, Nicaragua, Costa Rica, and Panama. During this time, temperatures are likely to be above-average across the entire region, with the highest likelihood over Cuba, Haiti, and the Dominican Republic. For further details, see the [CM4EW](#) Regional Outlook for Central America and the Caribbean.

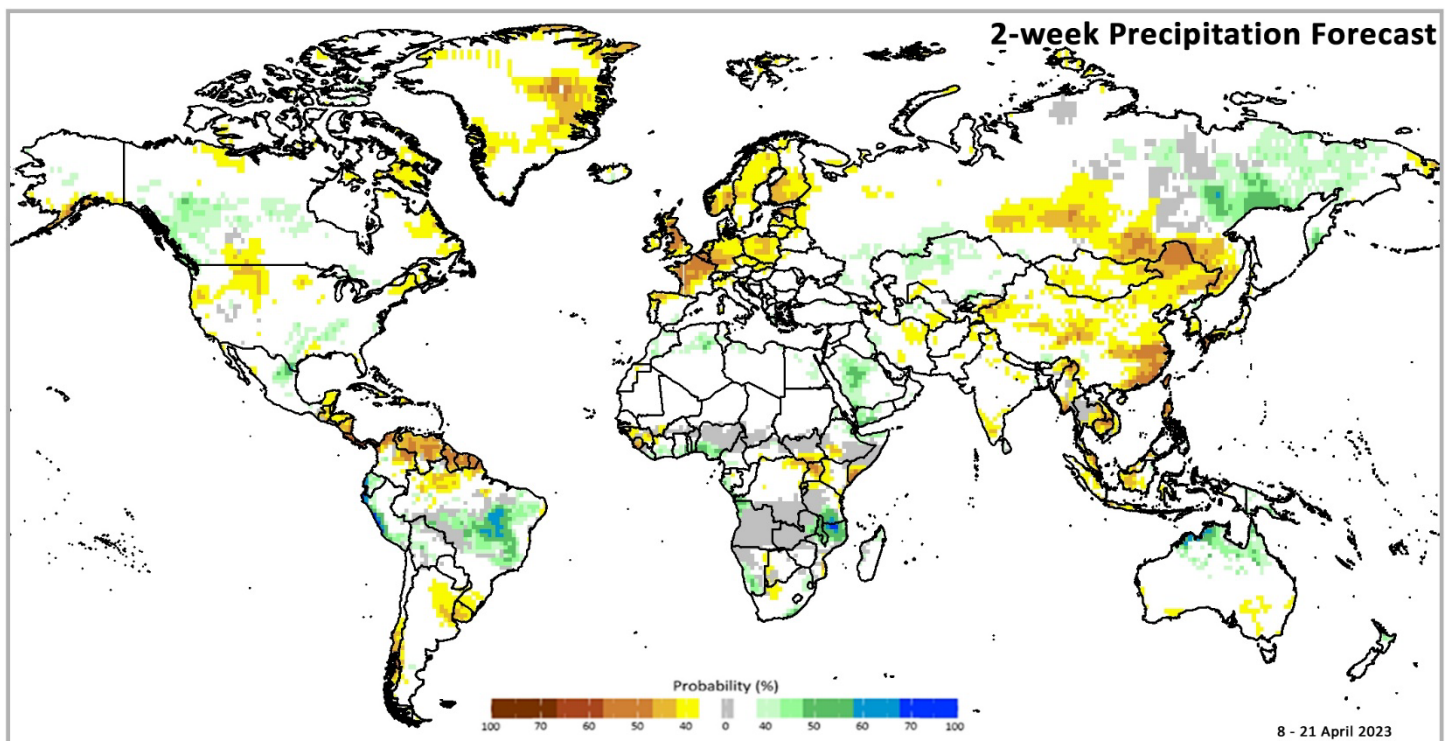


Figure 1: IRI SubX Precipitation Biweekly Probability Forecast for 8 – 21 April 2023, issued on 31 March 2023. The forecast is based on statistically calibrated tercile category forecasts from three SubX models. Source: [IRI Subseasonal Forecasts Maproom](#)

In **South America**, the two-week forecast (Figures 1 & 2) indicates likely below-average precipitation in northern and eastern Columbia, Venezuela, Guyana, Suriname, French Guiana, northern and southern Brazil, Uruguay, central Argentina, and southern Chile, while above-average over central Brazil, coastal Ecuador, and coastal Peru. During this time, temperatures are likely to be above-average in Guyana, Suriname, French Guiana, northern and eastern Brazil, southeastern Argentina, and Chile, while below-average in Paraguay and northern Argentina. The long-term April-May-June 2023 forecast (Figures 3 & 4) suggests likely below-average precipitation in eastern Venezuela, while above-average along coastal Ecuador and Peru. During that time, temperatures will likely be above-average across most of the continent, with the highest likelihood over Columbia, Ecuador, Peru, and northern Chile. For further details, see the [CM4AMIS](#) Regional Outlooks for Argentina and Brazil.

In **Europe**, the two-week forecast (Figures 1 & 2) indicates likely below-average precipitation over Norway, Sweden, Finland, Ireland, the United Kingdom, northwest Spain, France, Belgium, the Netherlands, Germany, Poland, Czechia, Slovakia, Lithuania, Latvia, Estonia, and northern Italy. During this time, temperatures are likely to be above-average in Ireland, the United Kingdom, Portugal, Spain, and Norway, while below-average over Finland, Estonia, Latvia, Lithuania, Belarus, Ukraine, Moldova, and the Russian Federation. The long-term April-May-June 2023 forecast (Figures 3 & 4) predicts no dominant tercile for precipitation over Europe. During the same period, temperatures will potentially be above-average across all of Europe with the highest likelihood over the eastern Mediterranean countries.

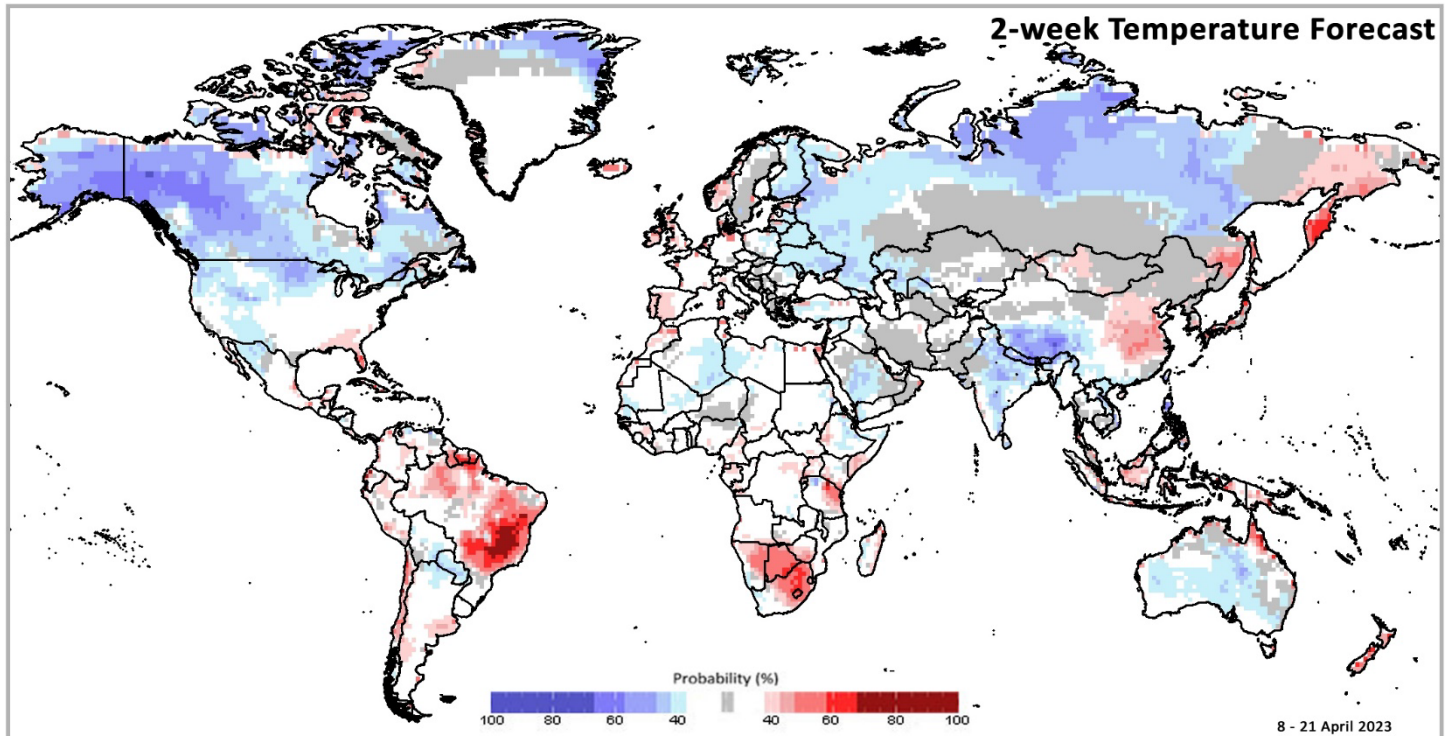


Figure 2: IRI SubX Temperature Biweekly Probability Forecast for 8 – 21 April 2023, issued on 31 March 2023. The forecast is based on statistically calibrated tercile category forecasts from three SubX models. Source: [IRI Subseasonal Forecasts Maproom](#)

In **MENA**, the two-week forecast (Figures 1 & 2) indicates a small likelihood of above-average precipitation in parts of Morocco, central Algeria, southern Tunisia, western Libya, central Saudi Arabia, and western Yemen, while a slight likelihood of below-average precipitation in northeastern Iran. During this time, temperatures are likely to be above-average in parts of northern Morocco, Tunisia, and Egypt, while below-average in central Saudi Arabia. The long-term April-May-June 2023 forecast (Figures 3 & 4) predicts no dominant tercile for precipitation over MENA. During this time, temperatures are likely to be above-average across the region, with the highest likelihood over Egypt and eastern Libya.

In **Sub-Saharan Africa**, the two-week forecast (Figures 1 & 2) indicates likely below-average precipitation over Sierra Leone, Guinea, southern South Sudan, northeast DRC, Uganda, western Kenya, southwest Ethiopia, southern Somalia, and northern Tanzania. Above-average precipitation is likely over southern Côte d'Ivoire, southern Ghana, southern Togo, southern Benin, southern Nigeria, the western Democratic Republic of the Congo, northwest Angola, southern Namibia, southern South Africa, Malawi, northern Mozambique, southern Tanzania, northern Somalia, and Djibouti. At the same time, temperatures are likely to be above-average in northeastern Tanzania, Namibia, Botswana, southern Zimbabwe, central South Africa, and Lesotho, while below-average over eastern Ethiopia. For the long-term April-May-June 2023 forecast (Figures 3 & 4), precipitation is likely to be above-average over Tanzania and the southern Democratic Republic of the Congo. During this time, temperatures are likely to be above-average across most of Sub-Saharan Africa. For further details, see the [CM4EW](#) regional outlook for East Africa.

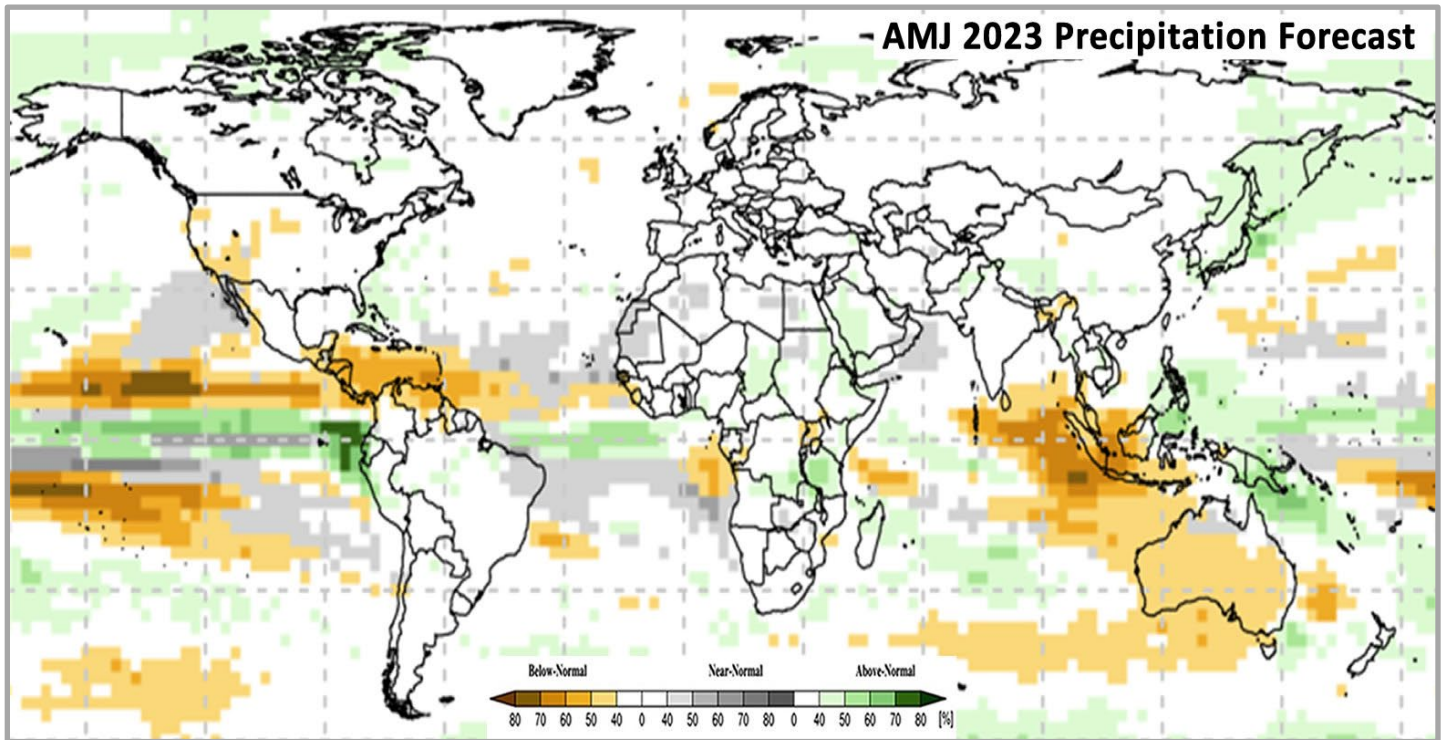


Figure 3: Probabilistic forecast for most-likely April-May-June (AMJ) 2023 rainfall tercile, based on March conditions. The white colour indicates that there is no dominant category across the model forecasts. Source: [WMO Lead Centre for Long-Range Forecast Multi-Model Ensemble](#)

In **Central Asia**, the two-week forecast (Figures 1 & 2) indicates likely above-average precipitation in northern Kazakhstan, while below-average precipitation in southern Kyrgyzstan and eastern Turkmenistan. During this time, temperatures are likely to be below-average across western Kazakhstan. The long-term April-May-June 2023 forecast (Figures 3 & 4) predicts no dominant tercile for precipitation over the region. At the same time, temperatures are likely to be above-average across the entire region.

In **South Asia**, the two-week forecast (Figures 1 & 2) indicates likely below-average precipitation in parts of northern Pakistan and southern and northeastern India. During this time, temperatures are likely to be below-average in India, Nepal, Bhutan, and southern Sri Lanka. The long-term April-May-June 2023 forecast (Figures 3 & 4) indicates no dominant tercile for precipitation over the region. At the same time, temperatures are likely to be above-average over northeastern India and Sri Lanka.

In **East Asia**, the two-week forecast (Figures 1 & 2) indicates likely below-average precipitation in parts of Mongolia, southeast and northeast China, the Republic of Korea, and southern Japan. During this time, temperatures are highly likely to be above-average across eastern China and Japan, while below-average in southwestern China. The long-term April-May-June 2023 forecast (Figures 3 & 4) suggests likely above-average precipitation over southwestern China and Japan. During that time, temperatures are likely to be above-average across the entire region.

In **Southeast Asia & Oceania**, the two-week forecast (Figures 1 & 2) indicates likely below-average precipitation in the northern Philippines, northern and coastal Myanmar, eastern Thailand, southern Laos, Cambodia, central Viet Nam, Malaysia, and Indonesia, while above-average over northern Australia. During this time, temperatures are likely to be below-average over central Laos, northern Viet Nam, the northern Philippines, and central Australia, while above-average over Malaysia, Indonesia, Papua New Guinea, northeast Australia, and New Zealand. The long-term April-May-June 2023 forecast (Figures 3 & 4) precipitation is predicted to be above-average in the Philippines, eastern Indonesia, and Papua New Guinea, while below-average over Indonesia Malaysia, and Australia. During the same time, temperatures are likely to be above-average across the entire region except for northern Australia.

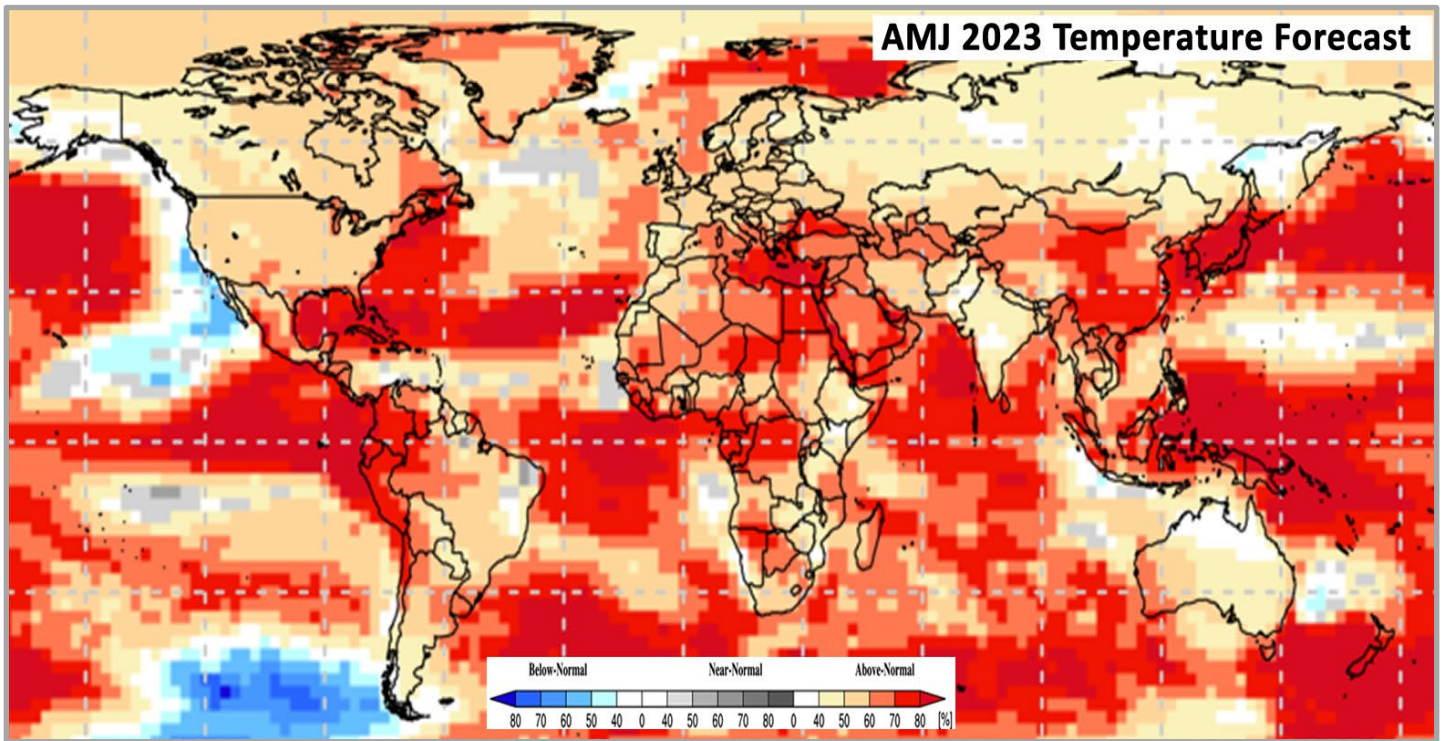


Figure 4: Probabilistic forecast for most-likely April-May-June (AMJ) 2023 temperature tercile, based on March conditions. The white colour indicates that there is no dominant category across the model forecasts. Source: [WMO Lead Centre for Long-Range Forecast Multi-Model Ensemble](https://www.wmo.int/en/lead-centre-for-long-range-forecast-multi-model-ensemble)



The Crop Monitor is a part of GEOGLAM, a GEO global initiative.
 Prepared by members of the GEOGLAM Community of Practice.
 Coordinated by the University of Maryland with funding from NASA Harvest.
 Synthesized from the Crop Monitor for AMIS, the Crop Monitor for Early Warning, and direct submissions from individual countries.

<https://cropmonitor.org/>

@GEOCropMonitor

Appendix 1: Terminology & Definitions

Crop Conditions:

Exceptional: Conditions are much better than average* at the 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 more than 5-25% below-average. This is only used when conditions are not likely to be able to recover, and an 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.*

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

Drivers:

These represent the key climatic, environmental, and anthropomorphic 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: Wetter than average (includes water logging and floods).

Dry: Drier than average.

Hot: Hotter than average.

Cool: Cooler than average or risk of frost damage.

Extreme Events: Catch-all for all other climate risks (i.e., hurricane, typhoon, frost, hail, winter kill, wind damage, etc.). When this category is used the analyst will also specify the type of extreme event in the text.

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.

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

Crop Condition Indicators:

Current Crop Conditions: The current crop condition indicators are based on only the crops that are currently in season. Crops with "No Data" are not counted. The crop condition is considered "Positive", with a green-coloured crop symbol, when 85-100% of active crops are currently under favourable to exceptional conditions. The crop conditions are considered "Mixed", with an orange-coloured crop symbol, when only 70-85% of active crops are under favourable to exceptional conditions. The crop conditions are considered "Negative", with a dark red-coloured crop symbol when only 0-70% of active crops are under favourable to exceptional conditions.

Crop Condition Comparisons: Crop condition changes are measured between the current month's conditions compared to the previous month and exactly one year ago. Only active crops are considered. If there is a -5% change in global crop conditions, then the crop conditions are considered "Deteriorating" (indicated by a down arrow). If there is a +5% change in global crop conditions, then the crop conditions are considered "Improving" (indicated by an up arrow). Otherwise, crop conditions are considered "Stable" (indicated by a dash).