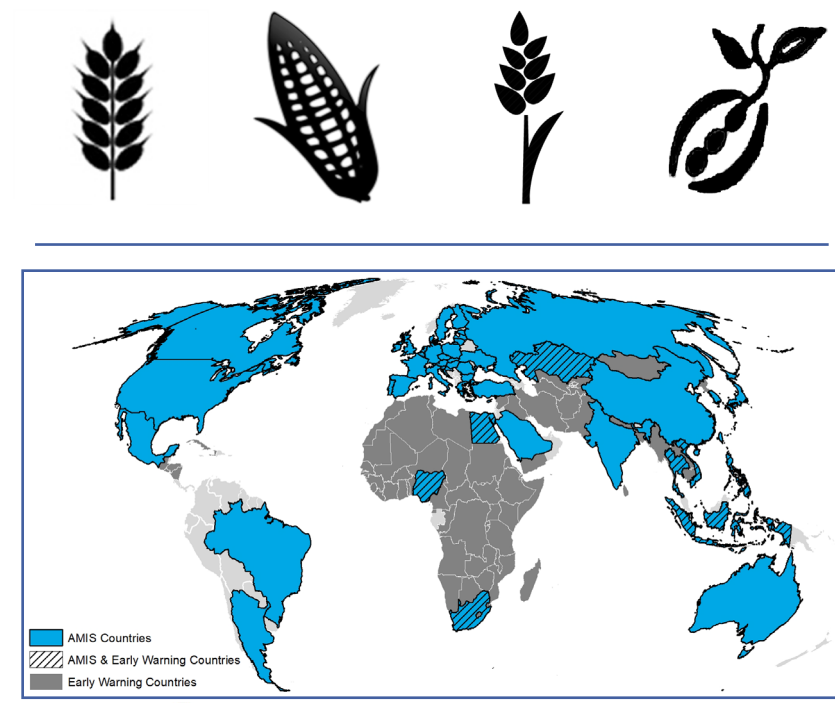
Crop Monitor for AMIS

Overview:

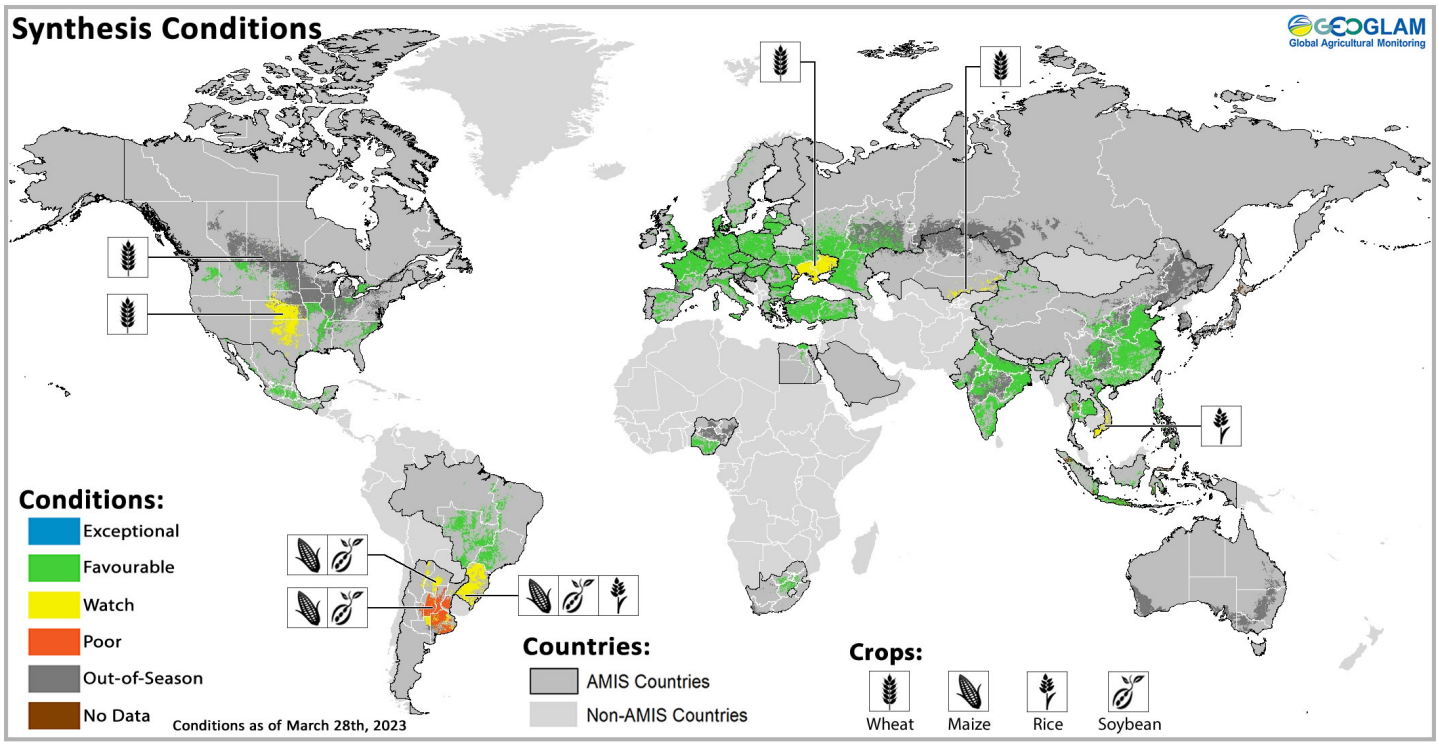
At the end of March, conditions are mixed for maize and soybeans, while favourable for wheat and rice. For wheat, conditions are generally favourable in the northern hemisphere as the crop breaks winter dormancy. Maize conditions in the southern hemisphere have deteriorated in Argentina and remained mixed in southern Brazil. Rice conditions are generally favourable across Asia. Soybeans are generally favourable in Brazil while mixed in Argentina.



Contents:

Assessment based on information as of March 28th

At a glance for AMIS countries (as of March 28th)



Global crop condition map synthesizing information for all four AMIS crops as of March 28th. Crop conditions over the main growing areas for wheat, maize, rice, and soybean are based on a combination of national and regional crop analyst inputs along with earth observation data from all Crop Monitors. ***Crops that are in other than favourable conditions are displayed on the map with their crop symbol.***

Crop Conditions at a Glance

Wheat - In the northern hemisphere, winter wheat is under generally favourable conditions as dormancy breaks except for in Ukraine due to the ongoing war and in the US due to drought.

Maize - In the southern hemisphere, harvest is ongoing for the spring-planted crop (smaller season) in Brazil as the sowing of the summer-planted crop (larger season) is wrapping up. In Argentina, high temperatures and a lack of rainfall have heavily lowered the expected yields of both crops.

Rice - Conditions are favourable as the sowing of the early-planted crop begins in China and the continued development of the Rabi crop in India. In Southeast Asia, dry-season rice is under generally favourable conditions in the northern countries while wet-season rice harvesting is progressing in Indonesia.

Soybeans - In the southern hemisphere, harvest is progressing in Brazil under generally favourable conditions, while hot and dry conditions continue to have a negative impact on crops in Argentina.

Forecasts at a Glance

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.

Argentina – In the short term (two weeks), below-average precipitation is expected over the next week followed by near-average precipitation over the second week.

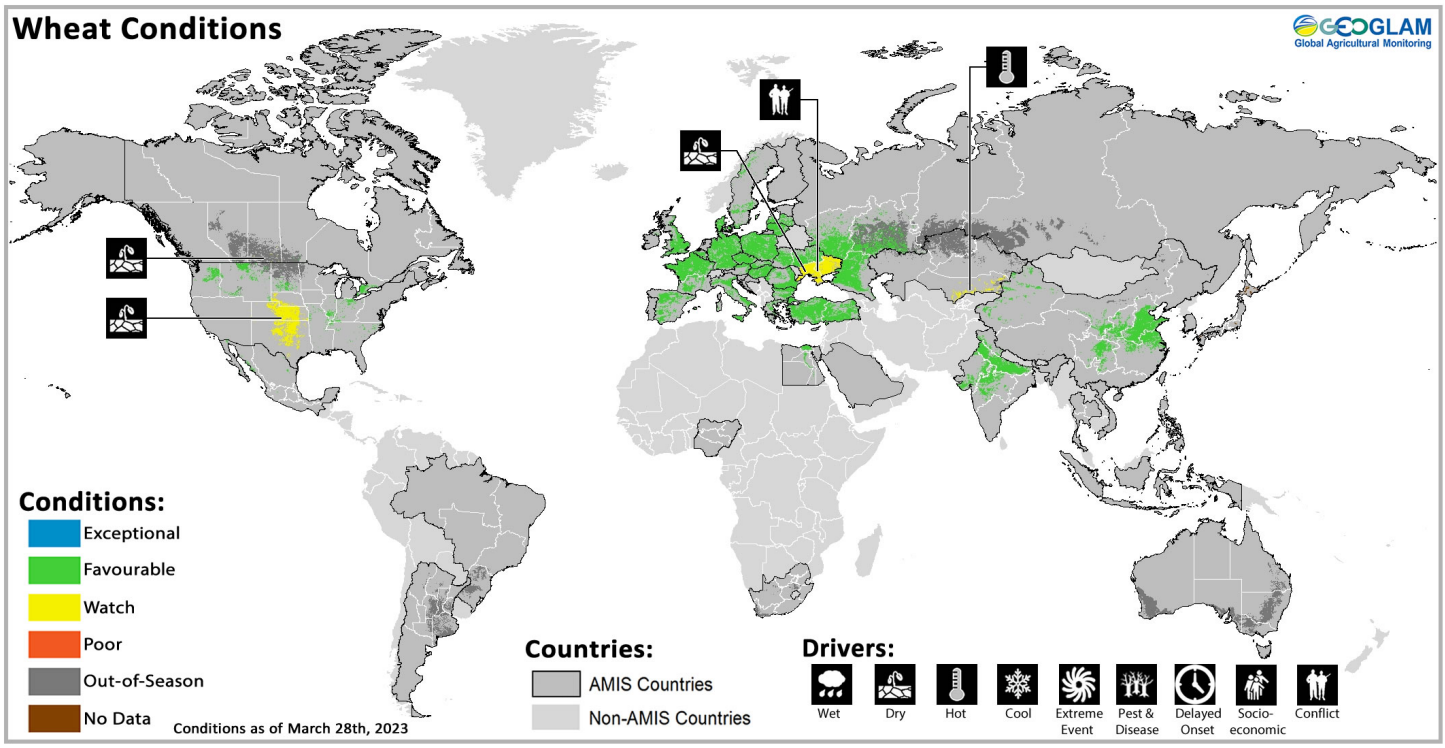
Brazil – April precipitation is likely to be near to slightly below-average, while the long-term (three-month) forecast is for below-average rainfall in Mato Grosso do Sul, Minas Gerais, São Paulo, Paraná, and Santa Catarina.

The United States – The short-term (two weeks) forecast indicates likely below-average precipitation in the east and above-average in the Pacific Northwest,

While the Crop Monitor for AMIS is primarily focused on documenting crop conditions based on environmental factors, the war in Ukraine and in other conflict areas will very likely negatively impact the ability of the crop to be harvested.

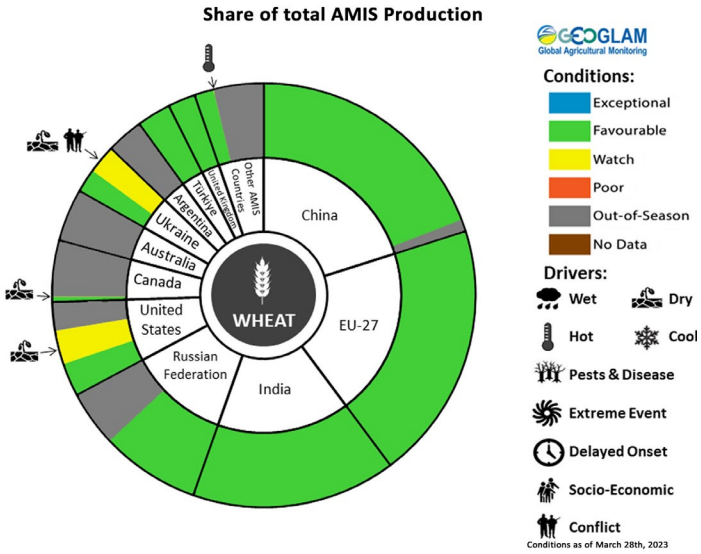
* Assessment based on information as of March 28th

Wheat Conditions for AMIS Countries



Wheat crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in other than favourable conditions the climatic drivers responsible for those conditions are displayed. Crop Season Specific Maps can be found in Appendix 2.

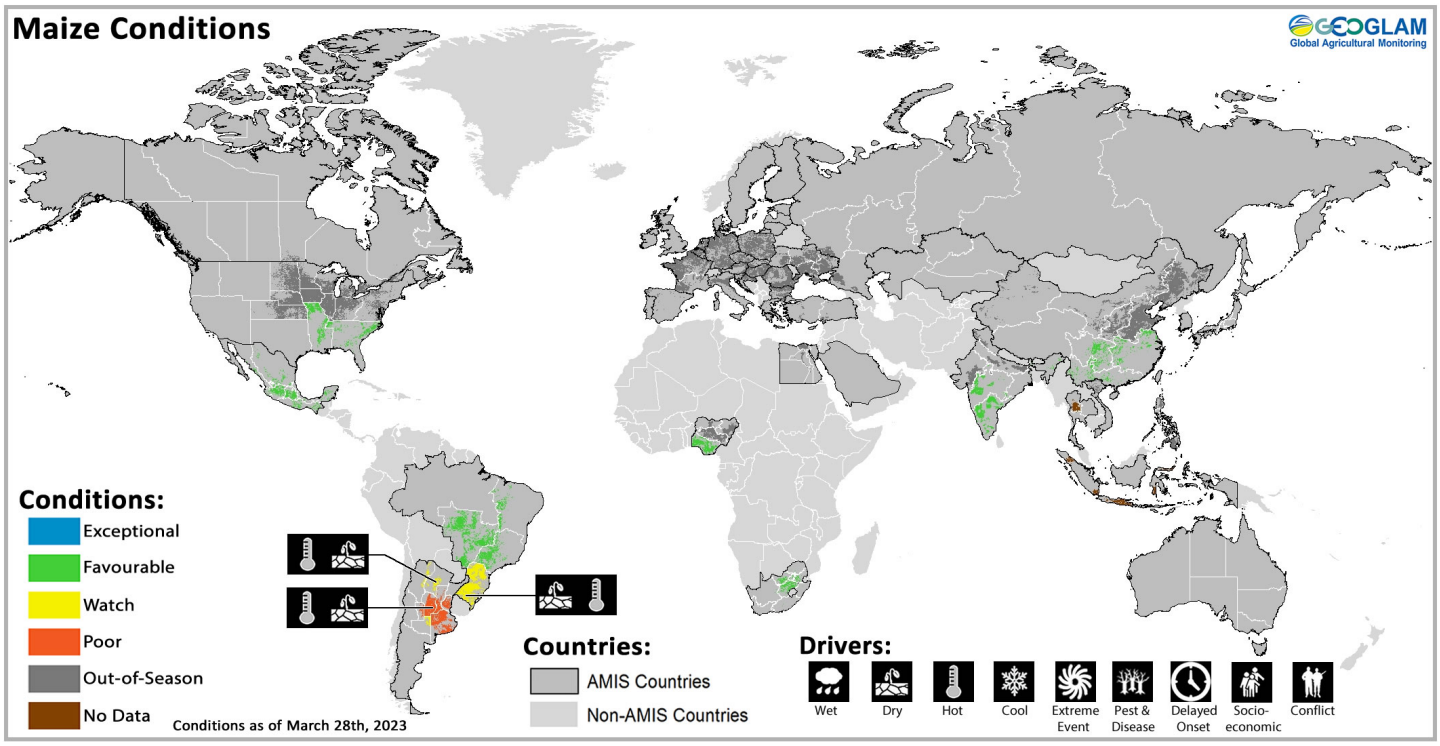
Wheat: In the **EU**, conditions are generally favourable, albeit heterogeneous due to an early onset of higher temperatures and reduced rainfall in northern Europe, mild temperatures and rainfall in the central countries, and warmer and drier conditions in the southern countries. In the **UK**, conditions are favourable. In **Türkiye**, conditions are generally favourable, albeit with delayed crop development due to late autumn sowings, two cold spells during winter dormancy, 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 **China**, winter wheat is under generally favourable conditions. In **India**, conditions are favourable with harvest progressing in Madhya Pradesh and Rajasthan. Recent heavy rainfall with hailstorms resulted in localized damage in several states. In the **US**, dry soil conditions remain in many areas across the central and southern Great Plains as crops begin to break out of dormancy. In **Canada**, winter wheat conditions are generally favourable.



For detailed description of the pie chart please see box on page 6.

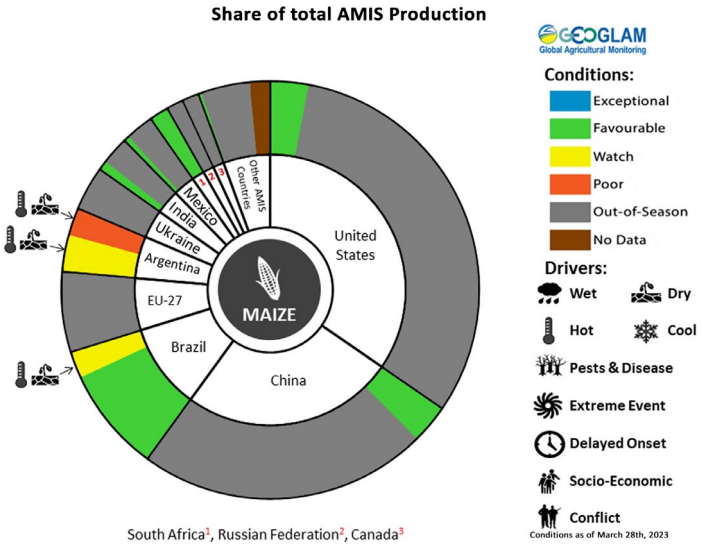
* Assessment based on information as of March 28th

Maize Conditions for AMIS Countries



Maize crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in other than favourable conditions the climatic drivers responsible for those conditions are displayed. Crop Season Specific Maps can be found in Appendix 2.

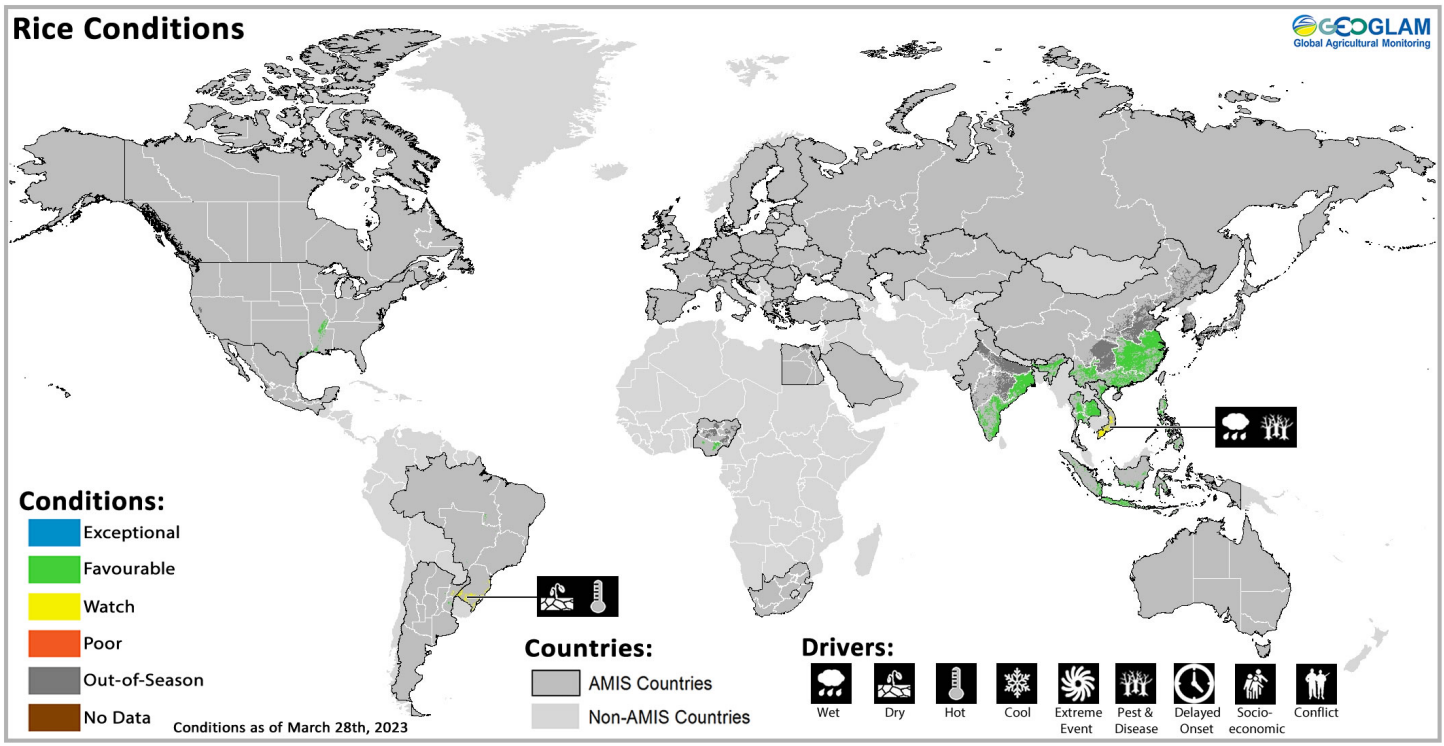
Maize: In **Brazil**, harvest is ongoing for the spring-planted crop (smaller season) under generally favourable conditions, except in Rio Grande do Sul due to a lack of rain and high temperatures throughout the season. Sowing is wrapping up for the summer-planted crop (larger season) at a slower pace than the last season due to a slight delay in soybean harvesting. An increase in total sown area is estimated compared to last season. 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 **China**, sowing of the spring-planted crop has begun. In **India**, conditions are favourable for the Rabi crop. In **South Africa**, despite some dryness during March conditions are generally favourable due to above-average rainfall earlier in the season. In **Mexico**, conditions are favourable for the autumn-winter crop (smaller season) as harvest begins. In the **US**, sowing is beginning in the southeast under favourable conditions.



For detailed description of the pie chart please see box on page 6.

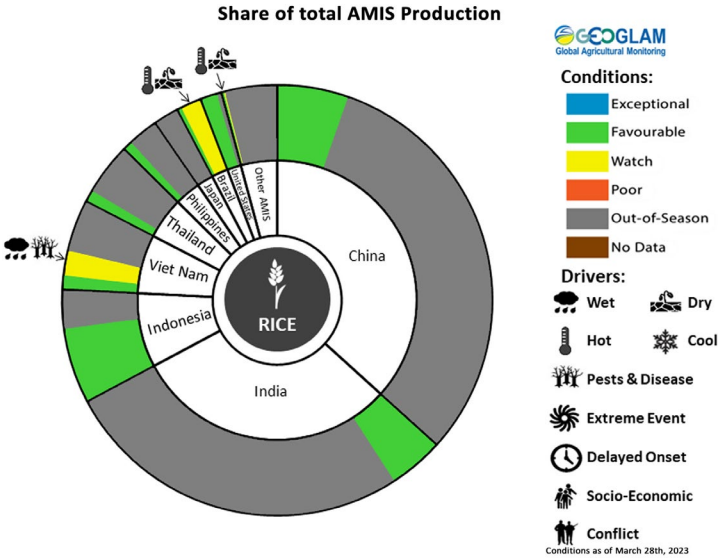
* Assessment based on information as of March 28th

Rice Conditions for AMIS Countries



Rice crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in other than favourable conditions the climatic drivers responsible for those conditions are displayed. Crop Season Specific Maps can be found in Appendix 2.

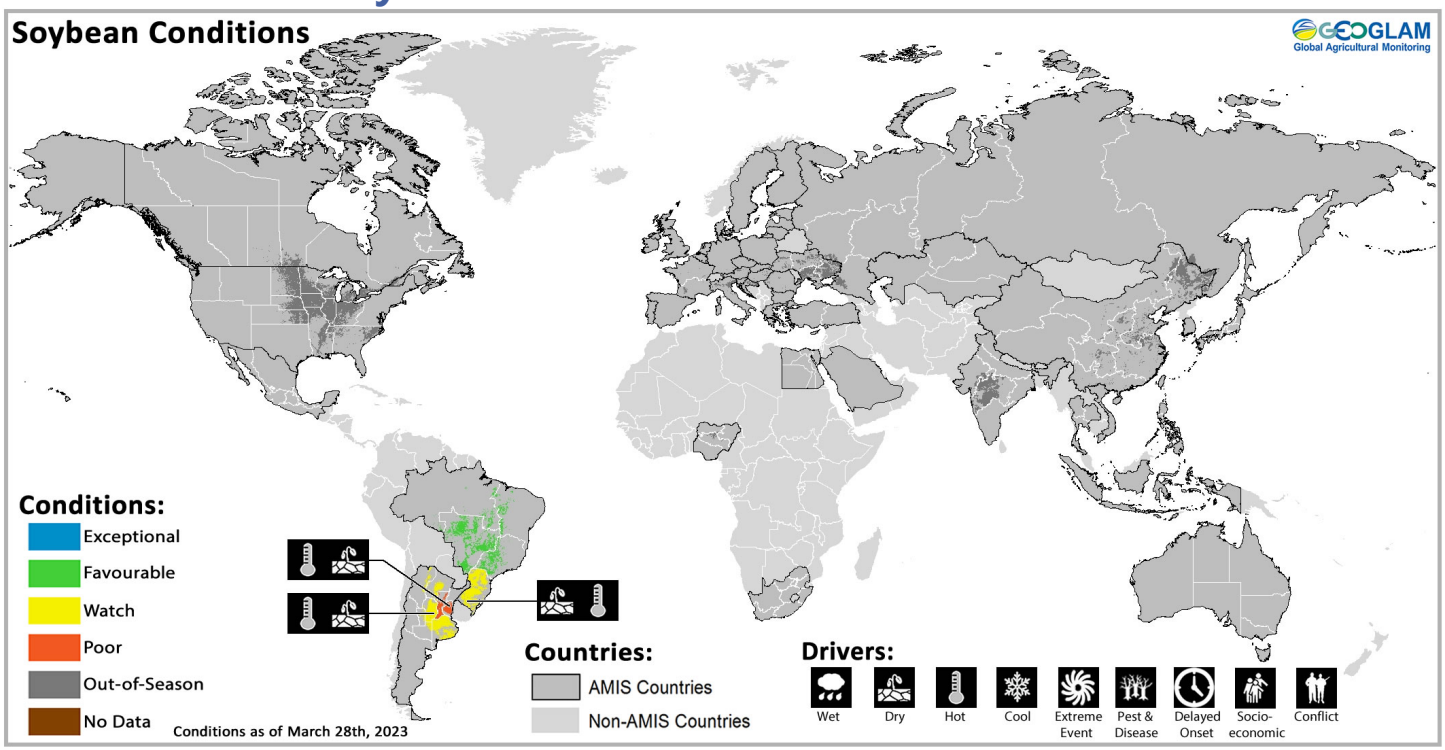
Rice: In **China**, sowing is beginning for the early-planted crop under favourable conditions. In **India**, conditions are favourable for the Rabi crop with recent excess rainfall providing ample irrigation waters. In **Indonesia**, sowing of wet-season rice is wrapping up with an increase in total sown area compared to last year. Harvesting of earlier sown wet-season rice is progressing much faster than last year with good yields. In **Viet Nam**, dry-season rice (winter-spring rice) is harvesting in the South under mixed conditions due to slow receding flood waters and reduced solar inputs from foggy weather. In the North, dry-season rice (winter-spring rice) is under favourable conditions due to good irrigation preparation. In **Thailand**, harvesting of dry-season rice is ongoing with generally good yields. There has been a large increase in the total sown area compared to last year due to enough irrigation water. 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 **Brazil**, harvesting is ongoing with concerns in the south due to the drought. In the **US**, sowing is beginning under favourable conditions.



For detailed description of the pie chart please see box on page 6.

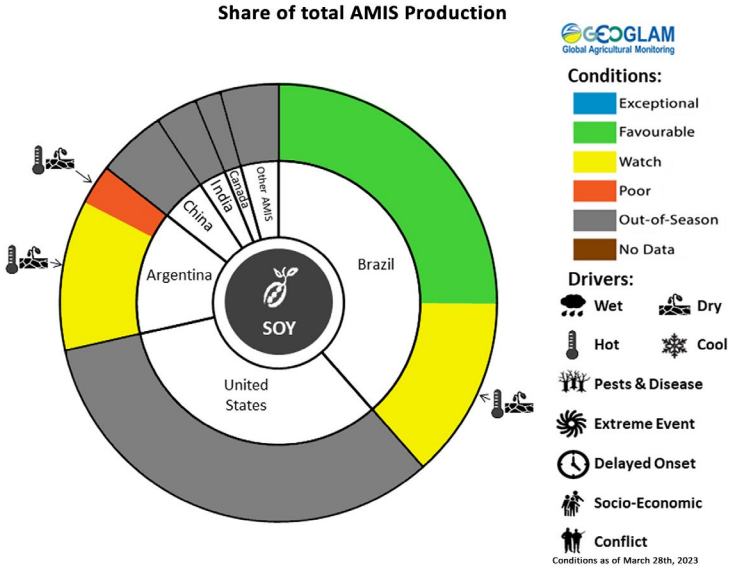
* Assessment based on information as of March 28th

Soybean Conditions for AMIS Countries



Soybean crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in other than favourable conditions the climatic drivers responsible for those conditions are displayed. Crop Season Specific Maps can be found in Appendix 2.

Soybeans: In **Brazil**, harvesting is progressing 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.



For detailed description of the pie chart please see box below.

Information on crop conditions in non-AMIS countries can be found in the GEOGLAM Crop Monitor for Early Warning, published April 6th

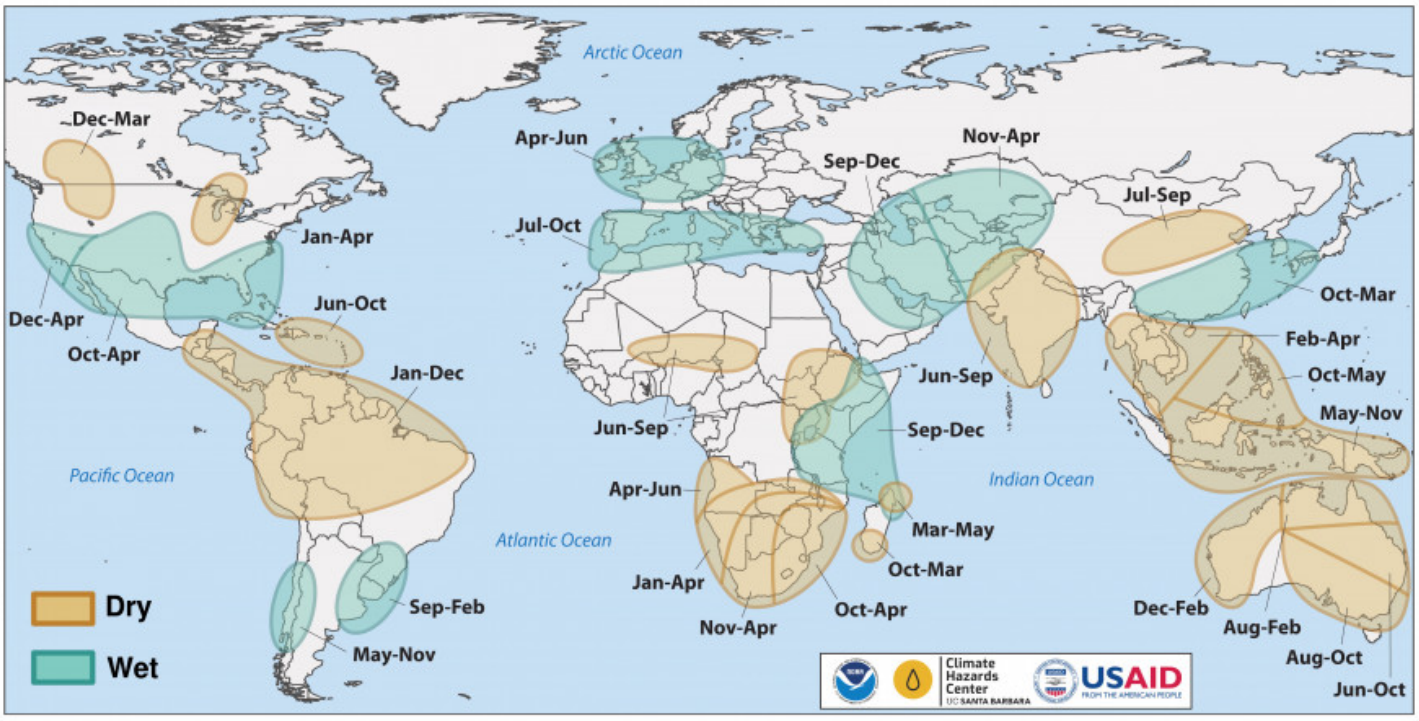
Pie chart description: Each slice represents a country's share of total AMIS production (5-year average). Main producing countries (representing 95 percent of production) are shown individually, with the remaining 5 percent grouped into the "Other AMIS Countries" category. The proportion within each 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 (i.e., spring and winter wheat). When conditions are other than' favourable', icons are added that provide information on the key climatic drivers affecting conditions.

* Assessment based on information as of March 28th

Climate Influences: La Niña Advisory

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

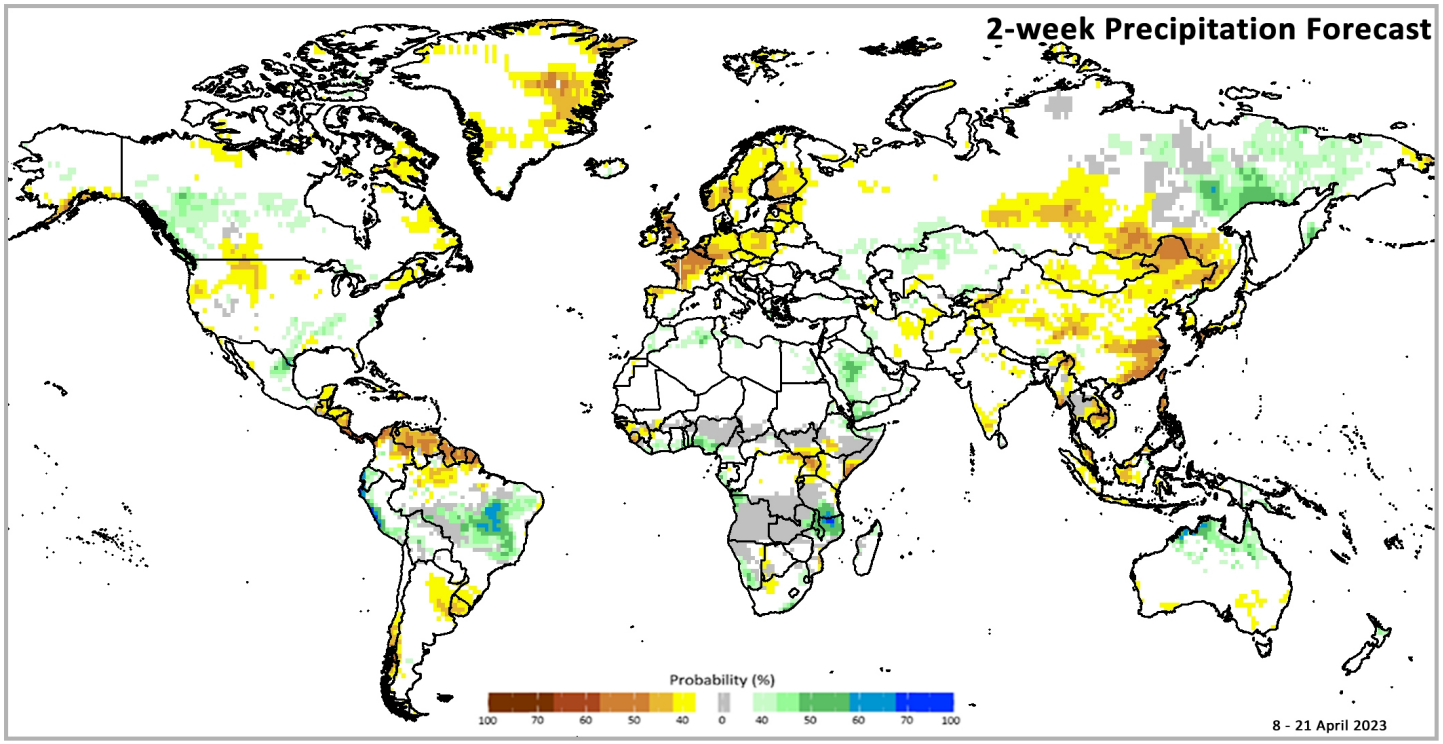


Location and timing of likely above- and below-average precipitation related to El Niño events. Based upon observed precipitation during 22 El Niño events since 1950, wet and dry correspond to a statistically significant increase in the frequency of precipitation in the upper and lower thirds of historical 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

Global Two-week Forecast of Areas with Above or Below-Average Precipitation

The two-week forecast (Figure 1) indicates a likelihood of above-average rainfall over the US southern Great Plains and Southeast, northeast Mexico, coastal Ecuador, coastal Peru, central and eastern Brazil, central Algeria, 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, Djibouti, western Yemen, central Saudi Arabia, northern Kazakhstan, and northern Australia.

There is also a likelihood of below-average rainfall over the western Prairies in Canada, the northwestern US, the Dominican Republic, Guatemala, Belize, Honduras, Nicaragua, Costa Rica, Panama, northern Colombia, Venezuela, Guyana, Suriname, French Guiana, northern and southern Brazil, Uruguay, northern and central Argentina, southern Chile, Norway, Sweden, Finland, Ireland, the United Kingdom, northwest Spain, France, Belgium, the Netherlands, Germany, Poland, Czechia, Slovakia, Lithuania, Latvia, Estonia, northern Italy, Sierra Leone, Guinea, southern South Sudan, northeast DRC, Uganda, western Kenya, southwest Ethiopia, southern Somalia, northern Tanzania, northeast Iran, eastern Turkmenistan, eastern Kyrgyzstan, Siberia and the Far East of the Russian Federation, Mongolia, northeast and southeast China, southern Japan, the northern Philippines, southern India, northern and coastal Myanmar, eastern Thailand, southern Laos, Cambodia, central Viet Nam, Malaysia, and Indonesia.



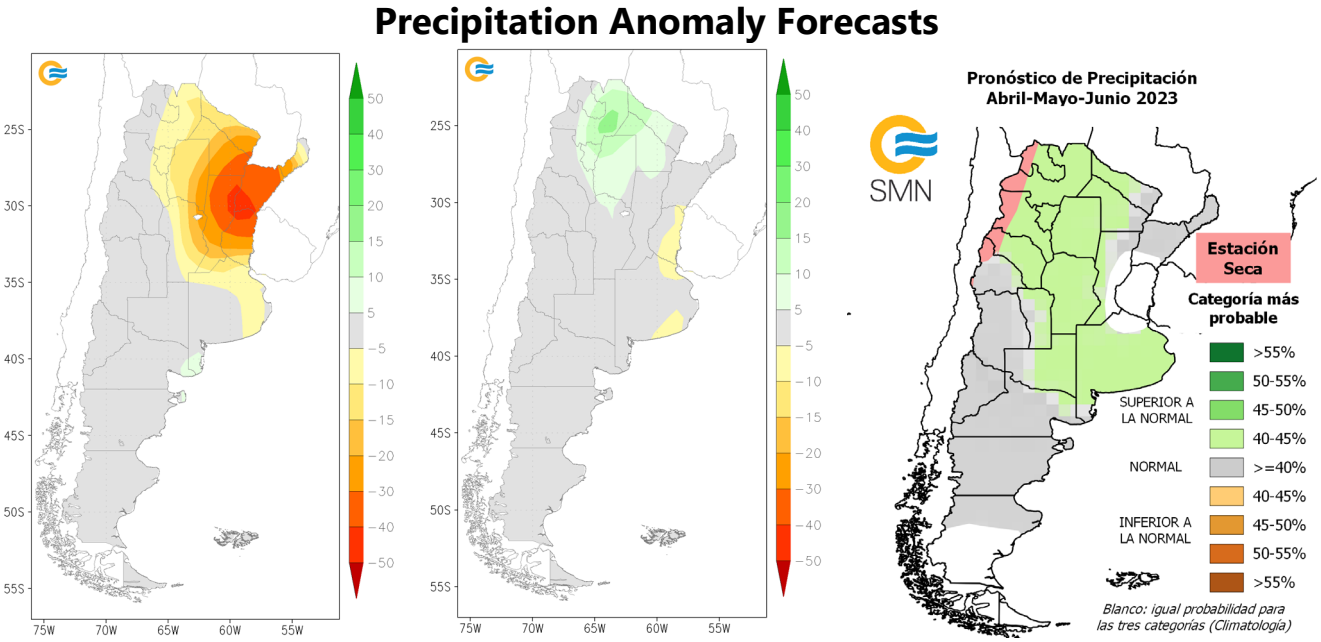
IRI SubX Precipitation Biweekly Probability Forecast for 8 – 21 April 2023, issued on 31 March 2023. The forecast is based on statistically calibrated tercile category forecasts from three SubX models. Source: IRI Subseasonal Forecasts Maproom

* Assessment based on information as of March 28th

Argentina Outlook

The 5 – 11 April precipitation forecast anomaly (left) indicates likely below-average rainfall over the northern, northeast, and eastern agricultural regions, with the highest deficits likely over Santa Fe, Entre Rios, and Corrientes. During the same period, temperatures are likely to be above-average over the southern agricultural areas. The 12 – 18 April precipitation forecast anomaly (center) shows near-average precipitation over most of the country. During the same period, temperatures are likely to be below-average in the southern agricultural areas, while above-average in the far northern areas.

The long-term April-May-June 2023 forecast (right) shows likely above-average precipitation across most of the main agricultural areas. During the same period, temperatures are likely to be above-average across most of the main agricultural areas.



Left: *5 – 11 April 2023 forecast precipitation anomaly in mm.* ***Center*** *12 – 18 April 2023 forecast precipitation anomaly in mm. Images from the National Meteorological Service of Argentina.* ***Right:*** *April-May-June 2023 forecast rainfall anomaly. Image from the National Meteorological Service of Argentina.*

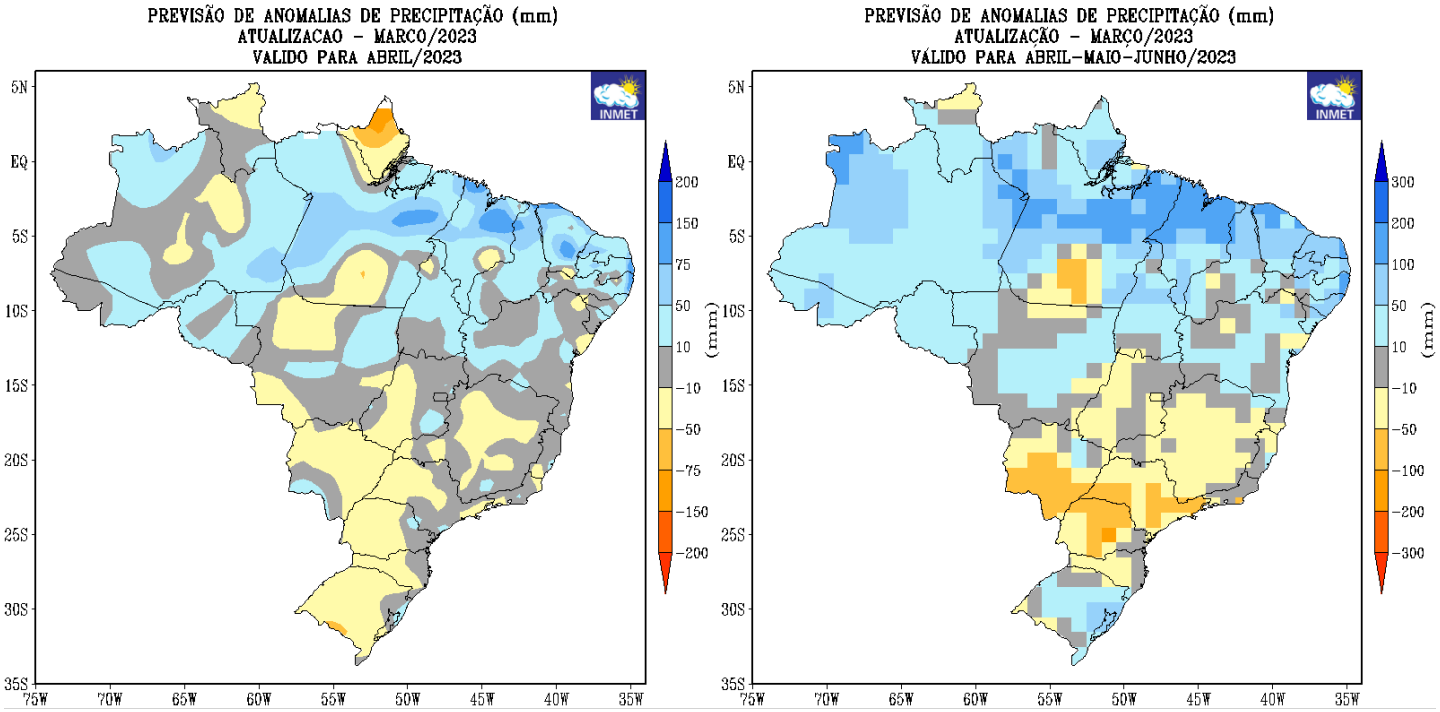
* Assessment based on information as of March 28th

Brazil Outlook

The April precipitation anomaly forecast (left) indicates a possible slightly below-average precipitation in Mato Grosso do Sul, Minas Gerais, western São Paulo, Paraná, Sana Catarina, and Rio Grande do Sul, while possible above-average precipitation in North regions. During the same period, temperatures are likely to be above-average across the Central-West, Southeast, and South regions.

The long-term April-May-June 2023 forecast (right) indicates likely below-average precipitation across Mato Grosso do Sul, Minas Gerais, São Paulo, Paraná, and Santa Catarina, while above average in the north and northeast regions. During the same period, temperatures are likely to be above-average across the Central-West, Northeast, Southeast, and South regions.

April and 3-month Precipitation Forecast Anomalies



Left: *April 2023 precipitation anomaly forecast, issued in March 2023.* ***Right:*** *April-May-June 2023 precipitation anomaly forecast, issued in March 2023. Images from the National Institute of Meteorology.*

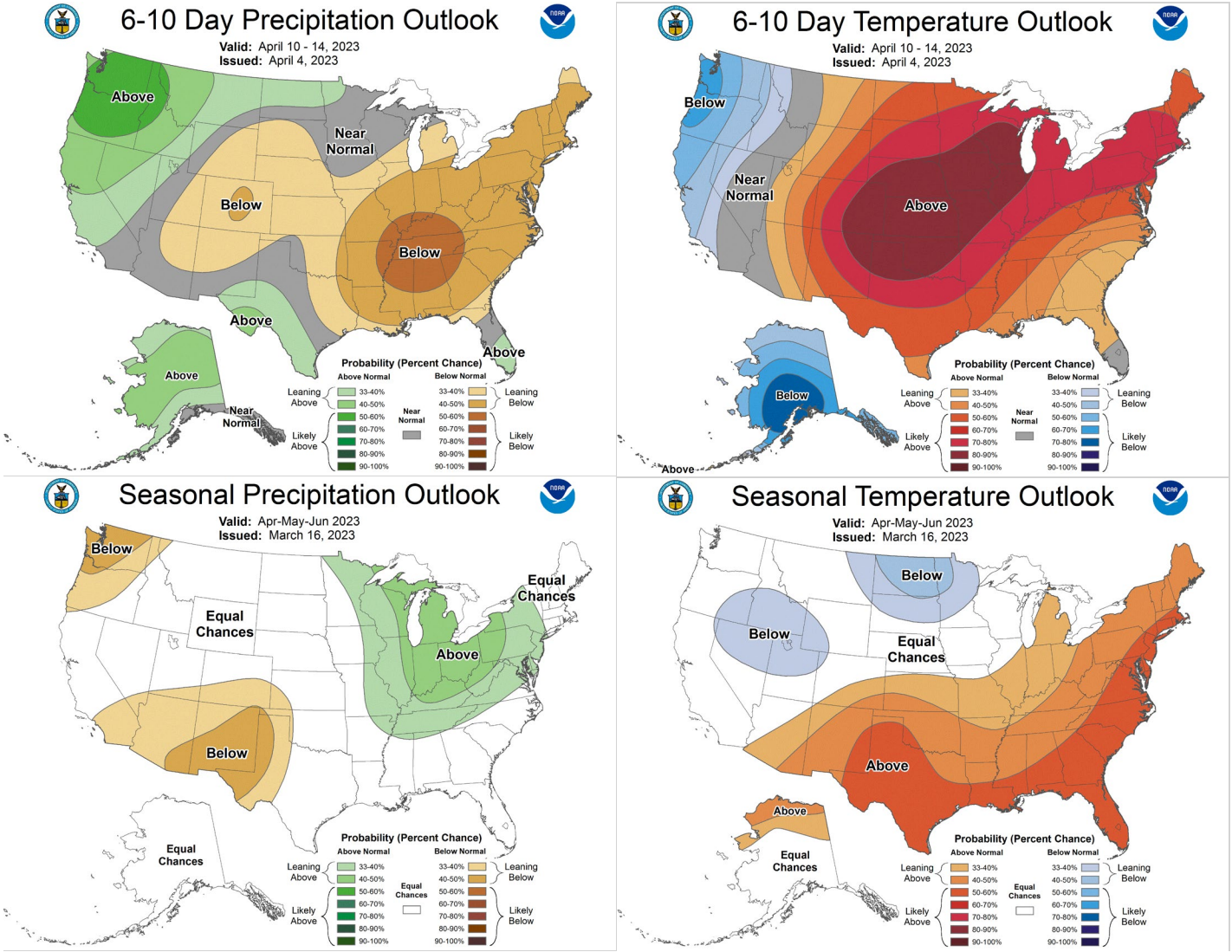
* Assessment based on information as of March 28th

United States Outlook

The 10 – 14 April 2023 outlook indicates there is the possibility of above-average precipitation across the Pacific Northwest and California, with the highest likelihood over Washington and Oregon. There is the possibility of below-average precipitation over the Central Great Plains, Southeast, Mid-Atlantic, southern Mid-west, and Northeast regions, with the highest likelihood over Kentucky, Tennessee, northern Mississippi, and northern Alabama. During the same time, temperatures are likely to be above-average across the majority of the continental US except for the West Coast and Alaska.

For the long-term seasonal April-May-June (AMJ) 2023 outlook, below-average precipitation is possible in the Pacific Northwest and the Southwest, while above-average in the Midwest extends to the Mid-Atlantic. During the same period, temperatures are likely to be above-average across the southern Great Plains and extend up the entire East Coast, while possibly below-average in North Dakota, and the central Rockies.

Short-term and the April-May-June 2023 Outlooks



***Upper Left**: 6 - 10 precipitation outlook issued on 4 April 2023. **Upper Right**: 6 - 10 precipitation outlook issued on 4 April 2023. **Lower Left**: Extended April-May-June precipitation outlook issued on 16 March 2023. **Lower Right**: Extended April-May-June temperature outlook issued on 16 March 2023. Maps from NOAA/National Weather Service, National Centers for Environmental Predictions, and Climate Prediction Center https://www.cpc.ncep.noaa.gov/products/forecasts/.*

Source: NOAA Climate Prediction Center

* Assessment based on information as of March 28th

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 close to 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% below average. This is only used when conditions are not likely to be able to recover, and an impact on production is likely.
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 function 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.

Crop Season Nomenclature:

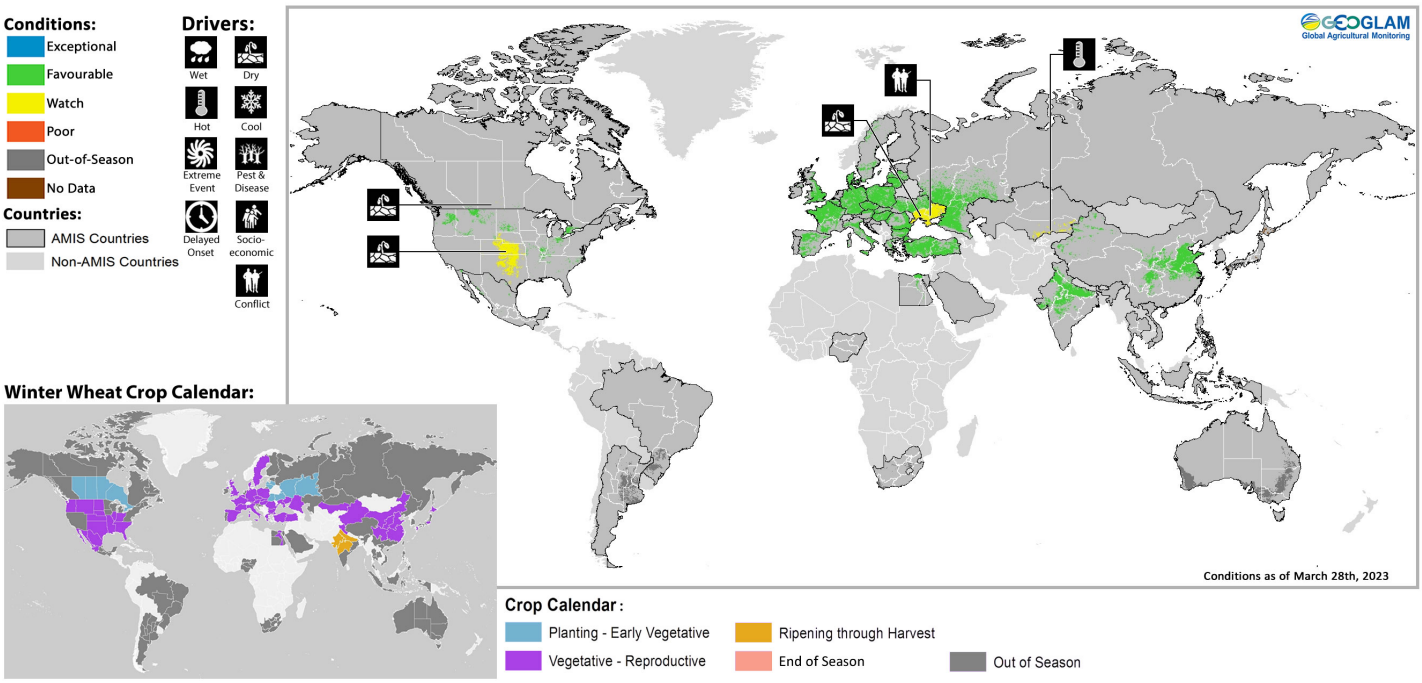
In countries that contain multiple cropping seasons for the same crop, the following chart identifies the national season name associated with each crop season within the Crop Monitor. Within the Crop Monitor for AMIS countries, the larger producing season (most recent 5 years) has been assigned to the first season.

Crop Season Nomenclature				
Country	**Crop**	**Season 1 Name**	**Season 2 Name**	**Season 3 Name**
Argentina	Soybean	Spring-planted	Summer-planted	
Brazil	Maize	Summer-planted (larger producing season)	Spring-planted (smaller producing season)	
Canada	Wheat	Winter-planted	Spring-planted	
China	Maize	Spring-planted	Summer-planted	
China	Rice	Single-season	Late-season	Early-season
China	Wheat	Winter-planted	Spring-planted	
Egypt	Rice	Summer-planted	Nili season (Nile Flood)	
India	Maize	Kharif	Rabi	
India	Rice	Kharif	Rabi	
Indonesia	Rice	Wet-season	Dry-season	
Mexico	Maize	Spring-planted	Autumn-planted	
Nigeria	Maize	Main-season	Short-season	
Nigeria	Rice	Main-season	Off-season	
Philippines	Rice	Wet-season	Dry-season	
Russian Federation	Wheat	Winter-planted	Spring-planted	
Thailand	Rice	Wet-season	Dry-season	
United States	Wheat	Winter-planted	Spring-planted	
Viet Nam	Rice	Wet-season	Dry-season	

* Assessment based on information as of March 28th

Appendix 2: Crop Season-Specific Maps

Winter Planted Wheat Conditions for AMIS Countries



Winter Wheat Crop Calendar:

Crop Calendar:
Planting - Early Vegetative
Vegetative - Reproductive
Ripening through Harvest
End of Season
Out of Season

Winter wheat crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

Spring Planted Wheat Conditions for AMIS Countries

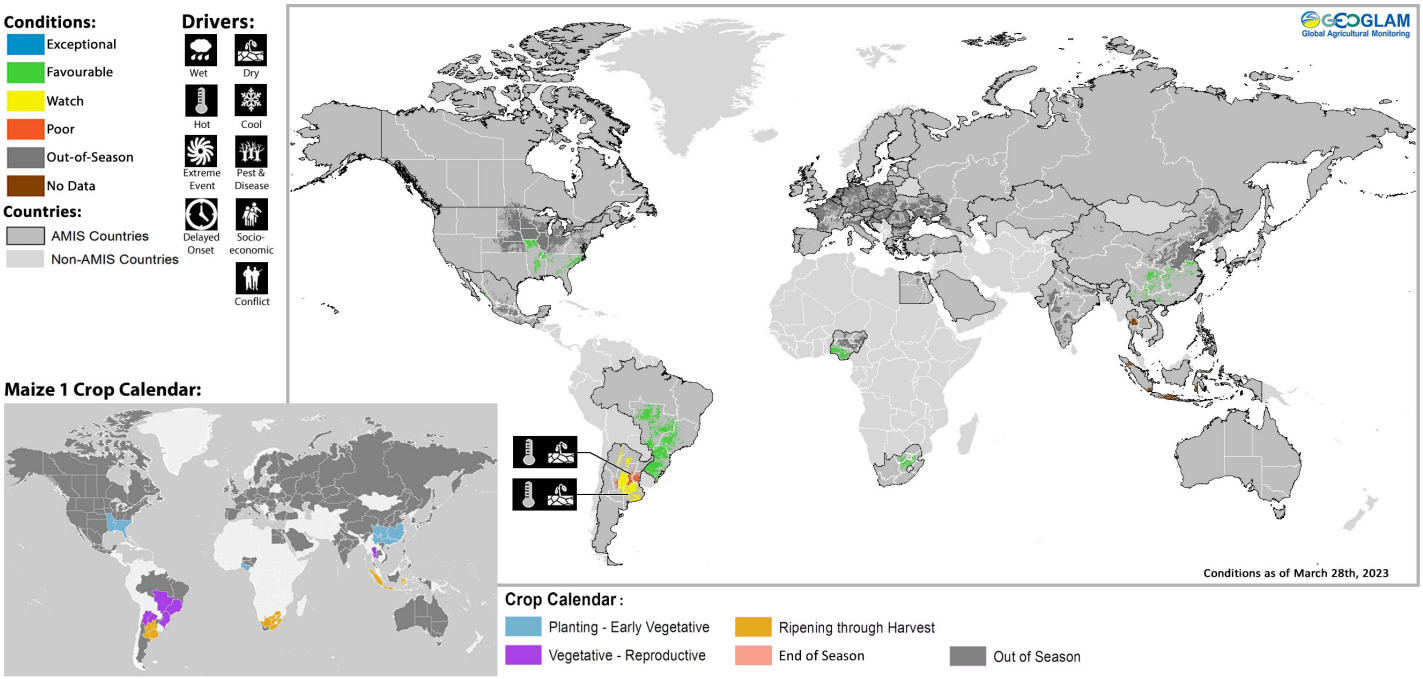
Spring Wheat Crop Calendar:

Crop Calendar:
Planting - Early Vegetative
Vegetative - Reproductive
Ripening through Harvest
End of Season
Out of Season

Spring wheat crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

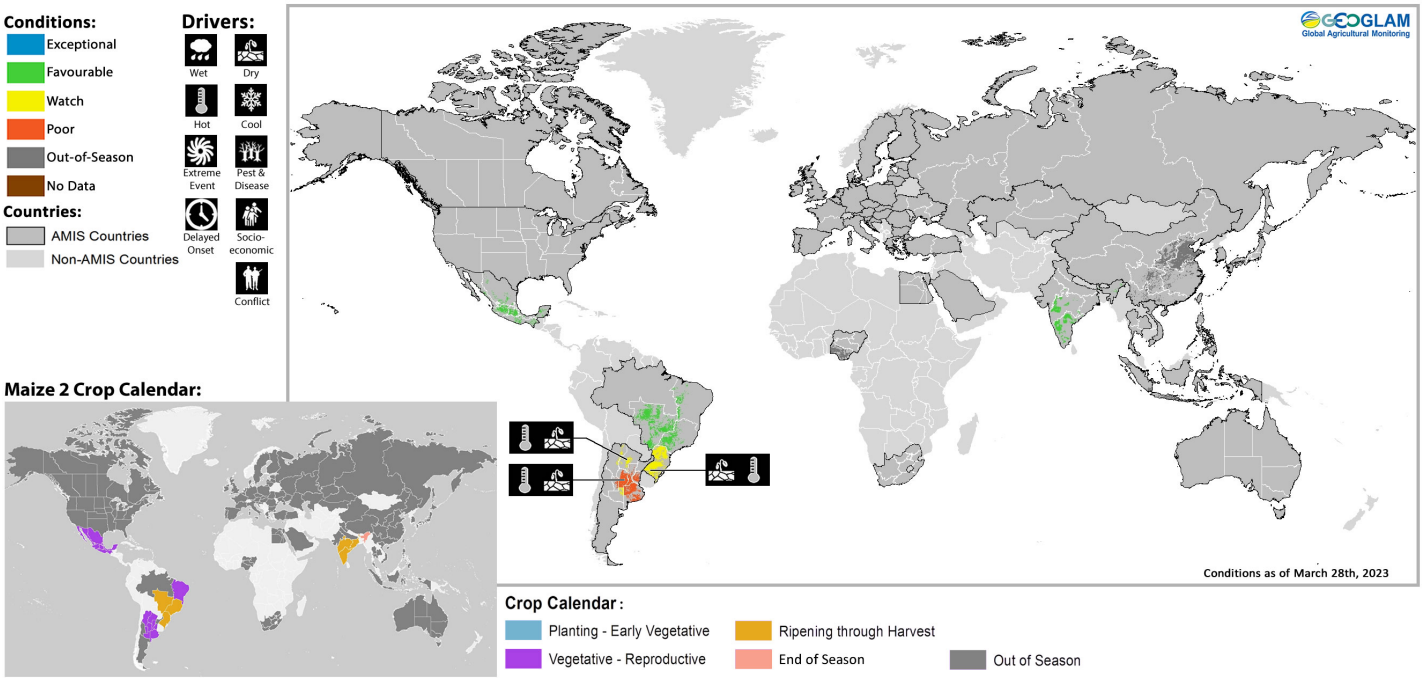
* Assessment based on information as of March 28th

Maize 1 Conditions for AMIS Countries



Maize 1 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

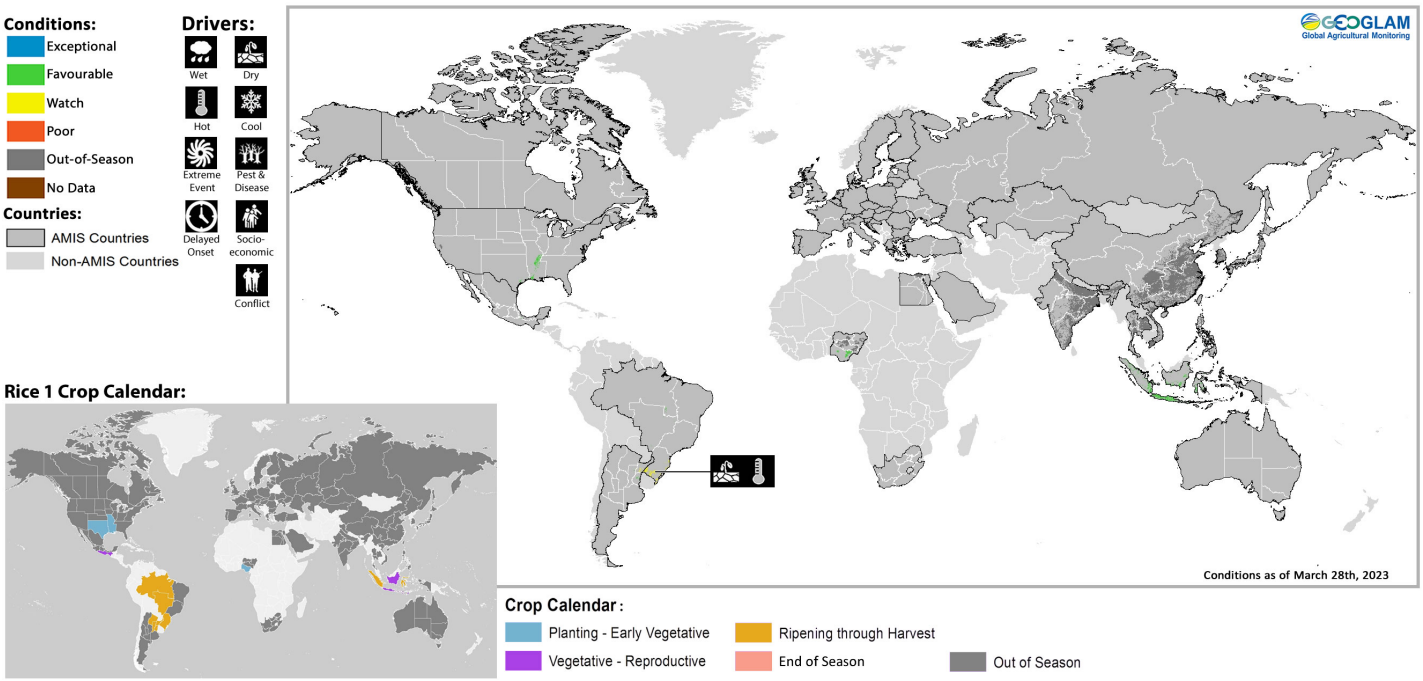
Maize 2 Conditions for AMIS Countries



Maize 2 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

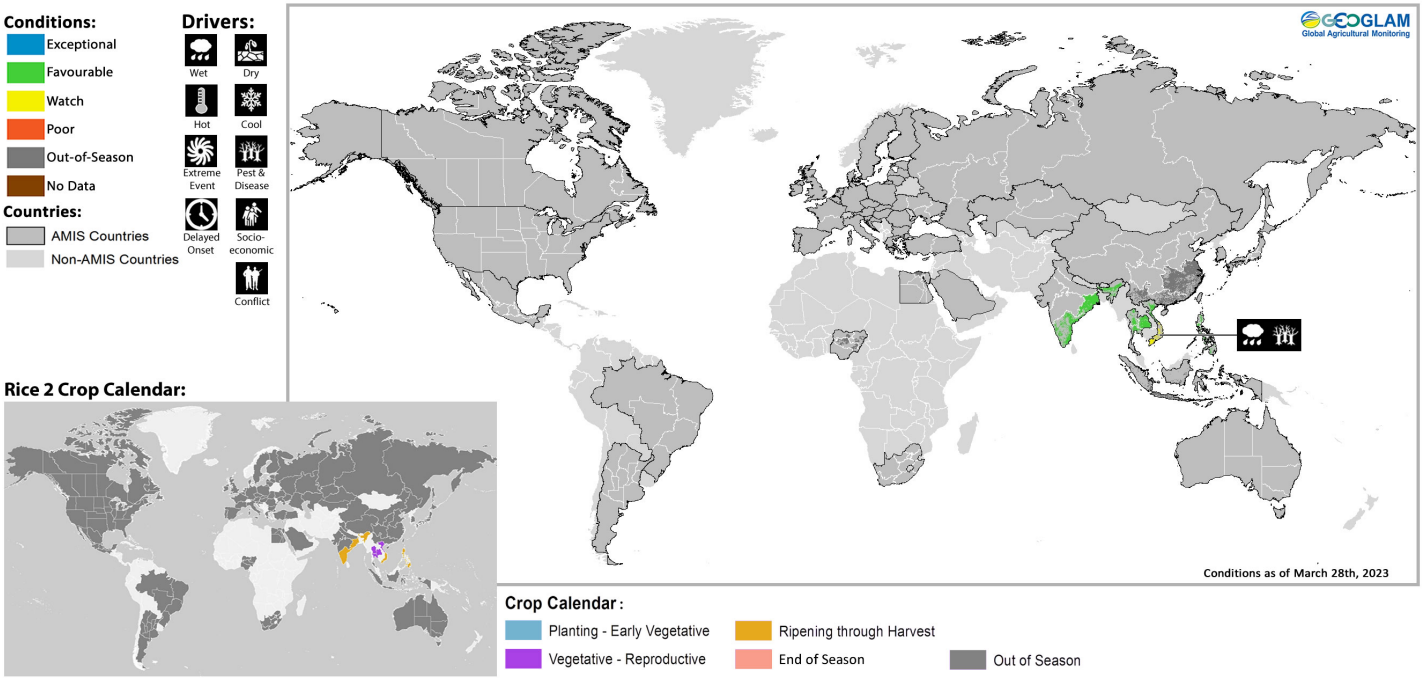
* Assessment based on information as of March 28th

Rice 1 Conditions for AMIS Countries



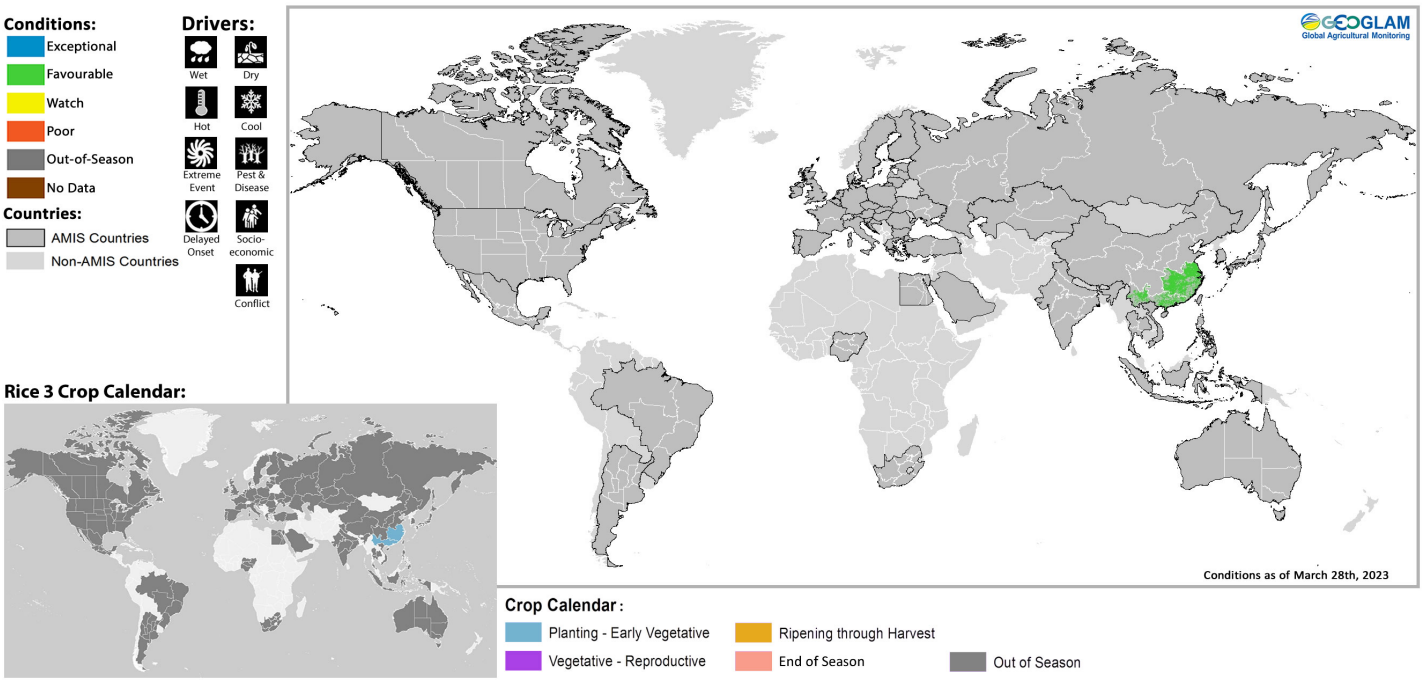
Rice 1 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

Rice 2 Conditions for AMIS Countries



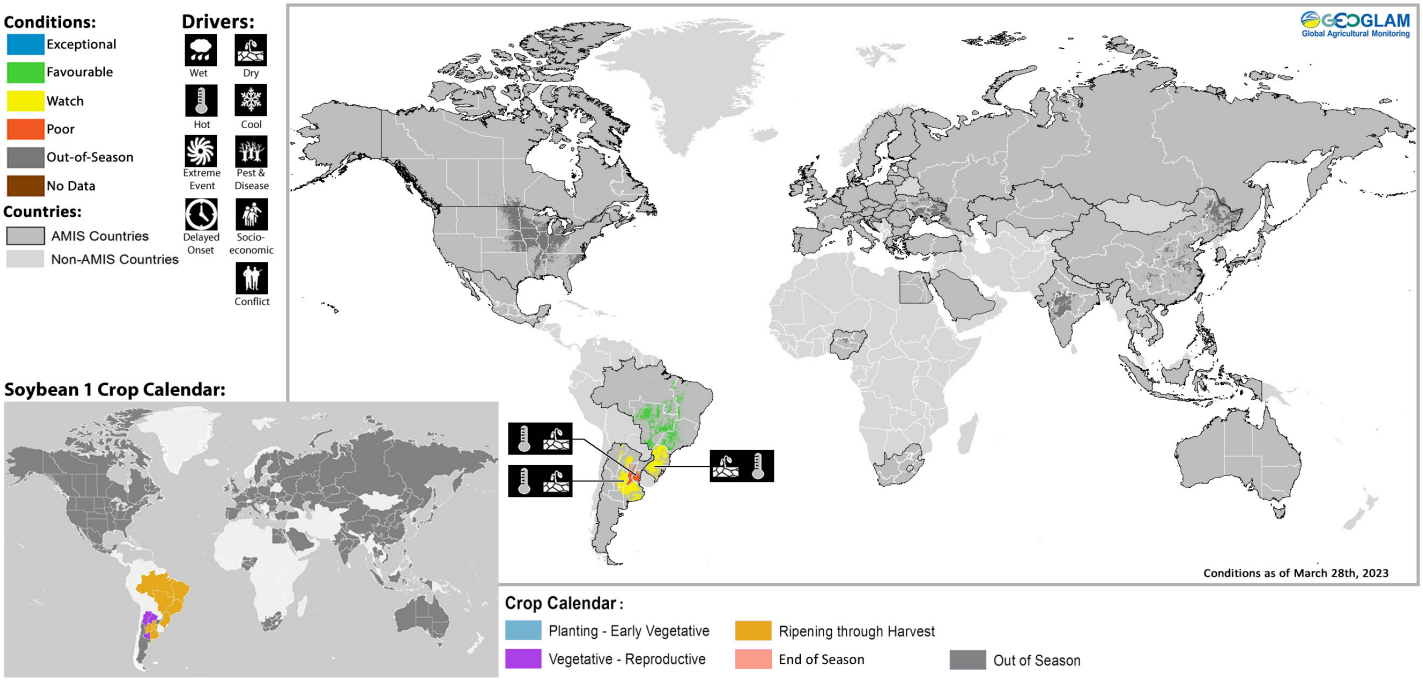
Rice 2 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

Rice 3 Conditions for AMIS Countries



Rice 3 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

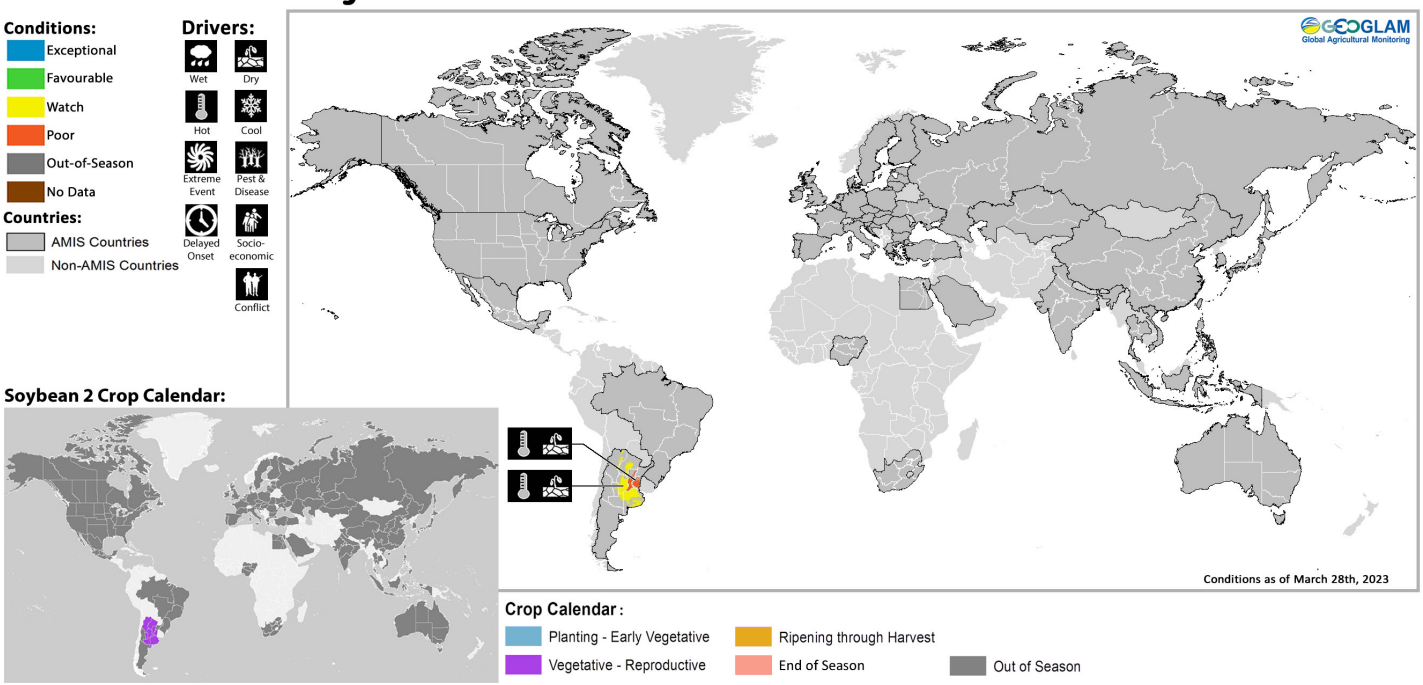
Soybean 1 Conditions for AMIS Countries



Soybean 1 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

* Assessment based on information as of March 28th

Soybean 2 Conditions for AMIS Countries



Soybean 2 Crop Calendar:

Soybean 2 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of March 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

* Assessment based on information as of March 28th

Prepared by members of the GEOGLAM Community of Practice
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Climatic Influences by Climate Hazards Center of UC Santa Barbara

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

Photo courtesy of Brian Barker

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Sources & Disclaimer

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