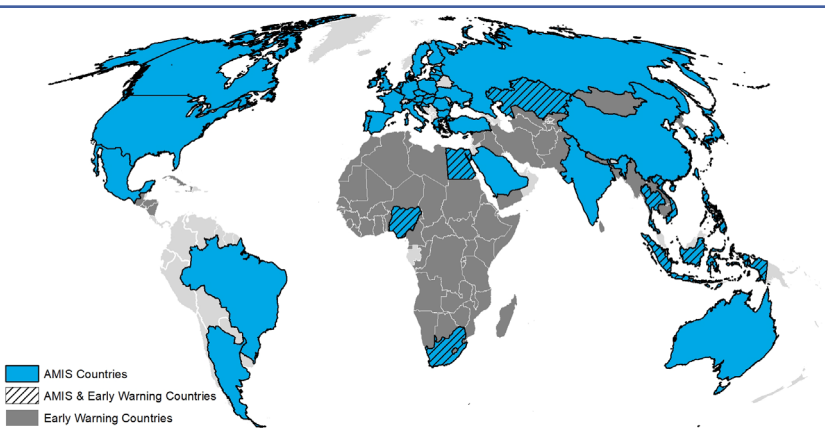


Crop Monitor for AMIS

Overview:

At the end of September, conditions remain generally favourable for rice and soybeans while mixed for wheat and maize. In the northern hemisphere, spring wheat sowing is wrapping up while winter wheat sowing is ongoing under dry conditions. In the Russian Federation, Ukraine, and the US. In the southern hemisphere, dry conditions persist in Argentina. Maize harvest begins in the northern hemisphere after a hot and dry summer has impacted crops. Rice conditions remain generally favourable except in parts of China. Soybean conditions remain generally favourable as harvesting begins in the northern hemisphere.

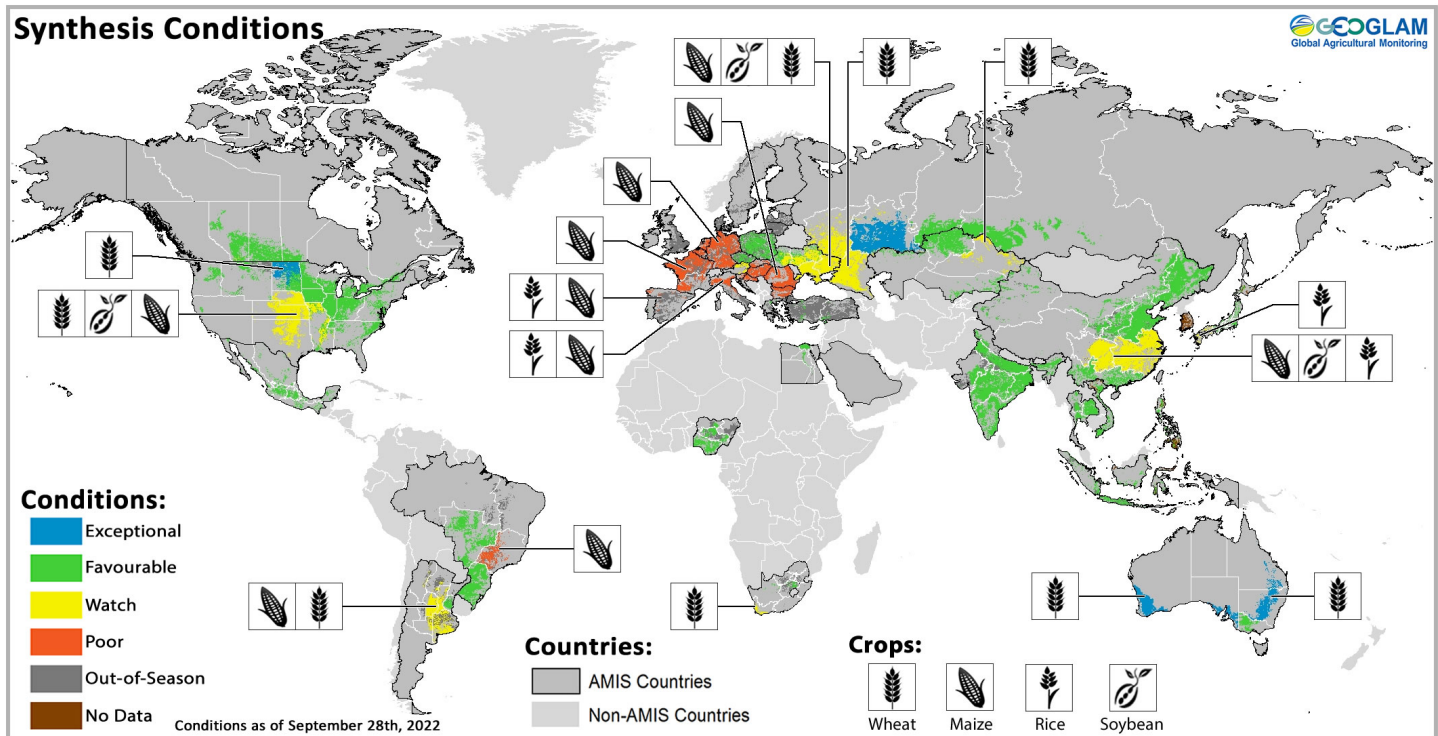


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Assessment based on information as of September 28th

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



Crop condition map synthesizing information for all four AMIS crops as of September 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. **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, spring wheat harvesting is wrapping up while winter wheat sowing is beginning. In the southern hemisphere, dry conditions persist in Argentina, while Australia benefits from ample rainfall.

Maize - In the northern hemisphere, a hot and dry summer has impacted yields in the US and Europe as harvesting begins. In the southern hemisphere, sowing of the spring-planted crop is beginning.

Forecasts at a Glance

Climate Influences – Both La Niña and a Negative Indian Ocean Dipole (IOD) are currently present. La Niña conditions will likely continue into early 2023 (89% chance for October to December and 65% chance for December to February) while the Negative IOD is likely to continue through November (78% chance).

Argentina – Both the short-term (two weeks) and long-term (three months) forecast indicate likely below-average precipitation across much of the agricultural areas.

Rice - In China, harvesting of single-season rice is ongoing. In India, Kharif rice is approaching harvesting in the north. In Southeast Asia, wet-season rice is progressing the northern countries along with dry-season rice in Indonesia.

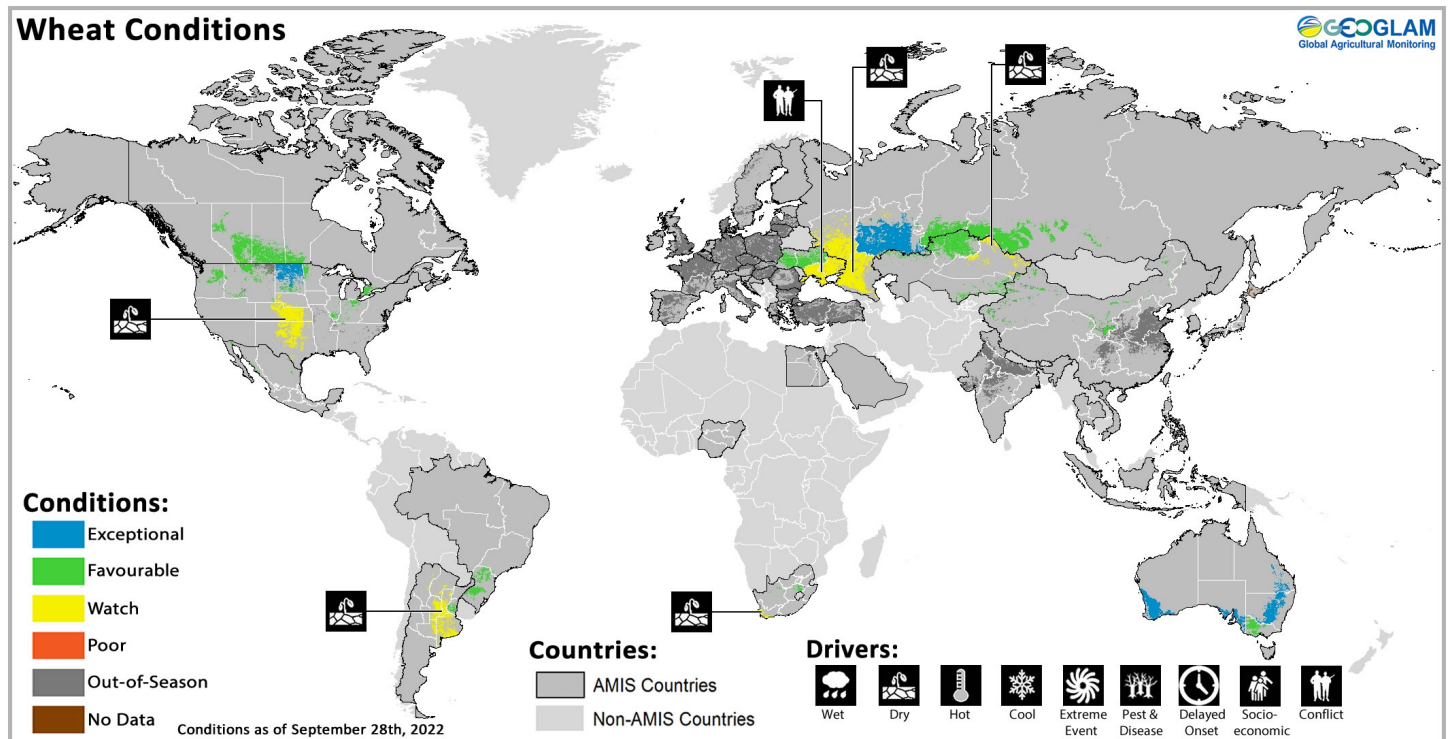
Soybeans - In the northern hemisphere, harvesting is beginning under mixed conditions in the US and Ukraine. In the southern hemisphere, sowing is beginning in Brazil under favourable conditions.

Brazil – Both the short-term (two weeks) and long-term (three months) forecast indicates likely below-average precipitation across the south, while above-average across most of the rest of the country.

The United States – The short-term forecast indicates possible below-average precipitation in the Pacific Northwest and northern Great Plains, while the long-term (three months) forecast indicates possible below-average precipitation in the southern and central Great Plains.

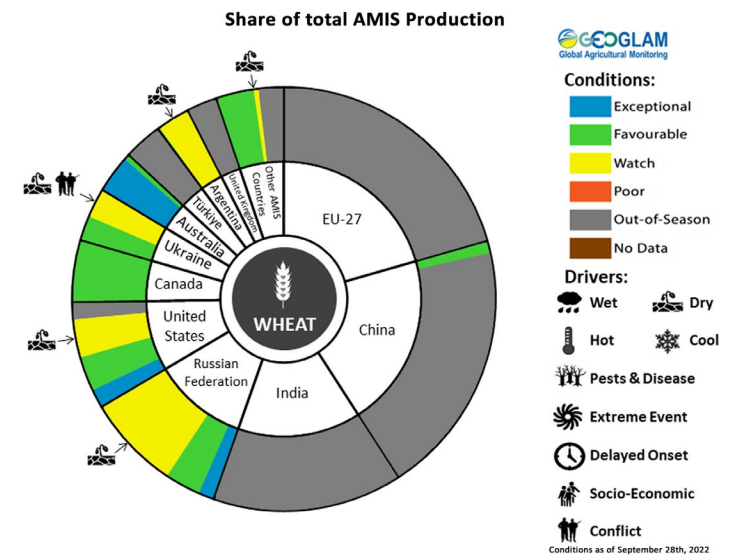
While the Crop Monitor for AMIS is primarily focused on documenting crop conditions based on environmental factors, the war in Ukraine and in other conflict areas will very likely negatively impact the ability of the crop to be harvested.

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. Condition information is based upon information as of September 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.

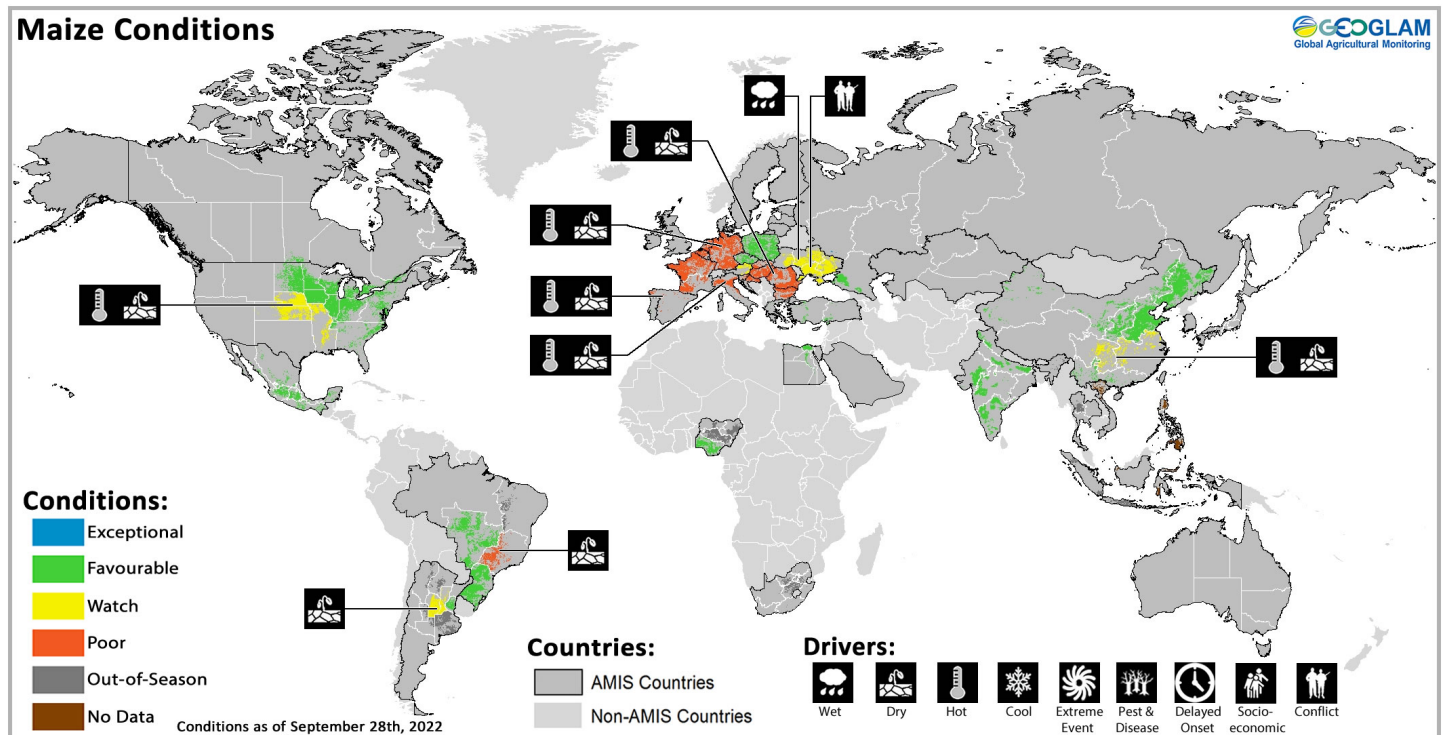
Wheat: In **Ukraine**, sowing has begun under mixed conditions in the southern and eastern regions due to the ongoing war and some dryness. In the **Russian Federation**, harvesting of spring wheat is wrapping up under favourable to exceptional conditions. Sowing of winter wheat has begun under dry conditions and will require additional rainfall to support crop establishment. In **China**, harvesting of spring wheat is wrapping up under favourable conditions. In the **US**, after a delayed start to the season, harvesting of spring wheat is wrapping up in the Dakotas under exceptional conditions. Sowing of winter wheat is ongoing under dry conditions in the southern and central Great Plains. In **Canada**, spring wheat harvesting is wrapping up under favourable conditions, while winter wheat sowing begins. In **Australia**, above-average yields are expected across the country due to timely and ample rainfall over the winter supporting crop development. In **Argentina**, dry conditions continue to persist across most of the central and northern growing areas, however, some recent rainfall has helped to stabilize the crops in the south.



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

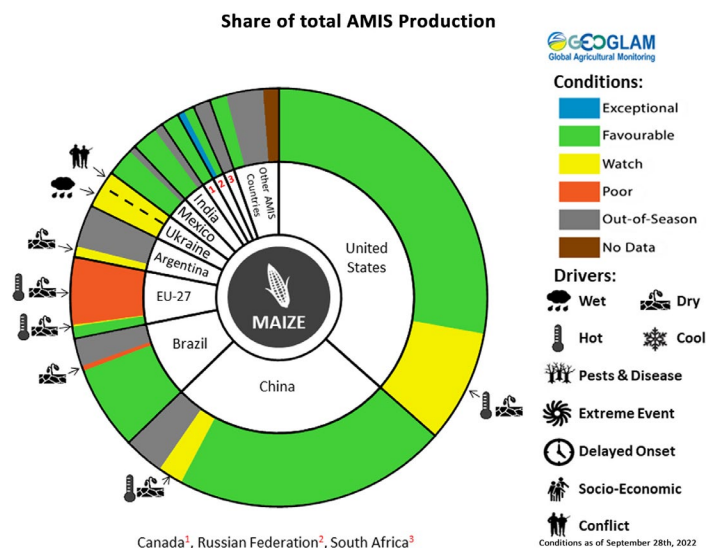
* Assessment based on information as of September 28th

Maize Conditions for AMIS Countries



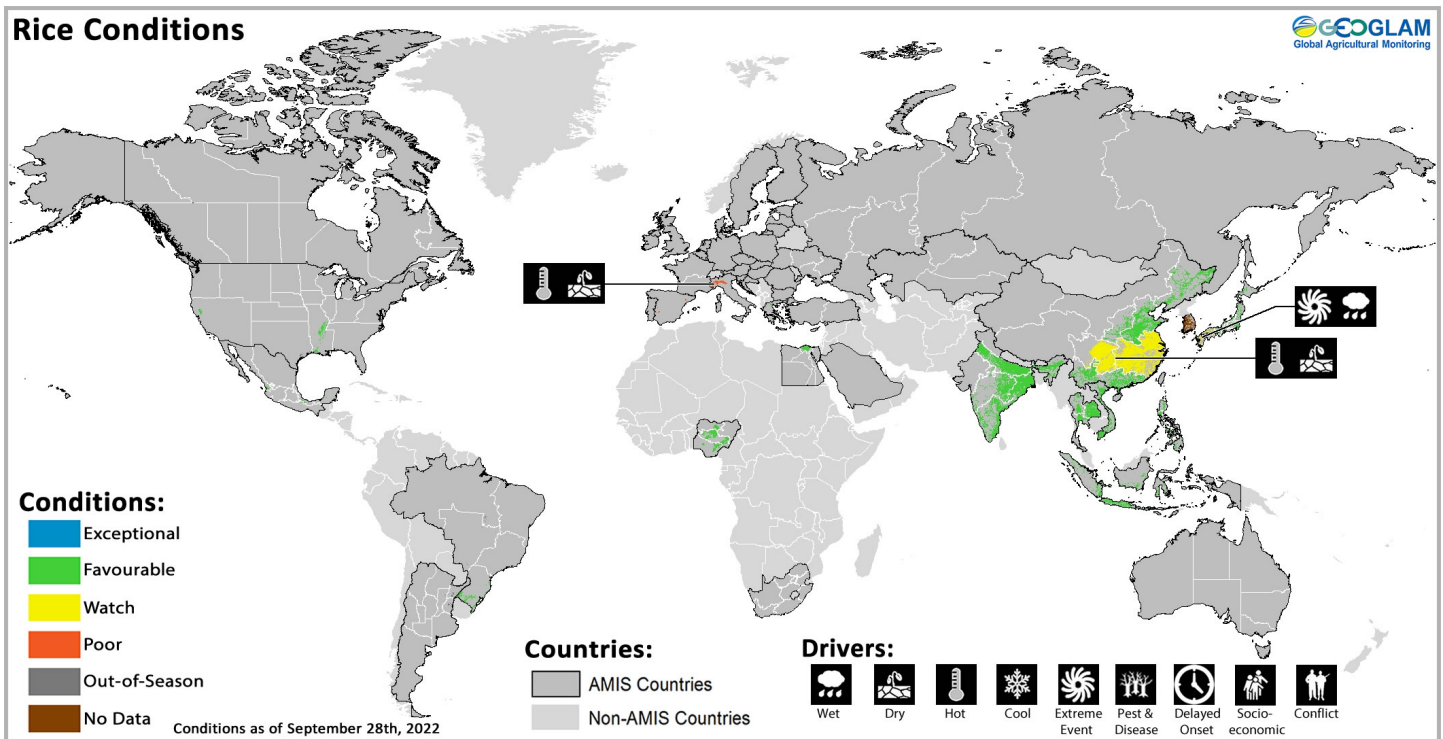
Maize crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Condition information is based upon information as of September 28th. Where crops are in other than favourable conditions the climatic drivers responsible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

Maize: In the **US**, conditions in the western and southern Corn Belt remain a concern as harvesting begins. In **Canada**, harvest is ongoing under favourable conditions. In **Mexico**, sowing is wrapping up for the spring-summer season (larger season) under favourable conditions. In the **EU**, impacts of the summer drought, despite the sparse return of rainfall, have brought the yield outlook for crops to a rather uniform poor status across Europe. In **Ukraine**, heavy September rainfall in the northern and western regions combined with cooler temperatures has slowed ripening and delayed harvesting. In the **Russian Federation**, harvesting is ongoing under favourable to exceptional conditions. In **China**, conditions are favourable in the main producing areas of the northeast, offsetting impacts from the earlier hot and dry conditions in the Yangtze River basin. In **India**, conditions are favourable with a total sown area similar to last year and above-average. In **Brazil**, the summer-planted crop (larger season) harvest is wrapping up under favourable conditions in the Central-West and South regions, while poor in the Southeast region. Sowing of the spring-planted crop (smaller) has begun in the south under favourable conditions. In **Argentina**, sowing of the early-planted crop (larger season) continues, albeit delayed due to a lack of soil moisture in many areas.



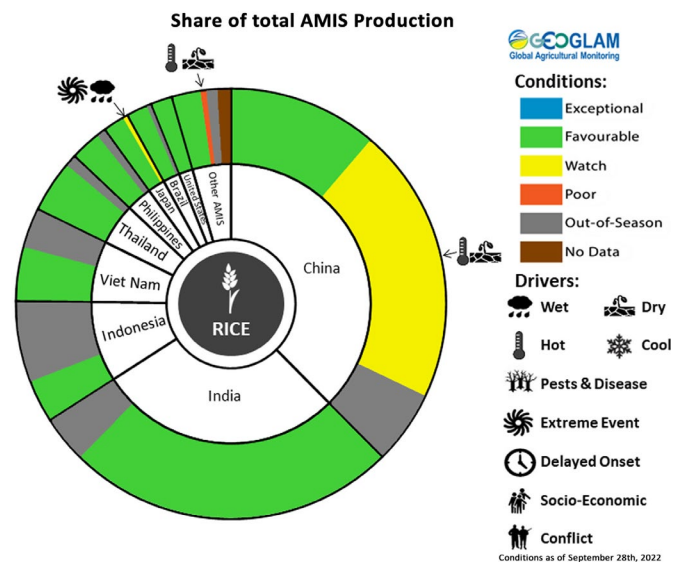
For detailed description of the pie chart please see box on page 6.

Rice Conditions for AMIS Countries



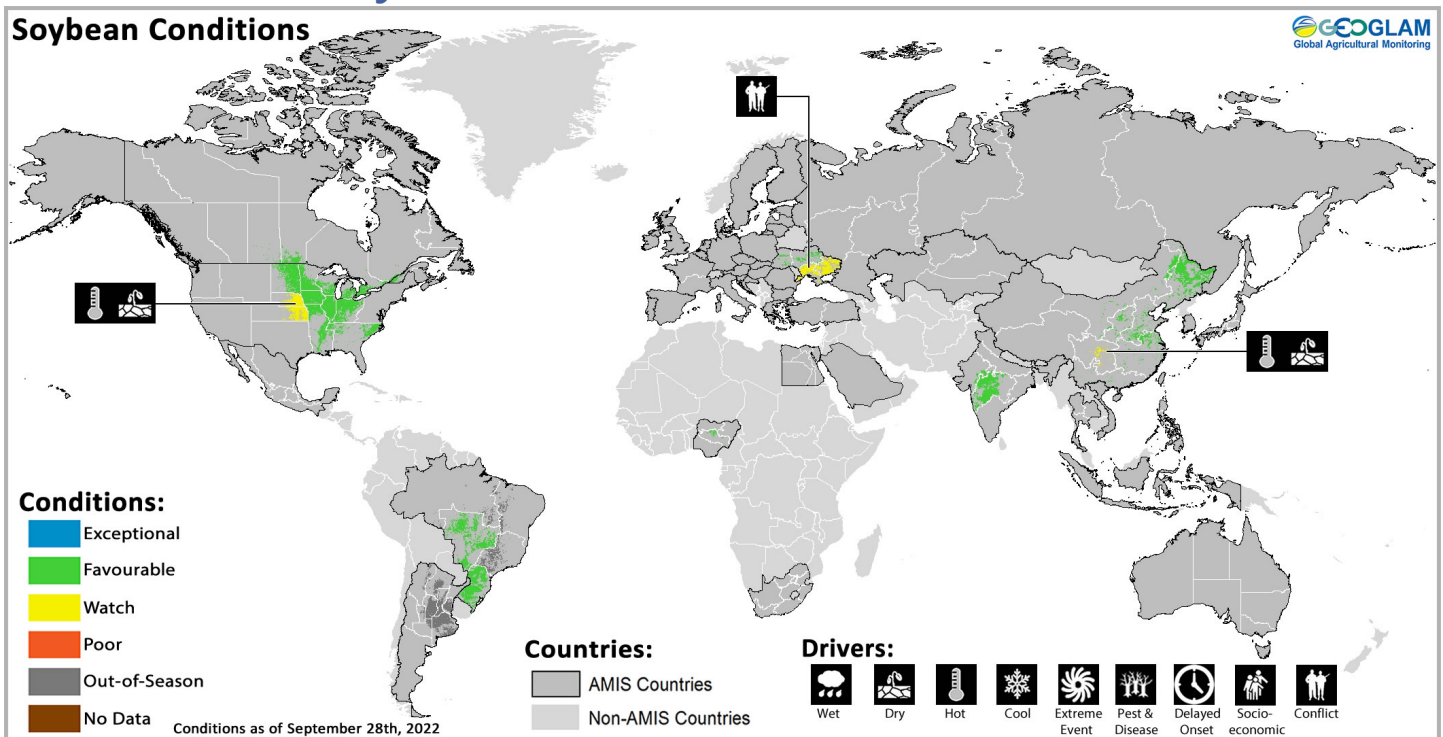
Rice crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Condition information is based upon information as of September 28th. Where crops are in other than favourable conditions the climatic drivers responsible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

Rice: In **China**, harvesting is ongoing for single-season rice, however, hot and dry conditions during the summer months impacted the yield potentials of both single-season and late-season crops in the Yangtze River basin. In **India**, conditions are favourable as harvesting approaches in the northern states. There is a slight reduction in the total sown area compared to the average and last year, primarily in the eastern states. In **Indonesia**, sowing of dry-season rice enters the late stages as harvesting of earlier sown crops continues under favourable conditions. In **Viet Nam**, wet-season rice is continuing to develop under favourable conditions in the north. In the south, harvesting is ongoing for summer-autumn rice (wet-season) while the other wet-season rice (autumn-winter rice and seasonal rice) continues to develop. In **Thailand**, wet-season rice is in the young panicle forming stage under favourable conditions. In the **Philippines**, wet-season rice sown between July and August is in the tillering stage under favourable conditions. In **Japan**, typhoon Nanmadol impacted the south, bringing heavy rainfall and flooding. In **Brazil**, sowing has begun in the south. In the **US**, harvest is ongoing.



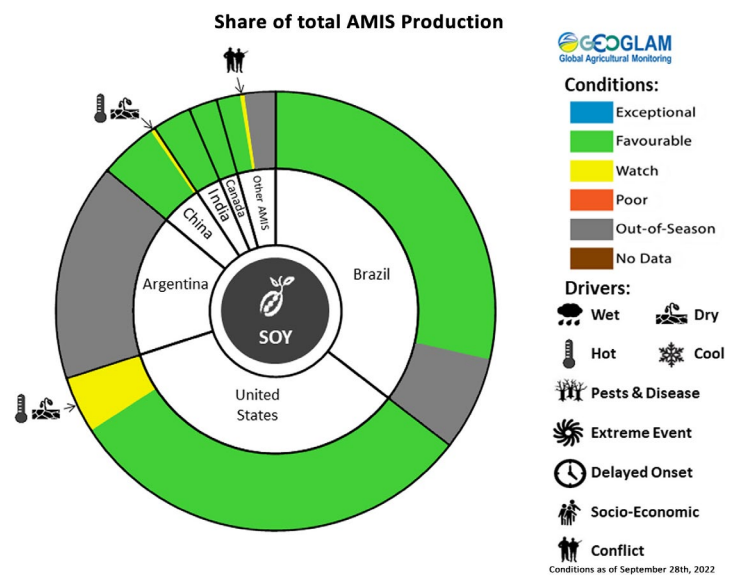
For detailed description of the pie chart please see box on page 6.

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. Condition information is based upon information as of September 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 the **US**, conditions remain generally favourable as harvesting begins, albeit with earlier hot and dry conditions likely impacting yields in Kansas and Nebraska. In **Canada**, harvesting is ongoing under favourable conditions. In **China**, conditions are favourable as harvest begins. In **India**, crops are in the maturity stage under favourable conditions with a total sown area similar to last year, but higher than the average. In **Ukraine**, conditions are favourable as harvest begins, however, conditions remain mixed along the southern and eastern regions due to the ongoing war. In **Brazil**, sowing is beginning under favourable conditions in the South region and some areas with enough soil moisture in the Central-West region.



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 October 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 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). 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 September 28th

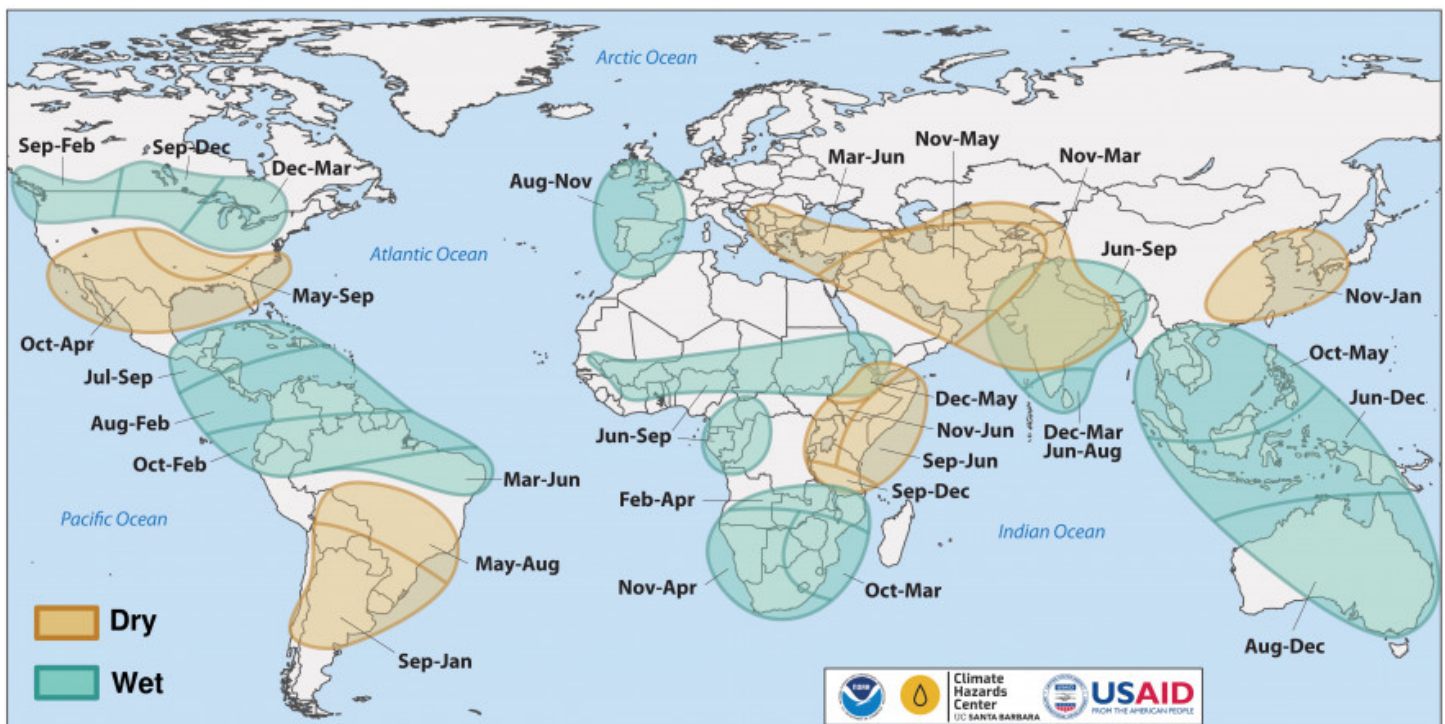
Climate Influences: La Niña Advisory and a Negative Indian Ocean Dipole

The El Niño-Southern Oscillation (ENSO) is currently in the La Niña phase. La Niña conditions will likely continue into early 2023 (89% chance for October to December and 65% chance for December to February), according to the IRI/CPC.

Negative Indian Ocean Dipole (IOD) conditions are present and are expected to continue through at least November (78% chance), according to the Australia Bureau of Meteorology.

Associated with co-occurring La Niña and negative IOD conditions there are very high risks of severe drought impacts across the Horn of Africa, and heavy rainfall and flooding in Australia and Southeast Asia. Additionally, La Niña conditions for a third year in a row raises concerns about repeat dry conditions in eastern East Africa, southern South America, Central and Southern Asia, and southern North America, where multiple rainfall seasons have been below-average since late 2020. Historically, co-occurring La Niña and IOD events have led to very dry conditions in East Africa during boreal fall, and fall La Niñas are very often followed by poor spring rains as well, even if La Niña strength wanes.

Source: UCSB Climate Hazards Center

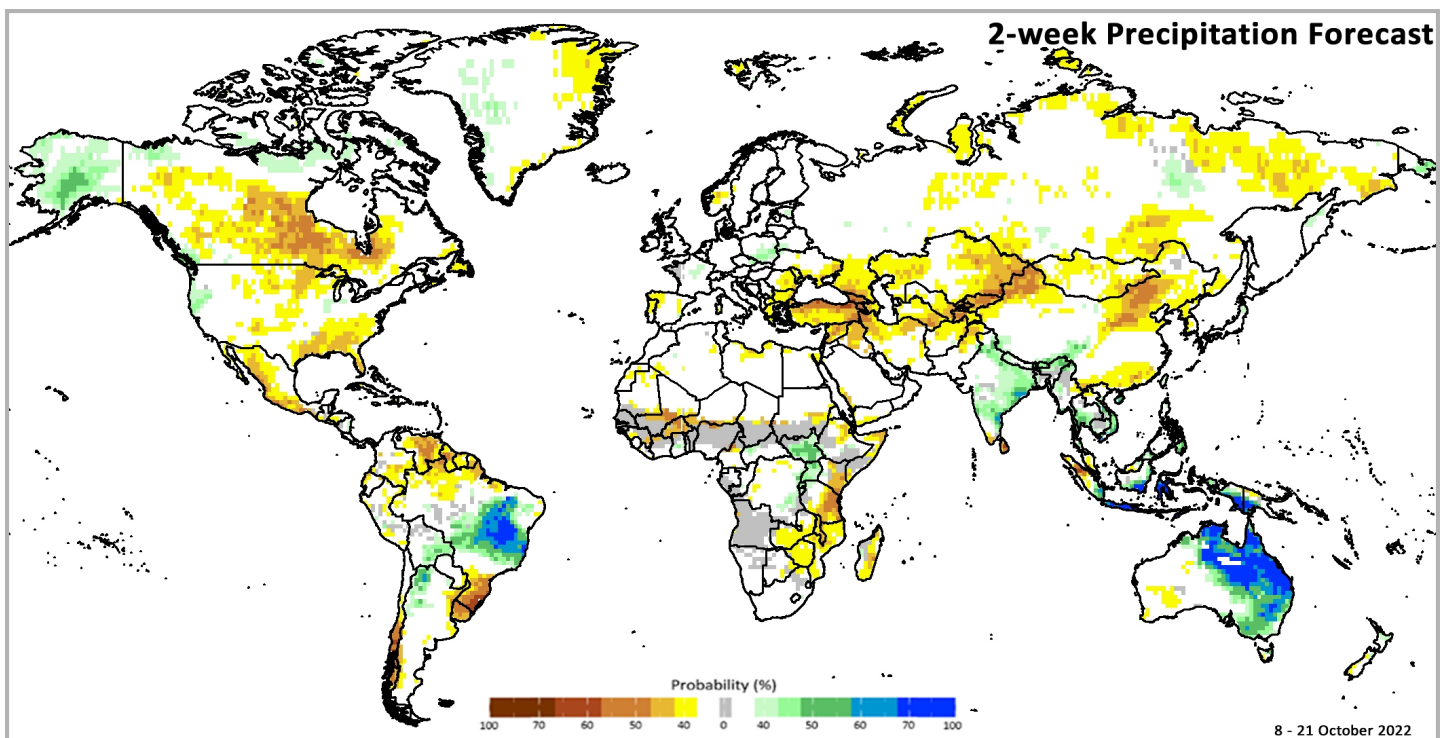


Location and timing of likely above- and below-average precipitation related to La Niña events. Based upon observed precipitation during 21 La Niña events since 1950, wet and dry correspond to a statistically significant increase in the frequency of precipitation in the upper and lower thirds of historical 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 Alaska in the US, Central Brazil, southeast Bolivia, northeast Argentina, southern Poland, South Sudan, Uganda, northern and eastern India, southern Thailand, southern Viet Nam, southern Philippines, southern Indonesia, southwest Papua New Guinea, and northern and eastern Australia.

There is also a likelihood of below-average rainfall over central Canada, northcentral and southeast US, western and southern Mexico, southeast Colombia, Venezuela, Guyana, Suriname, French Guiana, northern and southern Brazil, Uruguay, southern Chile, northern Portugal, northwest Spain, eastern Romania, Bulgaria, North Macedonia, Greece, Turkey, southern Ukraine, southern and eastern Russia, Georgia, Armenia, Azerbaijan, Syria, northern Iraq, northern Iran, central Mali, Burkina Faso, northeast Ethiopia, northeast Somalia, southern Kenya, eastern Tanzania, southern Zambia, Zimbabwe, Mozambique, eastern Madagascar, eastern and western Kazakhstan, Kyrgyzstan, eastern Uzbekistan, eastern Turkmenistan, northern Afghanistan, northern Pakistan, central Mongolia, northern and southern China, Sri Lanka, Democratic People's Republic of Korea, western Republic of Korea, and northwest Indonesia.



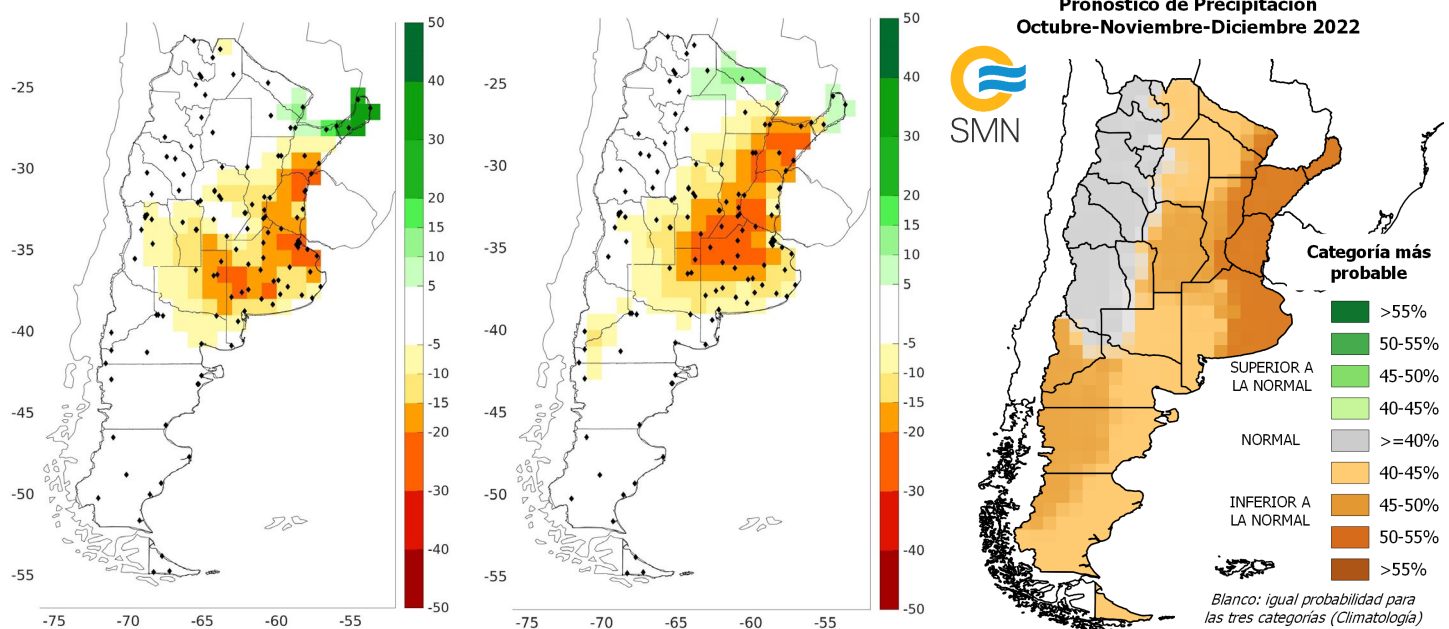
IRI SubX Precipitation Biweekly Probability Forecast for 8 – 21 October 2022, issued on September 30th, 2022. The forecast is based on statistically calibrated tercile category forecasts from three SubX models. Source: [IRI Subseasonal Forecasts Maproom](#)

Argentina Outlook

The October 5-11 precipitation forecast (left) indicates likely below-average rainfall over southern Corrientes, Entre Rios, Santa Fe, northeast and southeast Cordoba, Buenos Aires, San Luis, La Pampa, and northern Rio Negro. During the same period, temperatures are likely to be below-average over much of the central and northern agricultural areas. The October 12-18 precipitation forecast (center) follows the first week's forecast, but with likely larger negative anomalies over Santa Fe, southern Cordoba, and northern Buenos Aires. During the same period, temperatures are likely to be above-average across much of the central and southern agricultural areas.

The long-term October-November-December 2022 forecast (right) predicts below-average precipitation across much of the country. The largest negative anomalies are over Misiones, Corrientes, Entre Rios, Santa Fe, Cordoba, and eastern Buenos Aires. During the same period, temperatures are likely to be above-average across the central and southern agricultural areas.

Precipitation Anomaly Forecasts



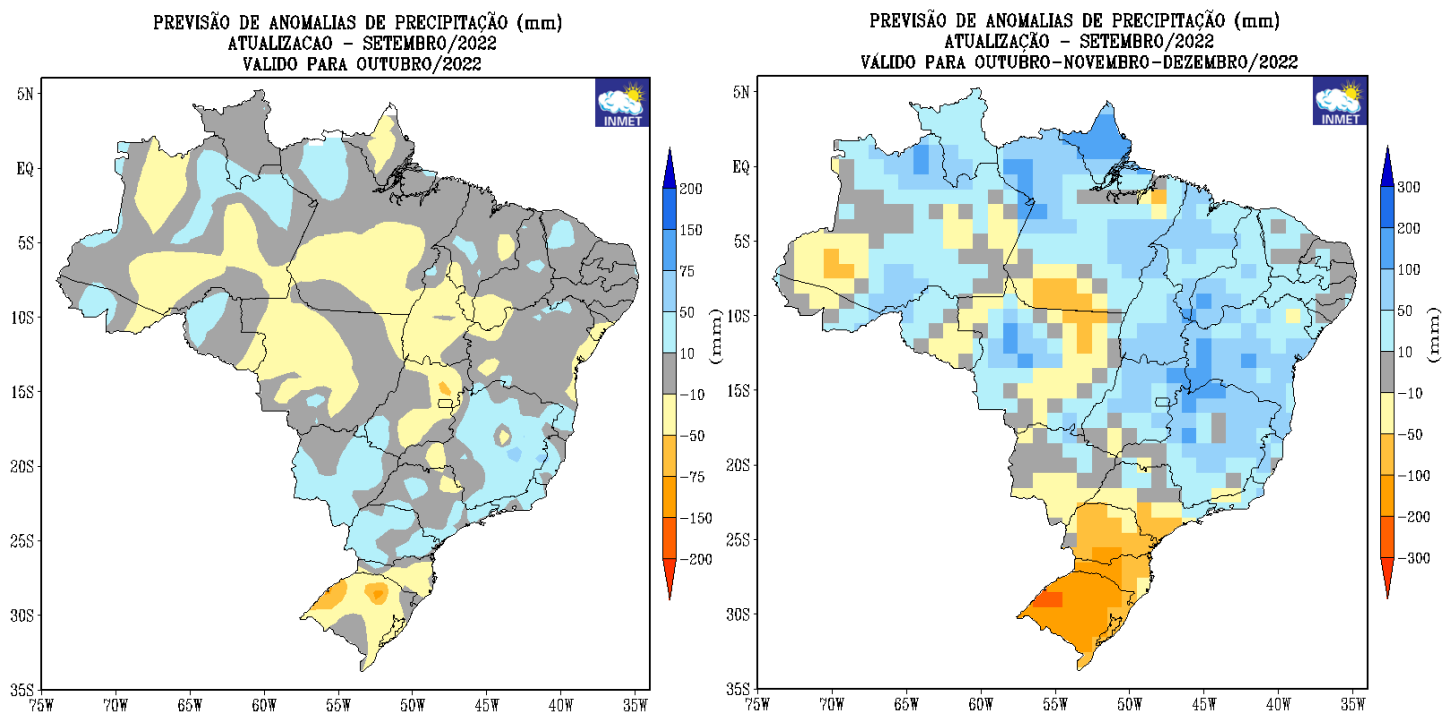
Left: October 5 – 11, 2022 forecast precipitation anomaly in mm. **Center** October 12 – 18, 2022 forecast precipitation anomaly in mm. Images from the [National Meteorological Service of Argentina](#). **Right:** October-November-December 2022 forecast rainfall anomaly. Image from the [National Meteorological Service of Argentina](#).

Brazil Outlook

The October precipitation anomaly forecast (left) indicates possible below-average precipitation over parts of cropping areas in Rio Grande do Sul, Santa Catarina, Mato Grosso, and Goiás, while possible above-average precipitation over parts of agricultural areas in Mato Grosso do Sul, Parana, and Minas Gerais. During the same period, temperatures are likely to be below-average in the south while above-average across much of the rest of the country.

The long-term October-November-December 2022 forecast (Figure 2) indicates likely below-average precipitation in Parana, Santa Catarina, Rio Grande do Sul, and parts of southern Mato Grosso do Sul. Above-average is likely across much of the rest of the country, specifically the north, east, and southeast regions. During the same period, temperatures are likely to be above-average across the northern half of the country.

October and 3-month Precipitation Forecast Anomalies



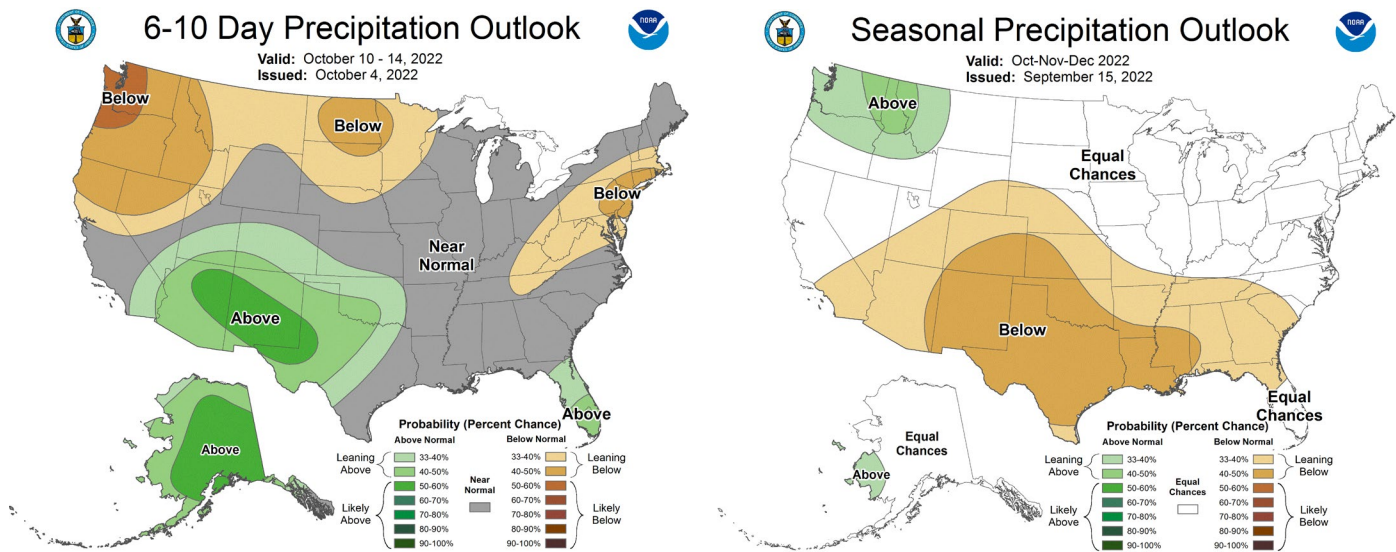
Left: October 2022 precipitation anomaly forecast, issued in September 2022. **Right:** October-November-December 2022 precipitation anomaly forecast, issued in September 2022. Images from the [National Institute of Meteorology](https://www.inmet.gov.br/).

United States Outlook

The 10 – 14 October outlook indicates there is the possibility of above-average precipitation in the Southwest and Southern Great Plains, while below-average precipitation is possible in the Pacific Northwest, Northern Plains, and New England. During this period, temperatures are likely to be above-average along the Pacific coast and in the Mississippi Delta / Southern Great Plains region.

For the longer-term seasonal October-November-December (OND) 2022 outlook, below-average precipitation is possible across the entire southern part of the country and reaching up into the Central Great Plains. Conversely, above-average precipitation is likely in the Pacific Northwest. During this period, temperatures are likely to be above-average across the entire country, except for the Northern Great Plains and the Pacific Northwest.

Short-term and the October-November-December Precipitation Outlooks



The official 6 - 10 precipitation outlook issued on October 4th, 2022, and the extended October-November-December outlook issued on September 15th, 2022, from NOAA/National Weather Service, National Centers for Environmental Predictions, and Climate Prediction Center. Images from <https://www.cpc.ncep.noaa.gov/products/forecasts/>.

Source: NOAA Climate Prediction Center

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% below average. This is only used when conditions are not likely to be able to recover, and 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.

Conditions:

	Exceptional
	Favourable
	Watch
	Poor
	Out-of-Season
	No Data

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: 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

	Wet
	Dry
	Hot
	Cool
	Extreme Event
	Delayed-Onset

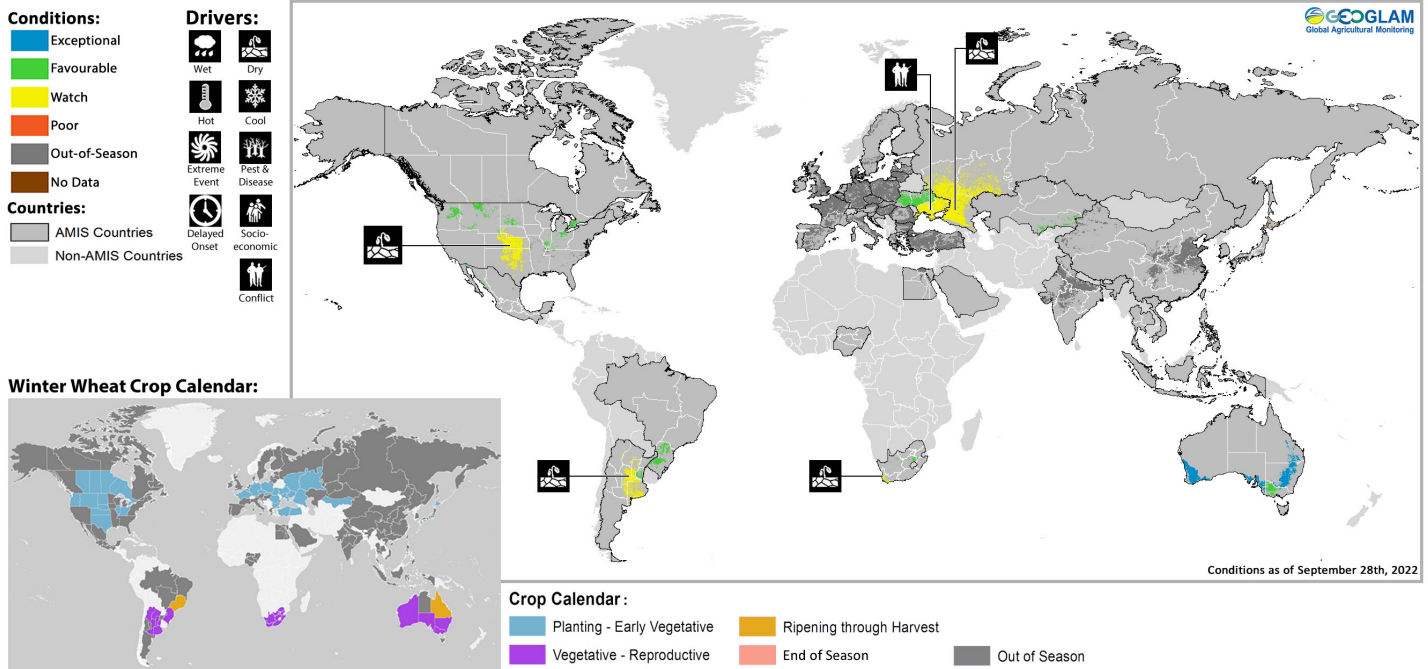
Crop Season Nomenclature:

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	

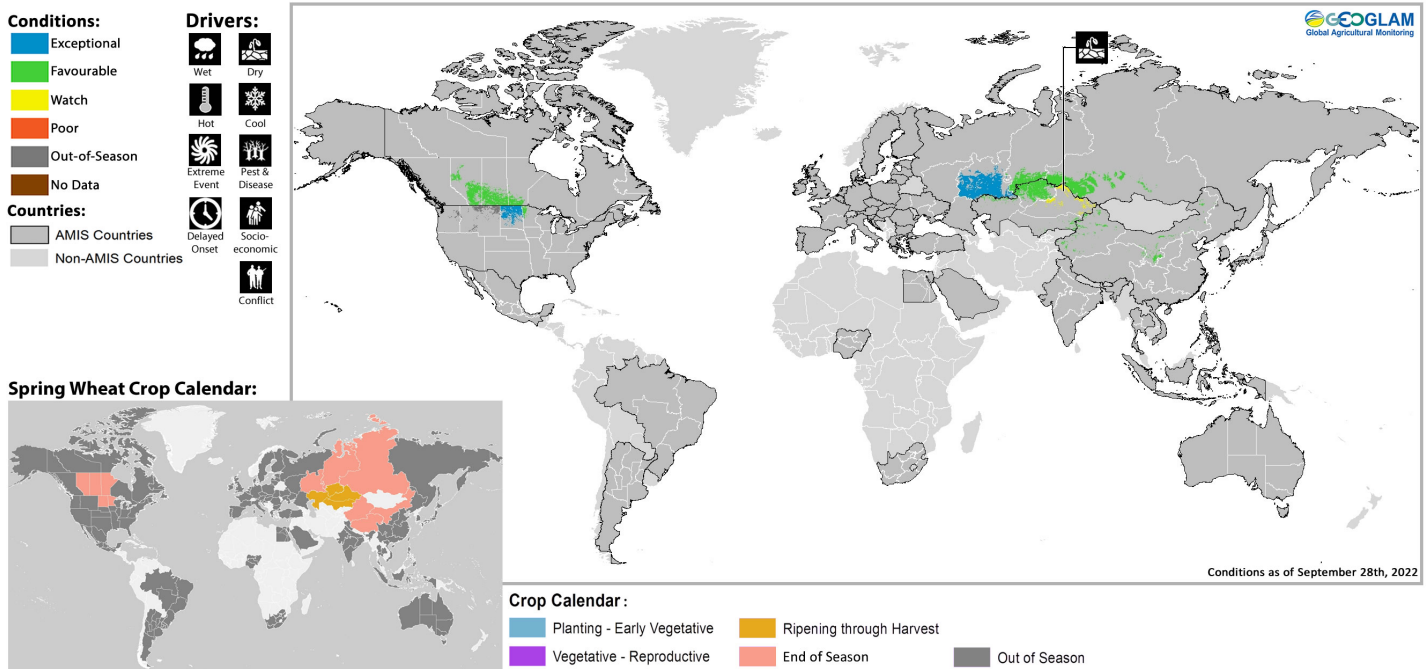
Appendix 2: Crop Season Specific Maps

Winter Planted Wheat Conditions for AMIS Countries



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. Condition information is based upon information as of September 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.

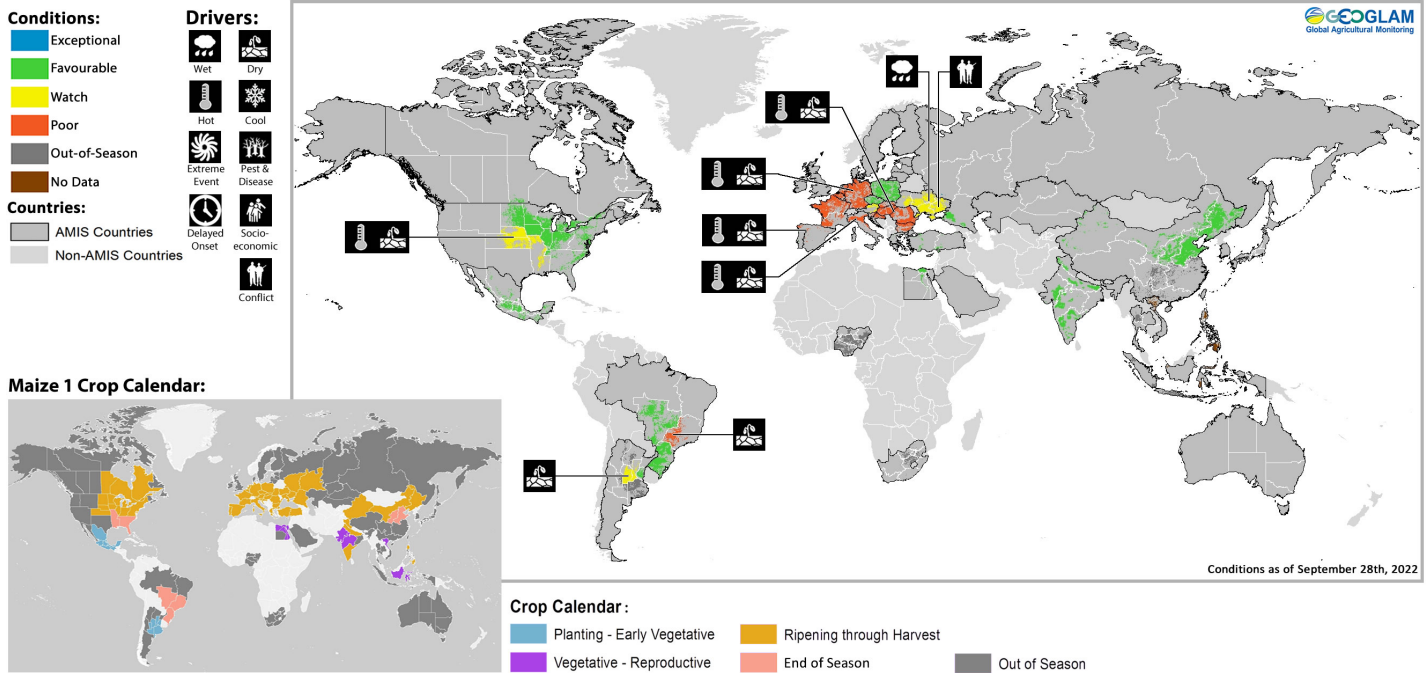
Spring Planted Wheat Conditions for AMIS Countries



Spring wheat crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Condition information is based upon information as of September 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.

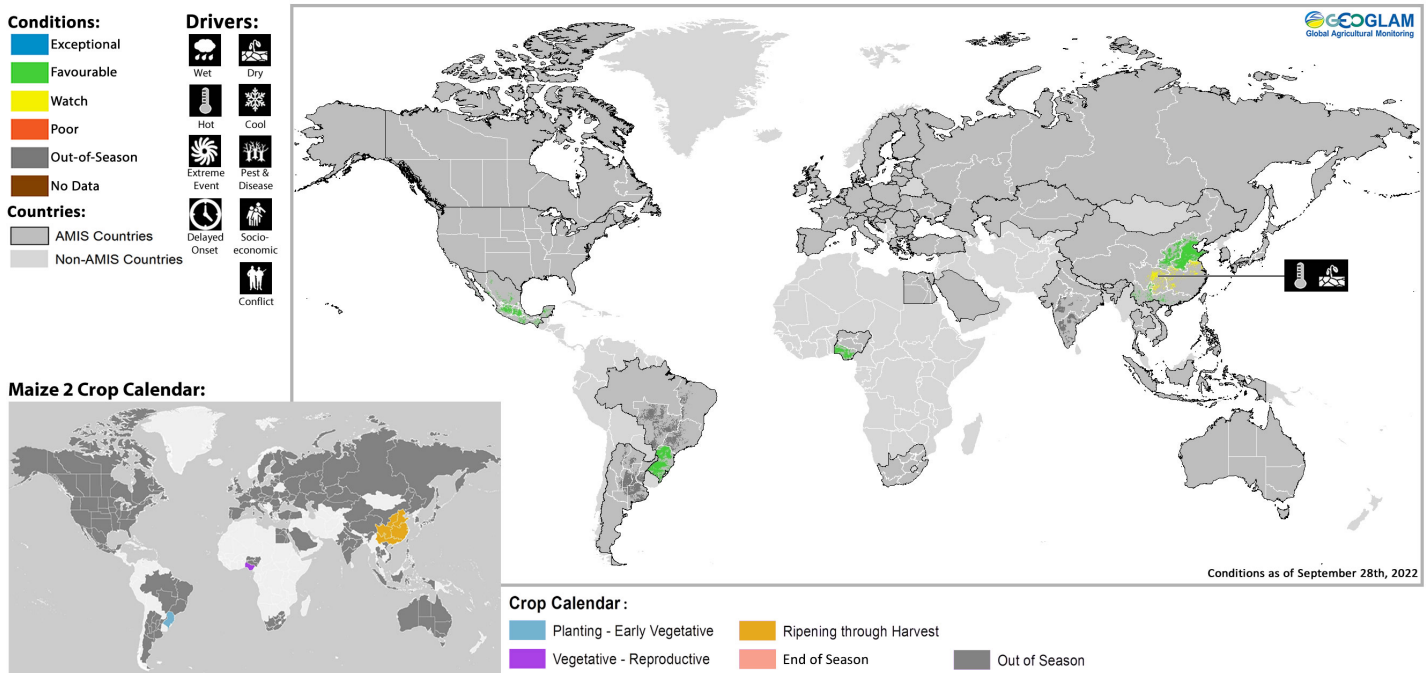
* Assessment based on information as of September 28th

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. Condition information is based upon information as of September 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.

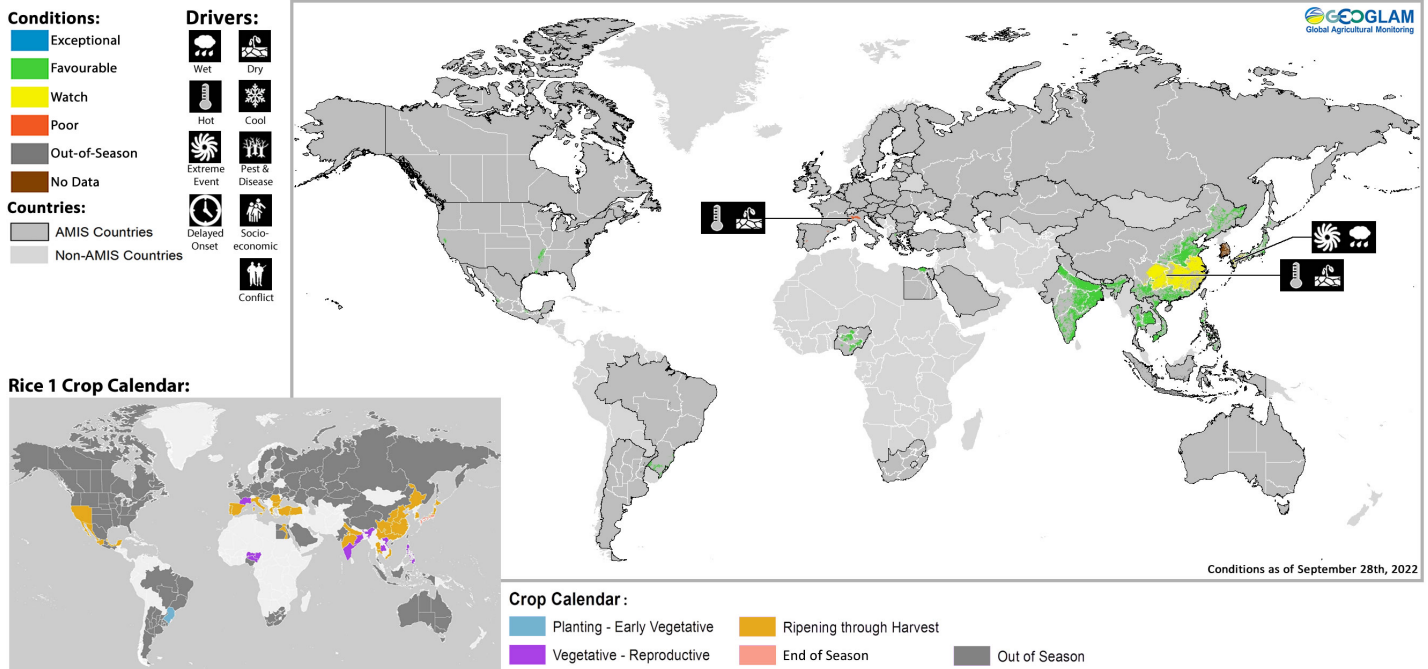
Maize 2 Conditions for AMIS Countries



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. Condition information is based upon information as of September 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.

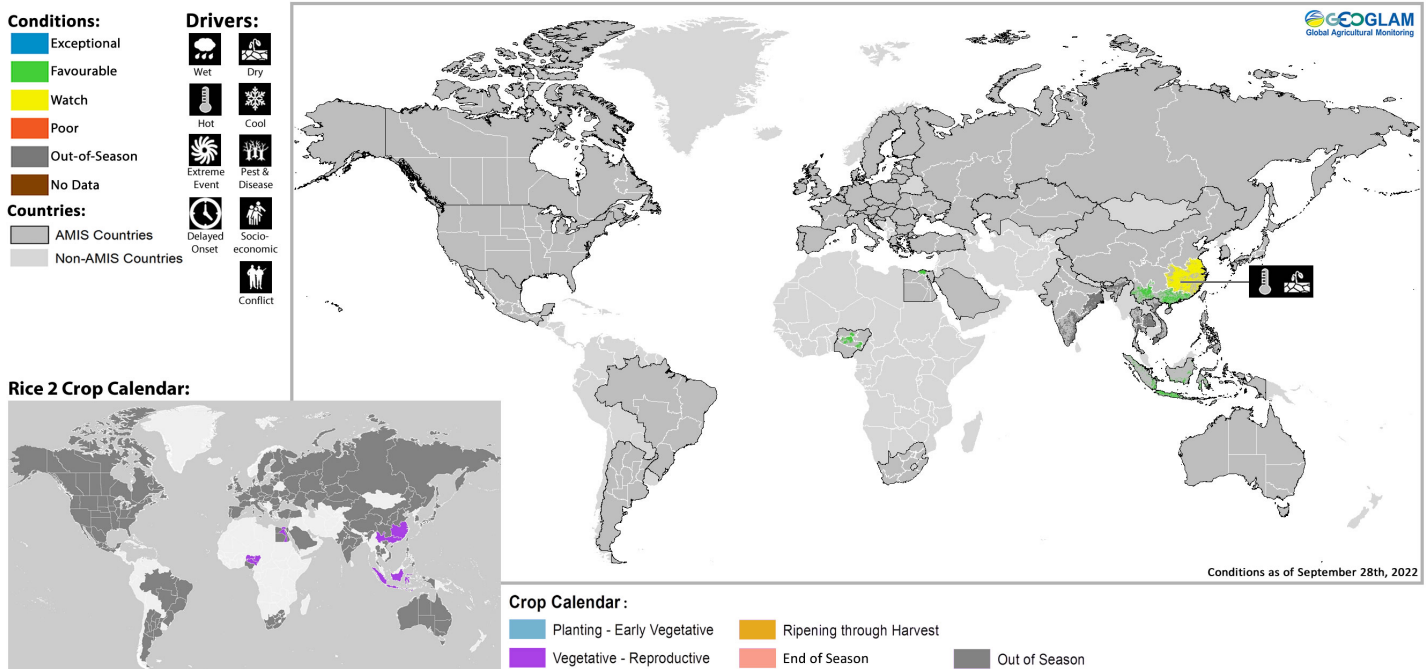
* Assessment based on information as of September 28th

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. Condition information is based upon information as of September 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.

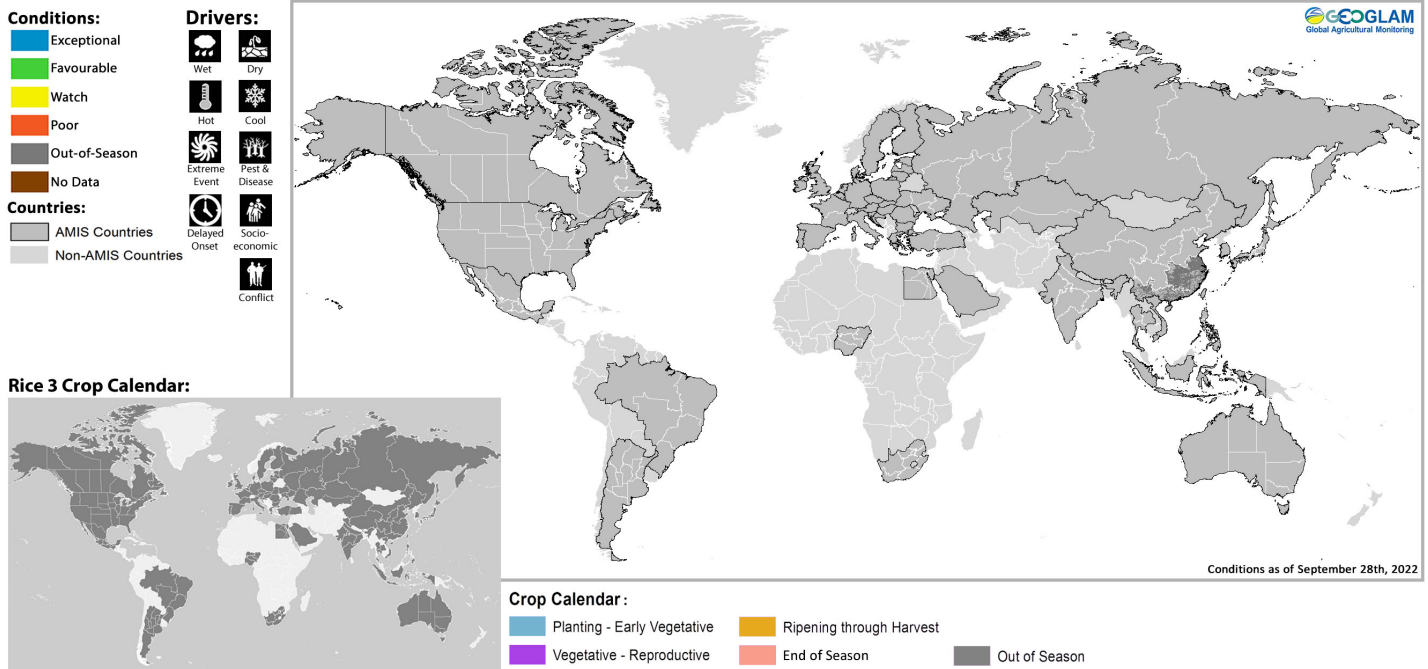
Rice 2 Conditions for AMIS Countries



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. Condition information is based upon information as of September 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.

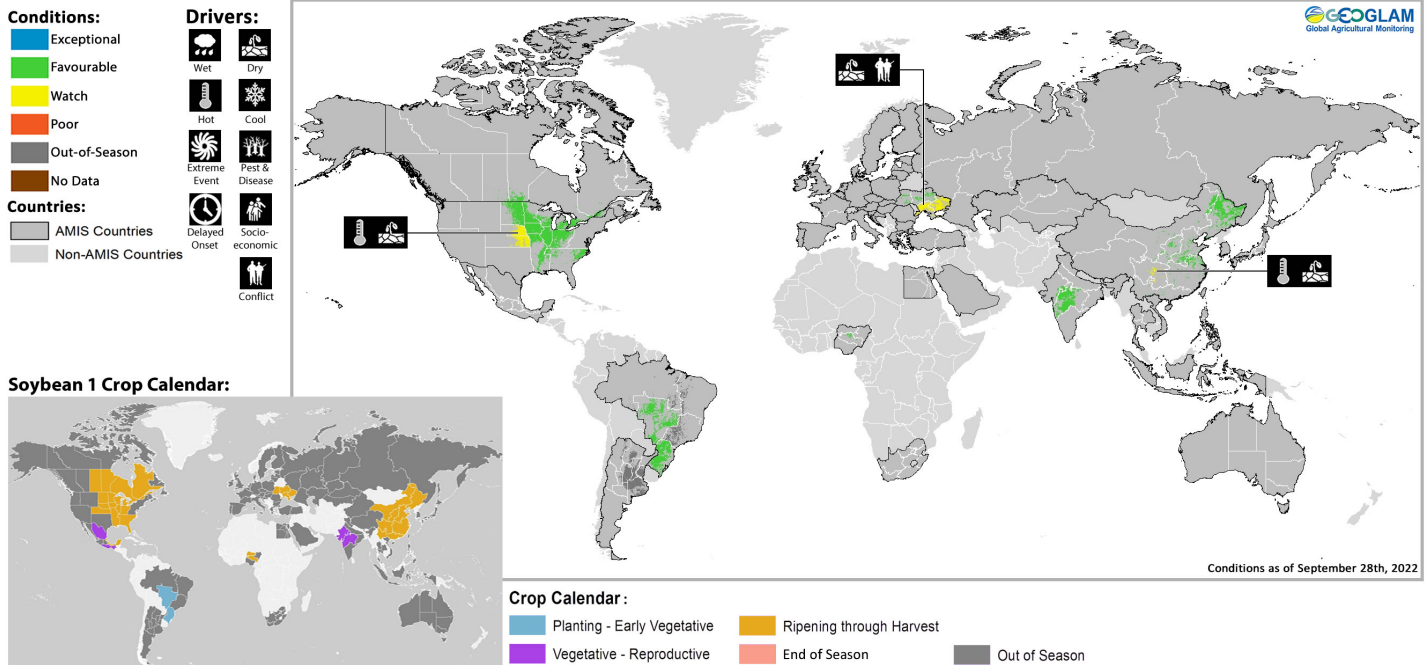
* Assessment based on information as of September 28th

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. Condition information is based upon information as of September 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.

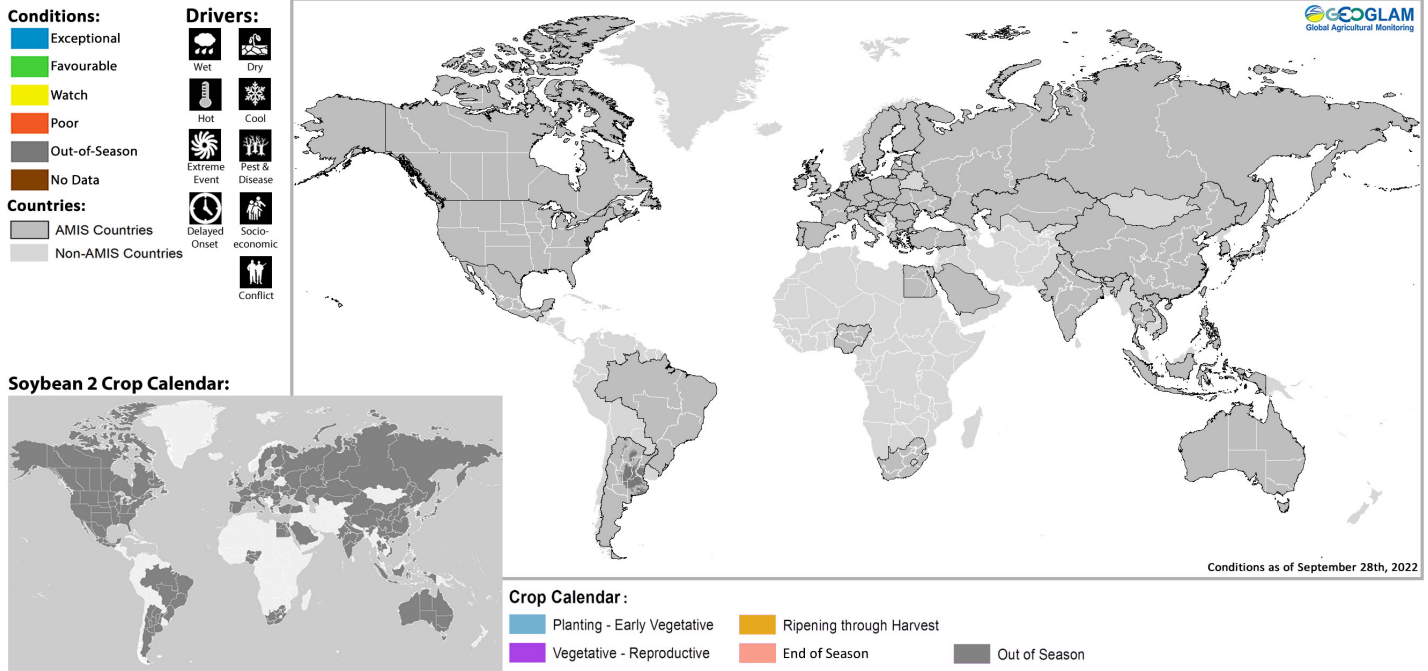
Soybean 1 Conditions for AMIS Countries



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. Condition information is based upon information as of September 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 September 28th

Soybean 2 Conditions for AMIS Countries



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. Condition information is based upon information as of September 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 September 28th



Prepared by members of the GEOGLAM Community of Practice
Coordinated by the University of Maryland with funding from NASA Harvest
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

<https://cropmonitor.org/>

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Sources & Disclaimer

Sources and Disclaimers: The Crop Monitor assessment is conducted by GEOGLAM with inputs from the following partners (in alphabetical order): Argentina (Buenos Aires Grains Exchange, MAGyP), Asia Rice Countries (AFSIS, ASEAN+3 & Asia RiCE), Australia (ABARES & CSIRO), Brazil (CONAB & INPE), Canada (AAFC), China (CAS), EU (EC JRC MARS), Gro Intelligence, India (NCFC), Indonesia (LAPAN & MOA), International (CIMMYT, FAO GIEWS, IFPRI & IRRI), Japan (JAXA, MAFF), Mexico (SIAP), Russian Federation (IKI), South Africa (ARC & CSIR & GeoTerraImage & SANSA), Thailand (GISTDA & OAE), Ukraine (NASU-NSAU & UHMC), USA (NASA, UMD, USGS – FEWS NET, USDA (FAS, NASS)), Viet Nam (VAST & VIMHE-MARD). The findings and conclusions in this joint multiagency report are consensual statements from the GEOGLAM experts, and do not necessarily reflect those of the individual agencies represented by these experts.

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