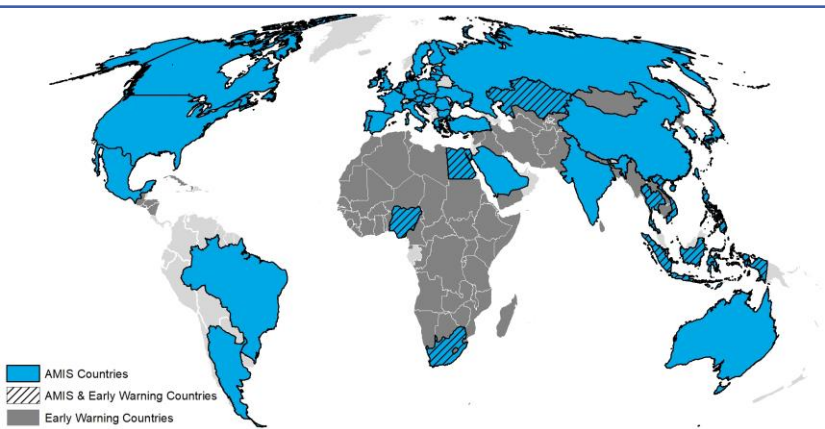




Crop Monitor for AMIS

Overview:

At the end of November, conditions are generally mixed for wheat while favourable for maize, rice, and soybeans. For wheat in the northern hemisphere, winter wheat is established with areas of concern. In the southern hemisphere, harvesting is ongoing. For maize, harvesting is wrapping up in the northern hemisphere while sowing is progressing in the southern hemisphere. Rice harvesting is wrapping up in China for late-season rice and India for Kharif rice, while wet-season rice remains impacted by heavy rains in October. Soybean sowing is progressing in the southern hemisphere.

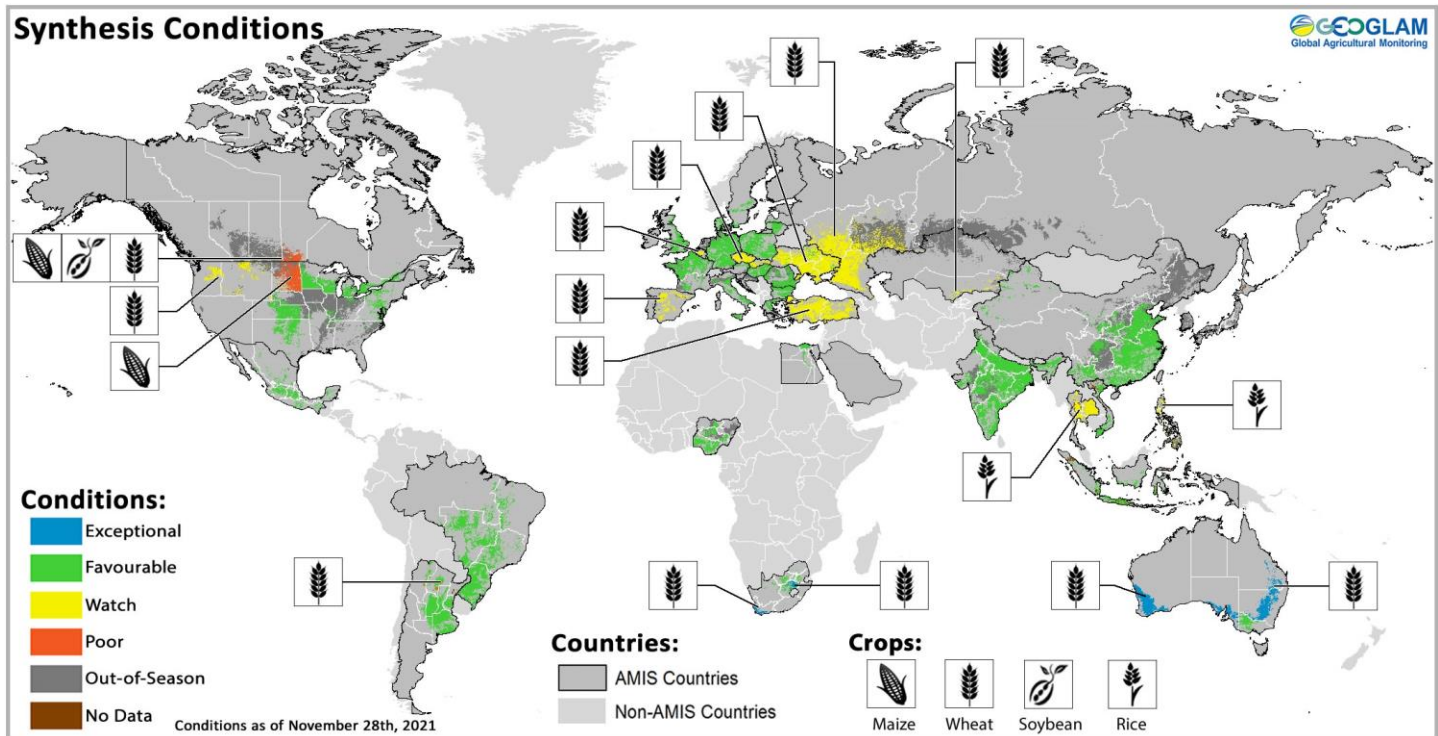


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Assessment based on information as of November 28th

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



Crop condition map synthesizing information for all four AMIS crops as of November 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, winter wheat is entering the winter months under mixed conditions in many places. In the southern hemisphere, harvesting is continuing under favourable to exceptional conditions.

Maize - Harvesting in the northern hemisphere is wrapping up while sowing in the southern hemisphere is progressing under favourable conditions.

Forecasts at a Glance

Climate Influences - The El Niño-Southern Oscillation (ENSO) is currently in the La Niña phase with NOAA CPC/IRI issuing a La Niña Advisory in October. La Niña conditions are expected to continue during December to February (92% chance) and into April (69% chance for February-March-April; 50% chance for March-April-May).

Argentina – The rainfall in November was above average across much of the corn growing area. Rainfall over the next two weeks will likely be average during the first week and then below-average the following week.

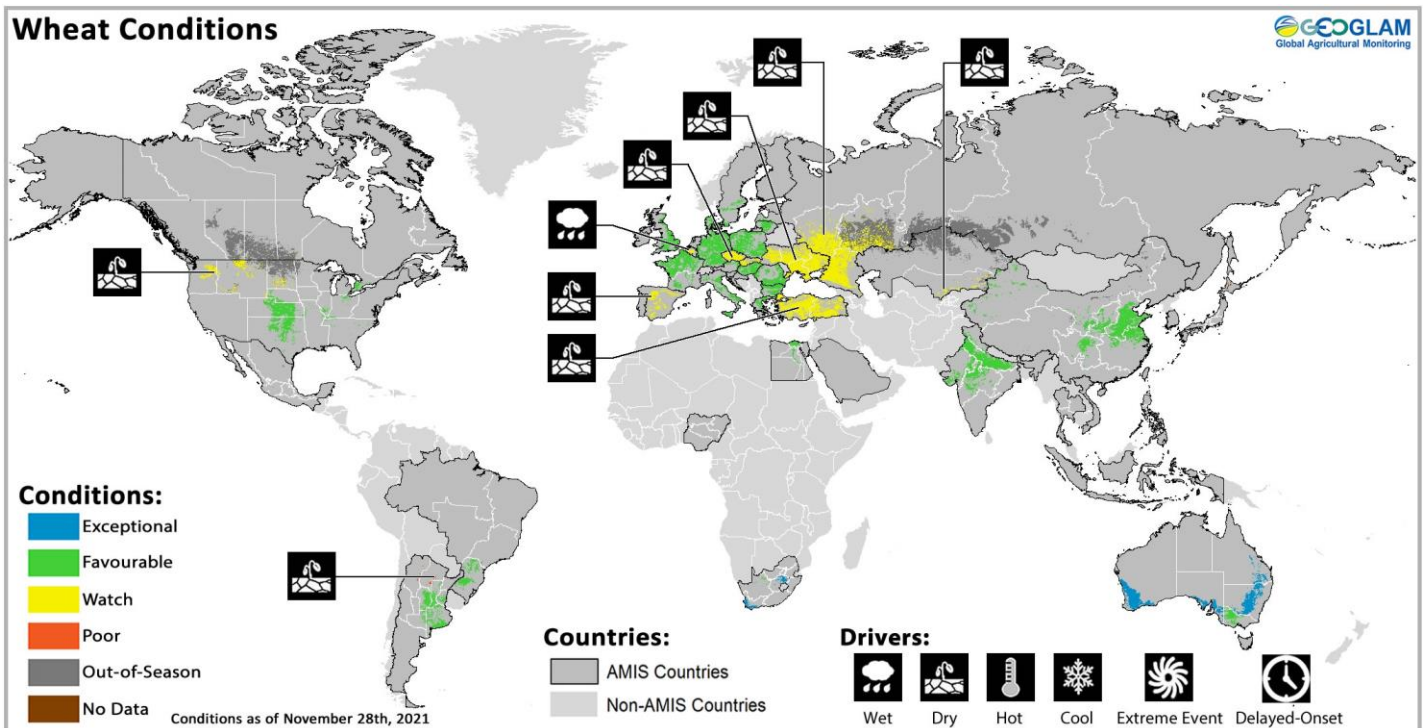
Rice - Harvesting is wrapping up in China for late-season rice and India for Kharif rice. In Southeast Asia, wet-season rice in Thailand and the Philippines remains impacted by earlier heavy rains, while in Indonesia dry-season rice is harvesting and wet-season rice sowing continues.

Soybeans - In the northern hemisphere, harvesting is wrapping up in Canada. In the southern hemisphere, sowing is progressing in Brazil and Argentina.

Brazil – The short-term (2-week) and the extended forecasts (JFM 2022) shows likely above-average rainfall in northern Brazil. However, below-average rainfall is likely in the short-term and extended forecasts in south Brazil.

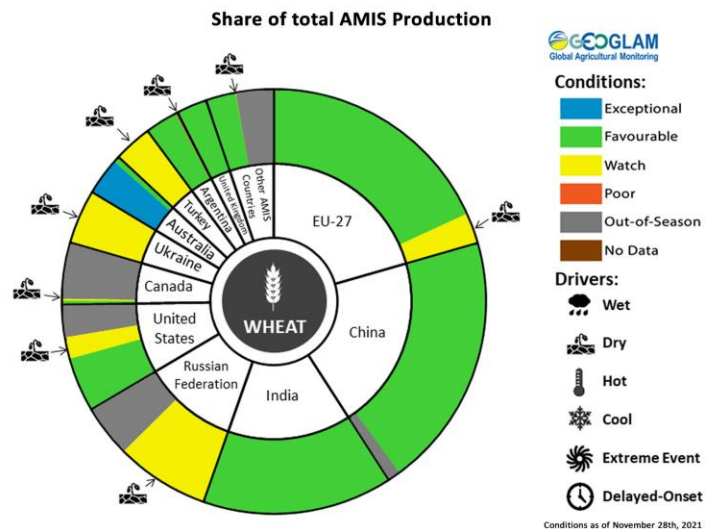
South Africa – The short-term (2-week) and the extended forecasts shows likely above-average rainfall in the central parts of the country over the western maize growing areas.

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 November 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.

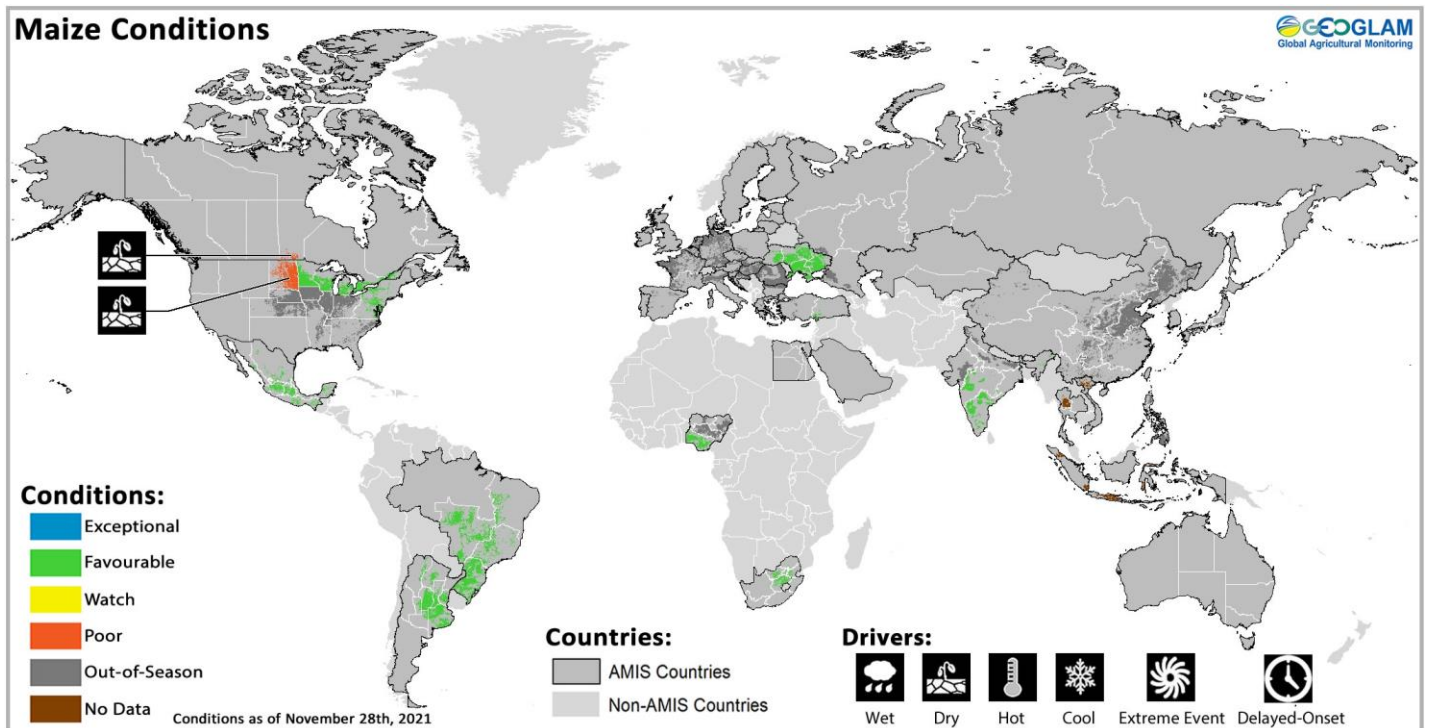
Wheat: In **Argentina**, harvesting is wrapping up in the north under poor conditions, while in the main producing provinces, harvesting is beginning under favourable conditions with an increase in total sown area this season compared to last year and the 5-year average. In **Australia**, harvesting continues with conditions favourable in Victoria and exceptional in the remaining states with yields well above the 5-year average. In the **EU**, winter wheat is well established in the northern countries under favourable conditions while sowing continues in the southern countries with a few areas of dryness. In the **United Kingdom**, conditions are favourable. In **Ukraine**, conditions continue to be mixed as soil moisture deficits expand due to little rainfall over the past month. In the **Russian Federation**, winter wheat areas remain drier than average, but soil moisture levels have stabilized over the past month. In **Turkey**, sowing of winter wheat is ongoing under mixed conditions due to dryness in the central and southern regions. In **China**, conditions are favourable for winter wheat. In **India**, sowing is beginning under favourable conditions in the northern and central states. In the **US**, winter wheat is under mixed conditions due to very dry conditions in the northern and northwest growing regions. In **Canada**, winter wheat is under favourable conditions in the main producing province of Ontario, while dryness persists in the Prairies.



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

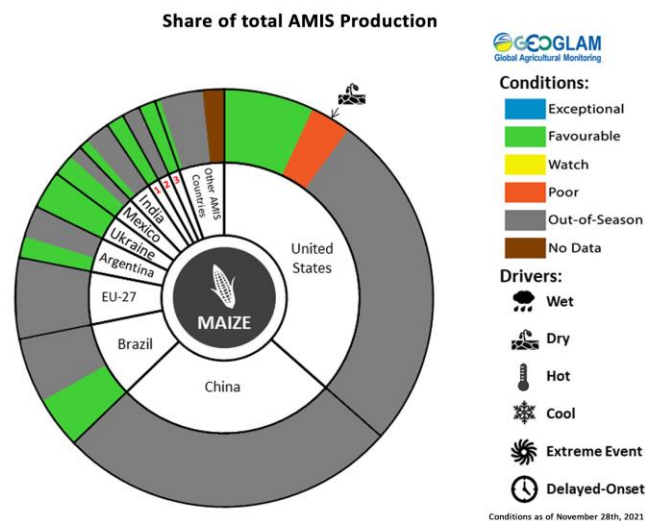
* Assessment based on information as of November 28th

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 November 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.

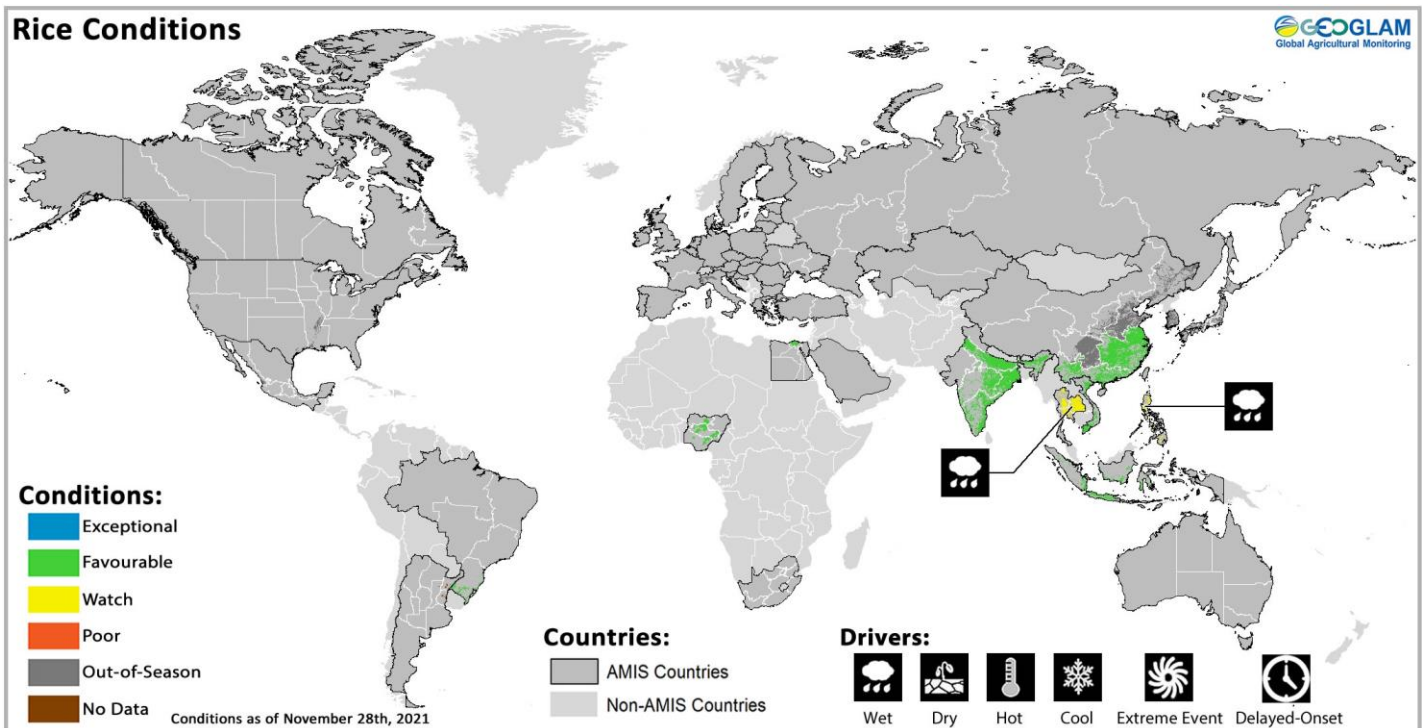
Maize: In the **US**, harvest wrapped up in the northern states under generally favourable conditions except in the Dakotas where persistent dryness has reduced yields. In **Canada**, harvesting is wrapping up under favourable conditions in Ontario and Quebec, while under poor conditions in Manitoba. In **Mexico**, harvesting of the spring-summer crop (larger season) continues under favourable conditions. In **Ukraine**, harvesting is wrapping up under favourable conditions. In **India**, sowing of Rabi season crops is beginning under favourable conditions. In **Brazil**, sowing of the spring-planted crop (smaller season) is continuing under favourable conditions with crops in the main producing South region entering the vegetative to reproductive stages. In **Argentina**, sowing of the early-planted (larger season) continues under favourable conditions. In **South Africa**, conditions are favourable with widespread rain since mid-November, supporting sowing activities across the entire main producing region.



Canada¹, Russian Federation², South Africa³

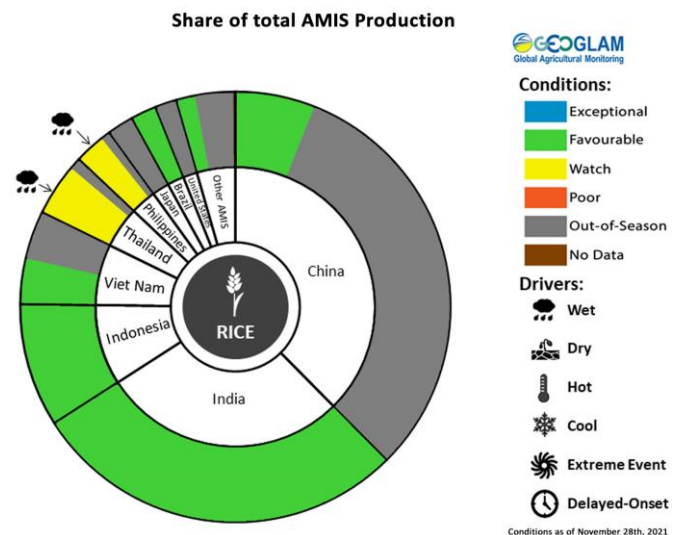
For detailed description of the pie chart please see box on page 6.

Rice Conditions for AMIS Countries



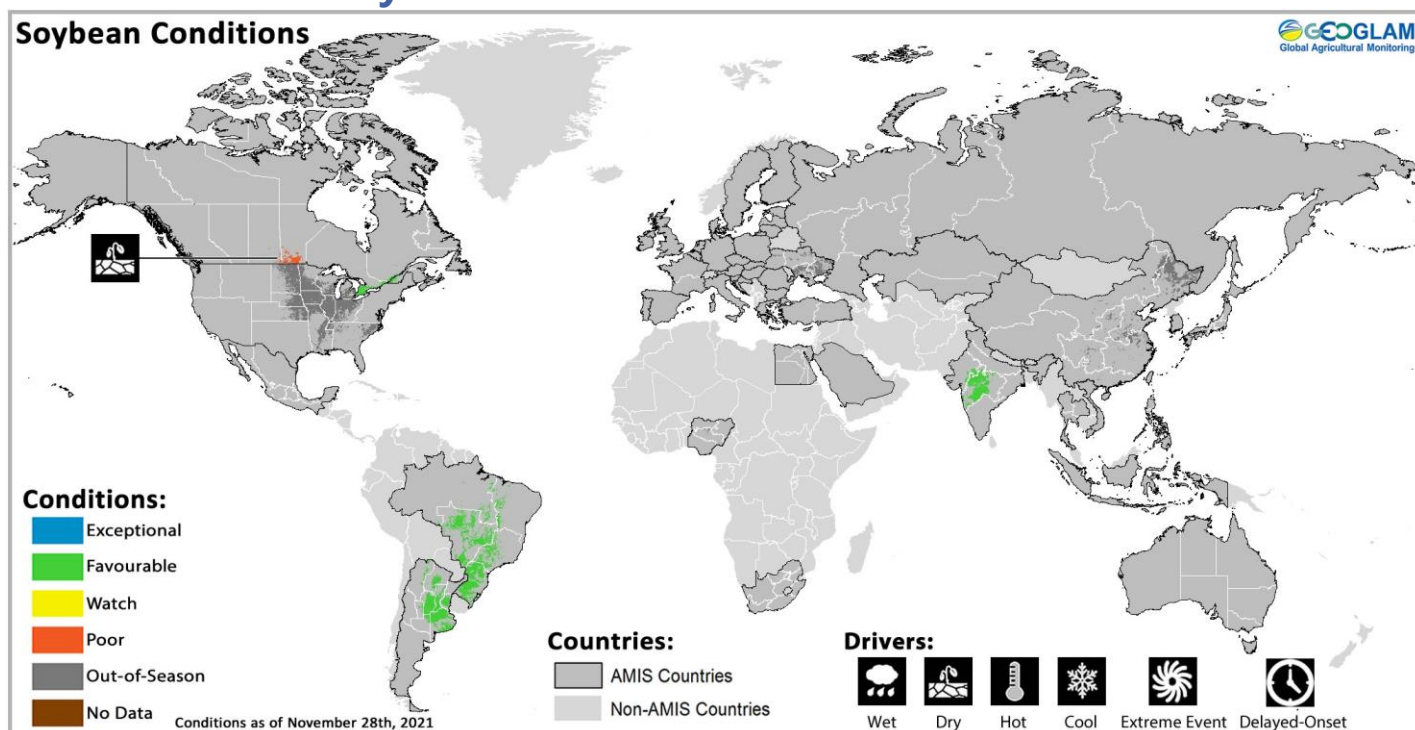
Rice crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Condition information is based upon information as of November 28th. Where crops are in other than favourable conditions the climatic drivers responsible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

Rice: In **China**, harvesting of the late-season crop is wrapping up under favourable conditions. In **India**, conditions are favourable in the southern and eastern regions as the harvesting of Kharif rice is wrapping up and the sowing of Rabi rice is just beginning. In **Indonesia**, conditions are favourable for dry-season rice as harvesting continues, albeit at a slower pace than last year. Sowing of wet-season rice continues under favourable conditions. In northern **Viet Nam**, wet-season rice is harvesting under favourable conditions with yields expected to be slightly above last year's. In the South, conditions are favourable for the harvesting of autumn-winter (wet-season) rice and the beginning of winter-spring (wet-season) rice sowing. In **Thailand**, wet-season rice is harvesting under mixed conditions as a result of excess rainfall and widespread flooding in the northern and northeast regions. In the **Philippines**, wet-season rice is harvesting under mixed conditions due to damage from heavy rainfall, most notably from severe tropical storm *Maring* that impacted northern parts of Luzon in October. In **Brazil**, sowing is ongoing under favourable conditions.



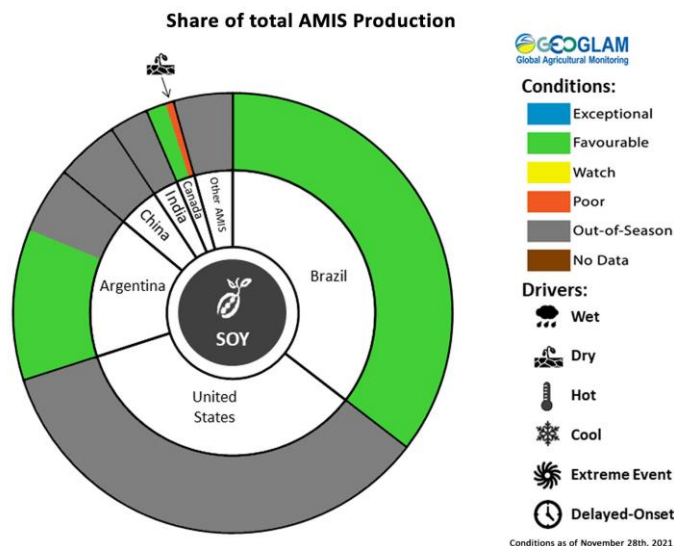
For detailed description of the pie chart please see box on page 6.

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 November 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 **Canada**, harvesting is wrapping up under favourable conditions in the main producing province of Ontario, while under poor conditions in the Prairies due to drought during the growing season. In **Brazil**, sowing is continuing in the main producing regions under favourable conditions. In the Central-West (largest producing region), sowing is wrapping up and most crops are in the vegetative stage and with few areas entering the reproductive stage. In **Argentina**, sowing of the early-planted crop (larger season) is progressing under favourable conditions owing to recent rainfall.



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 December 2nd

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 November 28th

Climate Forecasts

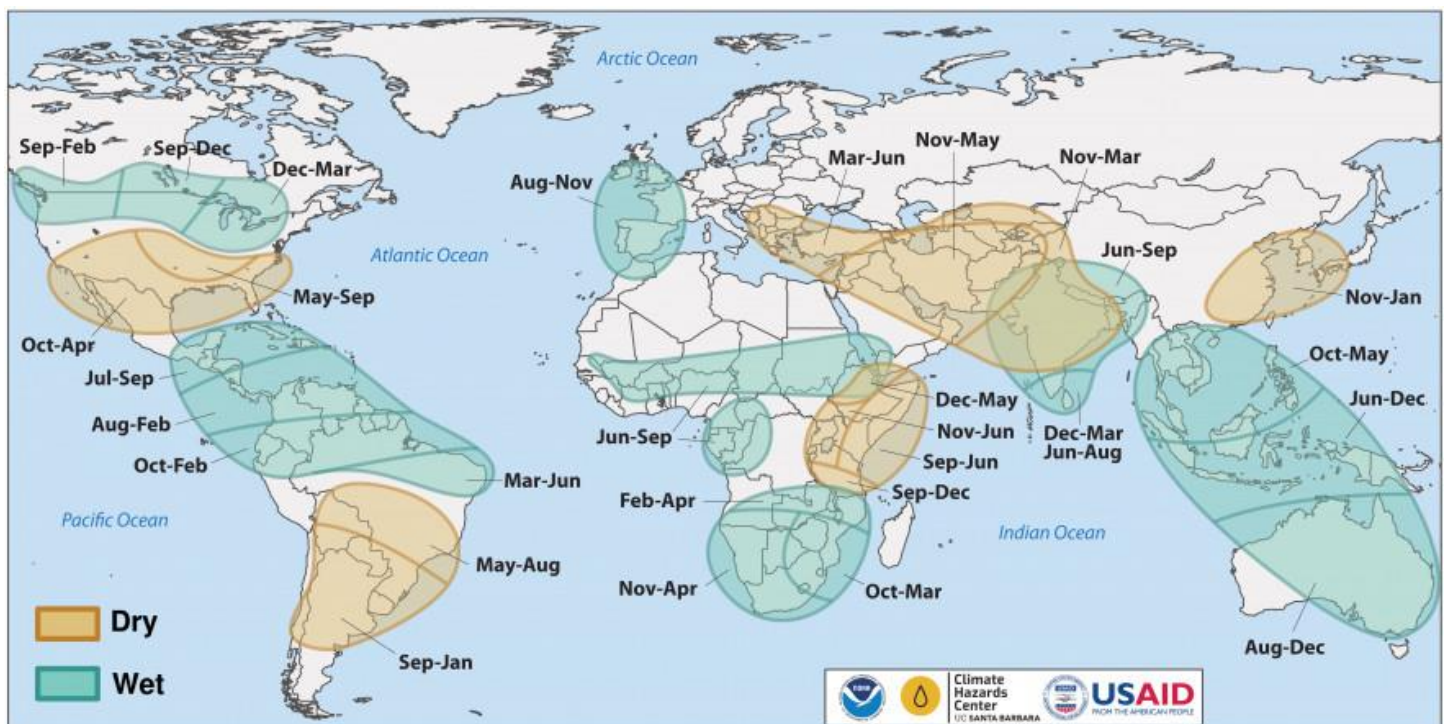
Climate Influences: La Niña Advisory and Neutral Indian Ocean Dipole

The El Niño–Southern Oscillation (ENSO) is currently in the La Niña phase with NOAA CPC/IRI issuing a La Niña Advisory in October. La Niña conditions are expected to continue during December to February (92% chance) and into April (69% chance for February–March–April; 50% chance for March–April–May). Climate forecasts also anticipate exceptionally warm west Pacific Ocean conditions, which can amplify the impact of cool eastern Pacific La Niña conditions.

La Niña conditions typically increase the chances of below-average precipitation in East Africa, Central and South Asia, southern South America, the southern United States, northern Mexico, and eastern East Asia. There are elevated risks of a two-year sequence of dry conditions in these regions, associated with La Niña conditions last year and this year. La Niña conditions typically increase the chances of above-average precipitation in parts of Southeast Asia, Australia, Southern Africa, and northern South America.

The negative Indian Ocean Dipole (IOD) recently weakened to a neutral state.

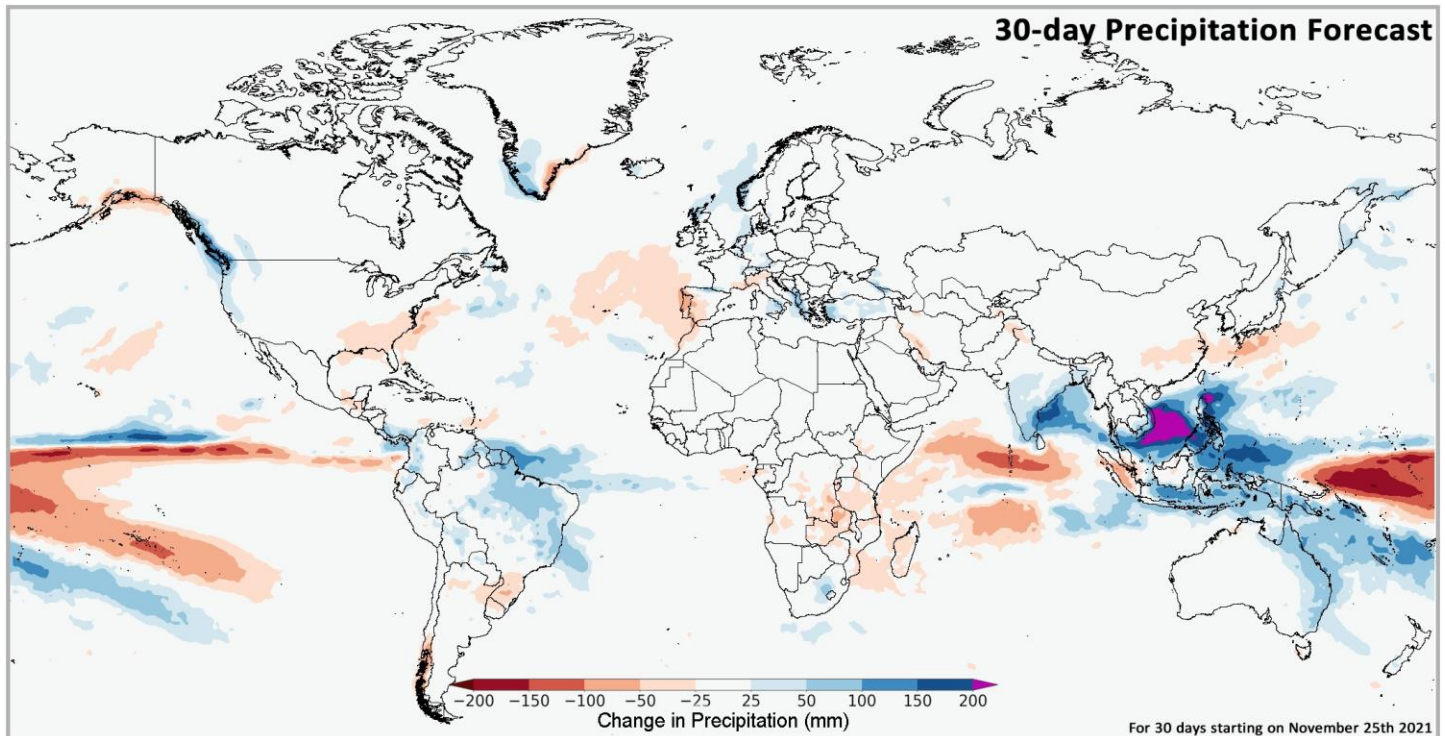
Source: UCSB Climate Hazards Center



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 <https://fews.net/la-ni%C3%B1a-and-precipitation>

Global 30-day Forecast of Areas with Above or Below-Average Precipitation

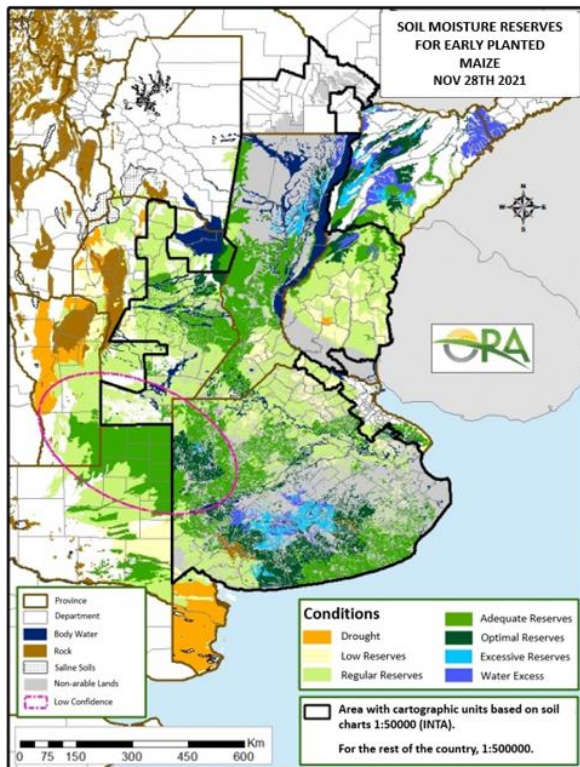
The 30-day precipitation forecast indicates a likelihood of above-average rainfall over the west coast of the United States, Costa Rica, Panama, western Colombia, central Bolivia, Suriname, French Guiana, north central to eastern Brazil, Albania, western Greece, western Turkey, central South Africa, southern and eastern India, southern Viet Nam, the Philippines, eastern Indonesia, Papua New Guinea, and eastern Australia. There is also a likelihood of below-average rainfall in the southeastern United States, northern Guatemala, southern Brazil, northeastern Argentina, northern Uruguay, southern Chile, Portugal, western Spain, northern Italy, southern DRC, Zambia, Tanzania, parts of Mozambique, Madagascar, southwestern Iran, southeast China, and western Indonesia.



Forecast of areas with above or below-average precipitation over the next 30-days starting on November 25th, 2021. The image is the multimodel mean of precipitations anomaly from the Subseasonal Experiment ([SubX](#)) model forecasts for that day. The anomaly is based on the 1999 to 2016 model average. Skill assessments of SubX can be accessed [here](#). Source: UCSB Climate Hazards Center

Argentina Outlook: Current Water Reserves and Wheat Sowing Probability

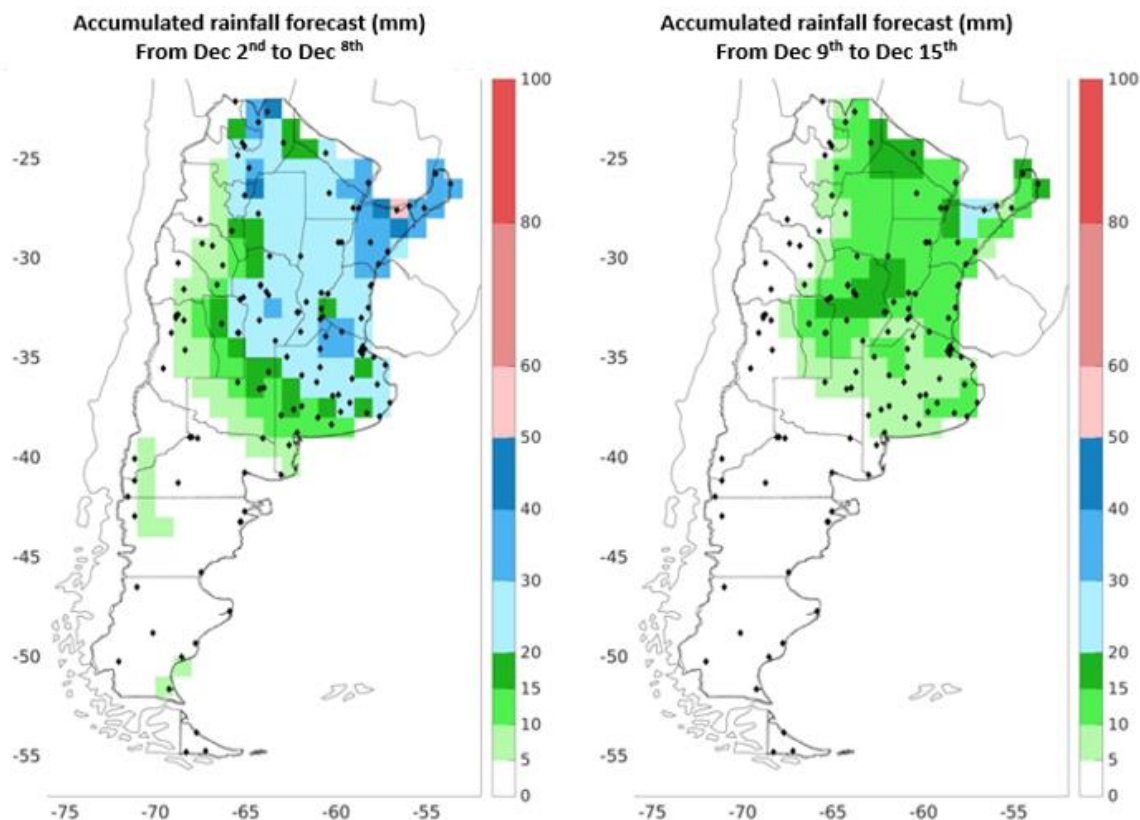
% Useful Water – November 30, 2021



November rainfall was higher than average in most of the corn growing areas, which meant an improvement in topsoil moisture, which was generally below adequate. Rainfall in Entre Rios, eastern and south-west of Buenos Aires and La Pampa was below-average. Currently, in the core growing zone, the water reserves are classified as fair to adequate. The only remaining areas with water deficits are some marginal growing areas. Furthermore, sowing of soybeans is progressing normally thanks to recent improvements in water availability in the topsoil.

Source: Office of Agricultural Risk. http://www.ora.gob.ar/camp_actual_cultivos.php?idcultivo=8

Accumulated Rainfall Forecast



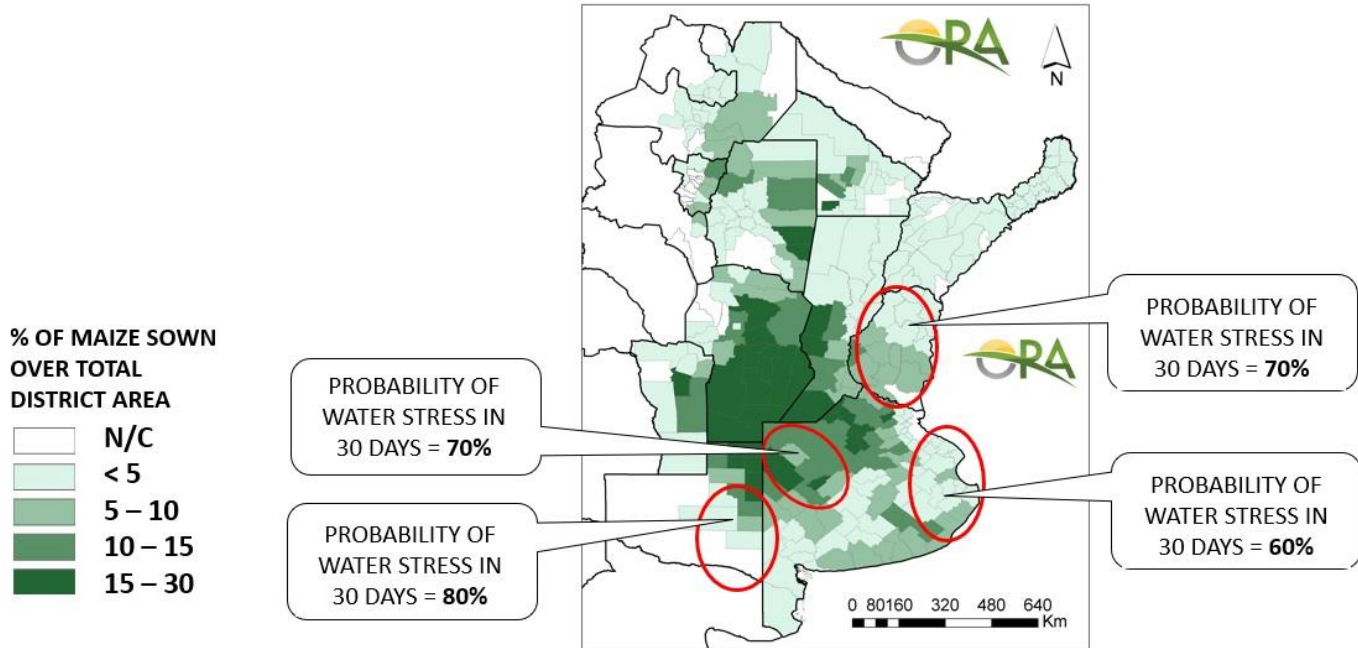
Forecasts from the *SERVICIO METEOROLÓGICO NACIONAL*

<https://www.smn.gob.ar/clima/perspectiva>

* Assessment based on information as of November 28th

For the week of December 2 to 8, rains of more than 20mm would cover most of the main producing area, although to a lesser extent La Pampa and southwest of Buenos Aires. For the week of December 9 to 15, rains of less than 20mm are expected in the center and northeast of the country. In Buenos Aires and La Pampa, the rainfall would be less than 10mm. For the first week, forecasted rains can be considered as normal, while in the second they would be lower than normal, and this trend is expected to continue in the rest of the month.

30-day Maize Water Stress Probability Scenarios



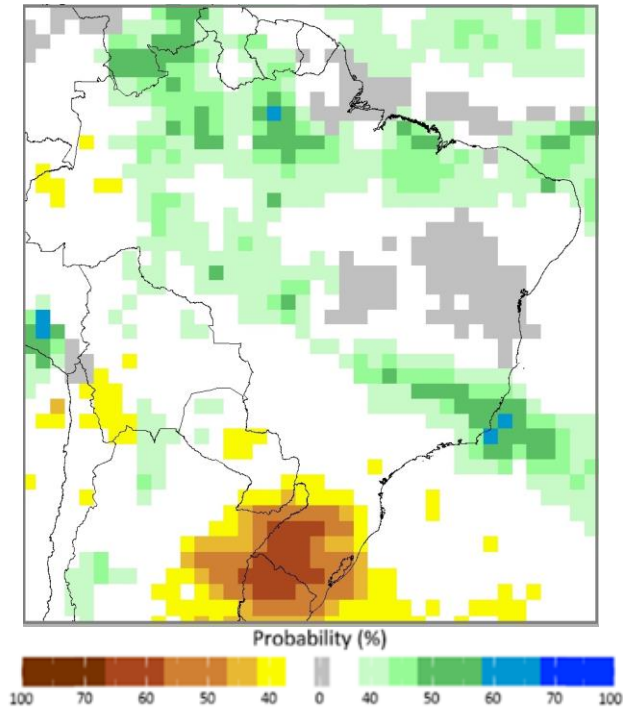
The scenarios were developed by ORA-MAGyP based on the weather forecast of the SMN <https://www.smn.gob.ar/pronostico-trimestral>

Brazil Outlook

Over the next two weeks (December 4th – 17th), above-average rainfall is likely in Brazil over much of the northern, central-west, and southeast states. However, below-average rainfall is very likely in Rio Grande do Sul and Santa Catarina. Over the extended forecast (January-February-March 2022), above-average precipitation is likely to continue in northern Brazil, while below-average precipitation is likely to continue in south Brazil.

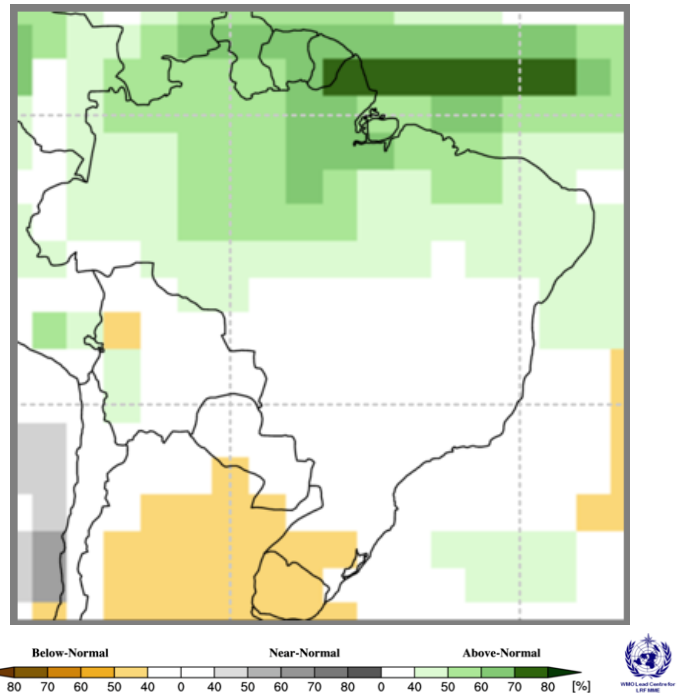
2-Week Rainfall Probability

December 4th – 17th 2021



3-Month Rainfall Anomaly Probability

January-February-March 2022



Left: IRI SubX Precipitation Biweekly Probability Forecast for December 4th – 17th issued on November 26th. The forecast is based on statistically-calibrated tercile category forecasts from three SubX models. Image from the [IRI Subseasonal Forecasts Maproom](https://www.iri.columbia.edu/forecasting/subseasonal-forecasts-maproom/).

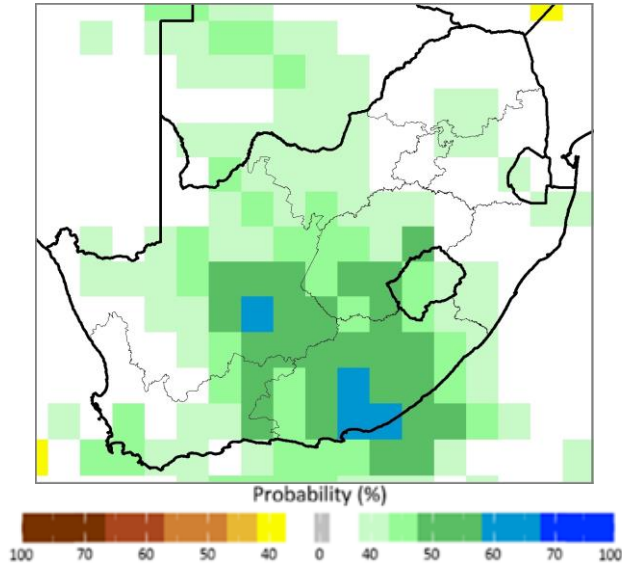
Right: Multi-model ensemble probabilistic forecast for January-February-March (JFM) 2022 precipitation from the WMO Lead Centre for Long-Range Forecast Milt-Model Ensemble at https://www.wmolc.org/seasonPmmeUI/plot_PMME.

South Africa Outlook

Over the next two weeks (December 4th – 17th), above-average rainfall is likely over much of the Northern Cape, North West, Free State, Eastern Cape, and eastern Western Cape. Over the extended forecast (January-February-March 2022), there is a continued probability of above-average rainfall across much of the same provinces.

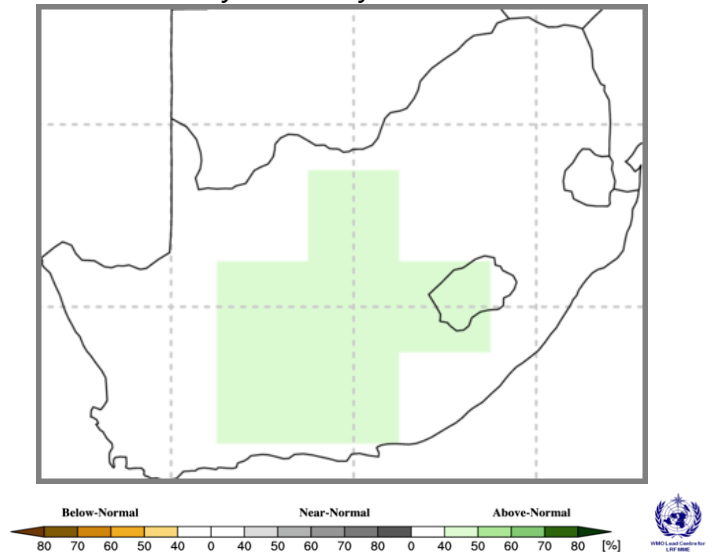
2-Week Rainfall Probability

December 4th – 17th 2021



3-Month Rainfall Anomaly Probability

January-February-March 2022



Left: IRI SubX Precipitation Biweekly Probability Forecast for December 4th – 17th issued on November 26th. The forecast is based on statistically-calibrated tercile category forecasts from three SubX models. Image from the [IRI Subseasonal Forecasts Maproom](#).

Right: Multi-model ensemble probabilistic forecast for January-February-March (JFM) 2022 precipitation from the WMO Lead Centre for Long-Range Forecast Milt-Model Ensemble at https://www.wmolc.org/seasonPmmeUI/plot_PMME.

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

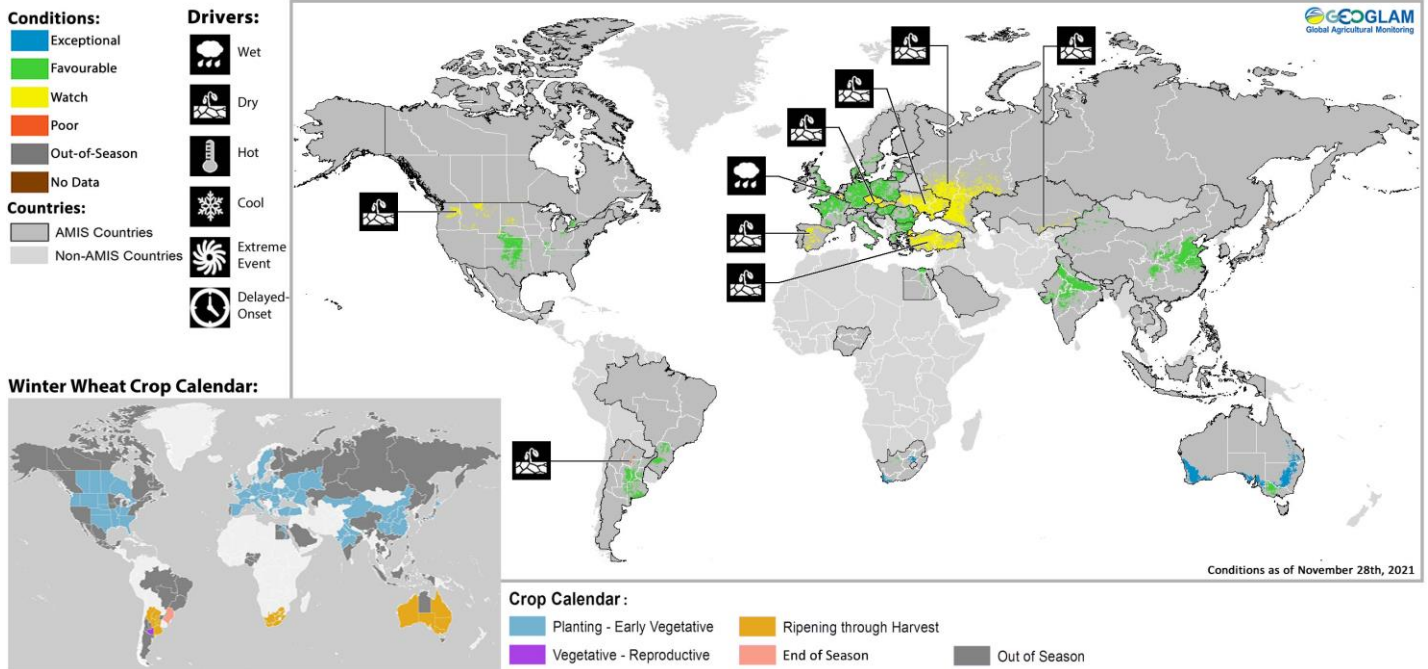
Crop Season Nomenclature:

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	

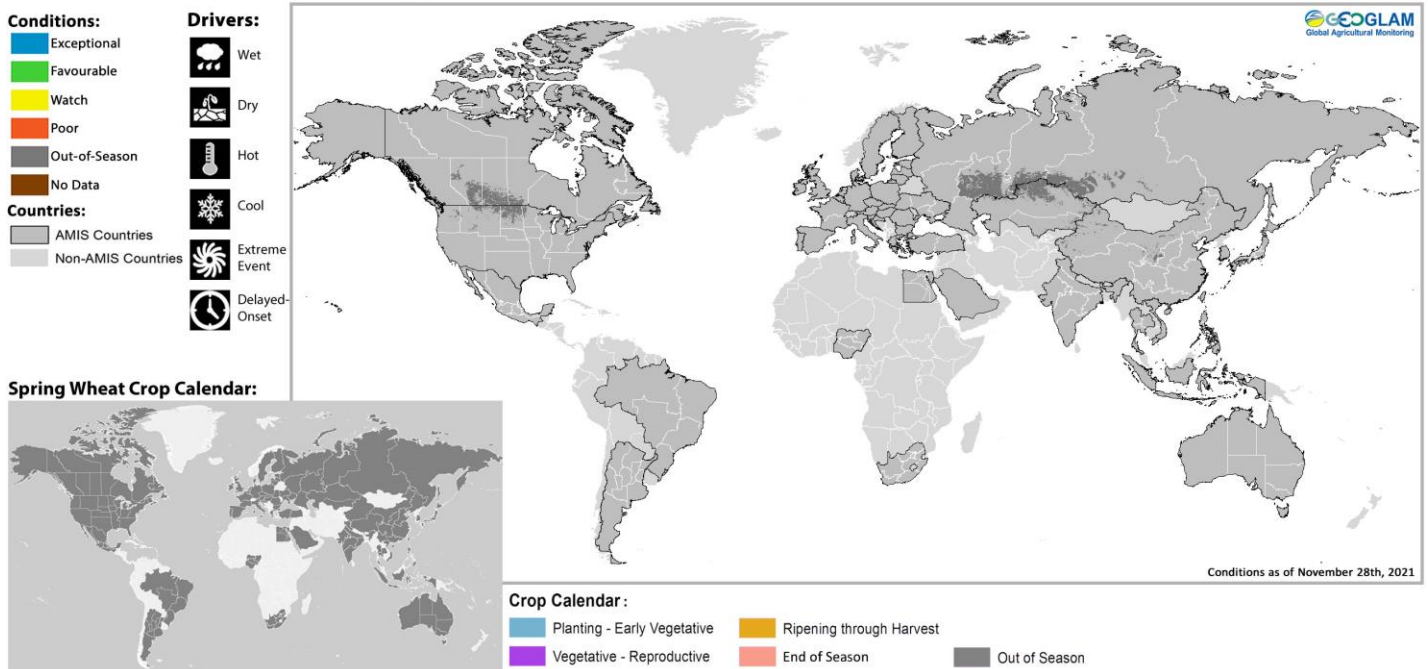
Appendix 2: Crop Season Specific Maps

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 November 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.

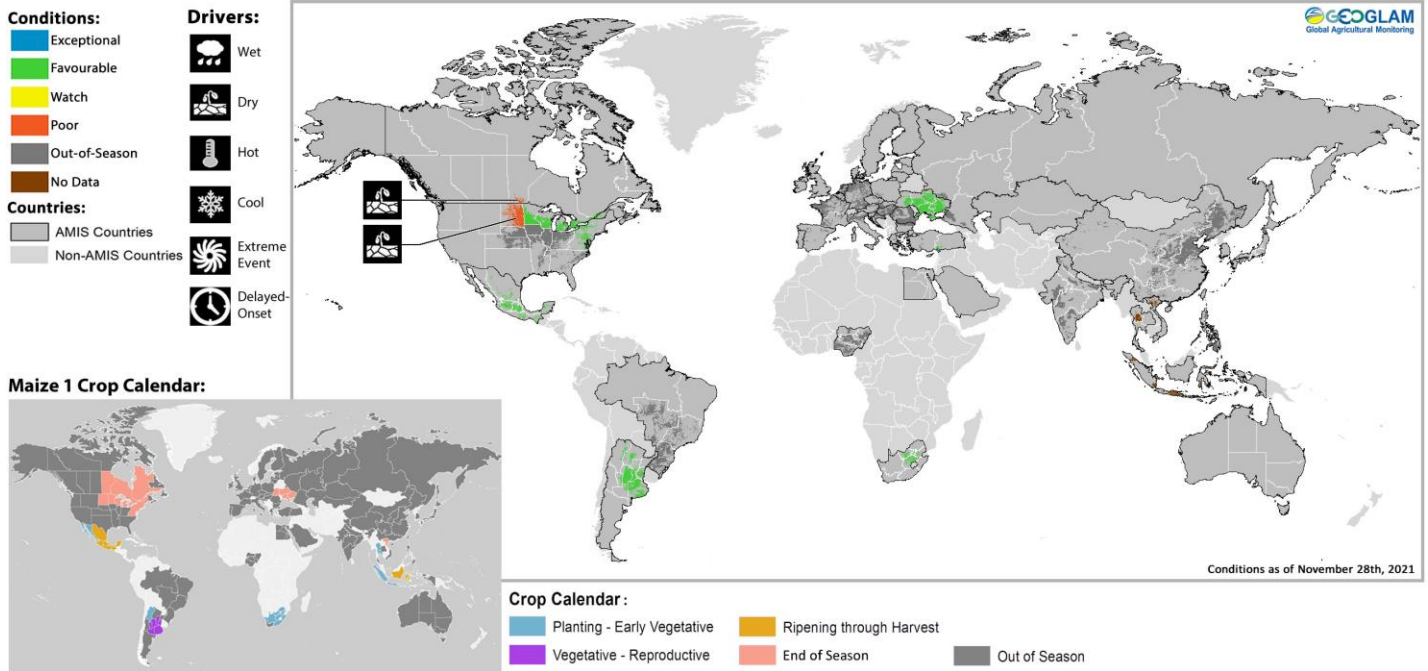
Spring Planted Wheat Conditions for AMIS Countries



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 November 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.

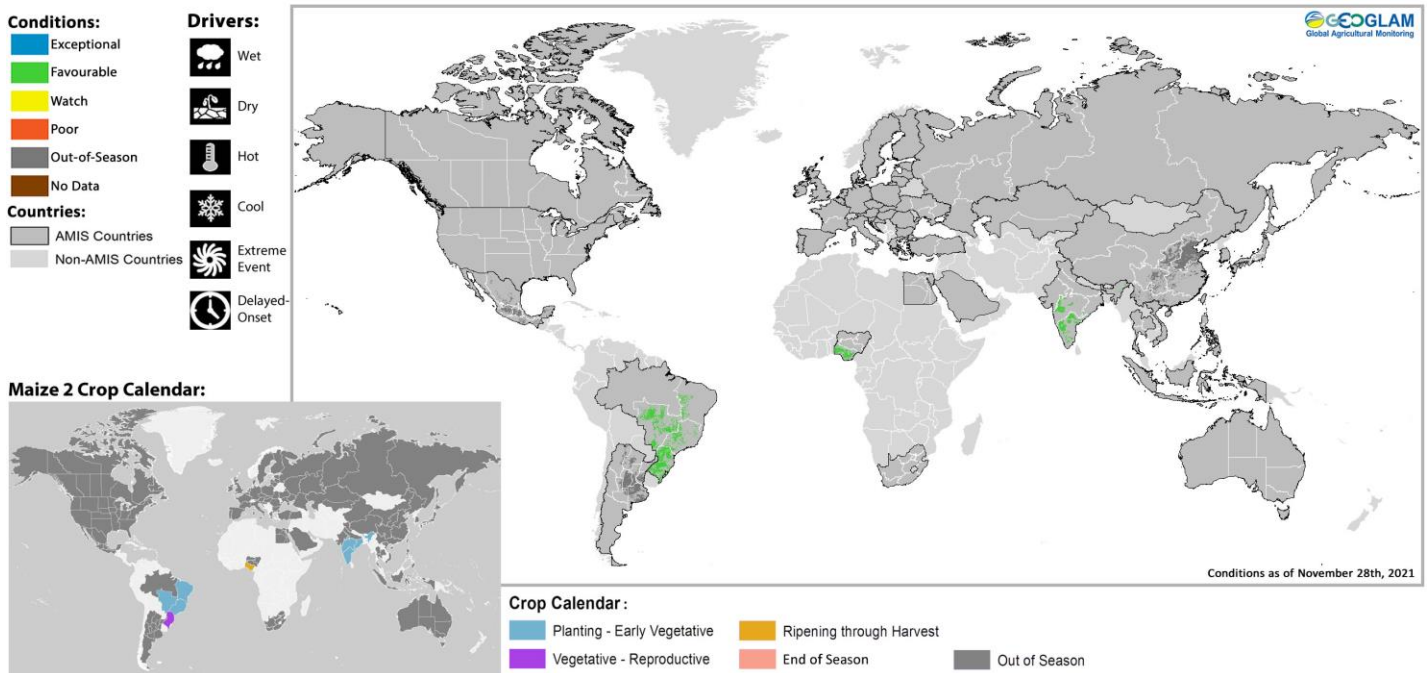
* Assessment based on information as of November 28th

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 November 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.

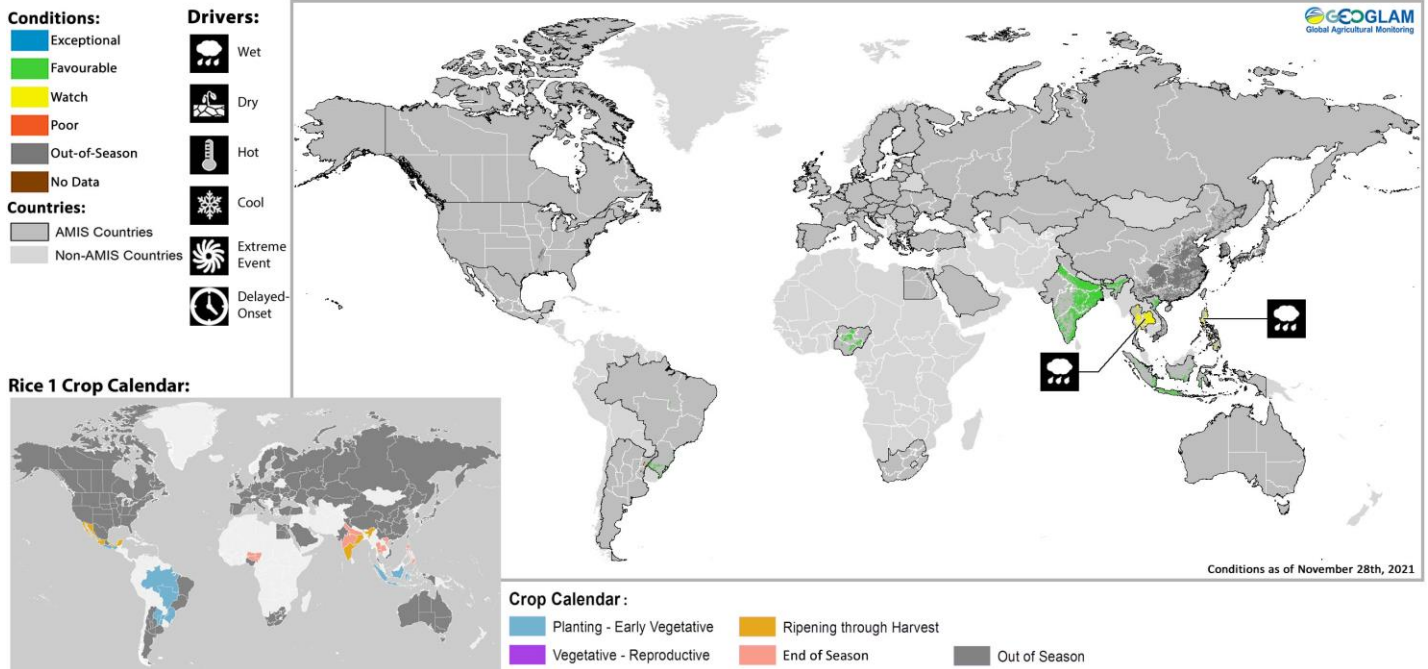
Maize 2 Conditions for AMIS Countries



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 November 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.

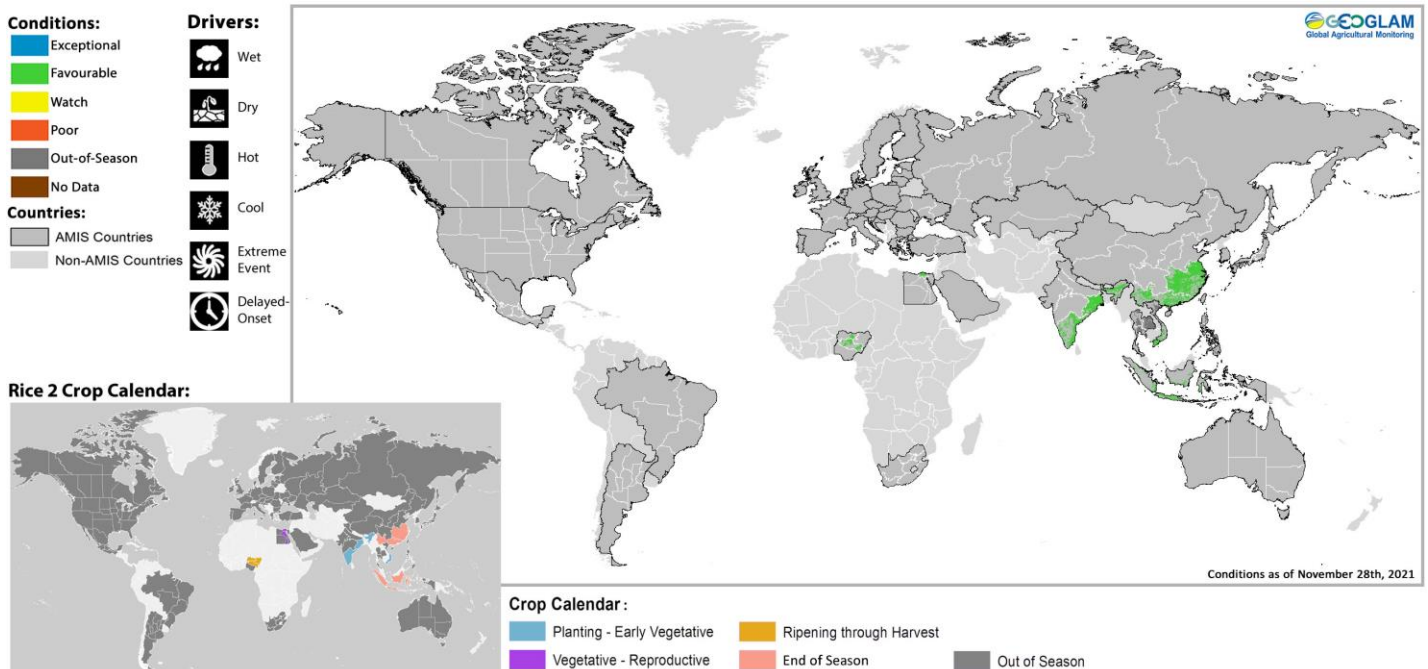
* Assessment based on information as of November 28th

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 November 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.

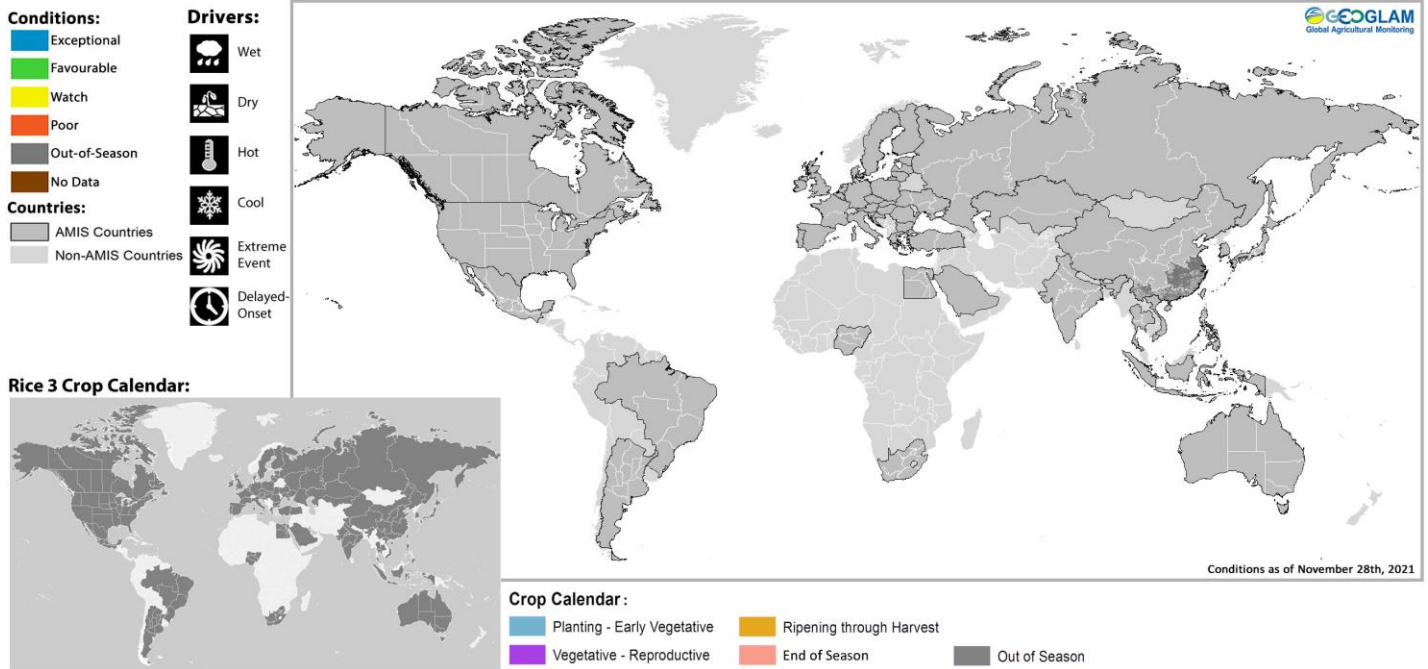
Rice 2 Conditions for AMIS Countries



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 November 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.

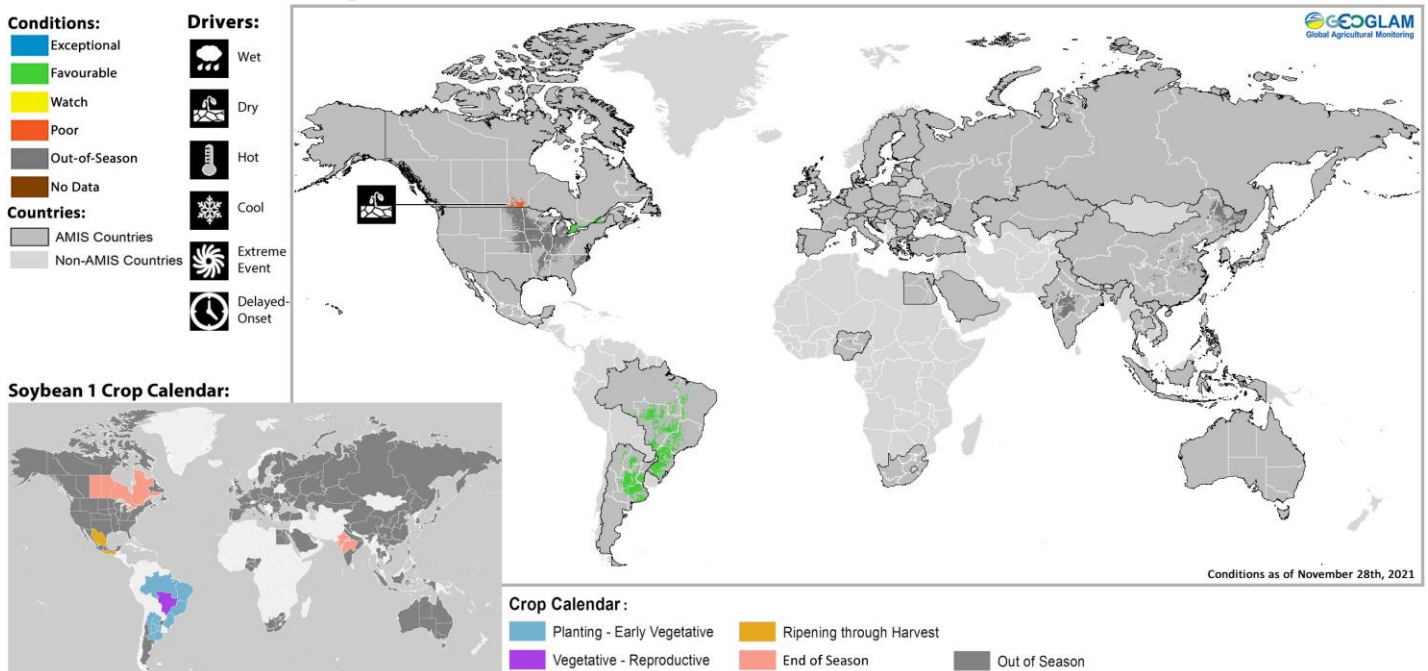
* Assessment based on information as of November 28th

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 November 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.

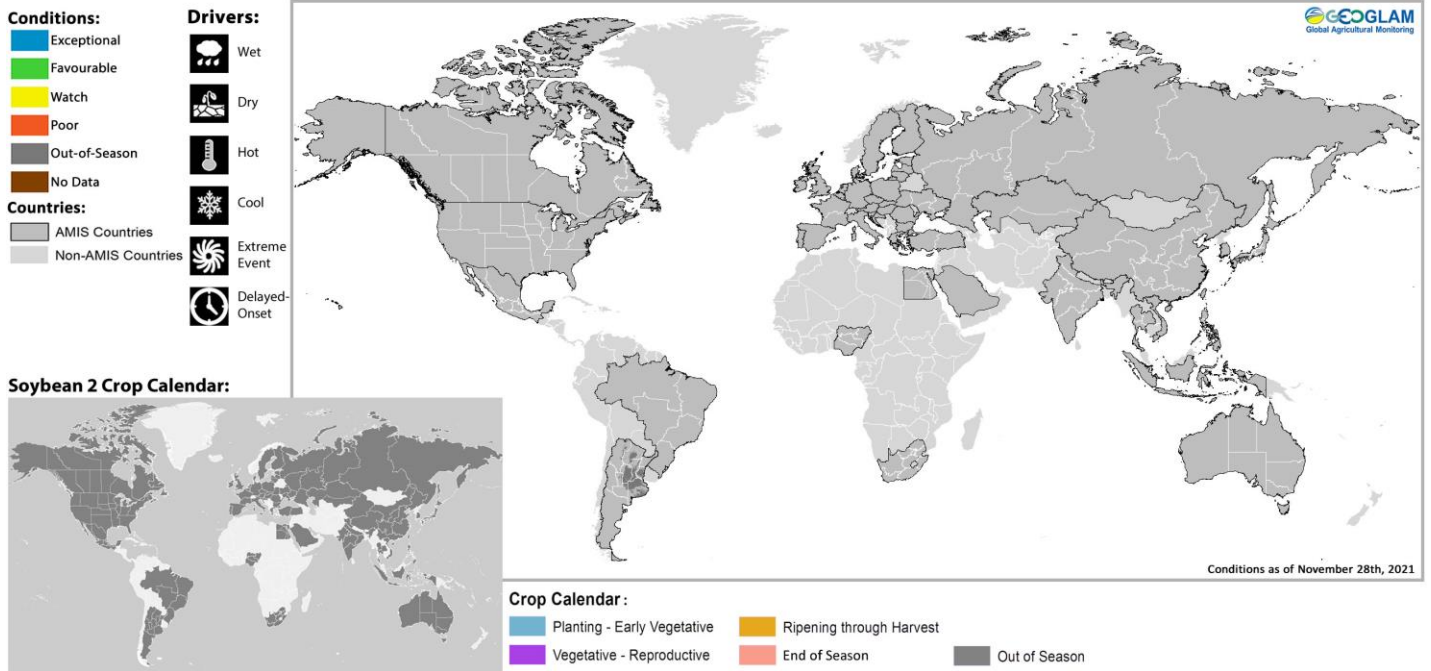
Soybean 1 Conditions for AMIS Countries



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 November 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 November 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 November 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.



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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