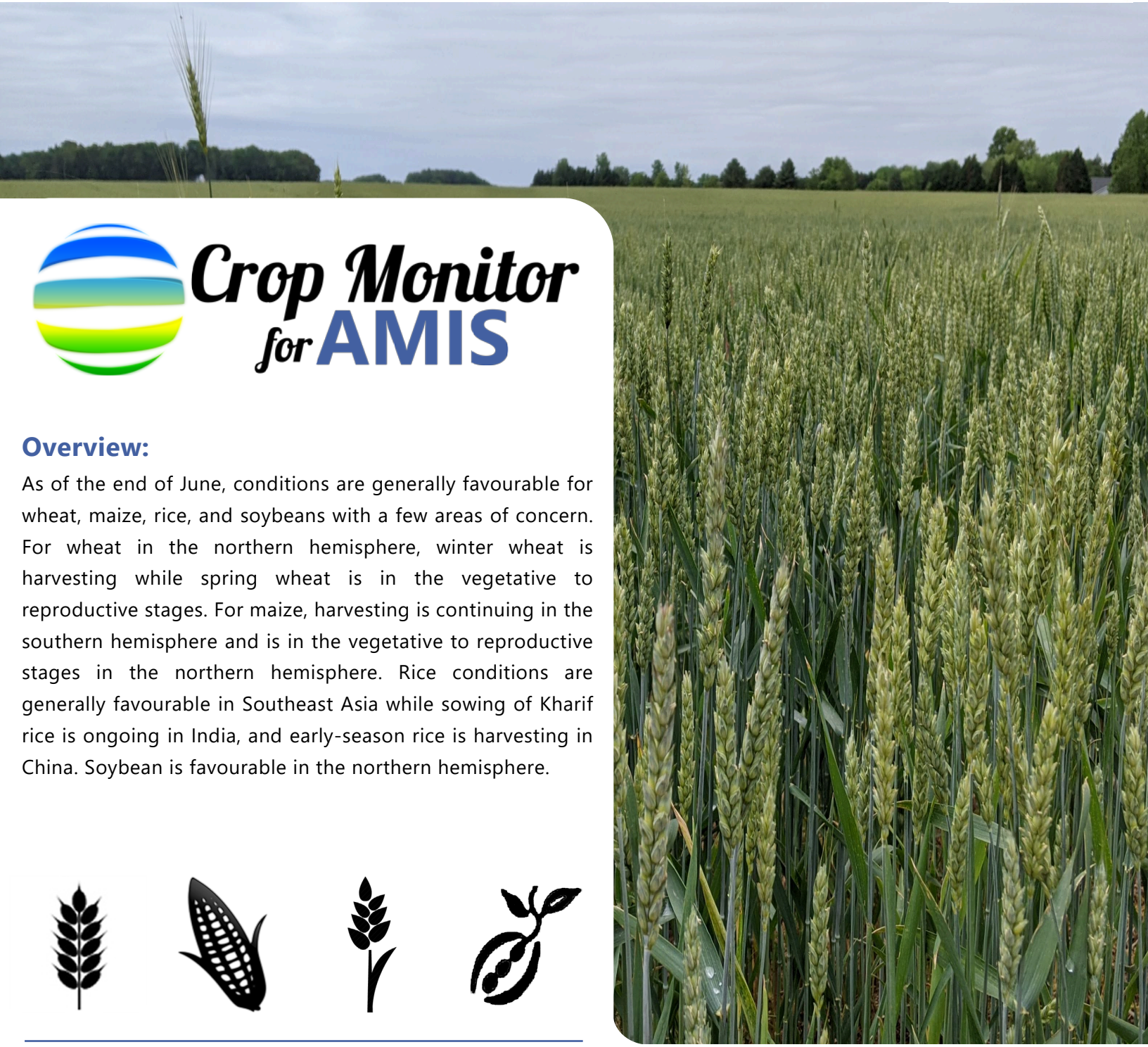
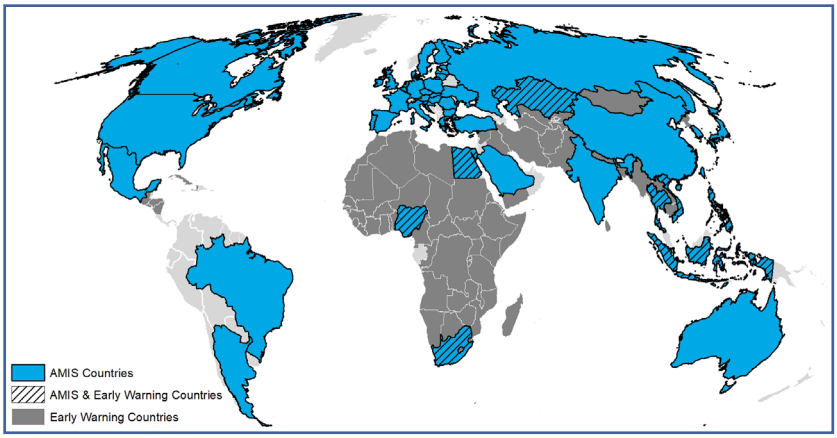


Crop Monitor for AMIS

Overview:

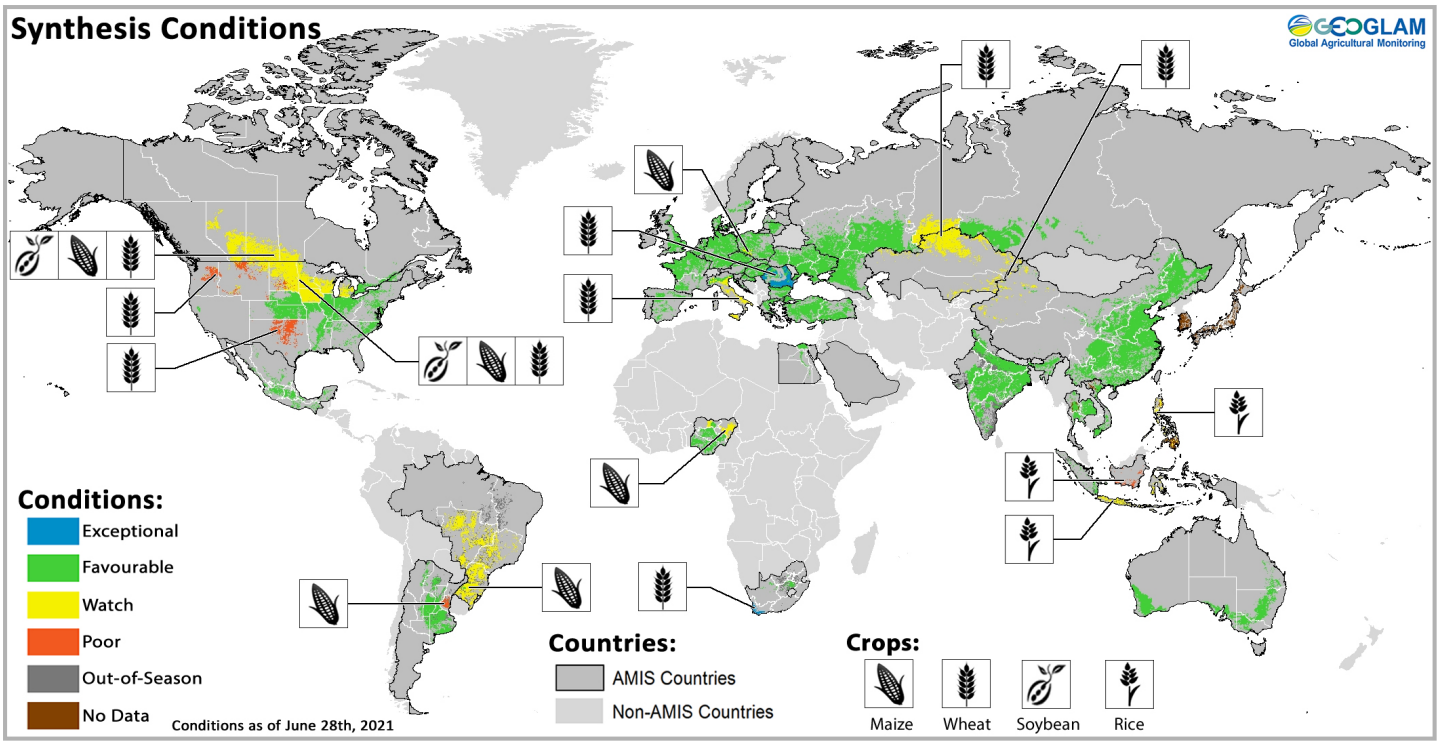
As of the end of June, conditions are generally favourable for wheat, maize, rice, and soybeans with a few areas of concern. For wheat in the northern hemisphere, winter wheat is harvesting while spring wheat is in the vegetative to reproductive stages. For maize, harvesting is continuing in the southern hemisphere and is in the vegetative to reproductive stages in the northern hemisphere. Rice conditions are generally favourable in Southeast Asia while sowing of Kharif rice is ongoing in India, and early-season rice is harvesting in China. Soybean is favourable in the northern hemisphere.



Contents:

Assessment based on information as of June 28th

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



Crop condition map synthesizing information for all four AMIS crops as of June 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 harvesting and spring wheat development are well underway with areas of concern expanding in the US, Canada, and Kazakhstan. In the southern hemisphere, sowing of winter wheat is ongoing under favourable conditions.

Maize - In the southern hemisphere, harvesting is starting in Brazil and continuing in Argentina. In the northern hemisphere, conditions have improved in Europe while deteriorating in the US.

Rice - Harvesting of early-season rice is ongoing in China. Transplanting of Kharif rice is starting in India. In Southeast Asia, Indonesia is transitioning over to dry-season rice while in the northern countries, wet-season rice is well underway.

Soybeans - In the northern hemisphere, hot and dry conditions expand in the northern US and Canada, while remaining favourable in China, India, and Ukraine.

Forecasts at a Glance

Climate Influences - Neutral El Niño-Southern Oscillation (ENSO) conditions are present. However, a negative Indian Ocean Dipole (IOD) event is likely to develop in July or August.

Argentina – June rainfall was seasonally below-average, and there are currently no water deficit areas across the main wheat growing regions as sowing begins.

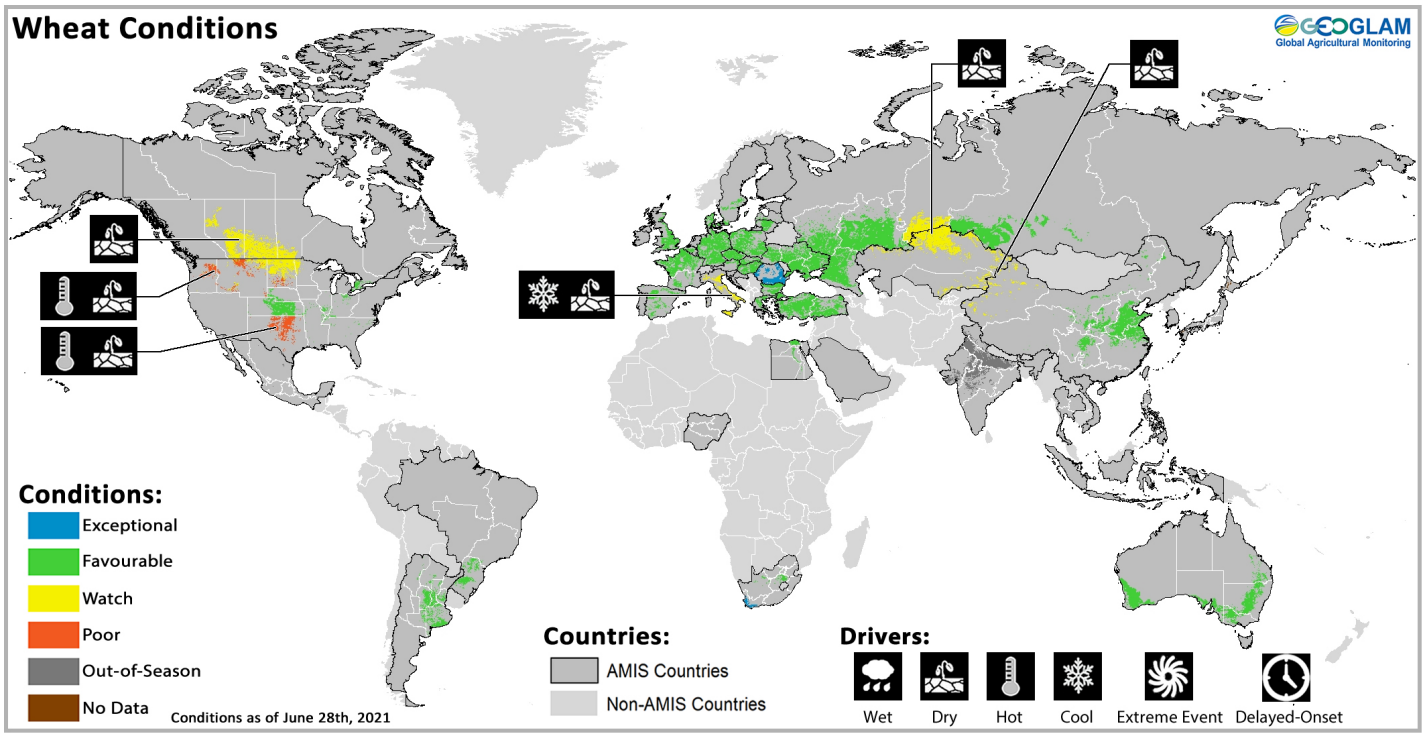
Australia – The two-week forecast indicates a likelihood of some rainfall for most wheat-growing areas, while the long-term outlook shows above-average rainfall for most areas.

India - The July forecast for the 2021 southwest monsoon (June to September) season indicates likely average (94-106% of the long-term average) rainfall over most of the country.

United States – The short-term outlook for the next week and a half shows continued possible below-average rainfall in the northwest and northern plains.

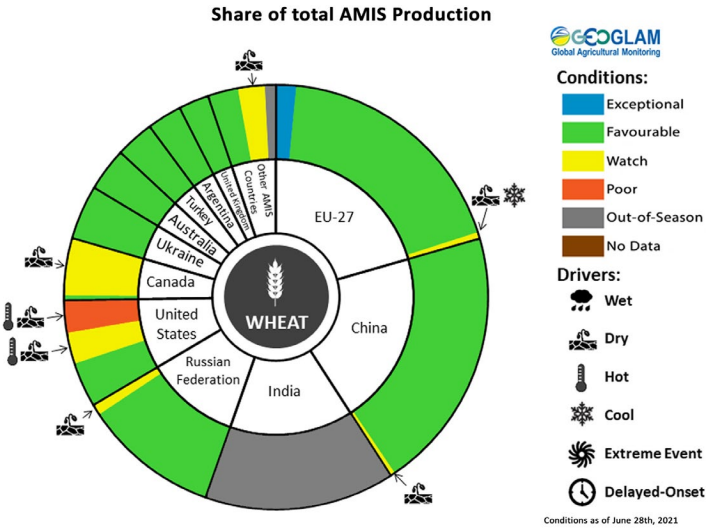
* Assessment based on information as of June 28th

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. Condition information is based upon information as of June 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.

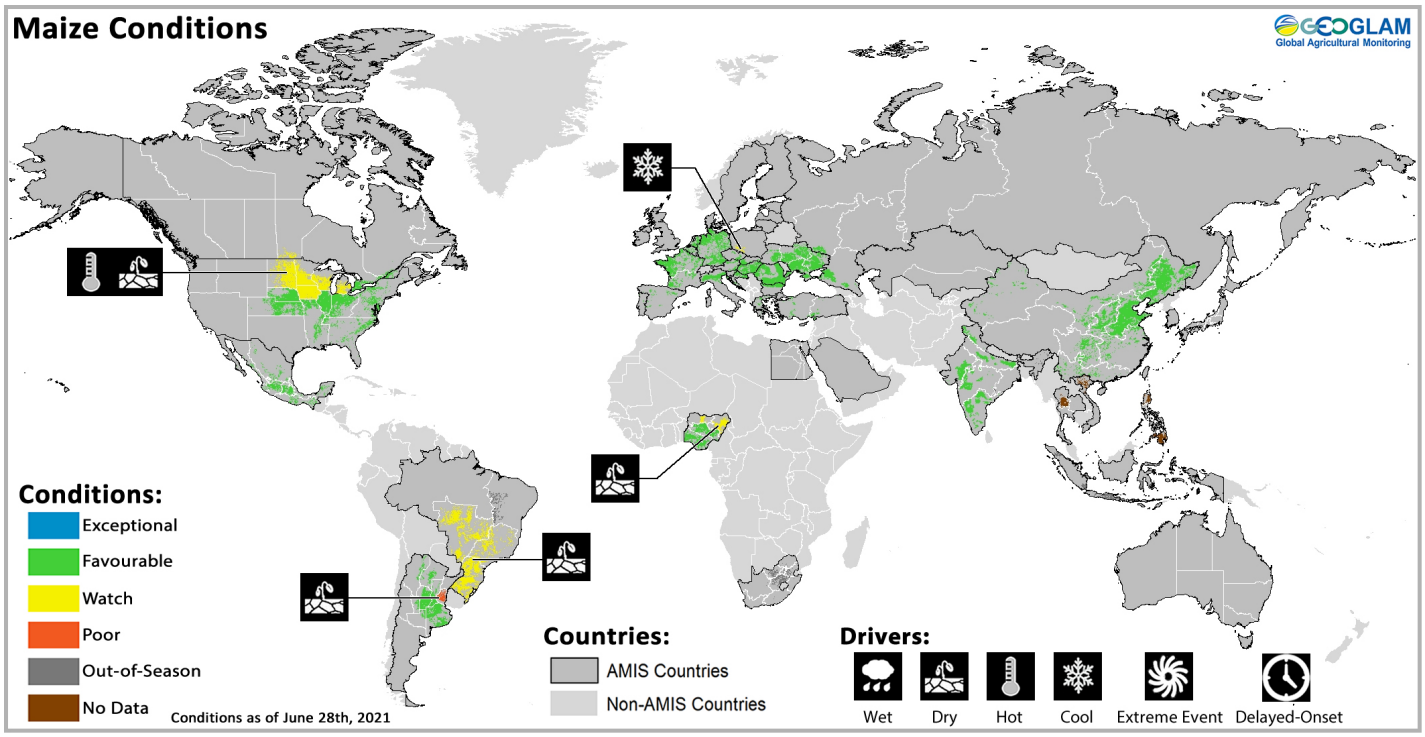
Wheat: In the **EU**, conditions are generally favourable for winter wheat after mixed weather during the spring. In the **UK**, winter wheat conditions are favourable. In **Ukraine**, conditions are generally favourable, however, recent heavy rainfall may limit final yields. In the **Russian Federation**, frequent rains during May and June have improved winter wheat conditions to favourable as harvesting begins. Spring wheat is under favourable conditions. In **Turkey**, winter wheat conditions are favourable as harvest begins. In **China**, harvesting is wrapping up in the central regions and continuing in the north under favourable conditions. Spring wheat is under generally favourable conditions. In the **US**, harvesting of winter wheat is ongoing under favourable conditions in the central growing regions and poor conditions in northern and southern areas due to hot and dry conditions. Spring wheat is under mixed conditions due to recent extreme heat and dryness. In **Canada**, hot and dry conditions are degrading both winter wheat and spring wheat in the Prairies, while winter wheat conditions are favourable in Eastern Canada. In **Australia**, conditions are generally favourable following close to average rainfall during June. In **Argentina**, sowing of winter wheat is progressing under favourable conditions.



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

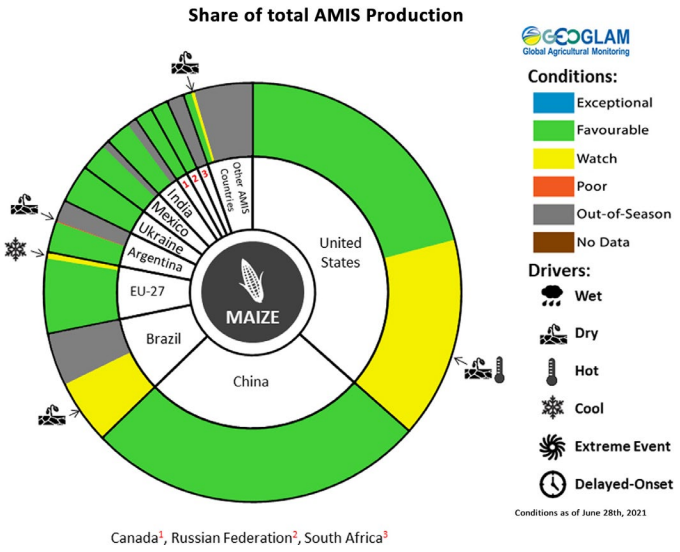
* Assessment based on information as of June 28th

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 June 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.

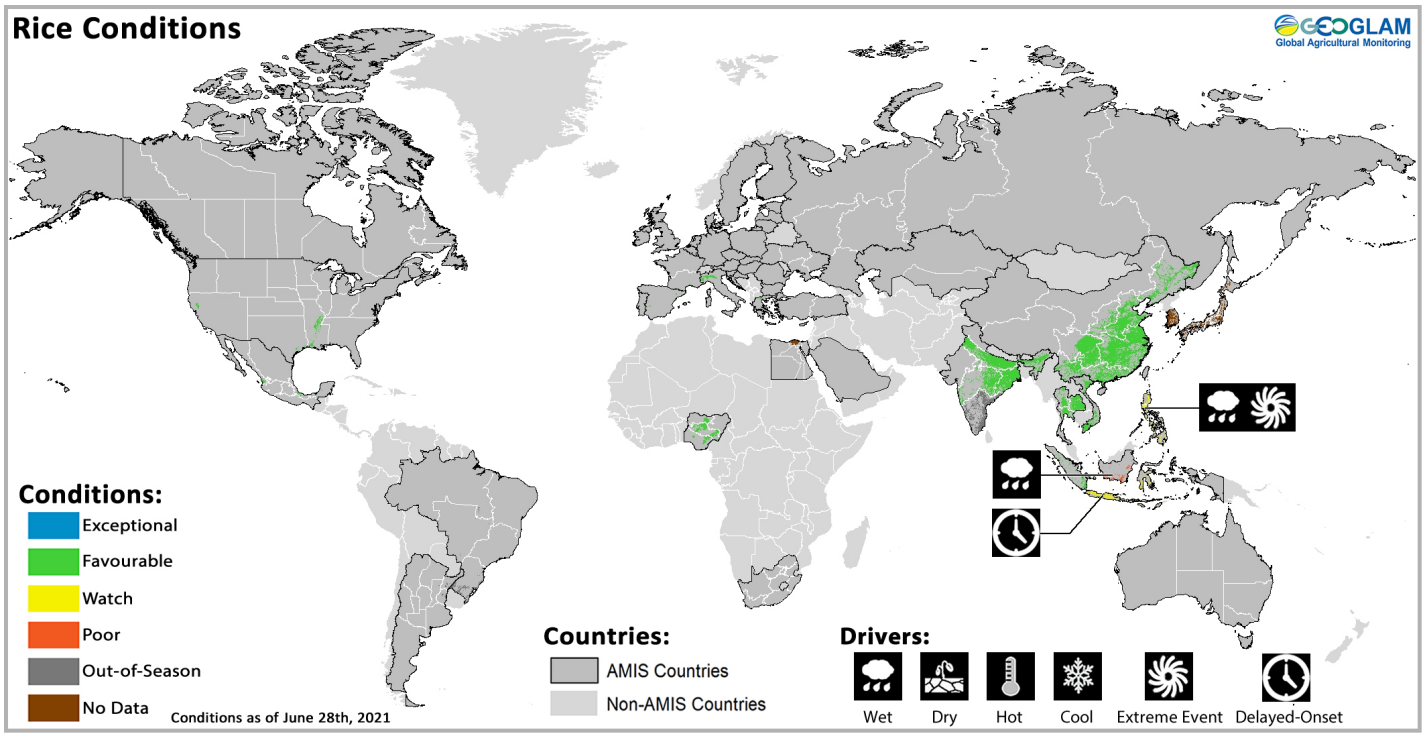
Maize: In **Brazil**, harvesting is just beginning in the main producing states under mixed conditions due to excessive dryness and frosts during the critical reproductive stage. In **Argentina**, harvesting of the late-planted crop (usually smaller season) continues under generally favourable conditions, albeit delayed due to high moisture levels. In **Mexico**, harvesting of the autumn-winter crop (smaller season) is continuing under generally favourable conditions. Sowing of the spring-summer crop (larger season) is beginning under favourable conditions. In the **US**, the situation is mixed as persistent hot and dry conditions extend across much of the northern Corn Belt, with the biggest impacts around the Dakotas. In **Canada**, conditions are favourable in the east while mixed in the prairies due to hot and dry weather. In **China**, both the spring-planted and summer-planted crops are under favourable conditions. In **India**, sowing of Kharif maize is progressing under favourable conditions. In the **EU**, warmer weather in June has improved crop conditions across most of Europe. In **Ukraine** and the **Russian Federation**, conditions are favourable.



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

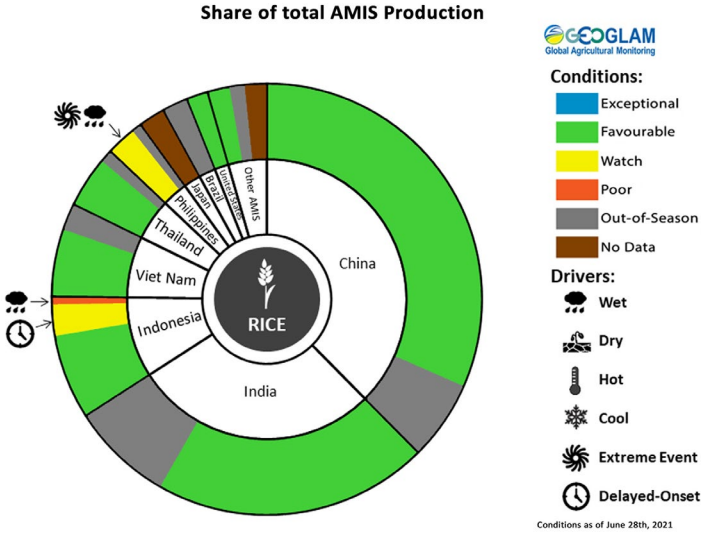
* Assessment based on information as of June 28th

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. Condition information is based upon information as of June 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.

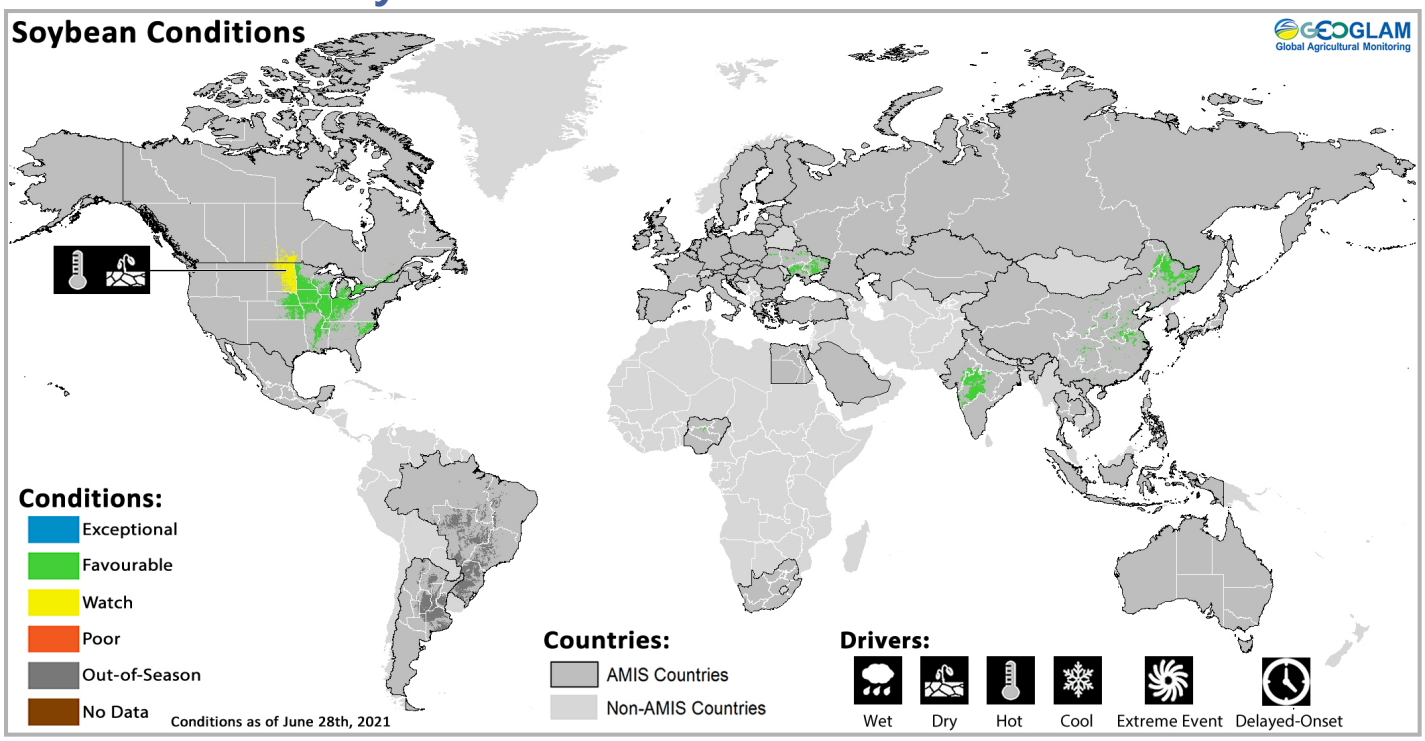
Rice: In **China**, early-season rice is harvesting, and single-season rice is in the vegetative to reproductive stage, both crops are under favourable conditions. In **India**, transplanting of Kharif rice has started under favourable conditions. In **Indonesia**, harvesting of wet-season rice is wrapping up under generally favourable conditions with an increase in total sown area compared to last year. Sowing of dry-season rice continues to be delayed. In **Viet Nam**, harvesting continues for the winter-spring (dry-season) crop in the north under favourable conditions with yields slightly higher than last year. Sowing of the summer-autumn (wet-season) crop is progressing under favourable conditions throughout the country. In **Thailand**, sowing of wet-season rice is ongoing under favourable conditions with an expected increase of total sown area compared to last year due to good rains since April. In the **Philippines**, wet-season rice is under mixed conditions due to the impact of typhoon "Dante" earlier in June. In the **US**, conditions are favourable.



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

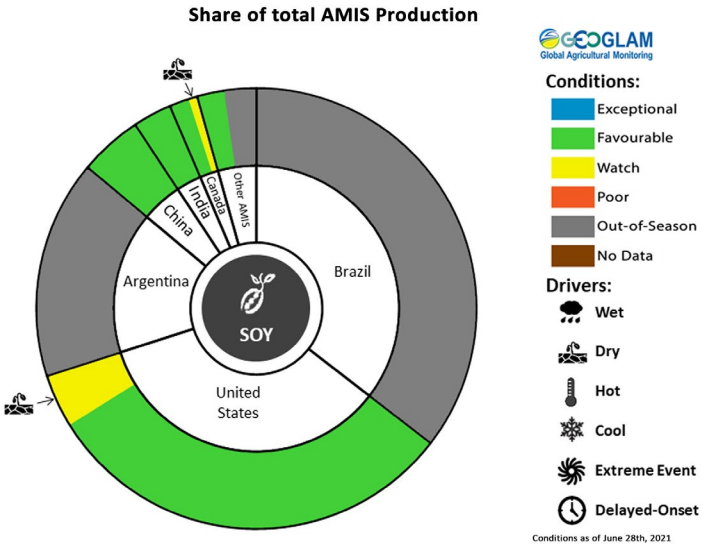
* Assessment based on information as of June 28th

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. Condition information is based upon information as of June 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 are favourable in the central growing states, however, there is growing concern in northern and western areas of the Mid-West as hot and dry conditions persist, particularly in the Dakotas. There is a slight increase in total sown area compared to last year. In **Canada**, conditions are favourable in the main producing province of Ontario, however, in Manitoba and Saskatchewan, low soil moisture is delaying crop development. In **China**, conditions are favourable with good rainfall and soil moisture for crop development in the main producing Northeast region. In **India**, sowing is progressing under favourable conditions supported by the advanced progress of the Southwest Monsoon. In **Ukraine**, conditions are favourable.



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 July 8th

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 June 28th

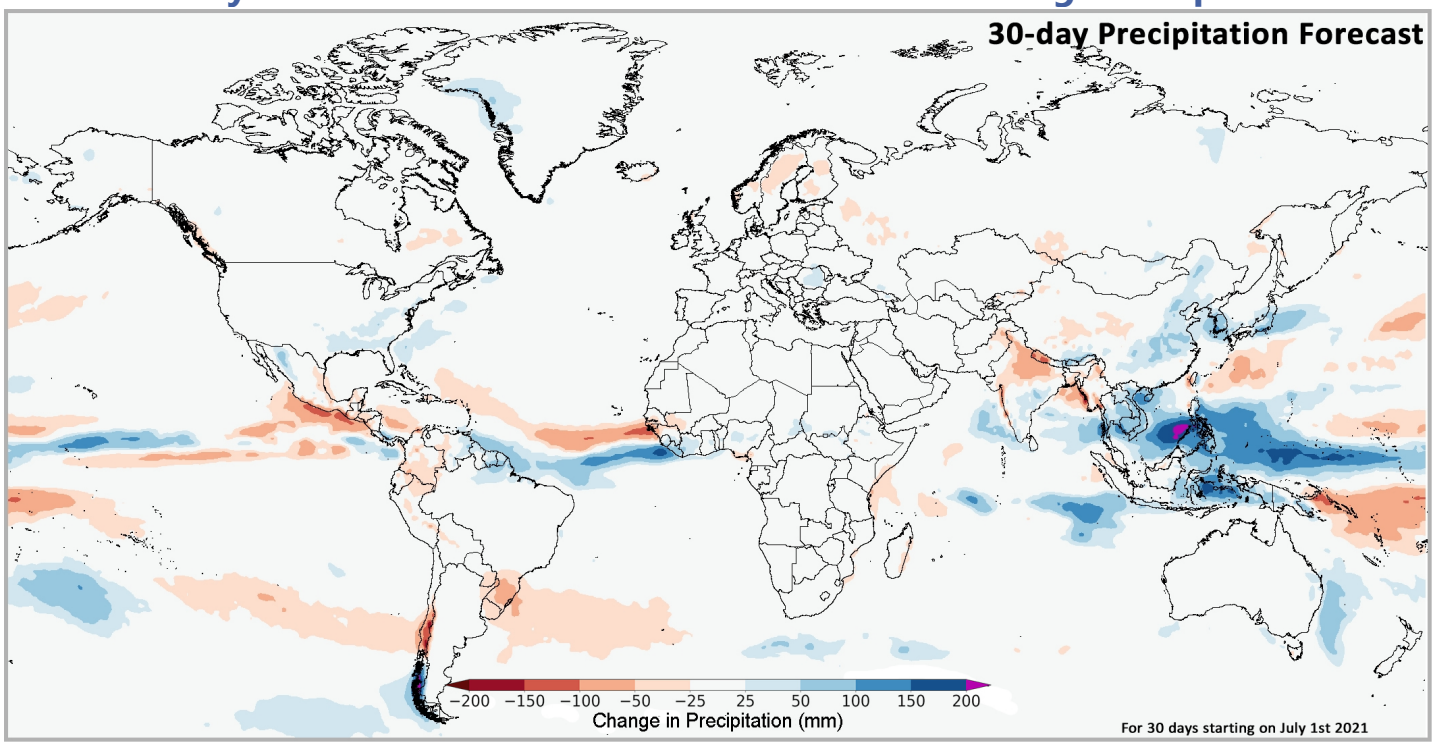
Climate Forecasts for AMIS Countries

Climate Influences: Neutral ENSO & A Negative IOD likely

Neutral El Niño-Southern Oscillation (ENSO) conditions are present and are expected to continue from July through September (64% chance). IRI/CPC forecasts in July indicate increased chances for La Niña (62% chance) during October to December 2021.

A negative Indian Ocean Dipole (IOD) event is likely to develop in July or August and persist for several months, according to the Australia Bureau of Meteorology forecasts and recent sea surface temperatures. Negative IOD conditions can increase the chances of above-average rainfall in parts of southeastern Australia during July to November and below-average rainfall in parts of East Africa from September to December.
Source: UCSB Climate Hazards Center

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

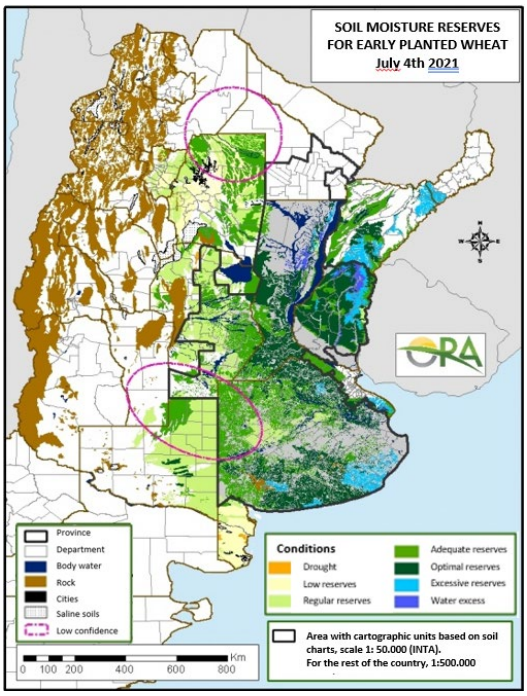


Forecast of areas with above or below-average precipitation over the next 30-days starting on July 1st, 2021. The image is the multimodel mean of precipitations anomaly from the Subseasonal Experiment (SubX) model forecasts for that day. The anomaly is based on the 1999 to 2016 model average. Skill assessments of SubX can be accessed here. Source: UCSB Climate Hazards Center

The 30-day precipitation forecast indicates a likelihood of above-average rainfall over the southern United States, northwest Mexico, Costa Rica, Panama, eastern Venezuela, Guyana, Suriname, French Guiana, Southern Chile, Sierra Leone, Liberia, Cote d'Ivoire, Romania, southeast India, Bhutan, south-central and northeast China, Democratic People's Republic of Korea, Republic of Korea, central Japan, Viet Nam, Lao People's Democratic Republic, Thailand, Cambodia, the Philippines, and eastern Indonesia. There is also a likelihood of below-average rainfall in eastern and southern Mexico, Guatemala, Honduras, El Salvador, southern Columbia, southern Brazil, Uruguay, central Chile, Gambia, southern Senegal, Guinea-Bissau, western Guinea, north-central India, Bangladesh, and western Nepal.

* Assessment based on information as of June 28th

Argentina: Current Water Reserves and Wheat Sowing Probability

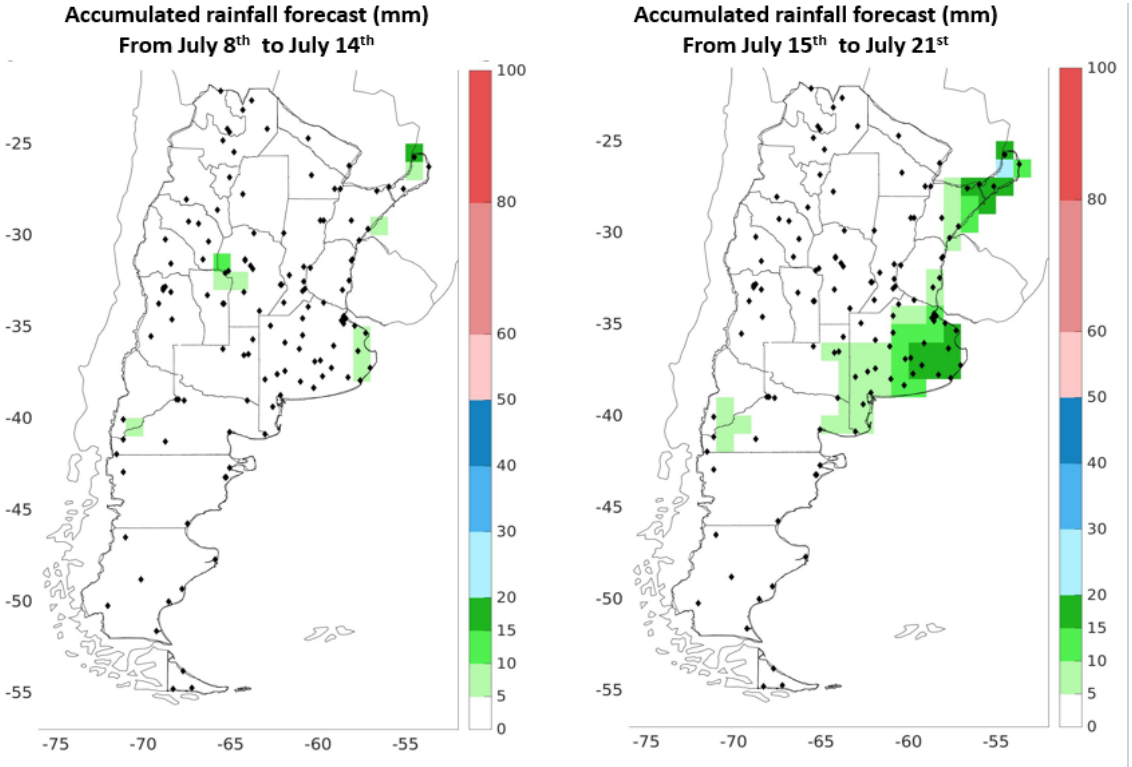


% Useful Water – July 4, 2021

- Rainfall in June was below-normal in most of the wheat growing areas. Above-normal rains only occured outside the productive region.
- Although precipitation anomalies in the main wheat areas were negative, rains are typically minimal in June.
- In this context, there are no areas with either water deficits or excess amounts that are affecting recently sown wheat.
- Regarding temperature, by the end of June, a cold air intake took place that generated very low temperatures in the center and north of the country.

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

Accumulated Rainfall Forecast

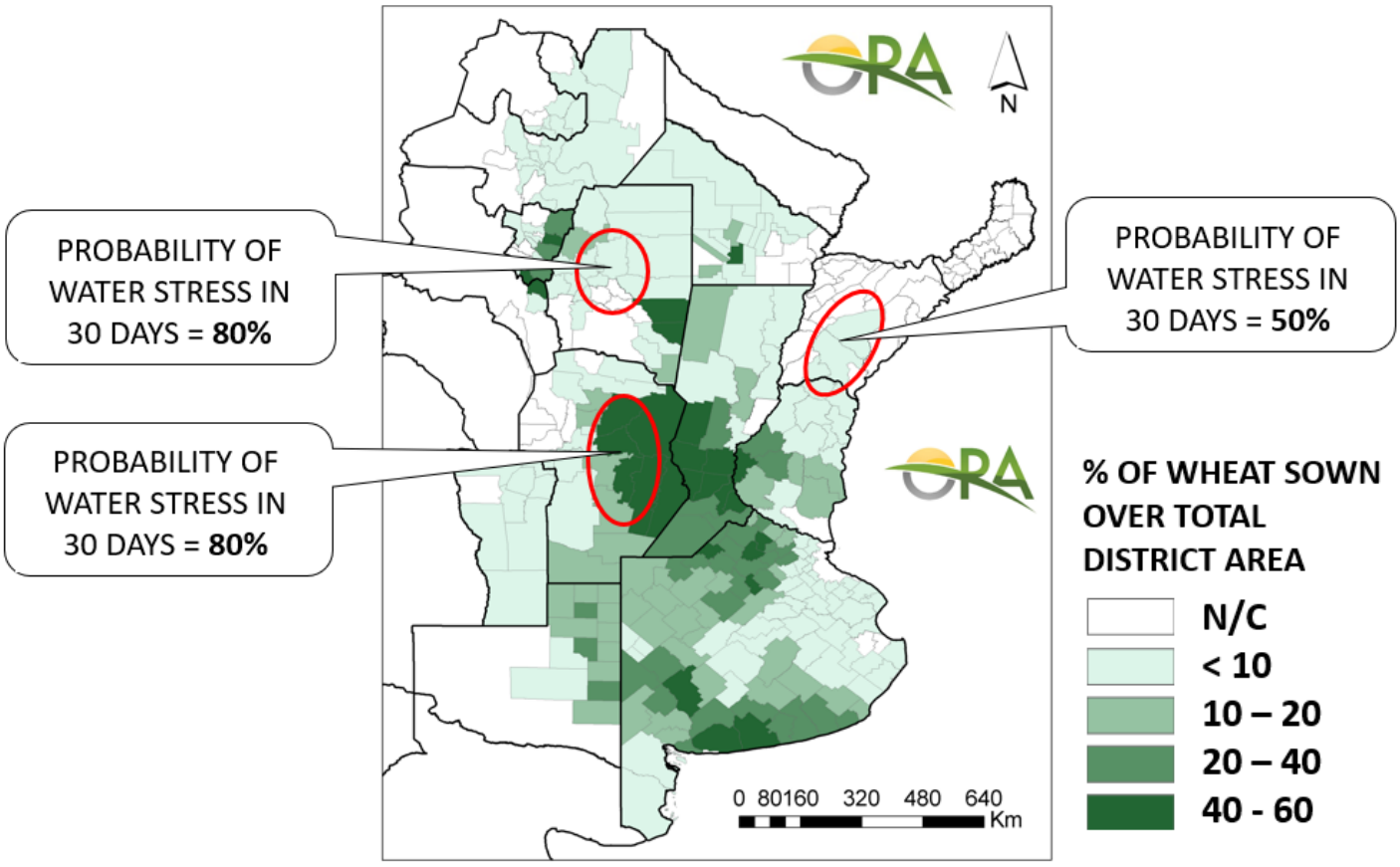


Forecasts from the SERVICIO METEOROLÓGICO NACIONAL
https://www.smn.gob.ar/clima/perspectiva

For the week of July 8-14, the expected rains are generally nil. Rainfalls above 10mm are only expected in the Córdoba mountains and the extreme northeast of the country. For the week of July 15-21, the forecasted rains would again be concentrated in the extreme northeast of the country and in the province of Buenos Aires. According to this forecast, rains in the next two weeks would be normal to slightly below-normal.

* Assessment based on information as of June 28th

30-day Wheat Water Stress Probability Scenarios

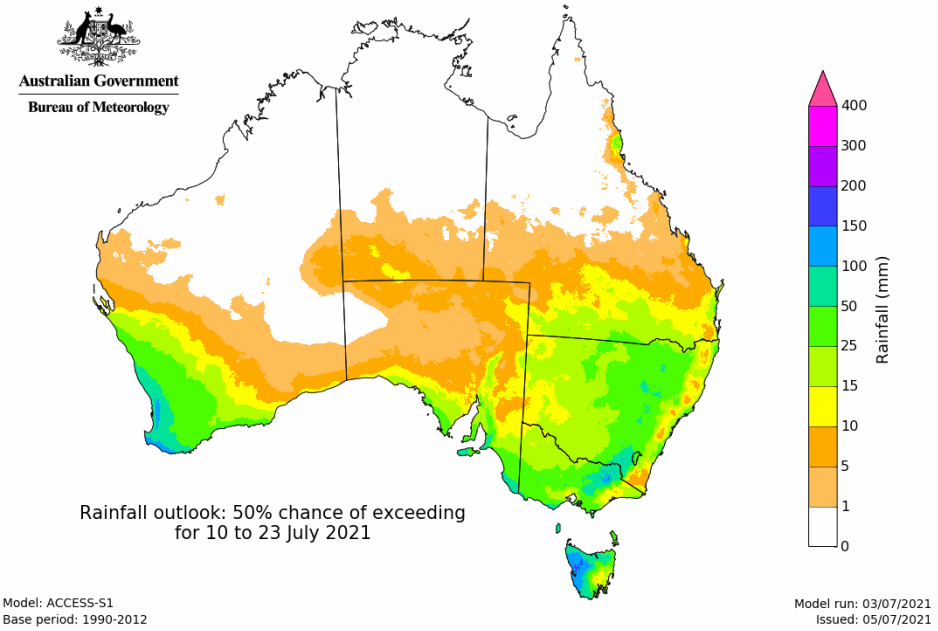


The scenarios were developed by ORA-MAGyP based on the weather forecast of the SMN
https://www.smn.gob.ar/pronostico-trimestral

* Assessment based on information as of June 28th

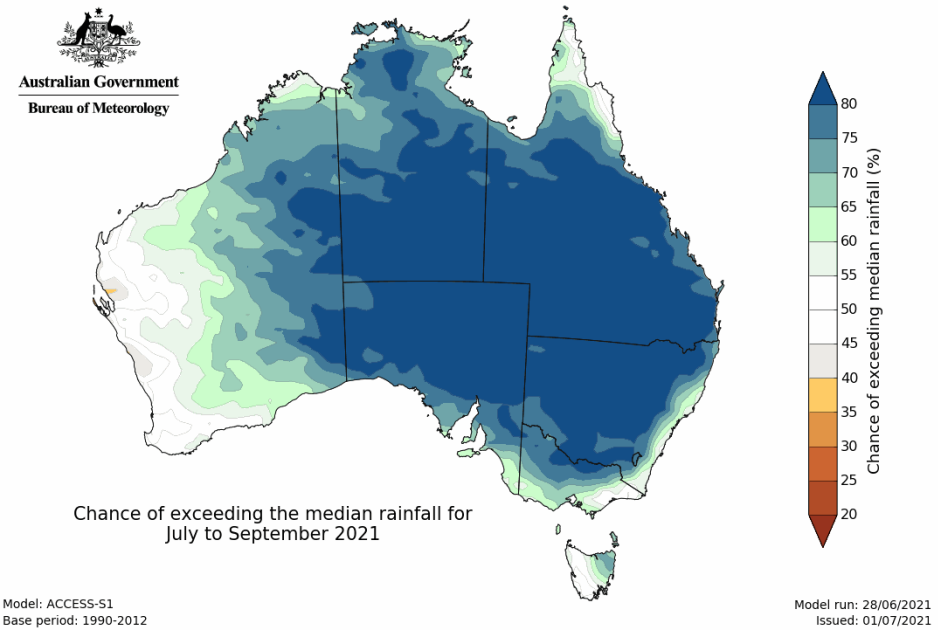
Australia Climate Outlook

The short-term weekly rainfall forecast (issued July 5th) for the next two weeks (July 10th – 23rd) shows that the majority of wheat-growing areas are likely to receive rainfall, particularly in southwestern West Australia, south and southeastern South Australia, Victoria, New South Wales, and southern Queensland. Daytime maximum and nighttime minimum temperatures are forecast to be mostly above-average, particularly from the northwest through Queensland, while temperatures in parts of Western Australia will be slightly below-average.



Australia rainfall outlook covering July 10th – 23rd 2021. Data from The Australian Bureau of Meteorology.
Image from: http://www.bom.gov.au/climate/ahead/outlooks/

The longer-term (July to September) outlook issued on July 1st indicates a likelihood of above-average rainfall for most areas while western West Australia, coastal southeastern Australia, and western Tasmania are likely to experience average rainfall. During the same time, maximum daytime temperatures are likely to be above-average for the northern tropics and parts of southwest and southeastern Australia and below-average from South Australia across western New South Wales and into southern Queensland. Minimum nighttime temperatures are likely to be above-average across the country.

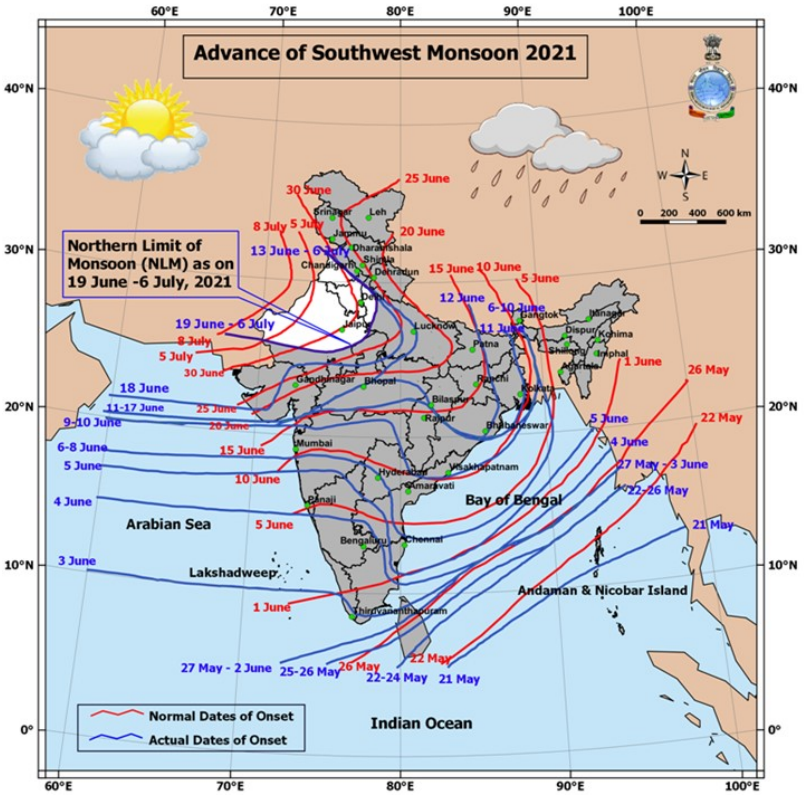


Chance of exceeding median rainfall for July to September 2021. Data from The Australian Bureau of Meteorology.
Image from: http://www.bom.gov.au/climate/ahead/outlooks/

Source: Australia Bureau of Meteorology

* Assessment based on information as of June 28th

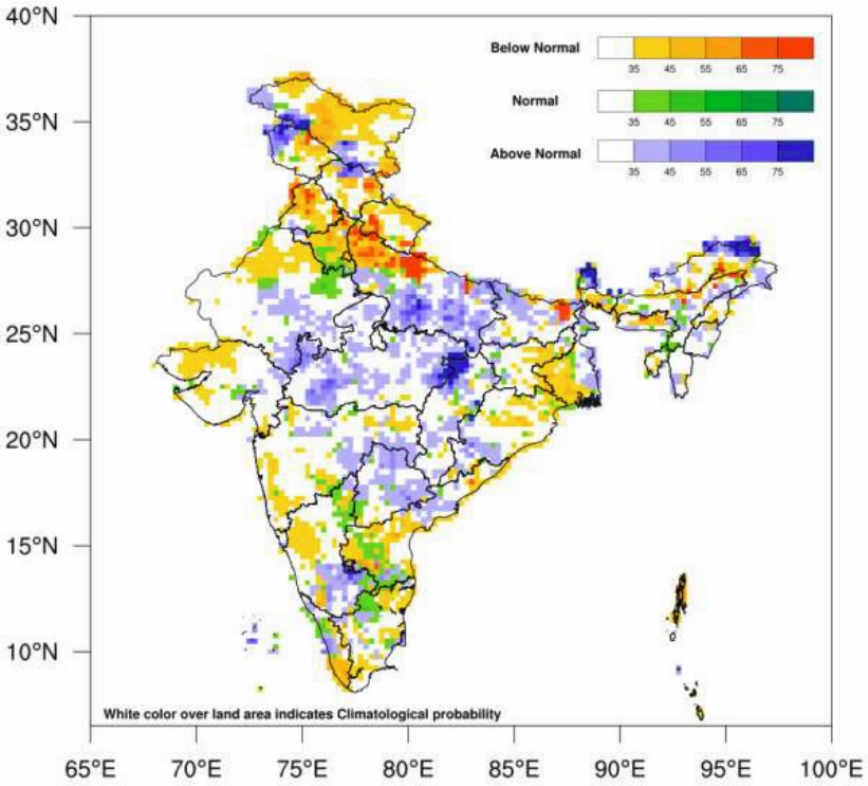
India: Southwest Monsoon Rainfall Forecast for July



As of July 6th, the 2021 southwest monsoon had advanced through Lat 26'N / Long 70' E, Barmer, Bhilwara, Dholpur, Aligarh, Meerut, Ambala, and Amritsar. It is likely to spread into northwest India covering Punjab, Haryana, Rajasthan, Delhi, and remaining parts of West Uttar Pradesh by July 10th.

The 2021 southwest monsoon forecast for July by the India Meteorological Department (July 1st) indicates that the country will receive average (94 – 106%) precipitation compared to the long-term average (1961-2010).

Tercile probability rainfall forecast for July 2021



Probability forecast of tercile categories (below normal, normal, and above normal) for the rainfall over India during July of the 2021 southwest monsoon season (June-September). Images from https://mausam.imd.gov.in/imd_latest/contents/press_release.php.

Source: India Meteorological Department

* Assessment based on information as of June 28th

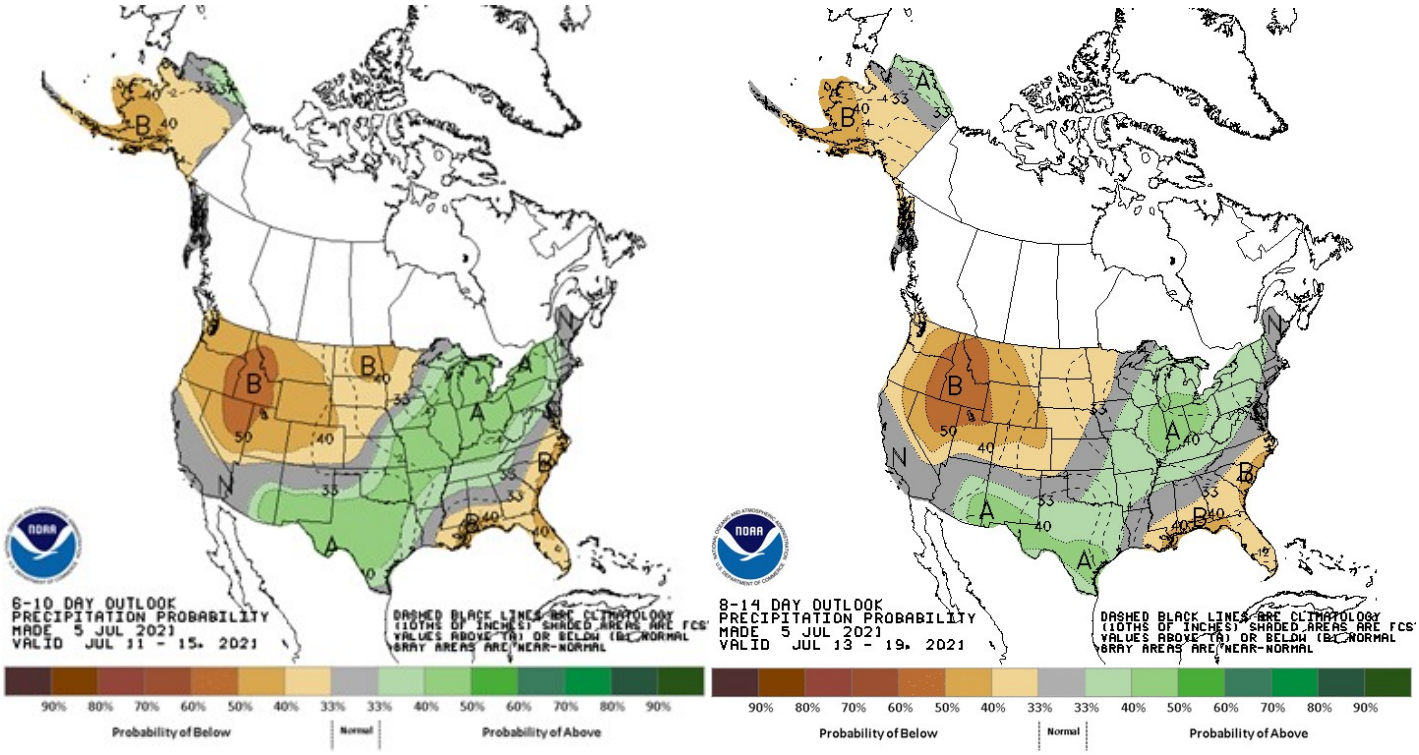
United States Climate Outlook

For the July 11-15 short-term outlook, there is a possibility of below-average precipitation in the northwest and central Rockies down into southern Nevada and also extending into the northern plains (33-50%). There is an additional area of probable below-average precipitation along the southern Gulf Coast up into the Mid-Atlantic Coast (33-40%). A belt of possible above-average precipitation extends from southern New Mexico to the Great Lakes and western New England (33-40%).

During the July 13-19 short-term outlook, the possibility of below-average precipitation remains across the northwest and central Rockies (33-50%). However, the probability of below-average precipitation in the northern plains is slightly reduced (33%). Below-average rainfall will also continue along the Gulf Coast to the Mid-Atlantic (33-40%). The possible above-average precipitation belt from southern New Mexico into the Great Lakes (33-40%) will split into two focused areas centered along the southern US border and over Indiana.

For the longer-term July-August-September (JAS) 2021 outlook, above-average temperatures are likely over the western half of the US with the highest likelihood centered over the Rockies. Additionally, above-average temperatures are likely over the northern US and the US east coast, with the highest probability over New England. Only in Missouri, Arkansas, Louisiana, Mississippi, and eastern Texas are temperatures expected to be average. For precipitation, below-average precipitation is likely from the Pacific Northwest to the central plains. Above-average precipitation is likely along the US south extending to New England. The highest probabilities for above-average precipitation are expected in New England and along the southern portion of the Mississippi.

6-10 Day and 8-14 Day Precipitation Outlooks



The official 6-10 and 8-14 day outlooks issued July 5th, 2021 from NOAA/National Weather Service, National Centers for Environmental Predictions, Climate Prediction Center. Images from https://www.cpc.ncep.noaa.gov/products/forecasts/.

Source: NOAA Climate Prediction Center

* Assessment based on information as of June 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 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.*

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

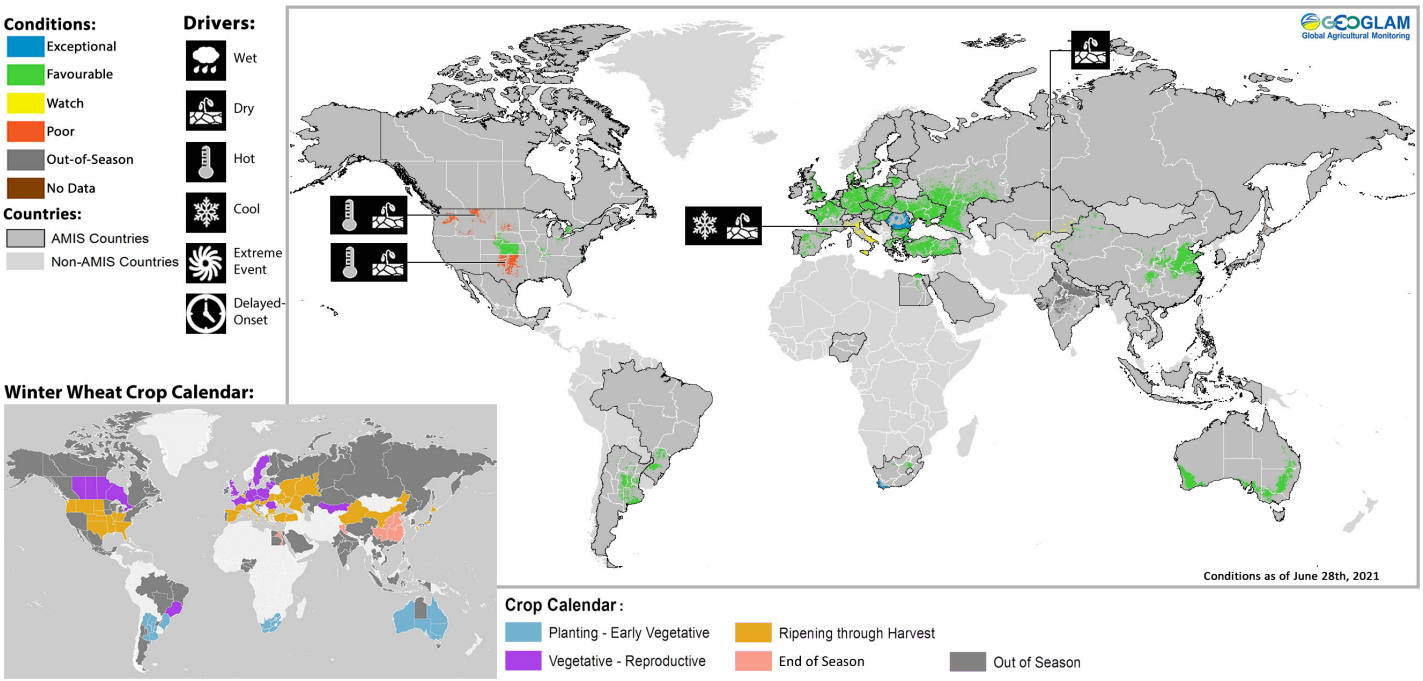
Crop Season Nomenclature:

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	

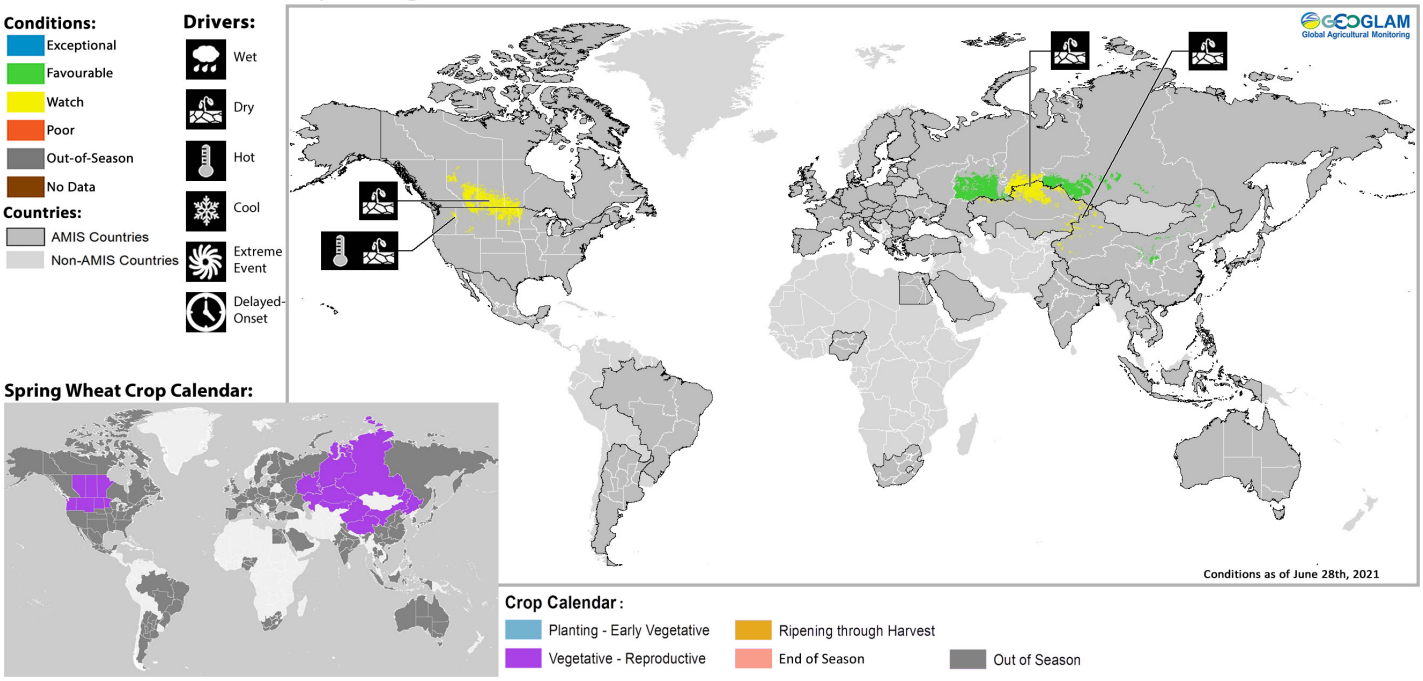
Appendix 2: Crop Season Specific Maps

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 June 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.

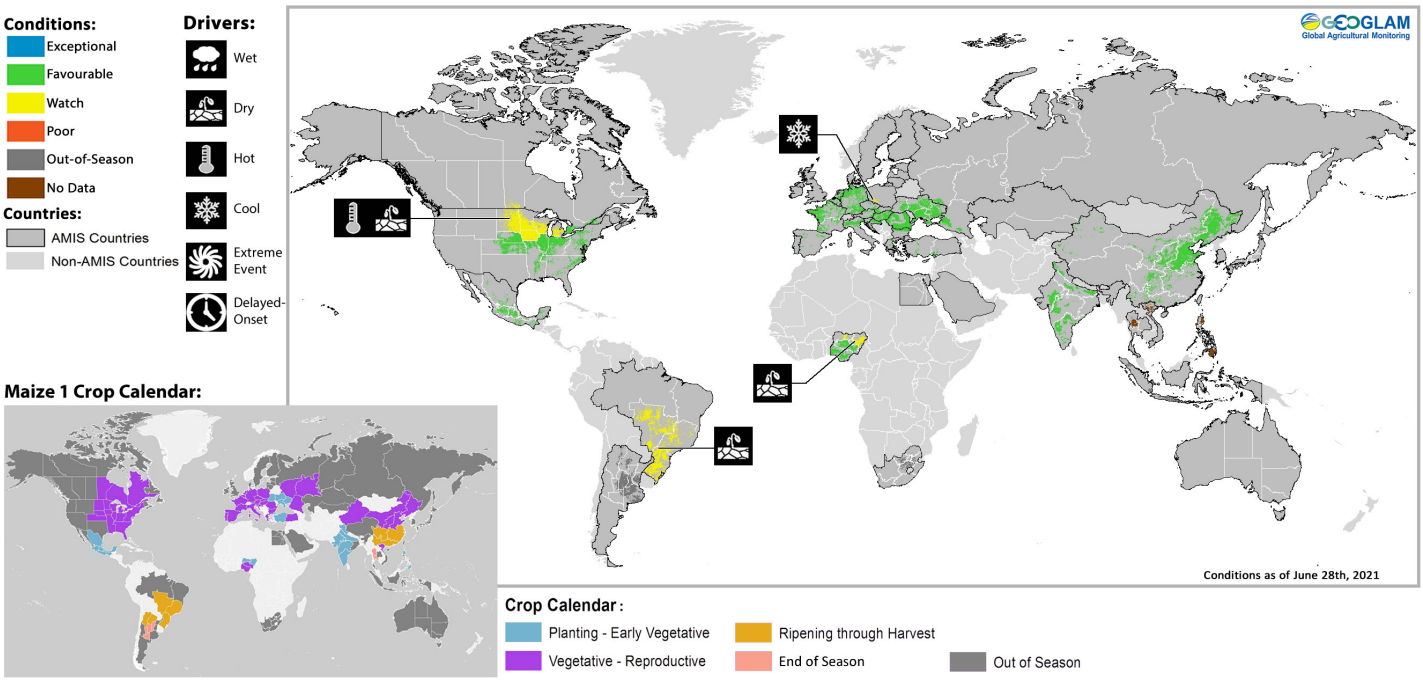
Spring Planted Wheat Conditions for AMIS Countries



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 June 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.

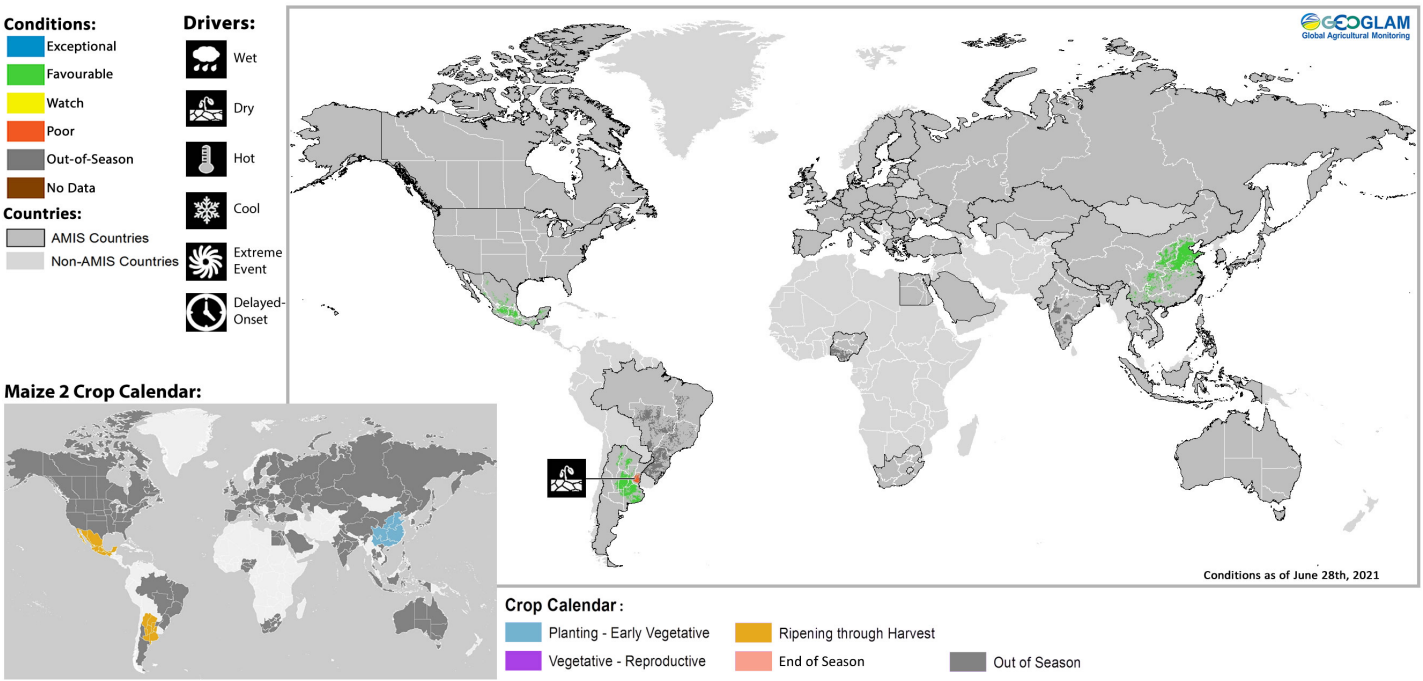
* Assessment based on information as of June 28th

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 June 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



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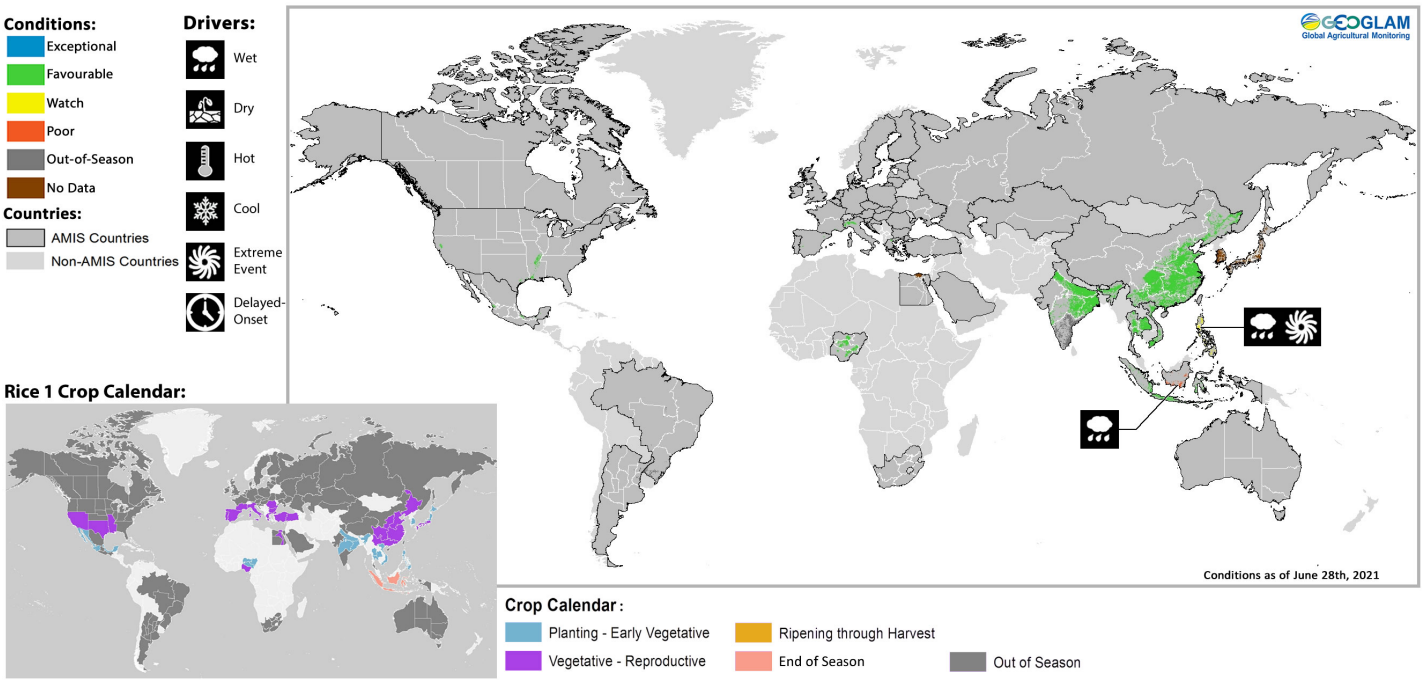
* Assessment based on information as of June 28th

Rice 1 Conditions for AMIS Countries



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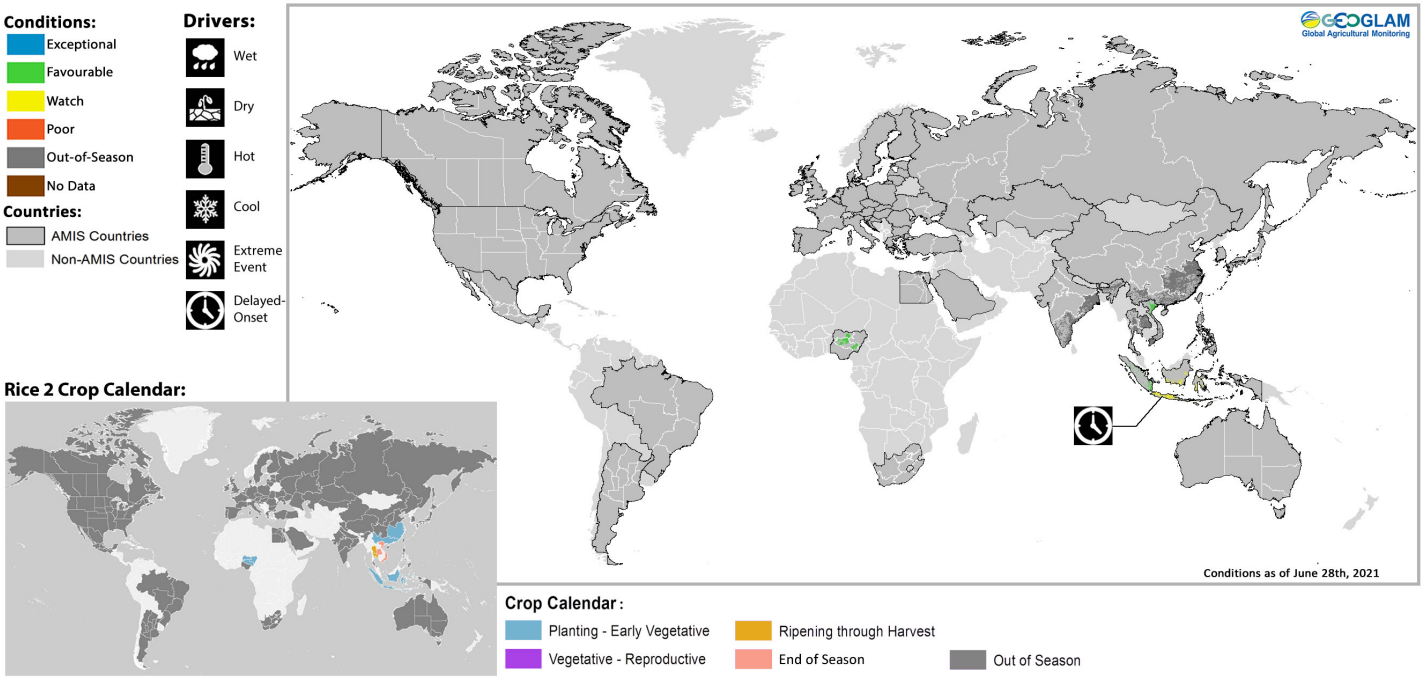
Rice 2 Conditions for AMIS Countries



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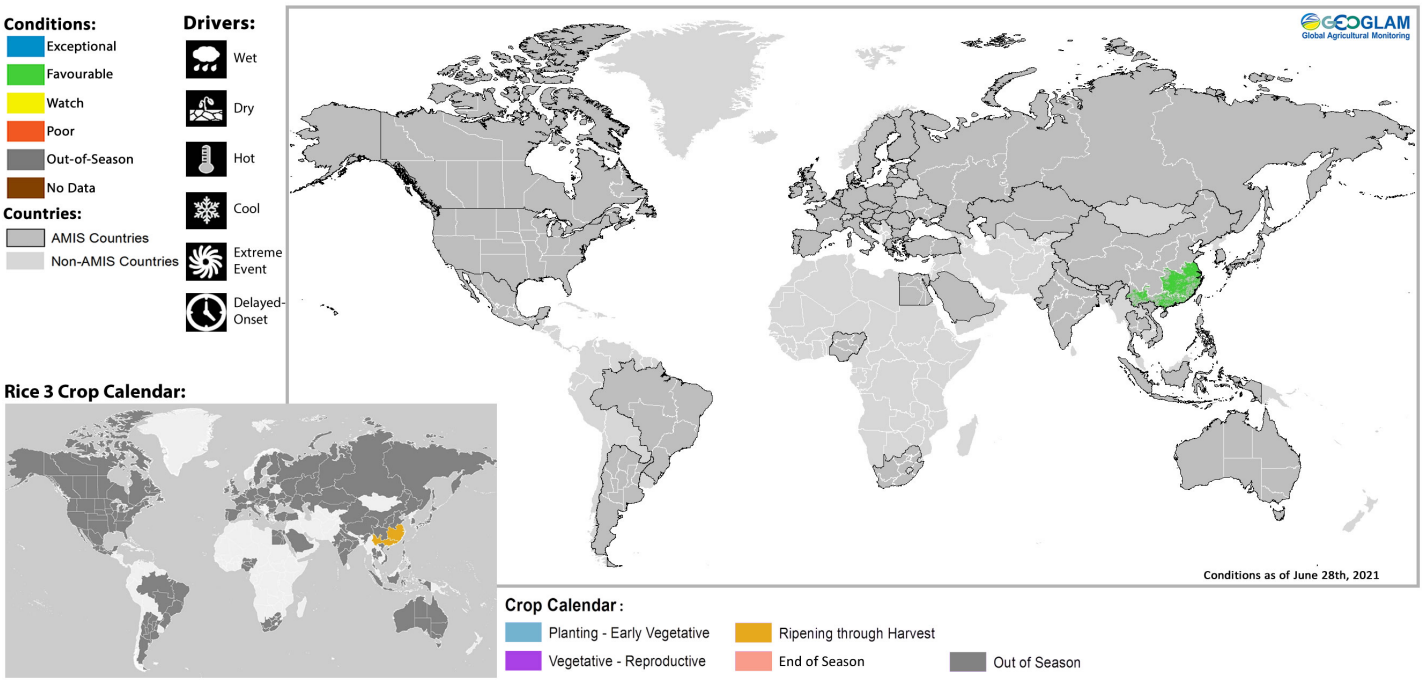
Rice 3 Conditions for AMIS Countries



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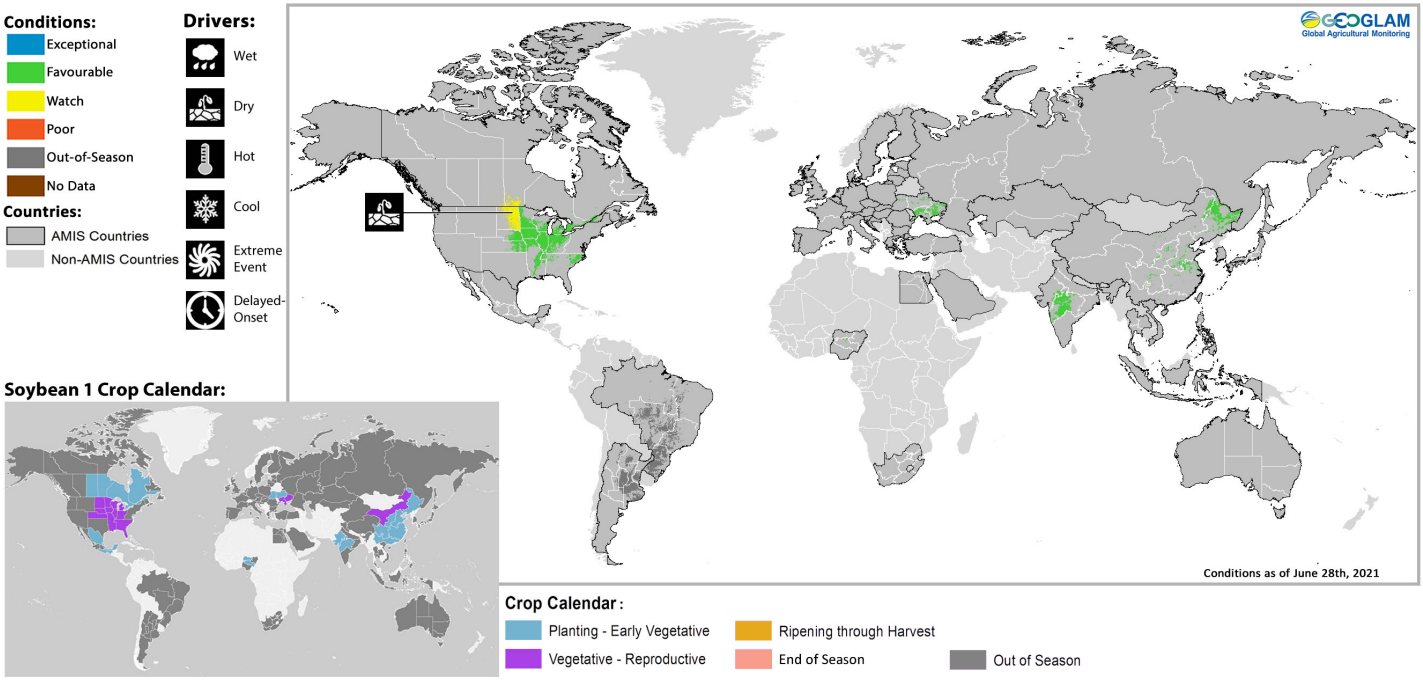
Soybean 1 Conditions for AMIS Countries



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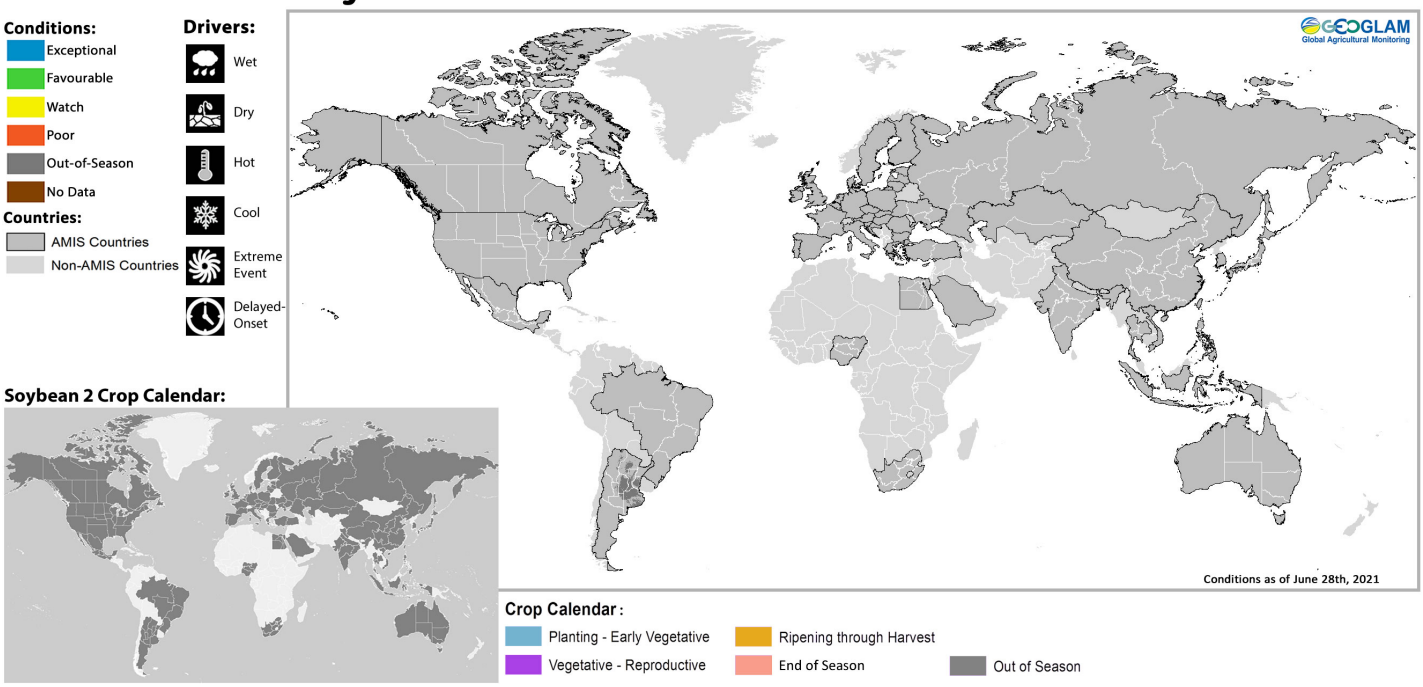
* Assessment based on information as of June 28th

Soybean 2 Conditions for AMIS Countries



Soybean 2 Crop Calendar:

Crop Calendar :

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

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 June 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

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Sources & Disclaimer

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