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Crop Monitor

Overview:

At the end of September, conditions are generally mixed for wheat and favourable for maize, rice, and soybeans with a few areas of concern. For wheat in the northern hemisphere, planting of winter wheat is underway while harvesting of spring wheat is mostly complete. For maize, harvesting finalized in the southern hemisphere and is wrapping up in the northern hemisphere. Rice conditions are favourable throughout Southeast Asia, and harvesting of single-season rice is nearing completion in China while harvesting of Kharif season rice is beginning in India. Harvesting is underway for soybeans under generally favourable conditions.







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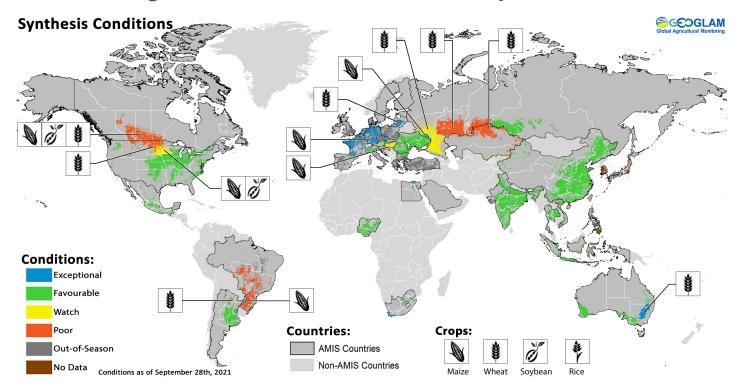
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Assessment based on information as of September 28 th	



Assessment based on information as of September 28th The Crop Monitor is a part of GEOGLAM, a GEO global initiative.



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, planting of winter wheat is underway while harvesting of spring wheat is mostly complete. Poor conditions resulted in lower yields in parts of Canada, the US, the Russian Federation, and Kazakhstan. In the southern hemisphere, winter wheat harvesting has begun under generally favourable conditions.

Maize - Harvesting in the southern hemisphere is complete while harvesting in the northern hemisphere is wrapping up. Conditions are generally favourable except

Forecasts at a Glance

Climate Influences - Neutral El Niño-Southern Oscillation (ENSO) conditions are present, and a weaknegative Indian Ocean Dipole (IOD) event is underway. A La Niña event is likely to develop in October or November and persist through early 2022 (78 percent chance for October to December).

Argentina – September rainfall was slightly below-normal across the productive regions with some wheat plots in the central region experiencing a soil moisture deficit.

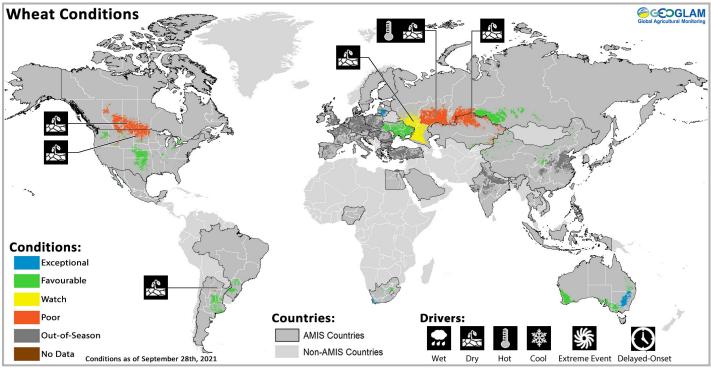
in western Canada and Brazil where final yields are belowaverage.

Rice - Harvesting of single-season crops is nearing completion in China while harvesting of Kharif season crops is beginning in India. Conditions are favourable in both countries. In Southeast Asia, conditions remain favourable for wet-season rice in the north and for dry-season rice in Indonesia.

Soybeans - In the northern hemisphere, harvesting begins amid lingering concerns over persistent dryness in the northern US and western Canada.

United States – The short-term outlook for the next week and a half shows above-average rainfall likely to ease dry conditions across the north and northwest while belowaverage rainfall is forecast for parts of the southern Mountain region and Northeast.

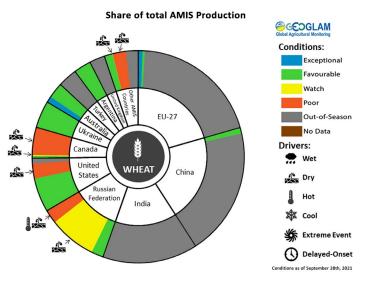
Black Sea Region – The October-November-December (OND) 2021 outlook indicates a probability of belowaverage rainfall across parts of the winter wheat growing areas and above-average temperatures across most of the region.



Wheat Conditions for AMIS Countries

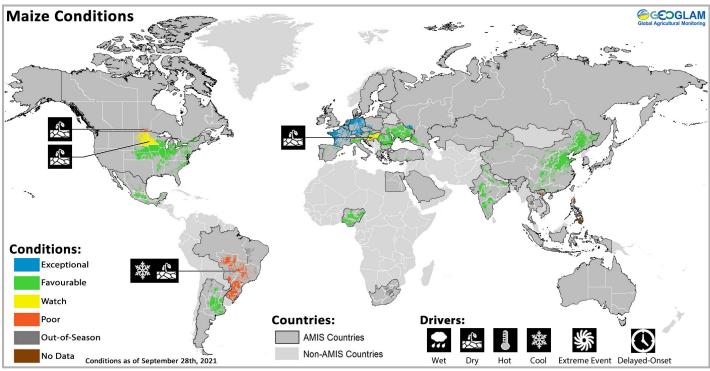
Wheat crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Condition information is based upon information as of September 28th. Where crops are in other than favourable conditions the climatic drivers responsible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

Wheat: In the EU, harvesting of winter wheat finalized in Lithuania and Latvia under favourable to exceptional conditions. Elsewhere, land preparation and early planting activities are underway. In Ukraine, conditions are favourable with sufficient soil moisture and stable temperatures throughout the country. In the Russian Federation, sowing of winter-planted crops is underway under watch to poor conditions as dryness persists in the Volga region. Harvesting of spring-planted crops finalized with below-average yields in the Volga and Urals regions due to persistent dry and hot conditions. In China, harvesting of spring-planted crops finalized under favourable conditions despite below-average precipitation in the north-western part of the country. In the US, sowing of winter-planted crops began under favourable conditions. Harvesting of spring-planted crops finalized



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

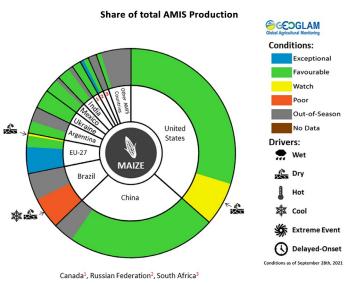
across the north and northwest with below-average yields due to persistent dryness throughout the season. In **Canada**, sowing of winter-planted crops commenced with concern in the prairies due to remaining dryness. Harvesting of spring-planted crops finalized in the prairies under poor conditions as a result of dry conditions and extremely hot weather, and national yield is expected to be well below-average. In **Argentina**, recent rains have improved conditions across the main producing areas while extreme dry conditions in the north and northwest have led to low yield expectations. In **Australia**, winter wheat crops continue to develop under generally favourable conditions due to good rainfall and soil moisture conditions in most cropping regions.



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 **Brazil**, harvesting of summer-planted (late producing season) crops finalized under poor conditions in all main producing regions as persistent dryness and periods of frost impacted yields. In the US, harvesting continues under generally favourable conditions except in the northwestern Corn Belt where ongoing dryness is likely to reduce yields. In Canada, harvesting is underway with poor yield outlooks in the prairies due to drought during the growing season, though national yield is forecast to be above-average. In Mexico, sowing of spring-planted crops continues under favourable conditions for harvest from November. In the EU, harvesting commenced under favourable to exceptional conditions except in Croatia, Hungary, and Slovenia where concern remains due to persistent dryness. In Ukraine, conditions remain



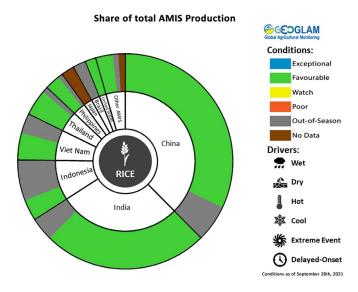
For detailed description of the pie chart please see box on page 6.

favourable despite cool and humid weather in the west and northern regions that delayed crop ripening and harvesting activities. In the **Russian Federation**, overall yield prospects remain positive due to adequate soil moisture during vegetative growth in most areas and despite above-normal temperatures in the Volga region. In **China**, harvesting of spring-planted crops is wrapping up while harvesting of summer-planted crops is beginning, and conditions are favourable despite dryness in the northern Loess Plateau and northwest. In **India**, harvesting of Kharif season crops began under favourable conditions. In **Argentina**, conditions are favourable for sowing of the early-planted (usually larger season) crop with improved soil moisture in eastern Córdoba, Santa Fe, and Entre Rios provinces.

Rice Conditions GEOGLAM Conditions: Exceptional Favourable Watch **Drivers:** Poor **Countries: AMIS Countries** Out-of-Season Non-AMIS Countries No Data Conditions as of September 28th, 2021 Hot Extreme Event Delaved-Onset Wet Drv Cool

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.

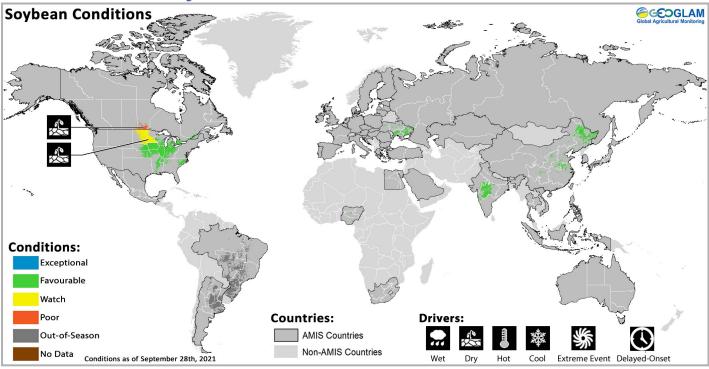
Rice: In **China**, harvesting of single-season crops is underway while late-season crops continue to develop, and overall conditions are favourable with abundant precipitation and suitable soil moisture. In India, harvesting of Kharif season crops is underway, and overall conditions are favourable with slightly abovenormal temperatures. In Indonesia, harvesting of earlier planted dry-season rice is underway with yields slightly higher than the previous year due to sufficient precipitation received during the growing season. In northern Viet Nam, wet-season rice is in young panicle forming to grain filling stage under favourable conditions. In the South, harvesting of summer-autumn (wet-season) rice is underway, and yield is slightly improved from the previous year. Autumn-winter (wetseason) rice is developing under favourable conditions.



Rice Conditions for AMIS Countries

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

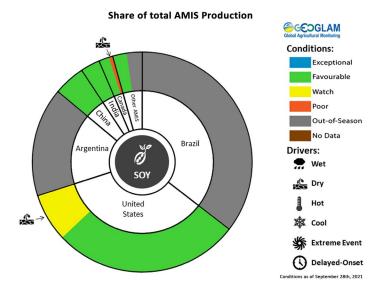
In **Thailand**, wet-season rice is in young panicle forming stage, and planted area has increased due to favourable weather conditions and good paddy prices. Growing conditions have improved from the previous year due to abundant rainfall from April, and final yield is expected to increase. In the **Philippines**, harvesting of wet-season rice planted in April to May is now complete with production slightly higher than the previous year's level. Crops planted in July and August are now in the tillering stage, and growing conditions are favourable. In the **US**, harvesting is wrapping up with near-average yields as conditions have been favourable throughout the season.



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**, harvesting began under generally favourable conditions except in Minnesota and the Dakotas where persistent dryness will likely reduce yields. In **Canada**, harvesting continues with poor yield outlooks in the prairies due to drought during the growing season, and national yield is forecast to be below-average. In **China**, harvesting began under favourable conditions despite drought conditions in the northern Loess Plateau. In **India**, crops are in maturity and harvesting stage in the major growing states of Madhya Pradesh, Maharashtra, and Rajasthan, and overall conditions are favourable. In **Ukraine**, harvesting continues under favourable conditions with near-average yields expected.



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

Information on crop conditions in non-AMIS countries can be found in the <u>GEOGLAM Crop</u> <u>Monitor for Early Warning</u>, published October 7th

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.

Climate Forecasts for AMIS Countries

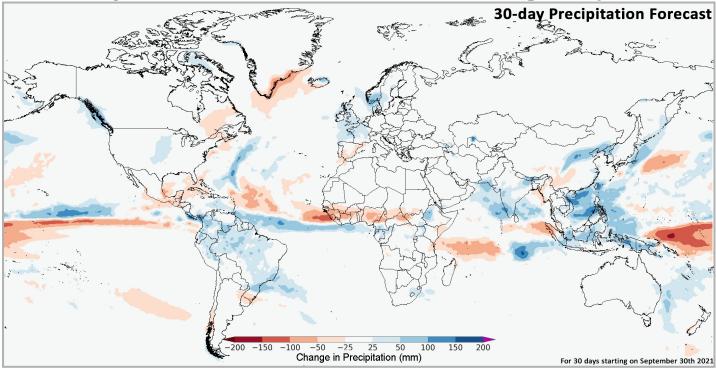
Climate Influences: La Niña event likely to develop and negative IOD underway

Neutral El Niño-Southern Oscillation (ENSO) conditions are present. A La Niña event will likely develop in October or November and persist through early 2022 (78 percent chance for October to December; 79 percent to 60 percent chance for November to March). Climate forecasts also anticipate exceptionally warm west Pacific Ocean conditions, which can amplify the impact of cool La Niña conditions in the east Pacific.

La Niña-like conditions typically increase the chances of below-average precipitation in East Africa, Central Asia, southern South America, southern United States, northern Mexico, and eastern East Asia. La Niña-like conditions typically increase the chances of above-average precipitation in parts of Southeast Asia, Australia, Southern Africa, and northern South America.

The Indian Ocean Dipole (IOD) is in a weak-negative state. The ongoing negative IOD event weakened in recent weeks, and some models forecast it will strengthen in October. Most models forecast a return to neutral conditions by December. Negative IOD conditions typically increase the chances of above-average precipitation in Southeast Asia and Australia and below-average precipitation in East Africa.

Source: UCSB Climate Hazards Center

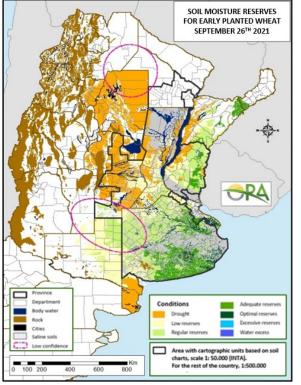


Global 30-day Forecast of Areas with Above or Below-Average Precipitation

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

The 30-day precipitation forecast indicates a likelihood of above-average rainfall over western Canada, the central US, Costa Rica, Panama, Colombia, southern Venezuela, Guyana, Suriname, French Guiana, Ecuador, Peru, Brazil, northwestern Bolivia, southern Paraguay, southern Cameroon, Equatorial Guinea, Gabon, Congo, the Democratic Republic of Congo, western East Africa, eastern South Africa, Ireland, the UK, Norway, Sweden, Denmark, Belgium, France, northeastern Spain, eastern Georgia, Azerbaijan, northwestern Iran, western Yemen, western Uzbekistan, southern Pakistan, India, Nepal, Bhutan, eastern China, the Democratic People's Republic of Korea, Japan, Laos, Viet Nam, Cambodia, the Philippines, Indonesia, Papua New guinea, and eastern Australia. There is also a likelihood of below-average rainfall in parts of eastern Canada, the northeastern US, southern Mexico, Guatemala, El Salvador, Honduras, Cuba, southern Brazil, Uruguay, northeastern Argentina, southern Chile, south of the Sahel, eastern East Africa, Portugal, Spain, southern China, Myanmar, western Malaysia, western Indonesia, and new Zealand.

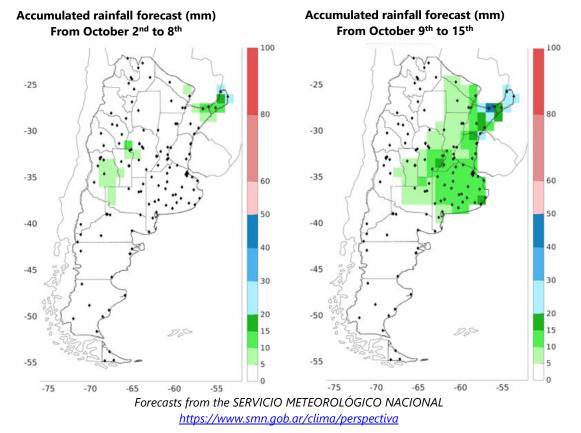
Argentina: Current Water Reserves and Wheat Sowing Probability



% Useful Water – September 26, 2021

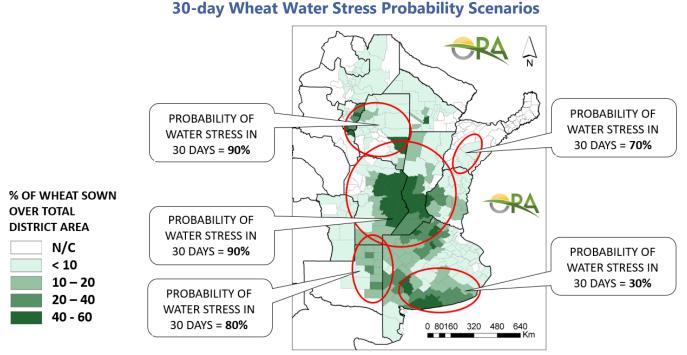
- Rainfall in September was slightly lower than normal across productive regions, continuing with the trend of the previous months.
- Consequently, some wheat plots in the central region of the country are experiencing a soil moisture deficit as spring rains are somewhat delayed.
- In the northwest of Buenos Aires, south of Santa Fe, and east of Cordoba, the availability of water for winter crops is currently estimated to be low to average.
- The southeast region of Buenos Aires maintains better water conditions with adequate to optimal reserves.

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



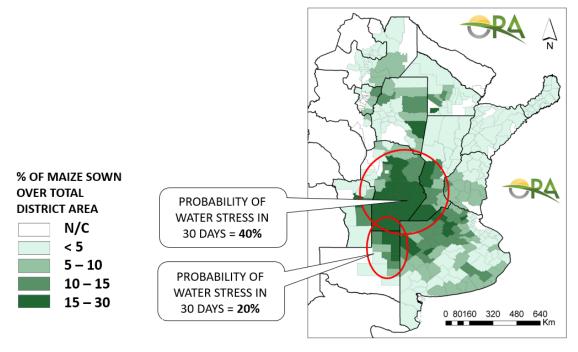
Accumulated Rainfall Forecast

For the week of October 2nd to 8th, the expected rains are likely to be concentrated in the extreme northeast of the country and, to a lesser extent, in the central west. For the following week from October 9th to 15th, heavier rainfall is expected over the productive regions, though it is not expected to exceed 15mm. According to this forecast, rains will likely be lower than normal in the next two weeks.



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

30-day Maize Water Stress Probability Scenarios



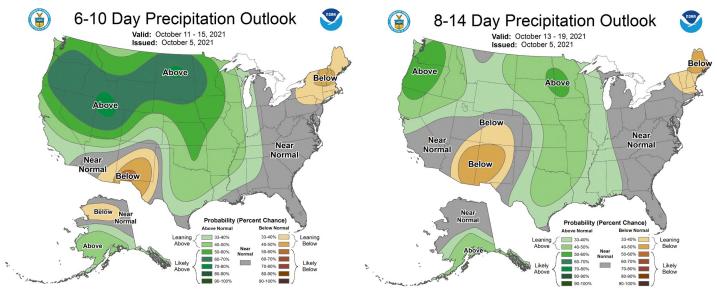
The scenarios were developed by ORA-MAGyP based on the weather forecast of the SMN <u>https://www.smn.gob.ar/pronostico-trimestral</u>

United States Climate Outlook

For the October 11 – 15 short-term outlook, there is a possibility of below-average precipitation across western portions of the Southern Plains (33-60%), with the highest probability in southwestern New Mexico (50-60%). There is also a probability of below-average rainfall in the upper Northeast region (33-50%). There is a large area of possible above-average precipitation extending from the Pacific Northwest to the western Lake States and Corn Belt and down into southern Texas and southern California (33-70%), with the highest probabilities along the northern Pacific, central Mountain region, and Dakotas (60-70%).

During the October 13 – 19 short-term outlook, the area of possible below-average precipitation remains in New Mexico, shifting westward into Arizona and northward into Colorado (33-50%). The possibility of below-average precipitation also remains in the northeast (33-50%). The area of likely above-average precipitation remains, with the highest probability area splitting into two regions centered in Oregon, Washington, and northern California as well as the eastern Dakotas and western Minnesota (50-60%).

For the longer-term October-November-December 2021 outlook, below-average rainfall is likely across the southern half of the continental US an up into South Dakota (33-50%), with the highest probability in New Mexico, Texas, and surrounding states (40-50%). Areas of above-average rainfall are only likely in the Pacific Northwest (33-50%) and in Michigan, the Eastern Heartland, and the Northeast (33-40%). During the same time, above-average temperatures are forecast for most of the continental US (33-60%), particularly in the far Northeast as well as in New Mexico, southeastern Utah, Arizona, southwestern Colorado, and western Texas (50-60%).



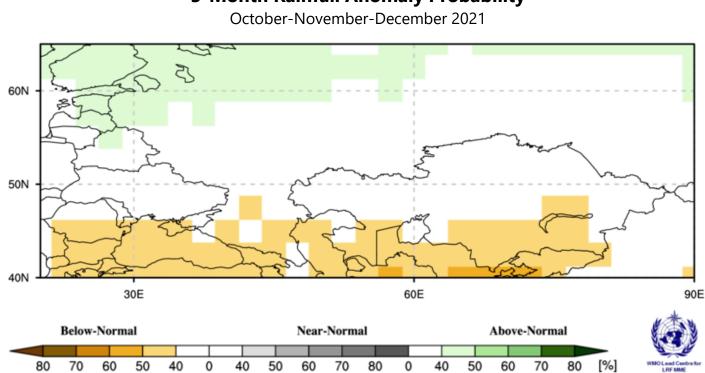
6-10 Day and 8-14 Day Precipitation Outlooks

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

Source: NOAA Climate Prediction Center

Black Sea Region Outlook

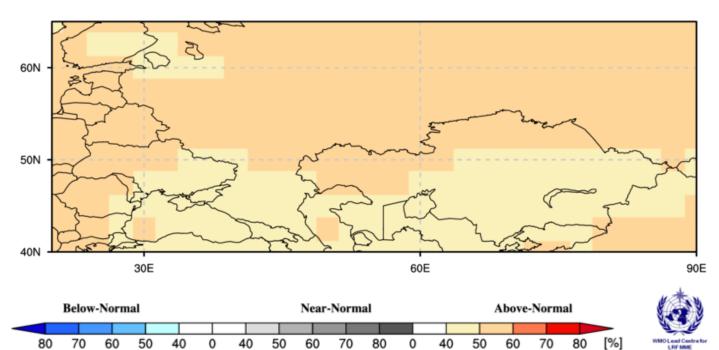
Over the next three months (October-November-December), there is a probability of below-average rainfall across parts of the winter wheat growing area in the Southern Caucasus region of the Russian Federation, southern Kazakhstan, southern Bulgaria, Romania, and Turkey. Additionally, above-average temperatures are probable across the region for the October-November-December period as planting and germination of winter wheat continues.



3-Month Rainfall Anomaly Probability

3-Month Temperature Anomaly Probability

October-November-December 2021



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		





Wet

Hot

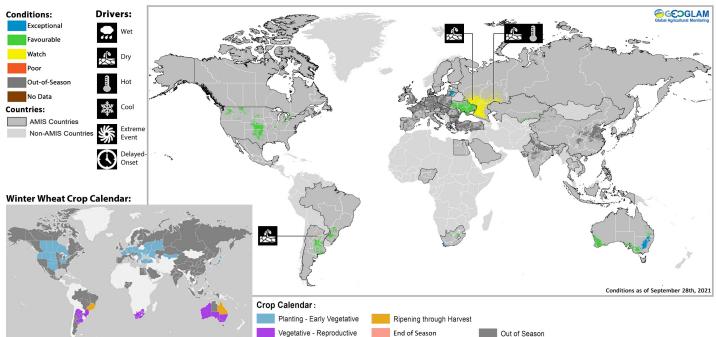
Cool

Extreme Event

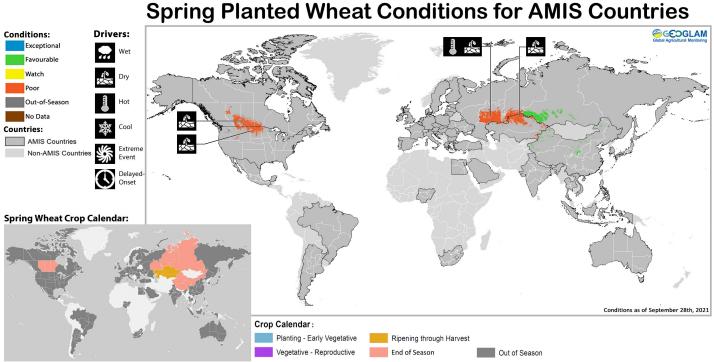
Delayed-Onset

Dry Dry

Appendix 2: Crop Season Specific Maps

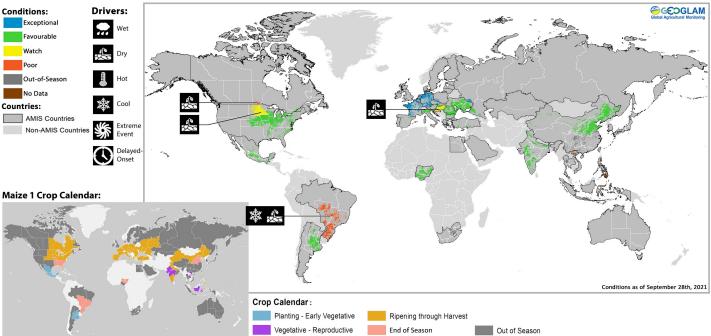


Winter wheat crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Condition information is based upon information as of September 28th. Where crops are in less than favourable conditions the climatic drivers 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.

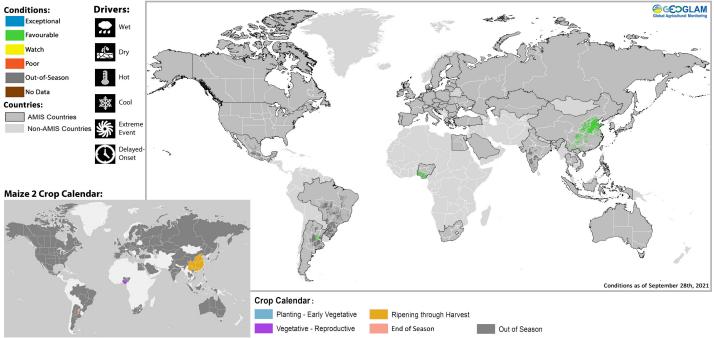


Spring wheat crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Condition information is based upon information as of September 28th. Where crops are in less than favourable conditions the climatic drivers 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.

Winter Planted Wheat Conditions for AMIS Countries



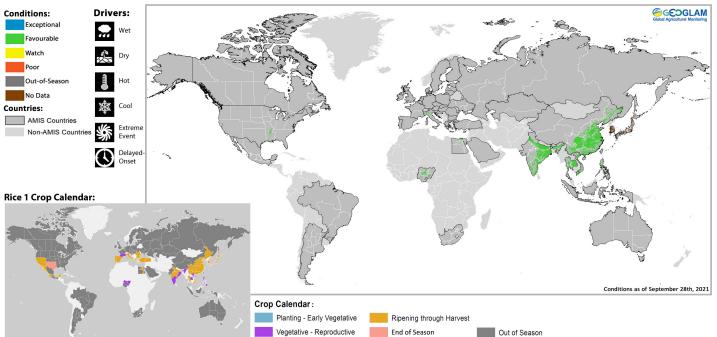
Maize 1 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Condition information is based upon information as of September 28th. Where crops are in less than favourable conditions the climatic drivers responsible 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.



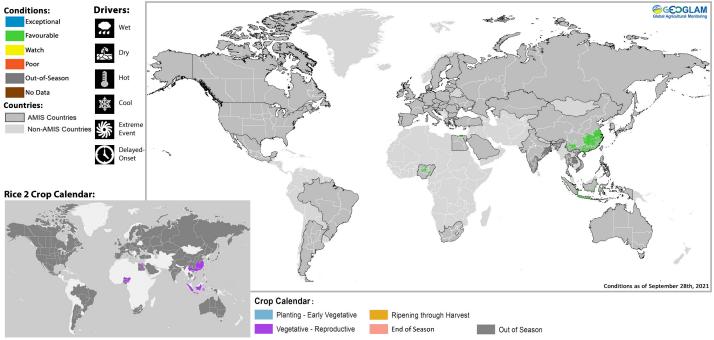
Maize 2 Conditions for AMIS Countries

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.

Maize 1 Conditions for AMIS Countries



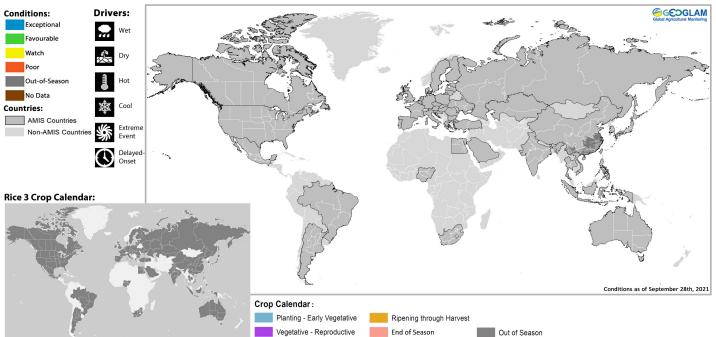
Rice 1 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Condition information is based upon information as of September 28th. Where crops are in less than favourable conditions the climatic drivers responsible 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.



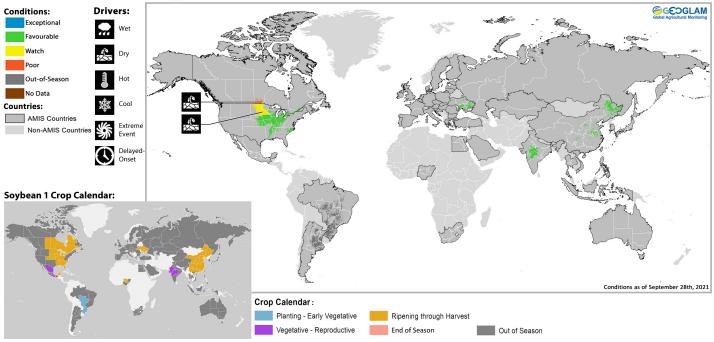
Rice 2 Conditions for AMIS Countries

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.

Rice 1 Conditions for AMIS Countries



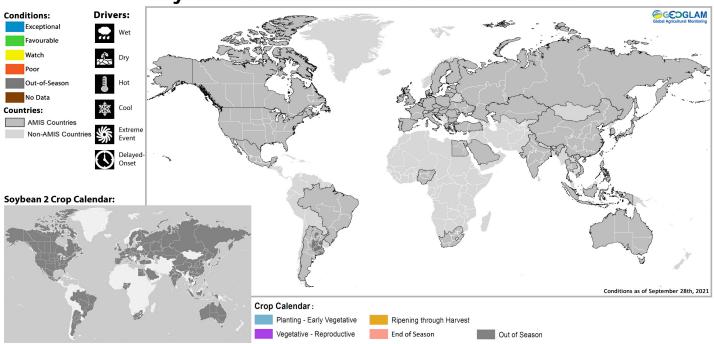
Rice 3 crop conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Condition information is based upon information as of September 28th. Where crops are in less than favourable conditions the climatic drivers responsible 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.

Rice 3 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.

Soybean 2 Conditions for AMIS Countries



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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