Overview:
At the end of September, conditions remain mixed for wheat, maize, rice, and soybeans. Spring wheat harvest is wrapping up in the northern hemisphere with poor outcomes in Canada, the US, and China. Dry conditions continue in parts of the southern hemisphere. Exceptional maize yields are expected for the larger season crop in Brazil, and harvesting conditions remain mixed in the northern hemisphere. Enhanced rains improved rice prospects in China, below-average monsoon rains continue to impact southern India, and conditions are favourable in Southeast Asia except in Thailand. Soybean harvest begins under mixed conditions with concern in the US, Romania, the Russian Federation, and China.
At a glance for AMIS countries (as of September 28th)

Crop Conditions at a Glance

**Wheat** – In the northern hemisphere, spring wheat harvesting is wrapping up with poor conditions in Canada, the US, and China. In the southern hemisphere, there are ongoing dry conditions in Argentina and Australia.

**Maize** – In the southern hemisphere, conditions are mostly favourable with exceptional outcomes expected in Brazil for the larger season crop. In the northern hemisphere, conditions remain mixed as harvesting ramps up.

**Rice** – In China, recent rains improved vegetation in the south and southwest. In India, the Kharif harvest begins with concern for below-average monsoon rains in the south. In Southeast Asia, conditions remain favourable except in Thailand.

**Soybeans** – In the northern hemisphere, harvesting begins under mixed conditions with dry and hot weather in the US, Romania, the Russian Federation, and China.

Forecasts at a Glance

**Climate Influences** – El Niño is currently present, and models predict a strong intensity during October to January. Positive Indian Ocean Dipole (IOD) conditions are present and likely to be strong and impactful.

**Argentina** – Forecast below-average precipitation through mid-October in major producing eastern areas likely followed by rainfall improvement and above-average temperatures through the end of the year.

**Australia** – Wheat growing areas are expected to receive rainfall in the coming weeks while dry conditions and high temperatures are likely in many areas through December.

**The United States** – Below-average precipitation is likely through early October in the Lake States, Corn Belt, and Appalachian areas. Wet conditions are expected through December from the Southern Plains to the Northeast.

* Assessment based on information as of September 28th
Wheat Conditions for AMIS Countries

**Wheat Conditions**

**Conditions:**
- Exceptional
- Favourable
- Watch
- Poor
- Out-of-Season
- No Data

**Countries:**
- AMIS Countries
- Non-AMIS Countries

**Drivers:**
- Wet
- Dry
- Hot
- Cool
- Extreme Event
- Pest & Disease
- Delayed Onset
- Socio-economic
- Conflict

*Assessment based on information as of September 28th*

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**Wheat:** In the **EU**, winter wheat harvesting finalized with poor yields in parts of the north. Planting begins in some northern countries under favourable conditions. In **Türkiye**, conditions are favourable for the start of planting. In **Ukraine**, summer-autumn drought is impacting timely sowing activities, and rainfall outcomes in early October will determine the possibility of improvement. In the **Russian Federation**, harvesting of the spring crop finalized under favourable conditions despite previous drought. Spreading dryness is impacting winter wheat planting, particularly in the Volga region. In **China**, harvesting finalized under mixed conditions for the spring-planted crop due to impacts of drought and heat stress along the north and northwest. In the **US**, spring harvesting is mostly complete with below-average yields expected as much of the west experienced drier-than-normal weather late in the season. In **Canada**, spring wheat harvesting finalized under mixed conditions in the Prairie region due to dry weather, with a large drop in national yields. In **Australia**, concern remains for winter crops in much of the east and west, and rainfall is needed soon to sustain yield potential. In **Argentina**, winter crops are under mixed conditions with insufficient rains in the north and west while crops in the east remain favourable.

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

* Assessment based on information as of September 28th
Maize Conditions for AMIS Countries

Maize: In Brazil, harvesting of the summer-planted (larger season) crop is wrapping up under exceptional conditions, and planting of the spring-planted (smaller season) crops begins in the main producing South region. In Argentina, sowing of the early-planted (usually larger season) crop is progressing in the eastern provinces, with recent rains benefitting crop emergence. In the US, dry weather is emerging in parts of the Midwest and Northeast while other areas have recovered from prior drought. In Mexico, drought and heat stress are impacting crop development except along northwest and southeastern coastal regions. In Canada, conditions are favourable as Ontario benefitted from good rains since the beginning of the season. In China, recent rains benefitted prior deficit areas for the ongoing harvest. In India, crops in the centre and west have improved from prior dry impacts while concern remains in the south. In the EU, conditions are mostly favourable with poor yields expected in Bulgaria and Romania due to dry and hot weather and in Greece due to the passage of Tropical Storm Daniel. In Ukraine, conditions remain favourable with the exception of conflict-affected areas. In the Russian Federation, harvesting continues under mixed conditions with some dryness now impacting parts of the Volga region.

* Assessment based on information as of September 28th
Rice: In China, conditions are favourable for both the single and late-season crop as recent rains improved vegetation in the south and southwest. In India, the Kharif harvest begins under mostly favourable conditions except in the south where monsoon rains were below-average. In Indonesia, dry-season rice harvesting continues with a favourable yield despite less precipitation received during the growing season. In northern Vietnam, wet-season rice is under favourable conditions with adequate irrigation preparation. In the south, conditions remain favourable for the wet-season crops (both summer-autumn and autumn-winter). In Thailand, there is ongoing concern for wet-season rice due to seasonal drought that continued through the end of August. In the Philippines, earlier planted wet-season rice is now fully harvested with a slightly lower production output compared to last year due to the passage of three tropical cyclones and the enhanced southwest monsoon. In Japan, harvest conditions are mixed with rainfall inundation in the southwest and dry soils in the north. In Brazil, despite slow planting progress, excessive rains have contributed to improved reservoir levels for irrigation. In the US, conditions are favourable for rice harvesting.
Soybean Conditions for AMIS Countries

Soybeans: In the US, soybeans are developing under mostly favourable conditions except in the Central Plains and Delta Region where dry weather and heat stress continues. In China, dry and hot weather continue to impact crops in the south and southwest. Elsewhere, harvesting conditions remain favourable. In India, crops have recovered from the limited precipitation received in August. In Canada, harvesting conditions are favourable except in Quebec due to concerns about excess moisture. In Ukraine, harvesting conditions remain favourable in unoccupied territories, and yield is higher than last year. In Brazil, sowing is beginning under favourable conditions in irrigated areas and in some regions with sufficient soil moisture.

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

Information on crop conditions in non-AMIS countries can be found in the GEOGLAM Crop Monitor for Early Warning, published October 5th

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 Influences: Strong El Niño Advisory and Positive IOD

The ongoing El Niño event will likely reach peak intensity during October 2023 to January 2024, and then remain active into March to May 2024 (78 percent chance), according to the IRI/CPC forecast. Very warm sea surface temperatures in the Nino3.4 region indicate this is already a strong event.

El Niño events tend to enhance precipitation in Central Asia, southern North America, south-eastern South America, southern Europe, east and southern East Africa, and south and eastern China. Drier-than-average conditions tend to occur in Central America, the Caribbean, northern South America, parts of west and northern East Africa, Southern Africa, India, Northern China, the Maritime Continent, and Australia.

A positive Indian Ocean Dipole (IOD) event is also underway and will likely be strong and impactful with a peak in October and November and lasting until January, according to the Australian Bureau of Meteorology. Positive IOD conditions typically enhance the drying influences of El Niño in Australia and the Maritime Continent, and substantially increase the chances of a wet and intense East Africa short rains season during El Niño.

Source: UCSB Climate Hazards Center

* Assessment based on information as of September 28th
Global Two-week Forecast of Areas with Above or Below-Average Precipitation

The two-week forecast (Figure 1) indicates a likelihood of above-average rainfall over parts of central and northeastern Canada, the Pacific Northwest and Southern Plains of the US, northern Mexico, Honduras, Nicaragua, the Dominican Republic, southern Peru, southern Brazil, central Argentina, parts of North Africa, much of western West Africa, Gabon, eastern South Africa, southern South Sudan, southern Ethiopia, Somalia, the United Kingdom, Finland, north and central parts of the Russian Federation, Kazakhstan, western Iran, southern India, Sri Lanka, Myanmar, Thailand, southern Viet Nam, and central-eastern Australia.

There is also a likelihood of below-average rainfall over much of central, southwest, and southeastern Canada, central and eastern parts of the US, Mexico, much of northern South America, northern Argentina, Uruguay, southern Chile, northern Morocco, northern Algeria, northern Tunisia, southern Niger, northeastern Nigeria, Cameroon, Chad, the Central African Republic, southern Sudan, north and central Ethiopia, Eritrea, Uganda, Kenya, Rwanda, Burundi, the United Republic of Tanzania, much of Southern Africa, much of north and eastern Europe, Turkey, much of the Russian Federation, Mongolia, China, DPRK, the Republic of Korea, Japan, Afghanistan, Pakistan, Nepal, Bhutan, much of India, Malaysia, Indonesia, Papua New Guinea, much of Australia, and New Zealand.

Figure 1: IRI SubX Precipitation Biweekly Probability Forecast for 29 September – 13 October 2023, issued on 22 September 2023. The forecast is based on statistically calibrated tercile category forecasts from three SubX models. Source: IRI Subseasonal Forecasts Maproom

* Assessment based on information as of September 28th
Argentina Outlook

The 3 to 9 October precipitation forecast anomaly (left) indicates a likelihood of below-average rainfall over a large area from eastern Neuquen northwards through eastern Salta and extending through the northeast, particularly in Entre Ríos and Corrientes. During the same period, above-normal temperatures are expected in Jujuy and northwestern Salta, central and southern Santa Fe, and much of Buenos Aires. Below-average temperatures are expected in much of the west from Santa Cruz to Catamarca as well as in the northeast.

The 10 to 16 October precipitation forecast anomaly (centre) shows continuing below-average rainfall over most central areas, particularly in and around southeastern Cordoba, southern Santa Fe, northwestern Buenos Aires, and northeastern La Pampa. During the same period, above-normal temperatures are expected over the northern half of the country while below-normal temperatures are likely along the eastern coast in the southern half of the country.

The long-term October-November-December 2023 forecast (right) indicates likely below-average precipitation in the northwest from San Juan to Salta as well as in the far south. Above-average precipitation is expected over much of the south and east from Chubut to Misiones, particularly in the northeast. During the same time, a continuation of above-average temperatures in the northern half of the country and below-average temperatures along southeastern coastal areas is expected.

* Assessment based on information as of September 28th
Australia Outlook

The short term 9 to 22 October rainfall forecast indicates a likelihood of rainfall being received over wheat-growing areas, with 15mm or over expected in southwestern Western Australia, southern Victoria, Tasmania, eastern New South Wales, and southeastern Queensland. During the same period, daytime maximum temperatures are expected to be above-average in most areas, particularly in southwestern Western Australia, and nighttime minimum temperatures are expected to be above-average along the west and east and below-average in the central states.


The long-term October-November-December outlook indicates a likelihood of below-average rainfall for most areas. During the same period, daytime maximum and nighttime minimum temperatures are likely to be above-average throughout the country.


Source: Australia Bureau of Meteorology

* Assessment based on information as of September 28th
United States Outlook

The 9 to 13 October outlook indicates a likelihood of below-average precipitation over most central and eastern areas, particularly in the Lake States, Corn Belt, and Appalachian regions. Above-average precipitation is expected across much of the west, particularly in the Pacific Northwest, and in some far south areas. During the same period, temperatures are expected to be above-average across most central and western areas, particularly along the Northern Plains, and below-average across much of the east, particularly in the Mid-Atlantic region.

For the long-term seasonal October-November-December outlook, below-average rainfall is expected only in the Pacific Northwest and from eastern areas of the Lake States to western areas of the Northeast. Above-normal precipitation is expected for much of the Southern Plains through the Northeast, particularly in southern Georgia and northern Florida. During the same period, above-normal temperatures are expected along the west, south, and east, particularly in the Pacific Northwest and Northeast. In most of the centre through inland areas of the Southeast, there are equal chances of above and below-normal temperatures.

Short-term and Seasonal Outlooks

Appendix 1: Terminology & Definitions

Crop Conditions:

**Exceptional**: Conditions are much better than average* at the time of reporting. This label is only used during the grain-filling through harvest stages.

**Favourable**: Conditions range from slightly lower to slightly better than average* at reporting time.

**Watch**: Conditions are close to average* but there is a potential risk to final production. The crop can still recover to average or near average conditions if the ground situation improves. This label is only used during the planting-early vegetative and the vegetative-reproductive stages.

**Poor**: Crop conditions are well below average*. Crop yields are likely to be more than 5% below average. This is only used when conditions are not likely to be able to recover, and an impact on production is likely.

**Out of Season**: Crops are not currently planted or in development during this time.

**No Data**: No reliable source of data is available at this time.

*“Average” refers to the average conditions over the past 5 years.

Drivers:

These represent the key climatic drivers that are having an impact on crop condition status. They result in production impacts and can function as either positive or negative drivers of crop conditions.

**Wet**: Wetter than average (includes water logging and floods).

**Dry**: Drier than average.

**Hot**: Hotter than average.

**Cool**: Cooler than average or risk of frost damage.

**Extreme Events**: Catch-all for all other climate risks (i.e., hurricane, typhoon, frost, hail, winter kill, wind damage, etc.). When this category is used, the analyst will also specify the type of extreme event in the text.

**Delayed-Onset**: Late start of the season.

Crop Season Nomenclature:

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

<table>
<thead>
<tr>
<th>Country</th>
<th>Crop</th>
<th>Season 1 Name</th>
<th>Season 2 Name</th>
<th>Season 3 Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Soybean</td>
<td>Spring-planted</td>
<td>Summery-planted</td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>Maize</td>
<td>Summer-planted [larger producing season]</td>
<td>Spring-planted (smaller producing season)</td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>Wheat</td>
<td>Winter-planted</td>
<td>Spring-planted</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>Maize</td>
<td>Spring-planted</td>
<td>Summery-planted</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>Rice</td>
<td>Single-season</td>
<td>Late-season</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>Wheat</td>
<td>Winter-planted</td>
<td>Spring-planted</td>
<td></td>
</tr>
<tr>
<td>Egypt</td>
<td>Rice</td>
<td>Summer-planted</td>
<td>Nili season (Nile Flood)</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>Maize</td>
<td>Kharif</td>
<td>Rabi</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>Rice</td>
<td>Kharif</td>
<td>Rabi</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>Rice</td>
<td>Wet-season</td>
<td>Dry-season</td>
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<tr>
<td>Mexico</td>
<td>Maize</td>
<td>Spring-planted</td>
<td>Autumn-planted</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>Maize</td>
<td>Main-season</td>
<td>Short-season</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>Rice</td>
<td>Main-season</td>
<td>Off-season</td>
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<td>Rice</td>
<td>Wet-season</td>
<td>Dry-season</td>
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<td>Russian Federation</td>
<td>Wheat</td>
<td>Winter-planted</td>
<td>Spring-planted</td>
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<tr>
<td>Thailand</td>
<td>Rice</td>
<td>Wet-season</td>
<td>Dry-season</td>
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<td>United States</td>
<td>Wheat</td>
<td>Winter-planted</td>
<td>Spring-planted</td>
<td></td>
</tr>
<tr>
<td>Viet Nam</td>
<td>Rice</td>
<td>Wet-season</td>
<td>Dry-season</td>
<td></td>
</tr>
</tbody>
</table>

* Assessment based on information as of September 28th
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. Crop condition information is based upon information as of September 28th. Where crops are in less than favourable conditions the climatic drivers responsible for those conditions are displayed. The crop calendar is provided as a point of reference to provide information on what part of the life cycle the crops are currently in for each area.

Spring Planted Wheat Conditions for AMIS Countries

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

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

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

* Assessment based on information as of September 28th
Soybean 2 conditions over main growing areas are based upon a combination of national and regional crop analyst inputs along with earth observation data. Crop condition information is based upon information as of 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.
Prepared by members of the GEOGLAM Community of Practice
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Climatic Influences by Climate Hazards Center of UC Santa Barbara

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

Photo courtesy of Kara Mobley

https://cropmonitor.org/

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