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The Canadian Agriculture Weather Prognosticator

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World Weather At A Glance

- Southern Australia winter crops are still favorably established
- Queensland and northern New South Wales winter crop areas are drier than usual
- India's monsoon has performed much better than expected
- Southeast Asia drying in late July was temporary as rain improves in early August
- China experiences flooding rain in parts of the north impacting summer crops
- Argentina's drought seems to be never ending especially in western wheat areas
- U.S. weather normalizes in many areas, but still too dry in upper Midwest and Texas
- Europe weather finally trends wetter, but late winter crop harvesting gets delayed
- Southern Russia drying out
- Mexico still in drought

PDO Breaks Down, Monsoon Moisture Fails

Every failed weather outlook is a lesson learned, but let it be known that these are certainly unprecedented times. World Weather, Inc. looked at six years all of which were very closely related in regards to upper air wind flow patterns and in relation to the multi-year La Nina event that abated in January and gave way to El Nino a few months later. Not one of those years had a failed southwest U.S. monsoon moisture feed like this year.

Never before had we experienced such a strongly negative Pacific Decadal Oscillation Index for more than two years and still come up with no well defined trough of low pressure in the western United States. And it has been a very long time since the Prairies have had so many years of struggle over moisture shortages.

August weather will not be capable of producing a serious change in the Prairies—at least not until significant cooling pushes through the region and then warmer air attempts to return. That means the latter part of this month and/or early September.

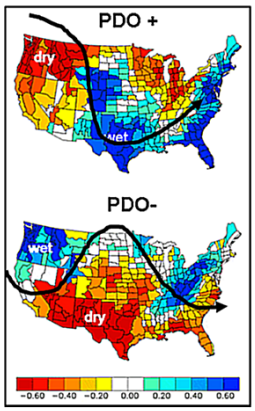
The failed monsoon moisture in the southwestern United States has been a huge event that influenced much of North America. Without that monsoon moisture and without the well-defined trough of low pressure in the western United States there was no way that Canada was going to get rain .

A weak insurgence of monsoon moisture did occur in late July and that moisture reached as far to the north as Wyoming and a part of southern Montana, but without a deep trough of low pressure coming into the western parts of North America there has been no opportunity to pull the moisture any farther to the north bringing rain to the drought stricken Prairies.

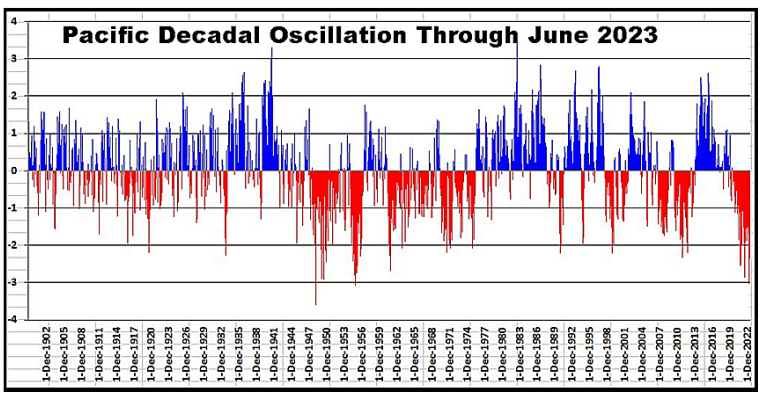
A pool of moisture in Montana and Wyoming at the time of this writing on Aug. 2 was expected to bring rain across southern North Dakota, South Dakota and Nebraska before moving to the lower and eastern U.S. Midwest, but the moisture was not expected to occur any farther to the north.

A similar bout of moisture advertised for Montana, southern Alberta

PRECIPITATION ANOMALIES ASSOCIATED WITH PDO PHASES



PDO has been strongly negative (less than -1) for 25 months which has never occurred previously.



PDO Breaks Down; Monsoon Moisture Fails (continued from page 1)

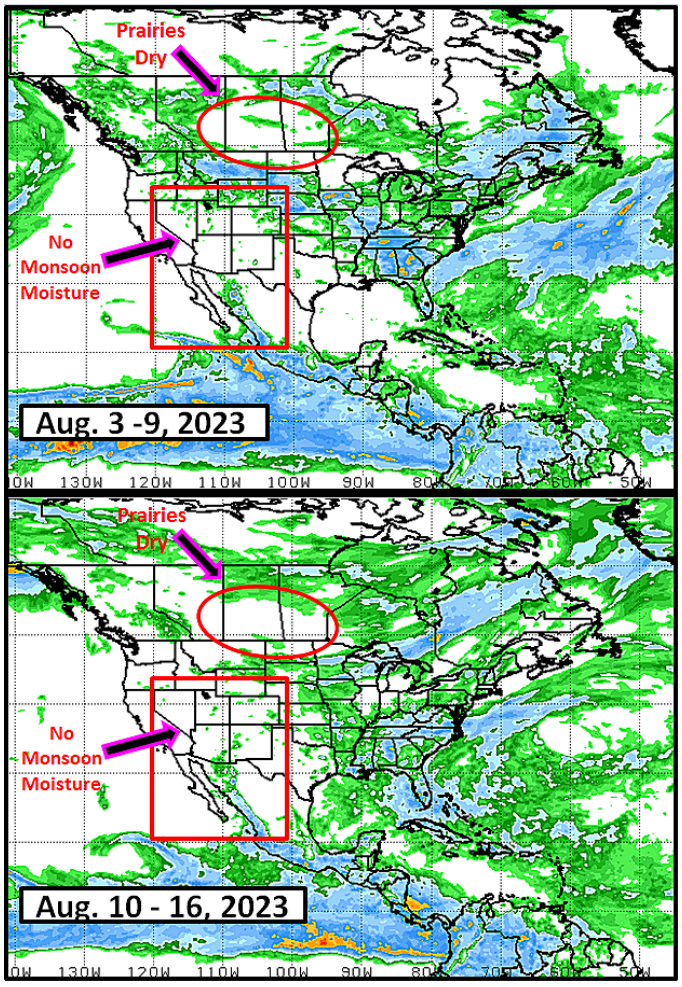
and southern British Columbia during mid-week next week is also expected to move east southeasterly through the U.S. missing most of the Prairies.

This latter event brings colder air to the Prairies for a little while next week and that might scare a few folks when the low relative humidity in the region allows temperatures to drop down deeply into the positive single digits. No frost or freeze is presently expected, but it will be chilly. The next best "hope" for rain would occur when warmer air returns to the Prairies after mid-month, but without the U.S. monsoon moisture feed in place confidence is very low that a serious rain event will reach the Prairies.

Most computer weather forecast models take the sputtering monsoon moisture in the southwestern United States completely out of the forecast for a while this weekend and into next week and only brings it back into the southwestern states, Great Basin and U.S. Rocky Mountain region as a sputtering shower pattern of limited significance in the second week of August.

There is some potential for a late season insurgence of monsoon moisture in the southwestern United States, but the upper air weather pattern may not support it well enough to bring a significant moisture flux far enough north to make it rain in the Prairies. Similarly there are no large scale storm systems advertised in the northeastern Pacific Ocean that would bring rain in from the west. As a result, the Prairies are likely heading into yet another month of poor rainfall.

Much hope in the rainfall forecast for the Prairies this summer was coming from the negative phase of PDO because that pattern normally brings cooler temperatures to the western part of North America while it is warm in central North America. The pattern also brings a deep trough of low pressure to the western U.S. while building a ridge over the middle of North America. Had the scenario verified rain would have fallen in both the Prairies and the northern U.S. Plains



The negative PDO is still with us today, but ocean surface temperatures in the Gulf of Alaska and off the U.S. coast are changing rapidly and the end result is a quick decline in the negative PDO. As the negative PDO becomes weaker it will be less influential which further reduces the potential for a trough of low pressure to evolve during August over western North America to possibly bring one last-ditched effort to make it rain in the Prairies before the summer ends. The combination of rapidly declining negative PDO and the failed southwest U.S. monsoon leaves very little incentive for rain to fall significantly during August.

All of the short term forecast models suggest little rain of significance except west of the Alberta Highway Two corridor in the next two weeks. Any change that occurs in the second half of the month would have to occur as a result of a very unusual weather pattern that would have to break the prevailing pattern and defy the failing southwest monsoon moisture and bring some kind of miraculous rain event in from the Pacific and that just does not seem very likely.

September weather could certainly turn wetter, but until World Weather, Inc. can see some return of "expected" rainfall based on the pattern and tools we have found to be useful in the past the best forecast is going to be persistence.

El Nino events of the past have suppressed precipitation in the Prairies during the fourth calendar quarter and on into the first quarter of the new year. The drier and warmer bias leaves a narrowing window of opportunity for improved rainfall in the Prairies from September through October. Once November arrives, it may be very difficult to get large volumes of moisture across the Prairies if this El Nino event is like those of the past. Because of that risk it will be imperative that significant rain falls for 2024 planting at some time in September and October.

U.S. Weather Stabilizing; Not Much Change Likely

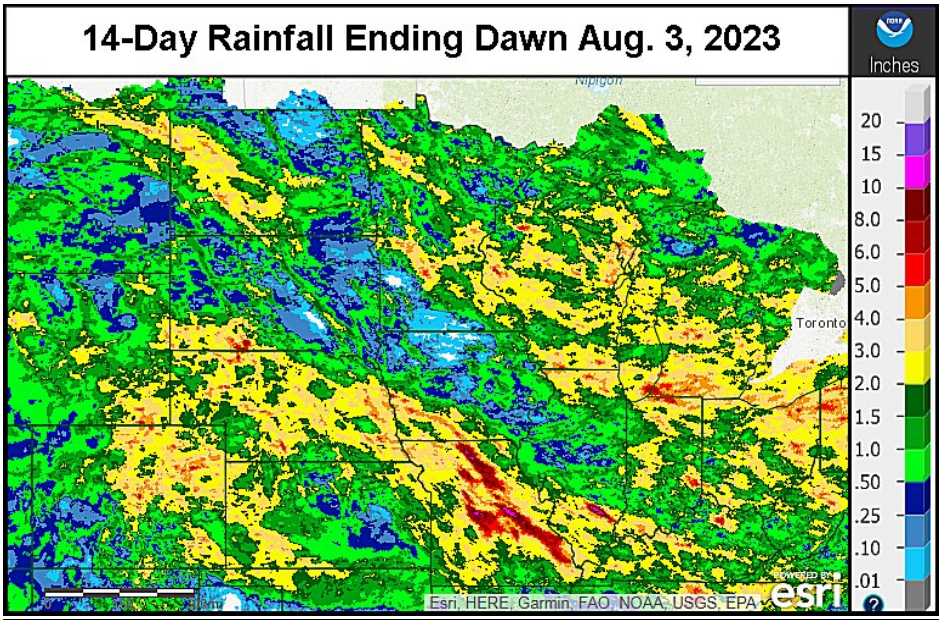
U.S. weather over the past few weeks has had a drier than usual bias from the eastern Dakotas and western Minnesota through a large part of northern, central and southeastern Iowa to central Illinois. Some of the rainfall in this region was less than 0.50 inch resulting in net drying and a rising level of crop stress.

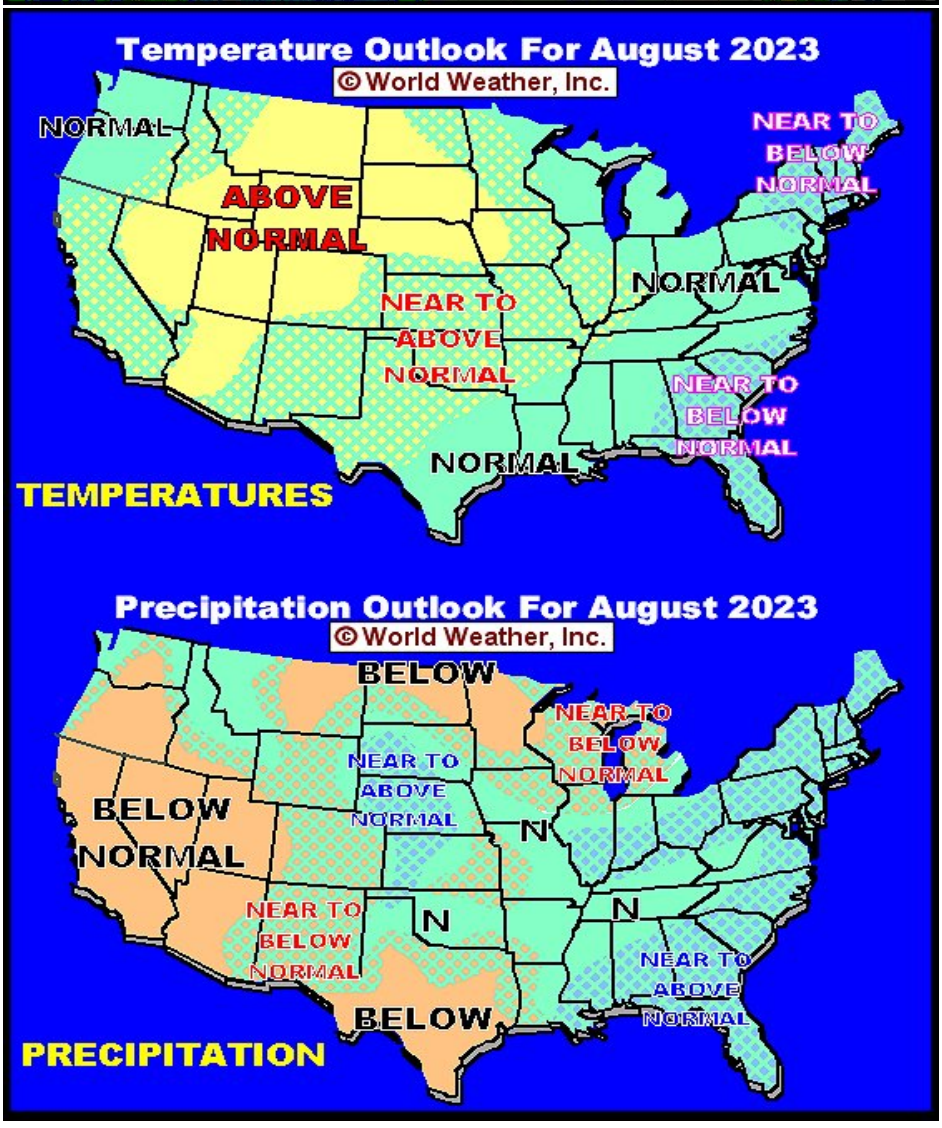
Recent rain from Nebraska into southwestern Iowa, Missouri, southern Illinois and western Kentucky was sufficient for a notable increase in soil moisture and crop stress relief. Other areas in the Great Lakes region southward to the heart of Ohio and Pennsylvania received abundant rainfall as well easing moisture deficits that built up during the March through June period. Crop conditions improved in these areas as well as in the southwestern Corn and Soybean production region.

The balance of August 2023 will be similar. The areas that have been driest in recent weeks may continue to have a lower than usual moisture profile and a higher level of crop stress periodically. Other areas in the Midwest as well as the Delta and southeastern states will see a routine occurrence of rain and seasonable temperatures to support relatively good crop development.

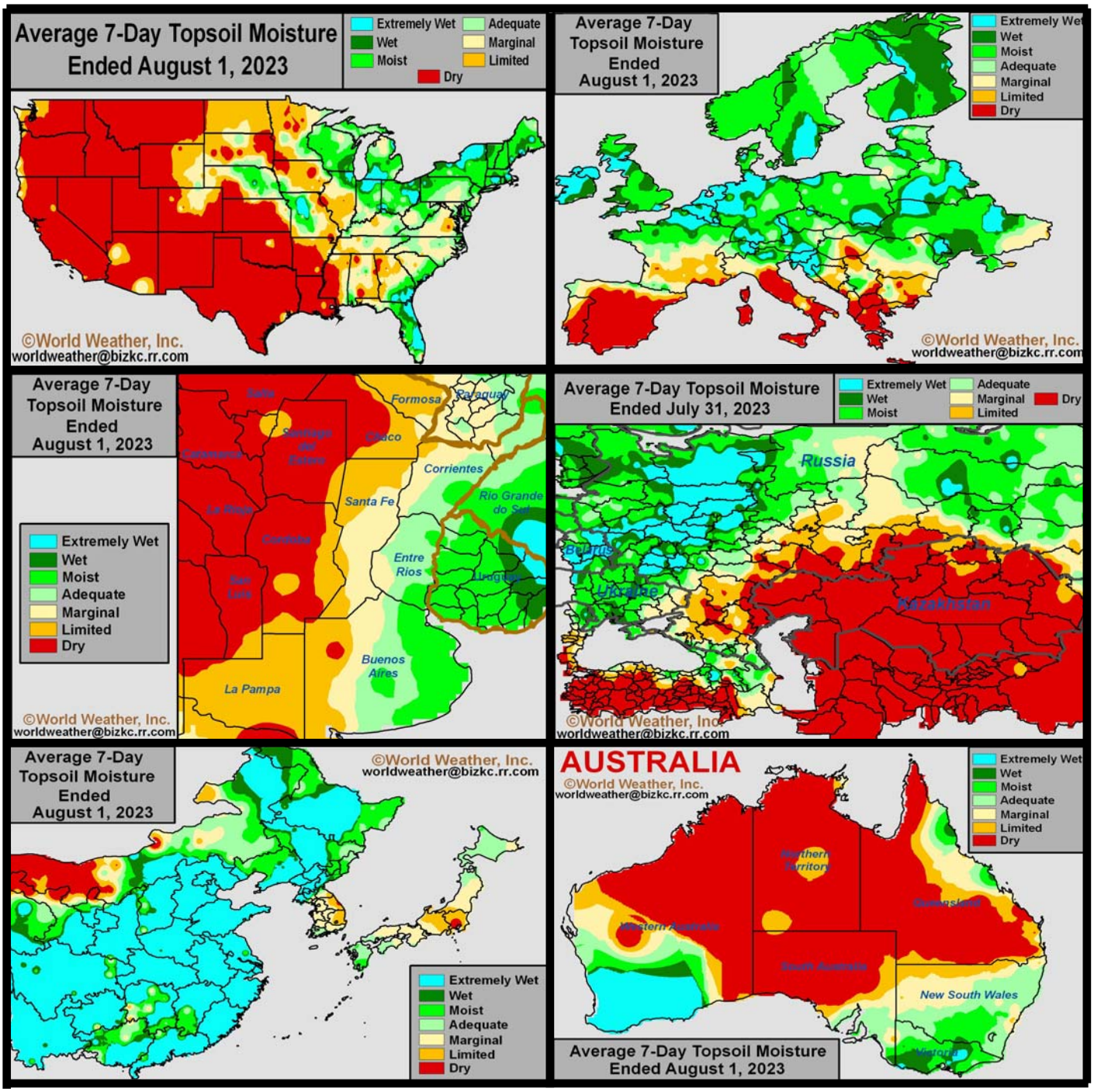
Portions of the U.S. central Plains will also be a little wetter biased during the balance of this month maintaining a good summer crop outlook, but possibly slowing some of the late wheat harvest. The far northern Plains and most of the western and south-central U.S. will be dry biased.

As a result of these patterns, World Weather, Inc. does not anticipate a huge change in U.S. summer crop production. Some lighter yields are likely from the northwestern production areas of the Midwest while good yields come from most other areas. Missouri and Illinois will have losses from early season crop stress, but the losses incurred should not worsen.





Selected Weather Images From Around The World



China has become quite wet this summer and that may not be providing the best environment for summer crops. Flooding has occurred periodically in the northeastern provinces and more recently in Hebei and Shandong where some crop damage resulted. In contrast, western Argentina wheat areas are still drought stricken and crops are not established well and may suffer a decline in production if improved soil moisture and crop establishment does not occur soon. Northern and central Europe has trended wetter recently and crop conditions across the continent are suspected of improving in the north, but still a little too dry in parts of the south. Winter wheat, barley and canola in Australia have established well in most southern crop areas, but there is a big need for rain in Queensland, northern New South Wales and parts of interior South Australia. U.S. weather is still too dry from the Dakotas and Minnesota through Iowa to parts of Illinois and northeastern Missouri. Some relief to U.S. dryness is forthcoming.

August To Be Warmer Biased; Limited Rainfall

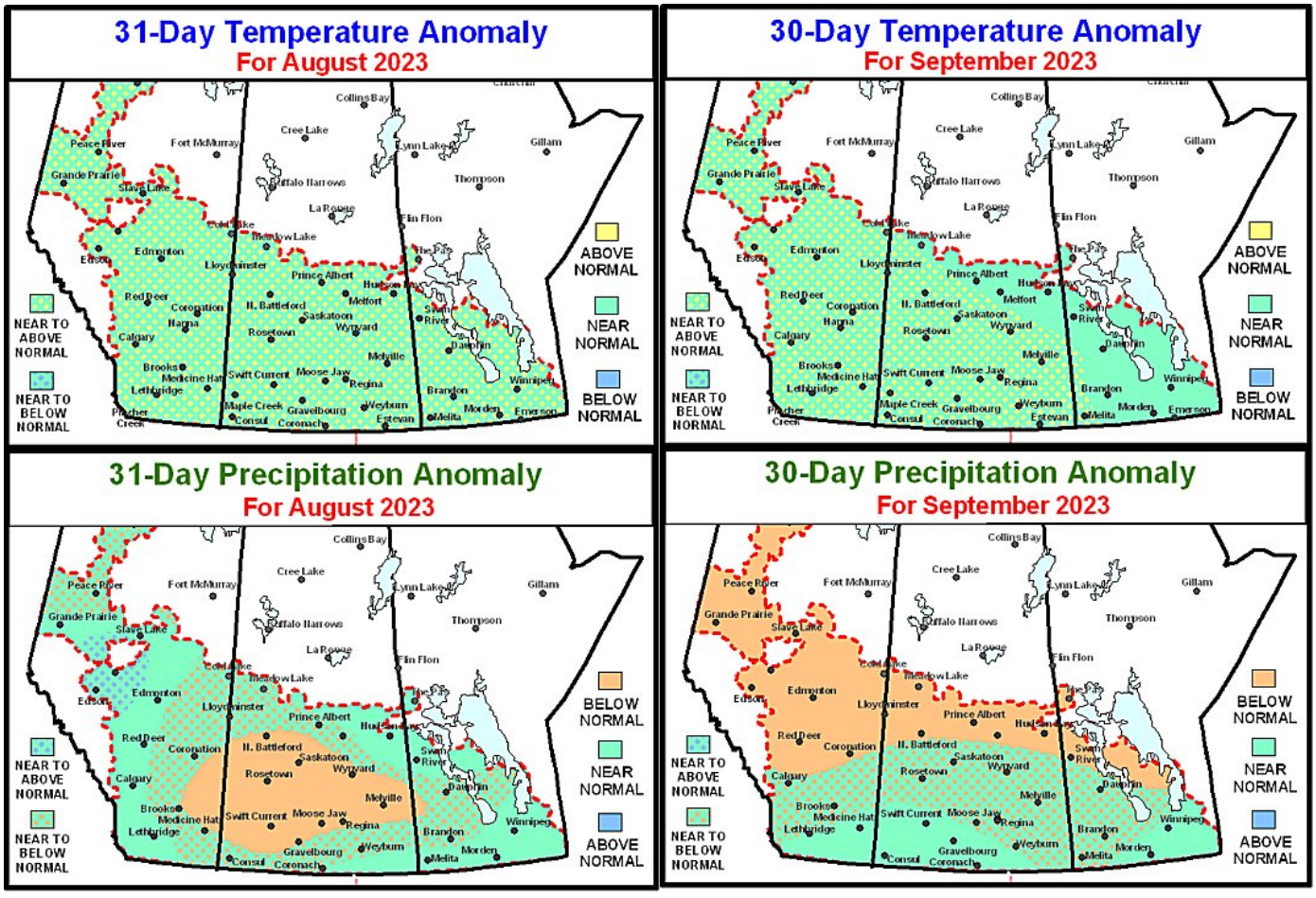
Persistence would have been the best forecast for the summer this year and now that World Weather, Inc. is convinced that the monsoon moisture from the U.S. is not coming and there will be no great troughs of low pressure in the western United States it will probably rain like crazy in August, but that is not the official forecast. We believe the month of August will be much like that of July with near to above normal temperatures and restricted rain.

The heart of the Prairies will likely have the most anomalously low precipitation in August. Areas west of the Alberta's Highway Two will continue getting the Prairies' most routine rainfall. Cooling expected during the second week of August should bring with it a little rain to the eastern parts of the Prairies, although the atmospheric moisture will be limited in such a manner to prevent generalized rain of significance from evolving.

There is some potential for warming in the second half of August, but close to the end of the month there will be some potential for another surge of cool air. These two bouts of cool weather are not well timed and confidence is low which is why we have left the average temperature bias for the month a little above normal.

Confidence in September weather is also very low. Until there is some kind of verification between actual weather in the Prairies and one of the various past weather patterns that we have been following there is not much reason to feel good about the outlook. September and October will be the two most varied months of weather for a while and most everyone will be praying from better rainfall during the period so that there is at least some moisture in the soil for use in the spring of 2024. El Nino biases in the November through February period do not usually offer much abundant moisture to the Prairies and that will leave quite a bit of pressure on September and October precipitation to restore the moisture profile. The bias for an El Nino winter is warmer and drier than usual and without greater rain in September and/or October that would possibly leave the Prairies in dismal shape for the start of 2024 planting.

September temperatures should be near to above normal with the most seasonable readings expected in the east. If frost and freezes are avoided in the last days of August and early September the next best time for such conditions should evolve in the middle and latter part of September.



Dryness Raises Potential For Late Season Cold Surge

Dry soil across much of the Prairies will restrict moisture feedback into the atmosphere keeping relative humidity well below normal. The dry air has already been responsible for warmer than usual weather during much of the summer, but now it raises the potential for greater early autumn cooling.

Thinking back earlier in the summer most of us only remember the dry and hot bias, but there were also some impressive cool mornings as well. Temperatures swung low enough earlier in the summer to induce some frost in pockets across Saskatchewan. The event had a low impact on most areas, but a few fields of grain and oilseed were impacted to some degree.

Drought always breeds wild swings in temperature. An atmosphere low of moisture will experience faster heating and cooling. To a large degree the excessive heat reported in the Prairies at times this spring and summer was a byproduct of the low relative humidity.

Moisture in the air acts as an insulator. It helps to hold heat in on the more humid days keeping nighttime low temperatures higher than usual. Similarly, the more humid the air is the less warming occurs during the afternoons. Without the moisture, though the air will heat and cool much faster and that is how excessive heat occurred in May and July to a large degree. This is true for any area on the planet which explains why North Africa, the Middle East and parts of Europe experienced warmer than usual weather during a part of the summer. Those areas had dried out much like that of Canada and the southern and western United States where there was also abundant heat.

The lack of moisture in Canada this late summer and early autumn will also lead to some impressive cool surges. The first few impressive cool air masses that pass through the Prairies are liable to drop temperatures more abruptly than one might think raising the potential for frost and freezes to occur earlier than usual.

The potential for early frost and freezes has been rising as the weather forecast continues to get drier later in our growing season. While many of us are still dealing with 30+ degree afternoon temperatures there is a growing potential for temperatures to slip into a frost and freeze environment earlier than usual.

For many of our crops this year such an event of early season frost and freezes would not be a huge problem because crop maturity is well ahead of its usual pace in some of the driest areas. Crop maturity is expected to occur earlier than usual in most of the drought stricken areas and that might help prevent the colder weather from having much impact on already damaged crops.

There is certainly very little to worry about in early canola, wheat, barley or oat fields. However, late season canola, corn, soybeans and flax could run some risk of damage if early season frost and freezes impact a part of the production region.

The next full moon, for those who believe early season frost and freeze events are associated with that event, will occur August 30. World Weather, Inc. is not advocating an association with frost and freeze events and the full moon, but there does seem to be some occasional association. However, like our 90-day and 180-day dense fog and hoar frost predictors the full moon scenario does not always work and statistically speaking it is not a valid argument for predicting frost and freezes. With that said, though, if there is already a risk of cold weather near a full moon date there does seem to be a higher degree of association as to when the coldest morning occurs and when the full moon occurs.

The combination of low relative humidity across the Prairies and the prospects for a full moon at the end of the month certainly should raise at little interest in weather at that end of the month. For now, everyone's focus is on the warm weather and lack of moisture thinking it will never turn cooler again, but as you know things can change in a hurry across the Prairies.

World Weather, Inc. believes there is support for some late month cooling in the Prairies and it may linger into early September as well. No specific event has been identified as a potential frost/freeze threat, but forecasters are closely monitoring the region or such a possible event.

El Nino should attempt to restrict the occurrence of frost and freezes, but this El Nino's influence on the middle latitudes has not yet become very significant and the prevailing drought has a much greater influence on North America. As long as rain continues to be lacking in the Prairies, World Weather, Inc. believes there is potential for a surprisingly great amount of cold to occur in late August or early September. That risk is only going to be valid if there is a notable cool front coming to the Prairies during that time period.

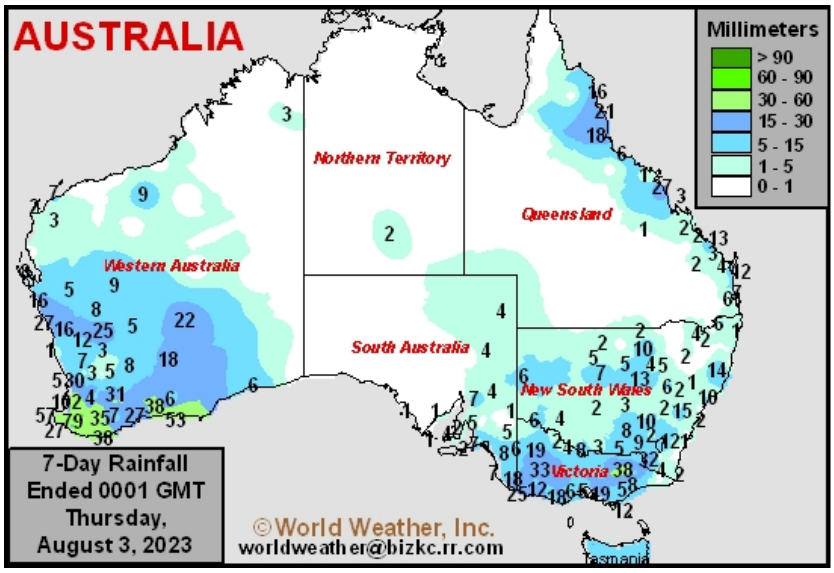
A significant cool front with a large surface high pressure center to follow it that comes into the Prairies while the air is still dry will have the potential for dropping the temperatures to the frost threshold this late summer and early autumn. There is no such event on the forecast charts today, but as long as the drought prevails we should be vigilant for such an event to evolve.

Analog weather data does not advertise a cooler than usual August or September, but it is very important to recall that it only takes a single night of cold weather to induce frost and freeze damage. It can be warm all other days in the forecast and damage can still occur.

Eastern Australia Will Continue To Dry Down

Significant moisture shortages are ongoing across Queensland and northern New South Wales due to the lack of rain for an extended period of time. Soil moisture is also quite limited in much of South Australia and northern and eastern most crop areas of Western Australia, although subsoil moisture is more favorable in those areas than in Queensland. The remaining production areas in New South Wales, Victoria, southeastern South Australia and southwestern parts of Western Australia generally have adequate to marginally adequate soil moisture.

Unirrigated wheat and barley prospects in Queensland and far northern New South Wales are less than favorable to poor due to the ongoing moisture deficits. Production is already expected to be below normal for the region this year and significant losses will be possible if dryness persists through the end of the growing season which is possible with El Nino taking more control of the atmosphere during the next few months. Northern New South Wales not only produces wheat and barley, but canola as well. Irrigated crops in the region should be in great shape and have a good long term outlook because of favorable water supply left over from the recent La Nina event.



Western and southern Western Australia, southeastern South Australia, Victoria, and southern New South Wales still have ample moisture to support generally favorable winter wheat, barley, and canola conditions. Rainfall in these areas should be more routine and favorable than that of Queensland and northern New South Wales, although there is some concern because of weak positive Indian Ocean Dipole conditions which might reduce some of the rain in southern parts of the nation as well.

Dry or mostly dry weather will persist for Queensland and northern New South Wales during the coming week. Any rain that does occur will be lost to evaporation. Western Australia and South Australia into Victoria and southern New South Wales will otherwise see a mix of erratic rain and sunshine. A frontal boundary will initially promote rain for South Australia, Victoria, and southern New South Wales today and Friday. Another front will initially bring rain to Western Australia late Sunday through Tuesday before shifting to South Australia and Victoria Wednesday. Moisture totals by next Thursday morning will range from 0.10 to 1.00 inch and local amounts of 1.50 inches or slightly more in southwestern Western Australia, eastern Victoria, and southeastern New South Wales. Dry or mostly dry weather will persist in Queensland and northern New South Wales August 11 – 17. The remaining crop production areas will again see a mix of erratic rain and sunshine.

Soil moisture in unirrigated fields will remain short to very short in Queensland and northern New South Wales in the coming weeks. Winter crop prospects will remain less than favorable to poor as the ground continues to firm. Other locations will dry down marginally in the coming weeks as well despite the periodic rain. Short-term winter wheat, barley, and canola prospects will remain generally good.

Rainfall later this winter and spring is still expected to trend lighter than usual for the main winter crop areas in Australia due to El Nino. The Indian Ocean Dipole is currently neutral, but is still expected to gradually trend positive in the coming weeks. A positive-phased Indian Ocean Dipole also helps restrict rainfall in southern portions of Australia's crop country. The reduction in planted acreage combined with potential for drier than normal weather later in the growing season continues to promote a smaller crop compared to those of the past few years when La Nina was prevailing. However, as long as timely rain occurs, production could still trend near normal in Western Australia, South Australia, and Victoria this year.

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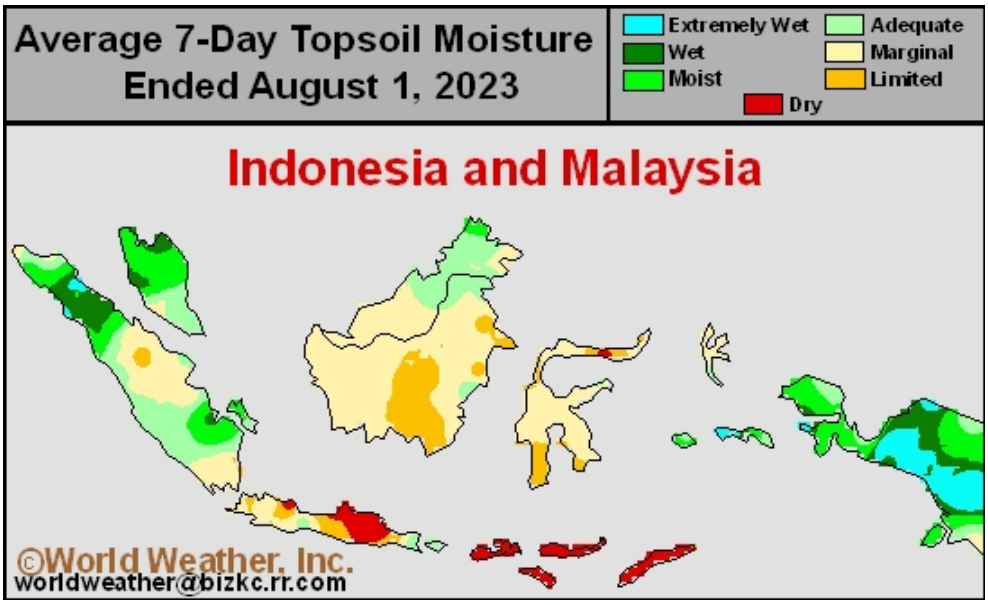
Indonesia, Malaysia To See Rain Return After Dryness

Peninsular Malaysia and portions of Sumatra received much-needed rain over the past few days ending a period of unusual dryness that impacted much of Indonesia and Malaysia. Topsoil moisture dropped to its lowest levels since prior to the multi-year La Nina event that occurred 2020-January of 2023. Short-rooted crops likely experienced some minor moisture stress during the past week, but subsoil moisture was still favorable to support crops. Rain will return to much of Indonesia and Malaysia with exceptions for Java, the Lesser Sunda Islands, and southeastern Sumatra through the middle of next week. Crop conditions will either improve or remain favorable for the short-term. There are still concerns El Nino will dry down the region more significantly later this year possibly impacting a host of crops with possibly lower production.



Peninsular Malaysia into northern and portions of central Sumatra saw a mix of rain and sunshine during the past week. Moisture totals for the seven-day period ending Tuesday morning ranged from 0.63 to 3.07 inches of rain with local amounts up to 4.88 inches in Peninsular Malaysia. Most of the rain occurred in the most recent few days. Pockets in northern Borneo and Sulawesi also received 0.24 to 2.64 inches of rain during this time. However, most other locations in Indonesia and Malaysia received little to no rain.

Moisture shortages persist in Java and the Lesser Sunda Islands due to a lack of rain in recent weeks. Many areas in Borneo, Sulawesi, and southern and central Sumatra also dried down and have marginally adequate to short soil moisture. These locations still have adequate moisture further down in the soil. Peninsular Malaysia and northern Sumatra generally have adequate soil moisture.

The drying trend in Borneo, Sulawesi, Java, and portions of Sumatra may have slowed short-rooted rice, corn, sugarcane, and other coarse grain and oilseed development in recent days. No significant production potentials are suspected, though timely rain is needed in the near future to reverse the drying trend. Longer-rooted crops, including palm, cocoa, and other crops, still had plenty of moisture to support aggressive growth.

Dryness remains a concern for Indonesia and Malaysia later this year due to El Nino. Other than the drier weather during the past week, most locations received timely rain to support a good environment so far this season. Timely rain must continue, though.

Java, the Lesser Sunda Islands, and southeastern Sumatra will remain drier biased through the middle of next week. Periodic rain will still occur with a few pockets receiving 0.25 to 1.50 inched of rain by next Wednesday morning. Most locations will not receive enough rain to counter evaporation. Malaysia and the remaining locations in Indonesia will otherwise have several opportunities for rain during the coming week. Moisture totals will range from 1.00 to 3.00 inches with locally greater amounts. Much of Indonesia and Malaysia with exceptions for Java and the Lesser Sunda Islands will again have several opportunities for rain August 10 – 16.

Grain, oilseed, sugarcane, and other crop conditions will either improve or remain favorable for much of Indonesia and Malaysia as more frequent rain returns to both countries. Production potentials will remain mostly unchanged. Drier biased conditions are still possible later in the growing season and could impact overall production potentials for this season's crop.

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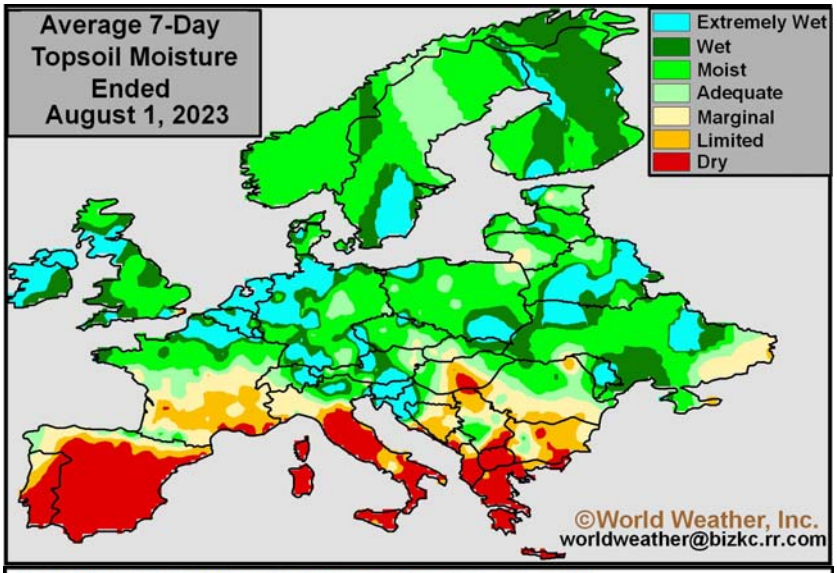
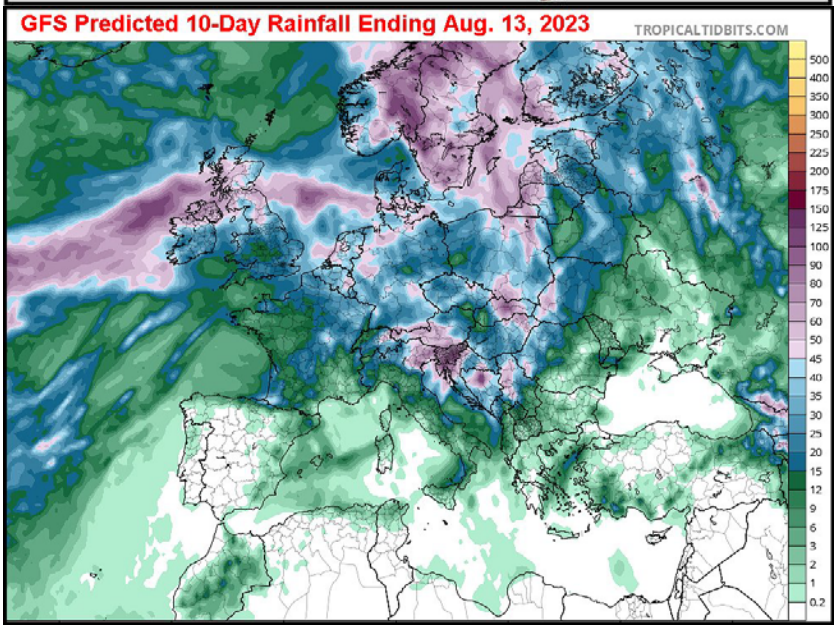
Europe Rainfall Delaying Winter Crop Harvest

Waves of rain were noted in northern Europe during the past week. While the rain was beneficial for the summer crops that have experienced dryness at times over the growing season, harvesting of the winter grains and oilseeds has likely been sluggish. Additional rain through the middle of next week will further slow or delay harvesting and may increase quality concerns. Moisture shortages in southern Europe are ongoing despite some rain in the Balkans region and southern France. Erratic rain will evolve for these locations in the coming days that may improve development conditions in some of the driest locations. However, unirrigated crops may continue to develop unevenly or poorly in the driest fields. Concern for some production decline will persist.





Temperatures were generally near normal during the past week with highest readings in much of Europe reaching the 70s and 80s Fahrenheit. Many areas from the Iberian Peninsula and southern France into southeastern Europe also warmed to the 90s at times. Pockets in Spain, Greece, and Bulgaria also warmed above 100 degrees.

Moisture shortages persist from Spain, Portugal, southern France, and central and southern Italy into a large portion of the Balkans region due to the lack of rain and warm weather in recent weeks. Areas farther north in Europe received enough rain in recent weeks to lift soil moisture to adequate or excessive levels.

The recent period of wet weather has slowed or delayed harvesting of the winter grains and oilseeds in northern Europe. Producers have likely had some opportunities to get into the fields between rain events, though drier weather is needed to support more aggressive harvesting. The main concern has been over some grain quality reductions in the fields that received the greatest amount of rain. Additional precipitation over the coming week to ten days may further increase the potential for quality declines. Rainfall has otherwise improved or maintained good summer grain, oilseed, and other crop development for northern Europe. Production potentials are generally favorable despite some dryness earlier in the growing season.

The environment has been more favorable for winter grain and oilseed harvesting in southern Europe in recent weeks. However, conditions remain less than favorable to poor for the summer crops, most notably in the dryland areas of the Iberian Peninsula, southern France, and southeastern Europe. The ongoing dryness and periods of warm to hot weather may have accelerated growth and likely reduced production potentials. There is still time for better rainfall to improve development conditions before crops start maturing.

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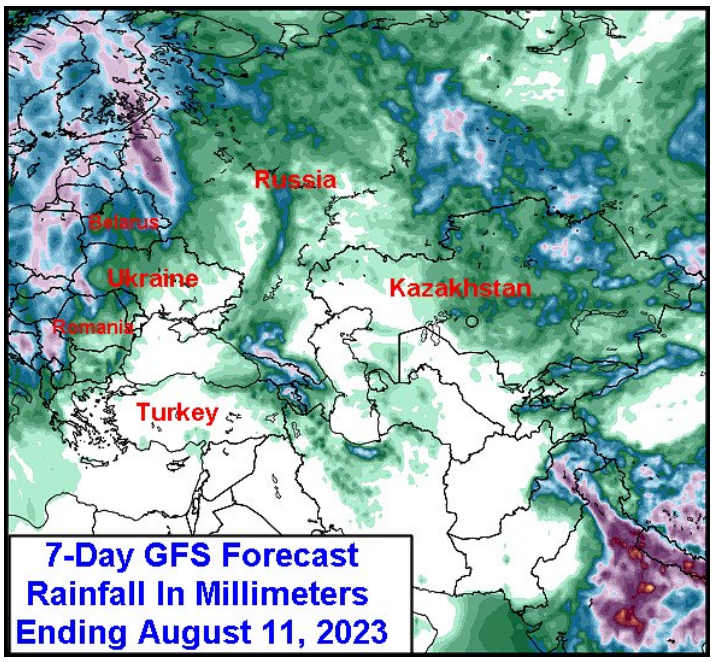
Russia's Winter Crop Harvest To Advance Better

Many areas in western Russia received enough rain during the past week to slow or delay winter wheat, barley, and rye harvesting. Minor quality declines were possible in the wettest locations as well. Spotty rainfall in other portions of the winter crop areas may have also slowed the harvest at times. A large portion of western Russia outside the extreme northwestern production areas will now trending drier than normal during the coming week. The lack of rain and warm weather will help firm the ground and likely expedite harvest progress. In the meantime, spring wheat from Russia's Southern Region through northwestern Kazakhstan to the southeastern New Lands continues to deal with periodic heat and dryness.



Kazakhstan, the 'Southern Region', and immediate neighboring areas in the Ural Mountains region and eastern New Lands have short to very short soil moisture Other production areas in Russia have adequate to excessive moisture.

Frequent rainfall in western Russia likely slowed or delayed winter wheat, barley, and rye harvesting in recent days. Minor quality declines were possible in the wettest fields as well. Production potentials remain favorable, though a period of drier weather in the near future is needed to firm up the ground and support more aggressive harvesting. Other winter crop areas in Russia were able to harvest more aggressive between the periods of spotty rain.

Spring wheat, sunseed, and other crop conditions in the eastern New Lands and northern Kazakhstan are likely variable due to the erratic rainfall in recent weeks. Many fields are too dry to support ideal crop development and are in need of significant rain. Production potentials may have already been reduced due to dryness earlier in the growing season and concern over the potential for additional losses will persist. Many areas in the 'Southern Region' and southern sections of the Ural Mountains region are also too dry for favorable spring grain and oilseed conditions and would benefit from a good soaking of rain. Western Russia and much of the Volga River Basin have enough moisture to support aggressive growth.

Dry biased conditions will prevail over the next ten days from Russia's Southern Region through northwestern Kazakhstan to the southern Ural Mountains region. These areas will experience a few showers and thunderstorms with no more than 0.50 inch of rain resulting. Most of the region will either be dry or will be warm enough to allow evaporation to far outpace any rainfall that occurs.

Other areas in the eastern Russia New Lands and northeastern Kazakhstan will receive periodic rainfall with 0.40 to 2.00 inches. Periods of light and erratic rain will be possible for these locations again August 11 -17, though resulting rainfall may be a little lower compared to the first week of the outlook.

Late season crop stress is expected to continue from Russia's Southern Region into northwestern Kazakhstan and the southern Urals Mountain region where soil moisture is already limited. The heat and dryness will continue to stress filling and maturing spring wheat and reproducing and filling sunseed. The periodic rainfall for other eastern Russia New Lands and northeastern Kazakhstan crop areas will provide a better crop environment.

Western fringes of Russia's crop country will have several opportunities for rain during the coming week. In the meantime, the lack of significant rain in the interior western Commonwealth of Independent States during the next two weeks will promote improving conditions for winter wheat, barley, and rye harvesting. A few days of drying may be needed before aggressive harvesting can resume in the wettest fields. Western Russia will still have ample moisture to support new growth for the summer crops as well. Other locations will likely dry down too much to maintain ideal growth. A good shot of rain may be needed later this month to limit production impacts.

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