TO SUBSCRIBE CALL 913-383-1161 OR WRITE TO WORLDWEATHER@BIZKC.RR.COM

The Canadian Agriculture Weather Prognosticator

Volume XIIII, Issue IIII http://www.worldweather.cc June 3, 2022

World Weather At A Glance

- U.S. crop weather has been good so far this spring, although rain and cool weather at times slowed planting
- Europe turned too dry for a while in May, but will get timely rain in early June
- China's North China Plain has been drying out and needs rain for rain-fed summer crops.
- Far southern China is experiencing a third year of excessive moisture and flooding
- Argentina wheat areas need rain to support planting which is normally most aggressive in June
- Brazil's Safrinha crops have suffered a production cut because of dryness
- Australia wheat, barley and canola planting outlook is very good
- India's first two weeks of monsoonal rain will be lighter than usual
- Russia is favorably moist.

General Weather Theme Still On Track

Despite the relentless colder than usual weather in the past few weeks, the weather trend across Canada's Prairies is still evolving in the general direction of expectations and that should translate into a better potential for rain in the drought-stricken areas soon. Those may sound like famous last words of esteemed weather forecasters of the past, but there is still plenty of evidence that the Prairies are on track for drought relief in the southwest.

Another wave of excessive rain occurred in the latter part of May in the eastern Prairies. The precipitation event turned out to be more dramatic than expected and we can make plenty of excuses why this happened, but the truth of it lies in the persistence of cool weather in the Prairies and a short-lived ridge of high pressure over the heart of the U.S. Midwest. The ridge of high pressure stopped storm systems passing through the northern U.S. Plains and Canada's Prairies from moving to the east southeast. The storms were forced to slow their forward speed and then turn more to the north in order to get around the high pressure ridge aloft over the U.S. Midwest. That made the late May rainfall greater than expected and allowed the cold to perpetuate.

The late May weather was not an omen of things to come, but more a by-product of an overly energized jet stream. What took place in the past two weeks is similar to what should evolve later this summer when the ridge of high pressure is located over the U.S. Plains and not the Midwest. Relocating the ridge over the Plains will force storms to move from the U.S. Pacific Northwest into the heart of Saskatchewan. This storm track should make a large part of Saskatchewan wetter during July and August while the southeastern corner of the Prairies and the Peace River Region into the Swan Hills region of Alberta trend a little drier.

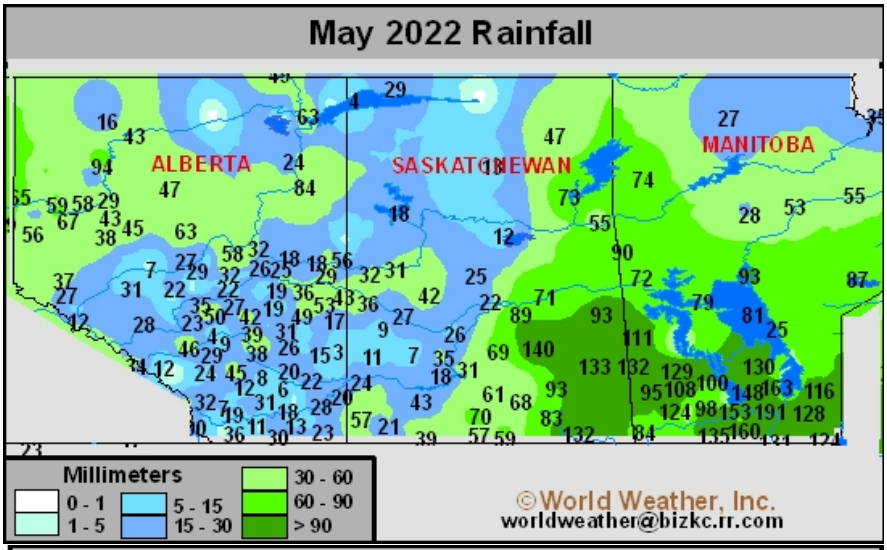
The cold air present in the higher latitudes of North America has been contrasting sharply with the warmer weather that has been evolving in the lower latitudes. This kind of contrast in the atmosphere drives the wind aloft very hard bringing a succession of storm systems across the continent. Normally, the cold air abates better in the month of May and that slows the high level winds aloft (jet stream) down. Had that occurred normally this year the ridge that evolved in late May over the U.S. Midwest would have been in the Great Plains and the wetter biased weather would have been shifted farther to the west bringing more moisture to the drought stricken areas of the Prairies.

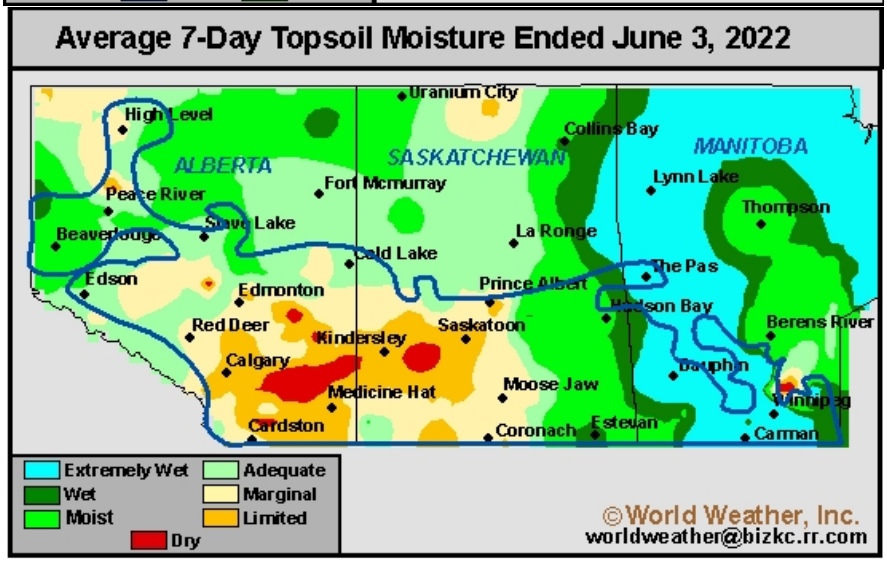
Once the cold air abates from North America in the next ten days, the jet stream will begin to lose its intensity. Slowing the jet stream will allow a high pressure ridge to begin building over central North America and allow a few weather systems to move across the Prairies from west to east bringing a little better distribution of rain. If and when the ridge of high pressure in the central U.S. becomes better established and stronger in intensity, the weather pattern in Canada will turn more decisively wetter in east-central and southern Alberta and west-central, southwestern and some south-central Saskatchewan locations. That is when the drought in the west will

General Weather Theme Still On Track (continued from page 1)

start to see some relief. World Weather, Inc. believes the precipitation pattern of late has not deviated far from our expectations, but the strong jet stream thwarted western Saskatchewan and Alberta rainfall in late May much farther to the east into the already wet crop areas in the eastern Prairies making that situation much worse.

As a result of the extra cold air, the Prairies experienced much more rain than predicted in the east and less rain in the west. With that said, however, be sure to recognize that World Weather, Inc. only expected some timely, erratic and light rainfall in the drought stricken areas during late May and early June with no serious change in drought conditions until greater rain evolved later in June. The expectation was for just enough rain in late May and early June to keep crops viable while waiting for greater precipitation. Unfortunately, the weather extremes in May have left many east-central Alberta and west-central Saskatchewan crop areas very near the point of no return on production potentials.





Erratically distributed rainfall in recent weeks has left some fields teetering on crop failure while other fields are still waiting for rain to induce germination. Much of the driest region has poor to very poor subsoil moisture meaning crops will not be capable of sustaining themselves for very long after germination and emergence without routinely occurring rainfall. At the same time, some of the wettest areas in the eastern Prairies are excessively wet and facing some potential abandonment if rain comes back too soon.

World Weather, Inc. still believes the necessary changes to improve drought status are still forthcoming and weather pattern changes over the next two weeks should open the door of opportunity for that change to evolve as expected. However, if the pattern change fails during the month of June some crop production loss will be inevitable and some folks will tell you that missed rain in the next week to ten days will already result in some losses.

There are many reasons to expect changes in the next few weeks. The changes will impact the drought stricken areas more than other parts of the Prairies, but changes should evolve. La Nina is in a general weakening trend, the negative phase of Pacific Decadal Oscillation (PDO) remains in place and weather patterns of late have not deviated far from the 18-year upper air wind flow pattern. These three features occurring while coming out of the recent solar minimum still provide much incentive for the weather pattern changes that we have talked about for months.

All of these weather patterns have dictated the same general theme for the Prairies which is why World Weather. Inc. has been so insistent that a more favorable weather pattern would evolve this summer. The outlook was never suggestive of ideal crop weather during the early spring. All of the data processed for 2022 suggested some timely bouts of light rain would occur erratically during the late spring while the most significant change in weather would come in July and August when rain falls more routinely. That is still the forecast. In the meantime, the eastern Prairies need to stay dry for a while.

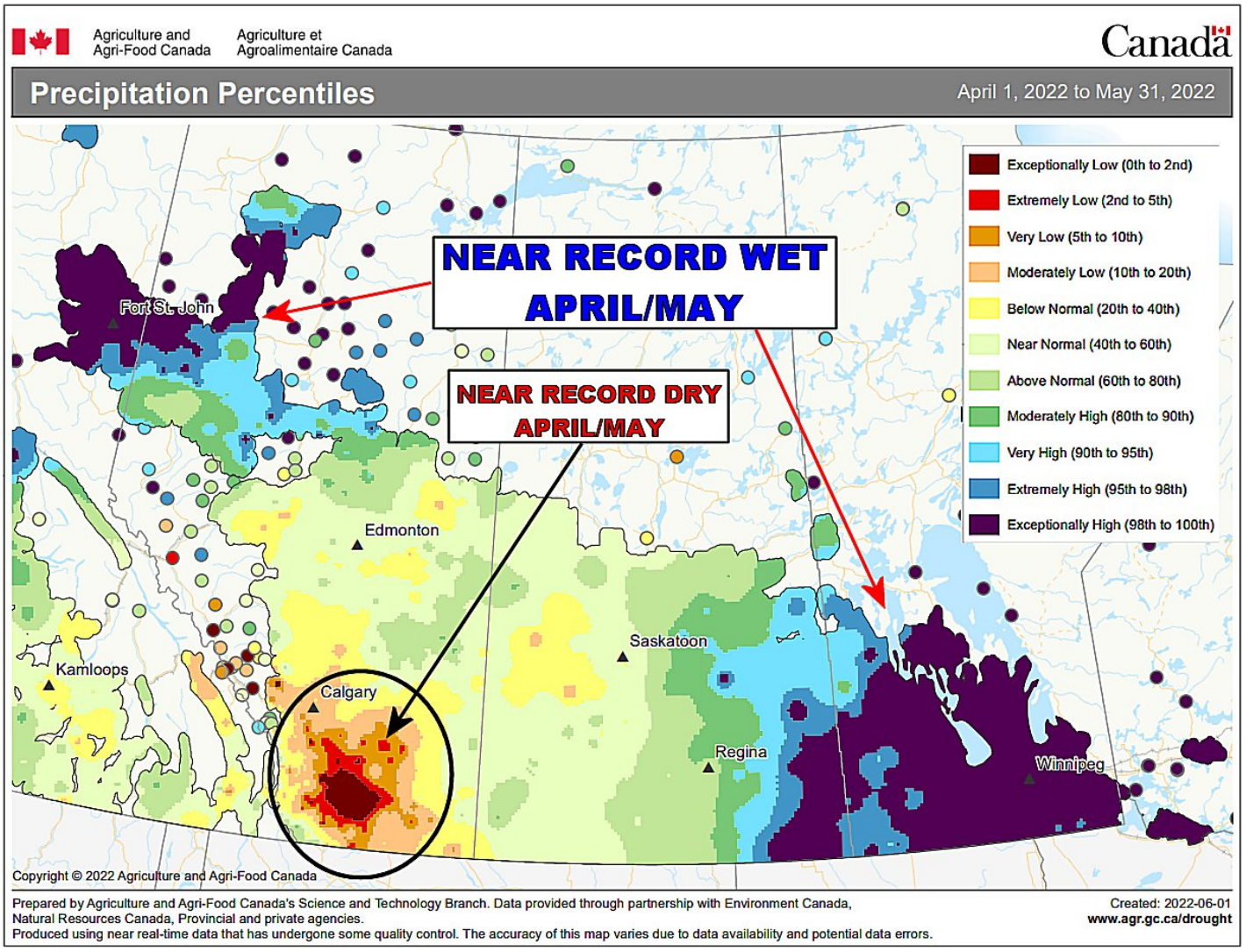
Another Year Of Extremes Under Way In Prairies

Spring (April and May) of 2022 has entered the record books as a year of record or near-record wet biases in portions of the Peace River region in northwestern Alberta and in most of Manitoba, as well as some neighboring areas of east-central and southeastern Saskatchewan. Most of these wetter biased areas are still dealing with the after effects of the wet bias with fieldwork left incomplete. There is need for a significant change and it looks like weather in the coming ten days will be drier biased for the eastern Prairies while the Peace River region experiences some periodic precipitation. No heavy rain is expected in the Peace Country, though.

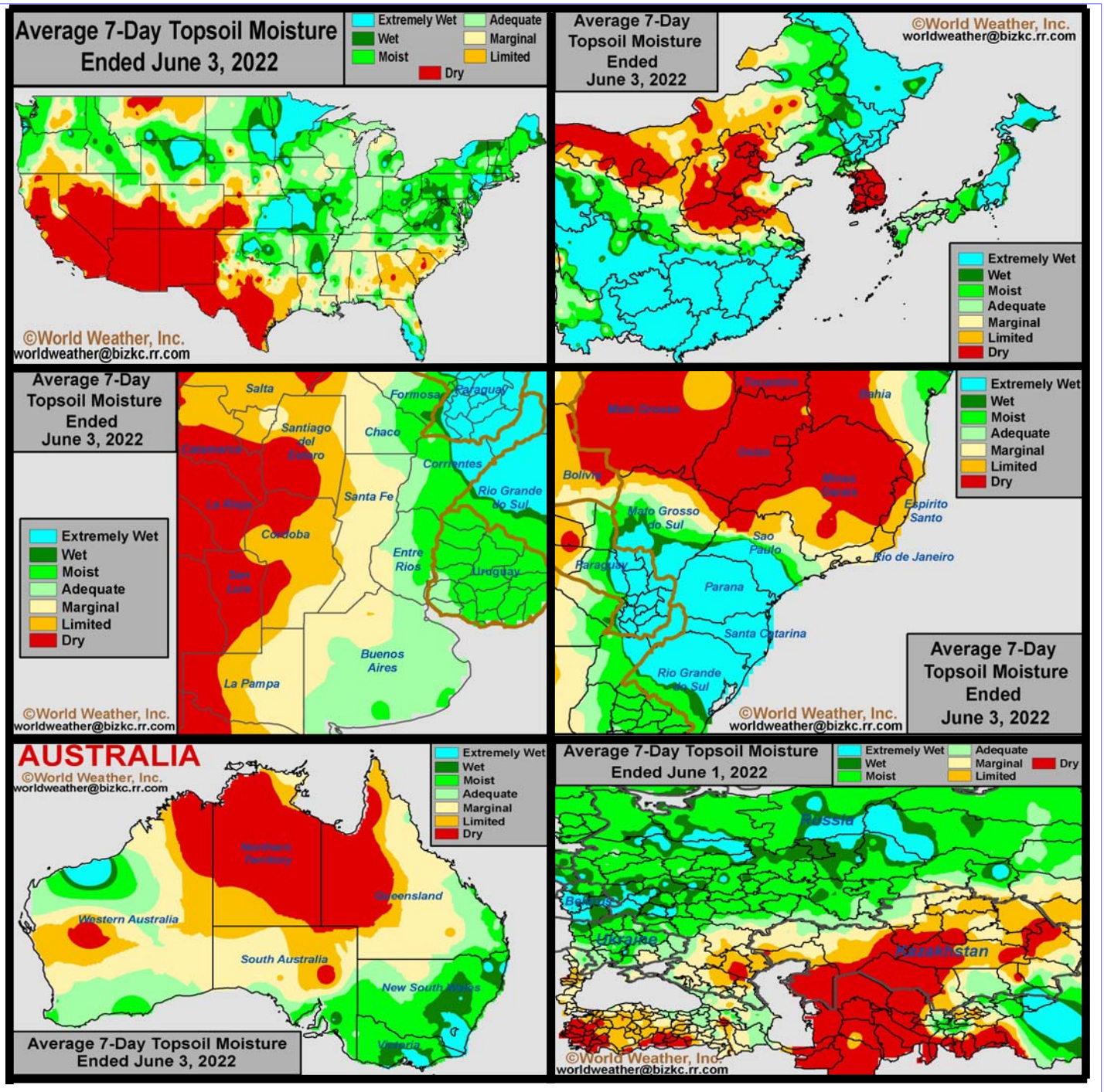
In contrast to the wetter bias, there is a region in southern Alberta that has been much drier than usual. Some areas have reported record or near record dry conditions for April and May in southern Alberta. The area impacted has been small, but given the region's struggle with drought over the past five years there is a high level of concern over the drier biased environment.

Southern Alberta is expecting rain this weekend and early next week to reduce some of the dryness that has been prevailing. Much of the precipitation that occurs will fall near and south of the Highway 9 corridor and rainfall may range from 20 to 45 millimeters resulting in some short term improvement in topsoil conditions. Much more rain will be needed to ensure the region's dryness is going to end. As of this writing (June 3), there is no sign of drought busting rain, but enough moisture is expected in this coming week to ten days to reduce crop stress and offer some improvement to topsoil moisture.

Weather elsewhere in the Prairies during the past 60 days has not been nearly as extreme and fieldwork has advanced, although there are pockets of concern most of which are in western Saskatchewan and east-central Alberta where multiple years of poor rainfall has left soil moisture rated very short. Substantial rain is needed soon to prevent crop failures in areas where the ground is still too dry and facing another week to ten days of similar conditions.



Selected Weather Images From Around The World



U.S. soil moisture is rated favorably and the outlook is calling for a good mix of rain and sunshine over the next ten days to two weeks. That should carry crops into the second half of this month with favorable soil moisture. China has moved into a very definite drying trend in the central Yellow River Basin and North China Plain. China must start getting rain soon to support rain-fed summer crops or there may be some new concerns about moisture shortages hurting early season crop development. In contrast, southern China is incredibly wet impacting its rice and sugarcane production areas. Northeast China needs to dry down too. Argentina's western wheat areas are too dry and unlikely to get much rain for a while. Brazil's wheat areas are plenty wet and so are southern Safrinha corn areas, but corn production cuts did occur because of dryness in the north. Australia's wheat, barley and canola planting outlook remains very good and most of Russia has favorable moisture except the Southern Region where it is turning too dry.

Better Rains Lie Ahead For Drought Area

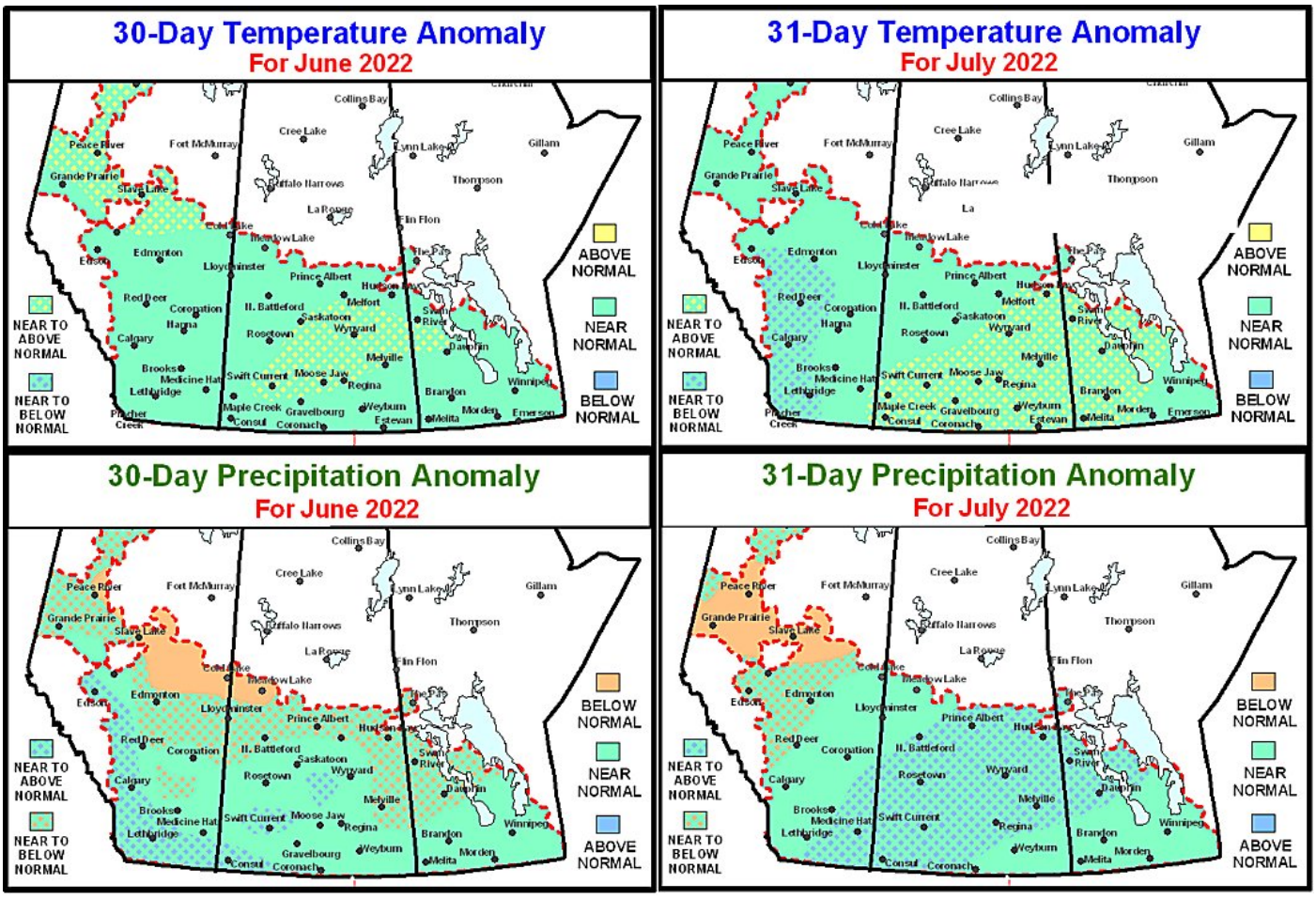
Ridge building is expected aloft during the coming few weeks in central North America. As that process unfolds the drier than usual bias in east-central and southern Alberta and west-central and southwestern Saskatchewan should begin to abate, but it is not a process that will occur quickly. The first half of June will continue to perpetuate a lighter than usual rainfall bias for the drought stricken areas except in this first week of the outlook at which time greater than usual rain may impact Alberta's front range of mountains and in far southern parts of the province near the U.S. border.

Temperatures will become near to above normal during June as the early month pool of cold air finally abates. The removal of that cool pool will also support the high pressure ridge building in central parts of the continent and once the ridge begins to evolve weather in the Prairies should trend wetter in the southwest and central parts of the production region. Since the greater rainfall does not evolve until the second half of the month average precipitation for June is expected to be more near normal than above average, but keep in mind that much of the moisture increase will come late in the month.

Temperatures in June will trend warmer in the second week of the month and average near to above normal for the balance of the month. Temperatures in July will also trend a little warmer than usual in the southeastern half of the Prairies. The amount of July heat that occurs will be determined by the amplitude and mean position of the high pressure ridge and changes in the specific details in both temperatures and precipitation will be made as it becomes better understood where the high pressure system will be centered.

July precipitation should be enhanced by moisture flowing north from the southwest U.S. monsoon flow. The high pressure ridge should be positioned in such a manner that moisture from that source will flow into the southwestern Prairies where it will run into occasional cool fronts to support precipitation. Near to above average precipitation is expected in the heart of the Prairies with emphasis on Saskatchewan.

Some heavy rain is possible in Saskatchewan and possibly the southeastern corner of Alberta in July and August as the upper air wind flow becomes more supportive of bringing moisture and storm systems out of the Pacific Northwest and into the heart of the Prairies. Rainfall in northwestern Alberta in the meantime will diminish.



World Weather, Inc. Softens U.S. Summer Outlook

Summer 2022 in the central United States will likely finish warmer and drier than usual, but it will start out much better than feared earlier this year. Changes to the outlook that have softened the impact weather will have on U.S. production may be a blessing for a world that is already in a very tight grain and oilseed supply situation. The changes to this year's summer outlook have come from many directions, but include a strong 18-year cycle that has shown enormous resistance to La Nina and negative PDO influences. May and early June rainfall should place enough moisture in the soil across the central U.S. to keep any high pressure ridge building in check during the initial development period whereas more abundant dryness in these weeks would have helped to build the ridge faster and stronger than advertised in other weather patterns.

The first half of June is expected to be as active as May was with frequent precipitation bringing rain to many areas in the central and eastern United States. The pattern will look quite similar through the first half of the month and the additional rain will maintain saturated or nearly saturated soil conditions that will induce feedback moisture to the atmosphere each time some summer time heating begins to kick in. The feedback moisture will work against strong ridge building aloft resulting in slower ridge building and reduced ridge amplitude.

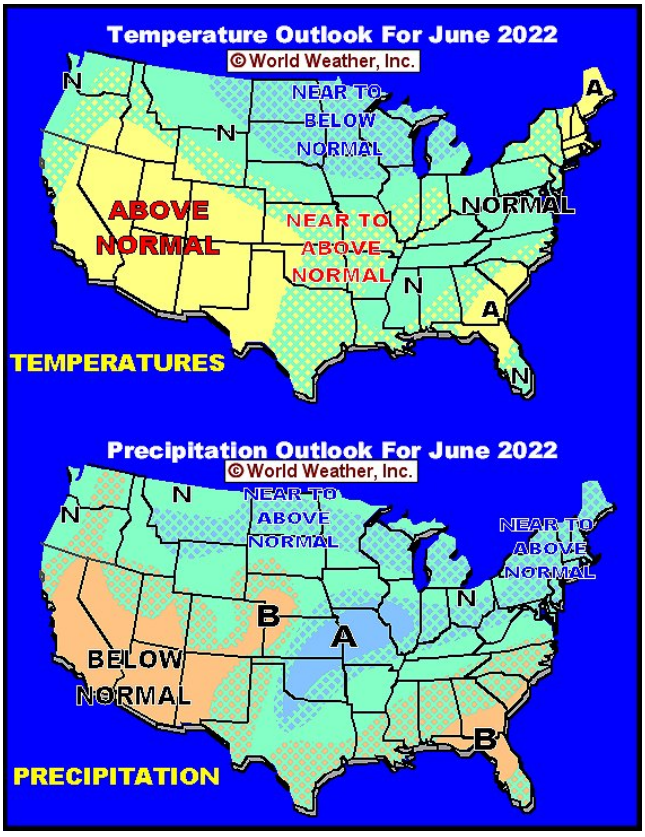
The original forecast for the summer had expected rainfall to be increased during the late spring, but the increases that have occurred are sufficient enough to alter the impact of high pressure building aloft during the summer. Heat and dryness are less likely to become excessive features during the first half of summer and that will buy time for early planted crops to develop in a good environment before any threatening heat or dryness evolves. One of the biggest reasons for lower yields in late planted crops is the heat and moisture stress that tends to occur as crops reproduce. The first half of June is not likely to be hot enough to present many problems to early planted crops, but a warming trend will occur in the second half of the month and on into July that could induce a little stress. However, the moisture abundance in the ground will help keep humidity high so that temperatures do not rise as far above average as originally expected.

The second half of June will still have some timely rain events, but they will be smaller in size and possibly a little shorter in duration. That will allow for a little more drying to occur in parts of the Midwest, Plains, Delta and southeastern states, but no seriously dry conditions are expected during the period.

Weather changes are most likely to evolve in July and August this year. However, the 18-year cycle data reflects an active jet stream with plenty of opportunity for showers and thunderstorms. The data also suggests a lack of excessive heat. The original summer forecast had assumed that dryness would persist in the central U.S. better than it has and that would lead to greater warmth than what might have otherwise occurred. The improved rainfall during May and that which is coming through early June will allow 18-year cycle data to occur without much increased heat which will provide a better overall environment for summer weather.

La Nina has been largely misunderstood by the trade. 30 years ago when the atmosphere was a cooler and drier place, La Nina events would reduce moisture from the atmosphere and nearly always create an adverse environment for crops because of heat and dryness. In more recent years, the atmosphere has been generally warmer and wetter than it was 30 years ago and it is much harder for La Nina events to cut out enough moisture from the atmosphere to induce drought without help from other weather patterns. The 18-year cycle is not helping to dry out central parts of the United States and that has reduced the potential for La Nina to create a serious moisture shortage this summer.

Data from the Climate Prediction Center does show more of a drier bias in the central United States during the middle and latter part of summer during La Nina events and that is why the summer may finish drier than it will begin. With that statement in mind, it is also important to note that La Nina is ex-

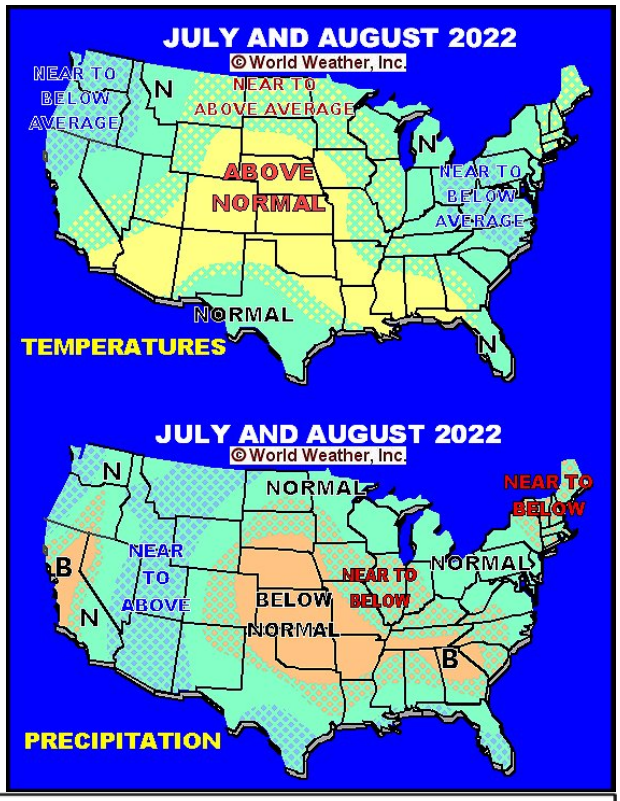


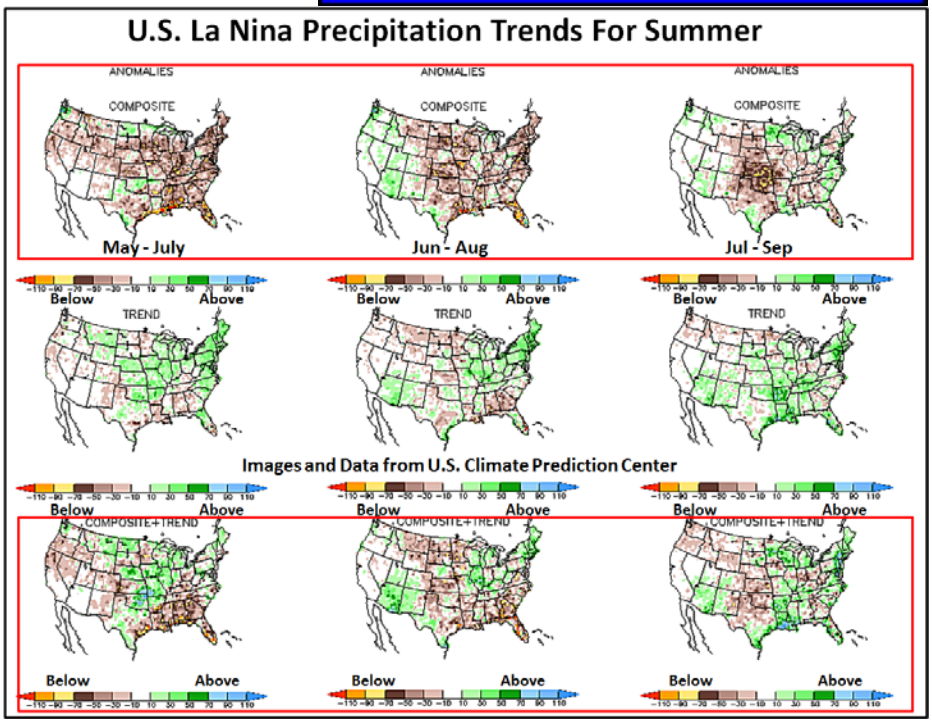
World Weather, Inc. Softens U.S. Outlook (Continued from page 6)

pected to go through a notable weakening trend over the next few weeks. The weakening trend will also reduce the La Nina bias toward reducing moisture from the atmosphere leaving larger amounts of moisture in the air to support summer time thunderstorms.

In the meantime, the negative phase of Pacific Decadal Oscillation (PDO) is still present and the event has actually intensified somewhat in recent months. Confidence is high that the negative PDO will eventually push a deep trough of low pressure aloft onto the west coast of North America. That feature will then support some ridge building over the central parts of the United States. This will be the primary driving force for a drier and warmer finish to summer. However, the performance of the 18-year cycle in the presence of a persistent multi-year La Nina event and a notable negative phase of PDO event has been impressive. The 18-year cycle pattern has been resisting all influences from these other patterns and has been the primary reason for the more active weather this spring than originally anticipated. These patterns and their influences upon each other can change in the next few weeks, but the resilience of the 18-year pattern to give way to these other patterns is quite strong.

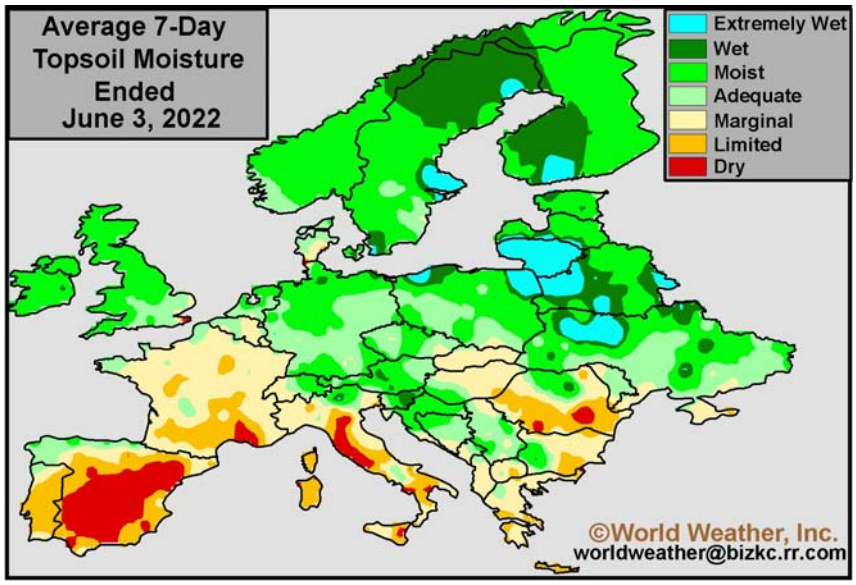
Also the 18-year pattern in three analog years showed a strikingly similar signature in each of its appearances and that lends confidence that it will do so again this year. For all of these reasons, World Weather, Inc. sees the need to back off of the intensity of the summer weather anomalies especially as they pertain to production. That does not mean it will be a perfect crop year, but it does suggest the problems expected later this summer may be less disruptive and less threatening to production than originally expected. So, some caution is needed in interpreting the impact of this year's weather on production. The same anomalies expected earlier this year should be in place, but with less degrees of significance allowing production to occur a little more normally and losses, if any, may be less dramatic than what they might have otherwise been. That does not mean there will be no production issues in the U.S. this summer, but it does suggest that a harsh finish like that of 1988, 1983 and 2012 might be a little harder to achieve, although such extreme conditions were not originally predicted. Now they seem less likely than before.





France, Germany To Get Needed Rain

France and Belgium continued to dry down during the past week due to a lack of rain. Periods of cooler weather limited drying rates at times, though a large majority of France is too dry to support good crop development. Many areas in Germany and southern England also saw limited rainfall during the past week. These areas still had enough moisture to support good development despite the drying trend. Western Europe will now have several opportunities for rain through the end of next week with France and Germany at the heart of the most significant and frequent precipitation. The environment will improve or remain favorable in most locations with the exception of some portions of southern France, Spain and Portugal where dryness will continue. In the meantime, eastern Europe has reported some important rainfall recently and more is expected to help whittle down the driest areas to a few pockets.



Many areas in France still have marginally adequate to very short soil moisture. The country has been too dry to support ideal establishment and growth especially in the south. Both winter and spring crops have been impacted by the dryness and need rain. Some winter crop yield has been decreasing, but rain expected in the next few days could put an end to that in a very timely manner. Another week or two of drier weather could harm both winter and summer crop yields, but sufficient rainfall is expected to protect most crops.

A few pockets in the Balkan Countries, most notably Hungary and Bulgaria, are also a little too dry for ideal crop conditions and would benefit from rain. The moisture profile in most other production areas in Europe is rated adequate and crop growth has advanced favorably.

WEATHER OUTLOOK

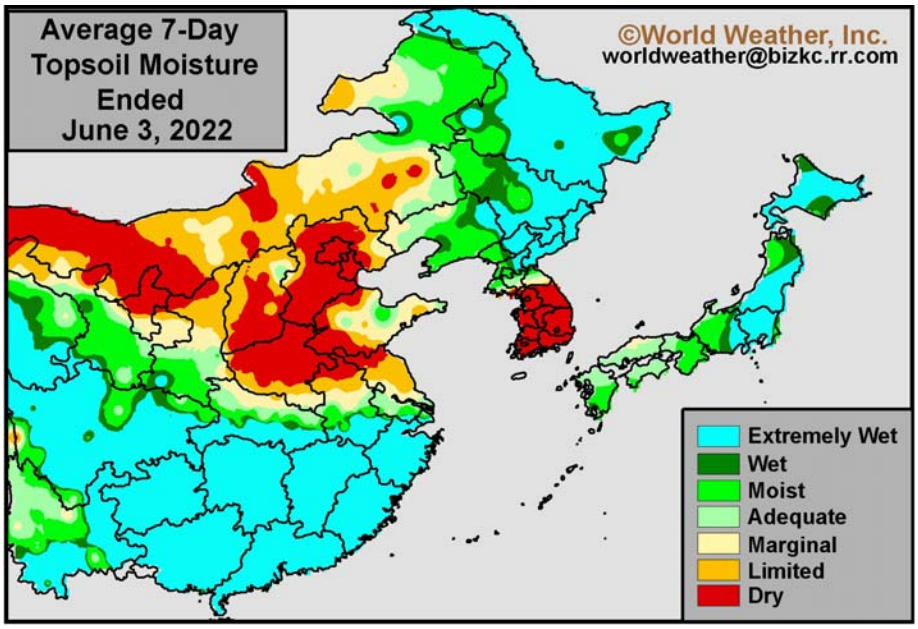
France, Germany, Belgium, the Netherlands, and southeastern England will see a good mix of rain and sunshine through the middle of next week. Two disturbances tracking across Western Europe will generate rain on a frequent basis. Moisture totals by next Wednesday morning will range from 0.75 to 3.00 inches, though portions of southeastern and south-central France will receive little to no rain. Other locations in the United Kingdom and northern sections of Spain and Portugal will also receive 0.10 to 0.75 inch of rain with portions of northwestern Spain getting 0.75 to 2.00 inches. Other areas in the Iberian Peninsula will receive little to no rain. In the meantime, Eastern Europe will also have opportunities for erratic rainfall through the middle of next week. Moisture totals by next Wednesday morning will generally range from 0.25 to 2.00 inches with local amounts of 3.00 inches or more in western Romania and Serbia. Drier pockets are also expected in eastern sections of Bulgaria and Romania.

Temperatures will be near to slightly above normal in much of Europe through the middle of next week. Daytime highs will peak in the 60s and 70s Fahrenheit with many areas in the Balkan Countries and Iberian Peninsula often warming to the 80s. Portions of Western Europe will also only warm to the 50s early next week as slightly cooler air moves across the region. Low temperatures will often be in the 40s and 50s with portions of southeastern Europe and the Iberian Peninsula only cooling to the 60s.

Rainfall in France through the middle of next week will gradually bolster soil moisture and support a better environment for the grains and oilseeds. Timely rain will still be needed later this month to ensure a better long-term outlook for the country. Eastern Bulgaria and pockets in Hungary and eastern Romania will also be a little too dry for ideal crop conditions while most other locations in Europe see favorable crop conditions.

North China Plain Needs Rain; Southern China Too Wet

China's weather has become a land of extremes recently with parts of the North China Plain and central Yellow River Basin reporting well below normal precipitation and short to very short soil moisture in unirrigated areas. That contrasts with flooding rainfall in the southern provinces where one location reported 27.5 inches of rain in the past seven days. Flooding rain of less significance also occurred in the northeastern provinces during this past week and there is a definite need for drying in some of that region. These anomalous weather trends must change soon to protect production potentials. Some rice and sugarcane has already been damaged by too much rain in the south and there are some unirrigated crop areas in the Yellow River Basin that must get rain soon to protect production potentials.



Hebei, Shanxi, central Inner Mongolia, much of Henan, and western Shandong have short to very short topsoil moisture due to the lack of rain and periods of warm weather in recent weeks. Subsoil moisture is lacking for these areas as well. Other locations in the North China Plain and central Yellow River Basin generally have marginally adequate to short soil moisture. In contrast, Northeast China has adequate to excessive amounts of moisture, though flooding was not suspected in most locations during the past week. Areas near and south of the Yangtze River remain saturated. Several of the wetter areas likely experienced severe flooding during the heaviest rain with some crop and structural damage possible. The extent of the damage was not known.

Unirrigated areas in the North China Plain and neighboring areas in Shanxi and central Inner Mongolia may be drying down too much to support ideal grain, oilseed, cotton, and other crop establishment and growth. Periodic rain earlier in the spring was beneficial for short-term establishment and development for several areas, though the need for rain has steadily increased in recent weeks. It is not unusual for dryness to impact these areas during May and sometimes the dryness lingers into early June, but rain must be falling more routinely thereafter to ensure favorable rain-fed crop development. The drier bias often lends support to winter crop maturation and harvest progress, but many summer crops in the same region are dependent upon monsoonal precipitation to support production and any dryness that lingers beyond this first week of June should be viewed as a potential concern.

In the meantime, a notable drying trend is needed near and south of the Yangtze River Basin where additional rain and potential flooding might result in a more serious threat to rice, sugarcane and a host of other crops produced in the region. Much of the region is already too wet for ideal rice, sugarcane, corn, and other crop development. Wet weather diseases are also a growing concern. Continued abundant to excessive rainfall may raise concern for yield and production losses this season due to the damage flooding and disease can cause.

Late-season winter rapeseed harvesting south of the Yangtze River has likely come to a standstill in the wettest locations, but World Weather, Inc. believes much of the crop was harvested prior to this bout of excessive rainfall. Rapeseed losses in 2022 should not be anywhere near as great as those from 2020 or 2021 and World Weather, Inc. believes the production year was mostly a big success.

Northeast China has seen enough rain in recent weeks to support generally good corn, soybean, and rice establishment and growth, though a few locations in Heilongjiang and Jilin may be too wet.