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The Canadian Agriculture Weather Prognosticator

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World Weather At A Glance

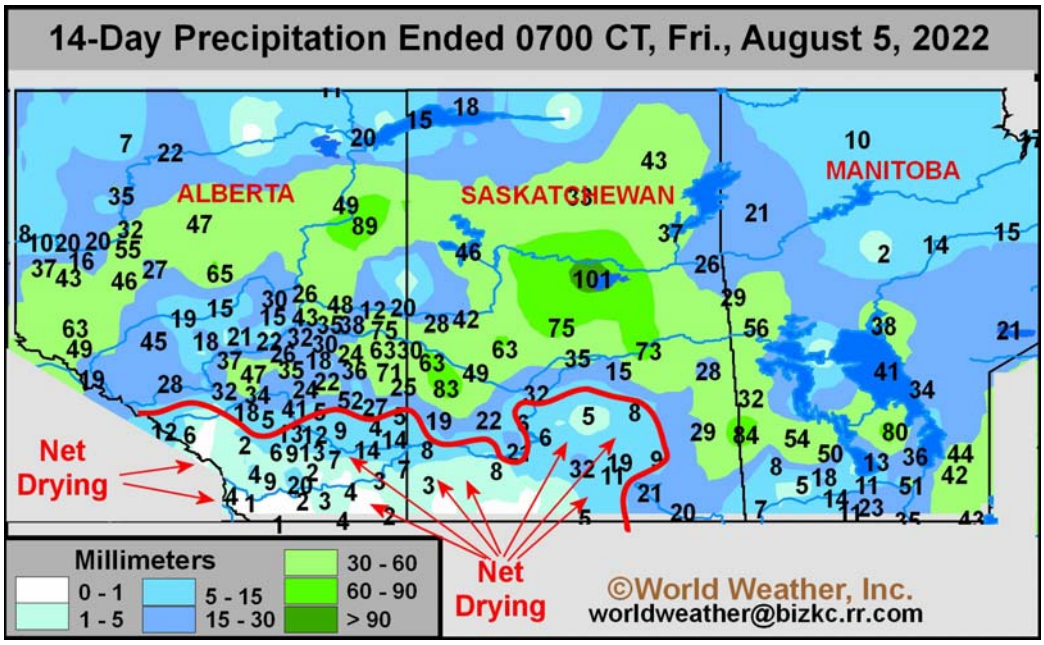
- Drought in France is one of the worst in modern history; 50% of all water districts are in crisis mode
- Other areas in western and southeastern Europe are also experiencing drought like conditions
- Russia and Ukraine weather this year has been mostly good for crops with a few exceptions
- China summer weather has remained very wet in the central and northeast, but damaging floods are becoming more infrequent and crops are improving.
- Western Argentina wheat areas still need significant rain
- India faces monsoonal flooding this coming week in central states
- U.S. crop weather is mostly good east of the Great Plains
- Australia rainfall raising soil moisture; Queensland still needs more

Canada Prairies Drying; Crop Stress Rising

A shift in summer weather pattern expectations occurred across the Canadian Prairies in July that reduced World Weather, Inc.'s expected late season rainfall for the Prairies. The drier bias has become more noticeable in the past two weeks with significant decreases in rainfall occurring across the southwestern and central parts of the Prairies. This decline in rainfall has the look and feel of 2021 when drought seriously hurt Canada crop production. However, weather conditions through the first half of the growing this year were close to ideal and many crop areas are handling the drier and warmer scenario in stride. However, some areas in the southwestern Prairies never fully recovered from drought and moisture in the soil has been a little light. Now that warm temperatures and a more definitive period of drying is under way crop stress could negatively impact late season development possibly hurting yields and quality.

Rainfall in the two week period ending Aug. 5 was less than 0.50 inch in southern Alberta, southwestern, south-central and central parts of Saskatchewan. That was not enough moisture to counter evaporation and net drying has resulted. The drying was accelerated this week as temperatures turned briefly hotter. Another area of limited rain has impacted southwestern Manitoba, but that area has been more significantly wet this season and drying in that area might be interpreted as mostly good.

In contrast, rainfall over the past two weeks has been more significant in other parts of the Prairies. Northern Alberta, portions of northern Saskatchewan and parts of northern and eastern Manitoba have reported enough rain to maintain a highly favorable



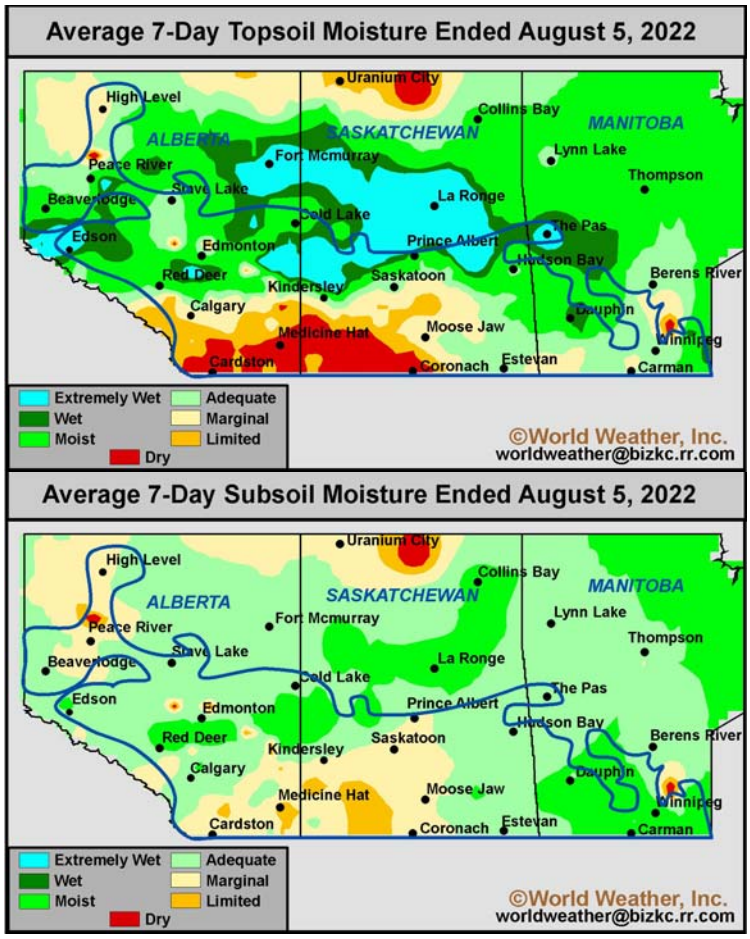
Canada Prairies Drying; Crop Stress Rising (continued from page 1)

amount of soil moisture. Actually, some areas may be a little too wet and some drying might be welcome.

The most important part of today's weather is not the drier or wetter biased areas, but rather the overall crop rating for the Prairies. The Vegetative Health Index and many on farm reports have stated crops are much better than last year and expected to yield well. Some producers have claimed a tremendous production potential while some in the drier areas of the southwest have stated that this is the sixth year in a row of drought and yields will be low. The good news for most of Canada is that the majority of crops in the Prairies are going to yield much better than last year and losses from the lingering drought areas in the southwest will be at least partially made up by high yielding crops elsewhere. But, of course, much of the validity in that statement lies in the forecast. Too much late season heat and dryness could still take yields down in some areas.

Rainfall during the past month varied greatly in the Prairies. A large section of Alberta outside of some eastern production areas reported 40-85% of normal precipitation. Some areas in the southwest and far northwest parts of the province reported less than 40% of normal rainfall. A similar situation was noted in southwestern Saskatchewan as well as a few areas in the northeast part of that province. The remaining production areas in Manitoba, Saskatchewan, and Alberta received near to above normal rainfall.

Temperatures during the past month have also played a role in the general condition of crops in the Prairies. Readings frequently bounced around from below to above normal and back again. Pockets in southern Alberta and Saskatchewan occasionally warmed through the 30s Celsius and peaking near 39. . Minor crop stress resulted during the warmest periods, though temperatures were not warm enough for long enough to significantly impact production potentials.



The anomalously dry weather became more significant in the past two weeks and temperatures have also trended warmer than usual a little more often. The impact of both limited rain and warm weather accelerated drying rates and returned stress to many crops. The latest soil assessment has rated the topsoil very short of moisture from southern Alberta through southwestern Saskatchewan into central and south-central parts of that province. Subsoil moisture in these same areas was rated marginally adequate to very short resulting in highly variable crop conditions from one field to another. Soil moisture in most other areas was still rated quite favorably with some of the wetter areas noted on the rainfall map above saturated with moisture in the topsoil while adequately rated down deep into the soil. Adequate soil moisture was prevalent in most other areas.

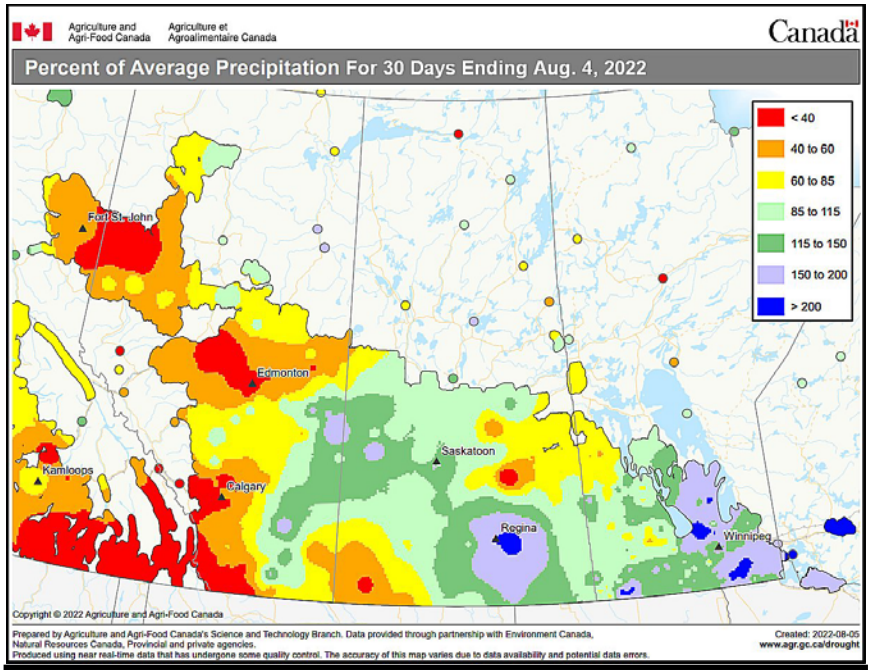
DRYING WILL CONTINUE FOR AT LEAST TEN DAYS

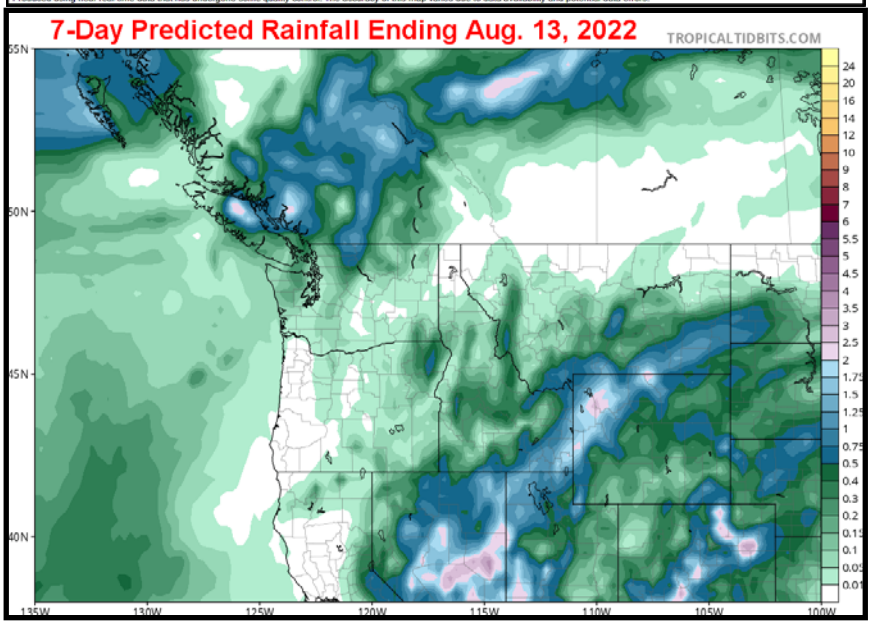
Additional drying is predicted over the next ten days in many areas from southwest to northeast across the central Prairies. Temperatures next week are expected to rise well above normal once again and the combination of heat and dryness will accelerate drying rates and increase crop stress. Rain is expected to fall in western and northern Alberta, far northern Saskatchewan and in parts of northern and eastern Manitoba. Soil conditions in most of these areas will remain favorably rated. Drying is expected elsewhere that will perpetuate serious moisture stress in the southwestern and some central parts of the Prairies. Some expansion of dryness into other areas will be possible, but not western or northern Alberta where rain is most likely.

Plant development in late season crops has already slowed in the driest areas of the Prairies and the trend will continue as more of the region experiences net drying and greater heat. Too much heat and dry-

Canada Prairies Drying; Crop Stress Rising (continued from page 2)

ness could reduce production potentials for the more immature late season crops like late canola, corn, soybeans and flax. However, the early season crops, including peas, lentils, early canola and possibly some of the small grains will not be seriously impacted and may just move more quickly into maturation. The harvest pace should be swift until rain falls.





WEATHER OUTLOOK

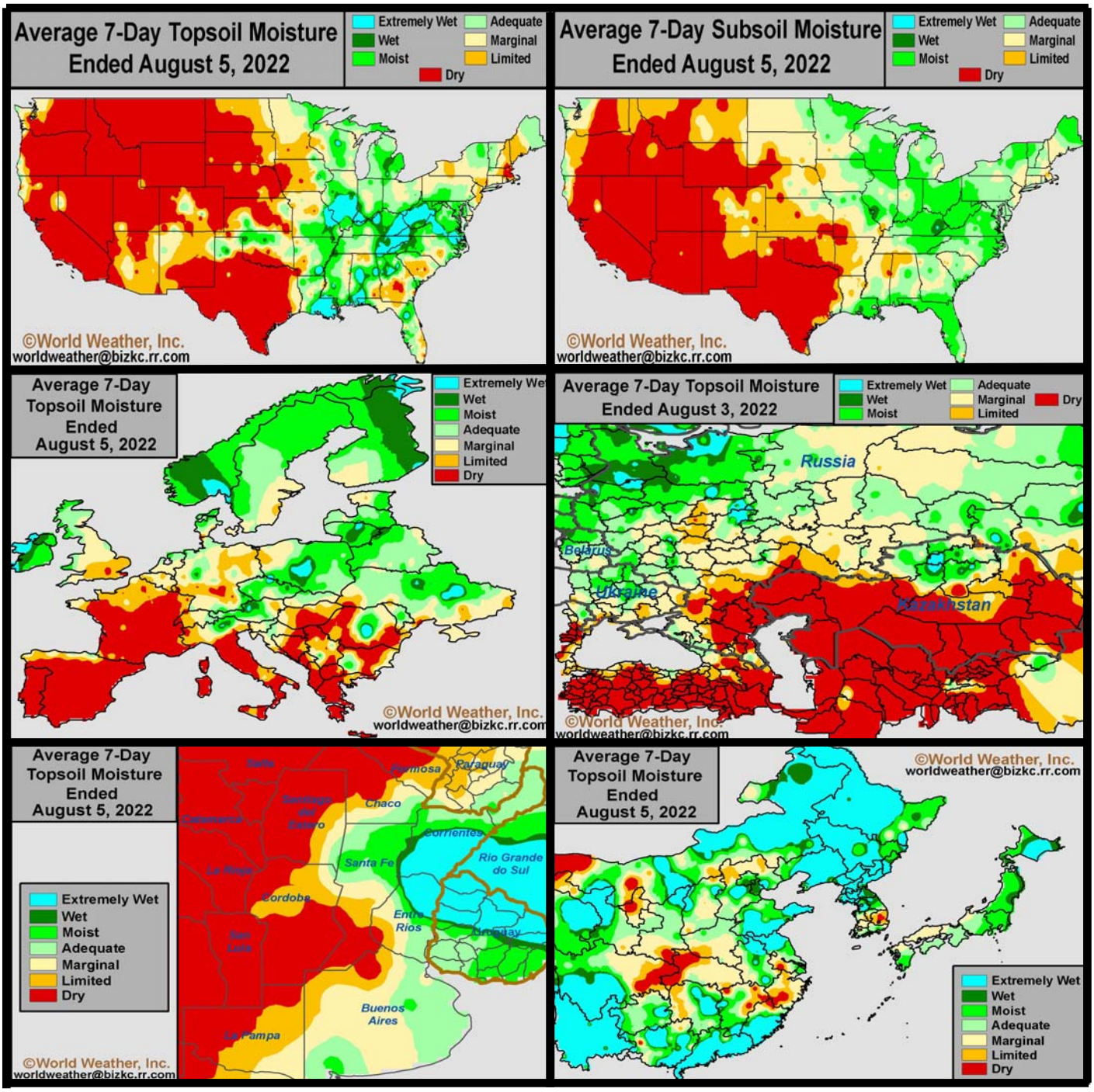
Drier-than-normal weather is slated for much of the Prairies for at least the next ten days. Light rain will still be scattered across the Prairies through the end of the weekend as a frontal boundary and disturbances track near or into the region. Resulting rainfall will be lost to evaporation or too light to counter evaporation. A high-pressure ridge will then evolve to help restrict rainfall for much of the Prairies Monday into at least Thursday. As the axis of the ridge shifts to the east late next week and into the following weekend, there will be some showers moving back into portions of Alberta and eventually Saskatchewan. Rainfall during this time will likely be light and not expected to significantly bolster soil moisture. The Prairies will have a few more opportunities for rain August 13 – 19, but the disturbances that advance near or into the region will likely only generate light to moderate amounts of rain. A more general rain of significance will still be needed.

A cool airmass pushing through the Prairies Friday will continue today (Saturday) . Highs will only peak in range of 19 to 26 Celsius with pockets near the U.S. still warming to the range of 27-39. The ridge will then funnel warmer air to the Prairies most days Sunday into next week with daytime highs peaking in the range of 27-36 in the main production areas. Northern sections of crop country will still only warm to range of 21-27 at times, most notably Monday and Tuesday. Pockets near the U.S. border in Alberta and Saskatchewan could also see highs climb near 38 or 39 degrees toward the middle and latter part of next week. Periods of warmer than normal weather are again expected August 13 – 19.

Dryness will spread and intensify across the Prairies for at least the next seven to ten days. Southern Alberta and southwestern Saskatchewan will remain too dry for aggressive late-season development. The periods of warmer weather may also stress crops that are still developing. Production potentials may slip lower in some of the more immature crops while protein levels in immature wheat could rise. Maturation and early-season harvesting will otherwise advance swiftly.

The remaining production areas in the Prairies will initially have enough moisture to maintain aggressive growth during the next ten days. Development rates may start to slow around mid-month as the ground firms, though production potentials will not be seriously impacted without a longer period of drying.

Selected Weather Images From Around The World



Most of the U.S. Midwest is still carrying favorable soil moisture for crop development, but the western Corn Belt has some notable dryness evolving and rain early next week will be of critical importance in determining what will happen to late season crops in the region later this month. Europe dryness is probably more serious than that in North America with France, and immediate neighboring areas seriously impacted along with some areas in south-eastern Europe. Recent drying in parts of Russia's Southern Region and its New Lands region is firming the ground and rain will be needed soon to protect sunseed, corn, soybeans and other late season crops; however, the situation is far from a crisis. China's weather has been trending drier recently in central parts of the production region. This is the first time in nearly three years that central China has shown any definitive drying and the trend will continue in the interior southeast for a while. Argentina's western wheat areas still need significant rain for crop establishment.

Moisture Fixes In SW Prairies Not Likely For A While

Moisture deficits returning to the southwestern Prairies, and for some areas that never went away, will not be fixed during the coming 30– or 60-day periods. Rainfall will continue restricted for a while, although there are signs of improved rainfall coming in September. The rainfall advertised in September and October does not look replenishing for the drought stricken areas of the southwest, but perhaps enough moisture will occur to improve topsoil conditions for winter grain planting. Not much rain will fall in the southwestern or south-central parts of the Prairies in the next couple of weeks and that will finish off the summer crops leaving no time left for crops to benefit from new found moisture.

Drying that is occurring now across southern and central Saskatchewan will continue for the next couple of weeks. Some rain will fall in the last days of August and early September that may improve the topsoil moisture situation somewhat, but a general soaking rain for the region seems a little unlikely.

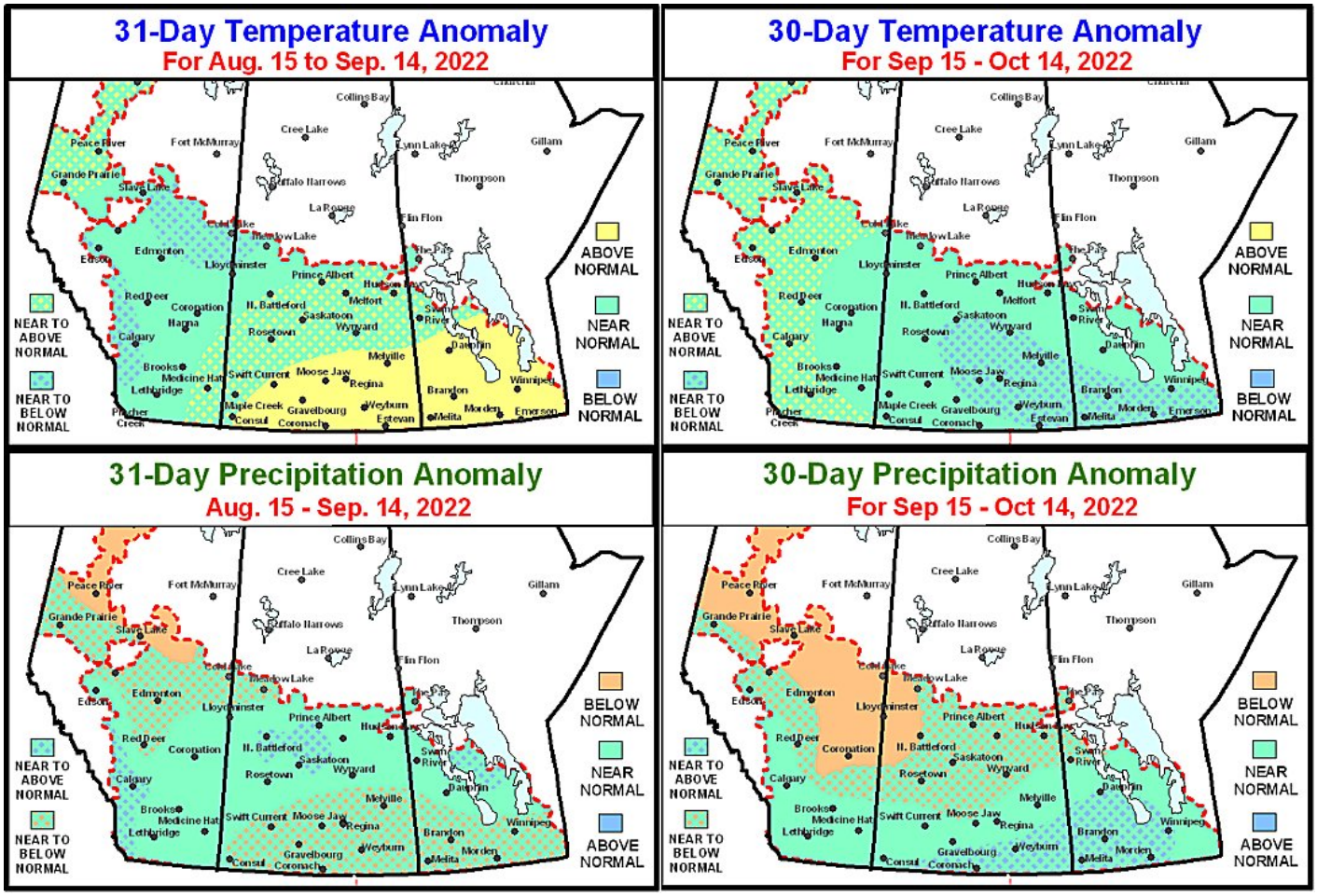
Drying is also expected to continue in southern Manitoba into early September which might be beneficial to those crop areas that are still plenty wet from early season rainfall abundance.

Some potential for improved topsoil moisture conditions will occur in the southern Prairies, but especially the southeast during the Sep. 15 to Oct. 14 period. Lingering La Nina conditions may turn the bias in other parts of the Prairies a bit drier again especially in October. The Peace River region should slowly dry down, but there will continue to be a moisture abundance in the region this coming week and perhaps a little beyond mid-August.

Temperatures are expected to trend a little cooler biased in a part of northern and western Alberta during the Aug. 15-Sep. 14 period while the Peace country is a little warmer and so will be many areas in the central and eastern Prairies.

Temperatures in the Sep. 15 to Oct. 14 period will be mostly near to above normal, but mid– to late September conditions may be cool enough to pull down the average for the 30-days. Confidence in the timing of this cool period is not high, but its occurrence is expected and a close watch on the timing will be needed over the next few weeks.

For details over the frost and freeze potential in the next few weeks see page 9 of this prognosticator. There is potential for relatively normal first frost occurrences.



West-Central U.S. Corn Belt Drying May Accelerate

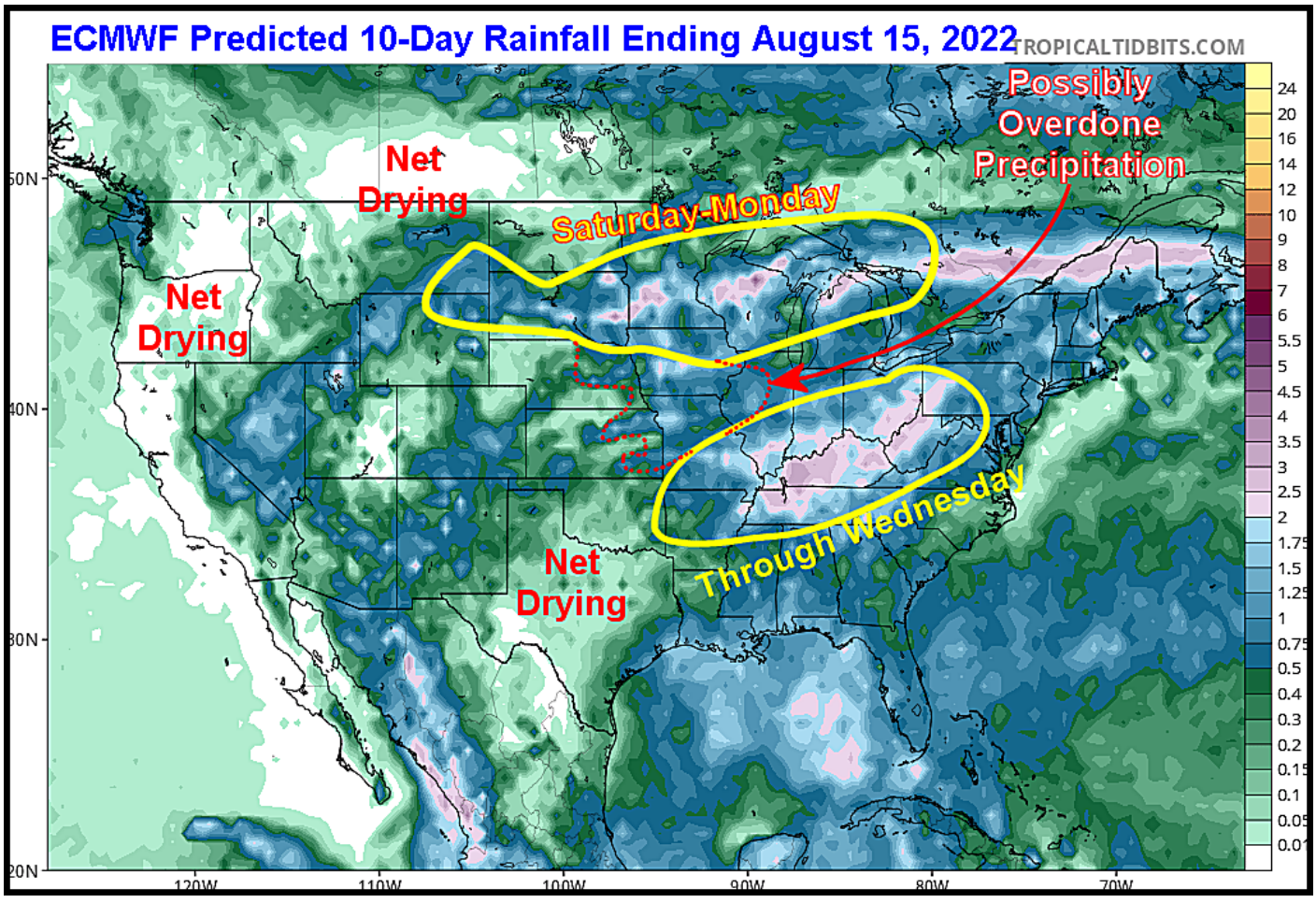
A cool front passing through the entire U.S. corn and soybean production region Sunday through Tuesday will bring showers and thunderstorms to many crop areas, although the distribution of rain is not likely to bring high volumes of rain to the west-central or southwestern Corn Belt. In contrast, some heavy rain is possible in northern and some eastern Midwest locations. Once the frontal system passes through the Midwest a stronger ridge of high pressure is expected to build into the Great Plains and the Gulf of Mexico may close as a moisture source. The drier air following the frontal system may get trapped over a part of the central and interior southern Plains and the west-central and southwestern Corn Belt where hotter temperatures and limited rain could bring accelerated drying and a new run at crop stress for a while.

The setup for the second half of next week through the following weekend is looking a little more interesting in support of faster drying and more heat in a part of the Plains and portions of the western Corn Belt. A stronger ridge of high pressure is being suggested for the Plains during that period of time and remnants of the early week frontal system could produce an upper level low pressure center over Florida or and the eastern Gulf of Mexico coast region which might limit moisture from flowing northward from the Gulf of Mexico into the Plains and portions of the west-central and southwestern Corn Belt.

First, though, the frontal system expected Saturday through Wednesday will come with a little pool of cool air that will help induce significant rain in eastern South Dakota, Minnesota, Wisconsin and a few neighboring areas in northern Iowa. Rain totals may vary from 0.50 to 2.00 inches across one of the driest corn and soybean production areas in the nation with a few amounts possibly between 2.00 and 3.00 inches. That would obviously provide at least some relief to recent crop stress, but the greatest rainfall may not be well enough distributed for more than a brief period of topsoil moisture improvement.

The frontal system is expected to lose support for rain as it moves through southeastern Nebraska, southern Iowa, Kansas, Missouri and portions of west-central or northwestern Illinois. These areas will get some showers and thunderstorms, but rainfall could be light varying from 0.10 to 0.75 inch.

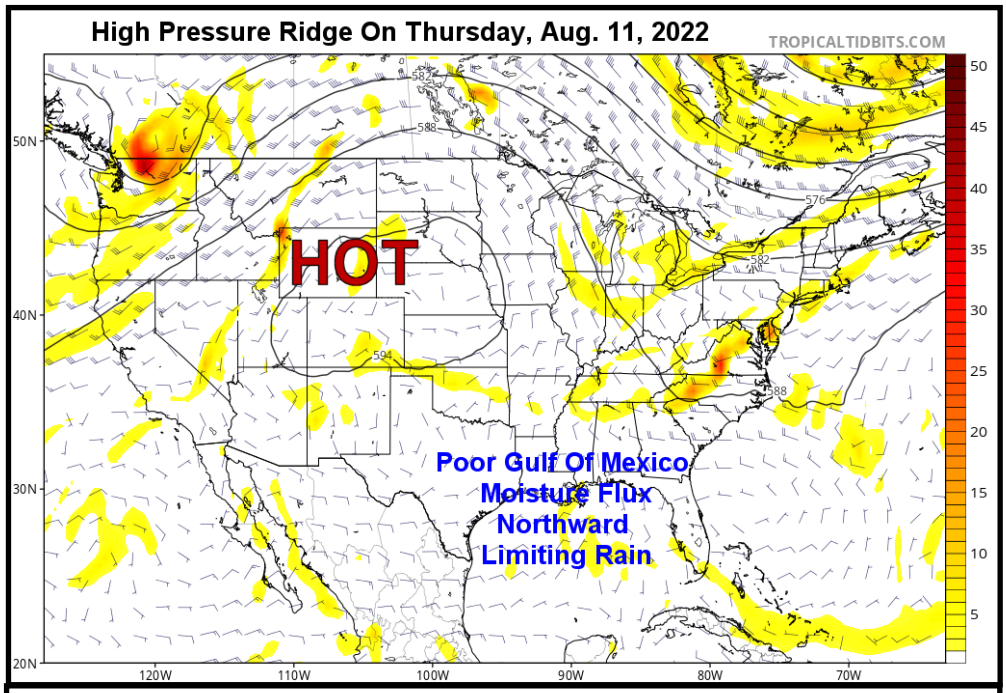
The frontal system will gain more support for greater rainfall once

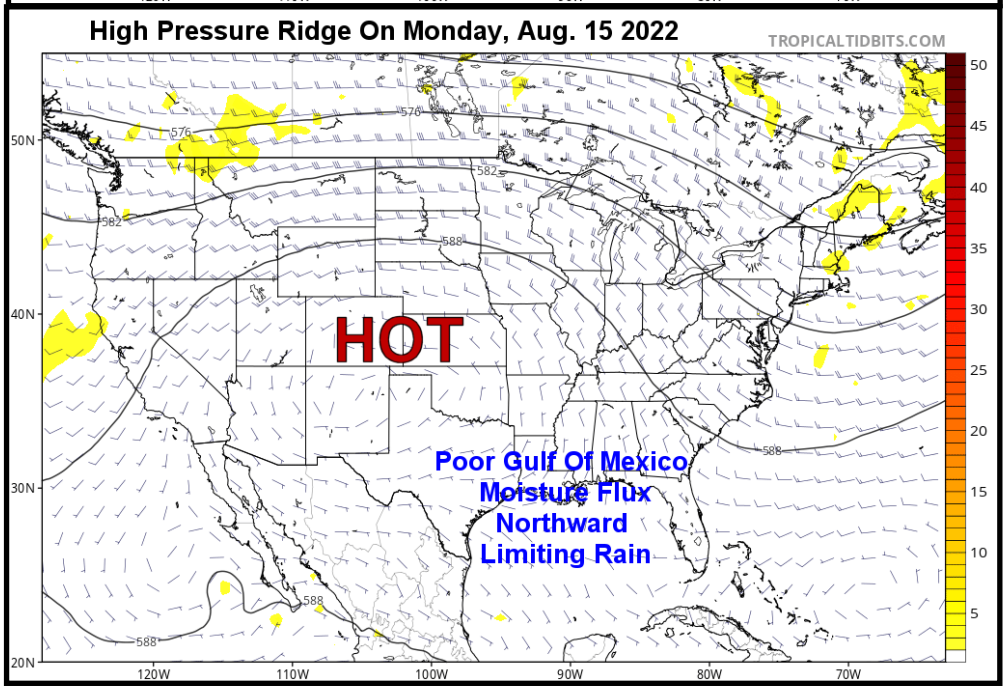


West-Central U.S. Corn Belt Drying (continued from page 6)

again as it reaches the lower eastern Midwest during the early to middle part of next week. Another band of significant rain may result in the Ohio River Basin and areas southward into the northern Delta and northern Tennessee River Basin. Rainfall may range from 1.00 to 3.00 inches in some of these areas by Thursday, Aug. 11.

The cool front will be followed by a relatively large sized surface high pressure center that will reduce humidity and clear the skies. This cool airmass is broad-based enough to induce much better drying conditions for a while. Helping the surface high pressure center to dry out the air will be a growing ridge of high pressure expected in the Great Plains. The ridge could become well positioned and strong enough to limit rainfall in the central and southern Plains into mid-month and possibly beyond it.

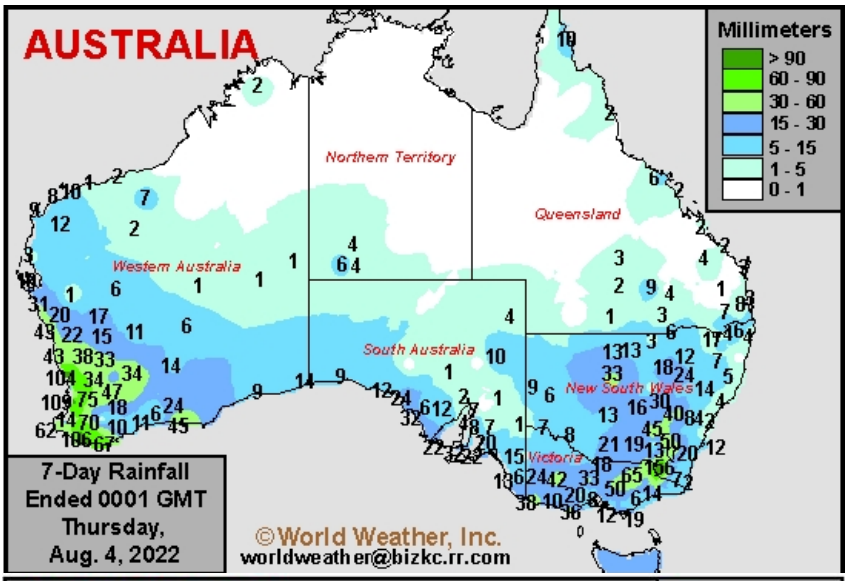


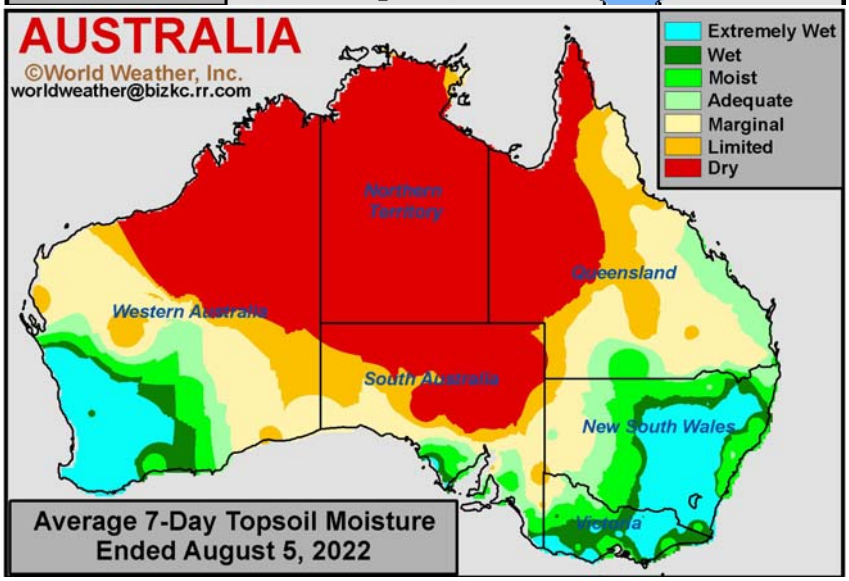


The ridge will weaken enough to allow weather systems over its top near mid-month and this will bring some additional rain to the northern and eastern Midwest in the following week while the west-central and southwestern Great Plains may be blocked from getting rain by the combination of the high pressure ridge in the central states and by the new trough of low pressure evolving in the southeastern parts of the nation that will limit northbound Gulf of Mexico moisture from impacting that part of the nation. The double whammy impact of these features could lead to hotter temperatures in the central Plains and wet-central and southwestern Corn Belt. The heat, low humidity and poor environment for rain could lead to rapid declining soil moisture and a rise in potential crop stress. The area most vulnerable to these conditions may be southwestern Iowa, Nebraska, Kansas and northern and western Missouri. The Delta could also get caught up in a new bout of heat and dryness as well.

Australia Rain Building Up Soil Moisture

Rain has continued to fall in much of Australia's winter wheat, barley and canola production areas during the past week. The moisture profile is rated favorably and another year of above normal yields will be possible as long as too much rain does not evolve. With another season of La Nina likely, frequent rainfall will be possible in most of eastern Australia and the negative phase in the Indian Ocean Dipole (IOD) could also help promote periods of elevated rainfall in coming weeks for portions of south-central and southeastern Australia. An active jet stream will promote a mix of rain and sunshine for most locations during the coming week that will keep soil moisture rated adequately to abundantly.





The main winter crop production areas in Australia reported varying amounts of rain during the past week. Queensland was driest with only a few showers producing up to 0.35 inch of rain. Interior parts of South Australia were also dry biased while rain fell in most other areas. Western Australia reported 0.39 to 2.95 inches of rain with local amounts up to 4.29 inches along the southwestern coastline for the seven-day period ending Thursday morning. South Australia, Victoria, and New South Wales received 0.28 to 2.56 inches of rain with a local amount of 6.14 inches in the mountains of eastern Victoria near the New South Wales border.

Soil moisture is rated marginally adequate to short in southern Queensland and western New South Wales while the remaining locations have adequate to excessive topsoil moisture.

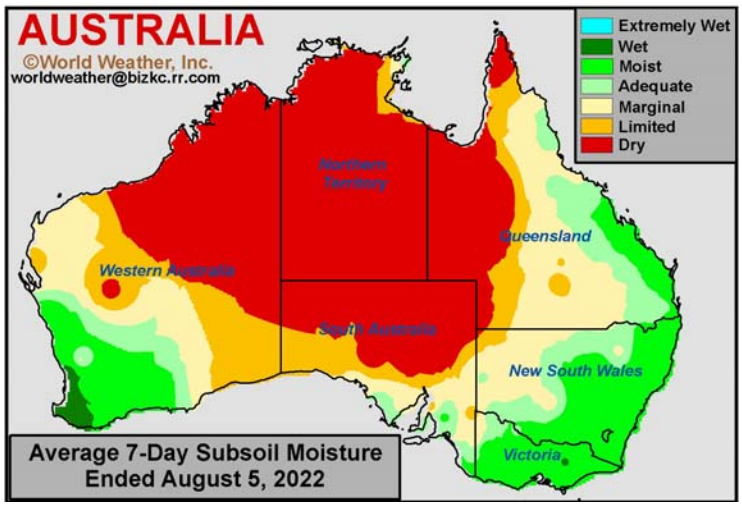
Winter wheat, barley, and canola prospects remain favorable across Australia. Timely rain was noted over the planting season with some sluggish planting noted during the wetter periods. However, the wet weather has not significantly impacted production potentials. With plenty of moisture in the soil and the potential for above normal rainfall in the coming months, the environment will be favorable for aggressive growth during the spring.

An active jet stream will promote waves of rain for much of Australia's production areas during the coming week. A weak frontal boundary will initially generate rain through Saturday. After a brief period of drier weather Sunday, a stronger pool of cold air will promote more rain at the beginning and middle of next week. Western Australia, South Australia, Victoria, and much of eastern and central New South Wales will receive 0.40 to 2.00 inches of rain with local amounts over 3.00 inches by next Thursday morning. Western New South Wales and southern Queensland will receive 0.25 to 1.00 inch of rain with drier pockets. A similar weather pattern is expected August 12 –

Australia Rain Building Up Soil Moisture (continued from page 8)

18.

Portions of southern Queensland and western New South Wales will dry down marginally during the coming week due to the lack of significant rainfall. These areas do not represent a large amount of the overall winter wheat, barley, and canola areas, though the crops that are produced in these areas would welcome a good soaking of rain late this month or early September. The remaining crop areas will continue to have adequate to excessive moisture in coming weeks. Crop prospects will remain generally favorable for these locations. Most winter crops are still considered to be semi-dormant, but seasonal warming at the end of this month and in early September should stimulate new season crop development in Queensland and northern parts of Western Australia.



The main concern later in the growing season may be the abundance of moisture in portions of Western Australia, Victoria, and New South Wales. With above normal rainfall possible for these locations in the coming months, fields may trend a little too wet for ideal conditions. Wet weather diseases will also be possible in areas that drain poorly. Cool weather in the coming weeks will also limit drying rates between rain events.

September Frosts Possible; Alberta Has Early Threat

Alternating periods of cool and warm air have been impacting the Prairies over the past few weeks and this trend will continue into the autumn. Most of the Prairies should not have much of a risk of August frost, but northwestern Alberta could get cool enough toward the end of this month for such conditions to evolve.

There is some concern this year because of La Nina and due to a parallel with 2004. Multiple La Nina years tend to dry out the air sufficiently enough to bring on some cooler than usual bouts of air in the late summer and autumn. Because of that feature World Weather, Inc. does not believe there is reason to expect warm weather into October this year.

Some cooler than usual air is possible later this month and in September that might stimulate a little scare over threatening temperatures, but the only area that might actually see a frost event before September would be in northern Alberta's crop region; including the Peace River region, Slave Lake and the Swan Hills region with some risk in the Athabasca area as well. If there is an early frost risk in the northwestern corner of Alberta it would not occur too much earlier than normal, but early enough to bring a threat to the Peace River region crops that were subjected to a wet spring delaying fieldwork.

The connection to 2004 is a little worrisome since many of you remember that year with a damaging freeze August 17 in the heart of the Prairies. The 2020-22 drought in North America is similar to that of 2002-04 which raises a great amount of concern only because of the fact that we are seeing some cold air coming and going across the Prairies now and there have been many other similarities to 2004.

Earlier this year World Weather, Inc. believed that it would rain enough in the Prairies during the summer to keep relatively humidity up and that alone would dampen the potential for early frost and freezes. However, the forecast has turned drier and humidity is low and falling. Dry air always promotes more wild swings in temperature so some caution is needed.

A freeze like that of 2004 is not expected, but some cool air will come and go and a few areas in northwestern Alberta could get nipped close to the normal frost and freeze dates. A similar situation is expected for the rest of the Prairies, although the first frost is more likely to occur near the normal frost dates in September.