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The Canadian Agriculture Weather Prognosticator

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WORLD WEATHER ISSUES

- Notable rainfall occurred in Brazil's Safrinha (second season) corn country during the past weekend easing long term crop stress and improving late season crop yields.
- Northwestern Europe is becoming too dry.
- Relief has occurred to the Black Sea region in recent weeks where winter and spring crops in Ukraine, southern Russia and SE Europe had been too dry.
- Central and a part of northern China is beginning to dry out and will need rain soon to protect dryland spring and summer crops from possible stress; winter wheat and rapeseed will not be seriously impacted.
- Western Australia finally received some rain a little earlier this month, but all of the nation's wheat, barley and canola will need more moisture soon for planting and establishment.
- U.S. Midwest crop areas have been a little wet recently.
- U.S. western hard red winter wheat areas have been too dry.

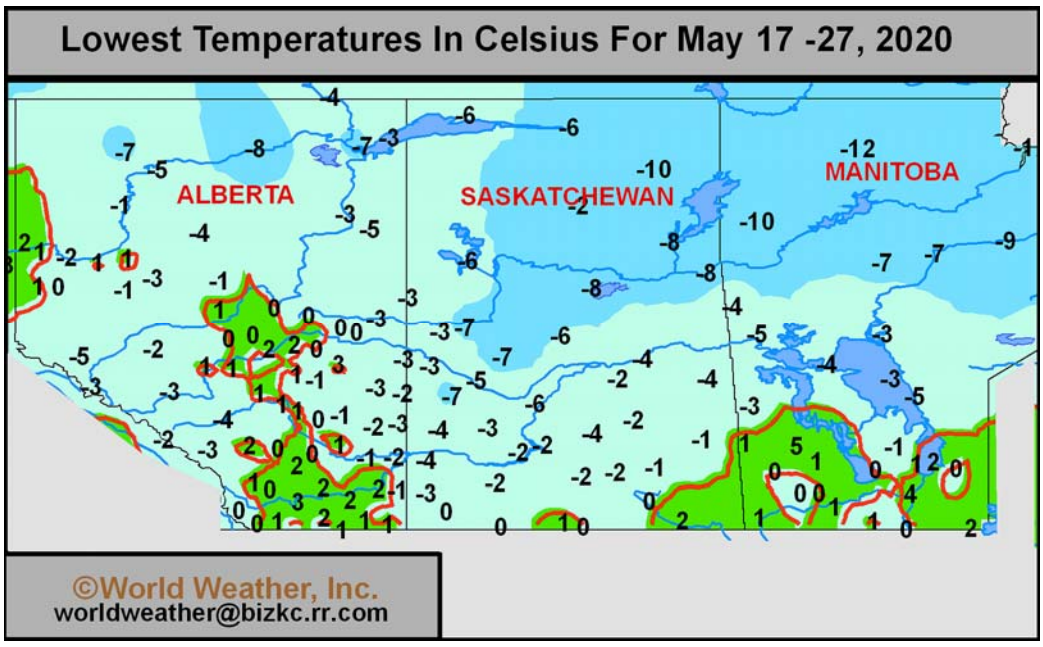
The Last Frost In A Long Cycle Of Cold

A cycle of frequent frost and freezes has been quite persistent this spring. Back in the "olden days" frost and freezes would occur into the last days of May and sometimes finish out in the early days of June. This year's frequent frosts have been reminiscent of the past. Fortunately, there has been little damage this year unlike that of the past couple of years.

World Weather, Inc. has been focused on a repeating cold weather pattern that has brought frequent bouts of notable cool surges since the middle of December. The last issue of the "Prognosticator" suggested that after the last big cold surge that occurred in early May there would be some potential for one more surge in the last days of May and/or early June, but it would not be nearly as significant as that which occurred earlier this month and it would occur farther to the east—mostly in Manitoba and eastern Saskatchewan.

That final surge of cold is upon us now and it will be confined to the northeastern corner of Saskatchewan and northwestern Manitoba Friday morning and in southern Manitoba Saturday. Low temperatures at that time will slip into the frost range with a couple of extreme lows dropping to the range of –2 to zero. The cold will be minor enough and far enough to the north to have no negative impact on crops.

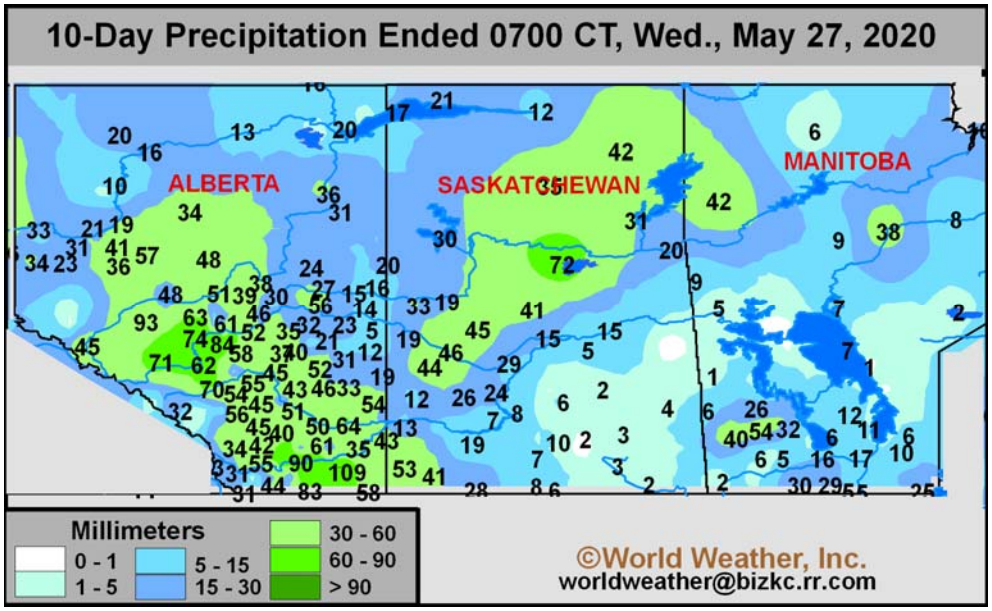
Once the cold passes, a significant change in weather patterns is expected for a while with a new heatwave in the central and eastern Prairies this weekend into early next week with highest temperatures back into the upper 20s and lower 30s. Strong wind speeds and low humidity are also likely. Friday's coolness will be the end of this long cycle of repetitious freezes.



Surprising Storm Dumps More Rain On Western Prairies

A very unusual weather pattern evolved for a brief period in mid-May that took a storm system that had been long predicted to impact the southeastern Prairies and shifted it far to the northwest. This event resulted in substantial rainfall across much of Alberta and in northwestern parts of Saskatchewan, which was exactly what was not needed.

Fieldwork was already running a little late across parts of western and northern Alberta and northwestern Saskatchewan before the wayward storm impacted the region. Harvesting of the 2019 crops was still advancing in some areas while conditions had not reached ideal levels to support the planting of 2020 crops.



A deep trough of low pressure over the western United States was expected to move northeast across the U.S. Rocky Mountain region and into the southeastern Prairies as well as the northern U.S. Plains May 18-21, but a building ridge of high pressure over the eastern Prairies and the northern U.S. Midwest prevented the storm from moving northeast as it was expected and instead it moved north northwest. The high pressure ridge then refused to move until a second weather disturbance moved from the northwestern U.S. into the northern Plains May 23-24.

The two low pressure systems and the temporary high pressure ridge forced rain to fall from western Saskatchewan into western Alberta during this period of time instead of moving through the southeastern Prairies. As a result, portions of central and eastern Saskatchewan and west-central Alberta came up empty-handed on rainfall which was equally unwelcome as the heavier rainfall was in Alberta.

The May 20-23 period brought substantial moisture to Alberta and parts of western and north-central Saskatchewan. Rain totals varied from 1.00 to 2.00 inches with a few amounts of 3.00 to more than 4.00 inches occurred between May 17 and May 27—most of which fell in the May 20-23 period. The rain saturated the soil in most of western, central and southern Alberta and parts of the Peace River region was already dealing with flooding because of recent snow melt and previous rain events. Flooding occurred in many areas and more importantly, fieldwork was stalled and some areas have still not dried enough for fieldwork to resume.

Not all of the precipitation was unwelcome. Rain in southern Alberta was a boon for some areas as it was in parts of western Saskatchewan. Significant dryness was impacting many of these areas prior to May 20 and worry was rising over germination and emergence moisture in several areas.

Sufficient rainfall occurred in the May 20-23 period to bring back favorable topsoil moisture in many areas from Val Marie through the Lake Diefenbaker area to Prince Albert and areas west to Cold Lake and Lloydminster. Not all of this region was treated equally and some of the area still has need for more moisture. However, sufficient rain fell to stimulate seed germination and plant emergence and it will not be long before these crops tap into subsoil moisture to sustain growth until the next big rain evolves.

The second storm system that occurred May 23-24 brought on some needed moisture to a few areas in interior southwestern and south-central Manitoba. The impact of this rain was mixed with some areas benefiting greatly from the rain after previous drying. Other areas had been struggling to get into the fields this spring because of cool temperatures that were limiting drying rates and preventing frost from getting out of the ground as quickly as it needed to. The Prairies have only been warm biased for a couple of weeks and when the rain event arrived in southern Manitoba it only added to the delay that was already impacting parts of the region.

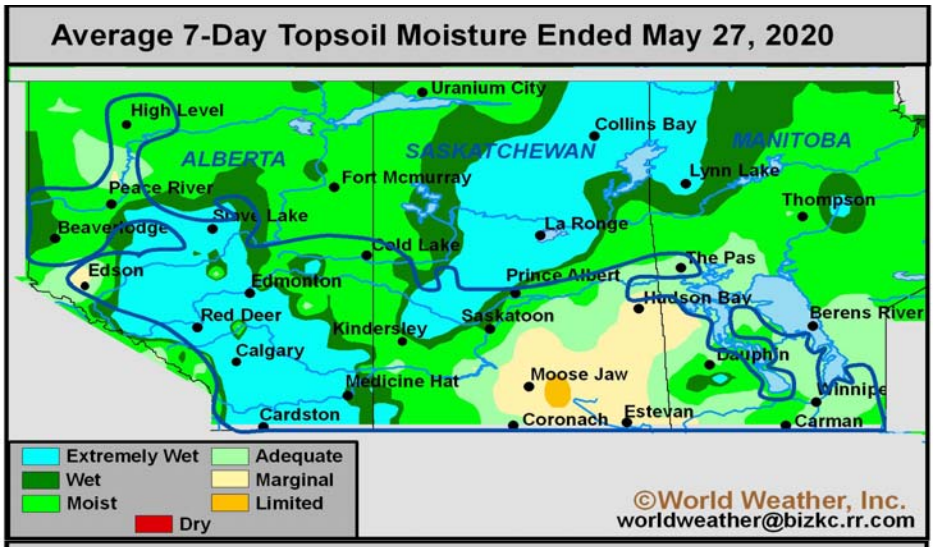
To the frustration of many producers in east-central, interior southeastern and some south-central Saskatchewan locations the precipitation of May 20-24 failed to bring any relief to recent drying. Some of these areas had been without significant

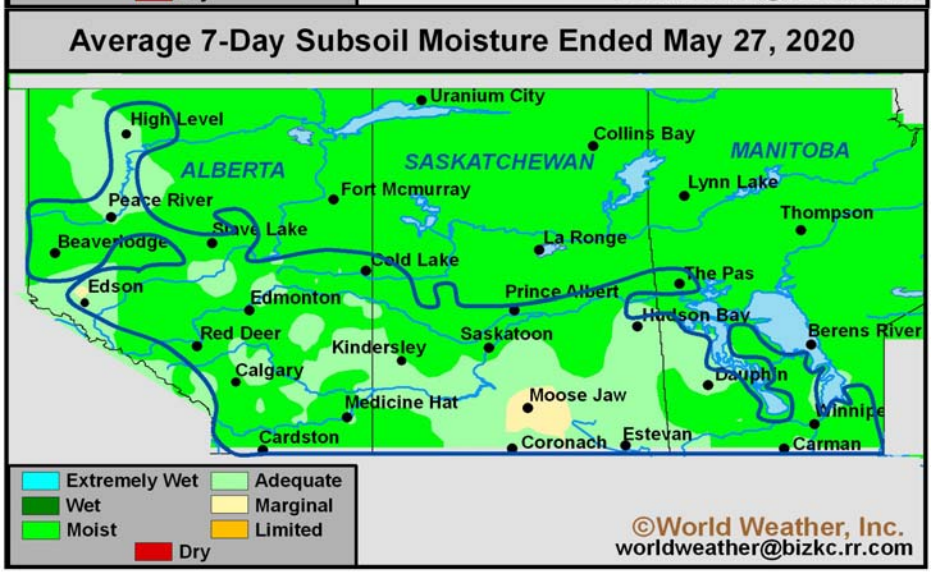
Surprising Storm Dumps More Rain On West (continued from page 2)

moisture during much of the winter and the ground was definitely drying out. A part of this dry region extended into west-central Manitoba, as well and these areas are still too dry today.

Subsoil moisture is still rated favorably in many of the driest areas of eastern and south-central Saskatchewan, but the lack of topsoil moisture is delaying germination and emergence. Some recent showers in a part of this region may have stimulated some germination, but greater rain is needed to induce good emergence and a good stand. It would not take much precipitation to improve crops in this region, but the outlook only offers sporadic showers in the coming week and there will be some returning hot, dry and windy conditions this weekend into early next week.

The earliest that the dry region in the eastern Prairies will get rain is after next week's heatwave breaks down in the second half of next week. Many crops and producers will become seriously stressed during this period of time and the expected rain will be extremely important for improving crop development potential. The situation will be very closely monitored.

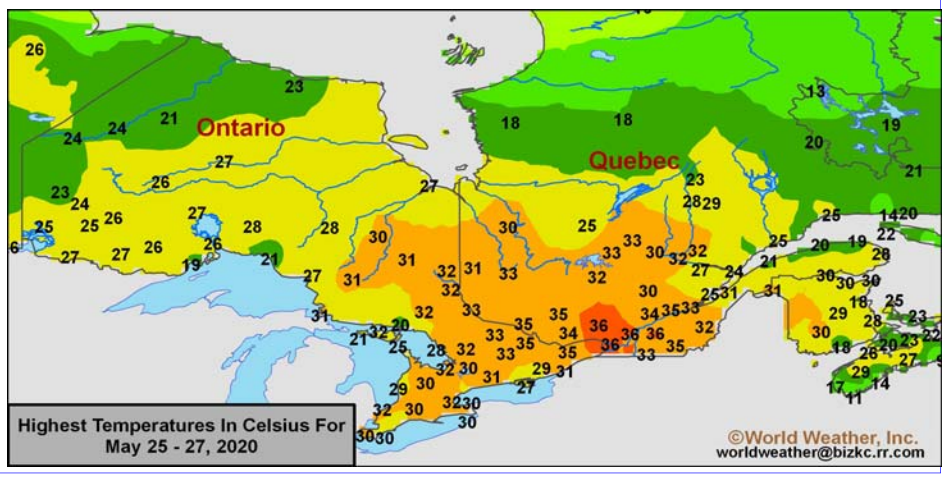




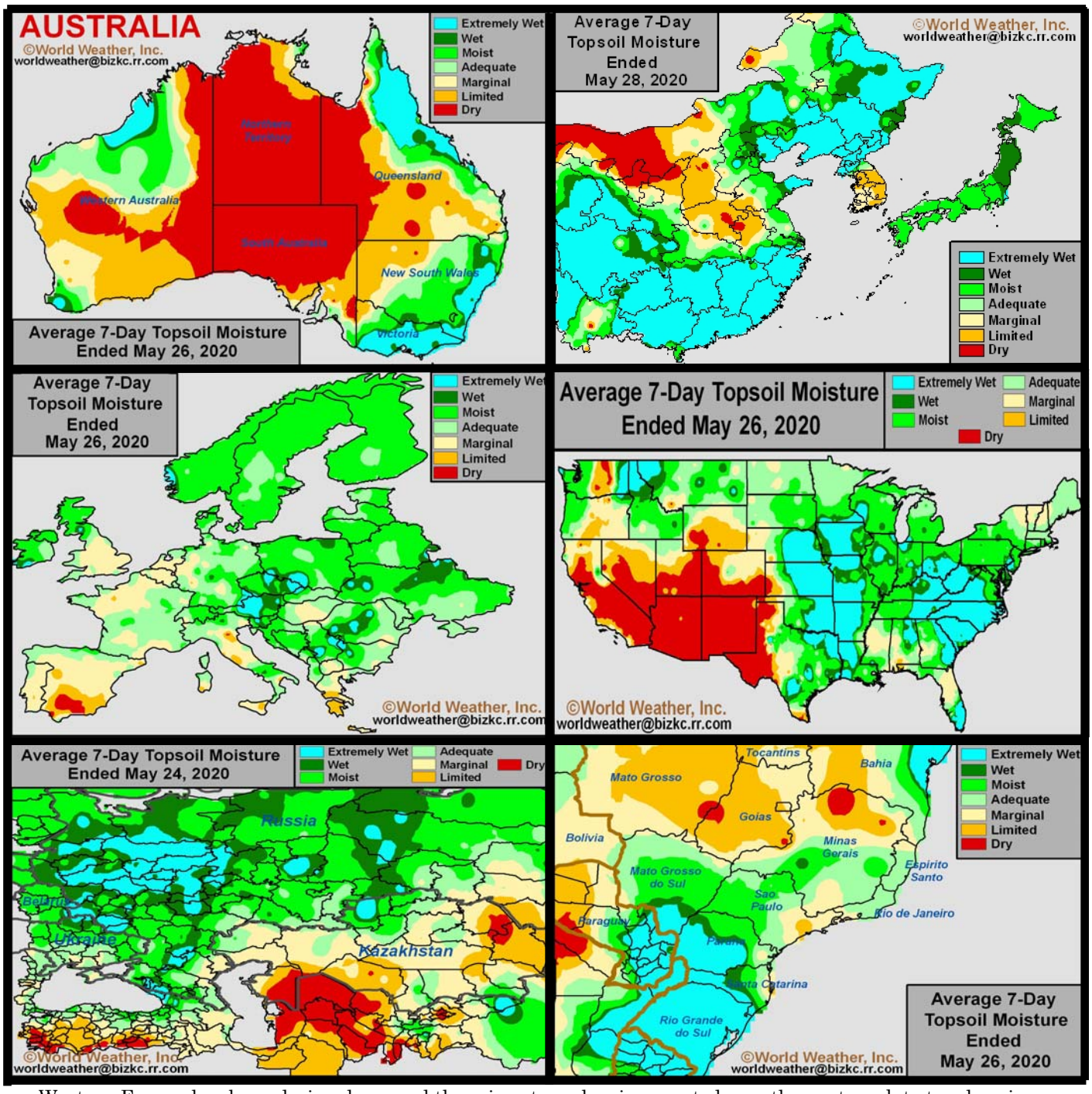
Southeast Canada Turns Briefly Hotter

Ontario and Quebec reported some impressive heat for a couple of days this week. The heat was needed after a prolonged mild to cool and rainy early spring. Planting has been very slow advancing across parts of this region, but this week's warm up helped to firm and warm the soil for better future planting, germination and emergence conditions for corn and soybeans. The change will also improve winter wheat development conditions.

A new surge of colder air is expected in southeastern Canada this weekend and early next week. Farmers will be watching for possible frost and freezes. Rain will precede the colder conditions and that will return some delay to farming once again.



Selected Weather Images From Around The World



Western Europe has been drying down and there is not much rain expected over the next week to ten days in northern France, the United Kingdom, northern Germany, Belgium or Netherlands. Increasing crop moisture stress is expected. In the meantime, additional rain has occurred in the Black Sea region helping to improve soil moisture for long term crop development in southeastern Europe, Ukraine and parts of Russia's Southern Region. Kazakhstan and Russia's lower Volga River Valley will remain too dry. U.S. weather has been plenty wet recently, but a high pressure center expected over the middle of the nation in the coming week to ten days will squelch the rainfall pattern and induce warmer temperatures. Better planting and crop development conditions will result in most of the Mid-west, Delta and Great Plains. Australia has been receiving some periodic rainfall in its key wheat, barley and canola production areas recently, but there is still great need for more moisture. Brazil's second season corn crop received significant rain this past week stopping the decline in yield potentials. Flooding occurred in the far south of Brazil.

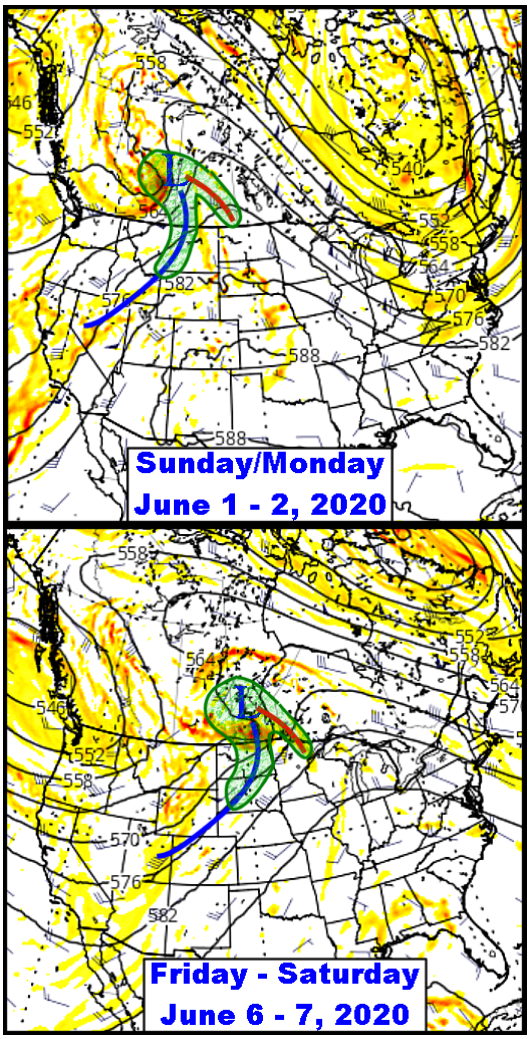
The Coming Week Will Try Our Patience Once Again

A ridge of high pressure will build over the central United States this weekend and it will have a presence in central North America for several days before shifting to the east. The ridge will bring some mixed impacts on crop country; including improving field conditions in the water-logged western Prairies and concern about moisture shortages in a part of the eastern Prairies. The ridge will hold the fate of many producers and getting through the next ten days of weather will be challenging from a psyche perspective in some areas.

Western Alberta needs to seriously dry out. It is quickly getting very late in the planting season and some of the wettest areas are going to be up against insurance deadlines for planting by the time field conditions become good once again. Then the debate will be over what to do next.

The high pressure ridge in western North America this weekend will provide Alberta with a very good environment for dry and warm weather. But the ridge is expected to shift east. Once the ridge shifts into the U.S. Plains and eastern Prairies the potential for rain will return to Alberta. The set up will not be much different from that of May 20-24 when a big storm moved across the province stalling fieldwork in a significant manner. As long as the high pressure ridge moves east and keeps moving east the potential for another soaking of rain in Alberta will be low, but there is concern that the ridge might move east and stall for a while. If the ridge stalls for too long a new storm system will form in the U.S. Pacific Northwest and then it might have potential to bring significant moisture to southern and eastern Alberta.

If the ridge stalls and actually shifts back to the west while the next storm is present in the northwestern U.S. there would be an even higher potential that the storm will be forced northward into western and central Alberta just like that of May 20-24. Now that is not the official forecast. World Weather, Inc. believes this time around the ridge will shift far enough to the east to set the stage for more classic southwest to northeast



movement of the storm bringing significant rain to Saskatchewan and southern Alberta a week from now and into the following weekend.

The timing of the ridge movement and size of the northwestern U.S. storm will dictate what the impact will be. For producers in eastern and southern Saskatchewan there will be many prayers raised that the ridge movement will be perfect in supporting a classic Montana low to move from eastern Montana to Manitoba leaving behind a swath of significant rain in the driest areas of both Saskatchewan and Manitoba. If this scenario were to play out, Alberta would get some significant rain in the south and east-central parts of the Province, but not nearly as much in the west and that would suit most of the farmers in the province quite favorably.

Unfortunately, the prospects for storminess in the June 6-12 period are not well defined. As of the time of this writing the prospects look extremely good for a Montana low to track across the central Prairies bringing needed relief to the drier parts of the region a week to 8 or 9 days from now. As you know, Prairies weather trends can change in a flash and what looks quite favorable for dryness relief in Saskatchewan and Manitoba today could be a bust a week from now if conditions do not evolve just right.

For now, World Weather, Inc. is betting on the Montana low scenario to verify, but watch your daily forecasts and "Tractor Weather" for indications that a change is occurring. It would not be surprising to see two low pressure centers coming out of the northwestern United States during the June 6-12 period and between the two events most of the Prairies would be impacted with rain. However, between now and then there is going to be more heat, wind, low humidity and drying across some of the drier areas in Saskatchewan and Manitoba raising stress for crops and producers. Alberta will be facing a few showers and thunderstorms beginning late this weekend and continuing through much of next week and that moisture will likely play on the nerves of most producers who are waiting for a sufficient break from wet conditions to finish fieldwork. There is hope for success, but there will be no perfect scenario for western Alberta.

Let The Rains Begin: June Will Start Off Wetter

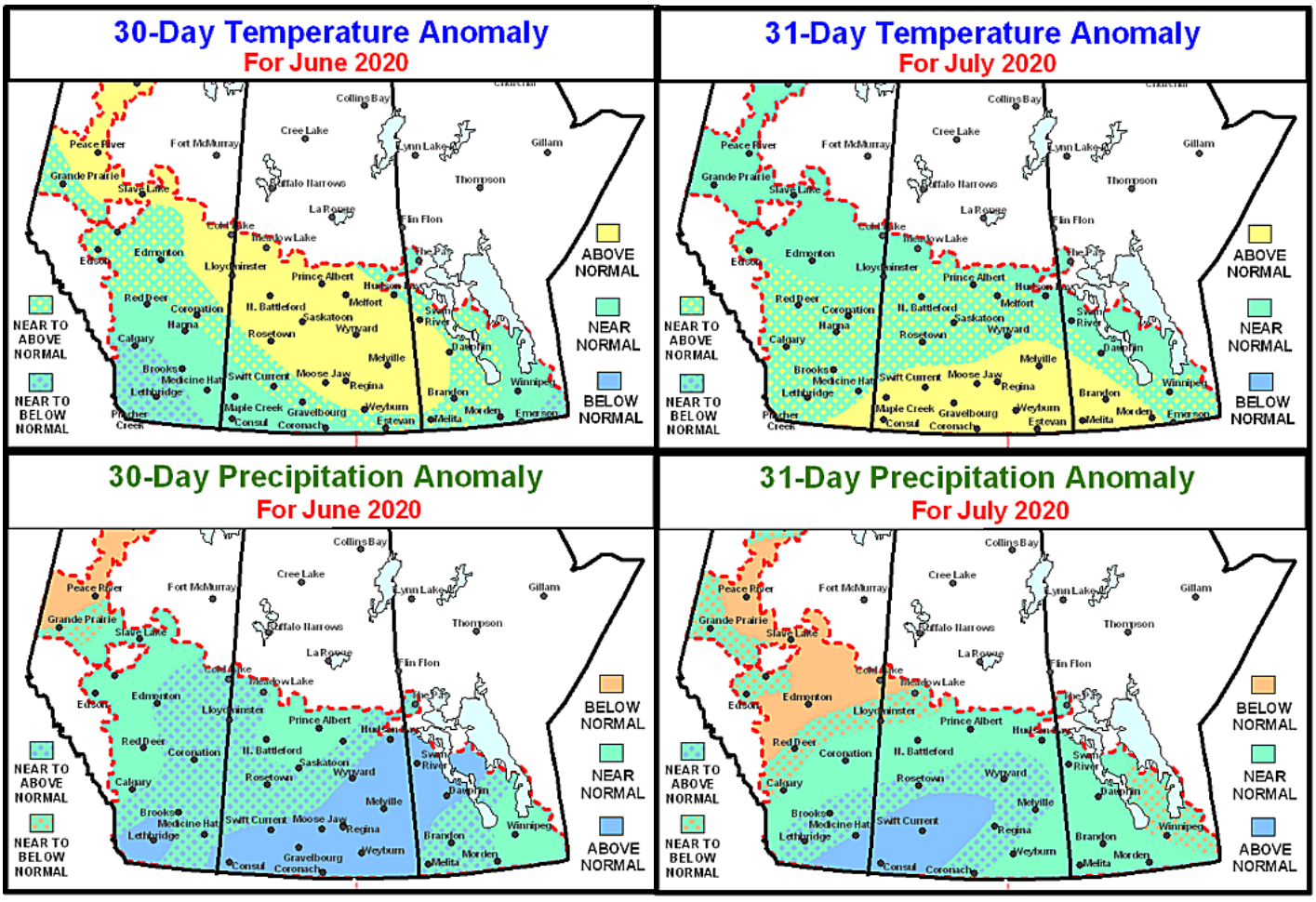
The outlook in June is a little more tenuous than usual because of recent computer forecast model debates over the positioning of a high pressure ridge in the first half of June.

Our Trend Model points to a more active weather pattern during the summer. We expected June to be a month of transition with July and August wettest. However, some changes are taking place that cannot be ignored and the first one is the advertised ridge for the coming ten days. This ridge will not have the ability to stagnate. The jet stream is still much too active for a stationary ridge of high pressure to evolve in the next few weeks. Based on that understanding and a strong consideration for the 18-year cycle we have chosen to buy into the early June ridge building followed by a breakdown in that ridge and at least two and possibly three rain events to occur as the ridge moves away and breaks down. Once the ridge breaks down it will take a while for it to redevelop and weather will likely not be as wet for a while and when the ridge builds again there will be a period of dry and warm weather in the eastern Prairies followed by another round of significant rain later in the month. This all translates into an active month for rainfall except in the Peace River region where rain will be lighter than usual. Temperatures in June will start off warm and become milder as time moves along in western parts of the region. Some hot weather is expected in the east, but only for brief periods of time.

July is expected to see a more consistent presence of a high pressure ridge in the central United States and it is not expected to be exceptionally strong so storms coming into the U.S. Pacific Northwest will tap into monsoon moisture coming north from the U.S. Rocky Mountains to bring some additional rainfall to the central Prairies. A more significant drying trend should evolve in northwestern parts of Alberta during July.

There is potential that the U.S. ridge will shift to the west late in July August and that is one of the primary reasons for July to begin drying out in northwestern Alberta. If the trend continues in August temperatures in the eastern Prairies might trend a little cooler with less rain, but no threatening cold is expected in that month.

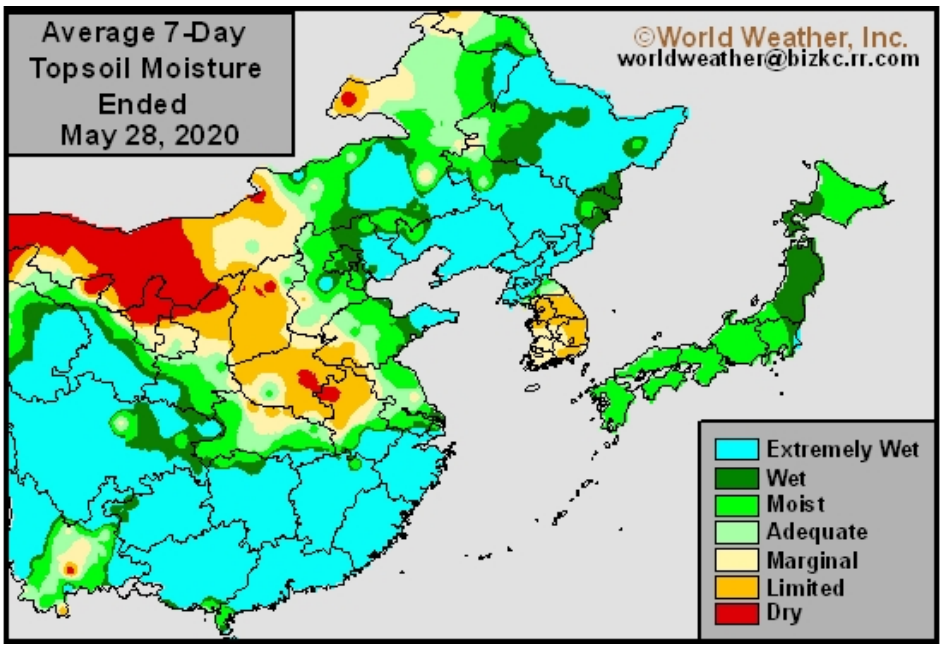
In the meantime, July temperatures will be above average in many areas with some near average readings possible in the far northwestern parts of the Prairies.



China Suddenly Dries Down; More Drying Likely

Precipitation has been variable across the North China Plain during the past month. Early month precipitation was substantial and provided an excellent environment for planting and crop development. However, more recent weather has been drier biased with temperatures seasonably warm. For the 30-day period ending May 25, northern and eastern Shandong into southern Hebei received two to more than four times normal rainfall while Henan received less than half of normal rainfall. Most other areas received 50-120% of normal precipitation.

Western Inner Mongolia was also drier or much drier than normal. Shaanxi and Shanxi generally received near to below normal rainfall with pockets that were slightly wetter than normal. Other production areas near and south of the Yangtze River saw several waves of rain during this time despite Yunnan, Guizhou, Sichuan, and a few other pockets trending drier than normal. Northeast China saw a good mix of rain and sunshine as well despite several areas in northern Liaoning, west-central Jilin, and Heilongjiang trending drier than normal.



Topsoil moisture has become short to very short in Henan, northern Anhui, western Shandong, and immediate neighboring areas into Shanxi, northern Shaanxi, and western Inner Mongolia. Rainfall in recent weeks was often spotty and daytime highs often peaked to the upper 20s and 30s Celsius with a couple of extremes in Henan reaching 39. Planting and establishment conditions have been very good until most recently when the ground dried enough to delay the germination and emergence of recently planted crops. There is still adequate moisture in the subsoil for these areas, though recently planted crops do not have established root systems that can get moisture from the subsoil.

A good shot of rain is needed in the near future to support a better environment for summer grains, oilseeds, and cotton production in these areas. Early established crops are likely performing better due to their deeper root systems. Winter wheat and rapeseed development should also be occurring normally.

Other portions of the North China Plain have adequate to marginally adequate soil moisture. Timely rain this month has limited drying and supported a good environment for spring crop establishment and growth.

Winter wheat development earlier this year in much of the North China Plain and central Yellow River Basin this year was quite good. Rainfall was sufficient to support aggressive growth in and high yields, despite a few pockets of dryness occasionally popping up. The recent dry and warm weather has been great for filling and maturation since subsoil moisture is still rated adequately.

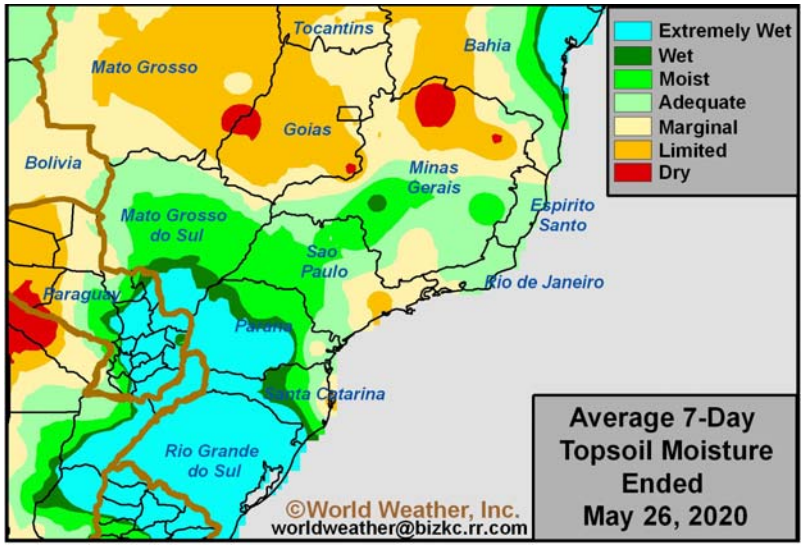
Drier biased conditions are slated for much of the North China Plain and central Yellow River Basin during the next two weeks. Periods of erratic rain are still expected Friday into Monday as a series of disturbances pass near the region. Portions of Shandong and a few neighboring areas will receive 0.50 to 1.50 inches of rain through next Thursday morning, though most areas will not receive enough rain to impact long-term soil conditions. Temperatures will remain warmer biased with daytime highs often peaking to the 80s and 90s.

The warmer and drier biased environment will further decrease soil moisture across the North China Plain and central Yellow River Basin. Spring and summer crop prospects will further deteriorate, though many areas in Shandong, southern Hebei, and northern Jiangsu will still have enough moisture to support establishment during the next several days. Longer-rooted crops will also have plenty of moisture to support aggressive growth due to adequate subsoil moisture. Crop prospects will otherwise deteriorate in Henan, Shanxi, Anhui, western Shandong and neighboring areas. A good soaking of rain will be needed toward mid-June to limit crop impacts for the driest areas.

Brazil Late Season Crop Improves After Recent Rain

Timely rain was noted over this past weekend for some important Safrinha (second season) corn production areas in Parana, Sao Paulo, Minas Gerais and southern Mato Grosso do Sul, Brazil. These locations were struggling with dryness earlier this month and corn development conditions were deteriorating. Some production cut had already occurred because of dryness during the first half of the reproductive season, but some of this recent rain came in time to stop declining crop yields.

The same weather system that brought rain to Safrinha crops also produced serious flooding in southern Brazil and Paraguay late last week. Some of this region reported 3.00 to 9.00 inches of rainfall with a few areas in western Parana reporting 9.00 to more than 13.00 inches. One location in western Parana received 19.75 inches through dawn on May 22.



In the meantime, rain also fell substantially in other parts of Rio Grande do Sul with some heavy rain falling during the weekend. Rainfall of 2.20 to 6.57 inches was noted in central and southern parts of Rio Grande do Sul for the seven-day period ending this morning. Rainfall farther north in Brazil was lighter, but still significant for this time of year with amounts of 0.57 to 2.12 inches occurring from central and southeastern Mato Grosso do Sul through northern Parana to western and south-central Minas Gerais. Rain totals in Rio de Janeiro, Zona de Mata and Espirito Santo into central and eastern Bahia varied from 0.35 inch to 1.10 inches. Some heavier rain occurred along the upper Bahia coast.

Mato Grosso was driest over the past week with rainfall rarely more than 0.39 inch. Eastern Mato Grosso, Goias and western Bahia were left mostly dry.

The rainfall late last week and during the weekend was disruptive to all kinds of fieldwork from wheat planting in the south to coffee, sugarcane, citrus and rice harvesting in center south parts of the nation. Flooding was serious enough in parts of the interior south that some wheat may have to be replanted. The moisture in key Safrinha areas, however, proved to be mostly beneficial in stopping a steady decline in crop conditions and yield potentials.

Southern Brazil has adequate to excessive moisture as a result of the recent rainfall. Many areas from Mato Grosso do Sul into Sao Paulo and portions of Minas Gerais also saw topsoil moisture increase to adequate levels. Mato Grosso and Goias into Bahia and northern Minas Gerais still have a shortage of moisture with pockets that are critically dry in the topsoil.

Late season corn reproduction and development improved for Parana, Sao Paulo, Minas Gerais, and portions of Mato Grosso do Sul due to the rainfall in recent days. Some production cut has already occurred due to dryness earlier this month, though the rain was well-timed for the crops that are not yet filling or maturing. Overall, Safrinha corn production is still expected to be high this year, but not as high as it was once predicted to be.

Much of Brazil's corn areas will have enough moisture to support aggressive late-season development during the coming week. Filling and maturation conditions will also be favorable due to the mostly dry and warm weather. However, some of the wettest fields in Parana may need a few days of drying to support better conditions for corn. Harvesting will advance swiftly in most locations.

In the meantime, recent rainfall in southern Brazil that was not excessively great supported a better environment for early season winter wheat establishment and growth. Planting and general fieldwork was stalled by rain late last week and into the weekend, but the ground is now wet enough in some areas to support crop development deeply into June without any more rain.