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The Canadian Agriculture Weather Prognosticator

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World Weather At A Glance

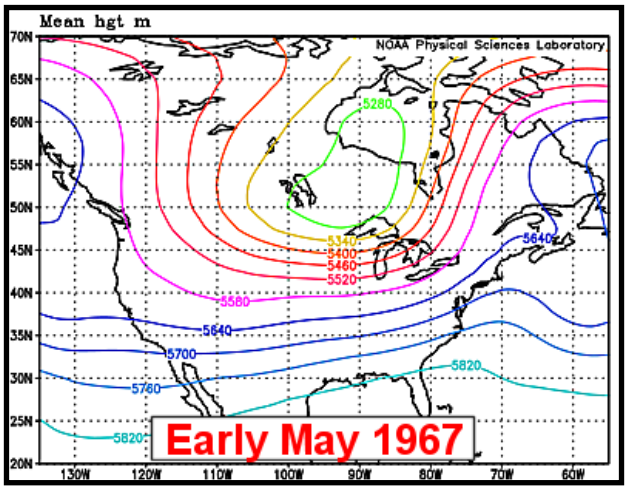
- Brazil's Safrinha corn finally got planted, but net drying now is raising some concern over future development
- Brazil will see improved rainfall later this month
- Argentina late season summer crops are finishing out favorably
- China soil moisture is very good this spring and that will translate into favorable winter crop development and spring planting
- India is seeing good crop maturation and harvest weather for winter crops
- Europe and the CIS will experience a good mix of weather over the next few weeks
- Australia's planting season for wheat, barley and canola will start well
- U.S. Midwest planting conditions are expected to be very good
- North America drought remains

Watch Those Frost, Freeze Dates

Drought and talk of more drought has raised a huge amount of interest in getting into the fields as early as possible this year. That is not a bad consideration, but be cautious and aware of your last frost and freeze dates.

There has been a great ground-swelling of interest in getting fieldwork started and completed earlier than usual this year. The interest in doing that has risen as we approach the planting season and temperatures are so far above average. The last time we started this warm in the spring was in an El Nino event and the risk of late season frost and freezes had to be considered then and they need to be considered now as well.

Our three analog years that we have based much of our comparisons to are 1967, 1985 and 2003. All three years turned wetter in the spring (i.e. April and May) and then turned drier again during the summer. In some parts of the southern Prairies rainfall in the spring of these years was substantial enough to slow planting and to bolster soil moisture sufficiently to carry crops into the warmer days of summer. Other areas did not fare quite as well and trended drier sooner than other areas, but in most cases the panic over dryness in the spring was put to rest before it was a serious crisis.



Now, the level of dryness in the Prairies in our three analog years was not as great leading into spring as we are today and that is a serious consideration. It is highly recommended to advance with fieldwork as soon as soil conditions will support it, but do not lose site of your last frost and freeze dates. Damage to early planted canola has occurred in both of the past two years and planting did not occur in those years notably early like what is being considered by some producers today.

Out of the three analog years one (1967) has a notably cold May. Frost and freezes in May 1967 occurred as far south as Iowa and neighboring states in the U.S. Midwest leaving the Prairies in the heart of a cold surge worthy of note. That year showed wild temperatures swings from unusually warm to quite cold and the swings occurred a couple of times.

Drought years as serious as this one have the ability to see widely swinging temperatures and a quick review of the past few weeks should reveal that to you in a short period of time. It was not much more than a week ago that temperatures fell hard into the negative teens and that occurred after many areas had warmed to the posi-

Watch Those Frost, Freeze Dates (continued from page 1)

tive teens and a few areas breached 20 degrees. Such swings in temperature occur when the air is very dry and until widespread precipitation falls in the Prairies a special warning should be issued for such swings in 2021.

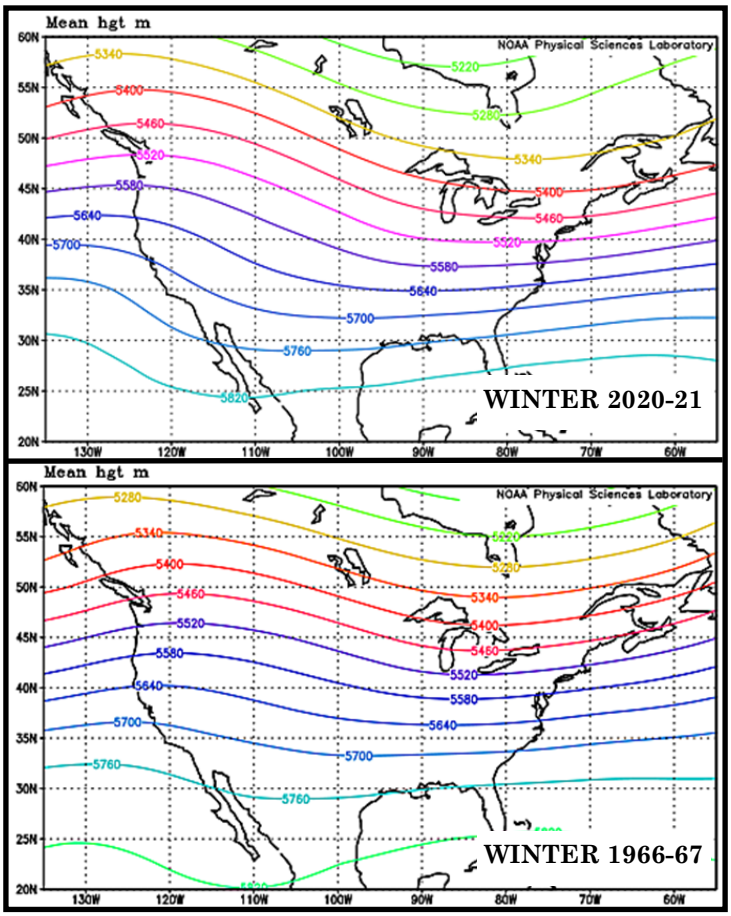
Even if rain falls as expected in late April and May some caution about the temperatures should be taken because of 1967. Rain fell in that spring too, but one or two of the rain producing events brought with it much colder temperatures.

Planting of wheat, oats, lentils and peas can certainly be planted early because of their ability to bounce back from frost and freeze events, but thinking twice about canola, flax, corn and soybean planting much earlier than usual is warranted.

Keeping an eye on the temperature swings that occur over the next few weeks will also help to determine the potential for swinging too cold in May for some of those frost sensitive crops. If we continue to see the wild swings it would be advisable to err on your normal planting dates instead of notably early.

No one wants to get caught in a drought waiting too long to plant and missing out on early season moisture that would help to get crops up and running faster than usual. However, in this case, there is a relatively good chance that rain will fall often enough this spring to get topsoil moisture in favorable shape so that the urgency in planting is reduced somewhat. So, waiting through the first couple of rain events to get closer to normal planting dates might be a wise thing to consider.

1985 and 2003 were not as cold as 1967. In fact, the atmosphere in the 1960s was quite a bit different than it is today. The air had a natural bias for being cooler and more recent years have not generally been as cool as back then. With that said you need to consider a few things that are similar to 1967. First, our winter weather pattern in the upper air (jet stream) was most closely matched to



that of 1967 relative to 1985 and 2003. Second, ocean temperature changes that are under way in the eastern Pacific are a little more like those of 1967 than the other two analog years and thirdly much of our weather last year was frequently compared to 1966.

The last thing to note about 1967 is that it was a year in which La Nina was present in January and dissipated during the spring and early summer just like this year. 1985 was a strong La Nina year all the way through the growing season and 2003 was an El Nino year in January that turned to neutral ENSO conditions during the spring and summer.

Those parallels to 1967 are enough for this meteorologist to wave a caution flag about May temperatures even if this is a drought year and even if the atmosphere is generally warmer than it was in 1967. Caution is still advised.

If you are good gambler and you believe that 1985 or 2003 are better bets you should at least note that temperatures in those years also swung widely, but their May weather was not nearly as cold as 1967.

The cold that occurred in the spring of 1967 was mostly confined to the first half of May. World Weather, Inc. has looked at the daily upper air weather maps for May and early June of each of our analog years and found that the most notable threats of cold seemed to pass in the first half of May. Now that statement needs to be taken with many disclaimers. Remember that just because a pattern is repeating from the past does not mean it will continue and it does not mean that a significant deviation from past patterns cannot occur. We have never seen any year repeated exactly like another for much more than a few weeks at a time so the best advise is to be cautious and watch for hints of changes in the pattern over the next few weeks.

The concern over dryness may be the greater threat relative to the risk of a damaging freeze and if that is the case adjust your plans accordingly. For now, praying for rain is priority one and the cold may be secondary. Stay tuned for more on this.

Late April And May Still Offer Potential Relief

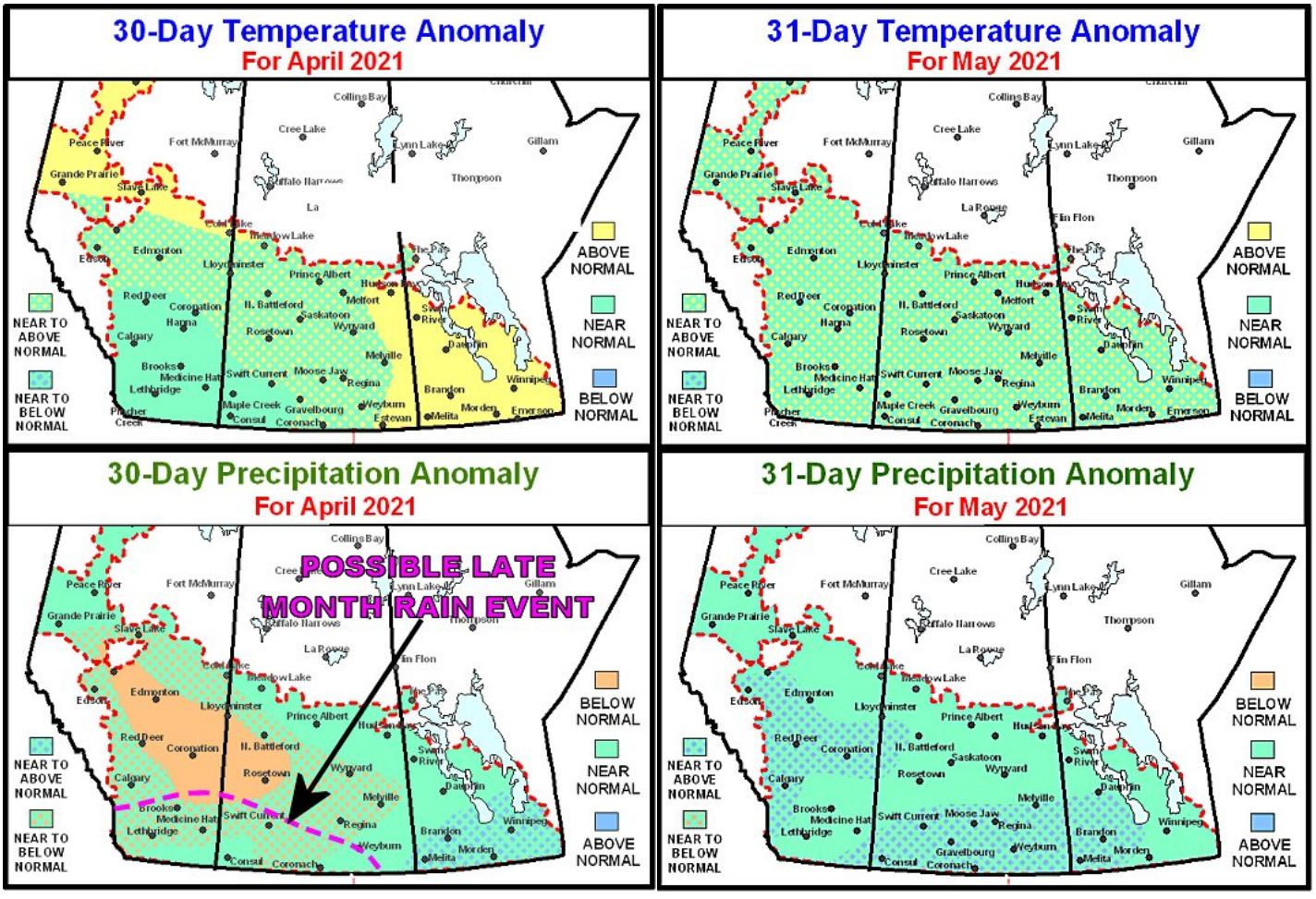
Recent computer weather forecast model runs have suggested some changes may be taking place during the second half of April to offer some needed rain in southwestern parts of the Prairies. This is a new development that has just recently showed up in the model data this week and confidence is a little low. However, the change fits our long term outlook for improving rainfall in late April and May so we have only indicated on the April map (below) where there is potential for late month improvement in precipitation. Until then, the only improved soil moisture will be in the southeast.

There is still some potential for rain in southeastern Manitoba this month, but a general soaking does not look to be very likely. Any rain would be welcome and there is still some potential for that in this coming week. The following week should trend drier biased once again and that dry bias will likely hold in place until the potential change in weather patterns evolves after April 20. This would be a great time for prayers to ensure that some timely rain evolves. Late April moisture would be extremely well timed and supportive of early season fieldwork.

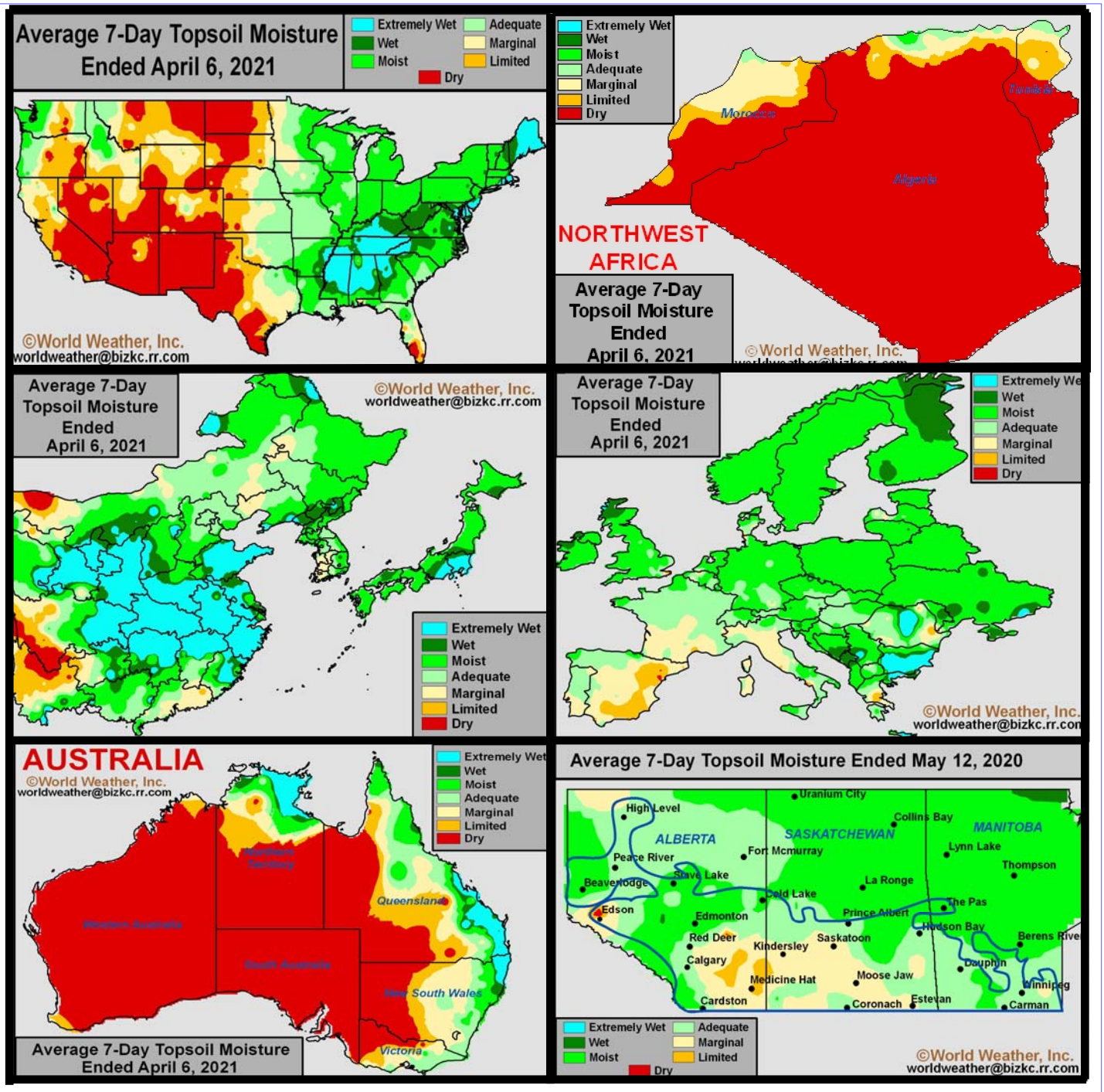
The outlook for May has not been changed for this prognosticator mainly because its outlook is totally dependent upon the late April weather adjusting as advertised. If late April's weather fails to generate some needed moisture in a part of the Prairies then the May outlook may have to be adjusted. The outlook in May is still looking to be the single best month for precipitation in the Prairies, but we are still walking on thin ice since droughts are sometimes hard to break down and conditions will have to be just right to bring about the anticipated change. We are hoping that the change in late April and early May occurs as expected and if that happens May weather could be wetter than advertised. A close watch on the outlook will be warranted, but confidence is still high that planting moisture will evolve.

The bigger concern after initial rain evolves is over whether or not subsoil moisture can be increased enough to carry crops through a drier summer in the southern Prairies, but that situation will be addressed in future prognosticators.

In the meantime, look for some cooler biased conditions to evolve in the Prairies for a little while over the coming ten days before the region starts to heat up again. Alberta soil moisture should improve in May as well as the remainder of the Prairies.



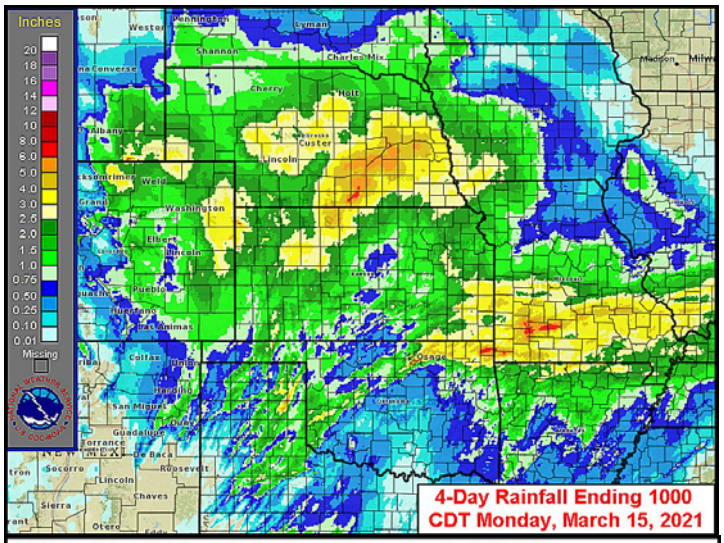
Selected Weather Images From Around The World



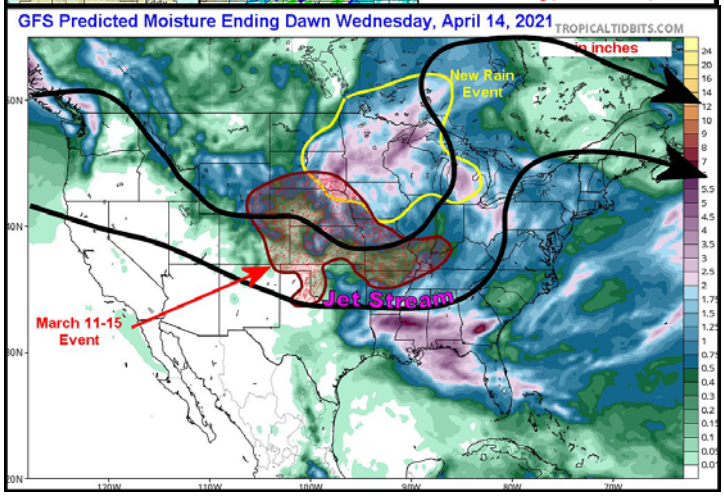
China soil has become a little too wet recently and there is need for drier conditions to protect rapeseed development and to support improved winter crop conditions. Spring planting moisture in China will be better than usual and as soon as temperatures become consistently warmer there is likely to be aggressive fieldwork. Recent rain and snow in parts of Canada's Prairies has improved topsoil moisture, but the need for greater precipitation is rising. Eastern Australia is drying down, but at this time of year that is a good environment for the maturation and harvest of summer crops. Rain is expected in southwestern Australia in this coming week which will improve soil moisture for autumn planting that begins later this month. U.S. soil conditions remain favorable for spring planting, although a storm system this week will saturate the soil in the upper Midwest, but that moisture is needed after recent drying. North Africa still needs rain in northwestern Algeria and southwestern Morocco. Western Europe is drying out.

Greater U.S. Rains Shifting North; Is Canada Next?

This week's big storm in the Upper U.S. Midwest is expected to bring significant moisture to South Dakota, southeastern North Dakota, Minnesota, Iowa and Wisconsin with some moisture in Michigan and Ohio as well. This event is extremely important for the upper Midwest which seems to have caught a bit of the drought from the northern U.S. Plains and Canada's Prairies. Dryness in the upper Midwest is not nearly as serious as that in Manitoba, Saskatchewan or southern Alberta, but is in a strategic location for the production of summer coarse grain and oilseed crops. That makes the precipitation very important.



However, to the Canadian producer, the precipitation event is extremely important. The event is very similar to one that occurred March 11-15 in U.S. hard red winter wheat production areas in which chronic dryness was finally eased following months of poor precipitation and the big February freeze event.



This week's storm in the central United States is occurring quite similarly to that which occurred in mid-March only at higher latitudes. That northward shift and repeat in patterns lends great hope for the Canadian producer. The jet stream is expected to shift farther to the north later this spring and if this is the prevailing weather pattern there will be hope for rain in the eastern and southern Prairies as we get into late April and especially May.

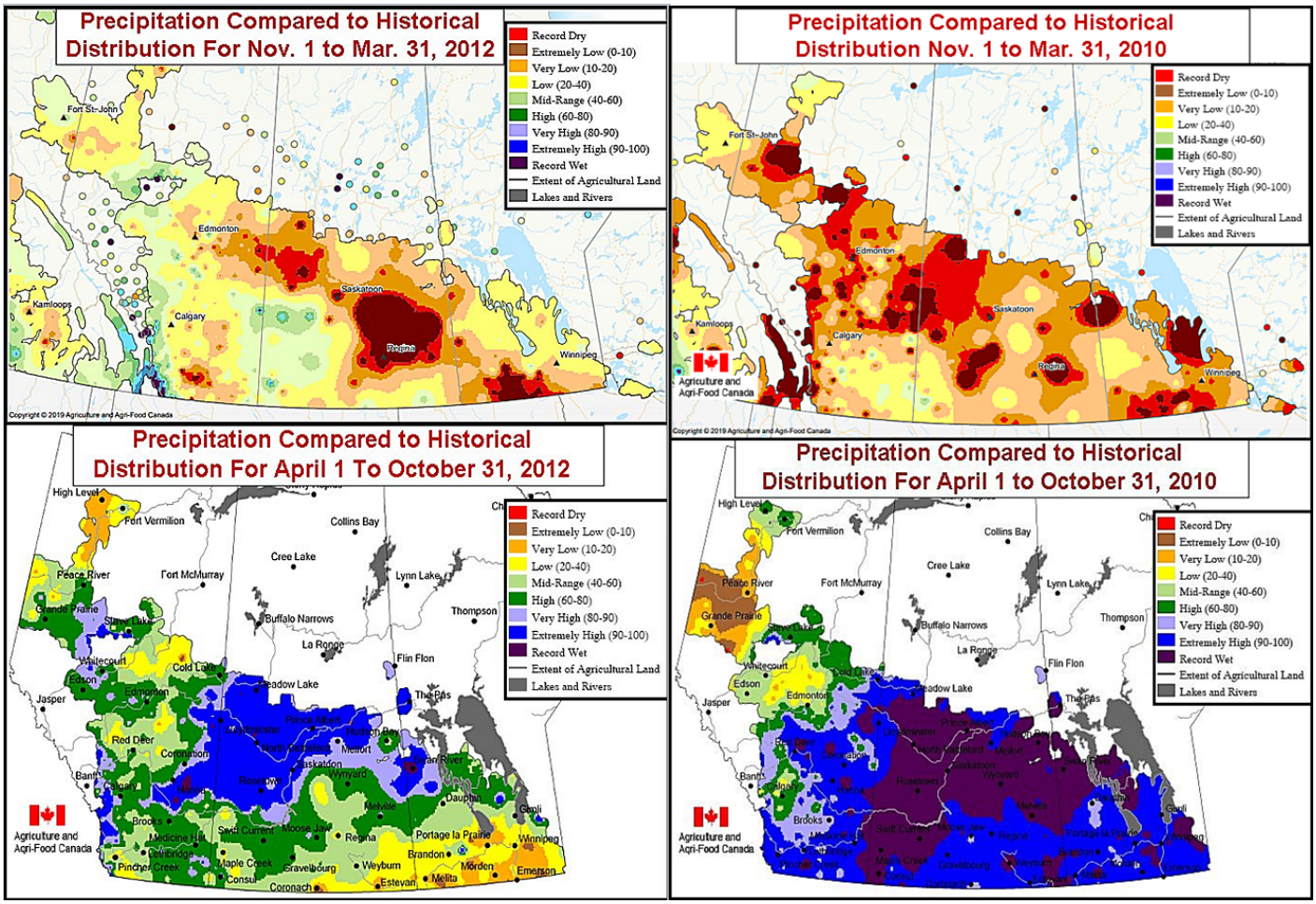
Now, you may be noting that the shift in precipitation was to the northeast and not the north or northwest. To get significant rain to fall in the driest areas of the Prairies the precipitation needs to shift north northwesterly and not northeasterly. As seasonal warming takes place the tendency will be for this pattern to shift farther to the north. However, as seasonal warming takes place there will also be the development of a ridge of high Pressure in the central United States. That high pressure ridge will force the jet stream northward and the broad-based trough of low pressure now over the central United States will relocate in the western United States with a new area of low pressure in the eastern United States. This change should come in May and June.

The hope and expectation is that when the ridge of high pressure begins to develop, the same amount of energy that is in the jet stream today will still be present, but more over the northwestern United States. From there storm systems in May will have a chance to move along a trajectory that is farther to the west bringing storm systems into the southern Prairies and northern U.S. Plains from the U.S. Pacific Northwest. That is how the Prairies should get their relief this spring.

The problem with the scenario just described is that it may not evolve and persist long enough to get multiple storms to move across the southern and eastern Prairies. The U.S. ridge of high pressure is going to want to build strongly into the heart of North America quickly instead of gradually and that is the biggest concern about our spring rain potentials. If the ridge builds in too quickly and strongly it will push the storms farther north into Alberta and northern Saskatchewan leaving the southern and eastern Prairies to fall back into a drier and warmer weather bias too quickly before the ground has been adequately recharged with moisture to carry crops through the summer.

This is why so much emphasis has been placed on the prevailing western U.S. drought, the abating La Nina and cooling ocean water off the U.S. west coast. Each of these factors is going to encourage strong ridge building quickly in late spring and summer raising the potential that needed rainfall in the southern and eastern Prairies may be of limited duration. A slower evolution in the ridge would help the Prairies immensely with greater rainfall over a longer period of time allowing the ground to moisten well.

Summer Weather After Dry Winters



Canada Prairies weather statistics may have the greatest vision of hope for the 2021 crop season than any other assessment or study. World Weather, Inc. decided to look at the growing seasons of those years with the driest winter weather. The study was conducted without any consideration of previous droughts or any weather features such as La Nina, El Nino or the solar cycle.

The study only looked at the top driest years since 2005 which limits the study and possibly raises doubt over its validity, but data from the Prairies was not as easily presented prior to the early 2000s and we decided to look at the data available only through the use of modern tools.

Clearly the two top driest winter seasons in Canada's Prairies were 2012 and 2010. Both years were influenced by La Nina with 2010 seeing the beginning of a multi-year La Nina and 2012 dryness was occurring at the end of that same multi-year event. In both cases dryness during the winter was exceptional and producers coming into the spring were concerned about the situation.

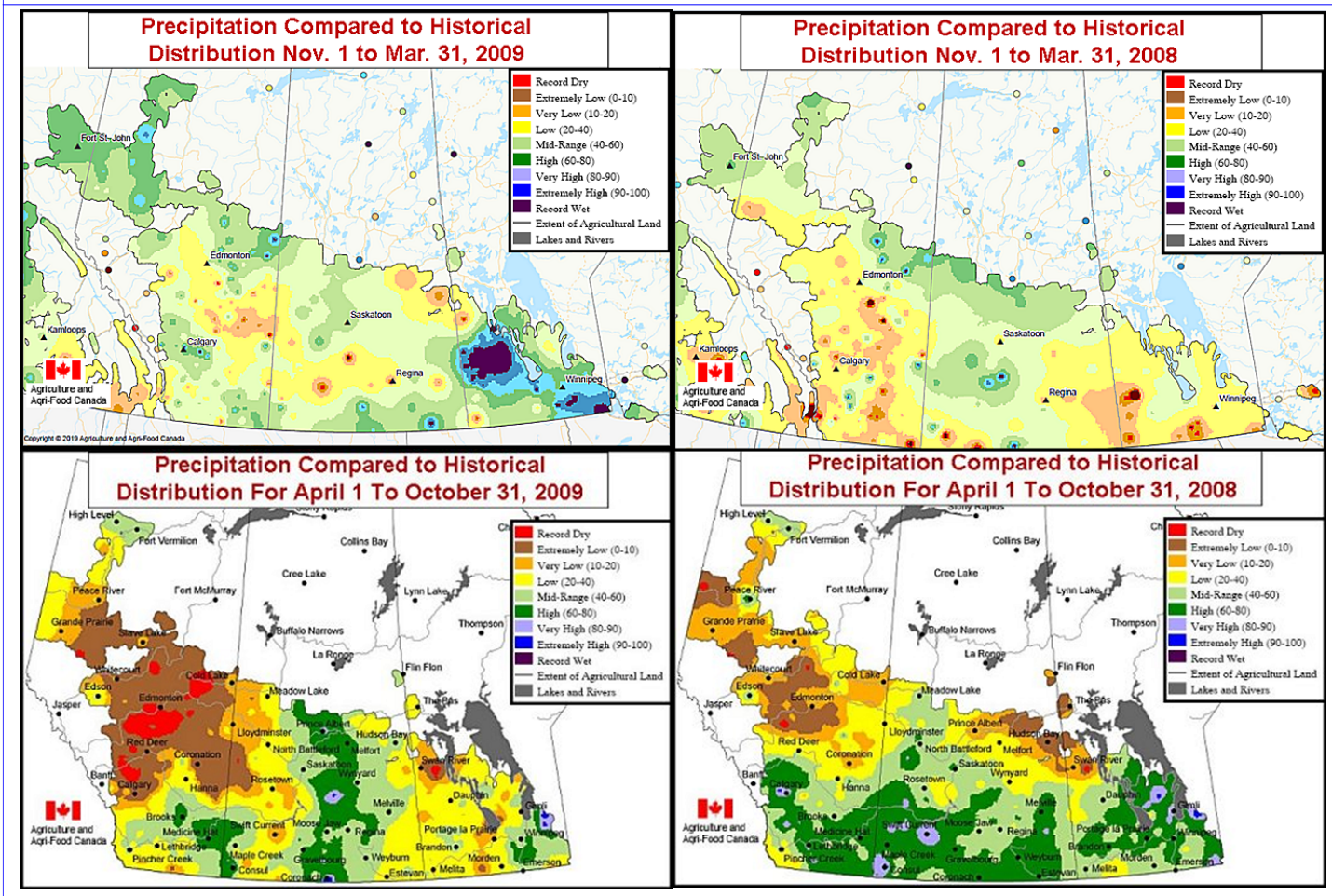
In both years, 2010 and 2012, drought was not nearly the issue that it is today. Drought has already prevailed for four years across the Prairies and soil conditions in southern and eastern parts of the Prairies has not likely been this low since the bigger drought years of the 20th century. However, for this illustration we will temporarily ignore that factor and look at the findings.

Notice above we have four images. The top two images are the percentiles of precipitation relative to the beginning of record keeping in the Prairies around 1948. Notice the degree of dryness that occurred in those two years. The situation is very similar to that of this year. However, notice what occurred in the following growing season.

2010 was one of if not the wettest year on record for much of the Prairies. The difference in precipitation from the winter season into the spring and summer was like night and day. Much of the Prairies ended up dealing with flood conditions in that year with tractors getting stuck in all kinds of mud during much of the growing season and planting was never fully completed and production cuts were extensive.

2012 was not nearly as wet as that of 2010, but there was a definite increase in precipitation with the

Summer Weather After Dry Winters (continued from page 6)



exception of the southeastern corner of the Prairies where dryness was an issue again during the summer.

2008 and 2009 were also very dry winters, but the level of dryness was not nearly as significant as that of 2010 and 2012. The result was much the same, however. The spring and summer seasons of 2008 and 2009 were mostly mixed with 2008 wetter than 2009. In both years western and northern Alberta trended drier during the growing season, but that was not the case in 2010 or 2012.

Not much can be concluded from this little study except there is an obvious tendency for precipitation to improve in the southern Prairies during the spring and summer seasons in years when winter is notably dry. That should leave a little more hope that a similar solution will occur in 2021.

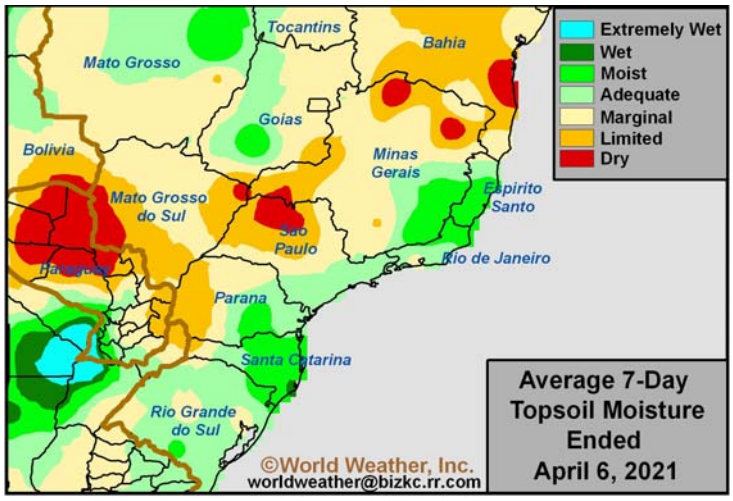
This past winter was certainly as dry or drier than that of 2012 and 2010 in some areas, although the November snowstorm in Saskatchewan helped put a bigger dent in dryness while Manitoba was drier than the other years.

The mere fact that drought has been prevailing for several years in the southern and eastern Prairies puts much more pressure on precipitation potentials for this spring. No one expects precipitation to be as great as 2010. In fact, most of the evidence suggests that at best the spring and summer of 2021 will be like that of 2012. However, with drought so deeply entrained in the western half of North America it will be difficult to prevent a strong full longitudinal ridge of high pressure from developing during the heart of summer unless there is significant drought relief in the next few weeks.

The bottom line still suggests relief this spring for many areas in the Prairies and then a return of dryness in the southeast while rain in other areas will be determined by the summer ridge intensity and position.

Southern Brazil Safrinha Corn Drying Out

Outside of Parana, the main Safrinha corn production areas in Brazil were either dry or saw a mix of light rain and sunshine during the past week. The lack of heavy rain helped expedite any planting that was not yet complete. The earlier planted crops were also able to get moisture from subsoil levels and maintain aggressive growth. Corn planted more recently may have struggled with the drying trend due to the lack of moisture in the topsoil and short root systems resulting from being planted in a wet environment. Mato Grosso and Goias will see the most frequent rain this week supporting aggressive crop development, but most areas to the south will experience ongoing dryness that may stress crops and limit growth.



Warm temperatures and restricted rainfall during the past week decreased topsoil moisture which is now rated short to very short in many areas. The only areas with adequate to abundant topsoil moisture are those that received the greatest rainfall during the past week; including northern and eastern Parana, southern Sao Paulo and from east-central Minas Gerais into Espirito Santo and northern Rio de Janeiro. Subsoil moisture was still rated favorably in the majority of Brazil which supported normal crop development except in areas where recently planted crops do not have the root systems to tap into the subsoil moisture. Subsoil moisture was rated poorest in central and eastern Bahia, northeastern Goias and northern and western Minas Gerais as well as near the Goias/Mato Grosso do Sul and Sao Paulo common borders all of which have short subsoil moisture.

The lack of rain during the past week helped producers finish or nearly finish Safrinha corn planting. Late-season soybean and first-season corn harvesting also advanced swiftly around the periods of rain.

Safrinha corn establishment and growth conditions are variable in the main production areas. Parana and other production areas in southern Brazil received enough rain to maintain aggressive establishment and growth during the past week. The more established crops in center-south and center-west Brazil also had enough moisture in the subsoil to promote favorable development. Recently planted and short-rooted crops in center-south and center-west Brazil are otherwise in need of rain. The ground is too dry to support ideal conditions for these short-rooted crops.

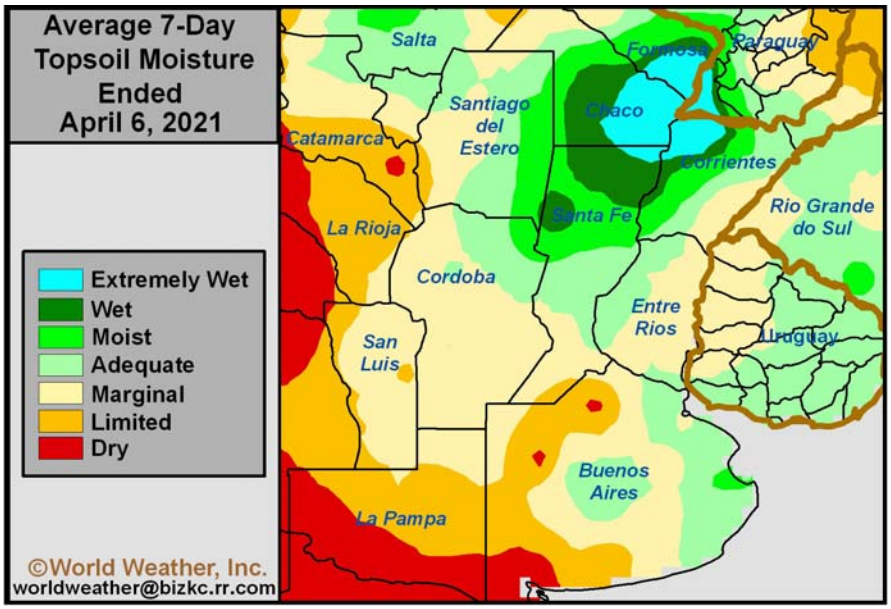
Late season corn planting was much later than usual and some of the crop was planted in wet fields. The wetter crops likely have under developed root systems and may find topsoil moisture depleted before roots have a chance to develop down into the subsoil. For these crops the current drying trend is a very significant threat to production. For most other crops the drying trend is a concern, but not a crisis since root systems will tap into the subsoil for moisture to develop normally.

Precipitation will vary across Safrinha corn areas this week. Mato Grosso do Sul, Sao Paulo, and Parana will be drier biased. Brief periods of light rain will be possible at times, though resulting rainfall will be quickly lost to evaporation limiting the benefit from rain. Parana will still have enough moisture to support a mostly good environment for establishment and growth. Mato Grosso do Sul and Sao Paulo will otherwise dry down significantly. The ground will become short to very short of moisture and the environment for corn will further deteriorate. The deteriorating crop development conditions may continue April 13-19 as rainfall stays limited while temperatures are warm. Production cuts will be possible if these conditions last too long.

Mato Grosso and Goias will otherwise see a good mix of rain and sunshine this week. Scattered showers and isolated thunderstorms will evolve on a daily basis through Friday. Light precipitation will continue for portions of Mato Grosso over the weekend as well. Moisture totals will range from 0.50 to 2.50 inches with local amounts over 3.00 inches. The rain will be enough to bolster soil moisture and support a good environment for Safrinha corn and cotton in the short-term. Additional rain will still be needed later this month and next to maintain a good environment for the corn.

Argentina Rain To Slow Early Season Harvest Progress

Kansas City, April 6 (World Weather Inc.) – Dry weather dominated Argentina's grain, oilseed and cotton areas this past week until Sunday into Monday when rain fell across northern most parts of the nation. Dry weather will occur again briefly today and early Wednesday before a slow-moving frontal boundary brings rain to most of the nation's agricultural areas late Wednesday into Saturday. The rain will slow maturation and delay harvesting, but only until next week when drying will allow fieldwork to resume. No significant changes in crop quality are expected except in a few northern cotton areas where rain has already occurred once this week.



Chaco and Formosa into northern Santa Fe and northwestern and west-central Corrientes received rain Sunday into Monday while all other areas in the nation were dry for the week ending this morning. Rain totals ranged from 1.50 to 2.60 inches resulting in a nice lift in topsoil moisture, but some of the open boll cotton in the region might have experienced enough moisture to temporarily discolor some of the crop.

Rain earlier this week restored favorable topsoil moisture in the areas noted above while the lack of rain in most other areas over the past week led to a general firming of topsoil. Subsoil moisture, however, remained sufficient to carry on normal crop development and the same is expected during the next couple of drier days.

The drier weather recently has supported crop maturation and harvesting in many areas. Rice was 61% harvested as of last Thursday compared to 62% in 2020. Corn was harvested on 13% of the nation's total acreage which is down from 20% last year. Sunseed harvesting was 79% complete which compares to 82% done one year ago.

Alternating periods of rain and sunshine will evolve in Argentina's main production areas during the coming week. The region will initially be dry today into Wednesday morning. A slow-moving frontal boundary will bring rain to La Pampa, San Luis, southern Cordoba, and neighboring areas late Wednesday before slowly shifting to the north Thursday into Saturday. Buenos Aires, Entre Rios, Santa Fe, and immediate neighboring areas will receive the most rain from this event, ranging from 1.50 to 3.00 inches and local amounts over 4.00 inches. Other production areas will receive 0.75 to 2.00 inches of rain with pockets of lighter rain in Chaco and Formosa. Drier weather will then return to most locations later this weekend and early next week. Drier biased conditions may then evolve across the production region April 14 – 20.

Rainfall late Wednesday into Saturday will be enough to slow early season harvesting and general fieldwork. Producers will still have time to get into the fields during the next day or two. A few days of drying may be needed after the rain ends before aggressive harvesting and fieldwork can resume. The only concern will be over the quality of open boll cotton in northern Argentina where rain might induce a little discoloring and a minor amount of string of maturing fiber out of its bolls. The precipitation will come too late to seriously impact yields for most coarse grains and oilseeds.

Precipitation later this week and weekend will be enough to bolster soil moisture in much of the country. Early season winter wheat and barley planting outlooks have improved due to March rainfall and will likely remain generally favorable due to the additional rainfall. Planting normally occurs in late May and June leaving plenty of time for the region to dry out again. Follow up precipitation will be needed to ensure the best autumn planting conditions, but too much moisture might delay summer crop harvesting.