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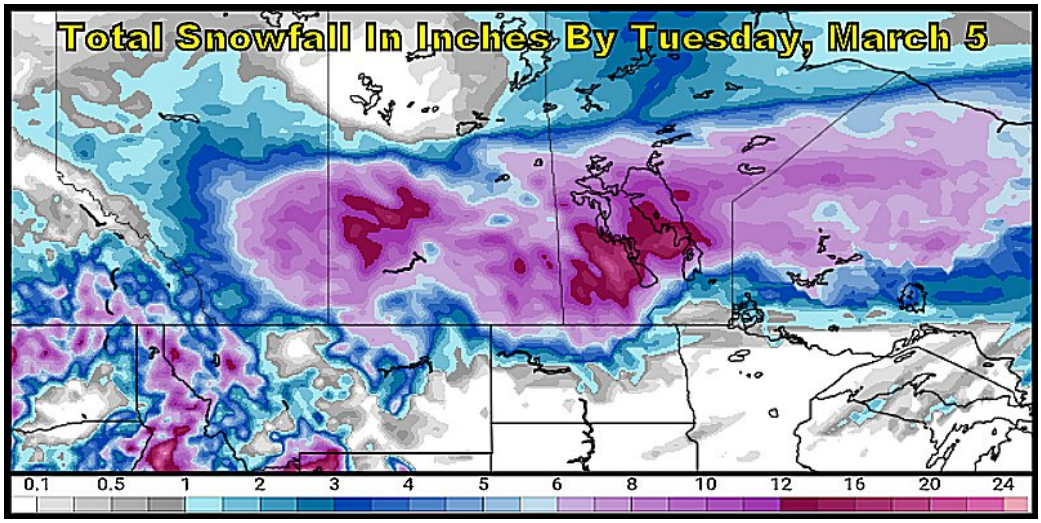
The Canadian Agriculture Weather Prognosticator

Volume XV, Issue XVI http://www.worldweather.cc March 2, 2024

World Weather At A Glance

- Western Brazil has been drying down again, but Safrinha corn planting is advancing swiftly
- Argentina weather turned much better in February with good soil moisture back for most summer crops
- Deep snowpack in western Russia has accumulated this year and is beginning to melt
- La Nina's return later this year could make the central United States, southeastern Canada's Prairies and a part of Russia dry
- South Africa drying in February has stressed summer crops while moving through reproduction
- India's winter crops have not had ideal conditions for reproduction, but there has been no excessive heat either
- Spain and Northwest Africa durum wheat areas are still too dry and may not produce well

March Begins With Needed Snowstorm



March is promising some relief from snow free or limited snow coverage that has been prevailing most of this season. The snow storm expected will be impressive beginning today in southern Alberta and western Saskatchewan today. The first wave of snow will fall apart while moving from southwest to northeast in western and north-central Saskatchewan Saturday afternoon, but a second wave of energy is expected to evolve over Montana and far southern Alberta tonight and move northeast Sunday. The storm will finally exit the eastern Prairies Monday.

The storm will leave behind 1-3 inches (3-8cm) of snow in southernmost Alberta near the mountains, 2-6 inches and local totals to 8 inches (5-15cm and local 20cm) in east-central Alberta and 4-10 inches with local totals to 12 inches (10-25 and local totals 30cm) in western Saskatchewan as well as from southeastern through east-central Saskatchewan to southern and central Manitoba.

There is some potential for much greater snowfall and blizzard or near blizzard conditions in southeastern Saskatchewan and southern and central Manitoba .

The moisture content in this storm will vary from 0.30 inch to 0.80 inch with local totals near or just slightly above 1.00 inch. That will translate into some improvement for surface moisture and runoff into dugouts and river systems.

However, some frost was put back into the ground this week. It may not be very deep, but it still may prevent melting snow from getting into the ground as nicely as desired. The storm will produce the single greatest volume of moisture seen since last October and is at least timed to encourage producers for the coming spring.

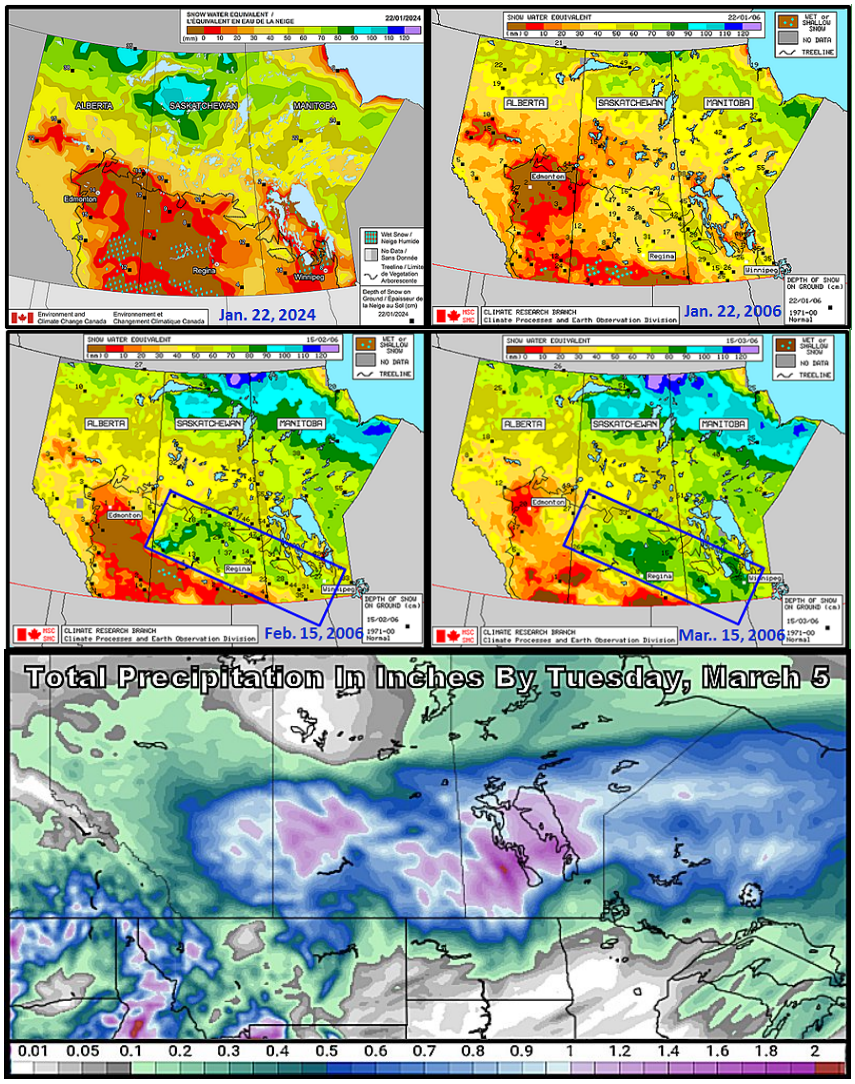
Cold weather will linger in the Prairies for at least ten days and some additional moisture is possible suggesting there may be snow around for a while.

Parallels To 2006 And 45-49 Day Cycle

World Weather, Inc. has been watching several weather patterns and analog years in recent months to get a better handle on what direction this spring and summer is most likely to go in. 2006 continues to show a notable parallel to that of this winter. This weekend's snowstorm and the snowfall that is associated with it seems to match closely with events that occurred in 2006, although the timing is a little different.

Go back to the page one article in this prognosticator and take note of where the greatest snow is supposed to occur and then come back to this page and note the graphics herein. There was very little to no snow on the ground during mid-January this year and the situation was quite similar in 2006. This is noted in the snow water equivalency charts shown here (top two graphics).

By mid-February there was much more snow on the ground in 2006. That did not happen this year—at least not through the end of February, but this weekend's snowstorm will lay down significant snow across much of the same region shown in 2006. By mid-March the snowpack was further increased. These graphics not only show a similar distribution of snow and snow water equivalency, but they also show limited to no relief occurring in the southwestern Prairies. The same thing is expected to occur this weekend.



The balance of March 2024 is expected to fall back to a more tranquil weather pattern in many areas, although there is some potential for a small follow up precipitation event in the southeastern Prairies next week and there may be one more opportunity for moisture of significance in late March.

Most likely this weekend's storm system will represent the bulk of March precipitation. The ridge of high pressure should reassert itself over western Canada and restrict precipitation for a period of time once again. This pattern seems to fit well with a 45- to 49-day cycle that was first noted in early October and then again in early to mid-January when the last cold blast moved into the Prairies. That sudden bout of cold resulted in the development of some significant precipitation in each event.

Completely dry weather is not expected in the balance of March, but the development of a major storm like that of this weekend will be low at least through mid-month. As mentioned in past prognosticators there is potential that as El Nino quickly weakens the pattern of dryness will get some weakness in it periodically and that will open the opportunity for additional light precipitation.

Going back through the recent weeks of weather there has been a clear trend of periodic "light" precipitation events and as seasonal warming occurs if this trend continues there will be a few bouts of light precipitation and a few areas may find the moisture beneficial.

Concern about the southwestern Prairies will remain, though. Most Trend Model data suggests precipitation will remain below to well below normal, although not absent. World Weather, Inc. says that will translate into ongoing moisture deficits in the southwest, but at least some moisture will fall occasionally that may improve planting potentials. Drought will not end, though. Timely precipitation will be important to support planting and early crop development in April and May.

Spring And Summer Outlooks Have Not Changed

Spring and summer weather across the Prairies has not changed since the last prognosticator. New data will become available in March and April that will enable us to make adjustments if necessary.

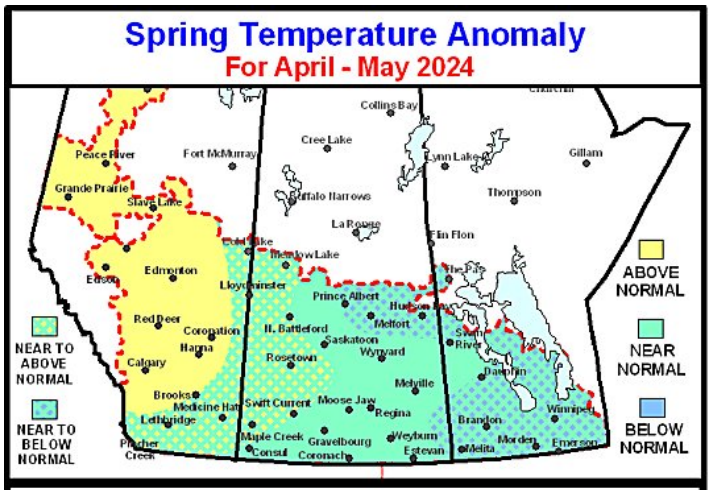
The demise of El Nino should be complete by the end of April and that will further widen the door of opportunity for improved rainfall. The next round of significant precipitation related to the 45-49 day cycle noted in the previous article should be in the April 16-20 period. That does not mean that is when the next precipitation event is expected, but it does suggest there may be another significant weather event in the central and eastern Prairies at that time.

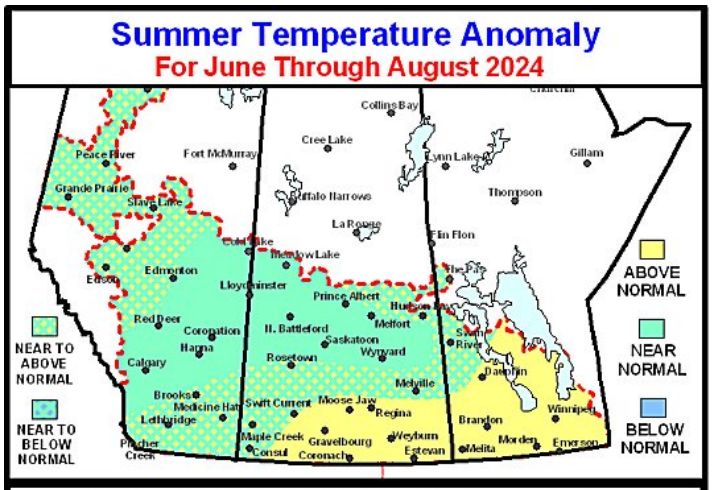
The changing ENSO patterns and the development of high pressure over the central United States in May could bring the 45-49 day cycle to an end, but we will watch for another significant precipitation event during that time period.

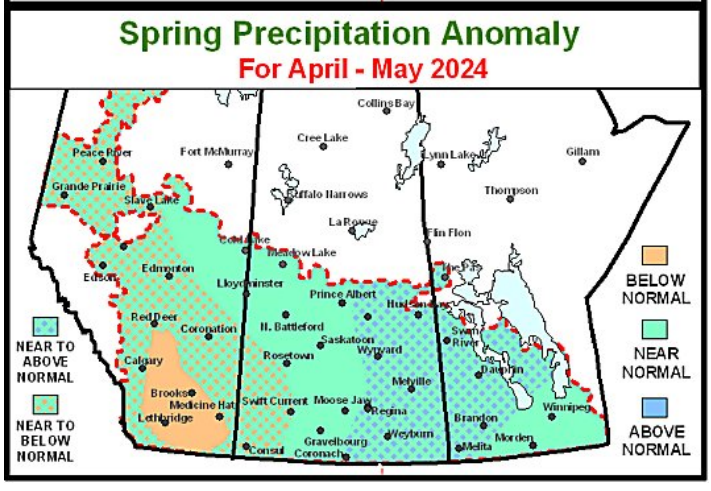
April and May weather seems to favor greater precipitation than usual in the eastern Prairies while the southwest may see more restricted rainfall. Be careful to not associate below normal precipitation in the southwestern Prairies with no rain. World Weather, Inc. still feels confident that a few timely rain events are expected this spring that will be a little better distributed in Palliser's Triangle to prevent dryness from being as significant as it was last year. However, rain in the region may be lighter than usual keeping a certain level of concern about the lingering long term dryness.

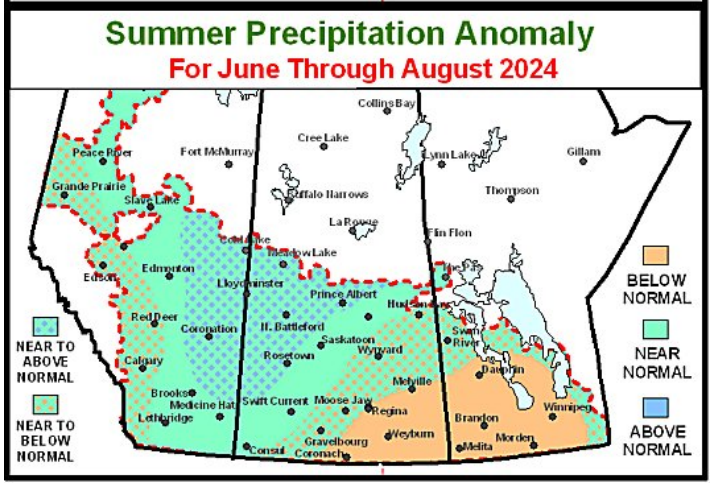
Summer is still expected to turn drier and possibly hotter in the central United States. The odds are relatively good that a notable heat surge will occur in the states this summer and if that verifies there may be enough intensity in the heat and dryness to build a stronger ridge of high pressure up into Manitoba and southeastern Saskatchewan. If that occurs rainfall will be lighter than usual and temperatures warmer biased in the SE Prairies during the summer.

Spring, though, in the eastern Prairies should be favorably moist and that should help get crops off to a good start. Quick planting this spring will be important. World Weather, Inc. is hoping that with the demise of El Nino this spring the potential for late season frost and freezes will decrease, but for now we need to watch the third week in April and the first week in June for possible cool spells. Most likely the June event will disappear because of ridge building in the U.S.

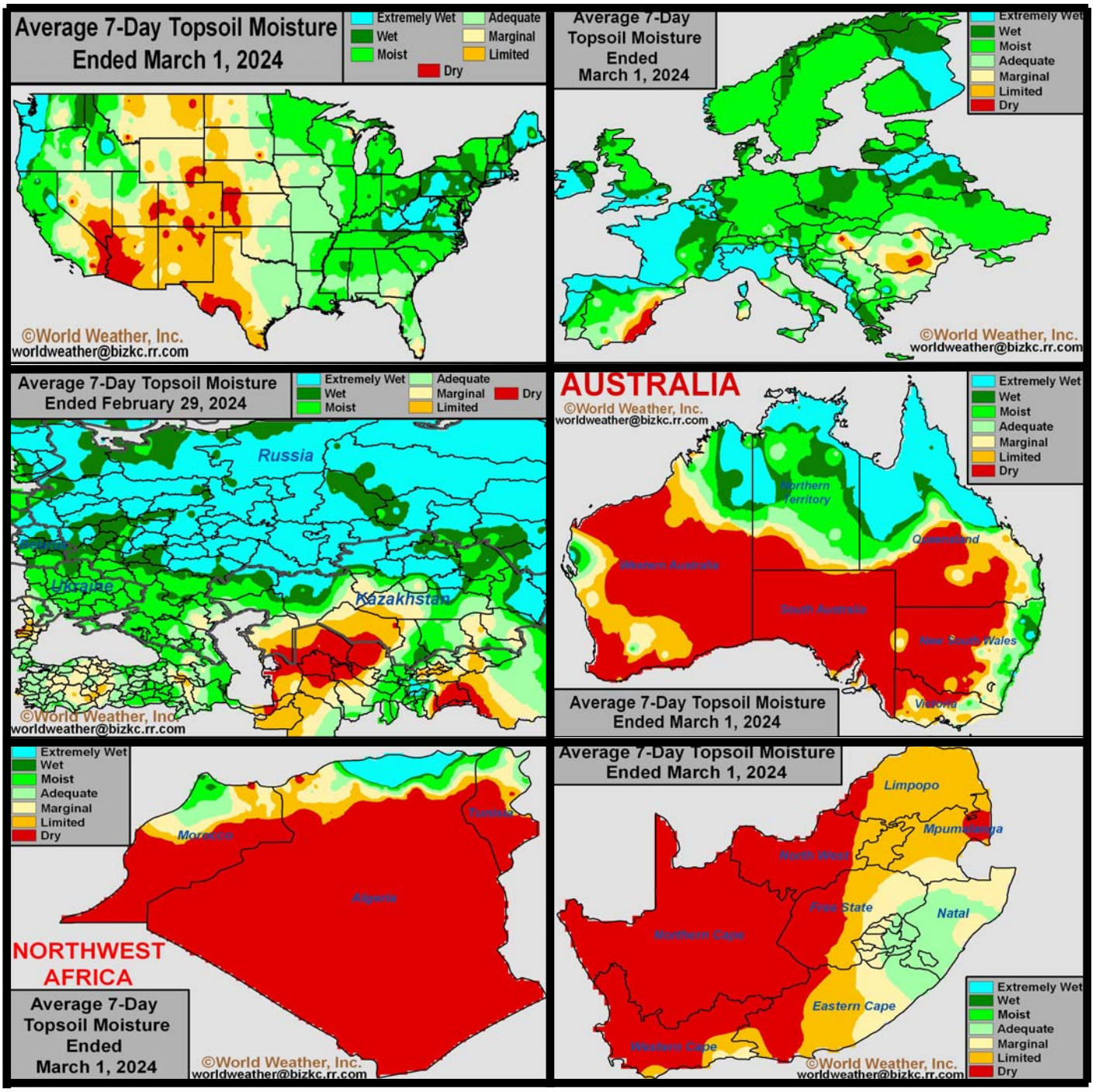








Selected Weather Images From Around The World



North Africa durum wheat and barley production will be cut this year in northwestern Algeria and northeastern Morocco while it stays well below normal in southwestern Morocco because of ongoing drought. Production from north-central and northeastern Algeria is expected to be better than last year. Tunisia should improve, too, but greater rain is needed. South Africa summer crops ran into dryness and warm biased weather during February and that may cut into some of its corn, soybean, sorghum, sunseed and peanut crop. Europe and CIS weather during February was mostly good, although there is still a problem with low water supply and poor soil moisture in southern and eastern Spain. Eastern Australia has dried out for late season crops and that could harm sorghum, cotton and peanut development as well as sugarcane. U.S. soil moisture has declined in the Plains and western Corn Belt because of dry and warm February weather. Better weather must occur in April to improve long term crop development potentials.

30– and 60-Day Outlooks Remain Hopeful

As noted in the page one article, the precipitation expected in this first weekend of March will be the single greatest precipitation event of the month. Other disturbances will produce some light precipitation periodically, but they are not likely to be nearly as great as that from Saturday through Monday. After this initial storm passes precipitation will be below normal with a few areas to see near normal amounts.

The first week of March will be cooler than usual in much of the Prairies and even though the latter part of next week will trend a little warmer, additional cool weather is expected in the following weekend and on into mid-month.

Changes are likely in the second half of March with temperatures rising above normal once again. The most anomalously warm weather during all of March should be in the Peace River Region where precipitation is also expected to be below normal. The warmer environment for much of the Prairies in the second half of March will help improve planting prospects especially for those areas that were snow covered in the first half of the month.

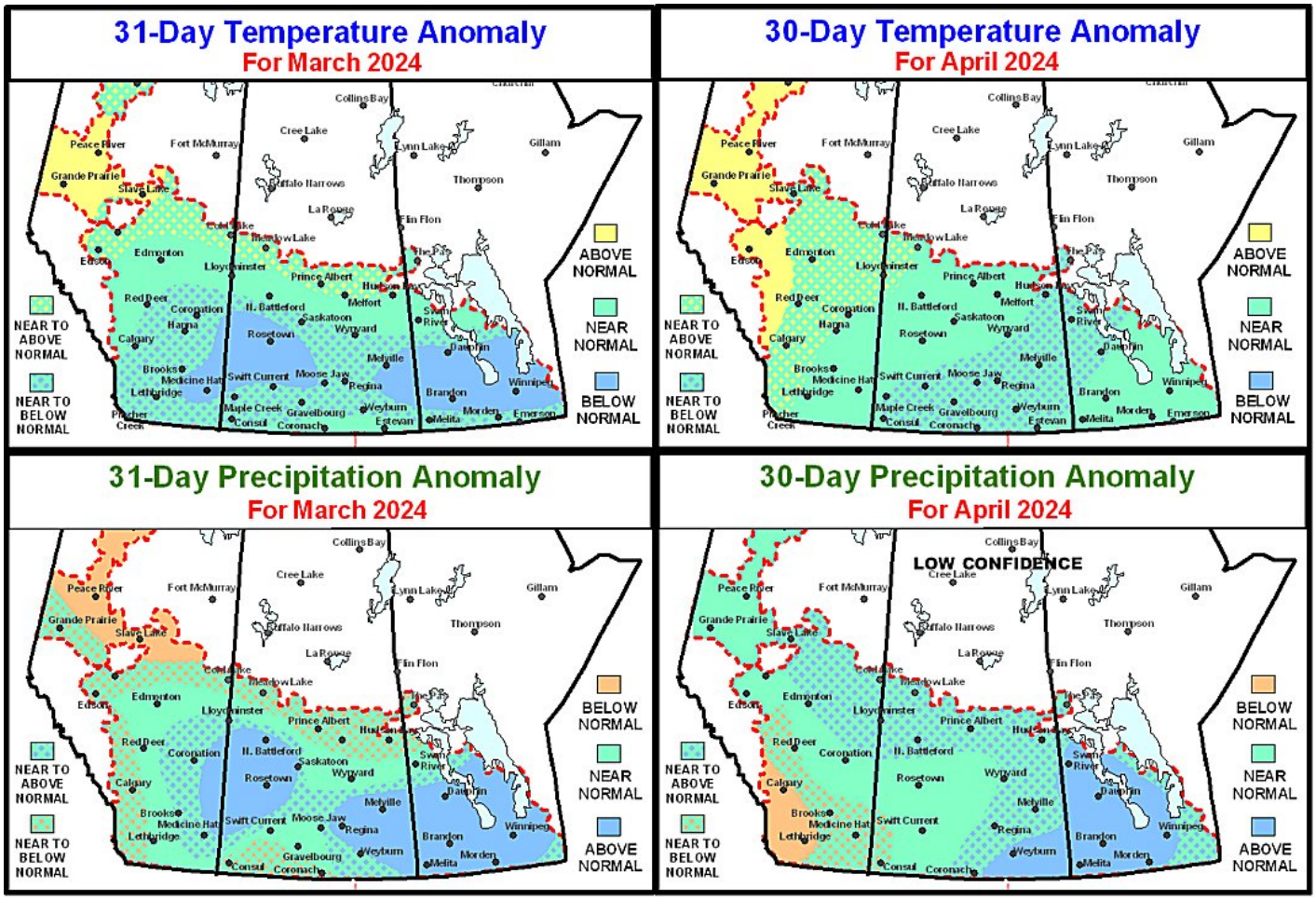
April will come along and perpetuate warm weather in northern and western Alberta with the Peace country likely to be warmest relative to normal.

Greater rainfall expected in the central and eastern parts of the Prairies will hold back temperatures at times possibly inducing a little bout of cooler biased conditions in southern and eastern Saskatchewan and northwestern Manitoba. Temperatures in most other areas should be near normal.

Precipitation in April is expected to be greatest in Manitoba and eastern Saskatchewan. By that time, El Nino will be gone and in late April there should be more temperature contrasts across the region as significant frontal systems carrying some notable cool air with them will run into an otherwise warm-bias setting the stage for some rain periodically.

Similar to the first weekend in March, much of the greatest rain in the Prairies may occur in eastern areas and it may be concentrated on the last ten days of the month when a 45-49 day repeating cycle has potential to return.

Dryness in the far southwestern Prairies may remain in May, but the region will have received some April rain and may have enough moisture to support fieldwork.



Peace River Region May Struggle With Dryness In 2024

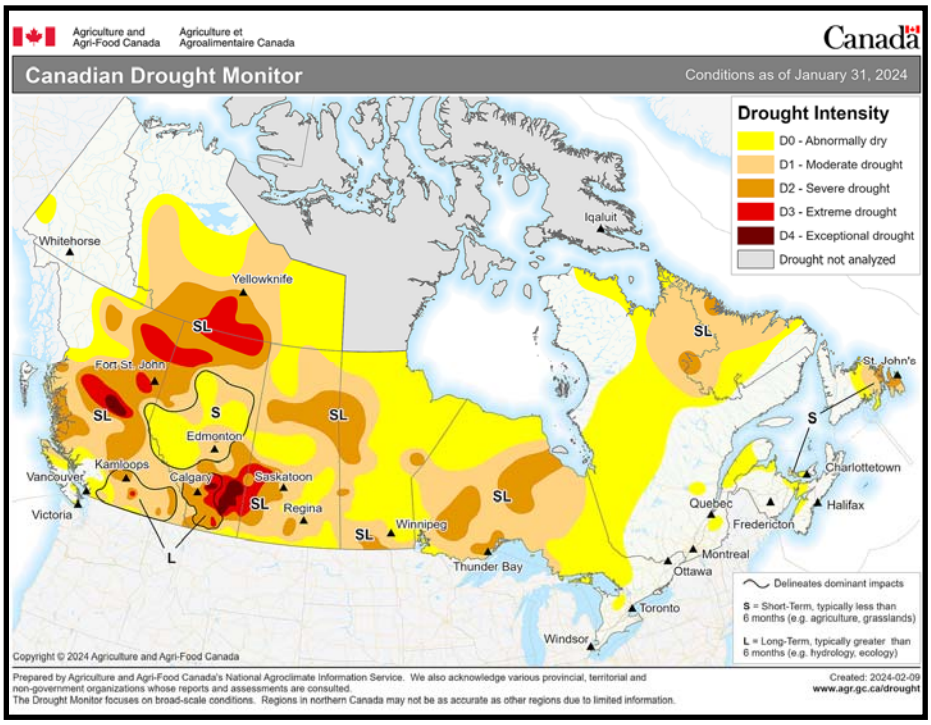
Peace River crop areas have dried out greatly in recent months. The El Nino ridge of high pressure locked into the western parts of Canada during the winter and allowed temperatures to be well above normal while restricting precipitation.

The ridge of high pressure associated with El Nino cannot break down quick enough to get dryness relief in the region. El Nino, however, is not the only game in town. Dryness and the high pressure ridge over eastern British Columbia and Alberta is also a by-product of the 18-year cycle that reinforces a high pressure ridge over the region during winter.

There are two features favoring rain to develop in northeastern British Columbia and northern Alberta this late spring. The first and most important is the absence of cold water in the Gulf of Alaska and the second seems to be an enhanced jet stream. During the past few weeks bouts of frequent rain and windy conditions have occurred first in California and then in the U.S. Pacific Northwest and more recently in both the northwestern U.S. and western British Colombia.

The wet weather is a by-product of warm ocean water, an active jet stream and the ridge of high pressure that is slowly shifting to the east. The ridge, as mentioned before, is partially due to El Nino and as that phenomenon goes away in March and April there will be less support for the strong ridge. The jet stream should remain enhanced during the two months, but during March it will be a little too far to the south to bring moisture to the Peace River Region. However, as the jet stream moves northward in April and May there will be a better chance for some moisture moving through western British Columbia to reach the agricultural region.

World Weather, Inc. believes there will be a narrow window of a few weeks in which precipitation



"may" fall frequently and possibly abundantly in the Peace River region. The period should be while the U.S. ridge of high pressure is developing in May. This process will allow the western Canada ridge of high pressure to break down and move to the east periodically. That should bring some of the waves of rain that have been impacting the British Columbia coast to shift northward and to advance farther to the east opening the door for some dryness relief.

The U.S. ridge of high pressure, once it is fully developed in June and July, will change the orientation of the jet stream so that storms start moving into the U.S. Pacific Northwest coast and shift to Montana then to northern Manitoba. Once this pattern evolves the U.S. ridge of high pressure will intensify and shift north of the Canada border into Manitoba and southeastern Saskatchewan reducing rainfall there and bringing some warmer temperatures to the eastern Prairies.

The U.S. ridge building into southeastern Canada and the shift in the jet stream bringing storms into the northwestern U.S. will cut down on rain events moving through the Peace River region and rain will increase across the Prairies from southwest to northeast.

Another twist in the forecast for this summer will be the development of La Nina. La Nina will feed more warmth and dryness into the central U.S. and may shift the greatest precipitation in the Prairies to northwestern Saskatchewan and eastern Alberta. If that occurs then the Peace River Region will start experiencing drier and warmer weather again.

There will be some potential for a second ridge of high pressure to evolve in northern British Columbia and into the Peace River region of Alberta during the heart of summer if that occurs rainfall will be minimized and temperatures will start to rise above normal once again.

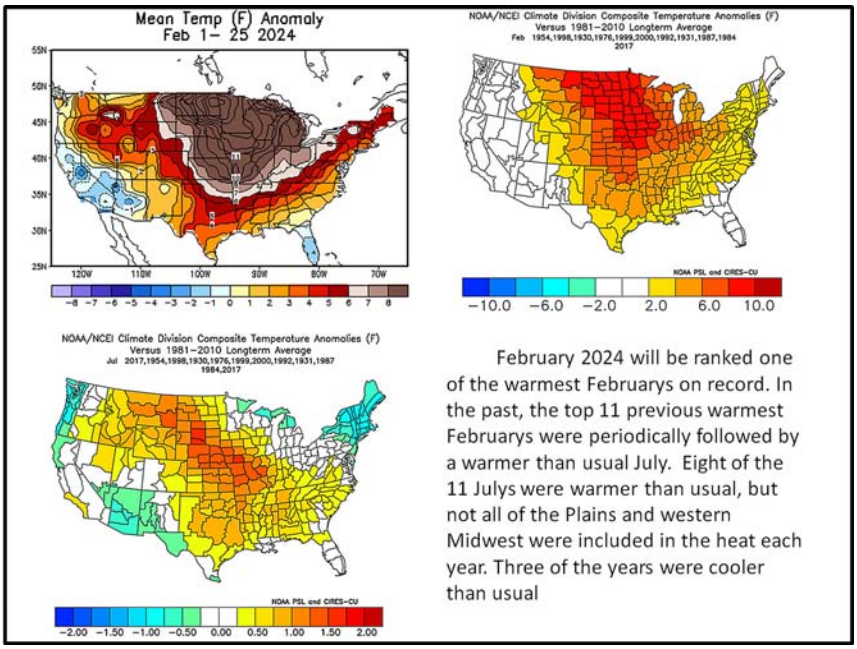
The bottom line is the Peace country will experience dry and warm-biased conditions in early spring and then briefly wetter conditions will be possible in late spring and early summer before dryness returns again.

Central U.S. Summer Has Potential To Be Hot

Improved farm management practices and better seed and plant genetics have provided the impression that grain and oilseed production is infallible. Recent production years in the United States and other areas in the world have surprised many producers and analysts how resilient crops are while under stress. However, it has become obvious that the biggest killer of crops is temperatures and not precipitation or lack thereof.

US production in recent years has outperformed expectations with yields that have managed to remain very high with only a small portion of "normal" rainfall. Last year's five months of well-below-normal precipitation in key summer grain and oilseed production areas would have wiped out production in the 1980s. Recent years of dryness have still managed to produce some amazing yields, and total production continues to grow rather than shrink in the face of dryness. World Weather, Inc. believes the true test of genetics and farm management may come in the summer of 2024 or the U.S. due to the potential for a hot summer.

One of the largest features missing from recent production years in the United States has been truly oppressive heat with no relief for long enough periods of time to damage crop production potential. The coming summer offers an opportunity for that to change, and modern agricultural technology and ingenuity may be put to the test in the Great Plains and western Midwest. World Weather, Inc. speaks of cycles in the atmosphere that are always in play. Many different weather patterns are at work influencing the atmosphere each year, and the period for each pattern to repeat is different. That is why weather is different each year even when it looks like a single pattern is repeating. It is like pulling the arm of a slot machine or playing the roulette wheel when it comes to determining the weather for each year. This year's spin of the wheel is suggesting greater potential for hot weather to impact the central United States than in recent years.



The lunar cycle already is promoting a ridge of high pressure in the middle of North America during the summer of 2024. Ridges of high pressure, when strong enough, can block precipitation and induce warmer-than-usual weather. A summertime ridge may begin to evolve in May of this year and already be suppressing rainfall in many areas by early July. Each time this cycle has played out in the past it has been slightly drier than usual in the spring across the Plains, Midwest and Delta, and more notably dry during the summer months. Most forecasters this year were expecting El Niño to be a greater precipitation producer in the United States than what has occurred thus far. Some of the moisture deficits that were present last summer are still prevalent deep into the soil in Iowa and other parts of the Midwest and central Plains. Even though a part of the Delta had been inundated with rain in late January and early February, it still has some moisture deficits remaining from last summer's drought. In recent weeks, there has been a mysteriously dry and warm bias in the heart of North America.

February temperatures were at or near record-warm levels for much of the Midwest, allowing greater evaporation and drying during the middle of winter, which is never a great feature to have when the growing season is approaching.

Many years ago, World Weather, Inc. assessed the 10 warmest Februarys and found that they often were followed by warmer-than-usual Julys. While that is not enough to rely on for a summer forecast, the lunar cycle has promoted a frequent occurrence of very warm to hot summers. The years looked at included 2006, 1988, 1970, 1952, 1934 and 1916. Many of these

Central U.S. Summer Has Potential To Be Hot (continued from page 7)

summers were warmer biased, but one feature that stands out in the Plains and western Midwest corn and soybean production area is a greater number of 100-degree days.

Many of these years produced more excessive heat than other years, with 1934 leading the way. However, 2006 was also a notable summer with excessive heat in the Plains and western Corn Belt, and 1970 was also in that category. The least amount of excessive heat among those years was in 1916, but each of the other years reported numerous days of 100-plus degree heat from Texas and a part of the western Delta to Illinois, Missouri, Iowa and South Dakota. The Plains were hottest.

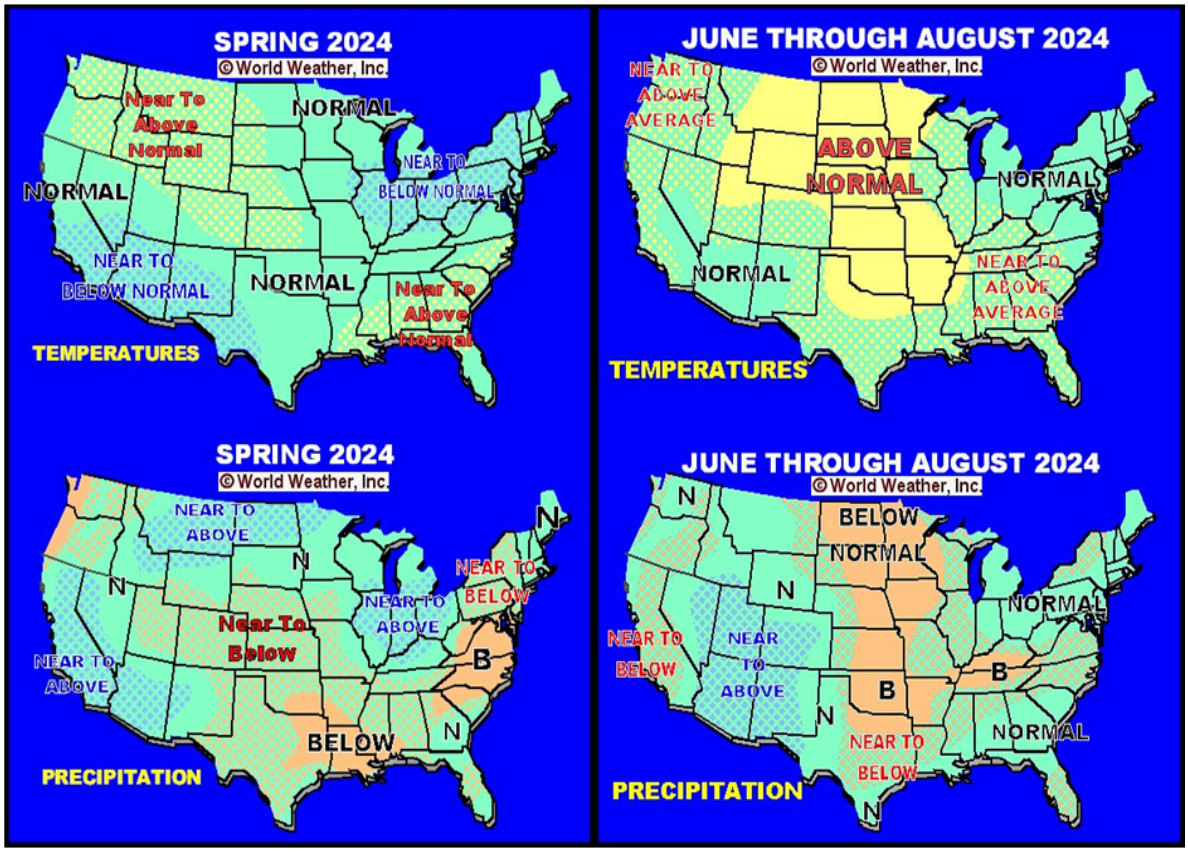
The heat showing up in the lunar cycle years along with unusually warm February weather that could lead to an unusually warm to hot July (by correlation of past years) makes the heat potential a little more real. But that is not all.

The US National Oceanic and Atmospheric Administration (NOAA) has a forecast model that has been consistently predicting La Niña could emerge by June of this year. In the past, years that begin with a moderately strong El Niño and transition to La Niña by mid-year have tended to be drier and warmer than usual. That agrees with the lunar cycle and our correlation with unusually warm Februarys.

World Weather, Inc. also has been monitoring world weather patterns for decades and notes the changes associated with the January 2022 Hunga Tonga volcanic eruption (which was the greatest in modern history). Global temperatures have spiked even higher than climate trend models predicted, and it may be due to the increase in stratospheric moisture resulting from the volcanic eruption.

Temperatures were excessively hot in the Northern Hemisphere last summer and similar conditions occurred in Australia in recent weeks and in Argentina earlier this summer as well as Brazil during the spring. The effects of the volcanic eruption should slowly dissipate over the next couple of years, but there may be enough heat remaining in the atmosphere to bring excessive temperatures to the central United States this summer since there is already support for warmer-than-usual conditions.

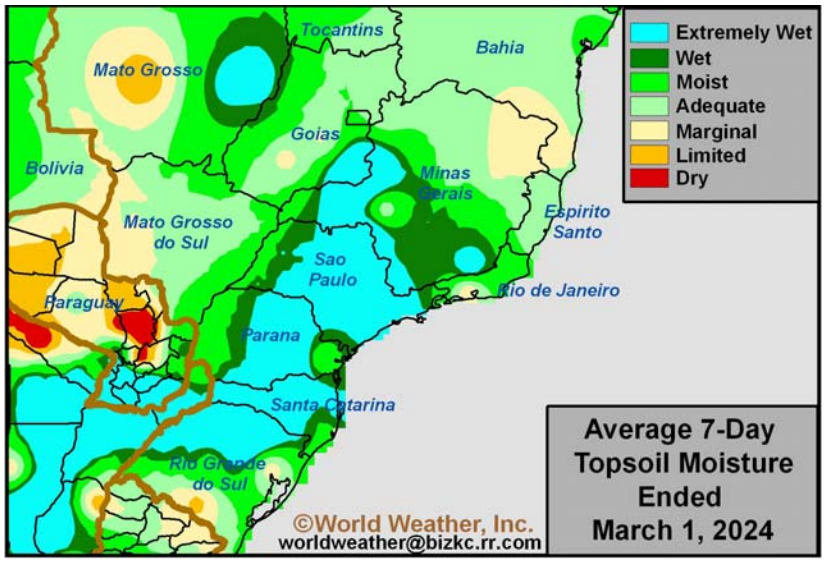
If all these cycles and atmospheric influences come together and support one another, the US Plains and western Corn and Soybean Belt may be subjected to one of the hottest summers in recent years. That could impact summer grain and oilseed production in 2024 in a more notable manner relative to the recent past drier summers that had no excessive heat.



Center West, Southwest Brazil Dry; Rain Needed

Western sections of Mato Grosso and Mato Grosso do Sul into Rio Grande do Sul have marginally adequate to slightly short topsoil moisture. Topsoil moisture in most other areas was rated surplus to excessive and a little less wet in the subsoil. Localized flooding was possible during the past week in in the wettest locations of Minas Gerais; though, no significant impact was suspected.

Harvesting is still advancing ahead of last year's pace in part due to periodic dry weather in recent weeks. As of February 24, 38% of the soybeans were out of the ground, up from 34.0% last year. Significant progress has continued since that date. First-season corn harvesting was also ahead of last year with 24.9% of the crop out of the ground, up from 16.7%. Periods of drier weather are still needed in the coming weeks to support harvest progress.



Safrinha corn planting is also advancing swiftly across Brazil as the soybeans come out of the ground. As of February 24, 59% of the corn was in the ground compared to 48.7% this time last year. The main production areas currently have adequate moisture to support establishment and early-season development. However, net drying during the past week and in the coming week has raised the need for abundant rainfall soon for portions of Mato Grosso, Mato Grosso do Sul, and Parana.

WEATHER OUTLOOK

Crop areas from Mato Grosso do Sul, interior Paraguay and far southern Mato Grosso to northern Parana and Sao Paulo will trend drier than normal into early next week The lack of precipitation will be partly attributed to an emerging Madden-Julian Oscillation event in the Indian Ocean, which tends to restrict rainfall in portions of Brazil.. Other locations in Brazil will see more frequent rainfall with amounts of 0.75 to 3.00 inches and locally more.

Temperatures will trend near to slightly above normal with daytime highs peaking to the 80s and 90s Fahrenheit (27-37C) . Pockets in Mato Grosso and Mato Grosso do Sul could also warm above 100 (38C) briefly this weekend.

Periodic showers and thunderstorms are expected during mid– to late-week next week and on into mid-month. Resulting rainfall is expected to be below normal, but sufficient to support crop development.

The lack of rainfall into early next week will be ideal for aggressive soybean and first-season corn harvesting and Safrinha corn planting. However, Mato Grosso, Mato Grosso do Sul, northern Parana, Sao Paulo and neighboring locations will steadily dry down Crop stress will slowly rise making the need for rain extremely important later this month.

SAFRINHA CROP COMMENTS

The lighter precipitation bias and warm weather in center west and southwestern Brazil crop areas will be fine for a few more days, but after Safrinha crops are all planted the need for significant rain will rise greatly. It will be imperative for the ground to be totally saturated with moisture in mid-April when the rainy season ends. That way the late planted Safrinha crops will have a good chance in developing normally into the reproductive season in May; otherwise there may be some moisture stress during reproduction and that will cut into yields a bit.

World Weather, Inc. does not believe the monsoon will end early and believes even stronger that the rainy season will not linger longer than usual making the moisture abundance in early April extremely important. It will also be important for temperatures during the dry season to be near normal and not above normal. Too much heat could evaporate moisture from the soil faster raising the concern that late planted crops might run low on moisture during reproduction. The longer range outlook does favor at least a slight warmer than usual bias in April and May.