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The Canadian Agriculture Weather Prognosticator

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World Weather At A Glance

- Central U.S. Plains get drought relief
- U.S. planting moisture in Midwest looks good
- U.S. northern Delta too wet for planting
- Argentina's dryness woes are over, but so is much of the crop season
- Brazil drying will finally help get the remaining soybeans harvested and late corn planted
- Concern over second season corn in Brazil will be high this year due to extremely late planting and a normal end to the rainy season
- India winter crops finishing well, but some minor yield losses occurred
- Australia planting prospects for wheat, barley and canola are good
- Dryness in SW Morocco remains; other areas in North Africa look good
- China, Europe and western CIS crop moisture good for spring

Worry About Drought Soaring

Drought continues in place across western North America and there has been no change except in the central U.S. Plains where rain this month has bolstered soil moisture and removed drought from Kansas, parts of Colorado and portions of Nebraska. But, the drought lives on in most other areas and there has been some worsening conditions in the Prairies and a part of the northwestern U.S. Plains brought on by unseasonably warm conditions recently.

All hope for the southern Canada Prairies and the northern U.S. Plains lies on the next two months. April and May will provide a period of transition from our dominating winter pattern to the summer pattern. Most indicators continue to suggest drier biased conditions will dominate July and August with June to be a transition month from the more active weather to a drier biased one.

June's weather will be dictated by western U.S. drought and the further development of colder than usual ocean temperatures off the west coast of the United States. That cool water is expected to continue building over the next few weeks and if that verifies the potential for a strong ridge of high pressure over central North America will rise greatly for the summer months.

Rain, or lack thereof, in the Prairies and northern U.S. Plains over the next two months will have a big role to play in determining whether June will be a good month or a bad one for the Prairies. The wetter the Prairies get during the period the longer it will take for a ridge of high pressure to build northward and the less intensive drought may ultimately become during the heart of summer.

Drought in the Prairies that is already prevalent should be whittled back during April and May by a more active weather pattern. Warm and cold air masses will begin to fight for dominance across the region during the second half of April through all of May and it is in that period of time that our best potential for precipitation will evolve. As noted above, there is potential for the pattern to linger into June and if it does the impact of summer dryness on the Prairies might be a little less. However, if early April is dry-biased and June fails to come up with significant rain the outlook for the summer could become bleak for the southern and eastern Prairies where dryness has already been significant.

World Weather, Inc. is still confident that precipitation will evolve in April and May. Topsoil moisture will be improved in many areas, but confidence over a big improvement in subsoil moisture is not nearly as great which raises much concern over late season crops in the driest areas because of limited subsoil moisture to support production during the heat of summer.

Another key factor in determining our rainfall potential in April and May will be on U.S. weather. Recent weather trends have been allowing storm systems to evolve in the central and southern Plains and move northeast through the Midwest and Delta to the northeastern and middle Atlantic Coast States. Seasonal warming in the next few weeks should shift the pattern northward and as it does there would be more potential for the same pattern to prevail, but on a track that would bring

Worry About Drought Soaring (continued from page 1)

rain from the central and interior northern U.S. Plains into the upper Midwest and southeastern Prairies. If the shift occurs normally there will be improved rainfall in Manitoba, southeastern Saskatchewan and neighboring areas of North Dakota and Minnesota during April. If everything goes just right the pattern will shift farther north during May bringing rain to many areas from southern Alberta to the heart of Manitoba as well as portions of the northern U.S. Plains.

However, this pattern could be influenced in a number of ways. One of our concerns is the potential for greater cool air to pool into western Canada during the later part of April and May keeping the jet stream at a lower latitude longer and delaying the onset of rain in the Prairies. In this case the window of opportunity for getting good rainfall into the Prairies will be much shorter because by the time warmer air returns and the jet streams shifts to the north the potential more notable ridge building in the United States will be rising restricting the period of relief to just a few weeks.

There is also potential that a northwesterly flow of air will prevail across Canada in a more split jet stream pattern keeping the pattern much less accommodating of moisture flow from the south which is imperative for drought relief this spring.

Ideally, the jet stream needs to shift norward immediately stopping in the northern U.S. Plains and then staying there over multiple weeks. This scenario would bring multiple storm centers across the northern Plains and southern Prairies bringing one rain after another over multiple weeks raising topsoil moisture and putting to rest much of the driest conditions. This scenario, unfortunately, is least likely to occur.

In previous prognosticators we showed how the 18-year cycle was promoting above average precipitation in the southern Prairies for late April, May and a part of June. We presented those maps as evidence that we could get through spring in an improving mode delaying the onset of worst conditions until later in the summer. We also mentioned that in order for the precipitation pattern to verify as well as it did in 1967, 2003 and 1985 that the intensity of drought needed to be parred back during the winter and early spring. Well, the drought has stayed in place with very little whittling down.

Another change that has occurred recently is the quick demise of La Nina. La Nina is expected to dissipate or become an insignificant factor by the end of April. Its weakening mode has already helped central U.S. precipitation and soil moisture has been bolstered in Nebraska, Kansas, Oklahoma and neighboring areas of the western Corn Belt. This dryness relief would not have occurred if La Nina stayed strong.

The moisture in the central United States—"if" it can prevail over the next few weeks will help to limit ridge building over that part of North America for a while this spring. Even though that sounds good it might not help get the jet stream pushed farther to the north so that the southern Prairies get rain. Some ridge building is needed in the central United States to push the jet stream north into the northern Plains and the Prairies. Without the ridge building in the states there is potential for a split jet stream pattern to evolve with a high pressure ridge building over western Canada while a trough of low pressure occurs over the western United States and U.S. Rocky Mountain region.

The development of split weather pattern as just described is called a "Rex Block" and it has been a very long time since North America has been subjected to such a pattern, but if it evolves it could create a very warm and dry pattern in the Prairies through the spring with the summer ridge of high pressure still evolving as mentioned before in June, July and August perpetuating the dry bias in the Prairies and creating one of the worst droughts in modern times. Now, before you throw in the towel for the growing season a few observations need to be made.

First there is dryness in the western Prairies, but it is not as significant as the southern and eastern Prairies and feed back moisture when it gets warmer might help limit the Rex Block from evolving. Also, the warm pool of water that has been prevailing in the Gulf of Alaska over the past few years is gone and that will work against creating a ridge of high pressure over western Canada during the spring. Dryness in the U.S. Rocky Mountains might also help to limit the development of a Rex Block, but cooling ocean temperatures off the west coast of the United States might help create a Rex Block if the water temperatures drop more significantly and suddenly than they have been.

The diminishing La Nina should help slow down the cooling water trend off the west coast of the United States which may help our cause a bit.

The Rex Block scenario, prevailing dryness in western North America, cooling ocean water temperatures off the U.S. Pacific Coast, weakening La Nina and ongoing drought in western North America are all reasons why some forecasters have suggested the drought in 2021 will extremely severe.

World Weather, Inc. is not ready to make that dive because we could still get some rain in April and May that would support early and short season crops favorably, but the concern over corn, soybeans, flax and other late season crops will remain because of the potential for returning dryness later in the year. The next few weeks will determine much about the fate of our growing season.

May Offers Greatest Hope For Rain

April precipitation is not likely to be abundant, but it should increase over that of March. At the time of this writing some computer forecast model runs were advertising a larger snow and rain event early next week in the southern and eastern Prairies. The event is quite likely overdone, but if it were to verify there would be a little more support for short term improvements to topsoil moisture and a little more support for our April and May forecasts.

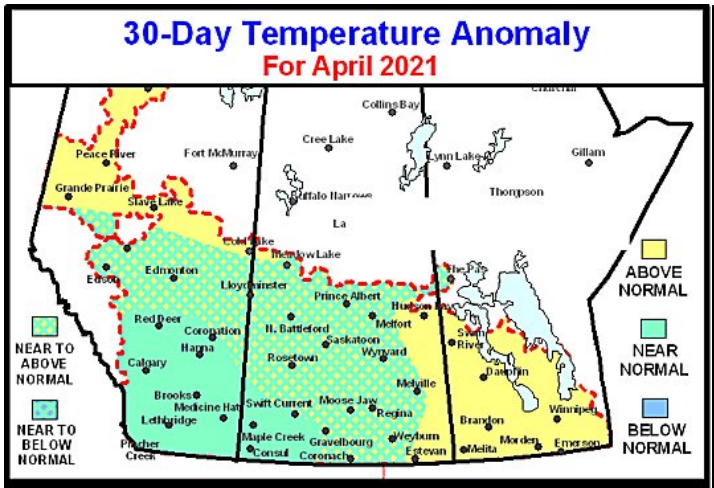
Warming in April will bring the jet stream farther to the north and there should be just a couple of weak pools of cool air meandering across the Prairies to help induce a little rain. However, a solid feed of moisture from the Gulf of Mexico or in from the Pacific Ocean does not look very likely outside of a couple of times. That will restrict April precipitation and with temperatures warmer –biased in most of the Prairies that will create a very difficult environment for notable increases in soil moisture.

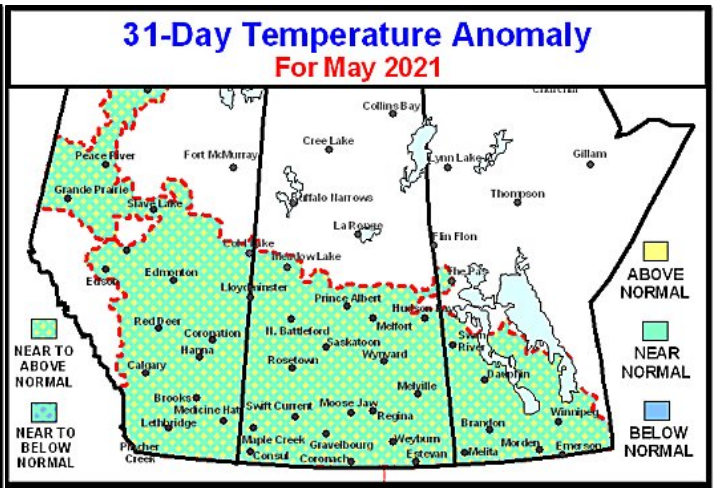
The area most disfavored for rain will be central Alberta into west-central Saskatchewan during April. There may be a few storm systems that move into the upper U.S. Midwest and southeastern Manitoba to help bolster precipitation in that region, but the farther west one travels the drier it may be.

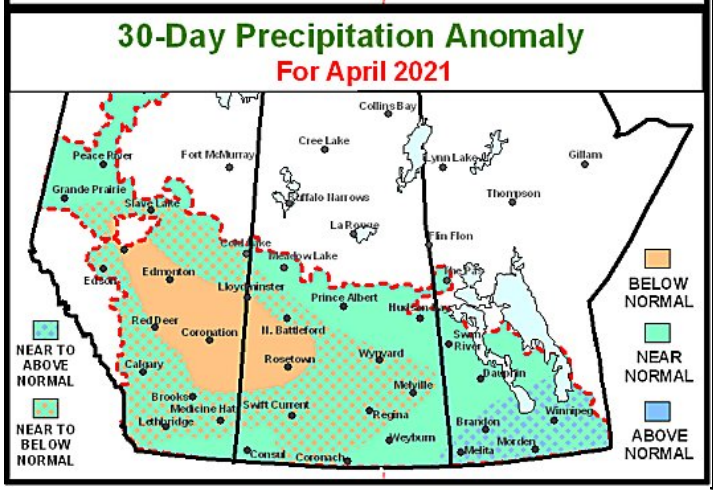
May is the only month that is going to have a potential for frequent weather disturbances and enough cool and warm air mixing to help induce normal to slightly greater than normal rainfall. The 18-year cycle data favors greater rainfall for most areas, but the atmospheric tendencies seen so far this year will keep that rainfall downplayed and until we can see how well weather systems reach the Prairies in April the potential for a significant change to the May outlook will be high. If the Rex Block pattern evolves in April the May outlook will be too wet.

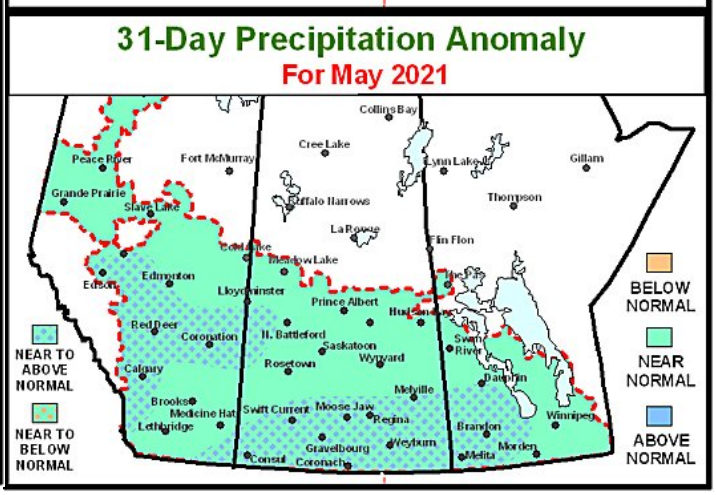
The warm temperature bias expected this spring will also be an important factor to consider. Evaporation rates will be high between rain events warranting greater rain to keep the soil moist. Subsoil moisture cannot be seriously increased without widespread heavier rainfall and that is the greatest part of the worry for the spring outlook. Replenishing subsoil moisture before summer heat and dryness come around is imperative if late season crops are going to have good chance of finishing favorably.

The summer outlook has not changed with a drier bias in the south and timely rain in the north.

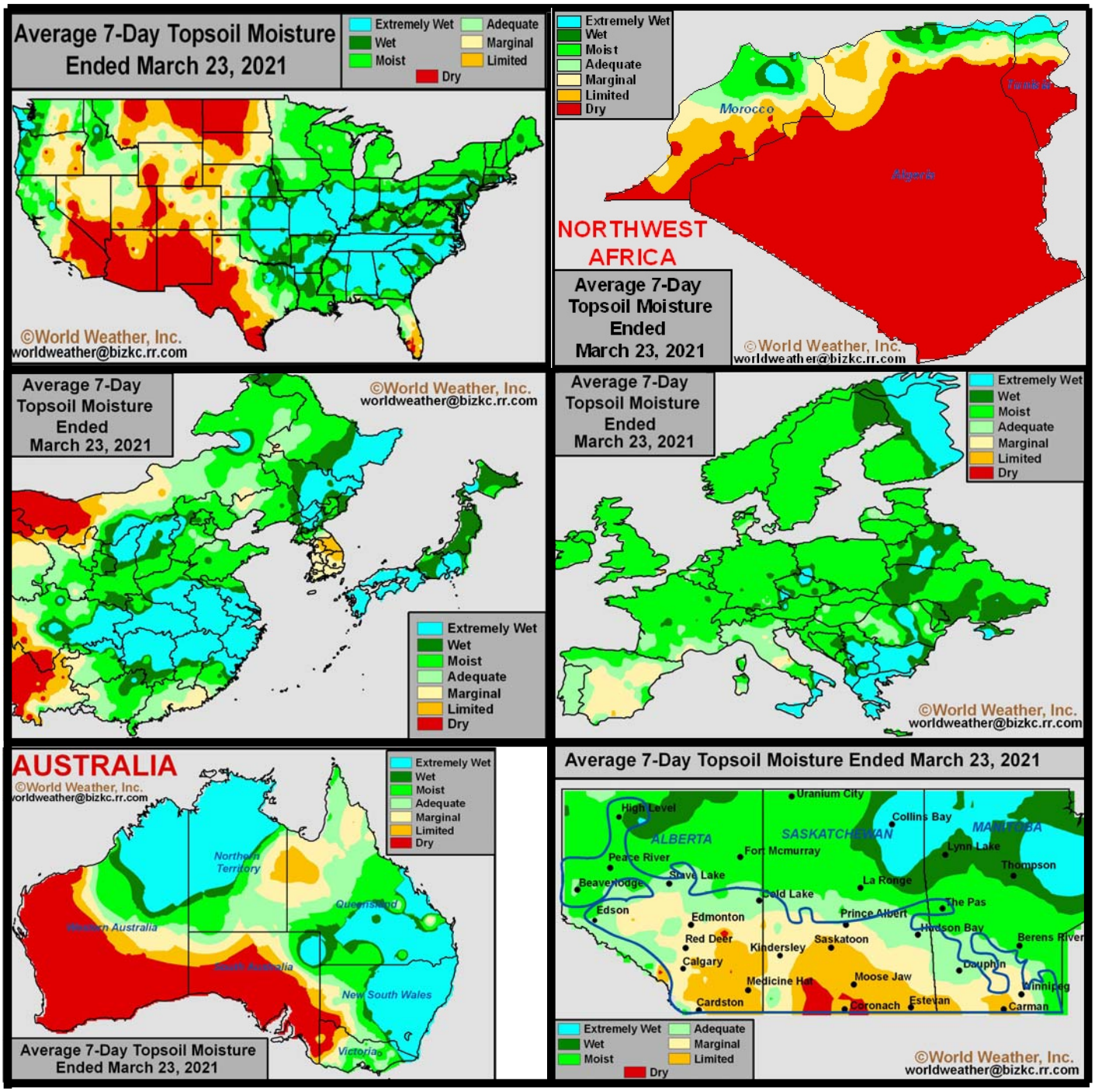








Selected Weather Images From Around The World



Eastern Australia rainfall in the past couple of weeks has bolstered soil moisture substantially and if the wetter bias can last long enough it will help support wheat, barley and canola planting in late April, May and June. Rain is needed in Western and South Australia, but there is plenty of time for it. Canada's Prairies are still hurting for moisture and have actually dried out additionally in recent weeks because of warm temperatures and limited precipitation. Northern China has experienced one of its wettest winters seen in a very long time and should translate into ideal winter crop development potential and better than usual spring planting progress once soil temperatures warm. Europe is beginning to dry out, but soil moisture is nearly ideal for the advancement of early spring planting. Timely rain will soon be needed, though. North Africa weather has been mostly good, but there is need for rain in northwestern Algeria and southwestern Morocco where some wheat and barley stress is prevailing.

Blocking Weather Patterns Possible in 2021

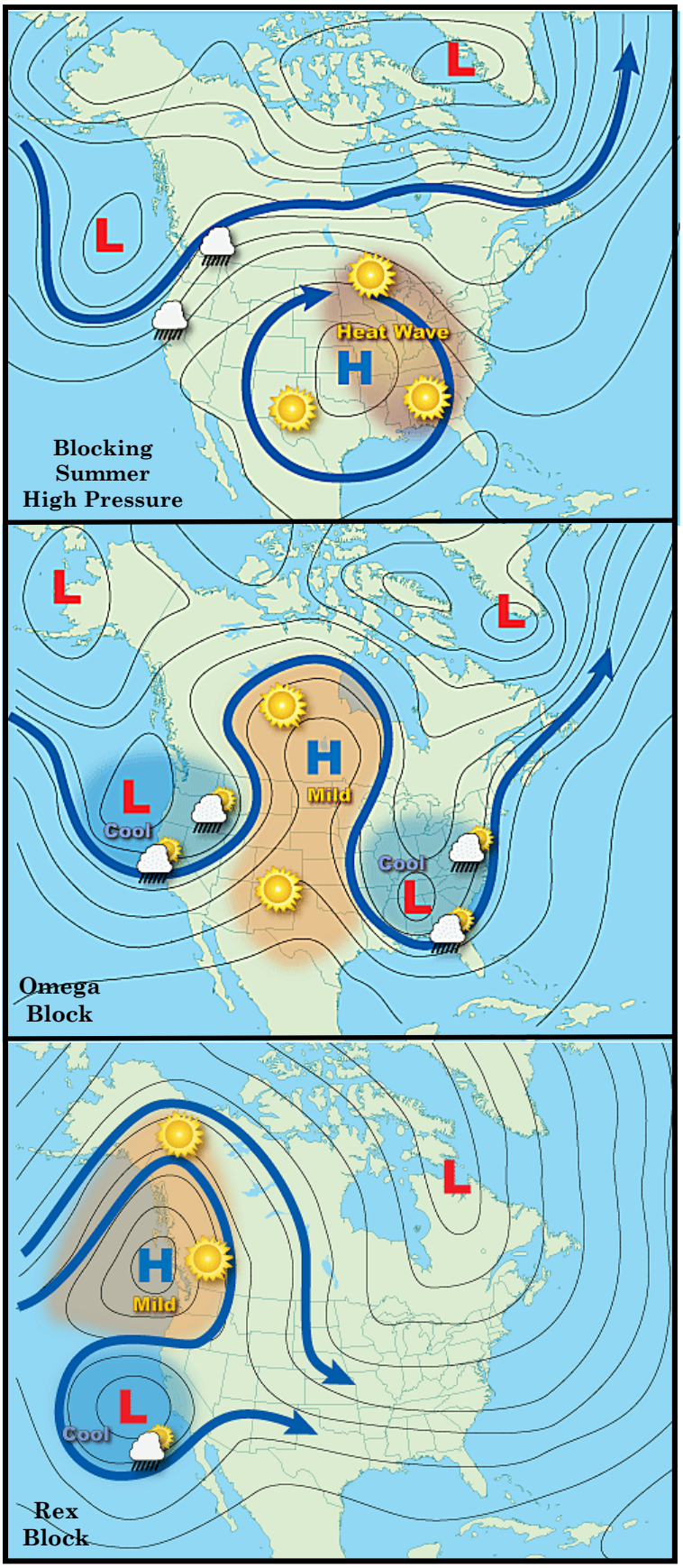
Blocking weather patterns occur in the upper air wind flow during the summer most often, but can occur in any season. This particular year the Canadian Prairies and the United States will have a higher than usual potential for seeing some kind of a blocking weather pattern. These blocks can have many implications depending on their position and intensity.

Each of the blocking patterns shown here have potential to show up during the next few months. The "Rex Block" was mentioned in the page one article and could show up in the next few weeks, but not along the west coast of North America, but possibly farther inland. The high pressure ridge aloft could evolve over the western Prairies with the trough of low pressure present over the interior northwestern parts of the United States and/or the U.S. Rocky Mountain states. This pattern is possible for a short period this spring and if it evolves it would shut down rain over the western and central Prairies while allowing some rain to fall over the eastern northern U.S. Plains and southeastern Prairies. The April outlook discussed on page 3 is slightly biased with this forecast pattern in mind.

The "Omega Block" has a high potential to show up this summer because of the cooling ocean surface water temperatures off the west coast of the United States supporting the negative phase of Pacific Decadal Oscillation (PDO). That cool water may help dig a deep trough of low pressure over western North America and then enhance a high pressure ridge in central North America. This pattern would then be completed with another trough of low pressure over the eastern parts of North America. This pattern would support hot and dry weather in the central parts of North America with rain and cool biases to the east and west.

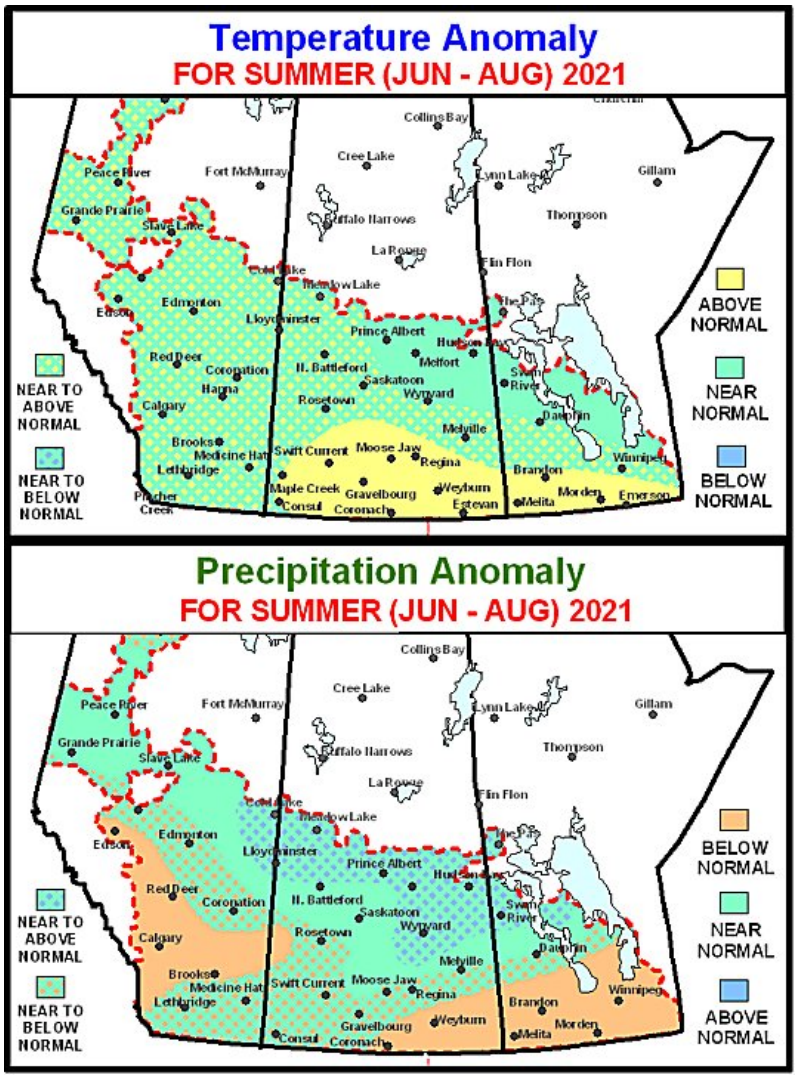
The "Blocking High Pressure" shown at the top of the page is the most common pattern during the peak of the summer in North America and this is the most likely pattern that will evolve late this summer. Rain systems would move from the U.S. Pacific Northwest through far western Canada and then across the northern Prairies. The southern Prairies would end up dry and warmer biased along with a large part of the U.S. Plains and western Midwest.

If the blocking high pressure shown at the top of the page is weak and mostly confined to the central United States, the Prairies would experience well-timed rainfall during the summer while the U.S. is dry and warm. A stronger ridge like that of the Omega Block is most likely this summer because of cooling ocean water off the U.S. west coast.



Prairies Summer Outlook Not Changed "Yet"

World Weather, Inc. has not changed its official summer forecast, much, but admittedly believes adjustments will be needed. Changing ocean surface temperatures off the west coast of North America will be much like a throttle on a car engine. If the water gets notably cool it will enhance the upper air wind flow pattern resulting in stronger ridge building aloft in central North America. If that happens the Omega Block shown on page 5 will then be most likely and it could have a huge impact squelching rain from the Prairies to the heart of the U.S. Plains and western Corn Belt.



The Omega Block could be quite a threat to North America crop production especially if rainfall this spring is a little lackluster and fails to put large amounts of moisture in the Canadian soil. That is where the month of May and some degree April is going to be instrumental in determining the impact of summer weather. The southern and eastern Prairies have little to no subsoil moisture and will not support crops in a hot, dry, summer scenario resulting from an Omega Block. However, if rainfall is above average in late April and May and extends a little longer into June before the ridge of high pressure evolves there would be a better chance that crops will have some subsoil moisture to fall back upon when it does turn drier and warmer again.

Also the more rain that falls this spring the greater feedback moisture will be. Feedback moisture occurs when significant soil moisture is evaporated into the atmosphere during the warm afternoons of late spring and summer causing thunderstorms to pop up as the heat of the day carries the moisture evaporating from the soil high into the atmosphere where it quickly condenses. In this case, the wet spring soil can help create more thunderstorms while the upper air wind flow becomes less suitable for cold fronts to bring moisture into the region. Feedback moisture is extremely important and in years when the ground is wet going into the dry summer pattern it can actually help save crops by keeping the relative humidity high and afternoon temperatures less oppressively hot. The pattern of showers and thunderstorms in this scenario would help keep many crops developing favorably even though a blocking pattern is preventing new weather systems from coming into the region.

Unfortunately, as dry as today's soil is across the Prairies it will take an extremely wet spring to get enough moisture in the ground to support the feedback scenario. It is not an impossible feat, but it will be very difficult to get that much moisture to fall in the next couple of months. That leaves the door open for temporary improvements to soil moisture this spring and then declining conditions in the summer.

Be sure to note that all of this talk about dryness and heat is most likely in the southern Prairies and less likely in the north. Northern crop areas this summer have a relatively good chance to be treated with some periodic rainfall that will support crops in a favorable manner.

Northeastern Saskatchewan and northern Manitoba had the greatest snowpack and most abundant soil moisture during the winter. Soil moisture in northern Alberta is also still very good down deep into the ground following years of abundant rainfall. Northwestern Saskatchewan is also suspected of having favorable subsoil moisture, but southern Alberta, west-central through southern Saskatchewan and east-central Saskatchewan into southern Manitoba are not doing well with subsoil moisture and are most vulnerable to dryness issues later this summer.

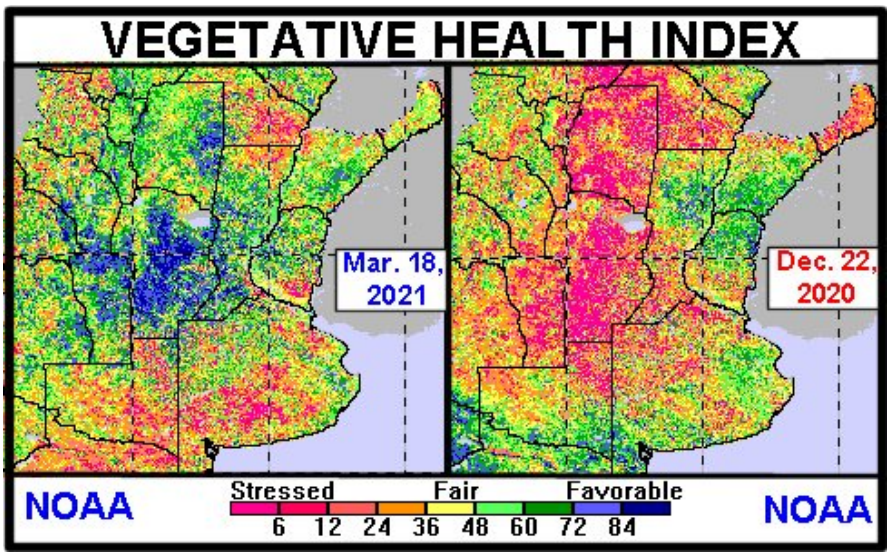
Argentina Soil, Crop Conditions Much Improved

Argentina's key crop areas are still reaping the benefit of significant rain earlier this month, but some drying did occur in western parts of the nation this past week and in north-central Buenos Aires. Weather changes the remainder of this week will generate some hefty rainfall in southern and eastern parts of the nation which may induce some local flooding. However, not all areas will be impacted. A restricted amount of rain is expected from northwestern Buenos Aires into southern Cordoba which may lead to a pocket of late season dryness at the end of March or early April.

Soil conditions were still rated favorably for normal crop development in most of the nation, despite recent drying in the west. Topsoil moisture was marginally adequate to slightly short in the areas reporting the lightest rainfall during the past week except in La Pampa and southwestern Buenos Aires where topsoil moisture was rated short to very short. Most other areas had topsoil moisture rated adequate to excessive while subsoil moisture was still a little light in northern Buenos Aires, southern Entre Rios, Chaco, Formosa and northwestern Corrientes. The areas with low subsoil moisture will need rain soon to ensure there is no moisture stress as crops finish out the growing season.

Recent weather and soil conditions helped promote a good environment for developing soybeans, corn, sunseed and peanuts. Moisture stress earlier this month was threatening late season production and for some crops the relief that came was a little late resulting in lower production. More recent rain has stopped that decline in potential yield and quality. For more mature crops the recent rain was a little too late to significantly improve production.

Argentina crops have put up a good fight this year, despite all of the heat and dryness. Extreme stress was impacting most of the nation during December and early January, but that quickly broke down as some timely rain events whittled away at the dryness. Conditions improved in many areas periodically and then would decline again and this pattern went on from late January through early February.



Another period of notable drying then evolved in late February and early March causing crop stress to rise to nearly the same level of December, but only for a short period of time and then relief came about ten days ago.

Despite the challenging growing season and forecasters suggesting a disastrous production year, Argentina has not lost nearly as much production potential as once feared. The Vegetative Health Index shown here provides some evidence of how crop conditions changed from late December to mid-March. Production cuts have still occurred and it will be interesting to see what the damage is, but the production year will end better than most had visualized.

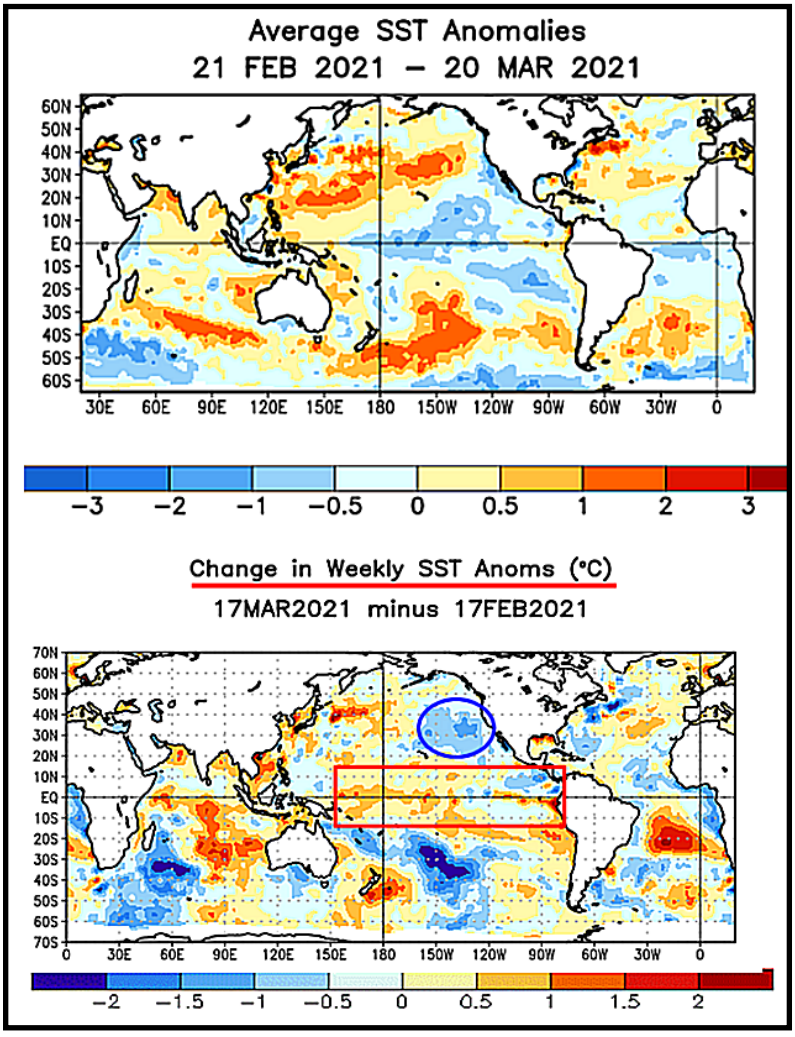
Argentina's weather is expected to turn wetter in the south and eastern parts of the nation into Saturday. Southern Cordoba, southern Santa Fe and northwestern Buenos Aires will receive 0.25 to 0.75 inch of rain with a few locally greater amounts by next Tuesday morning, although most of the significant precipitation will be over Friday afternoon. Most other areas in Argentina will receive far more rain with amounts of 1.00 to 3.00 inches and local totals of 3.00 to nearly 6.00 inches. The greatest rainfall will lead to some flooding and the areas favored for that will be in eastern La Pampa and from Entre Rios and northeastern Buenos Aires to Corrientes

Late-season coarse grain and oilseed development conditions will remain mostly favorable for much of Argentina during the next ten days, although drying in the coming week will be important for the waterlogged fields.

Negative Phase Of PDO To Influence North America

Evidence for a stronger negative Pacific Decadal Oscillation (PDO) continues to arrive for this spring and summer and the trend will have to be watched closely. Significantly negative PDO and lingering drought in western parts of the United States could make the summer drier and warmer biased especially during the second half of the season. Despite the loss of La Nina, there is still potential to get dry later this year after an active spring season. This discussion does not represent a change in the official forecast, but it reinforces our previous comments and leaves the door open for a drier finish to the growing season if all goes just wrong.

Cooling ocean surface water temperatures off the west coast of the United States is continuing to be closely monitored because of its potential influence on Pacific Decadal Oscillation (PDO) and summer weather across North America. PDO was projected to be one of the four most influential factors to summer weather this year. The other three are La Nina, drought in western North America and the prevailing 18-year cycle.



La Nina has weakened greatly in recent weeks and is expected to dissipate during April . Computer forecast modeling has been suggesting La Nina will not likely make a comeback until late this year, although it will be closely monitored. Many forecasters were keying in on La Nina to help recreate a 2012 style drought in 2021, but as World Weather, Inc. reported earlier this year neither phenomena will likely occur in the coming growing season. Just because no 2012 style drought is expected does not mean that a regional drought will not become an issue and it probably will as time moves along, but the spring season will be active and that will prevent dryness like 2012 from occurring as early or as significantly as it did.

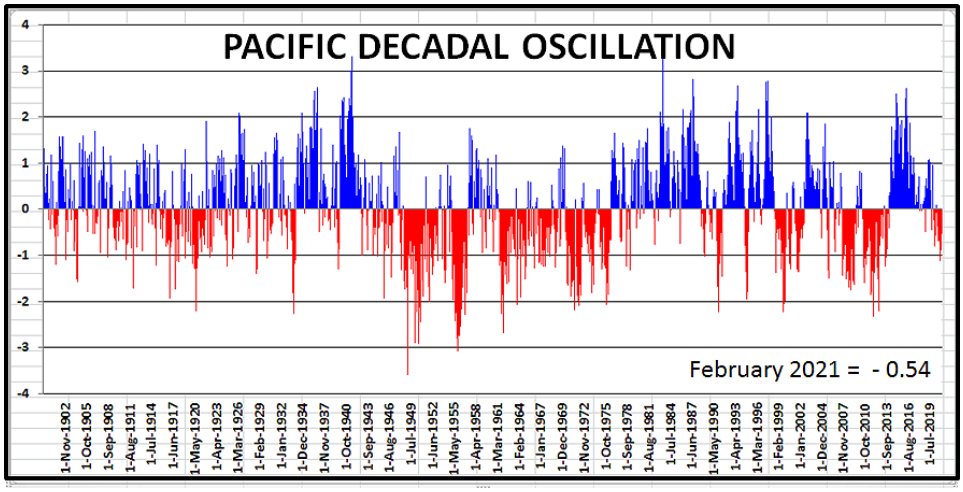
With La Nina now expected to be a minimal influence on North America weather this spring and summer the other three influences will take precedence. Out of the three influences on weather this year the two that will have the greatest influence will be PDO and prevailing drought.

Drought continues very serious across western North America. Recent weather systems have done little to nothing to break the pattern down. The only exception is in the central U.S. Plains where drought has been notably eased. An active weather pattern is expected from the Plains to the Atlantic Coast during the next several weeks. The frequency of storm systems will maintain adequate to abundant moisture from the eastern Great Plains through the Midwest and Delta to the middle and northern Atlantic Coast states. If anything, this pattern promises to slow fieldwork down during the planting season, but a return of 2012 is not likely because the pattern will not promote broad-based excessive heat or notable dryness until later in the summer limiting the intensity, depth and breadth of any dry pattern that evolves.

However, that is only a true statement until PDO is added into the equation. An overly simplified definition of PDO is cooler than usual water off the west coast of the

Negative PDO To Influence N. America (continued from page 8)

United States. But, be aware that the definition is a little more complicated than that. Large pools of cool water tend to reduce water vapor in the atmosphere so when storm systems move across the cooler water there is less evaporation occurring and weather systems moving from the Pacific inland to the United States will do so carrying less amounts of moisture to make precipitation. The second influence of cool water temperatures is the development of a quasi-stationary region of surface high pressure over the cool water region and that helps to create a trough of low pressure over the interior parts of western North America.



The colder the water anomaly becomes the stronger the surface high pressure system and the deeper and more broad-based the western U.S. trough of low pressure becomes. The strongest negative PDO events occur when the ocean water temperature anomaly is significantly cool. In those events the trough of low pressure in the western United States can shift deeply into the western states forcing a downwind ridge of high pressure to develop aloft over the Plains and in some cases the western Corn Belt.

This year's ongoing dryness in the Rocky Mountain States and Great Basin is expected to create a deeper thermal low pressure center over the Rocky Mountains and more likely immediately east of the mountains in the western high Plains region. That thermal low is often present in the Plains during the summer, but due to drought in the western states it will have the potential to become larger and more significant this year. The stronger the thermal low pressure center gets and the deeper the trough of low pressure gets over the western U.S. the stronger ridge building will occur downwind into the Plains and western Corn Belt.

The conclusion of this is that a strongly negative PDO event will induce a stronger high pressure ridge in the middle of North America blocking rain systems from reaching the area and inducing an eastward expansion or shift in drought .

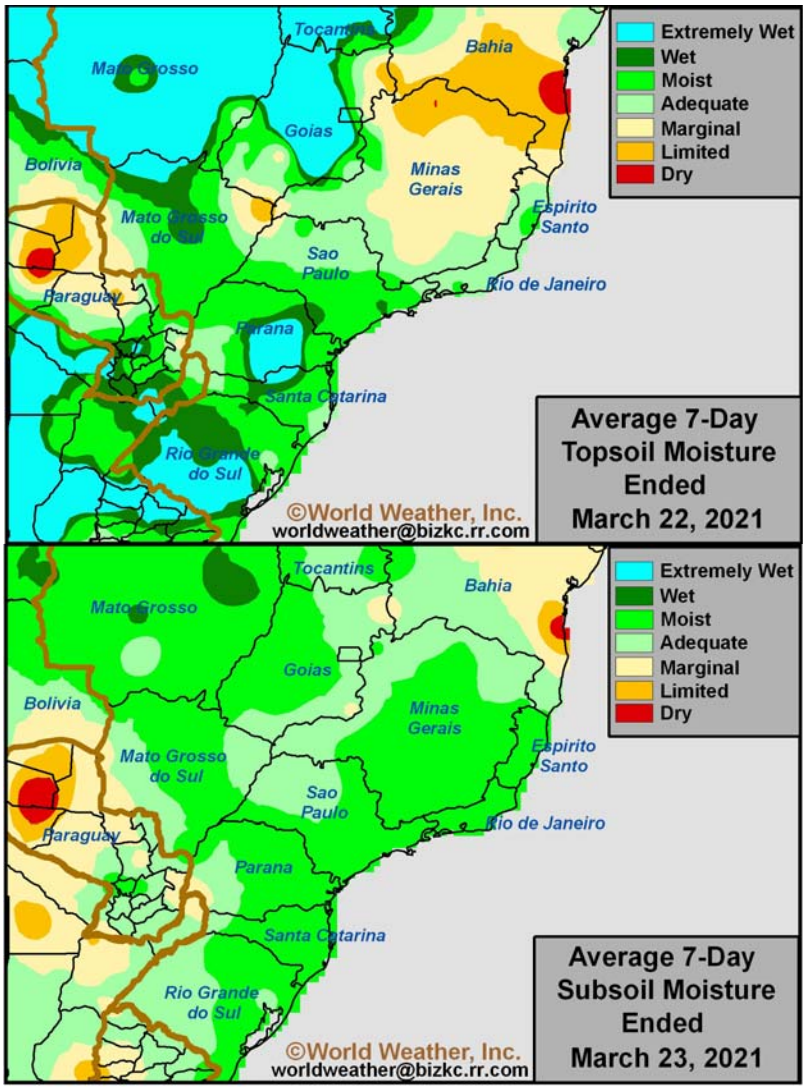
The 18-year places a ridge of high pressure weakly over the high Plains region this year, but the negative PDO and drought in the western United States suggests the ridge could be a little farther to the east and more intense. The lunar cycle also promotes an active storm track during the spring bringing weather systems into the Great Plains and moving them toward the Great Lakes region and sometimes the northeastern states. This year's ridge building in the middle of North America is not expected to evolve very quickly, but the drought in western portions of North America could help it evolve sooner, but farther to the west over the dry Rocky Mountain region. Then as late spring advances into summer the negative PDO factor should begin to have influence shifting the ridge to the east.

The negative PDO should give North America a little more ridge building in June and especially July and August. The heart of the summer may produce a high amplitude ridge of high pressure over the high Plains region that will extend northward into Canada's Prairies. The positioning of the ridge will likely bring the northern Plains, upper Midwest and southern Canada Prairies into dryness first with a second area of dryness in the southern Plains. As July turns into August these two dry areas should strive to merge together and once that happens some dryness is expected in the western Corn Belt as well as the northern and southern Plains.

The timing of all of these features and the intensity of the PDO event will have much to say how much of North America will suffer from dryness, but a regional area of drought is expected at the bare minimum. Most likely the broad-based 2012 style drought that is feared will hold off until 2022-23.

Brazil Weather Breaking For Late Soy Harvest

Brazil's extended run of frequent rain is breaking and that will enable late season soybean harvesting and Safrinha corn planting to accelerate to a conclusion during the next week to ten days. Conditions will not be ideal, but they should improve greatly except in northwestern Mato Grosso where rainfall frequency may still be a little high. The improving trend has already begun with less rain in some areas in recent days, but the best field working conditions are expected over the coming week. In the meantime, far southern Brazil will see a mix of rain and sunshine this week while other production areas will be drier biased and that moisture will be good for late season crops.



The drier bias in Minas Gerais and Bahia firmed up the topsoil during this past week, but subsoil moisture was still good for supporting normal crop development. The exception was in eastern Bahia where dryness has persistent for a while, but this region produces mostly coffee, cocoa and sugarcane and it does irrigate portions of the region. Soil conditions elsewhere are still rated quite favorably, although Mato Grosso and a few neighboring areas of Tocantins and northern Goias are too wet.

As of March 18, soybean harvesting was 59% complete, down from 66% this time last year. The lack of rain in portions of center-south Brazil supported more aggressive harvesting and planting. Many areas in Mato Grosso, Goias, and neighboring areas were still too wet for ideal harvest conditions and dry weather is needed to get the remaining soybean crop harvested and late Safrinha crops planted. The drier weather predicted for this coming week to ten days should be ideal in supporting that need.

Safrinha corn planting in center-south Brazil was 86.2% complete as of this morning, down about ten points from this time last year. The wet weather and delayed soybean harvesting has continued to promote sluggish planting, though significant progress was made during the past week.

Center-west, center-south, and northeastern Brazil will see much-needed drier weather this week. Light rain will still be scattered from Sao Paulo and southern Minas Gerais into Mato Grosso, Mato Grosso do Sul, and Goias at times. Moisture totals by next Monday morning will range from 0.25 to 1.00 inch in most locations with locally greater amounts in Sao Paulo. There is potential for more widespread and significant rainfall March 30 – April 5.

The lack of significant rain and warm daytime temperatures will promote aggressive drying in center-south, center-west, and northeastern Brazil this week. Soybean harvesting will advance under generally favorable conditions, though the wettest fields in Mato Grosso and Goias will likely need a few days of drying before aggressive fieldwork can resume. Safrinha corn planting will also advance swiftly for the areas that have not yet finished planting. Establishment and growth for the corn will also advance under favorable conditions.

Southern Brazil will see rain scatter across the region on a near daily basis this week. Moisture totals by next Monday morning will range from 1.00 to 3.00 inches and local amounts over 4.00 inches. A similar weather pattern will likely occur March 30 – April 5. Soil moisture will remain at adequate to excessive levels. Late-season soybean harvesting will be sluggish in most locations. Safrinha corn planting in Parana may also advance slowly.