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The Canadian Agriculture Weather Prognosticator

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World Weather At A Glance

- Brazil Dryness is hurting second season corn production potential
- Argentina rainfall and late season soil moisture is nearly ideal for protecting crop yields
- Western Russia and Ukraine are fighting a wet and cool bias that is delaying spring fieldwork and crop development
- China soil moisture is still almost ideal in many crop areas with southern rapeseed areas suffering from too much moisture
- Southern Australia is waiting for significant rain to support wheat, barley and canola planting
- Western U.S. drought will help support a strong ridge of high pressure over western and/or central portions of the United States this year
- Europe weather will be well mixed this spring, but may be drier than usual this summer

Drought Has Only Worsened In N. America

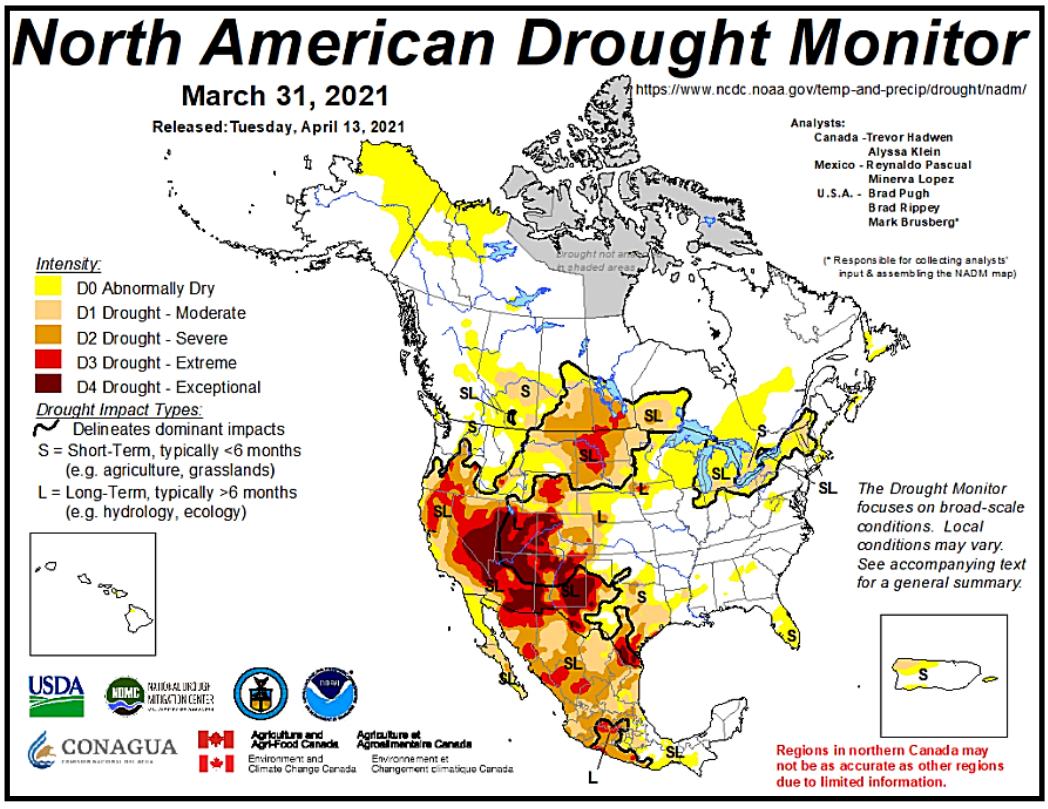
North America's drought has changed very little since last autumn. Sone areas are reporting more serious dryness than before, but other areas are better off.

The importance in reducing drought during the winter was extremely high because drought begets drought and the more persistent dryness becomes the harder it is to break down.

The warm season is upon us and without a general soaking of rain during May the central parts of North America could be looking at a notable ridge of high pressure during the summer that could block rainfall and reduce production potential for many areas in the central and western United States and the Canada Prairies.

There is still time for change, but May will be the most important month of the growing season this year. If significant rain does not fall by the end of the month it will become very difficult to get enough rain to break the drought and some crops will have great difficulty in sustaining themselves during the peak of the summer season when high pressure in in place.

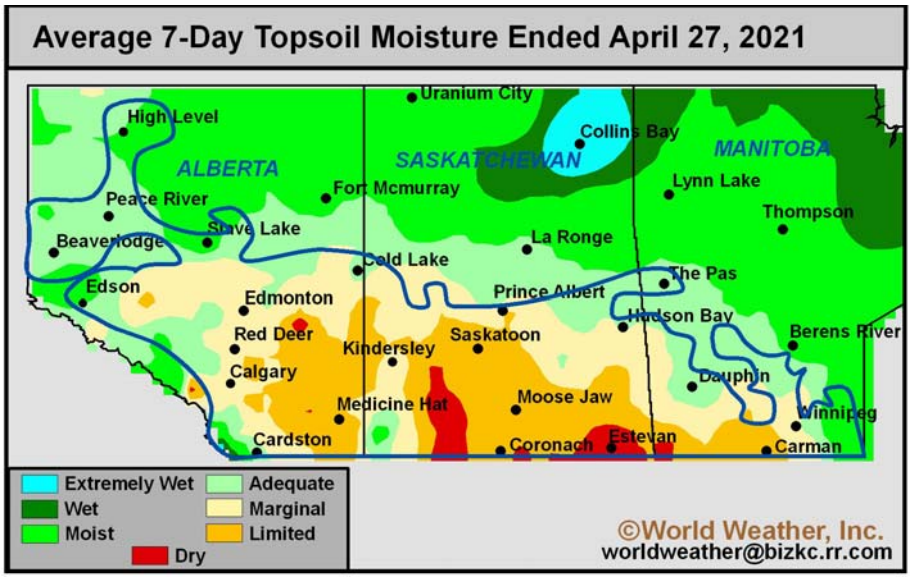
The eastern U.S. Midwest and the northern Canada Prairies are expected to do best with rainfall this year. Most other areas will continue in need of rain.



May Precipitation Will Be Most Important This Year

May precipitation in the Prairies and neighboring areas of the northern U.S. Plains will be of critical importance this year. The entire growing season's weather and potential crop development will be dependent upon precipitation in May. That is because of the unchanging drought status that has prevailed through the winter. Significant moisture has to fall now to support spring planting, crop emergence and establishment.

Without notable rain this month some of the 2021 crops may not get planted or will be planted late enough to set the stage for crop moisture stress during much of the late spring and summer. Drought that extends from Canada's Prairies to Mexico will create a large region of rising air that should help to induce a stronger than usual ridge of high pressure over the Rocky Mountains and western U.S. Plains during early summer. The ridge will then shift east to the heart of the Plains and western U.S. Corn Belt during late summer with its amplitude strong enough to block precipitation across the southern Prairies as well as the U.S. Plains and western Midwest.



Soil moisture is still rated short to very short across a large part of central North America which implies difficulty in getting spring cereals, canola, corn, flax and soybeans to emerge and establish normally. Some of the pulse crops will struggle with dryness too as will peas, sunseed and sugarbeets.

May has been long advertised to be a critical precipitation month. Our 18-year cycle years of 1967, 1985 and 2003 all experienced a notable improvement in precipitation during late April and May. All three years reported sufficient moisture during the month to bolster soil moisture helping to ease winter dryness and to give producers hope for adequate planting moisture and a needed good start to the growing season.

The same three analog years experienced drier biased weather conditions during the summer and had it not been for good late spring precipitation crops would have suffered more serious production cuts. The Prairies, northern U.S. Plains and upper U.S. Midwest are all facing a similar threat this year.

Just because the three analog years all managed to get good spring rainfall does not mean the same will occur this year, but the scenario seems to fit logic with the jet stream moving northward from the U.S. into Canada's Prairies in the next few weeks. An active weather pattern that has been bringing timely precipitation to the Plains, Midwest and southeastern states should shift northward during May and early June bringing the more active weather into the drier biased areas.

The reason May is so critically important for getting rain is not only because the ground is so dry, ,but it is also extremely important to get rain to fall before the summer ridge building begins. Drought in western North America will promote ridge building during late spring and especially summer. Once the ridge of high pressure sets in it will likely be present during much of the summer and the chances for getting significant rain may decrease beyond May and early June—at least for crop areas in the northern U.S. Plains, upper U.S. Midwest and portions of the southern Canada Prairies.

If the window of opportunity for getting significant moisture in the Prairies and northern Plains closes without meaningful rain the potential for hot temperatures and restricted rainfall during the heart of summer will rise greatly.

Getting moisture into the Prairies is not only important for planting and crop development, but also in helping to reduce wild temperature swings during the growing season. Dry soil and dry air will promote quick changes in air temperatures allowing parts of the Prairies to get over heated at times and also help to bring on some late season frost and freezes. If precipitation starts falling more often there will be greater humidity in the air as the cool season ends to reduce the intensity of cold snaps so that early planted crops have less potential for late season freezes This is extremely important since aggressive planting is expected during the next few weeks due to dryness and worry over summer drought.

Improved Rainfall Still Expected In May, Early June

Every drought has a break in the dryness at some time or another and the potential for relief from drought this year seems poised for a short term period in May. **Confidence is slipping though because of the dominating northwesterly trend aloft which is liable to restrict moisture and warmth from reaching the Prairies**. More importantly the northwesterly flow pattern will restrict storm systems from the U.S. Pacific Northwest from moving into the heart of the Prairies as they have in the past.

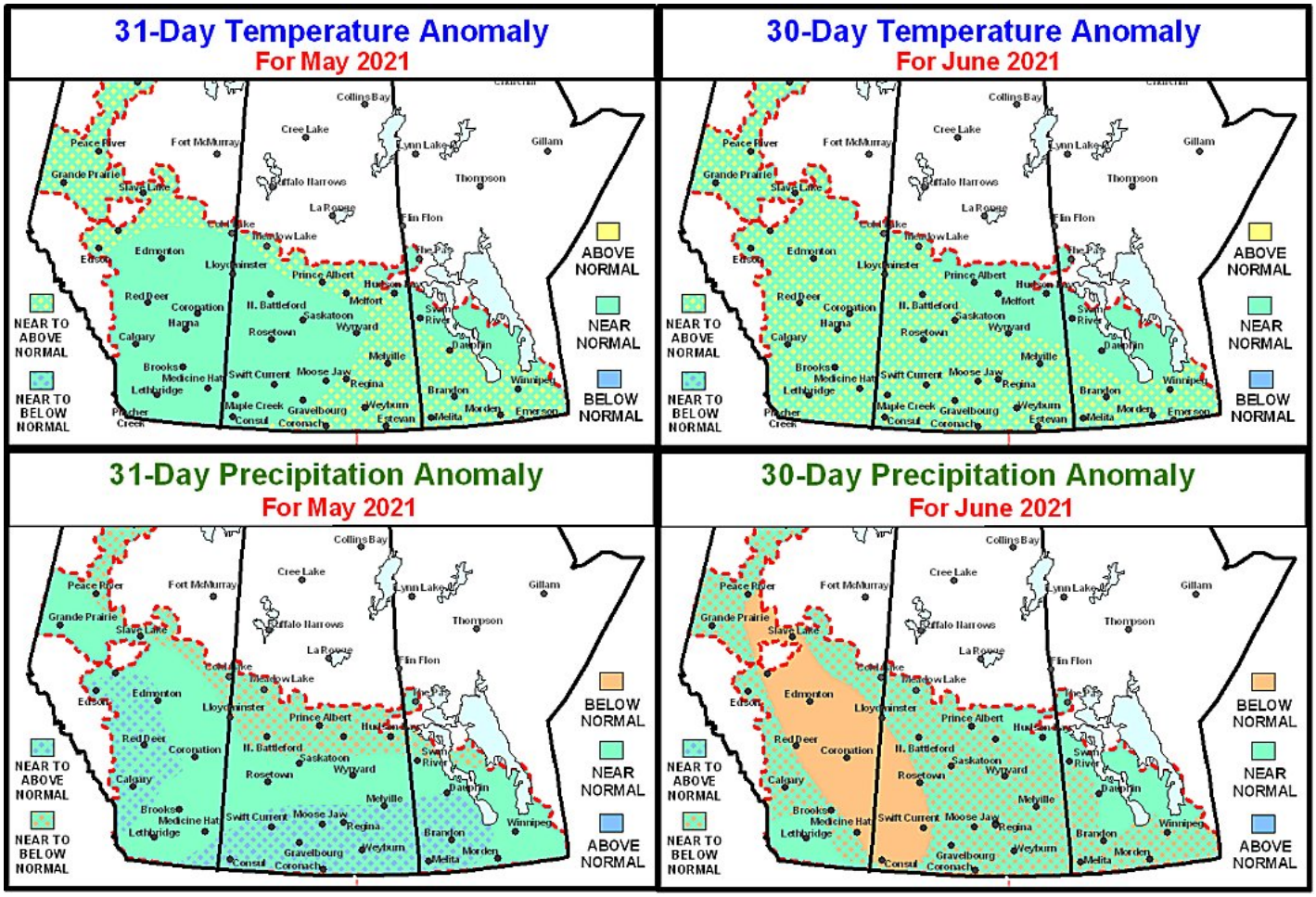
World Weather, Inc. has reduced some of the warmth once believed to be present in May and that may help conserve moisture a little better, but it will also restrict some of the potential rainfall. The most ideal weather pattern for generating rain in the Prairies was once expected to be present in May just before a ridge of high pressure builds up across the Prairies, but it is looking more likely that the ridge will not be as quick to evolve as originally anticipated allowing the northwesterly flow pattern aloft to prevail a while longer. This fundamental change will keep temperatures a little milder than previously expected and prolong some of the lighter precipitation bias that has already been prevailing for a while.

The first half of May will be cooler biased in many areas of the Prairies which is consistent with our 18-year cycle. Frost and freezes will return to many areas for a little while in the first half of the month followed by warming temperatures and a return of more seasonable temperatures. There is some potential that a part of early May will be a little colder than usual, but that will be counterbalanced by warmer weather later in the month.

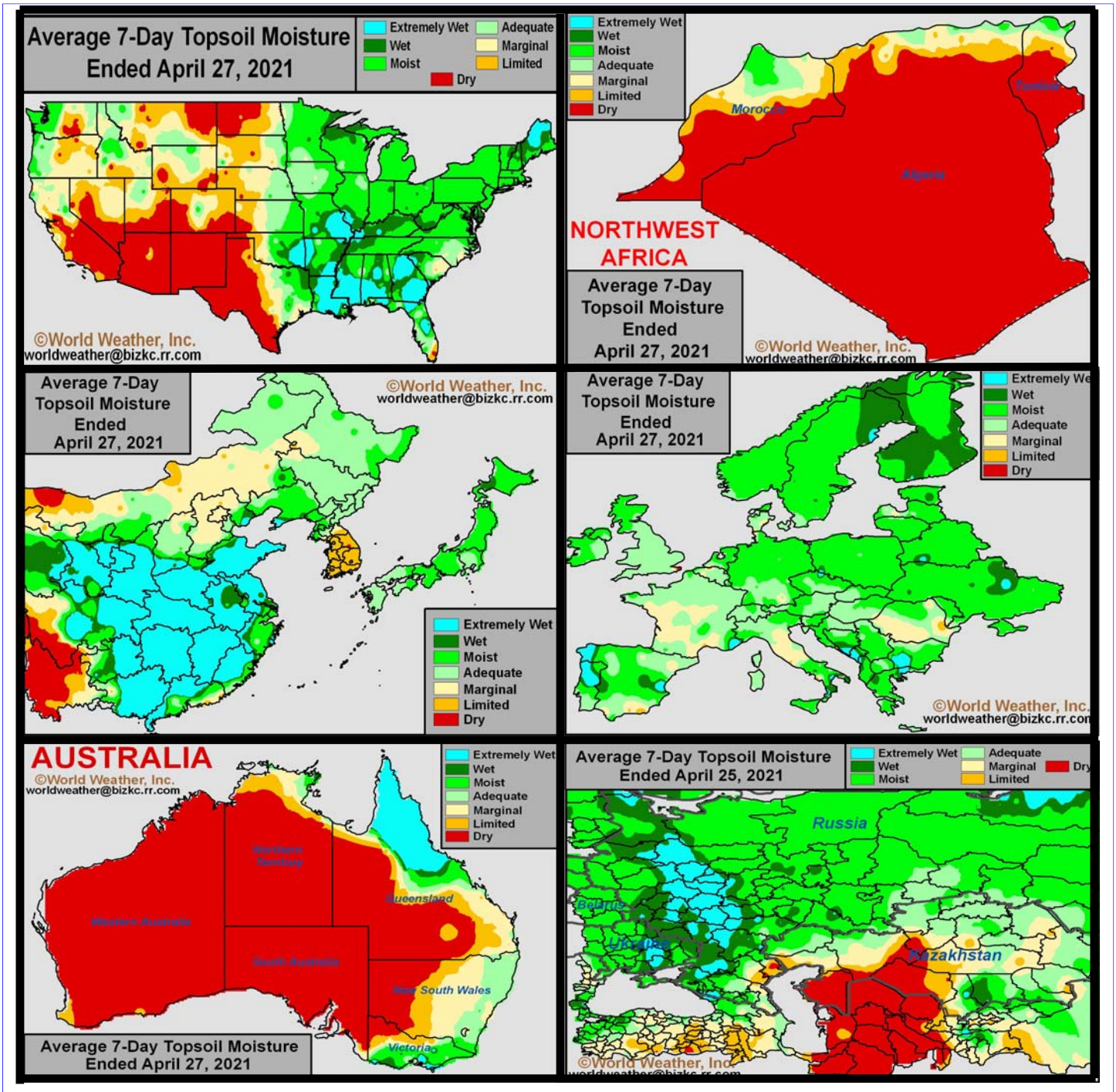
June weather will be a little warmer, but there is still some potential for a couple of cool air masses to move through the eastern Prairies. The cooler air in the east could induce a couple of rain events that will help to raise topsoil moisture briefly in Manitoba and a few northeastern Saskatchewan locations. However, the wind flow pattern aloft will be confluent and that is likely to translate into lighter than usual precipitation across the Prairies.

There is some potential for the better rainfall pattern advertised for May to occur in late May and early June, but if significant rain has not evolved in early May we may have to drop the potential for a short-term improving trend for the Prairies.

Summer still looks warm with restricted rainfall, keeping or returning a more stressful crop environment.



Selected Weather Images From Around The World

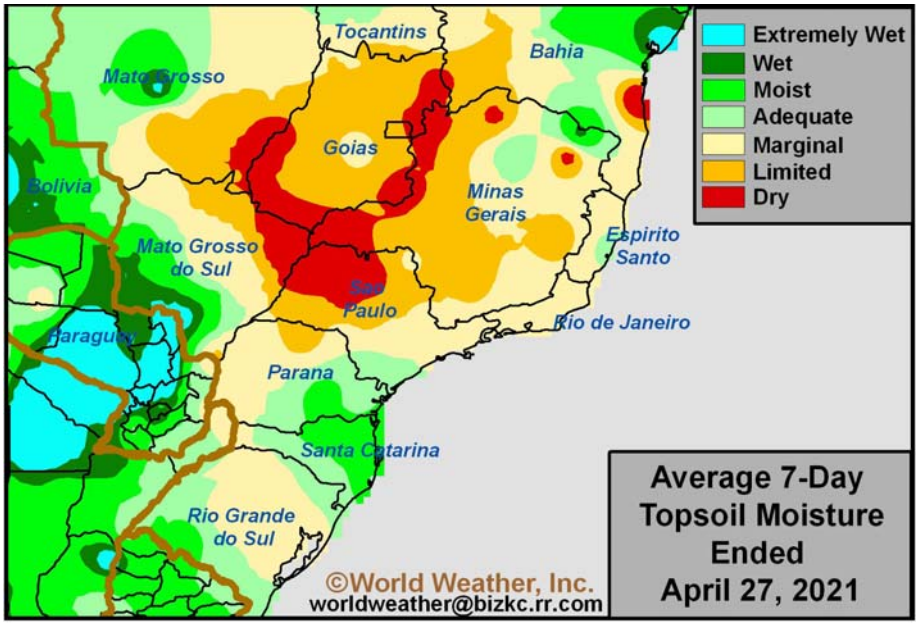


Wet fields in southern China in April may not have supported the best environment for rapeseed yields and some delay in rice, corn and other early season planting may have occurred. Good moisture in the north China Plain has the wheat crop in good shape. Portions of western Europe have been drying out recently, although a boost in early May rainfall will fix the situation for most areas. Western portions of Russia and a part of Ukraine are a little too wet and need drier weather to support spring planting and better winter crop development potential. Soil moisture in Kazakhstan and Russia spring wheat areas will need to be closely monitored this spring. Australia's wheat, barley and canola production areas are waiting for significant moisture to support planting. The moisture boost should begin in May. North Africa wheat and barley areas have dried down recently and rain is needed. In the United States, soil moisture is rated favorably east of the Plains supporting good planting conditions. Dryness to the west is a concern.

Brazil Corn Stressing On Poor Moisture

Kansas City, April 28 (World Weather Inc.) – Worry over world grain stocks is being heightened by the realization that Brazil's Safrinha corn is reproducing in a very limited moisture environment. The first ten days in May are unlikely to provide much opportunity for improved rainfall or soil moisture implying lower yields for the early crop.

Nearly 60% of Brazil's corn was planted beyond the optimal planting date of February 20 and nearly one third of the crop was planted three to five weeks later than usual. Rising futures prices gave producers plenty of incentive for planting no matter how late it got, but now the proof is in the pudding and yields may be falling more than expected. Twenty-five to 50% of the corn crop was silking and flowering at the end of April. Rain must fall significantly in the first half of May to give crops a chance to yield as well as possible given the late planting dates.



Brazil's rainfall in April fell well below average in southern Safrinha corn areas; including Parana, Sao Paulo, eastern Mato Grosso do Sul, southern Goias, southwestern Minas Gerais and southeastern Mato Grosso. The limited rain was not a big deal as long as timely rain occurs in May. However, typically the dry season begins at the end of April and substantial rain in May is a rare occurrence. The premature start to the dry season in some southern corn areas has already led to short and very short top and subsoil moisture. The success of second season crops in Brazil is often determined by a fully saturated soil column when the monsoon season ends. That way Safrinha crops can coast on subsoil moisture through the reproductive and filling stages of development That cushion of moisture is absent this year and corn needs that moisture now more than ever.

Northern Safrinha crop areas have not been nearly as dry and crops still have good production potential in northern and western Mato Grosso and western and some central Mato Grosso do Sul production areas. Subsoil moisture is sufficient in these areas to carry crop development into the first half of May and farmers are hoping for a few bouts of light rain between now and then to protect subsoil moisture. Temperatures may briefly rise above average causing faster moisture losses and greater crop stress. Some temporary cooling may occur in the second week of this month and the frontal system bringing the cooler conditions could generate a little rainfall. The moisture may slow down the deterioration of corn conditions, but without a general soaking of rain any relief is expected to be temporary and downward production potentials will resume after a few days of net drying.

Brazil's drying bias is not just impacting corn, but its sugarcane, coffee and cocoa crops as well. However, most of these soft agricultural commodity crops have matured enough that the impact on production will be low. Sugarcane has had a tough year with seasonal rainfall four to six weeks later than usual and then periods of dryness continued to come and go during the heart of the summer season. As a result, Brazil's sugarcane tonnage will be down, but the sucrose levels may be high in the cane that is harvested.

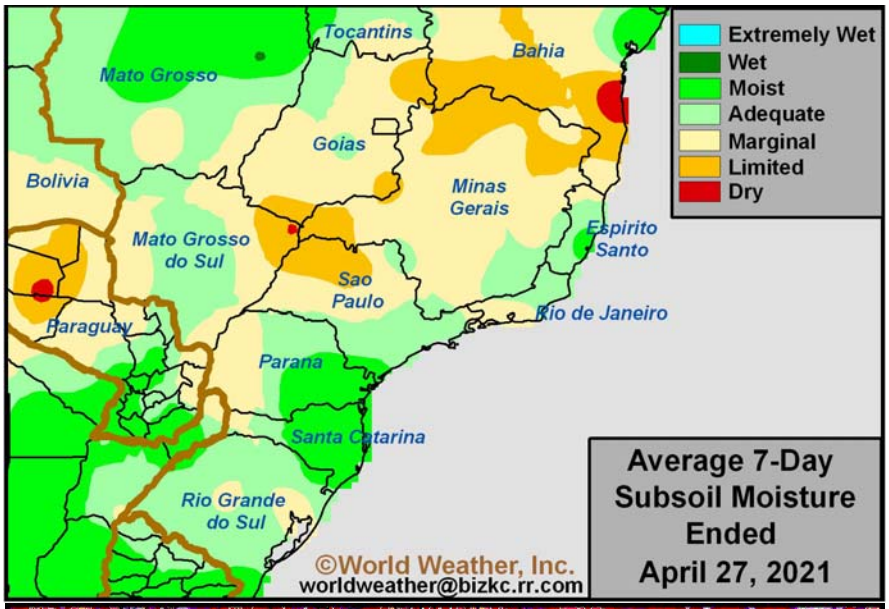
The risk to coffee because of dryness will not be on this year's crop which is maturing and getting ready for harvest, but could impact next year's crop if seasonal rainfall is delayed. The extra weeks of dry-biased weather in coffee areas will have soil moisture more depleted than usual by September when seasonal rains usually resume and if they are late trees could become stressed enough to perform poorly in the Southern Hemisphere spring.

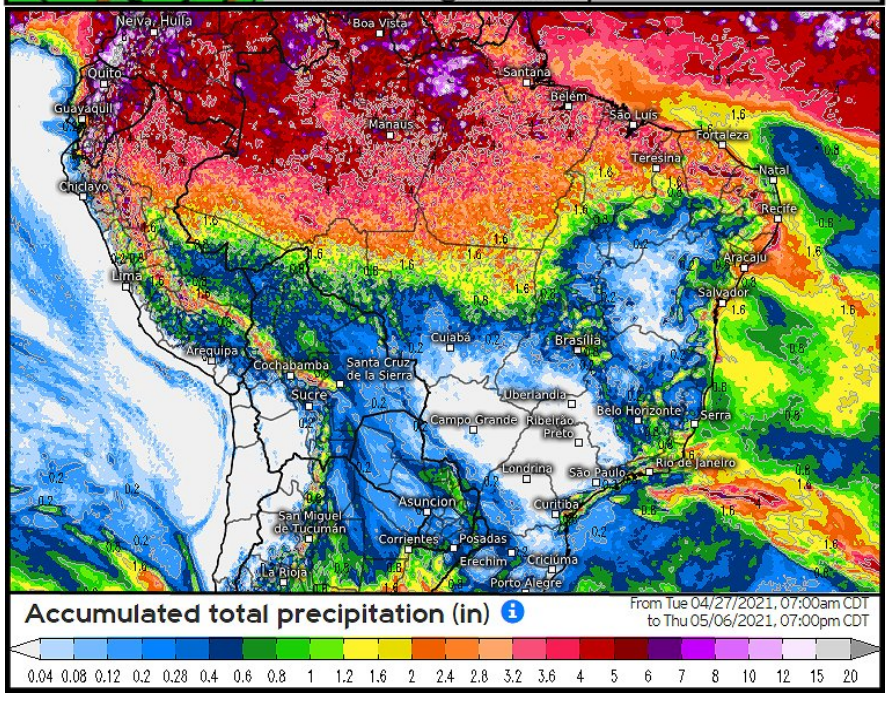
Brazil's dryness in corn production areas is more serious than that of the coffee or sugarcane crops primarily because of corn's higher demand in world trade and the already low ending stocks being reported in the United States. A smaller Brazil crop will put more pressure on the U.S. crop in 2021 and there is quite a bit of speculation under way over the fate of the U.S. crop weather this summer.

Drought continues to dominate a tremendous part of North America stretching from Mexico through the western half of the United States to portions of Canada's Prairies. May is

Brazil Corn Stressing On Poor Moisture (continued from page 5)

a critically month for precipitation in the central Plains for hard red winter wheat reproduction and filling and for the planting and establishment of spring and summer grains and oilseeds in the northern Plains and Canada's Prairies. The next 30 days will likely be extremely critical in determining the fate of small grains in the U.S. and Canada. Continued drought during the month would delay planting and leave crops poorly established and vulnerable to lower yields without perfect conditions in June and July.





Corn and soybeans have been produced more abundantly in recent years across the northeastern U.S. Plains and upper Midwest as well as in Manitoba and Saskatchewan, Canada. Many of these areas have been drier biased in recent months. Getting a lasting bout of relief from dryness in the early spring is much easier than getting it in late spring or summer and some areas in Manitoba, North Dakota and Saskatchewan have reported well below average rainfall since last autumn. For some areas in the Prairies dryness has lasted four years with 2016 the last wetter than usual growing season. Needless to say, substantial rain needs to fall.

World Weather, Inc. expects rainfall in the northern Plains and Canada's Prairies to increase during May with some of it to linger into June. The moisture will not be sufficient to fix low subsoil moisture, but it will give farmers support for planting their 2021 crops. Sufficient timeliness in rainfall during May and early June will also support planting, emergence and establishment. However, the odds are relatively high that dryness will be returning to the northern Plains, Canada's southern Prairies and a part of the upper U.S. Midwest this summer which may lead to crop moisture stress during reproduction – very similar to that which is expected in Brazil over the next few weeks. If the forecast is correct a smaller U.S. crop may be on the horizon.

A full blown "wall to wall" drought like that of 2012 is not likely or expected by World Weather, Inc. However, regional dryness will dig into some of production potential which may reduce production enough to tighten world ending stocks a little more. Farmers are expected to take advantage of high futures prices and cash in on whatever crop is produced no matter how small, but the consumer will come up on the short end of the stick with a further rise in food prices. In the meantime, food companies need to not only be frugal with their expenses this year, but they could be facing multiple years of shorter supplies and higher prices making profitability a greater challenge. Efforts should be taken now to prepare for this year's shorter crops and the potential of additional trouble in 2022 as La Nina returns while soil conditions are still drier than usual.

What It Will Take To Make It Rain In The Prairies?

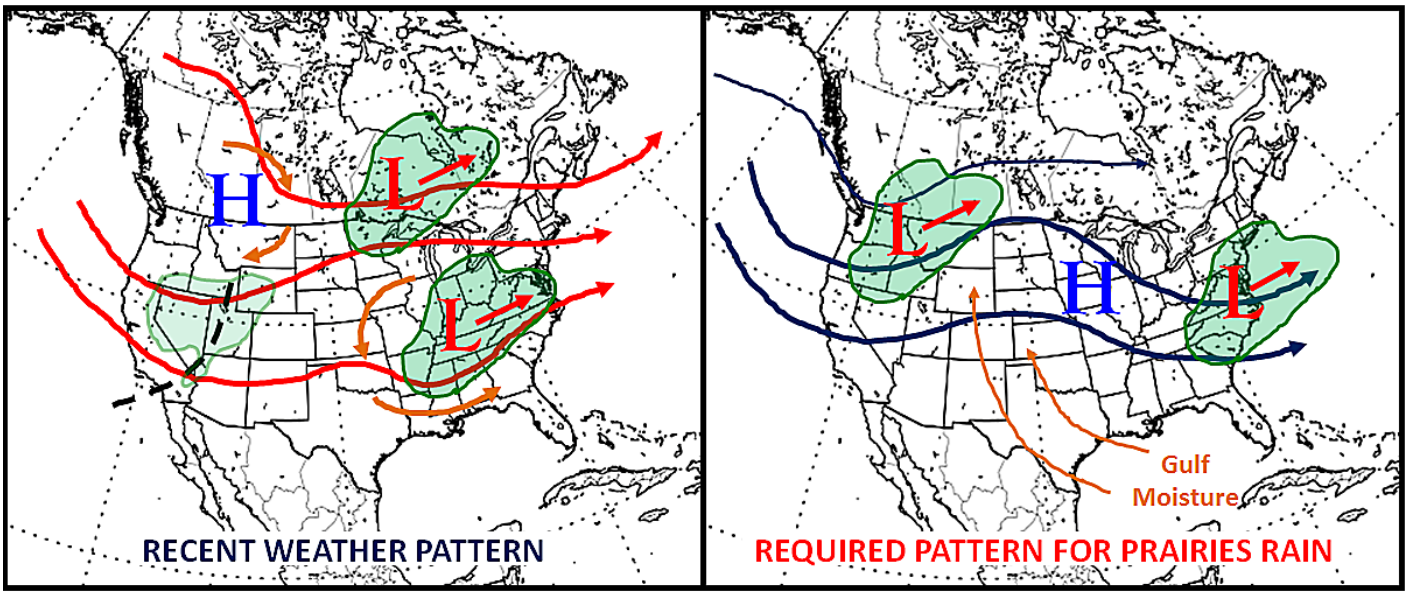
"Some" ridge building is needed in the central United States during May to push the jet stream to the north and consolidate the upper air wind flow so that storm systems can come to the Prairies from the southwest.

The most recent weeks of weather in North America have been dominated by a disjointed and highly disorganized jet stream A few weeks ago the demise of La Nina was producing many splits and cutoff wind flow patterns which seriously impacted precipitation events across the continent. Now that La Nina is mostly dissipated the jet stream is attempting to become more consolidated, but it is taking too much time and rain potentials that were supposed to increase in April have still not evolved.

Notice the graphic below on the left. The flow pattern has not allowed Gulf of Mexico moisture to flow northward into the northern Plains or Prairies and low pressure systems have often been split and mostly in the eastern part of North America keeping rain in the Plains limited to a few freakish storm systems and much less precipitation to the west.

The Gulf of Mexico has to open up as a moisture source to the Plains and Prairies and until that occurs precipitation will continue limited. All that is needed is a little ridge building in the central United States and that should do the trick in getting the storm track repositioned for storms to move from the U.S. Pacific Northwest into the Prairies which is typical of May.

However, there is growing evidence that the needed ridge development will be slow in coming delaying rainfall. Delaying the ridge will reduce the potential generalized rainfall of significance. .

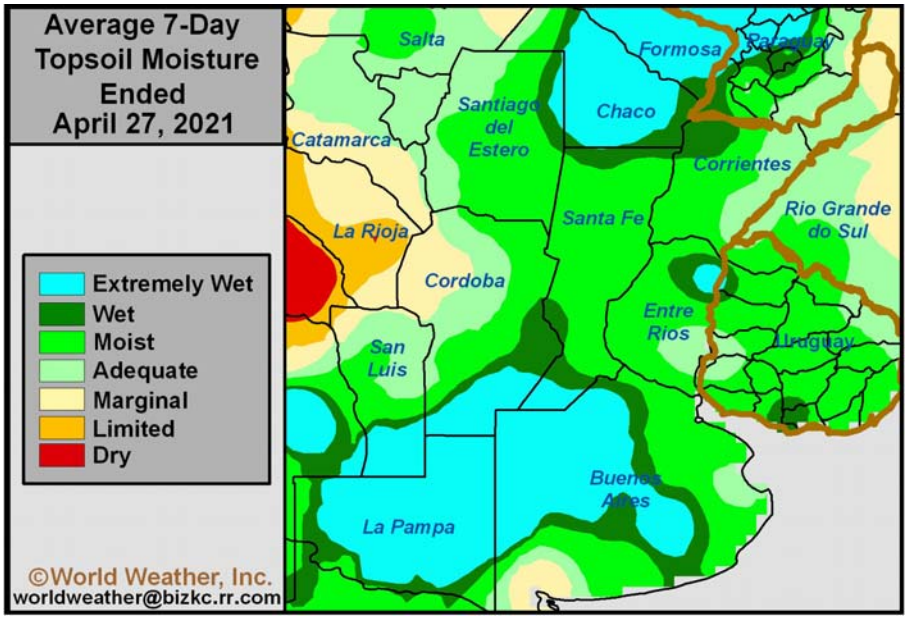


A very disorganized jet stream pattern has dominated late winter and early spring across North America. This pattern has disfavored the occurrence of meaningful precipitation at times across the Great Plains and northward into the Prairies. Infrequent precipitation events have brought rain to the central Plains, but not the northern Plains or Prairies. Ridge building is needed in the central United States to improve rain chances in the Prairies. A ridge is expected to evolve, but with drought dominating much of western North America there is potential the ridge will become very strong too quickly reducing the opportunity for rain in the Prairies and northern Plains to a small window of a few weeks in May and/or early June. After that the high pressure ridge could become strong enough to suppress rain again.

Parts Of Argentina Soil Saturated Once Again

Rain returned to most of Argentina's late season crop areas during the latter part of last week through the weekend. Sufficient amounts fell in many areas to saturate the topsoil once again after beginning to dry down last week. The nation's harvest is behind the usual pace and that may not change much for a while as farmers wait on additional drying. Precipitation in the coming week will favor Buenos Aires, Entre Rios, and Corrientes mostly during the late weekend and early part of next week. Western parts of the nation will experience net drying.

A huge variance in rainfall occurred during the past week. Northeastern La Pampa reported 2.83 to 4.92 inches while 2.00 to 3.39 inches fell from central Chaco through Formosa. The wet weather in northern crop areas likely interfered with cotton harvesting and may have discolored some of the mature fiber while stringing some of it out of open bolls.



Rainfall elsewhere was not quite as great, but 1.00 to 2.25 inches fell from central Buenos Aires into southern Santa Fe and east-central through southern Cordoba. A few other amounts over 1.00 inch occurred in northern Santiago del Estero and in northeastern Entre Rios as well as northwestern Corrientes. In contrast, parts of central and northern Cordoba and far southwestern and southeastern Buenos Aires reported less than 0.50 inch of moisture. Rainfall in all other areas varied from 0.50 to 1.00 inch.

Late season corn, soybeans, peanuts and sorghum will benefit most from this past week's rain. The late crop will be harvested in May and early June while the early crop has already been harvested to some degree. Delayed planting in parts of Argentina because of dryness in the spring is partially responsible for the delayed harvest. As of April 22, cotton was 24% harvested compared to 38% last year, rice was 83% harvested compared to 84%, corn was 24% harvested versus 33% and sunseed 99% done. Soybeans were harvested in 28% of the planted acreage versus 49% last year and sorghum was 18% done versus 30% last year

Early season winter wheat planting prospects are otherwise favorable across the main production areas due to the recent rain. Planted acreage is expected to be greater than usual as producers try to take advantage of the favorable moisture profile and high commodity futures prices.

La Pampa and neighboring areas that received the greatest amount of rain during the past week may have seen a minor decline in oilseed quality. However, no significant production impacts were suspected.

Precipitation will be variable across Argentina during the coming week. The country will be mostly dry through the first part of the weekend. A disturbance will then bring erratic rainfall to much of the country later this weekend and early next week. Eastern and central Buenos Aires, Entre Rios, and Corrientes will receive some of the most significant rain with totals ranging from 0.50 to 2.00 inches and locally greater amounts by next Tuesday morning. Areas farther west will only receive 0.10 to 0.75 inch of rain with locally greater amounts in Santa Fe. Drier-than-normal conditions will then potentially evolve across the main crop areas May 5 – 11.

Dry and warm weather during the next several days will help firm up the topsoil across Argentina. Harvest conditions will gradually improve, though the wettest fields may need a day or two of additional drying before aggressive fieldwork resumes. Rainfall later this weekend and early next week will briefly slow the harvest once again. Winter wheat planting will begin in the second half of May and occur mostly in June and early July.

Remembering Early May Cold In Eastern Prairies

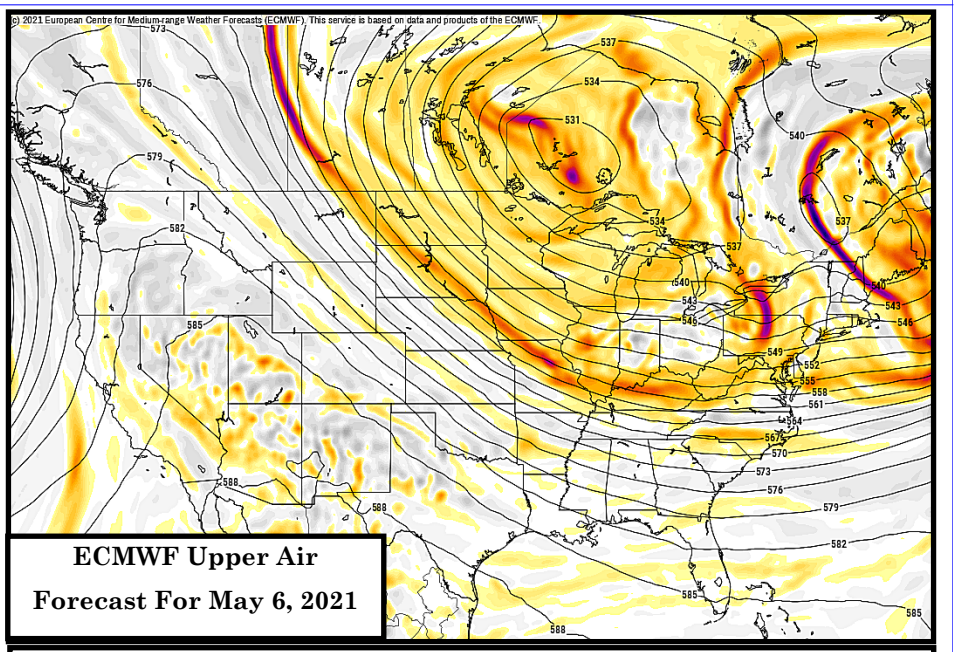
As discussed in the April 7, 2021 prognosticator, only one of the three 18-year cycle years (1967) was promoting significant cold weather in early May. However, the other two years had at least some cold weather advertised in the first half of the month. The April 28 mid-day European model run excited everyone by producing unusually cold weather in the Prairies and most of the U.S. Midwest May 4-8. The event was a very close match to the 1967 event that we mentioned in the previous prognosticator.

WE SAID IT THEN AND WE WILL SAY IT AGAIN NOW THERE WILL BE NO EXTREME COLD LIKE THAT IN 1967 IN THE PRAIRIES OR THE U.S. MIDWEST IN EARLY MAY. The model forecast was way overdone.

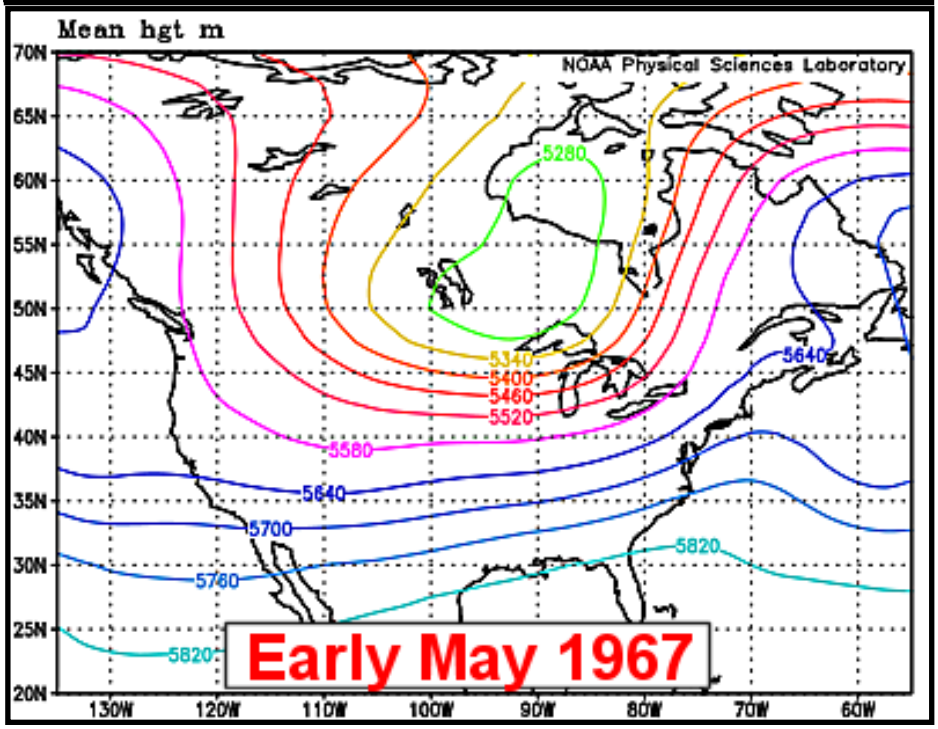
What you need to know is the same thing that we suggested in the last prognosticator and that all three of the analog years we are looking at had cool air around in the Prairies (mostly in the central and east) during the first half of May. Temperatures after that were less threatening. That statement is still correct, despite the graphics shown here.

The only additional comment that needs to be made is this….The upper air wind flow pattern later in May and in June will produce a least a couple of other cool shots of air into the eastern Prairies, but the most significant cool air seems to abate after early May. Please note that "if" a super ridge of high pressure evolves unexpectedly over western North America in late May or early June it could push greater amounts of cold air into the eastern Prairies and Manitoba, but this scenario is quite unlikely based on the latest data.

With that said just be aware that there is still "some potential" for cool air to push through Manitoba and a few northeastern Saskatchewan crop areas in late May or early June. There is no reason to suggest a damaging cold weather event will occur during that period of time, but just in case it is still very wise to keep one eye on those last freeze dates and the other eye on dryness.



ECMWF Upper Air Forecast For May 6, 2021

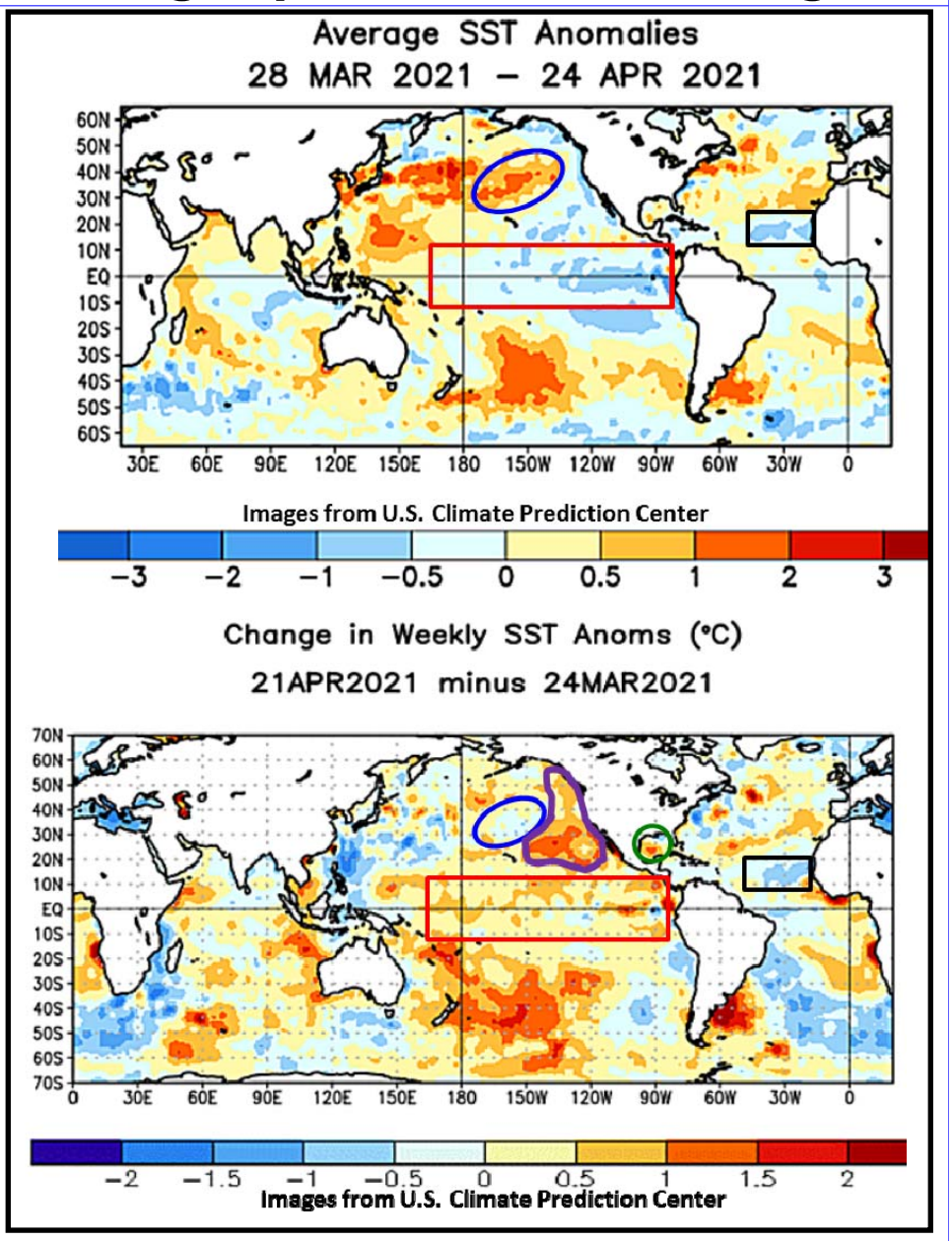


Eastern Pacific Warming Key To N. America Drought

Ocean surface water temperatures have a huge amount of influence on North America weather and all areas in the world for that matter. In past prognosticators we have talked about cooling ocean water off the west coast of North America and how that was becoming a serious threat to the continent's summer weather.

The cooling ocean water west of the U.S. coast often supports the negative phase of Pacific Decadal Oscillation (PDO). Now that is a mouthful, but all you need to know is that if ocean water off the U.S. west coast is notably colder than usual during the summer it tends to support a trough of low pressure over the western North America and that induces a strong ridge of high pressure over the central parts of the continent.

Earlier this year there was much speculation that prevailing drought in western North America was not likely to go away during the spring or summer and the mere presence of dryness would induce a thermal low pressure area over western North America leading to strong ridge building either over the Rocky Mountain region or in the Great Plains. If the ocean water temperature anomalies were also significantly negative the odds of a blocking high pressure ridge in North America becomes much greater.



The good news is that ocean water temperatures have been warming in recent weeks off the west coast of North America. This trend, if sustained, will do two things. First warming ocean water could reduce the risk of a "mega" ridge of high pressure over North America this summer and, two, if the water temperatures rise above average it would help place the high pressure ridge in the western parts of North America.

The trend in ocean water temperatures has not been established long enough to make a complete determination, but if this warming bias prevails through May the summer outlook will become less threatening to the U.S. Corn and Soybean Belt.

If the summer ridge is far enough to the west there might be less heat in the Prairies and U.S. Northern Plains as well as the U.S. Midwest and that too can help crops deal with a below average precipitation bias. Sometimes, a northwesterly flow pattern aloft over the central and eastern parts of North America can induce waves of beneficial rain in the U.S. corn and soybean producing areas as the cooler and drier air mingles with warm and humid air over that part of the continent.

One last consideration if the ocean temperatures continue warming is that dryness in the Prairies could become more significant in the west where the high pressure ridge will be allowing a few bouts of timely rain farther to the east. Obviously, there is much to watch and the summer outlook is not locked into stone.