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The Canadian Agriculture Weather Prognosticator

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World Weather At A Glance

- U.S. crop weather remains good across most of the Midwest, Delta and southeastern states
- U.S. far western states and northern Plains still drought ridden
- Australia rainfall recently improved topsoil moisture, but more rain needed
- Argentina wheat needs rain in southwestern crop areas
- Brazil Safrinha corn losses continue as dryness prevails
- India monsoon off to slow start, but flooding rain is expected in central areas this weekend
- Russia's southern New Lands are still too dry and in need of rain
- Ukraine and southwestern Russia are wet; drying is desired
- China drying trend to break down over next seven days
- SE Canada crops look good

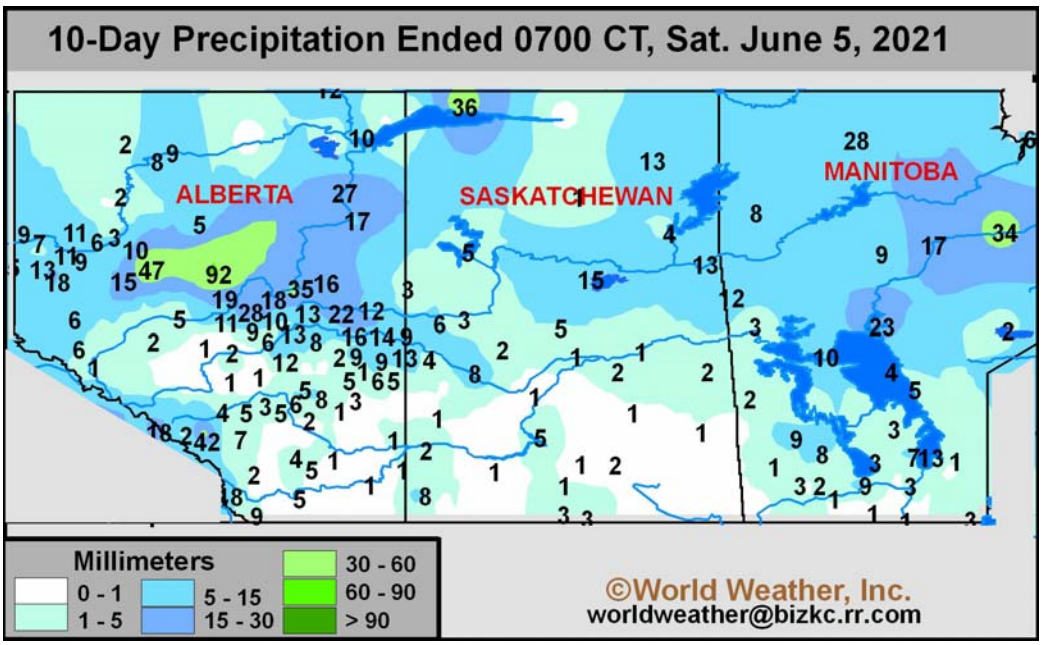
Another Opportunity For Rain

Canada's Prairies weather deteriorated over the past ten days after a beneficial period of rain occurred May 20-24. The rain back then was very important for the planting, emergence and establishment of spring crops after the ground became critically dry. A similar situation evolved over the past ten days with unusually hot temperatures and limited rainfall depleting soil moisture once again. The Prairies are facing another critical crossroad in weather with the ground quickly becoming too dry to support young unirrigated crops. Just like in May, however, relief is expected to come just time to save the crop, "again".

The significant rain event of May 20-24 brought a dramatic improvement to topsoil moisture for a short period of time. Farmers took full advantage of the moisture and worked the soil aggressively while the moisture was present. Crops also responded well to the new found moisture, but it did not take long for conditions to deteriorate. Portions of the Prairies have been in a drought for four years and the rain in May was not nearly enough to fix the long term moisture deficits for the region.

Excessive heat in the southern, central and eastern Prairies last week took much of the lingering moisture in the topsoil away from the areas benefiting most from the May 20-24 rain. Extreme highs reaching into the 30s to 41 Celsius (86-105F) over a few days was more than enough to deplete topsoil moisture especially since rainfall in the previous week had already been minimal.

The majority of the Prairies reported less than 0.40 inch of moisture during the ten day period ending Saturday, June 5, and many areas were left completely dry. The exception

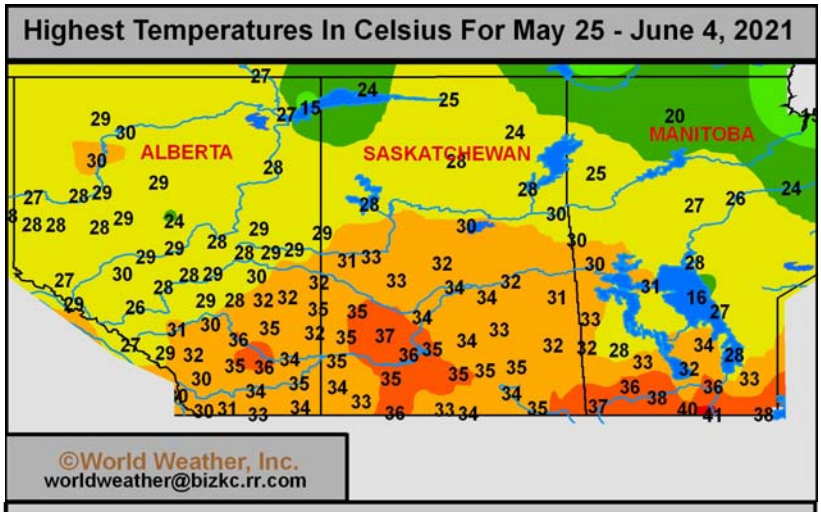


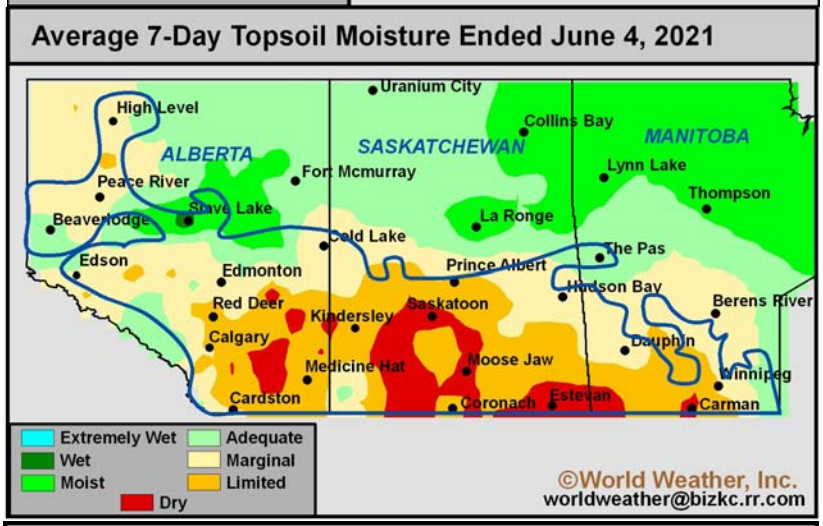
Another Opportunity For Rain (continued from page 1)

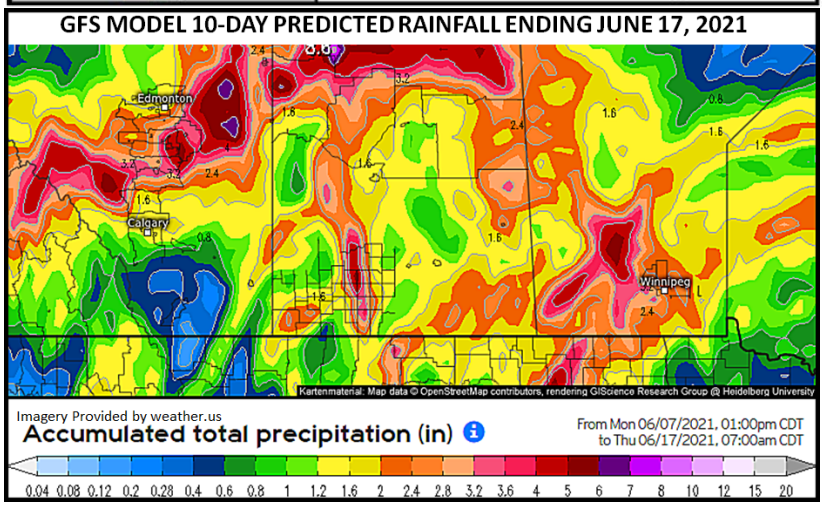
was in north-central Alberta crop areas where rainfall of 0.40 to 1.10 inches resulted with a few areas near Slave Lake reporting 1.00 to 3.62 inches. The greatest rainfall only impacted a tiny part of the Prairies leaving most areas in a new drying mode.

Topsoil moisture is rated short to very short once again and crop stress is rising to a critical point once again. The ridge of high pressure that evolved last week and created the mini-heatwave has abated and a succession of weather disturbances are expected to move through the Prairies bringing another bout of relief to most of the region similar to that which occurred in May. Sufficient rain is expected to bring up topsoil moisture once again to a level that will be many times more supportive of early season crop development and late planting. Follow up rain will still be needed, however.

Weather computer forecast models are not in good agreement over the distribution of rainfall during the coming ten days, but starting at mid-week this week there will be a succession of storm systems that will bring two waves of significant moisture and several other opportunities for scattered showers resulting in rain for all of the Prairies at one time or another. The greatest rainfall is likely to occur in southeastern Saskatchewan and from eastern Alberta into western Saskatchewan from the two larger storms, but some showers will also occur in the west and northern parts of the Prairies early this week and again across many areas next week as the atmosphere begins to stabilize once again.







The pattern of heating up and drying down followed by relieving rainfall may be repeated multiple times this summer, but the only part of the Prairies that will likely come up short on moisture most often will be in the southeast. Portions of southern Manitoba and southeastern Saskatchewan may not get as much rain as they normally do which adds more pressure to the rain that is already being advertised for these areas in the coming ten days. There is very good chance that southeastern Saskatchewan will receive some of the more significant rain out of the coming ten days and that will help carry crops later this summer if precipitation is missed from future storms, which is possible. Southern Manitoba will likely continue to have the greatest potential for being driest during the summer.

An active jet stream is responsible for keeping the weather in June favorably mixed, but concern will rise over the potential for a more stagnant weather pattern latter in the summer when the jet stream slows and that is when dryness is most likely to fester into a larger problem, but only over the southeastern parts of the Prairies. Most other areas will do fine.

June Offers A Little More Respite From Dryness

Recent weather in the Prairies has provided some significant clues about the weather this summer and changes to the outlook were made recently that are of higher confidence than that presented previously. The two storm systems this week and a couple of smaller events expected later this month will bring the Prairies just a little more moisture than previously had been advertised. That will buy portions of the Prairies some precious time before soil conditions become too dry. Crop development will take full advantage of the rainfall and develop better root systems and more aggressive vegetative growth.

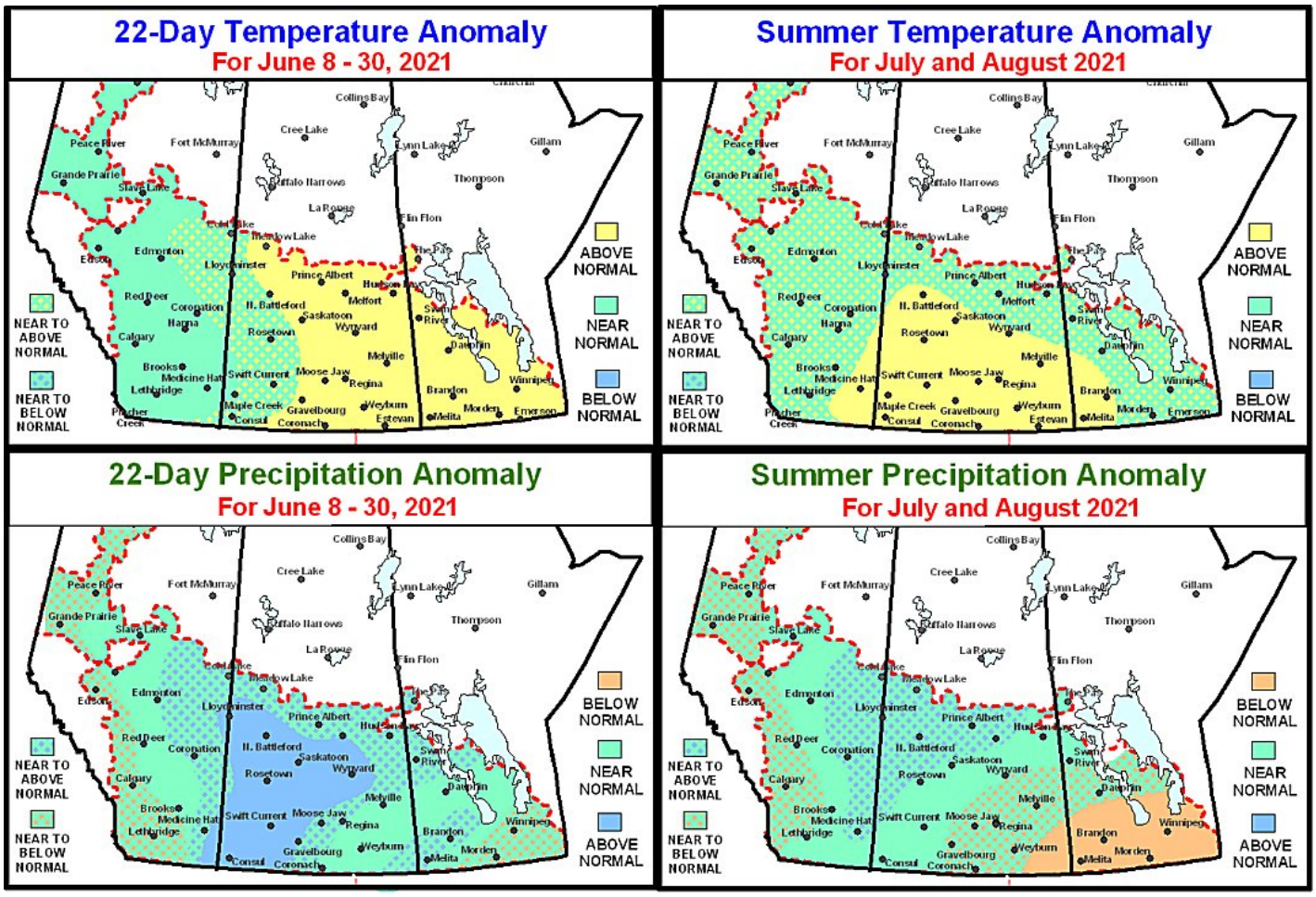
It is becoming more obvious that the summer ridge of high pressure that has been advertised will be broader based and stronger impacting a larger part of the Prairies and neighboring areas of the United States. The good news is that the ridge will move around just enough to allow some timely rain to occur in the central and western parts of the Prairies. The precipitation may not be sufficient to restore soil moisture to normal, but it will be sufficient to support long term crop needs in central and eastern Alberta and western and northern Saskatchewan.

Dryness is still expected to be significant in southern Manitoba and southeastern Saskatchewan where rainfall anomalies will be most significant in July and August. Rain that falls in June will be very helpful in slowing down the drier bias so that crops can get a little closer to reproduction before getting too dry.

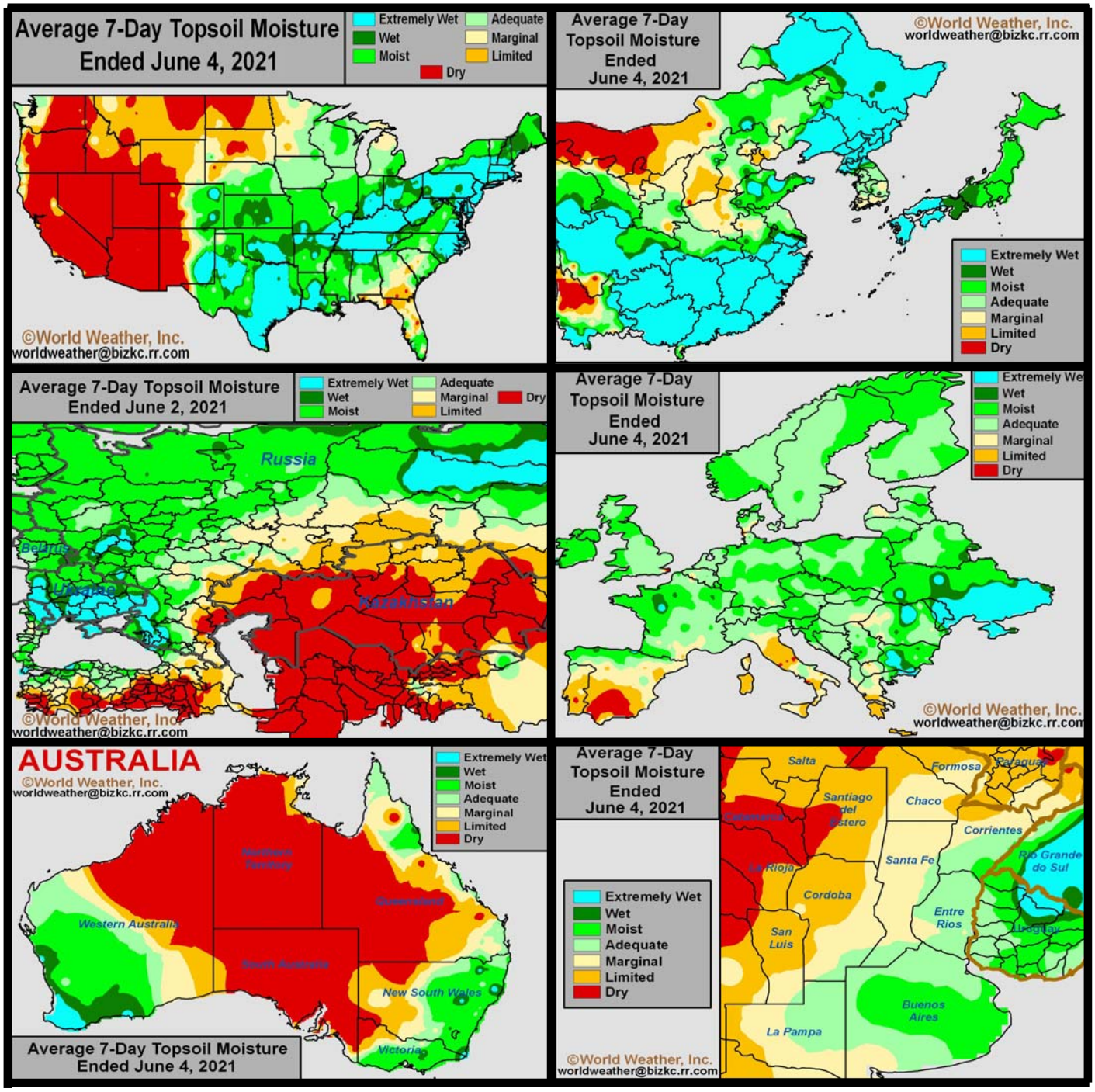
Most of the above-average rainfall suggested for June 8-20 comes from the late week storm system this week in the Prairies and a possible similar event near the end of this month when the high pressure ridge tries to shift farther to the east across North America similar to that of later this week.

Storm systems will move up the back side of the high pressure ridge and if the ridge axis is in the U.S. Plains and eastern Prairies there might be potential for a couple of weather systems to move from the U.S. Pacific Northwest into the western and some central Prairies locations. The storm systems will have trouble moving through the ridge of high pressure and most of them will fail to carry significant rainfall very deeply into Saskatchewan.

As a result, rainfall will be poorest in the southeastern Prairies and greatest in central areas and temperatures will be warmer than usual for most crop areas except in Alberta where they will be near normal.



Selected Weather Images From Around The World

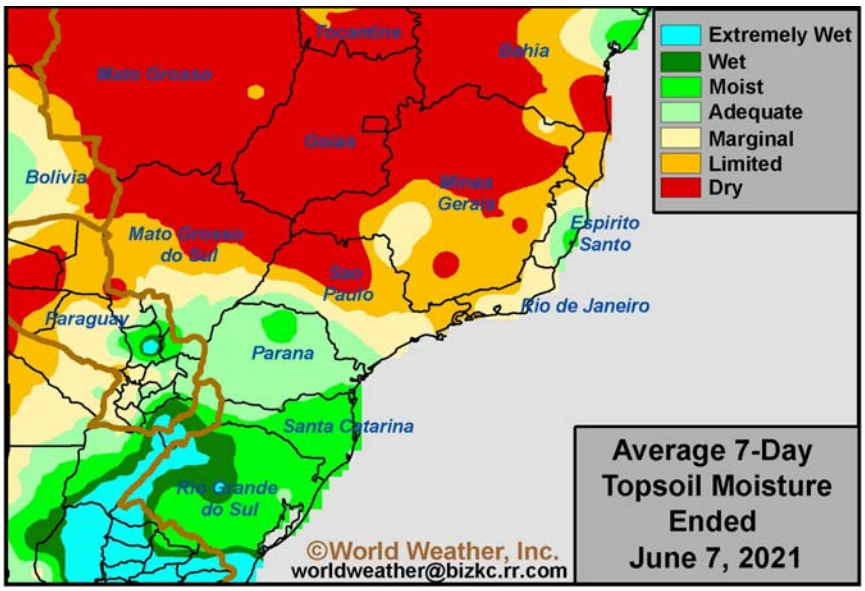


Argentina wheat areas are drying down, but planting prospects are good except in Cordoba. Not much rain is expected for a while, but rain will come eventually and support good emergence and establishment. China's drying trend in the Yellow River Basin will end this week as periods of rain begin to fall. The nation's summer crops are off to a good start and wheat yields should have been favorable this year. Australia rainfall improved recently in both the west and southeast. Rain is still needed in Queensland, South Australia, northwestern Victoria and western New South Wales for the best possible crop emergence and establishment. Europe soil moisture is rated well except in the south where seasonal drying is firming the ground and raising need for rain in unirrigated areas. Russia's southern New Lands and northern Kazakhstan remain too dry and a new heat wave is coming next week. U.S. soil moisture is rated quite favorably except in the northern Plains, the Pacific Northwest and portions of the southeastern states.

Southern Brazil Expecting More Rain; Corn Yield Low

Production cuts continue for Safrinha corn areas in Brazil due to ongoing dryness. Mato Grosso, northern Mato Grosso do Sul, Goias, southwestern Minas Gerais and northwestern Sao Paulo have been dealing with dryness most of the growing season and will experience the greatest cut in production.

Parana and southern portions of Mato Grosso do Sul have received rain most frequently and significantly in recent weeks supporting some flavor of normal crop development, but the improvement came only after a large part of the crop had already reproduced limiting the production gains that were needed to counter failing crops to the north. A disturbance will bring much-needed rain to Mato Grosso do Sul, Parana, Sao Paulo, and far southern Brazil during the next few days that will be beneficial for late-season development. However, the rain will be too late to significantly improve the production outlook.



Rio Grande do Sul and Santa Catarina into Parana and southern Mato Grosso do Sul reported 0.39 to 1.38 inch of rain for the seven-day period ending this morning. Rio de Janeiro and Espirito Santo received 0.24 to 1.46 inches of rain while several areas in central and southern Minas Gerais received up to 0.63 inch. The remaining production areas were mostly dry. Temperatures were warm with daytime highs often peaking in the 80s and lower 90s Fahrenheit.

Rio Grande do Sul, Santa Catarina, and Parana have adequate amounts of moisture in the soil due to periods of erratic rain in recent weeks. Southern sections of Mato Grosso do Sul and southern Sao Paulo have adequate to marginally adequate moisture. The remaining production areas were rated with very short moisture.

The recent rain in Parana and southern Mato Grosso do Sul was beneficial for all Safrinha crops. Both areas are still expected to see significant production losses this year despite some timely rain in recent weeks. Mato Grosso, Goias, northern and central Mato Grosso do Sul, Sao Paulo, and western Minas Gerais otherwise continued to see a poor environment for late-season development. Significant production losses are still expected for these areas as well. In addition to the dryness, light frost in Parana late last month may have also damaged a small amount of corn.

In the meantime, winter wheat produced in the wetter areas of southern Brazil benefited from the moisture and are poised to yield well. Some crop areas in Sao Paulo and immediate neighboring areas to the north and west have been too dry for wheat development, although the bulk of productions comes from the south where rainfall was more frequent and significant.

A disturbance and slow-moving frontal boundary will promote scattered showers from southern Brazil into southern Mato Grosso do Sul, central and southern Sao Paulo, and portions of southern Minas Gerais today into Thursday. A few showers that produce minimal rain will linger in several locations Friday as the disturbance shifts over the ocean. Drier weather is then expected this weekend. Moisture totals by next Monday morning will range from 0.75 to 3.00 inches and locally more in Parana and southern Mato Grosso do Sul.

Production areas farther north will remain drier than normal this week. Light shower activity will be possible in a few locations over the weekend, though resulting rainfall will be lost to evaporation.

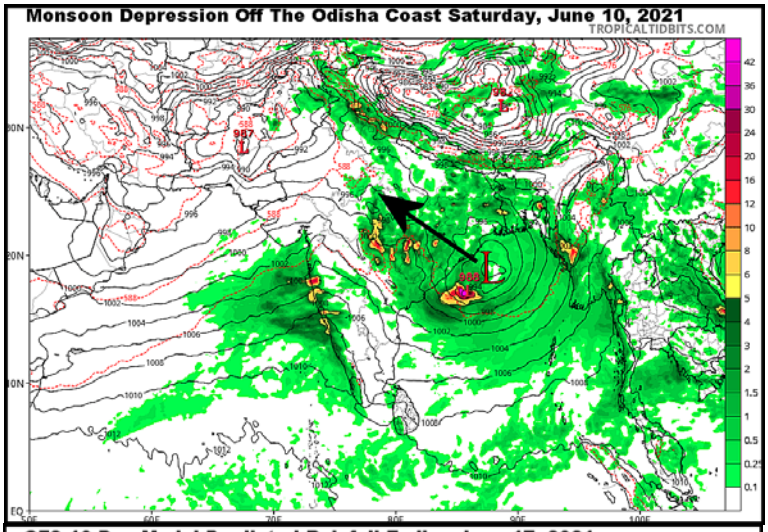
Precipitation during the next few days in Parana, Mato Grosso do Sul, and neighboring areas will fall too late to significantly improve Safrinha corn production, although some crop quality changes will be possible. Maturation may actually be a littler sluggish in the wettest locations, though quality impacts will be minimal. Maturation conditions for the remaining corn production areas will continue favorably.

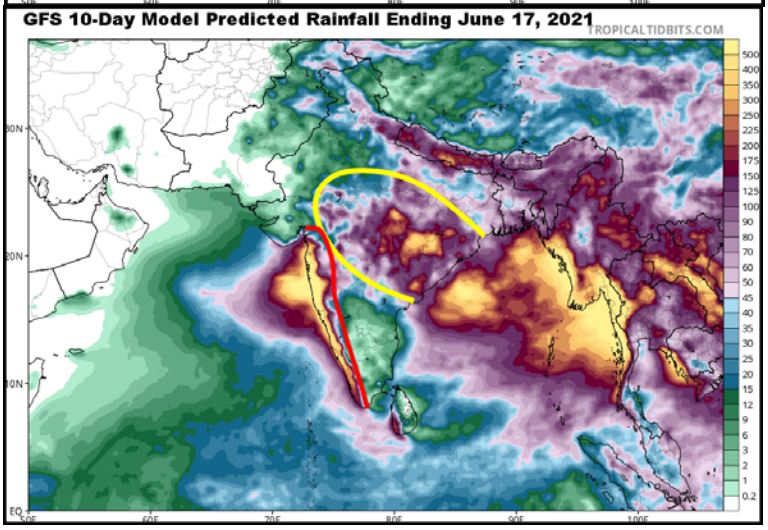
In the meantime, winter wheat conditions will remain favorable for much of southern Brazil into southern Mato Grosso do Sul. Some improvements are also expected in portions of Sao Paulo, though additional rain will be needed to completely fix the moisture deficits in that state.

Neighboring areas of Argentina will see its wheat crop establish well.

Central India To Get Flooding Rain

India's first monsoon depression of the 2021 monsoon season will form in the northern Bay of Bengal late this week. The storm promises to move inland through Odisha and Chhattisgarh to Madhya Pradesh. In the wake of this movement will be torrential rainfall, some strong wind gusts of more than 45 mph and flooding. Damage to a few crop areas is possible, but since only a small part of this year's summer crops have been planted there will be plenty of time to replant or to begin planting after a period of net drying.





Rainfall may range from 6.00 to 15.00 inches in a part of the region while surrounding areas receive 1.00 to 6.00 inches. Very little planting has actually been completed so far this summer and heavy rain that occurs during this time of year rarely has a lasting impact on field progress or crop development potentials.

Other areas of India will also receive torrential rain and experience some flooding in this coming week. The most significant area of rain will be along the west coast where amounts will vary from 8.00 to 17.00 inches with some potential for locally more. Flooding is expected and damage to crops, personal property and infrastructure is possible.

A final area of moderately heavy rainfall will occur east of Bangladesh in India's far Eastern States where rainfall will vary from 3.00 to 8.00 inches.

Despite the three areas of significant rainfall, India's monsoon season has begun a bit erratically with below average precipitation in most of the interior west and south and more of the same was expected during the balance of this week. Monsoonal rainfall is expected to improve as time moves along, but for now one of the main reasons for a slow start to the growing season is a weak monsoon flow pattern and another is cooler than usual Arabian Sea Ocean surface temperatures.

Cooler-than-usual ocean surface temperatures reduce water vapor that is released into the atmosphere. That means when the ocean is cooler than usual there is less rising motion above the sea surface and the amount of water vapor being released into the atmosphere is less as well. The southwest monsoon season gets its name from the southwesterly winds that blow off the Arabian Sea and into India. When the ocean water is warm high levels of water vapor are released into the atmosphere and then the southwest winds grab that moisture and blow it inland where the air rises much faster due to the warmer soil. The warm moist air then rises until it reaches cooler air aloft at which time it condenses out as rain. When the ocean temperatures are warm rainfall can be greater than usual, but when the water is cool there is a tendency for less rain to evolve.

Ocean temperatures in the Bay of Bengal are still warm and that is why the monsoon depression is capable of evolving. In this particular case, India will receive significant rain in the next week without the monsoon behaving normally because of the warm ocean water in the Bay of Bengal.

Monsoon precipitation this summer is expected to improve across India, but not before the Arabian Sea surface water temperatures rise back to normal and that is not likely for a few weeks. Rain will still evolve periodically, but portions of southern and interior western India may be drier than usual for a while.

Planting of 2021 summer crop will likely increase greatly following the big rains from Odisha to Madhya Pradesh this week. Fieldwork to the east will also advance normally, but interior western areas will have to wait on greater rainfall before beginning.

Southern Russia New Lands, Kazakhstan To Turn Hot

Southern portions of Russia's New lands and neighboring areas of northern Kazakhstan have been struggling with dryness this spring. Recent weather trended a little cooler with a few bouts of rain. The moisture was great, but not nearly enough to make up for the moisture losses through strong evaporation that occurred earlier this spring because of very warm to hot temperatures.

Crop conditions are stressed in unirrigated areas, but the situation is not nearly as serious as that in other drought years like 2010. However, the growing season is not nearly over and there is another bout of significant warm and dry weather coming this weekend and next week.

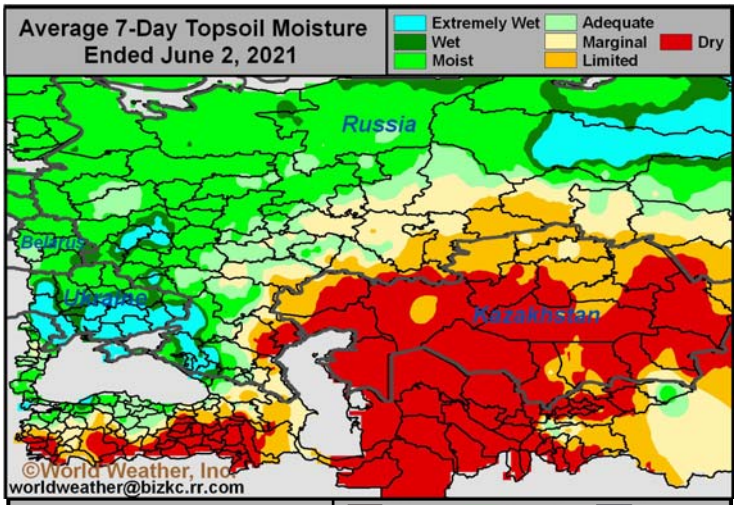
Soil moisture is still rated short to very short over much of Kazakhstan and southern parts of Russia's New Lands. Soil conditions are more favorably moist in Ukraine and western Russia as well as northern parts of the Russian New Lands.

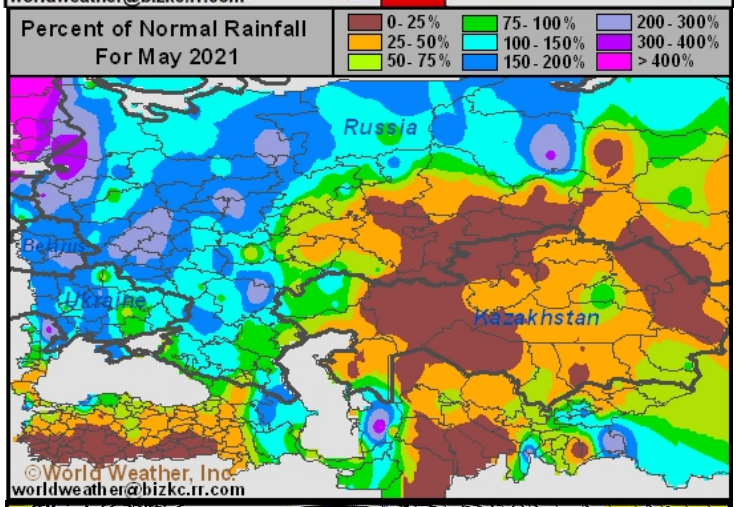
Rainfall over the past 30 days was well below average in the spring wheat and sunseed production areas east of the Ural Mountains and near and south of the Kazakhstan border. Some areas reported less than 25% of normal precipitation while others less than half of normal.

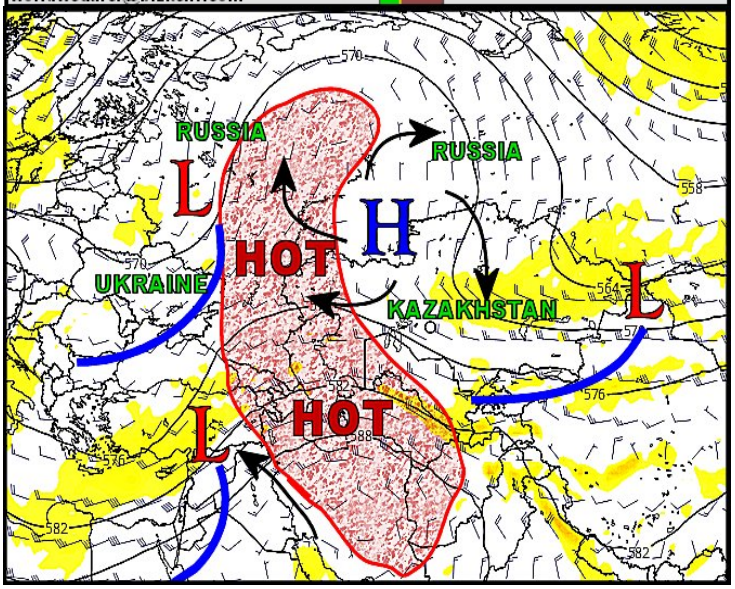
Needless to say, soil moisture is slipping lower across these areas and a weather pattern change is advertised for the coming weekend through next week that will induce a bout of hot and dry weather from Russia's Southern Region and western Kazakhstan northward through the Volga River Basin and western Ural Mountains region. Just a little farther to the east temperatures will not be hot, but it will be equally dry and the ground is expected to slowly dry out.

Dryness in this spring wheat and sunseed production area is of some interest not only because of the impact on crops in the region, but more on a global scale because Canada's Prairies and the northern U.S. Plains are struggling with dryness as well.

Relief is coming to North America this week, but it is not expected to prevail through the summer and that may lead to lower production for some crops in the region. If the same thing happens in Russia and Kazakhstan there may be a greater reaction to small grain trading around the world especially if other wheat areas have similar problems with moisture shortages.





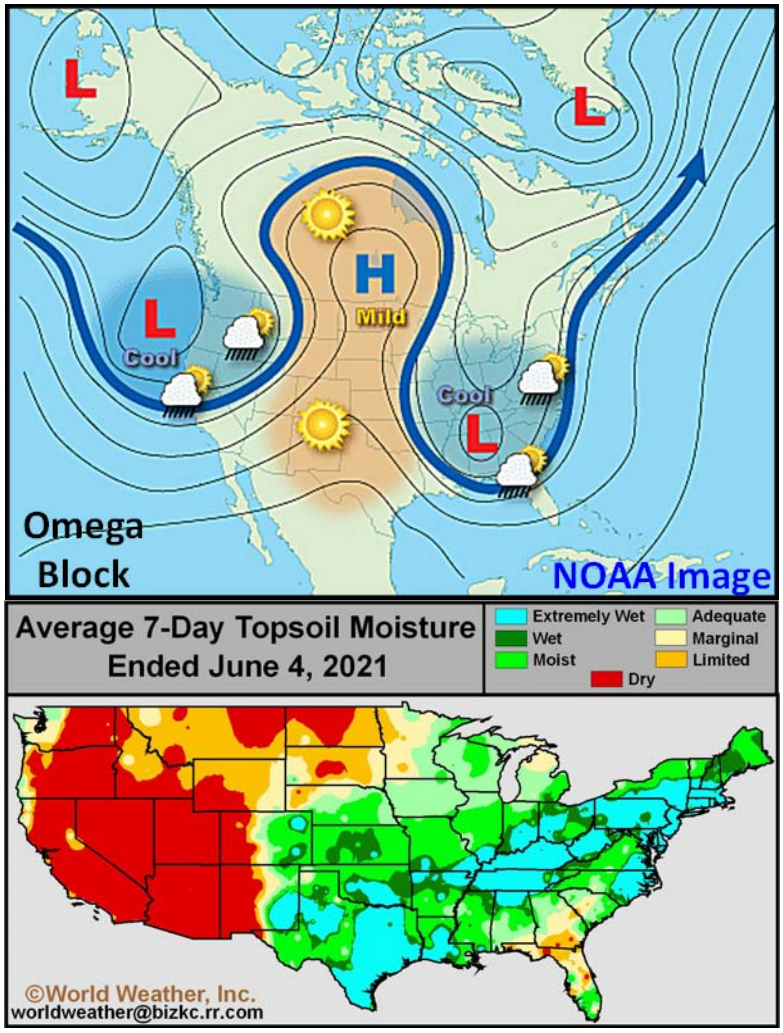


N. America Heatwave Could Have Foreshadowed Summer

Unusually hot temperatures occurred in the northern U.S. Plains and Canada's Prairies last week. Afternoon highest temperatures rose into the 30s Celsius and breached 40 degrees in parts of southern Manitoba, North Dakota and South Dakota. Hot temperatures at such high latitudes is rare, but nearly always occurs in significant drought years and that raises a concern for the next several weeks.

Relief coming to Canada's Prairies and a part of the northern U.S. Plains over the next seven days will come in the form of rain and cooler temperatures. However, the volume of rain should not be great enough to prevent another strong ridge of high pressure from developing like that of last week.

The forecast for July and August still favors a notable ridge of high pressure evolving from the Prairies through the U.S. Plains. The "Omega" Blocking pattern noted to the right is one of the more classic blocking patterns in North America, but it has not been seen in quite a while. The 30– and lower 40-degree temperatures of the past week occurred while such a pattern was in place and World Weather, Inc. believes the pattern will return again especially in July and August. There will be enough persistence in the blocking pattern that dryness and heat will last for many days longer at a time and that will stress crops more significantly than that of this past week. That makes getting significant rain prior to the ridge development imperative and extremely important. The more moisture that is in the ground prior to the high pressure ridge development the weaker the ridge will be and the better off crops will be in fighting off the stresses that come with such a ridge of high pressure.



The ridge of high pressure has temporarily weakened over the past few days and it will move briefly into the U.S. Midwest before retreating back to the west into the Rocky Mountain region. The ridge will then begin to drift to the east again and that will set the stage for another round of hot and dry weather for the Prairies and Great Plains. The more moisture that gets into the ground before the next ridge evolves the more likely feedback moisture from the soil will help to destabilize the atmosphere keeping the impact of high pressure relatively low. However, if conditions are already dry when the ridge arrives temperatures will soar higher and extreme highs like those in the 1980s may return.

Summer temperatures in the 1980s reached into the upper 30s and lower 40s periodically, but mostly in the driest of the drought years.

Drought remains significant from western and northern Mexico through most of the western United States to the southern and eastern Prairies. There has been relief in the west-central and southwestern U.S. Plains this season and a little more relief is expected in the northern Plains and Canada's Prairies later this week and into the weekend, but much greater volumes of rain must occur to change the summer outlook which is still promising additional bouts of heat and dryness for at least the southeastern Prairies, the northern U.S. Plains and the upper U.S. Midwest.

U.S. June Weather Turns Drier; Summer Outlook Unchanged

Recent weather in North America has shed some new light on weather during the month of June. It has verified and further acknowledged the repeating 18-year cycle and added new confidence to the longer term outlook for this summer.

In the United States, temperatures will be warmer than usual across most of the western and north-central states while the southeastern Plains, Delta and Tennessee River Basin experience near normal temperatures. Precipitation is expected to be lighter than usual from the western and northern Plains and upper Midwest westward to the Pacific Coast. That does not mean there will be no bouts of dryness easing rainfall, but it does suggest a difficult time easing long term dryness trends.

Favorable crop weather is advertised for the Delta, Tennessee River Basin lower eastern Midwest and in a few southeastern states.

July and August weather are still expected to be warmer biased in much of the United States and across much of North America for that matter. Temperatures in the southeastern U.S. will be mostly near normal and none of the nation will be cooler than usual and the same statement is valid for most of Canada's agricultural areas.

Summer precipitation is still expected to be lighter than usual from the southeastern Prairies through the northern Plains and upper Midwest to the Great Lakes region. Another area of drier than usual conditions will evolve in the southern Plains and the two areas could merge together during the latter part of summer if the Omega Blocking Pattern (shown on page 8) evolves periodically.

The lower eastern Midwest and southeastern states will likely receive frequent showers and thunderstorms this summer and may experience a slightly cooler bias, but the impact on crops will be mostly good since rain will be needed to preserve and protect production potentials. In the meantime, the summer monsoon will bring rain to the Rocky Mountains and a part of the central Plains in a July.