TO SUBSCRIBE CALL 913-383-1161 OR WRITE TO WORLDWEATHER@BIZKC.RR.COM

# The Canadian Agriculture Weather Prognosticator

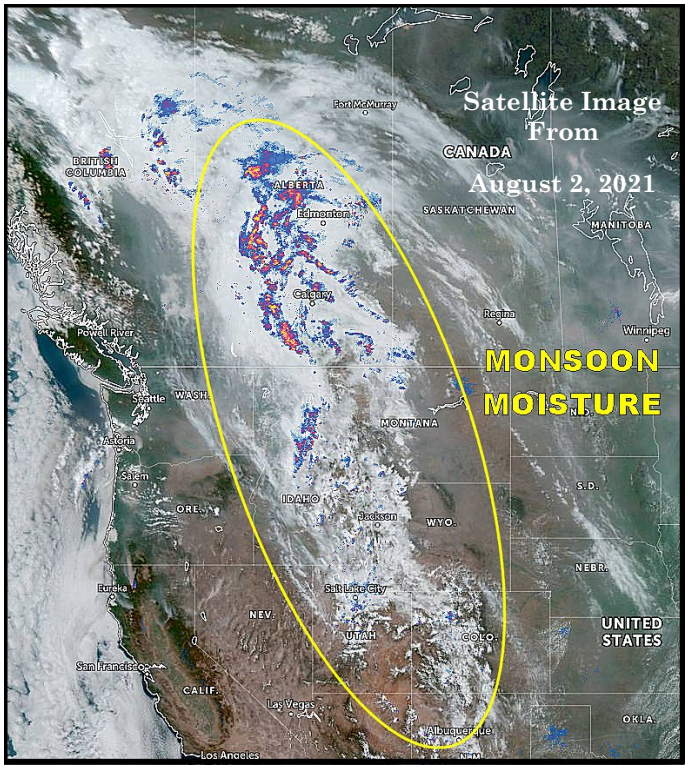
Volume XIII, Issue VIII | http://www.worldweather.cc | August 3, 2021

## *World Weather At A Glance*

- China flooding reached a peak after two weeks of excessive rain; damage to crops and personal property was significant in some areas
- Northern Madhya Pradesh and southeastern Rajasthan, India are also experiencing some serious flooding; more rain is expected into Friday
- Australia winter wheat, barely and canola have established well this year and spring growth is poised to get under way swiftly; rain is needed in Queensland
- Freezes in Brazil during last ten days of July damaged coffee, wheat, corn and impacted some sugarcane and citrus
- Drought in the western U.S. continues to threaten fruit and vegetable industry especially in 2022
- La Nina is still expected to return in the fourth quarter of this calendar year
- U.S. Midwest crops are still rated mostly well

## Monsoon Moisture In Canada; Will It Help?

Weakness in the North America ridge of high pressure and some monsoonal moisture that has reached far to the north in the Rocky Mountains may combine to induce a short term bout of rainfall for parts of Canada's Prairies and the Northern U.S. Plains. The potential rain event does not represent a trend change, but it will offer a little break from persistent dryness and heat in a part of the drought stricken Canada Prairies and a few areas in the northern U.S. Plains. Just as soon as this brief period of potential rain passes there will be another bout of dry and warm weather coming for most of these areas limiting the duration of any relief that occurs.



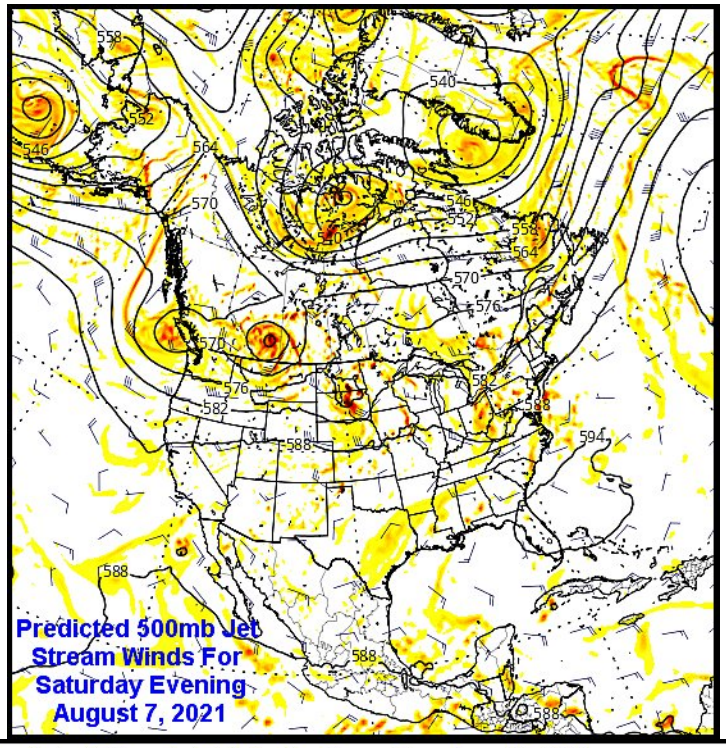

Not much high pressure ridge of significance will be left in the upper atmosphere during the middle part of this week. The weakness in the high pressure system that has dominated the summer will open the door of opportunity for a couple of weather disturbances to move into the U.S. Pacific Northwest and Canada's Prairies during the second half of this week and into the weekend.

The disturbances that are expected to evolve will move through the monsoon moisture and carry some of that moisture eastward into the Prairies and a part of the northern U.S. Plains. The moisture source is weak and so will be the storm systems that are advertised to move through the moisture resulting in a boost in precipitation, but with restricted results. The air is so dry across the Prairies and northern Plains that some of the monsoon moisture will evaporate as it moves eastward. However, there may be just enough cool air aloft in association with the weak weather disturbances to induce a little rain. The result of this will be to generate some of the best coverage of showers and thunderstorms seen in the drought stricken areas of the Prairies and northern U.S. for a while.

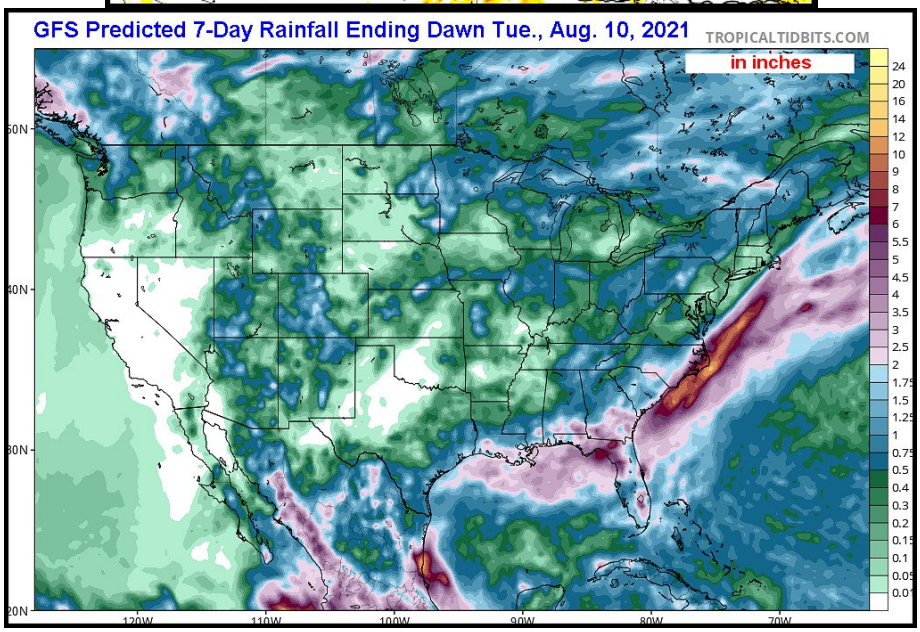
# Monsoon Moisture In Canada; Will It Help? (continued from page 1)

Resulting rainfall is not expected to be great enough to bust the drought and in most cases it will not be enough to seriously improve topsoil moisture, but it will introduce some atmospheric moisture to the region and offer some rainfall for many areas that have seen little to no rain in quite some time.

Alberta rainfall is expected to be greatest with southwestern crop areas getting enough to lift topsoil moisture nearest to the Rocky Mountains. The precipitation will lighten up greatly as it gets pulled farther to the east, but there is some potential for rain to fall in a part of Saskatchewan and Manitoba as the second of two weather disturbances moves through the Prairies offering a little more cooling which should help condense a little more of the monsoon moisture out over the Prairies.




A large gap in the predicted rainfall between central and western Alberta and the eastern Prairies is expected in which rainfall will not be great enough to alter drought conditions. The same gap will also impact eastern Montana and the western Dakotas, but some improved rain potential may evolve in the eastern Dakotas and Minnesota briefly Saturday into Sunday as the second of the two weather disturbance moves into the region bringing with it a little cooler air.




This pattern does not seriously change drought status in any part of the northern Plains or Canada's Prairies, but it does offer a little moisture to ease some of the crop stress briefly. Obviously, much more rain will be needed to more significantly ease drought and that is not likely to occur until seasonal changes come in late August and September when storm systems are expected to evolve more frequently in the U.S. Pacific Northwest and move east northeast into the Prairies and northern Plains at the same time greater cooling begins as autumn approaches.

The monsoon moisture will dissipate during late August and early September and to be honest it does not usually travel quite so far to the north. For that reason we cannot count on this situation returning again—at least not for a while. What the Prairies need more than anything else is a complete break down of the ridge of high pressure like we are going to see this week, but without any ridge building returning.

Unfortunately, once this bout of instability passes from the Prairies early next week a new ridge of high pressure is expected to evolve that will suppress rainfall in many areas outside of western and northern Alberta and allow temperatures to heat up once again.

Seasonal cooling that comes along in late August and September will likely have a huge role in breaking down the high pressure ridge and setting the stage for some brief periods of autumn rainfall. A full restoration of our soil moisture is not likely, but any improvement will lend some greater hope for 2022 planting and early season growth.

# Maybe September Will Bring Some Relief

Serious droughts are hard to break and this year's drought in the Prairies is going to be a tough one. August is starting to look pretty tough and World Weather, Inc. has delayed the relief that we had previously thought would begin late this month until September. This first week to ten days of August will be unstable, but there will not be enough atmospheric moisture to stimulate a serious change in drought status.

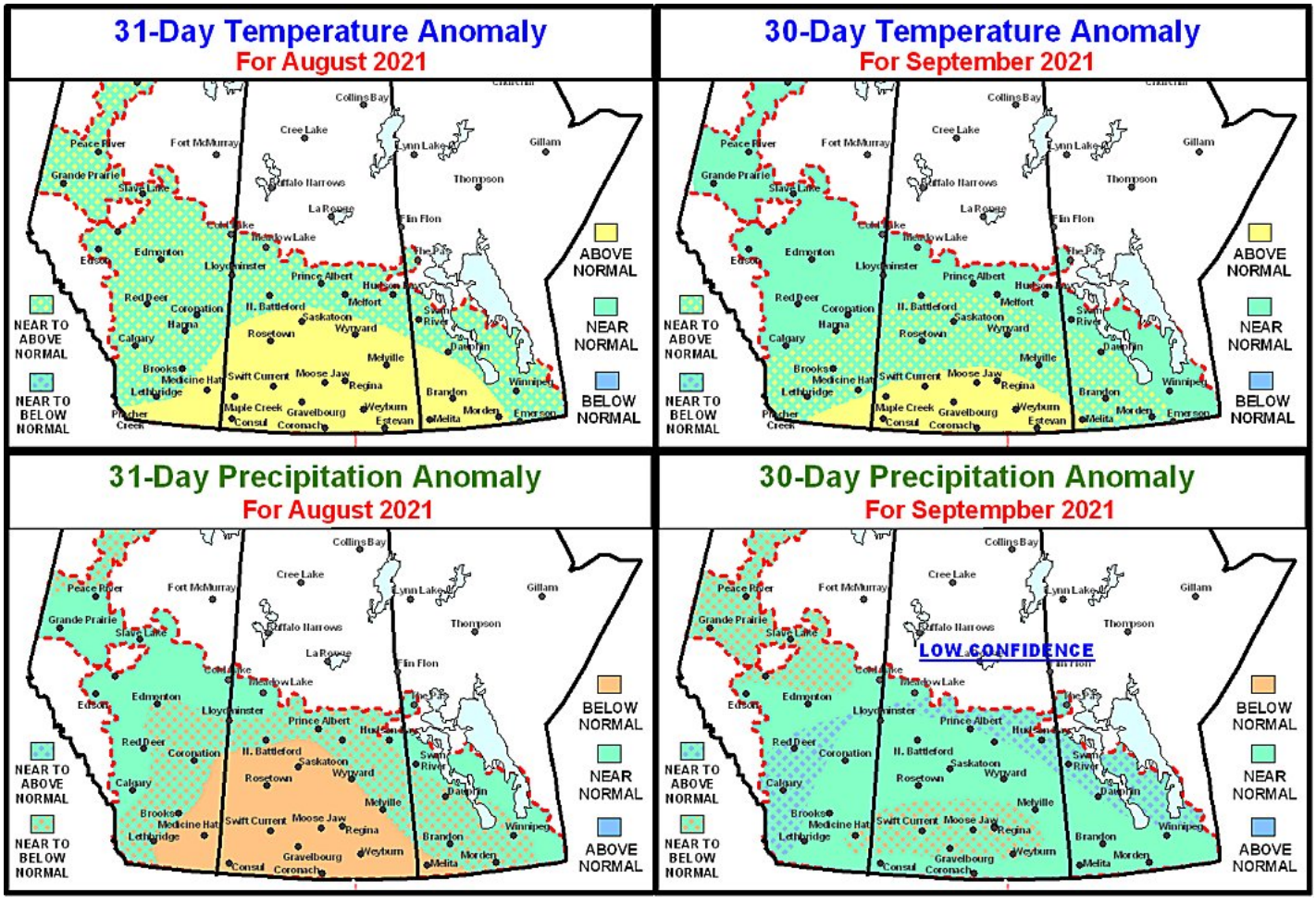
The cloudiness and shower activity early this month will help to hold temperatures back a bit, but resulting rainfall will only be significant in parts of western and northern Alberta and in a few random locations in other northern and eastern portions of the Prairies. A large part of the most drought stricken part of the Prairies will not get enough rain to counter evaporation and the month will be drier than usual for much of central and southern Saskatchewan, east-central and southeastern Alberta and far southwestern Manitoba. The easternmost portions of Manitoba might get enough rain to be close to normal, but confidence in that part of the outlook is very low.

Temperatures during August will continue warmer than usual in most of the Prairies, although there should be a brief bout of cooler conditions in the west next week and possibly in the far eastern parts of the Prairies late in the month.

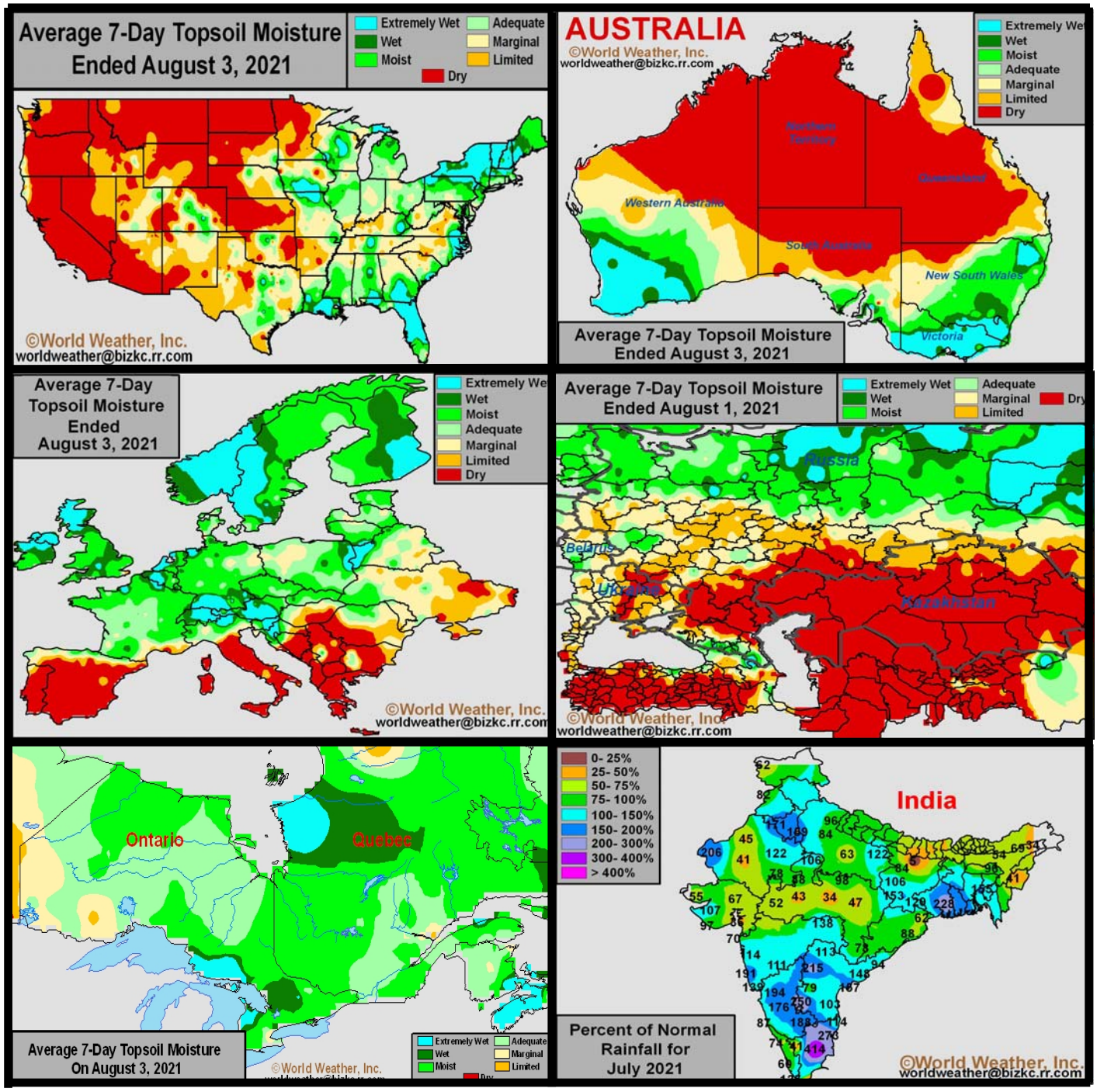
September is expected to be a month of possible transition away from the summer heat and dryness to a little cooler conditions at times and periodic precipitation. Confidence in the September outlook dropped quite a bit for this prognosticator because of the change in late August weather. It looks as though our Trend Model is beginning to show signs of deviation from actual weather and that reduces confidence. The Trend Model performed extremely well this year, but we are going to be more cautious as we move into autumn.

The Prairies need rain desperately and September and October are the best months to get that. The late autumn and winter will be ruled by La Nina and even though that event will be weak precipitation will be greatest in southwestern Alberta, and southern most Saskatchewan and a little lighter than usual elsewhere.

Temperatures this winter will likely be colder than usual across the Prairies which will limit snow accumulations after October except in the areas noted above. That will lead to huge pressure on spring weather to break or ease the drought.



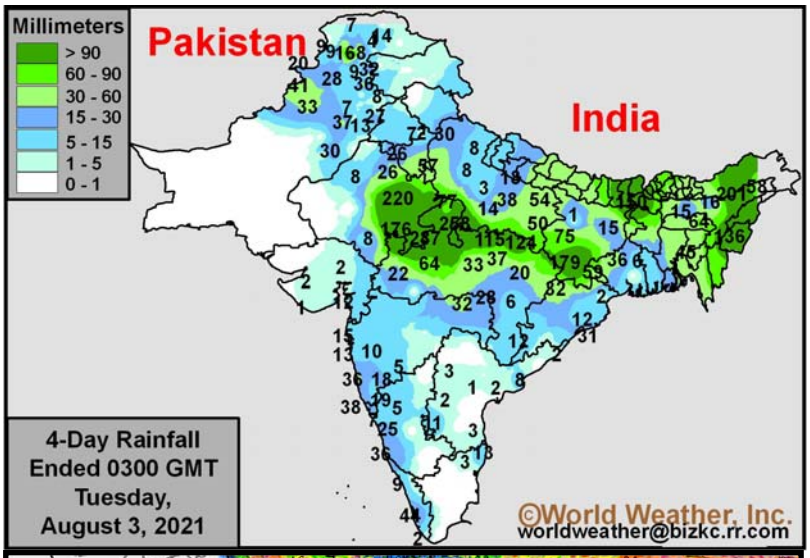
# Selected Weather Images From Around The World




Prior to the past few days of excessive rain in central India, much of central and southern parts of Madhya Pradesh, one of the nation's most important summer crop producing states, was less than half of normal. Rainfall has also been limited in western Rajasthan and eastern Gujarat while most other areas have done well. Dryness remains a concern for summer crops in southeastern Europe from parts of the Italian Peninsula to Hungary, western Romania and Bulgaria as well as from eastern Ukraine through Russia's Southern Region to Kazakhstan. Australia's winter wheat, barley and canola production areas have seen a good distribution of rain for a well established crop this year except in Queensland where greater rain is needed. Ontario and Quebec, Canada rainfall has also been well timed supporting good corn and soybean development while allowing the wheat harvest to progress around showers. U.S. subsoil conditions are mostly good even though the topsoil has firmed . Timely August rain will be needed in the U.S.

# Excessive Rain In India To Cause Local Flood Damage

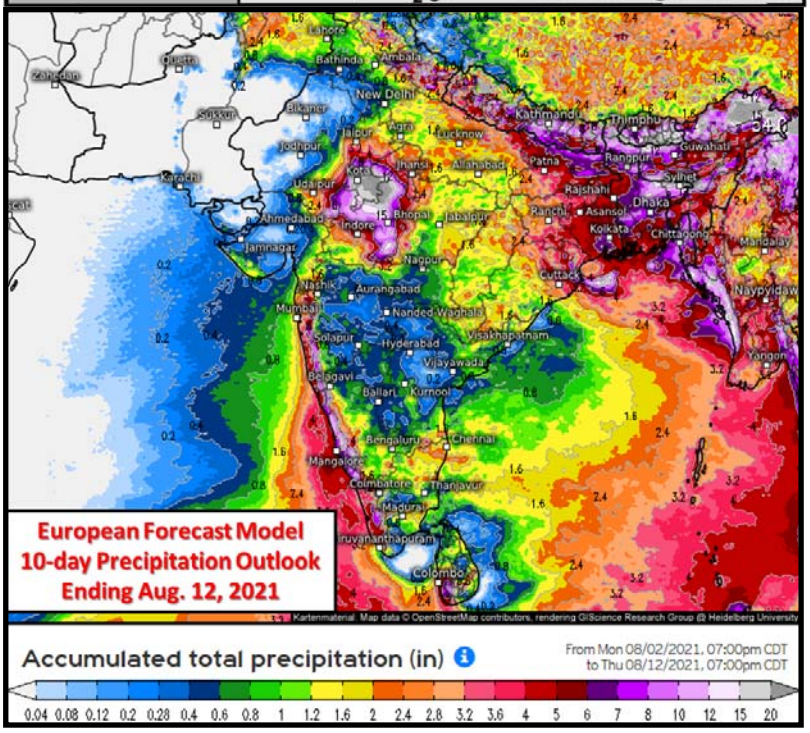
India's monsoon has not been performing in the best manner this year, although the nation's crops have been developing relatively well. The most anomalous weather of late has been in north-central parts of the nation where excessive rain began during this past weekend and will continue through the balance of this week.




Rain totals through dawn India time on Tuesday, Aug. 3, had ranged from 2.50 to nearly 7.00 inches from the northern one-third of Madhya Pradesh northward into south-eastern Rajasthan. Several locations near the common border of the two states reported rainfall of 8.00 to 11.30 inches. Since much of that rain fell over four days and the ground was already saturated flooding was suspected.

The flood event was expected to worsen over the balance of this workweek as the low pressure center responsible for the excessive rain becomes nearly stationary. Additional rainfall by the weekend will vary from 8.00 to more than 12.00 inches bringing some of the rain totals up over 20.00 inches for the week. Flood conditions will worsen and the impact on some of the region's corn, sorghum, groundnuts, rice and pulse crops will be negative. Some production cuts are inevitable and there is a good chance that some crops will survive, but fail to yield as well as usual.

This week's flood event may be the only one in crop areas that will have a negative impact on production—at least so far this season. The area impacted will be small, but it is a very important production region and the losses will be significant for that local area.




Prior to this past week's excessive rainfall the central and southern portions of Madhya Pradesh reported less than half of the normal June 1 to July 31 precipitation. A similar shortage of moisture was noted in the interior western parts of Rajasthan and in eastern Gujarat. Rain farther to the north and in most of the far south had been above average over the past two months and temperatures were mostly seasonable supporting a favorable production year. There are some moisture shortages prevailing in the far eastern parts India east of Bangladesh and in a few other random locations.

For the most part, the nation has seen good crop weather thus far and yields have not been seriously altered by the anomalous rainfall noted above. This week's damaging flood could impact the bottom line somewhat, but as long as drier weather evolves soon some of the crops in the region will manage to survive and might still yield favorably.

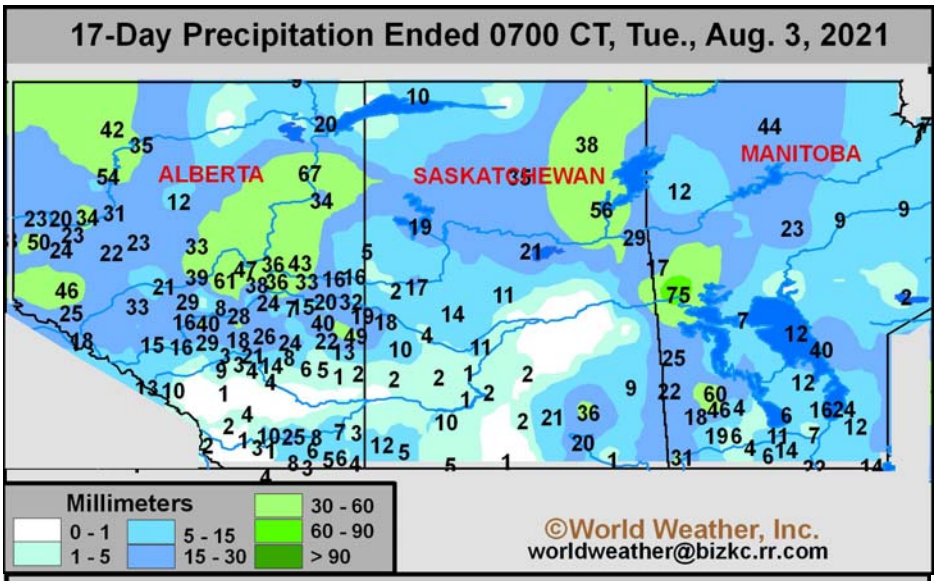
The biggest dry down occurring in India right now is in the interior south, but after above average rainfall occurred in July the drier bias will be viewed as a mostly beneficial event.

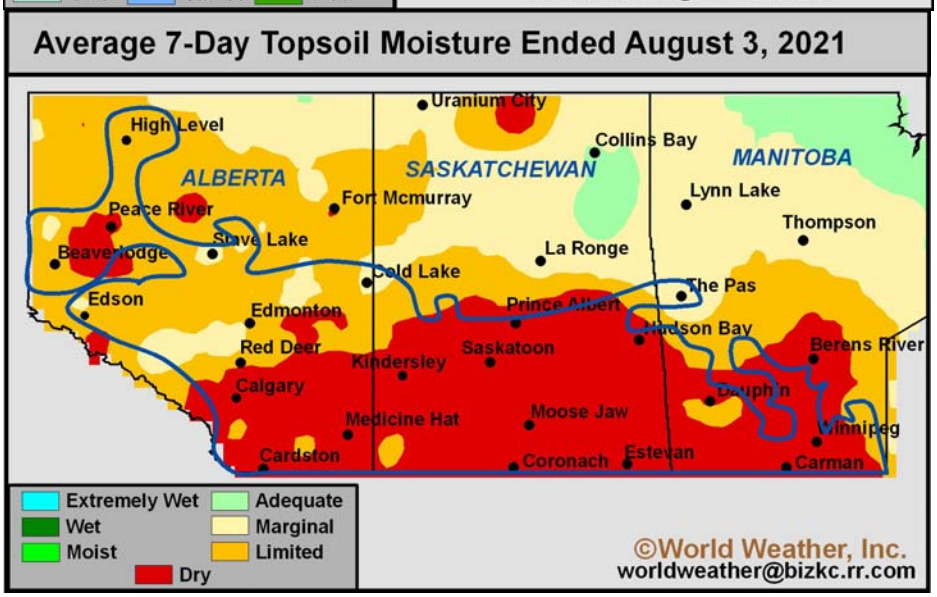
August rainfall is expected to be near to above average in the heart of India. Rainfall will be lighter than usual in both the far south and northwest. Pakistan, northwestern Rajasthan and northwestern Gujarat are expected to be driest relative to normal with near to below average precipitation surrounding those areas. September rainfall should be favorably distributed as well leaving the nation with a good production year.

# Prairies Moisture Hits Rock Bottom

Drying in the southern, central and eastern parts of the Prairies the past three years has finally caught up to the region's crops. Production in the region the past few years was amazingly good given the lack of rain, but the poor moisture profile coming into this growing season coupled with too much heat has pushed crops over the edge. Soil moisture has hit rock bottom in many areas.

Alberta's west, central and north has managed to get through the growing season much better than other areas in the Prairies because of a few well timed rain events. The province has had serious problems with moisture shortages in the south and east-central production areas along with much of Saskatchewan.




Dryness in Saskatchewan that was most critical in the central and south earlier this year has since expanded into much of the north, as well. Harvesting has begun in many areas across the Prairies and for some areas that harvest has come nearly a month early because of the chronic heat and dryness. Soil moisture is critically low throughout the areas that have been driest over the past few years including southern and east-central Alberta, central, southwestern and south-central parts of Saskatchewan. In the past few weeks, the lack of rain and persistent above average temperatures have allowed the critically dry conditions to expand to the north and east impacting virtually all of Saskatchewan and a large part of Manitoba.

The areas that have been least impacted by dryness this summer include central, western and northern Alberta, the far northwest part of Saskatchewan and in west-central through northwestern crop areas in Manitoba. That does not mean these areas will all have a good production year, but it does imply better yields than in the critically dry crop areas.

Dryness in the Prairies has expanded into the northern U.S. Plains this summer and includes Montana, North Dakota and portions of both Minnesota and South Dakota. There have been fears of dryness expanding into the U.S. Corn and Soybean Belt, but so far that has not materialized.

Dryness in the Prairies is comparable to that of the 2001-2003 event and 1988 in its impact on the region. But the duration of this drought in years is longer for parts of Saskatchewan and southern Alberta even though there were periods of rain in past years that saved the crops.

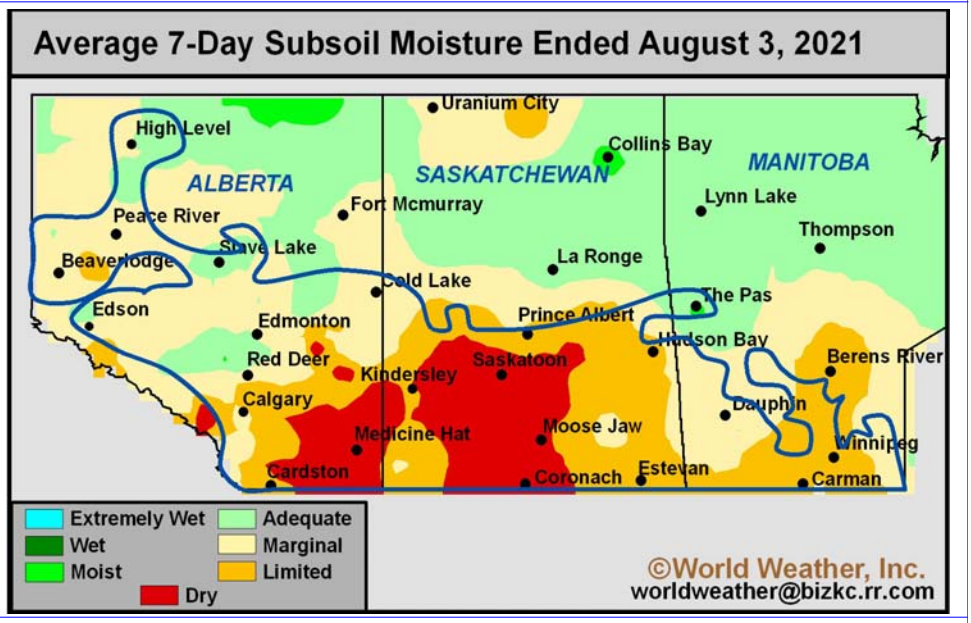
Showers in the Prairies at the time of this writing are teasing producers and traders into thinking the drought is beginning to wane, but in actuality it is still strongly in tact and likely to prevail a while longer. However, this period of teasing showers is hinting at future weakening in the high pressure ridge that should come in late August and more likely in September offering some relief and a chance to put a little moisture back into the topsoil.

However, weather patterns this autumn will not support a full resto-

# Prairies Moisture Hits Rock Bottom (continued from page 6)

ration in soil moisture, but there will be some relief and a little moisture would be welcome—if for no other reason than the psyche of our fellow farmers. We need to see it rain just to provide some hope for a better tomorrow. World Weather, Inc. believes relief will come, but it is obvious that rain cannot fall soon enough for this year's crops. So the focus will soon turn to 2022.

As dry as it is across the Prairies today, there is concern about early season cold weather that could be another blow to late season crops in the eastern Prairies and neighboring areas of the Northern U.S. Plains and U.S. Midwest.




# Cold Potential For Late August, Early September

Needless to say, the air across Canada's Prairies is quite dry and that raises a concern over the potential for early season frost and freezes.

Severe drought usually occurs with very low humidity. Without moisture in the air temperatures can and do rise and fall much more dramatically than they would if the air was full of moisture. Earlier this year when the growing season was just beginning the Prairies encountered a number of impressive hot and cold periods that threatened some of the early season crop development. It has been a while since the region has been plagued by such a wide range in temperatures, but as seasonal cooling occurs late this month and in September the Prairies will see this phenomenon again.

It was not more than ten days ago that portions of Alberta's Front Range region with the Rocky Mountains encountered temperatures near the frost threshold. Crops areas that butt up against the mountains reported low temperatures to +3 Celsius and some of the foothills actually reported frost and a few light freezes. Fortunately, there was no crop damaging cold that came at that time. The episode of surprisingly cold temperatures was a reminder of how quickly summer conditions can change and the risk of crop damage through frost and freezes can rise.

As dry as the Prairies are today, the potential for early season frost and freezes will be greater than usual at least until significant rain falls.

There has been a 45-day cycle in temperatures this summer with periods of heat and dryness occurring within the cycle. The next bout of notable cooling is due into the Prairies during the latter part of August and very early in September. Frost and a few freezes could evolve at that time, but there is no guarantee that the airmass that comes during that period will be potent enough to support such an incident. There is certainly nothing on the forecast charts today that would suggest such an event might occur.

These repeating cycles are good to find the rhythm in temperature patterns, but are not much help in determining the intensity of heat or cold that might occur and for that reason the jury is still out on how significant the next bout of cold might be. There is some potential that the cold will impact Manitoba and eastern most Saskatchewan and southward into the United States. Most likely temperatures will stay up just enough to avoid a damaging event, but the situation should still be closely monitored.

In order for this next bout of cooling to impact the eastern Prairies the ridge of high pressure that is nearly non-existent today will have to redevelop and become quite strong in the last ten days of this month.

# Is Weather Cyclical Or Is The Sky Falling???

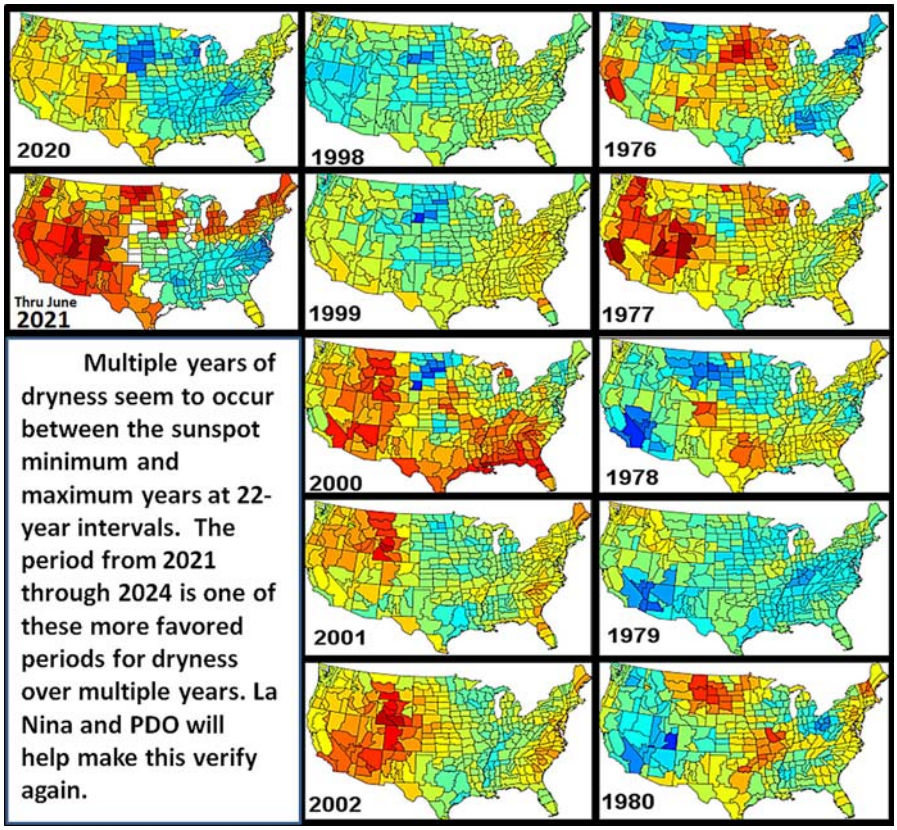
This year's most shocking weather included the unprecedented heatwave in the U.S. Pacific Northwest and southern British Colombia, copious rainfall and flooding in China for a second year in a row, damaging frost and freezes in Brazil's coffee country and notable drought in North America. These are just the top four incidents of late and judging from the reaction of the world, "the sky must be falling".

The drought in Canada's Prairies is four years old and much more severe this year than in the three previous years. Damage to nearly all crops in the Prairies has occurred and substantial cuts in production have occurred throughout the region. Spring wheat, canola, lentils, peas and barley production have all been cut substantially and the same fate is expected to corn, soybeans and flax as well as late season canola. This year's drought in Canada has expanded and intensified reaching into the northern U.S. Plains and a part of the upper Midwest adding more wheat, canola, sunseed, corn, soybean and sugarbeet country into the dry situation and worsening the impact.

Drought in Canada and the northern Plains this year has been compared to that of 1988 and 2001-2003 in which tremendous losses occurred in the region previously. What is also most interesting about the pattern in North America this summer is that is has followed extremely closely to the dry years of 2003, 1967 and to a lesser degree 1985. We have obviously been here before, but without the excessive heat in British Columbia and the U.S. Pacific Northwest.

It is pretty hard to justify the 122 degree Fahrenheit extreme in southern British Columbia in June this year. The computer forecast models predicted the event, but many forecasters did not buy it until it was too late. Holy cow that was hot and what a tragic end for Lytton, BC. A few days after reporting the hottest temperature in Canada the town burned to the ground!

It is so easy to take such a weather event and claim the "sky is falling" or, in other words, the world is coming to an end, but this has happened before. Did you know that the record high temperature in the state of North Dakota is 121 degrees Fahrenheit at Steele, located just east of Bismarck on the same latitude as the Yakima Valley in Washington State where temperatures were equally hot earlier this summer? The heat wave in North Dakota occurred in 1936 in the midst of the worst North America drought since the late 1800s. Keeping the record setting event in perspective one has to come to the conclusion that such extremes, although not reported ever before at that location, have occurred at similar latitudes 85 years ago.



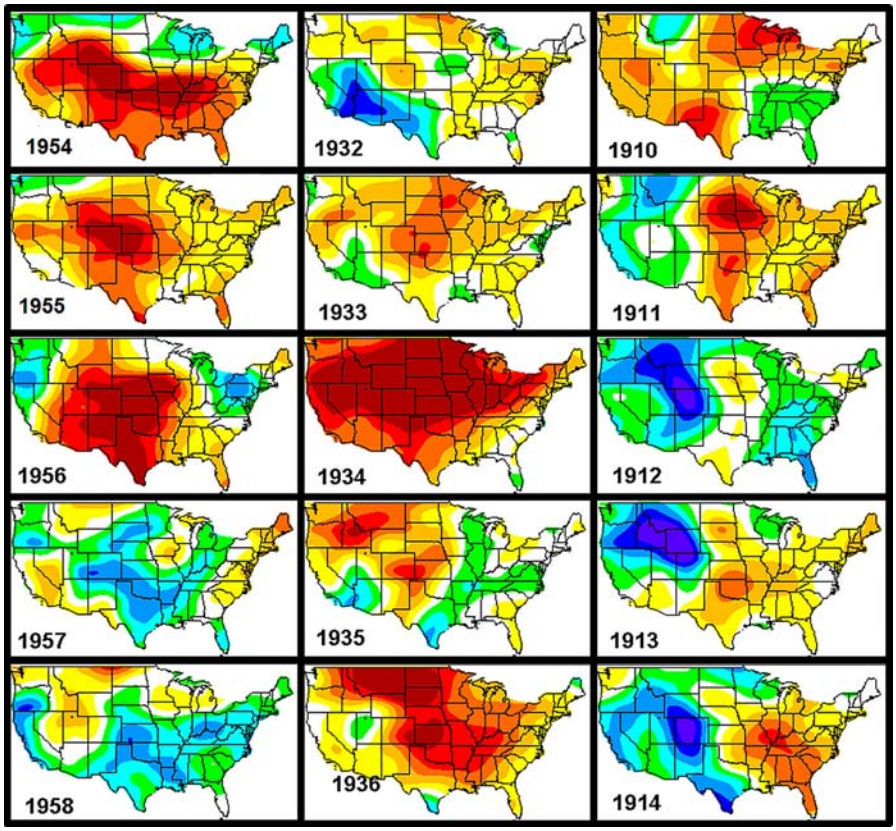

Weather is quite cyclical and that has become obvious to this forecaster who has been following global weather for 42 years. The climate has certainly warmed, but the patterns that generate the extreme weather are very much the same only with more intensity.

Did you know that China's flooding this year, as severe as it has been, was worse last year? During July in northern Henan province two twenty-four hour 30-inch rain totals were reported at two different locations over two different nights. Those same two locations ended up

# Is Weather Cyclical Or Is The Sky Falling? (Continued From Page 8)

with 40-45 inches of rain over a 6-day period. Des Moines, Iowa gets roughly 36 inches of rain in an entire year and these locations almost did that in a single day and surpassed that rain in less than week. Needless to say, serious urban and rural flooding resulted, damaging crops and property.

What is almost more amazing than the mere record 24-hour rain totals has been the fact that China's extreme floods in the past have all occurred very near to the solar minimum and quite often the flooding is spread out over more than one year, but one of those year's stands out as a real extreme and that was last summer. Check it out! All of China's "epic" floods have all occurred within a couple of years of the solar minimal. That makes such phenomena almost predictable. The single biggest difference between the flooding associated with this solar minimum and that which has occurred in the past has been in the volume of rain and that is much greater resulting from the warmer atmosphere and the mere fact that warmer air holds more water which raises the precipitable rainfall potential in events like these.




A similar relationship exists in Brazil coffee production areas. Significant frost and freezing temperatures occurred July 20 and again July 30 across many production areas from southern Minas Gerais to northern Parana. The cold induced serious crop damage. At first look one might conclude that this was unprecedented, but the truth is that a similar event occurred 27 years earlier in 1994. Once again, there is a strong association with serious freezes in Brazil and the solar or sunspot cycle. There is a clustering of frost and freeze events in that region within a couple of years of the solar minimum just like China's floods. The latest solar minimum occurred in 2020. That makes such events predictable and at least one coffee analyst used this relationship earlier this year to predict a damaging freeze this year.

Multi-year droughts in North America are not unheard of, but the most serious of those have been relatively rare until you look at the weather patterns and cycles. Just like in Brazil and China, there is an association with multi-year droughts in North America and the 22-year solar cycle. It is partially because of that association and the fact that La Nina is expected to return in the fourth quarter of this year and cooling ocean water off the west coast of North America has led to the prediction that North America is moving into another one of those multi-year drought periods. At the bare minimum this could be like the 1980s, but World Weather, Inc. is concerned that the repeating pattern may be more like that of 1950s or 1930s. However, with that said, our atmosphere is warmer than it used to be and it does hold more water. Forecasters are hoping that there will be more moisture in the air during this multi-year drought to limit its duration and intensity.

Because of the parallels in atmospheric cycles, World Weather, Inc. continues to wave a caution flag to food companies, farmers and the entire agricultural sector in North America, because the odds are high that the current drought is not going away anytime soon. Water supply issues in the western United States will continue leading to fruit and vegetable shortages in the coming year and much higher food costs for consumers.