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The Canadian Agriculture Weather Prognosticator

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World Weather At A Glance

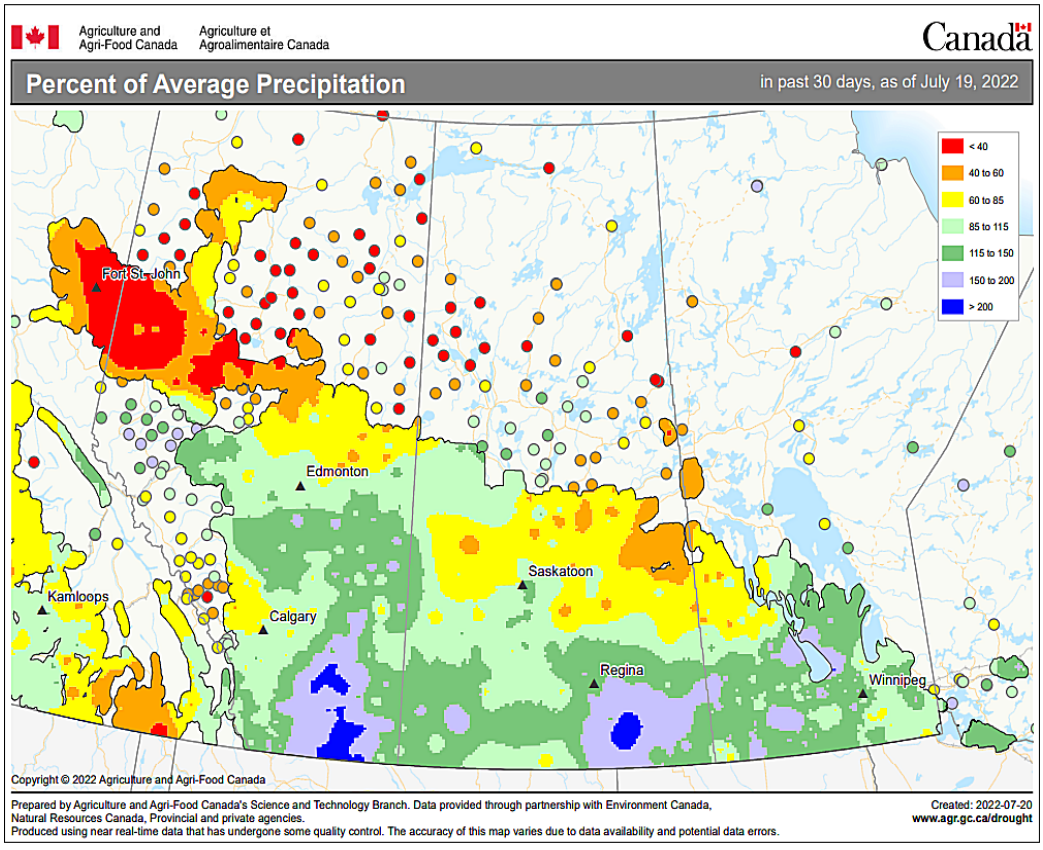
- Southeastern Europe is quite dry and expected to stay that way for ten days with above normal heat.
- Western Europe's heat wave is over, but rainfall remains below normal and crops stressed
- Russia's Southern Region had been too dry in recent weeks, but is getting rain now
- Argentina wheat areas are still too dry, but rain expected in late July will offer relief
- India's monsoon fires up successfully after slow start
- China weather settles down wet spring and early summer with flooding
- U.S. Plains bake in unusual heat during mid-July
- U.S. Midwest crop conditions mostly rated well
- Australia wheat, barley and canola establishing well and has good potential

Mid-July Rain Brings Needed Relief To Sask.

At the end of June Central Saskatchewan was notably drier biased, but soil moisture three weeks later was much better rated. Rain fell in early to mid-July to not only ease dryness in central Saskatchewan, but some of the moisture totals were great enough to raise 30-day rain totals above normal from eastern Alberta through southern Saskatchewan to southern and central Manitoba. The wetter bias proved timely for many crop areas that were teetering on being too dry at the end of June; however, for a few areas, the rain came a little late and yields have slipped low again.

The difference between last year's drought and this year's weather has been huge for many areas in the Prairies, but pockets of southwestern and central Saskatchewan and southern Alberta may not have received enough rain save production potentials when warmer than usual temperatures arrived just shortly before the big rain event in this past week.

Yield potentials have slipped lower in a few areas and that loss on top of some abandonment in Manitoba and eastern Saskatchewan will prevent the Prairies from coming in with a huge crop of wheat, barley, canola, flax, corn and soybeans; however, despite the pockets of



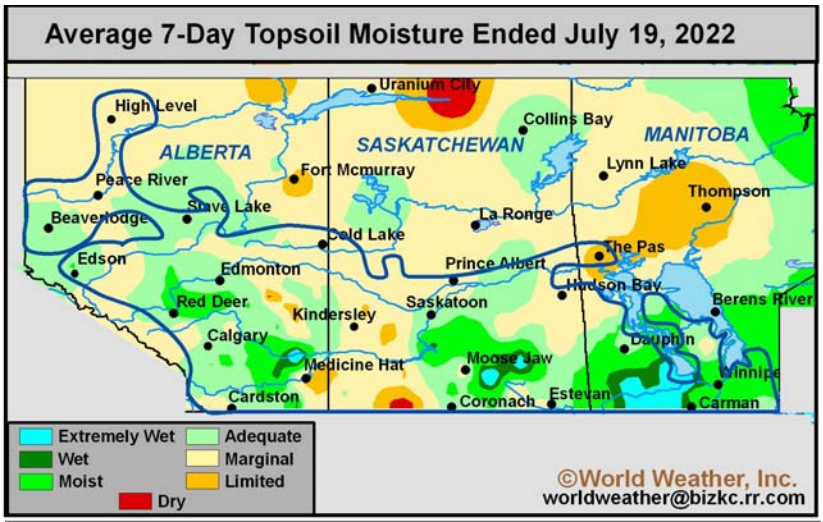
Mid-July Brings Needed Relief To Saskatchewan (continued from page 1)

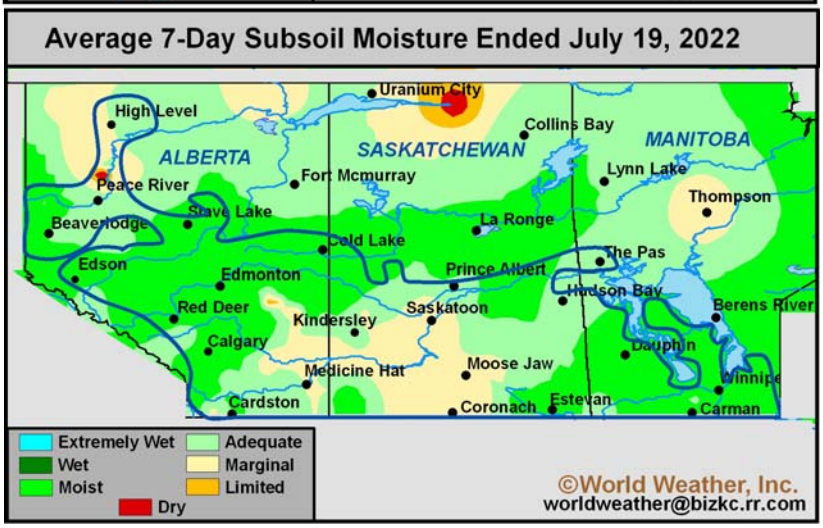
trouble, most of the Prairies have had enough timely rainfall to make this a much better year than last year. Production may still be short of average in some crops, but most farmers will be pleased with the bottom line after last year's disastrous crop.

Temperatures in the second and third weeks of July rose a little too far above average in some areas causing accelerated drying and a big rise in crop moisture stress. The heat and dryness did not last long with much improved weather coming in the past week that helped to bolster soil moisture, remove much of the stress that had been prevailing and restore favorable production potentials to many areas.

In the meantime the Peace River Region in northwestern Alberta began drying out. These trends toward improved rainfall in the central and eastern Prairies and drier biases in the northwest are consistent with the original summer outlook, although the situation did not evolve quite as expected.

The next 30 and 60 days will bring quite a mix of weather to the Prairies. The only stagnating weather may be in the Peace River region and neighboring areas of the far western Prairies where lighter than usual rainfall is expected. The drier bias will lead to some crop stress later this summer and that in combination with delayed spring planting because of excessively great precipitation may bring down some of the yields.





It is not unusual for the year following extreme drought conditions to have some lingering negative weather. Production is usually much improved after the bad drought year, but quite often the year following serious drought has issues with dryness in some areas and excessive moisture in other areas. As a result, the year after serious drought is rarely a disastrous crop year, but it is rarely a bumper crop year and that will be the case this year as well.

Temperatures in the next 30 and 60 days should vary greatly with parts of the Prairies expecting warmer than usual conditions while other areas experience short term bouts of coolness. Even though 2004 is one of our analog years, World Weather, Inc. does not anticipate a frost or freeze threat in August.

There will be some threat of cooler weather in September with the cool conditions possibly great enough to induce the season's first frost during the middle of the month. There may be a few crop areas planted late enough this year to be partially impacted by seasonal frost and light freezes resulting in some decline in crop quality. Only a very few areas would have immature crops present in mid-September that could see production cuts because of early season frost and freezes.

It is still too soon to predict the first frost and freeze event, although World Weather, Inc. remains confident that 1) no damaging cold will occur in August and 2) the coldest conditions should occur in Alberta and not Saskatchewan or Manitoba—at least not initially.

Despite, the mid-July rainfall many areas in the Prairies are still rated a little drier than usual and a boost in soil moisture is desired. The driest areas will be slow to recover, but there will be sufficient time to get moisture back into the topsoil in time to support production. A few pockets of below average precipitation will continue to prevail across the region and those will need to be closely monitored in case anticipated rainfall is delayed or erratically distributed enough to miss some of the driest areas.

Drier Weather Expected As Summer Ridge Outlook Fails

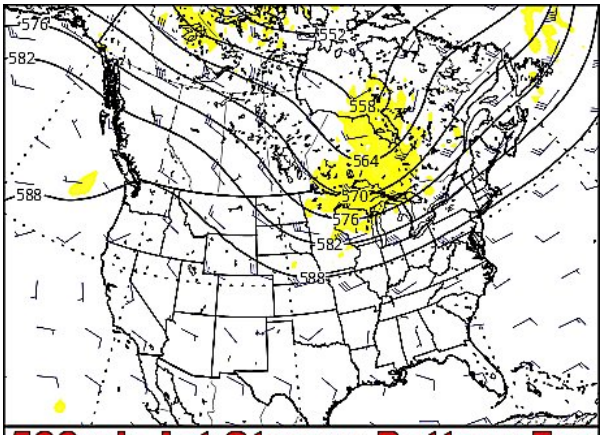
A fundamental change in late summer weather has occurred that changes our outlook for the remainder of the growing season. That change includes a poor monsoonal moisture flow into the southwestern United States and a poor mechanism to bring that moisture north to the Prairies.

Originally in World Weather, Inc.'s speculation over summer weather we had anticipated a mean high pressure ridge position over the U.S. Plains during the second half of summer. The ridge was predicted to be strong enough to extend north into the southeastern Prairies during late July and August. That position would have pulled monsoon moisture from Mexico through the U.S. Rocky Mountain region and into the Prairies. The pattern was also expected to be supported by a strong trough of low pressure over the U.S. Pacific Northwest.

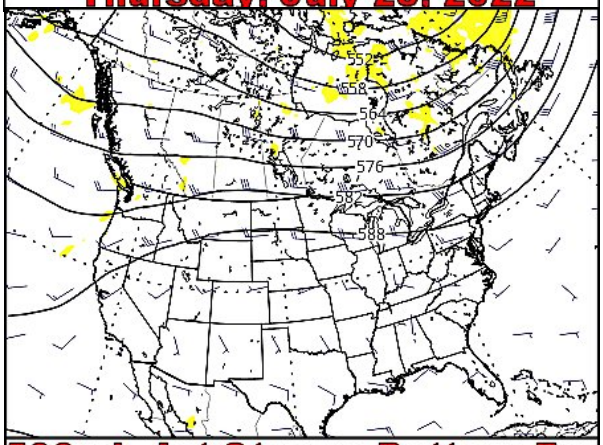
All three of these weather phenomena have failed to evolve as expected. Granted, the three features would have all been part of the same mechanism and had they verified the summer would have ended wet for parts of the Prairies. However, a few things are different. First, the ridge in the U.S. Plains was strong, but it sloped northwest from Texas and Oklahoma into the northwestern Plains and southwestern Prairies instead of reaching northward to southeastern Saskatchewan and Manitoba. This change resulted in hotter and drier weather in the central and southern Plains, but it has also limited the moisture north from Mexico into the U.S. southwestern states.

In addition to that, a deep trough of low pressure has failed to evolve in the U.S. Pacific Northwest and that feature and the high pressure ridge were supposed work together the pull moisture northward into the Prairies making it rain.

July will now end with a drier and milder temperature regime as a northwesterly flow pattern becomes better defined this weekend and next week. Our source air will come from Alaska and the Northwest Territories cutting out the rainfall. The pattern is quite similar to that seen at times during 2021, although the northwest flow is expected to be reduced as we move into August.



500mb Jet Stream Pattern For Thursday, July 28, 2022



500mb Jet Stream Pattern For Friday, August 5, 2022

Nevertheless, rainfall in this first ten days of the outlook will be more restricted than previously anticipated. Early to mid-August weather will then orientate the ridge of high pressure somewhat similar to that of last year bringing the Prairies warmer temperatures in August and a reduction in rainfall for some areas. The big soaking rains that had been predicted are no longer expected.

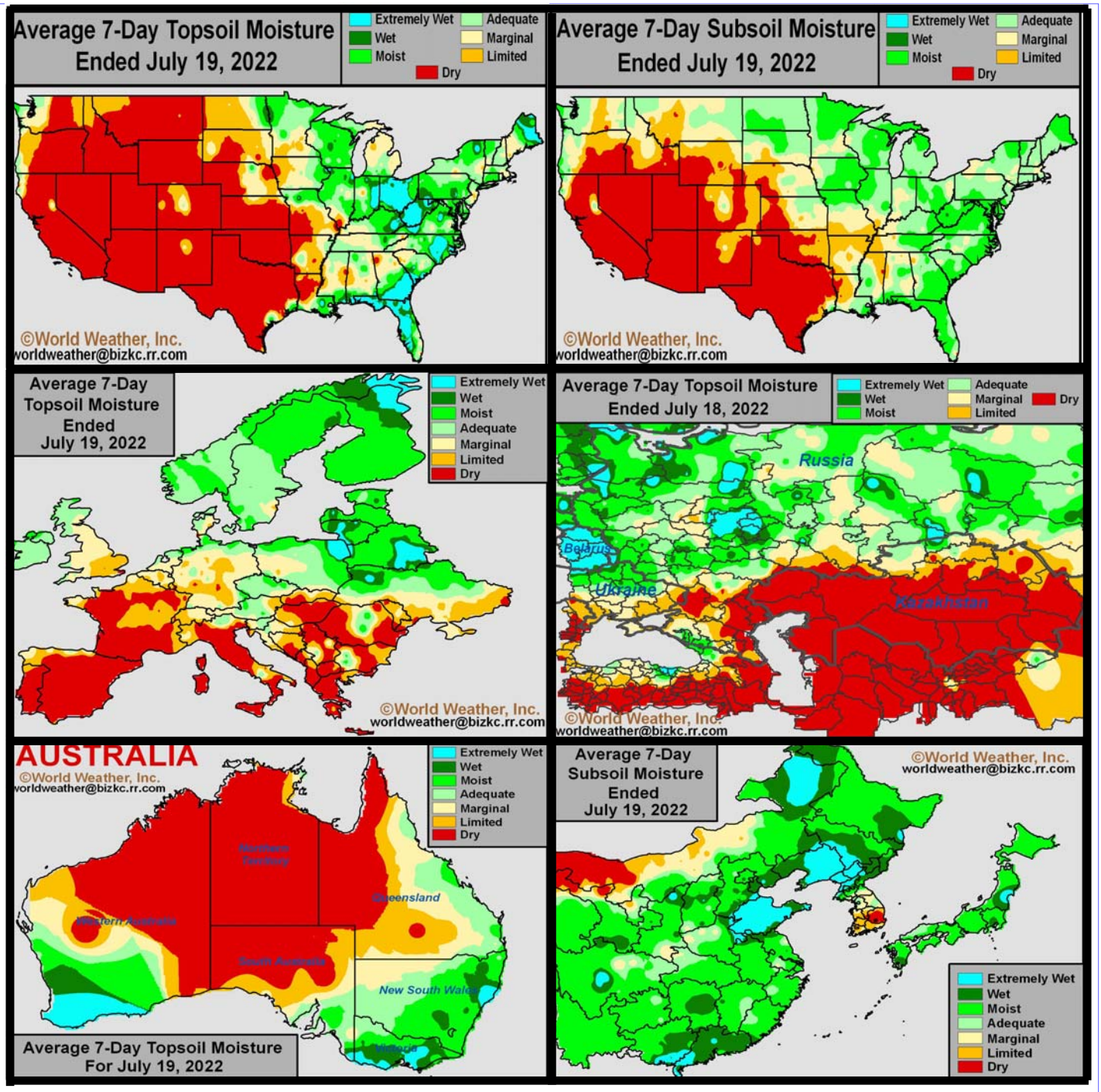
Soil moisture across the Prairies is good, but not as good as we had hoped in case this solution ended up evolving. Crops will rely on subsoil moisture and a few bouts of rain during the next few weeks to finish out. It will become very important to get a few bouts of significant rain to evolve, but the near term forecast does not offer that as a solution, which raises a caution flag over mid– to late August weather.

Timely rainfall will be imperative during the month. Soil moisture will already be ebbing a little too low when August begins and there may be a few pockets of moisture stress in various places across the Prairies. Western and northern Alberta will have plenty of moisture in the subsoil to support crops, despite a drier bias, but conditions in parts of east-central and southeastern Alberta and west-central, southwestern and central Saskatchewan will not be as great and the potential for late season crop moisture stress will rise in some southwestern areas.

World Weather, Inc. still believes that the ridge of high pressure in North America will change its orientation periodically in August allowing some timely rain to fall. We do not believe that absolute dryness will occur. The precipitation that does evolve will be varied in its intensity and coverage leaving some crops surviving from one rain event to another with not much cushion for long term development.

Manitoba has more abundant soil moisture and will get along much better than other areas in the Prairies if a drier bias evolves, but Manitoba is the one province that may have a little better potential for rain more routinely.

Selected Weather Images From Around The World



U.S. soil moisture remains favorably rated across much of the most important grain and oilseed production areas in the Midwest and southeastern states, but it remains very poor in the northern Delta, central, northwestern and southern Great Plains and in a part of the far southwestern Corn Belt. Hot weather in this past week stressed crops especially those that were in the driest areas. Northwestern Europe experienced its hottest weather in recorded history this past week and rainfall has been well below average depleting soil moisture and further stressing crops and livestock. Much of Europe will be drier biased over the next two weeks. Russia's Southern Region will get some needed rain in the coming week while parts of Ukraine and Kazakhstan remain drier than usual. China's subsoil moisture is adequate to abundant and sufficient to carry normal crop development into mid-August. Australia's winter wheat, barley and canola is establishing well and poised to perform favorably during the spring.

An Old Familiar Weather Pattern Expected Into August

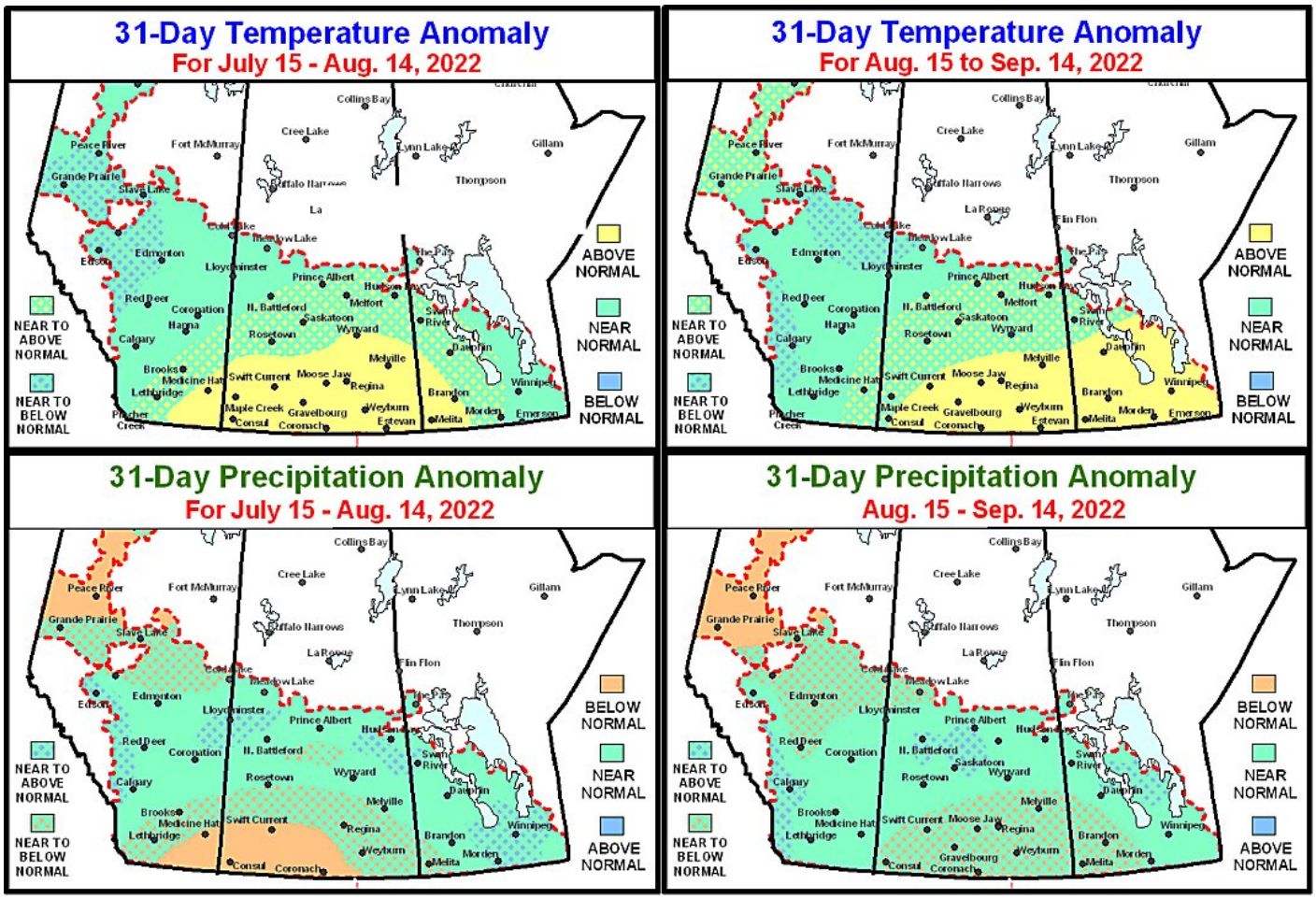
The second half of summer still promises a mix of weather across the Prairies that should prove positive for most crops in the region. However, the first 30 days ending August 14 will return an old familiar weather pattern disfavoring rainfall in the southwestern and central parts of the Prairies. This pattern dominated last summer, but it will only last a little while before the pattern shifts to the east.

Nevertheless, in this first 30 days a drier-than-usual bias is expected in central and southern Saskatchewan and southern Alberta. The pattern will be similar to that which dominated the summer of 2021, but without the excessive heat and without the persistence of below average precipitation. There are pockets of dryness still prevailing in the southwestern Prairies and adding another 30 days to this trend will not bode well for some crops. Rain is needed, but it is needed now rather than a few weeks from now. As a result, some of the driest areas in the southwestern Prairies may come up a little short on production, but the situation will not be nearly as serious to the bottom line for nationwide production as that of 2021.

Rain is expected to become plentiful during the first half of August across the northern half of the Prairies excluding the Peace River Region and Slave Lake area while including much of eastern Manitoba. Temperatures will be warmer biased except in far western Alberta where readings may be a little cooler than usual.

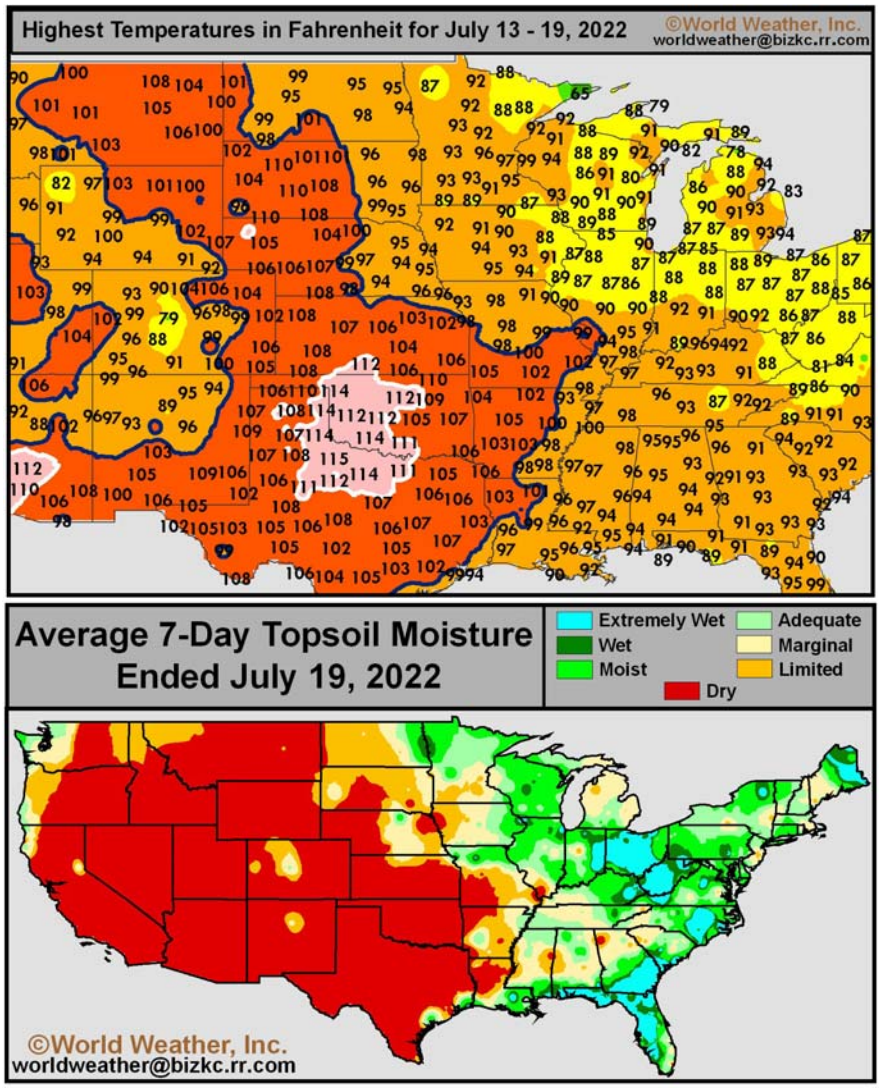
The Aug. 15-Sep. 15 period is likely to change with the driest bias in the Prairies shifting more to the southeastern parts of the region where temperatures will be above normal. Drying in portions of Manitoba and southeastern Saskatchewan may eventually raise the need for moisture, but the trend will prove beneficial for early maturing crops. Late season crops and especially those planted later than usual may not welcome the lighter than usual precipitation bias.

The greatest rainfall Aug. 15-Sep. 14 will be in eastern Alberta and northwestern Saskatchewan while the driest areas will be in the Peace River region and neighboring areas of western Alberta. Some of the temperatures in the western Prairies will be a little cooler than usual during the month as well. Temperatures in the Peace River Region, like those of Saskatchewan and Manitoba, will be a little warmer than usual.



Central U.S. Heat, Dryness To See Only A Brief Break

Computer forecast model runs have recently advertised showers and thunderstorms and cooler weather for the central and northern U.S. Plains and western Corn Belt where conditions this week have been a little oppressive. Excessive heat and dryness have dominated the week and those conditions will linger into the coming weekend. Changes advertised in the computer forecast models will then kick in and may prevail for a week to ten days – at the most – before ridge building returns inducing warmer and drier conditions again in the central U.S.



This week's excessive heat has stayed mostly in the Great Plains. Very few western Corn Belt crop areas have seen temperatures over 35 Celsius. Missouri and Kansas have been the exceptions along with the Delta and a small part of southwestern Illinois. Hot weather will continue over the next few days with similar conditions expected from South Dakota into Texas and the Delta, but the eastern extent of 35 degree temperatures or warmer will not deviate much from that which has already occurred in this past week.

While there has been much market attention given to the U.S. Plains and western Corn Belt in recent days because of the heat and dryness, the majority of the Midwest has managed to keep a good level of soil moisture. Crop development in most of the Midwest has advanced quite favorably with only a few pockets of dryness. There are moisture deficits, but they are pocketed and temperatures have rarely been hot enough since June to cause any serious plant stress.

The northern, central and eastern Midwest will continue to receive periodic rainfall that will suffice to support corn and soybean development through the next two weeks. Frequent frontal passages will bring periodic rainfall to the region and keep temperatures in a mostly seasonable range which should be nearly ideal for yields.

Back in the Plains and western Corn Belt, there will be a breakdown in the hot and dry weather for a period of 7-10 days beginning late this weekend and lasting into the first couple of days in August. Rainfall advertised by some of the forecast models has varied greatly in the past two days. The odds are good that rain will fall in many areas from Kansas and northern Oklahoma to Canada at one time or another in the week to ten-day period described above. That does not mean the ground will be restored of moisture and the drought is over. What it does suggest is temporary relief from recent weeks of warm to hot temperatures and dryness and that may help some crops attempt to improve for at least a little while.

The weather pattern change coming is seen as being only temporary, though. The shift of high pressure aloft out of the Plains is only expected to last a short period of time and then it will return. During its absence rain and more seasonable temperatures will evolve, but the period in which high pressure is expected to be absent is not likely to last more than a week to ten days and when it returns so will some of the heat and dryness. World Weather, Inc. does not expect the same level of extreme temperatures seen this week necessarily returning in August, but as long as dryness remains in the southern Plains the

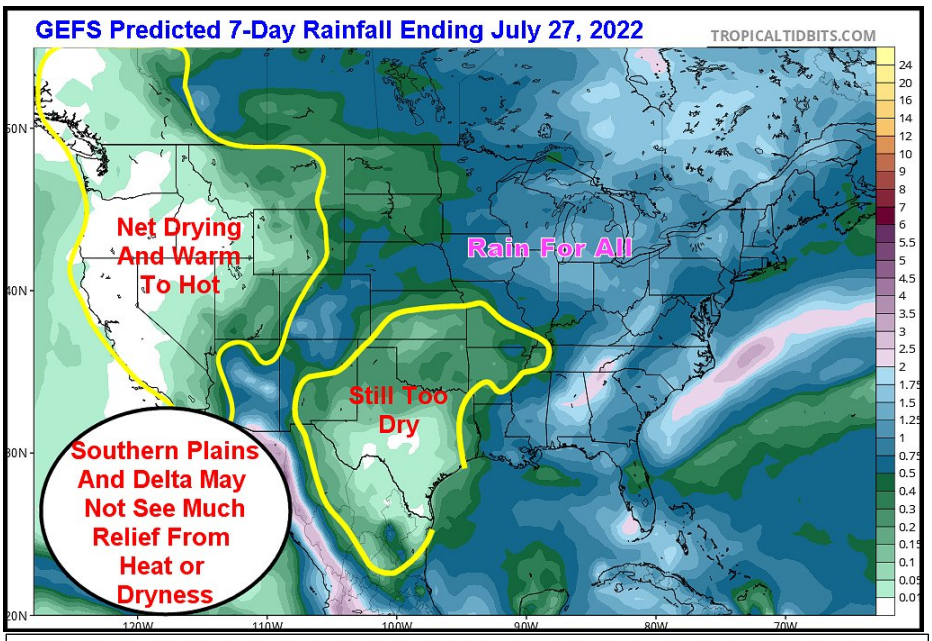
Central U.S. Heat, Dryness To See A Brief Break (continued from page 6)

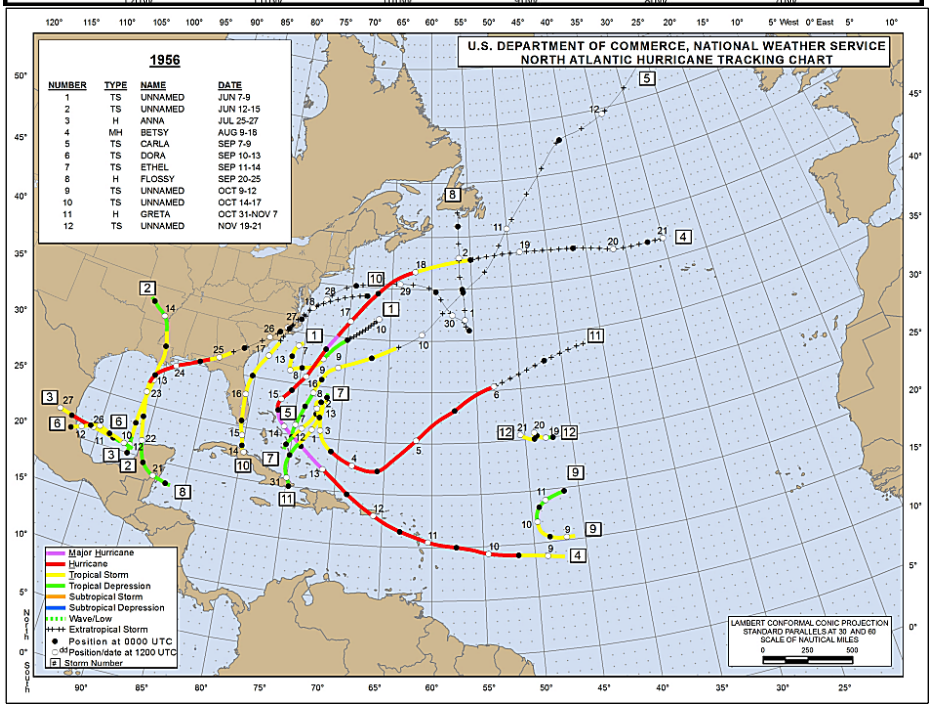
heat source will remain in place and the potential for expanding heat and dryness to the north will continue especially since it is only mid-summer.

The weather pattern in North America still looks and feels much like that of 1956 and in that year the ridge of high pressure dominated the central U.S. through much of the summer season.

The tropics will soon start to become more active with tropical cyclones. This is most likely in August and September. Those storms will have some influence on ridge positioning in the United States and keeping a close eye on the tropics will give us some additional clue as to where the mean ridge position will be in the middle and latter part of August and September. If tropical cyclones pass frequently near or over the southeastern U.S. a ridge of high pressure will have some potential to prevail in the Plains with some expansion into the Midwest. If tropical cyclones come into the Gulf of Mexico they may help keep the ridge over the Plains and allow some potential for more rain to come into the eastern Midwest or into southern Texas. In either solution the central Plains would likely be an area still favored for the driest and warmest weather since the mean ridge position for this summer is already predicted to be in that region and the tropics will only reinforce that. In 1956, all August and September tropical cyclones occurred frequently near U.S. east coast which is why late summer weather turned drier across most of the Midwest instead of mostly in the Plains.

For now, the conclusion of all this is that after this coming week to ten days of potential relief in the central

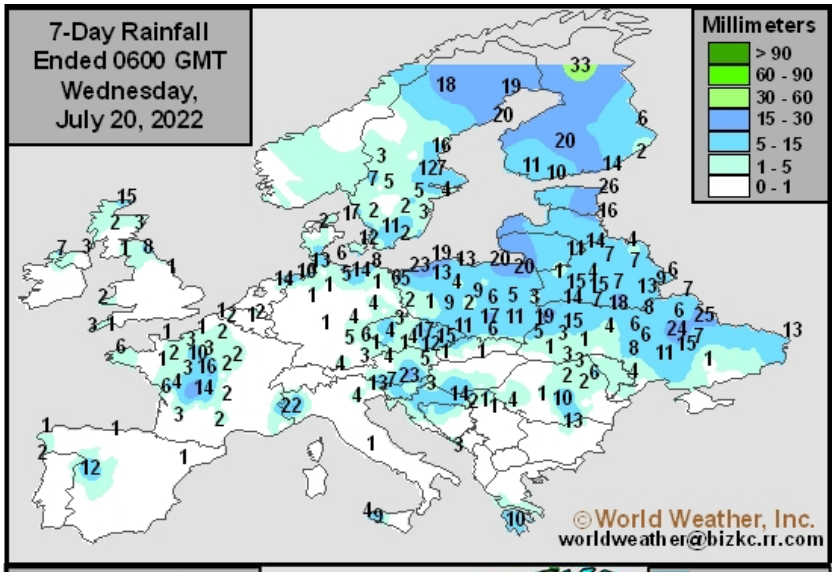


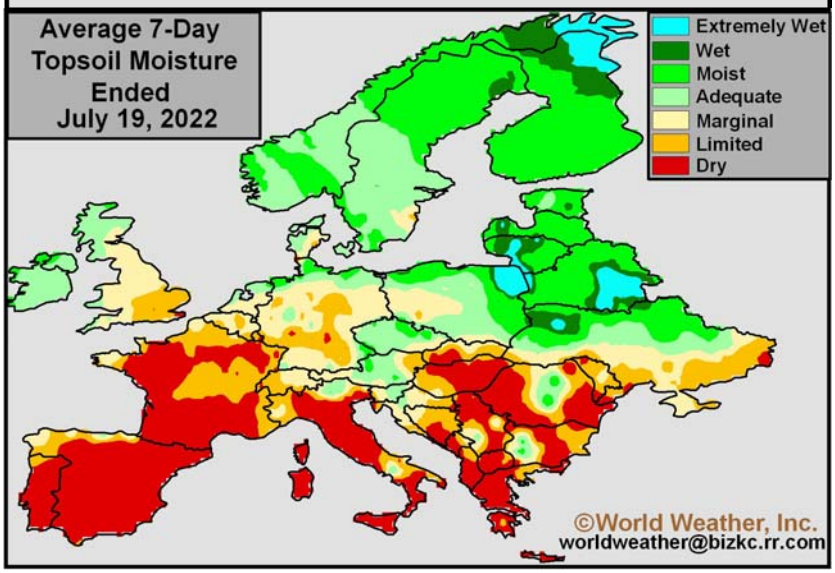


Plains and southwestern Corn Belt, the odds favor a return of conditions similar to that of recent weeks. Warmer temperatures will come back to the Great Plains and should impact a part of the western U.S. corn and soybean production region possibly raising some concern over soybean yields. The corn crop might finish out more favorably since rain will be widespread into early August.

Europe To Remain Drier Biased

The majority of Europe's agricultural areas are expected to continue drier biased over the next ten days to two weeks, despite the blocking weather pattern breaking down. Showers are expected along with some cooler temperatures, but resulting rainfall is unlikely to be sufficient enough to seriously bolster soil moisture meaning some of the driest areas in the continent will continue to deal with limited soil moisture, warm to hot temperatures and crop and livestock stress. France, Germany, the United Kingdom, and neighboring areas into Poland, Belarus, the Baltic States, and Ukraine will see periods of rain that will limit drying; however, resulting rainfall will be too light to significantly improve the moisture profile for most locations. Parts of Western Europe and the Balkan Countries will further dry down and crop conditions will deteriorate.





Temperatures were often above normal in Western Europe during the past week as a high-pressure ridge funneled warm to hot air into the region. Daytime highs often peaked to a range from 90 to 110 degrees Fahrenheit in the Iberian Peninsula. Other areas warmed to the 80s and 90s on a frequent basis with many areas in France reaching above 100 degrees in recent days. An extreme high of 108 occurred in western France Monday afternoon and England was hottest today.

Temperatures this afternoon reached 96 to 104 degrees Fahrenheit across much of England. London and several other cities in southeastern England reached 100 to 104. Heathrow International Airport in London reported a high of 40.2 degrees Celsius (104.4 degrees Fahrenheit) earlier today, which shattered the previous warmest temperature in Britain of 38.7 degrees Celsius (101.7 degrees Fahrenheit).

Temperatures in the Balkan Countries were warm during this past week, but not as Western Europe with highs mostly in the 80s and 90s. Most other areas in Eastern Europe reported high temperatures over the past week in the 70s and 80s.

France, the Iberian Peninsula, and much of the Balkans region either became dry or remained dry because of the warm and dry weather. Many areas in England and Germany dried down in this past week, but were not critically dry with marginally adequate to short soil moisture noted this morning. Other areas in Eastern Europe received enough rain during the past week to keep soil moisture rated favorably.

The need for rain is high due to dryness intensifying across Western and southeastern Europe. Many crops are entering or will enter critical stages of development in coming weeks, which may be impacted by the lack of rain and warm to hot temperatures. The remainder of Eastern Europe has seen more favorable crop conditions in recent weeks as

Europe To Remain Drier Biased (continued from page 8)

timely rain fell and temperatures were not oppressive.

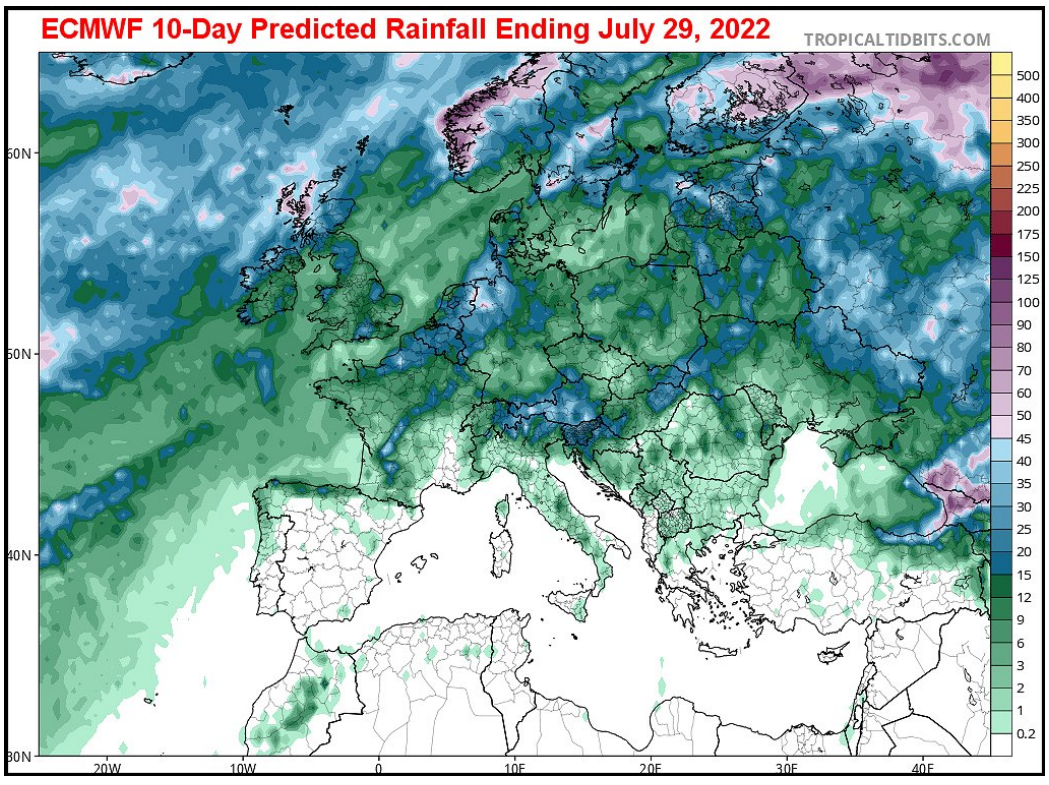
An upper-level low-pressure center will advance across Europe today through the end of the workweek. A few disturbances advancing around the upper-level low will generate scattered showers from the United Kingdom, France, Germany, and neighboring areas into portions of Eastern Europe outside the Balkan Countries. Another upper-level disturbance will bring rain to the United Kingdom and neighboring areas this weekend and early next week. Portions of Ireland, Scotland, Belgium, the Netherlands, and western and southern Germany, along with portions of Belarus and northern Ukraine will be impacted, but rain totals will rarely be great enough to seriously bolster soil moisture. A trace to 0.50 inch of rain will occur in most precipitation areas each day and only a few areas will end up with more than one inch of rain for the entire week ending next Wednesday. A few areas will get as much as 2.00 inches, but such instances will be rare in the heart of Europe. The Iberian Peninsula and Balkans will otherwise receive little to no rain.

Temperatures over the next ten days will continue to be warm biased, despite the upper level low pressure system pushing the hottest air off to the east in the next few days. Temperatures will still trend near to above normal in much of Europe during the coming week with the Iberian Peninsula, France and southern Germany into the Balkans will reach the 80s and 90s most days with several areas in Spain, Portugal and the Balkans warming above 100 degrees. Pockets in southern France will also warm above 100 degrees today and again early next week. The remaining portions of Europe will also be in the 80s and 90s today and Wednesday before temperatures moderate to the 70s and 80s with pockets in the lower 90s most other days.

Low soil moisture will persist in much of France, the Iberian Peninsula, and portions of England and Germany through early next week with some areas still drying out for a while. The lack of significant rainfall and periods of warm to hot weather will continue to promote sluggish growth and some additional heat stress. Crop conditions will deteriorate further and concern over production potentials will slowly rise. Mainland areas of Western Europe will continue to see limited rainfall during the last few days of July and early August, which could further threaten production potentials.

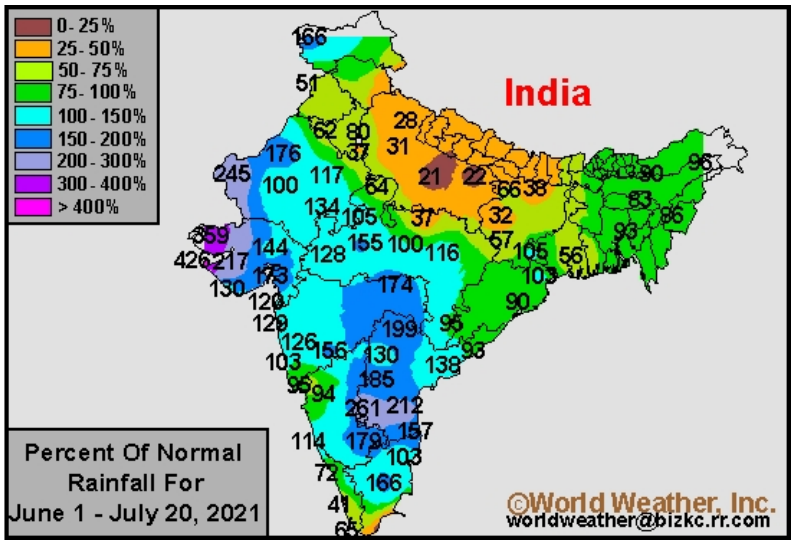
Aggressive drying is also slated for the Balkans during the coming week due to the lack of rain and warm to hot weather. Crop conditions will deteriorate rapidly and the need for rain will increase because of much less rainfall potential than in northern Europe and expected persistent very warm to hot temperatures.

Poland, Belarus, Ukraine and the Baltic States will experience the best crop weather with soil moisture either remaining near current levels or gradually decreasing through the end of this month. There will still be enough moisture to maintain aggressive growth despite many fields drying down. Timely rain will be needed late this month into early August to keep the ground from drying out too much.



India Crop Prospects To Remain Good

Portions of Madhya Pradesh and northern Maharashtra, India likely received enough rain to promote flooding during the past week. Crop damage was suspected, although not yet confirmed and a little replanting maybe necessary. The remaining production areas generally saw a good mix of rain and sunshine. Portions of Uttar Pradesh and Bihar have remained too dry for ideal development, though these areas will see more frequent rainfall through the middle of next week. A slow-moving monsoonal low-pressure will also generate frequent rainfall in the remaining production areas of eastern, central, western, and northern India. Flash flooding will still be a concern from Odisha and central India into northern India. However, production impacts will be minimal. Some of the drier areas in southern India will also receive timely rain that will help improve the moisture profile.



Uttar Pradesh and Bihar have been drier or much drier than normal since the start of the monsoon season. These areas reported 21-66% of normal rainfall from June 1 – July 20. Punjab, Haryana, Himachal Pradesh, and pockets in northeastern Madhya Pradesh, western Jharkhand, and West Bengal have also been drier than normal, reporting 37-80% of normal precipitation. The remaining production areas generally received near to above normal rainfall. Portions of western Gujarat, western Rajasthan, and southern Andhra Pradesh received 176-261% of normal rainfall with pockets in western Gujarat receiving up to 426% of normal precipitation.

Many areas in central and eastern Uttar Pradesh, Bihar, and Tamil Nadu have a shortage of moisture due to the lack of significant rain and warm weather in recent weeks. These areas have an immediate need for greater rainfall and some is expected outside of Tamil Nadu by this time next week. Parts of the Ganges River Basin could have been dry enough for a long enough period of time to stunt sugarcane and to restrict some of the region's rice, corn and sorghum production, but the situation could improve greatly with routinely occurring rainfall through September.

The remaining production areas in India have adequate to excessive soil moisture. Flooding was suspected in the wettest areas of Maharashtra, Madhya Pradesh, Punjab, Odisha, and neighboring areas. Some crop damage was suspected, although not confirmed. The area of greatest potential damage because of flooding likely occurred in northeastern Maharashtra and southwestern Madhya Pradesh.

The greatest concern for flooding through the middle of next week will occur from Odisha, Chhattisgarh, and Madhya Pradesh into northern India. Some crop damage is possible, although losses are expected to be low. The environment will remain generally good for aggressive growth. However, the wettest fields would benefit from a period of drier weather.

Southern India will also have opportunities for rain through the middle of next week. A weak disturbance from the Bay of Bengal will potentially move into the region early next week that could promote locally heavy rainfall, though the region will see frequent rainfall through the end of the weekend as well. Tamil Nadu, Kerala, and southern Andhra Pradesh will receive 0.75 to 4.00 inches of rain with local amounts of 7.00 inches or more in Tamil Nadu and Kerala. Karnataka will receive 0.25 to 1.50 inches of rain with areas near and along the coast receiving 3.00 too 7.00 inches of rain. The driest areas in Tamil Nadu and neighboring areas will receive enough rain to gradually improve the moisture profile. Other areas will still have adequate amounts of moisture. Crop development conditions will either improve or remain favorable.

Despite dryness issues in Uttar Pradesh, Bihar, West Bengal, Jharkhand and Uttarakhand, most of the nation is reporting abundant moisture so far this season. On average the nation is 11% wetter than usual through July 20, but that does not mean that all is well. Rain must start falling immediately in the drier areas of the Ganges River Basin to protect, rice, sugarcane, corn, sorghum and a host of other crop production potentials.