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The Canadian Agriculture Weather Prognosticator

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World Weather At A Glance

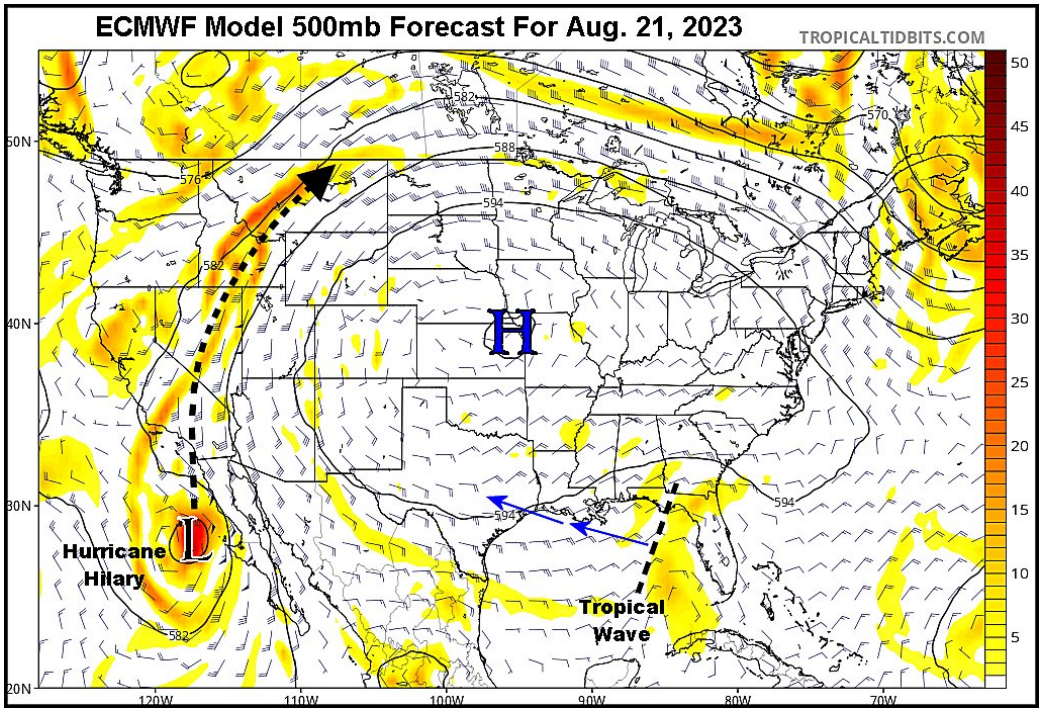
- U.S. crop conditions may deteriorate in the Plains and Midwest over the next ten days due to dry and warm to hot weather
- Western Argentina wheat areas are still in the midst of a notable drought with little relief expected
- Southern Brazil soil moisture is rated well
- Europe is experiencing another bout of warm and dry weather, but it follows some abundant rain earlier this month
- Russia's Southern Region and areas east into Kazakhstan and the central New Lands are too dry raising concern over late season crop yields
- China has been too wet this summer resulting in some yield and production cuts
- Northwestern India and Pakistan monsoon rain may end early
- Northern Australia wheat areas are too dry

Hurricane Moisture To Reach Prairies

Finally, an opportunity is on the horizon to bring much-needed moisture into Canada's Prairies this weekend and next week. However, before getting too excited about the prospects for rain there is a key factor that is missing from our great desire for moisture. That factor is cool air.

Tropical moisture will be transported from the tropical eastern Pacific Ocean to the northern U.S. Rocky Mountain region this weekend and early next week. The moisture will then be carried into the Prairies by a massive upper level high pressure ridge in the central United States. The ridge will be so large that precipitation will be eliminated from nearly all of the Great Plains, Midwest and Delta, but in this case that is a big plus for the Prairies. The air circulation around such a high pressure system is clockwise and as long as the ridge is as broad based as it is advertised to be a strong south wind will blow aloft over the western United States. That south wind will pick up the moisture from Hurricane Hillary and carry it into Idaho, Montana and Wyoming. The same ridge of high pressure will generate a southwest to northeast wind from the northwestern U.S. Plains and northern Rocky Mountain region into the eastern Prairies, North Dakota and northern Minnesota.

That transport of tropical moisture brings moisture to the Prairies that has been absent for weeks. Moisture in the atmosphere should not be interpreted as generalized rainfall, although some rain is certainly expected.



Hurricane Moisture To Reach Prairies (continued from page 1)

The key ingredient that is needed to induce a significant rain event is notable cooler air aloft. If there was a significant cool airmass over Alberta while all of this moisture was being transported into the central and eastern Prairies there would be a fair chance for widespread rain. Unfortunately, there is only a limited pool of cool air in Alberta that will be available to make rain.

World Weather, Inc. believes that rain will fall in some of the drier areas of Saskatchewan and Manitoba during the early to middle part of next week, but without a greater pool of cool air it may be difficult for a general soaking rain to evolve and greatly ease long term dryness.

Some, if not most, producers in the Prairies may not feel like this is the best time for a general drought-easing rain because harvesting is getting under way. Too much rain now could delay harvesting and raise a crop quality issue in many areas. With that said, though some areas in the southwestern Prairies are finishing off seven years of poorly distributed rainfall and the idea that there could be significant relief next week if there is greater cool air available might be truly tantalizing since much of this year's crop has been lost to the drought already. That is fine for the most seriously drought stressed areas, but producers farther to the east can still eek out better corn, soybean, flax and possibly some late canola yield if rain falls light to moderately and not excessively in these next couple of weeks.

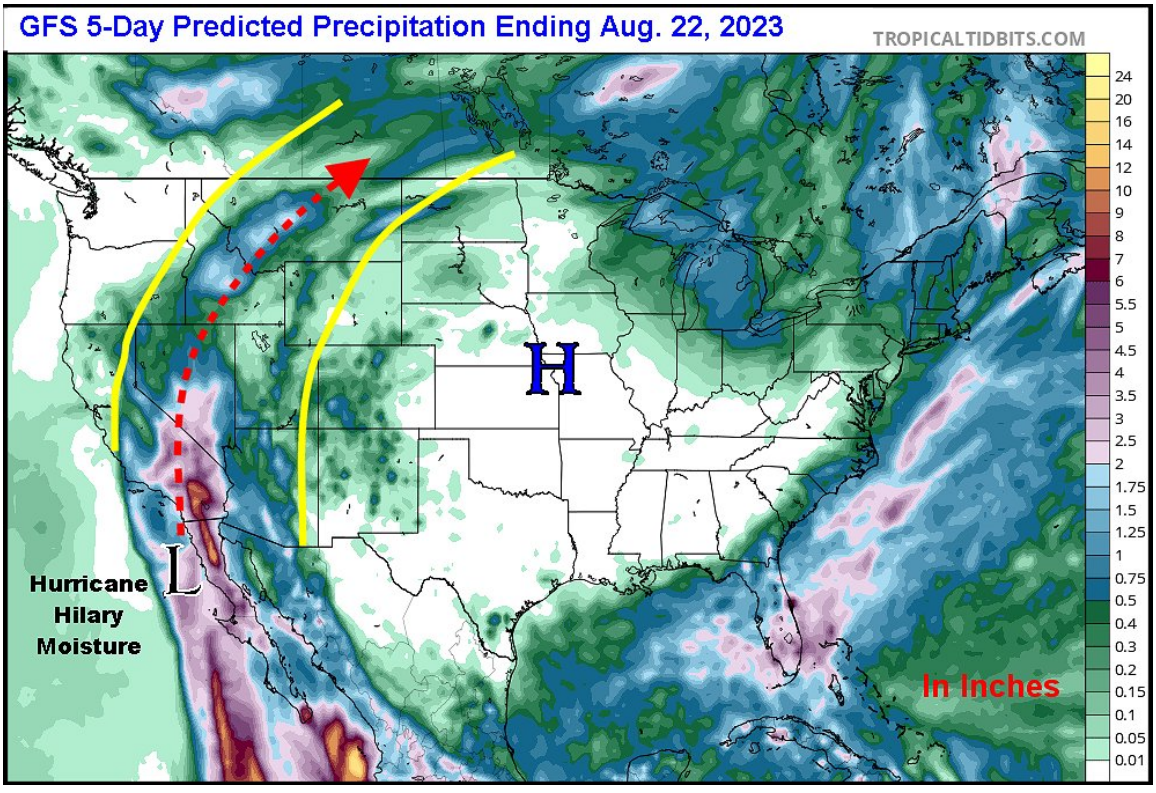
The situation in the Prairies is really a bit of a quandary for producers, but the choice is not ours to make. We will have to sit back and see what happens next week. Even if the rainfall turns out be a bit light because of limited cool air aloft there will be residual moisture left in the atmosphere to be used for rain making when there is a more significant bout of cold air coming into the region. So, with fingers crossed we will wait and see what happens, but this is the first truly encouraging sign of possible weather change that we have seen in a very long time.

The seriousness of the situation is greater than you might imagine because in a strong El Nino event like this one winter is normally drier and warmer than usual. That means November through February may not generate as much precipitation as we would like and the western Prairies could experience warmer than usual weather for quite a while.

World Weather, Inc. believes September and October will be the best months for improving the moisture profile before the El Nino bias kicks in for the winter. That does not mean we will get drought busting rain, but it suggests if we are going to get any meaningful relief it must occur in these two months.

Looking at the coming two months of weather it is very difficult to see an overly active weather pattern. The jet stream may become split and that may lead to some beneficial rainfall in parts of the Prairies, but not all. Cool air masses will be pushing through the Prairies periodically as the seasons change and that should generate the rainfall needed to improve soil moisture in many areas as long as moisture remains in the atmosphere.

Hilary's moisture will attempt to push some moisture in the air and on the ground, but it will be imperative that follow up moisture insurgences occur to keep the atmosphere from drying out too soon. The more moisture that is being held in the air the greater the potential will be for needed rain.



Northeast Half Of Prairies Get Moisture Boost

Two waves of rain moved through the northeast half of the Prairies during the week ending August 16. The moisture brought a boost in topsoil moisture in northern and eastern Saskatchewan and western Manitoba where 0.72 to 1.00 inch occurred often and a number of areas reported 1.00 to 2.00 inches. Much lighter rain fell to the east and west of this region with less than 0.65 inch in southeastern Manitoba and a trace to 0.60 inch in southwestern Saskatchewan and southern and western Alberta.

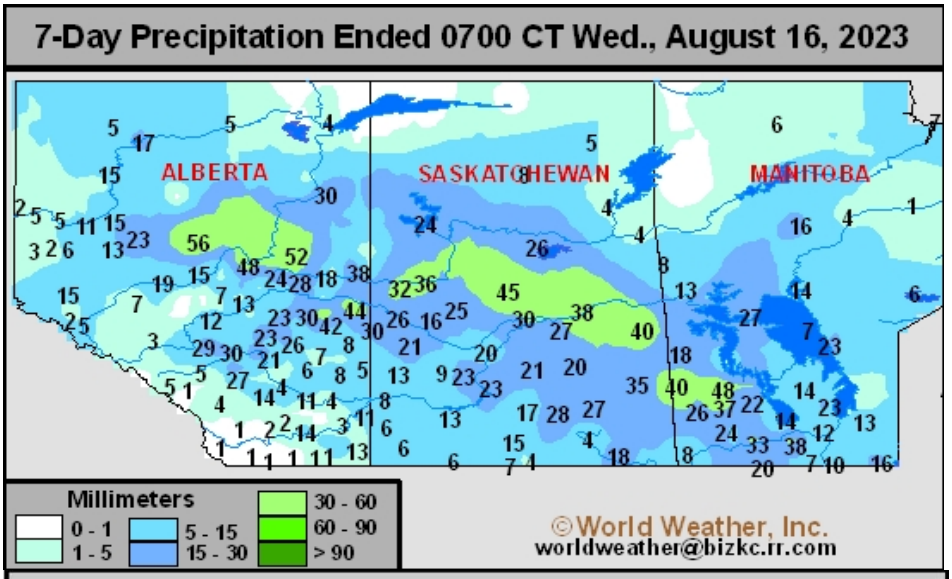
Temperatures were warm during the past week allowing evaporation to take back much of the rain between precipitation events.

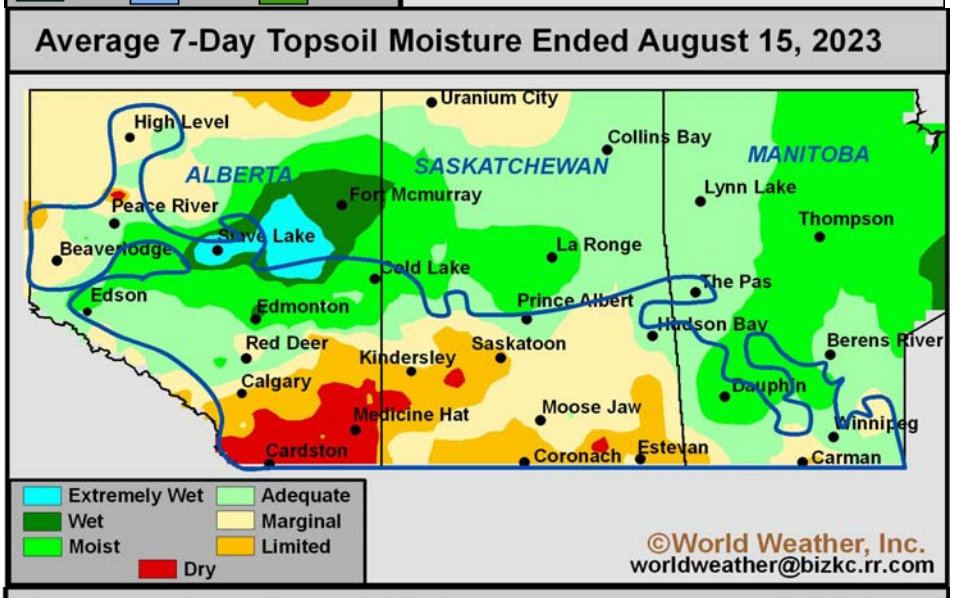
Drought continued in southern and east-central Alberta and west-central and southwestern Saskatchewan where dryness has been quite persistent this growing season and last year too. Crop losses are suspected of being greatest in these drier biased areas.

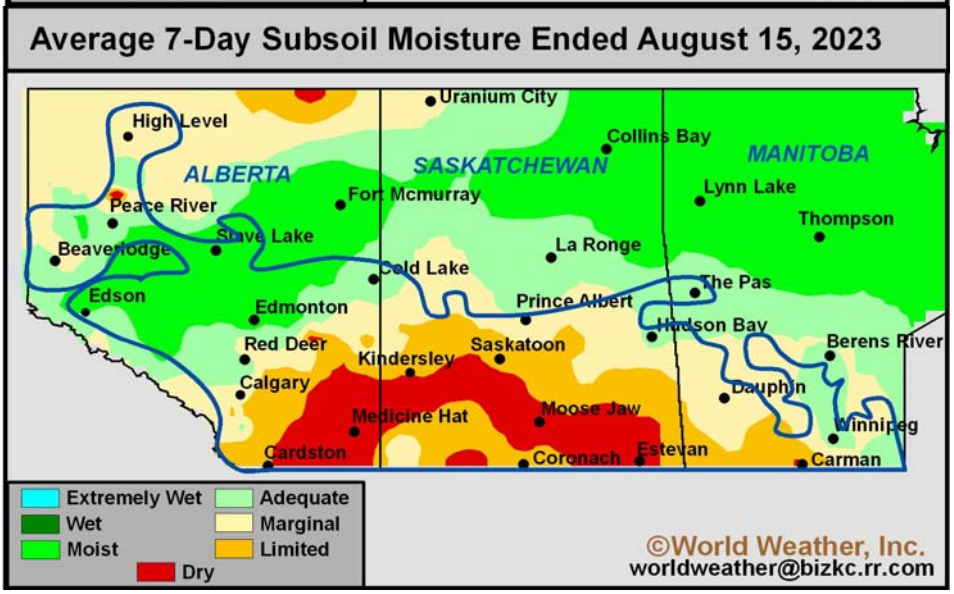
In contrast, the recent rain in northeastern and east-central Saskatchewan and western Manitoba should have induced some short term improvements in soil moisture and late season crop development. Corn, soybeans and flax likely benefited from the moisture most significantly, though some late season canola may have also benefitted.

Most of the wheat, barley and early planted canola as well as lentils were too far advanced to benefit from recent rain. Much of the small grain crop was too far advanced to benefit from rain and the harvest of lentils was well under way. Some early harvesting of wheat and canola was also occurring.

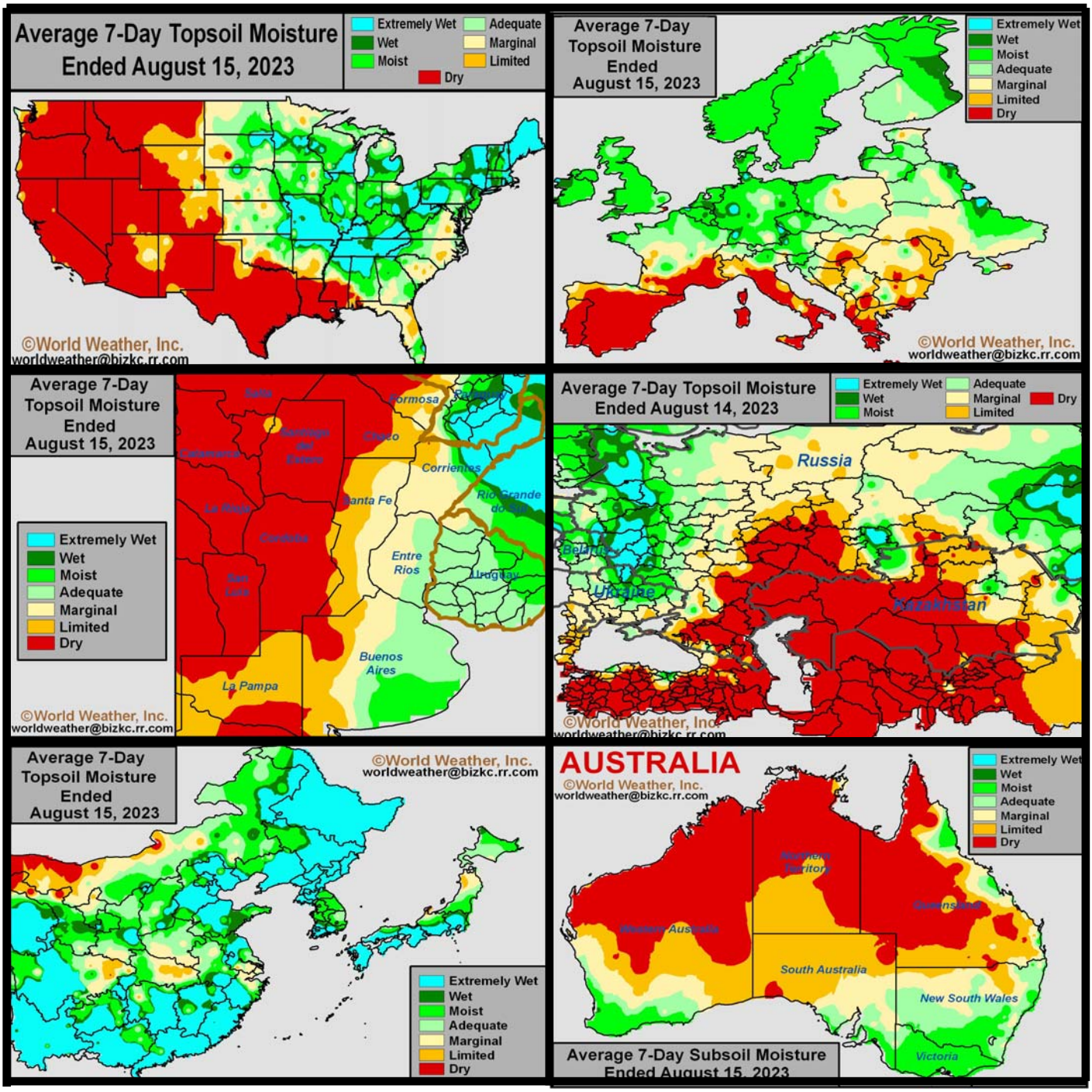
Overall, if moisture from Hurricane Hillary comes into the Prairies some fieldwork will be delayed, but there will also be additional improvements to corn, soybean, flax and a few canola crops as well. Yield potentials for these late crops may rise slightly.







Selected Weather Images From Around The World



U.S. topsoil moisture was bolstered in early August hiding dryness that lingers in the subsoil. Crop improvements have been widespread, but changing U.S. weather in the coming ten days to a hot and dry bias will reverse the trend and increase crop stress. Southeastern Europe is trending drier and parts of Italy, southern France and Spain have been dry for an extended period of time cutting into some dryland summer crop production. A new round of heat and dryness is expected in this coming week. Russia's Southern Region, Kazakhstan and some neighboring areas in the New Lands are trending too dry for late season crops raising some concern for yield declines. Argentina's west and north is still chronically dry, although rain falling at the time of this report was offering some temporary relief for a part of the region. China continues too wet in many areas and more rain is forthcoming. Australia's northern wheat and barley areas must see improving rain soon as reproduction quickly approaches in Queensland.

September Rainfall May Still Be Erratic, Light

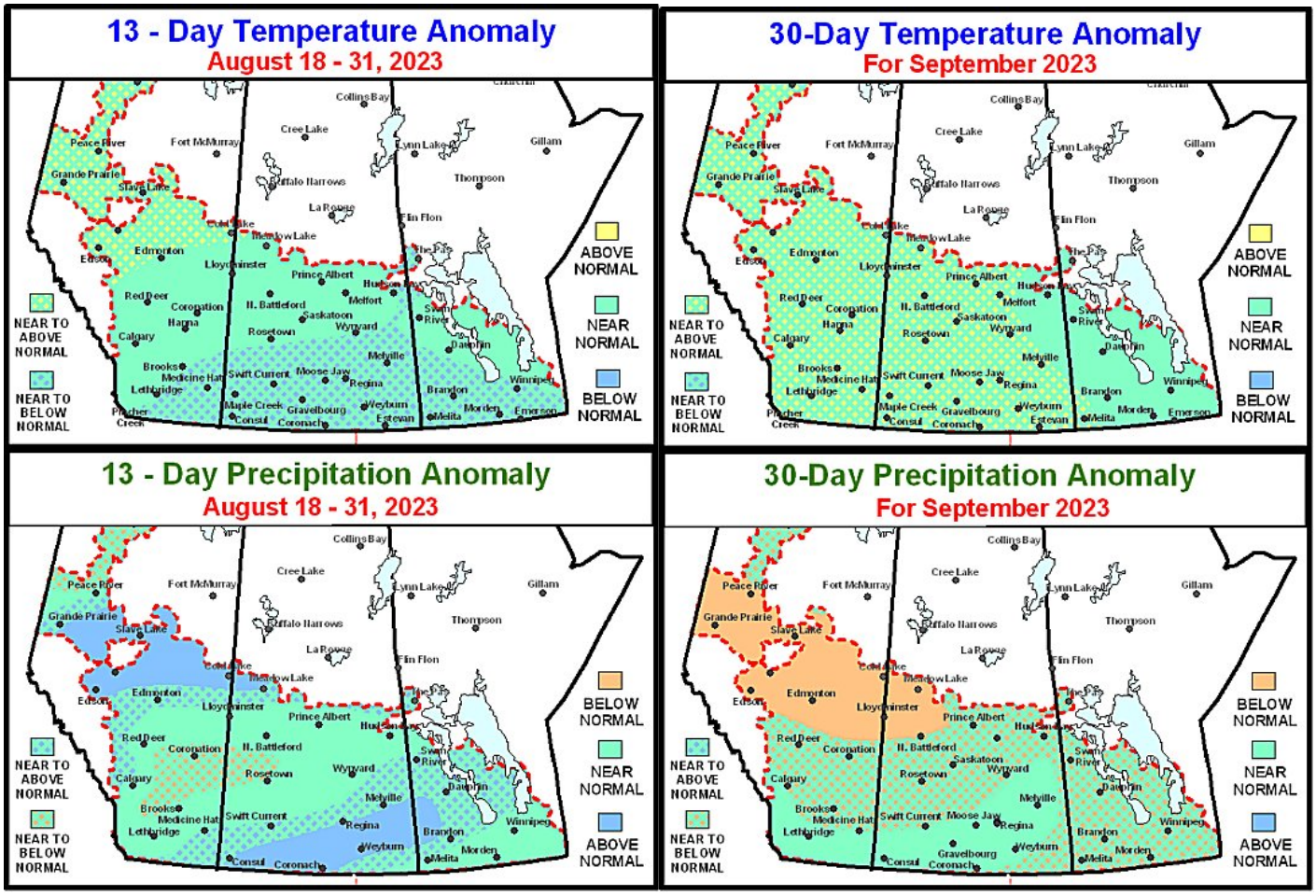
Despite Hurricane Hilary's moisture coming into the Prairies during the late weekend and first half of next week, September weather may not be much different than our first release forecast for month issued a few weeks ago. The moisture from Hilary will help make late August soil moisture briefly better with rainfall near to above normal in many areas during the last 13 days of this month. Relative to the entire month of August, though, the rain will not have nearly as much meaning. Nevertheless, rain is rain and it is all beneficial when it has been as dry as it has been this year.

Hilary's remnants are expected to split with a part of the moisture and energy from the storm moving into western and northern Alberta while another part of the storm streams off to the northeast from the northern U.S. Rocky Mountain region. Near to above normal rainfall will occur over the balance of this month in far southern Alberta and in much of southern and east-central Saskatchewan as well as a part of western and central Manitoba. Without Hilary's moisture these areas would all end the month of August notably drier biased. The details over where Hilary's moisture goes may still change a little over the next couple of days and there is still much debate whether rainfall will be all that great or not.

There is a good chance that a narrow band in southern and east-central parts of the Prairies will get some beneficial moisture from Hilary while other areas are not nearly as wet. Concern about the persistence of rainy weather in September should be put to rest at least somewhat with today's September outlook still playing down the frequency and amounts of rain during that month.

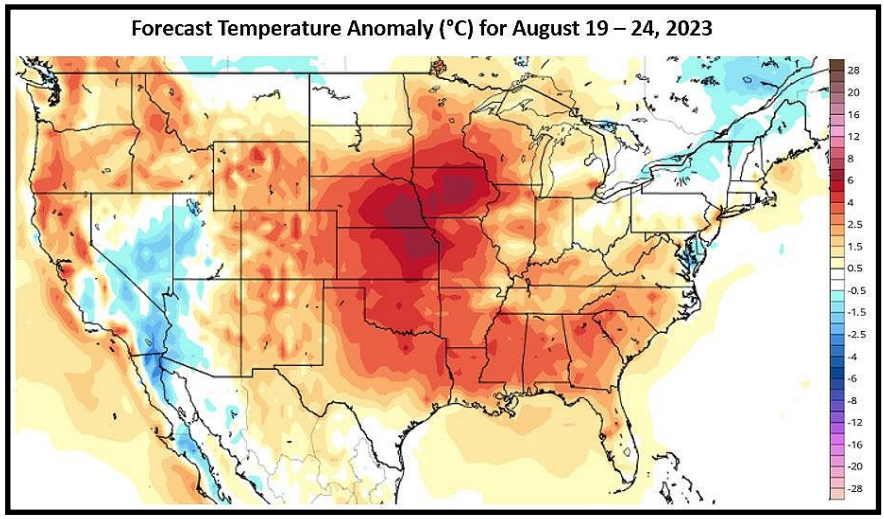
Rain should fall a little more often and a little more significantly in September than in August, but no general soakings are expected that would seriously delay fieldwork or raise a big concern about crop quality. The weather pattern still does not look ideal for bringing moisture into the region. Hilary's moisture may get depleted out of the area during the first half of the month and the need for a new moisture feed into the region will likely increase once again as more harvesting gets done. Worry about subsoil moisture going into the cool season will be on the rise as we move to late September and October.

Temperatures in late August will be a little cooler biased mostly because of cloud cover and the coming week of rainfall. Warming is expected to return in the last days of August. September temperatures should be near to above normal.



U.S. Heatwave To Have Mixed Impact on Agriculture

Even though there have been bouts of hot weather this year in Europe and Asia most of it has not been devastating to agriculture. The biggest problems because of excessive and persistent heat has been in North Africa and Spain as well as in parts of the Middle East, Inner Mongolia, northeastern Mexico, Texas and southern Louisiana. These are areas in which excessive heat occurred for a little too long this summer resulting in drought and heat stress for crops and livestock. Losses in production will be highest in these areas. That should not be interpreted as if there will no other losses in the world, but these are likely to be among the greater losers in production. Other areas in North America, Europe and Asia have experienced periods of hot weather, but it has not been as persistent and the impact on agriculture may be low. The same is expected in the central United States from its coming bout of excessive heat in the central and Plains and western Midwest.



Temperatures will rise well above normal this weekend into next week in the central United States impacting the Great Plains, lower Mississippi River Basin and western half of the Midwest. Temperature extremes of 100 to 110 will impact the Plains states from Texas to South Dakota and 95 to 104 degrees from Minnesota and a part of western Wisconsin to the lower Mississippi River Valley. The hottest weather will be in the Plains for a full week and in the western Midwest for four to five days. That will be long enough to accelerate drying in many fields and to stress livestock while inducing a strong demand for natural gas and electricity.

Recent rainfall in the Midwest and a part of the northern Delta and central and eastern Plains has greatly improved topsoil moisture, although there are still some holes of dryness prevailing. Subsoil moisture reflects a bigger picture of the longer term moisture reserve and it does still show dryness in Minnesota, northeastern Iowa, parts of Wisconsin and Illinois. Many areas in the central and northeastern Plains still have low subsoil moisture as well and each of these areas noted with dryness down deep in the ground will be first to experience crop moisture stress in the coming week to ten days of dry and warm to hot weather.

Frist, it is still important to remember that crop development is not just influenced by temperatures, but by rainfall and soil moisture as well. The excessive heat coming to the central United States will not last as long as the dry weather may. Some areas in the Plains and Midwest are expecting dry weather for ten days with five days to a full week of that time also expected to be quite warm to hot there is potential for accelerated declines in soil moisture and the quick development of crop stress.

Temperatures in the 90s Fahrenheit will evaporate at least 0.50 inch of moisture a day when conditions are ideal and greater moisture losses can occur at readings above 100. World Weather, Inc. anticipates a rapid decline in soil moisture over the next full week and the moisture loss will be greatest in the Plains and western Midwest as well as in the Delta. Most of these areas will likely have very short topsoil moisture by the middle part of next week. Subsoil moisture will not be any better than that noted today and in most areas the subsoil will be drying down too, albeit more slowly. The implications of this are that many of the areas in the Midwest still reporting short to very short subsoil moisture (marginal to limited on the above graphic) will be first to experience crop stress during the coming week.

Much of the favorable topsoil moisture present today will be exhausted by the end of the weekend and early next week and crops will once again be dependent on either irrigation or subsoil moisture to develop normally.

CORN

Corn is already advanced far enough that this next week to ten days of dry and warm to hot weather will accelerate crop maturity. There is potential for a few fields to be dry enough to see some shrinkage in kernel size, but most of the crops are far enough advanced to be minimally impacted by the hot, dry, finish to August.

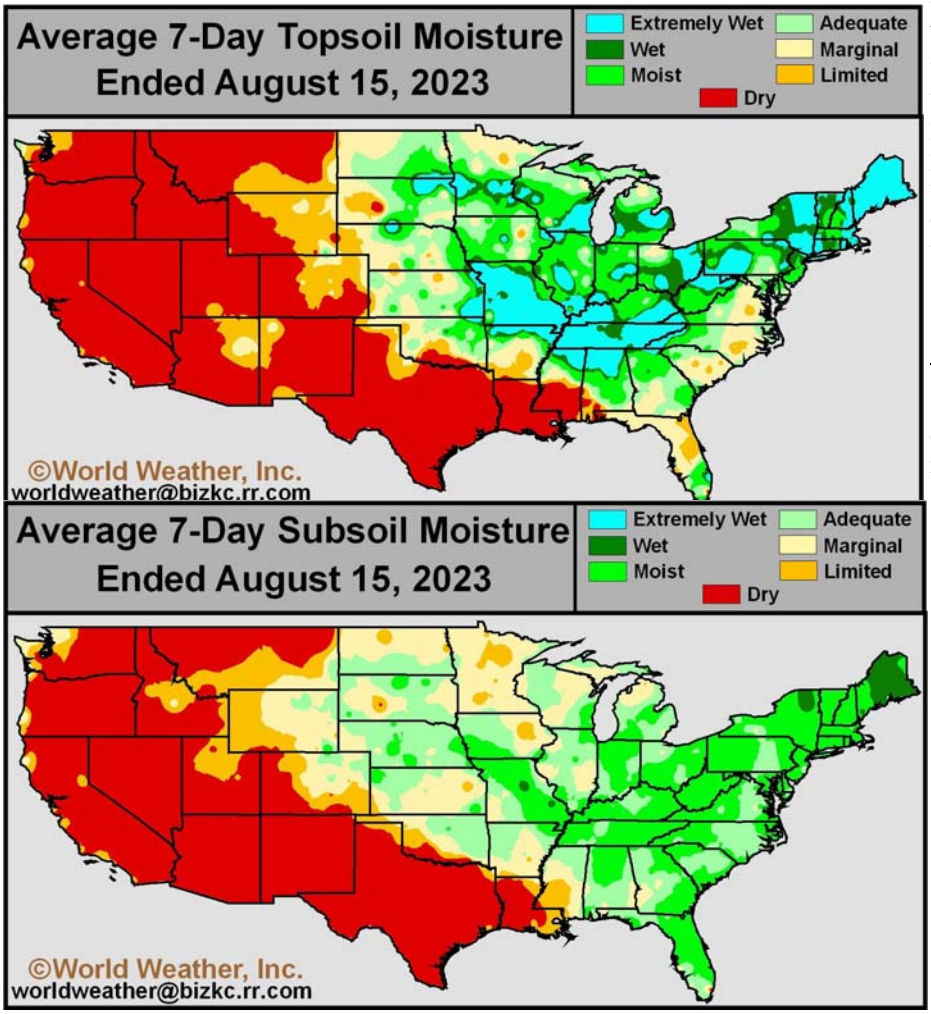
SOYBEANS

Soybeans are setting and filling pods in the more immature fields and mostly filling pods in other areas. The first few days of warmer weather will likely be good for soy-

U.S. Heatwave To Have Mixed Impact (continued from page 6)

beans in fields that have favorable soil moisture. More aggressive bean and pod development will take place until soil moisture is exhausted. Once the ground becomes dry stress on the beans will slow bean and pod development which could slow or stop some of the growth and development possibly having some impact on yield.

If soybeans are treated to another bout of significant rain and more seasonable temperatures at the end of next week and into the following weekend the impact of this bout of hot and dry weather should be low in areas that have the most abundant soil moisture. For areas that are already developing in fields of limited moisture the stress will prove significant much sooner and could have a bigger impact on bean and pod sizes.



The key to this week's heat and dryness will be determined by weather in the last days of August and early September. If cooler and wetter weather evolves the impact will be low. If there is more dryness and possibly additional heat then late season bean yields could be reduced a little more.

World Weather, Inc. believes that soybean development has been very good in many areas this year, despite the drier start to the growing season. The recent rainy weather and mild temperatures were perfect in supporting crops in the pod setting and filling stage. Some of the expected heat and dryness will shave off a little potential, but if the crop is already looking very good the impact is going to be lower than feared.

LIVESTOCK

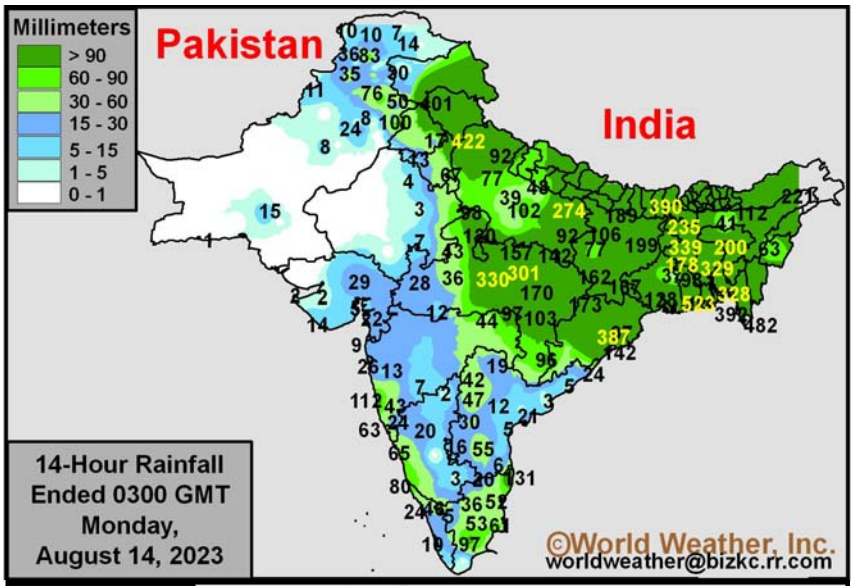
In the meantime, livestock in the southern Plains have already had a tough summer. Weight gains have not been very good and animal health has been a constant concern. Expanding heat northward into South Dakota from Texas late this week through the first half of next week will expand the stress. Cooling is expected in the last days of August and if that occurs as advertised there should be sufficient relief to put a limit on the stress and production impacts. The situation must be closely monitored though.

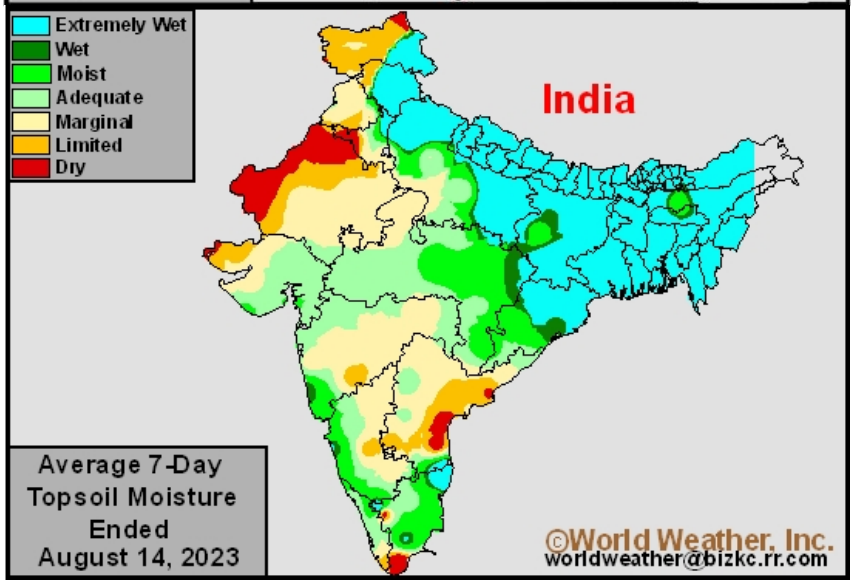
COTTON

Texas crops have suffered greatly from summer heat and dryness this year the coming week to ten days of additional heat and dryness will only worsen the situation. There is some potential that tropical wave will bring rain to South Texas and northeastern Mexico next week, but the moisture comes too late for cotton, corn and sorghum which are maturing and being harvested. The moisture might help improve some sugarcane and citrus crops, but much more rain will be needed and it is rather late in the year for a big change in production.

NW India, Pakistan Late Summer Rain To Disappoint

Waves of monsoonal rain were noted in eastern and portions of extreme northern India during the past week. Severe flooding was noted in portions of Uttar Pradesh and Uttarakhand with some crop damage suspected. Tamil Nadu and southern Andhra Pradesh received much-needed rain that may have marginally improved crop conditions. Other locations in the west were dry or received limited rainfall and dried down significantly.





Eastern and extreme northern India is excessively wet due to waves of rain in recent weeks. Flooding was noted in Uttar Pradesh and Uttarakhand, most notably areas near the Himalayan Mountains. Some crop damage was suspected, though the extent of the damage and losses was not known. Some of the wetter areas in eastern India and Bangladesh have received 10.78 to 15.35 inches of rain so far this month. One location in Uttarakhand reported 16.61 inches of rain since the beginning of August. In contrast, Rajasthan and central through southern Pakistan have been dry. Rainfall in western and northern Gujarat has also been restricted.

The drier bias in northwestern and west-central India and Pakistan has not been of much concern quite yet because these areas had been abundantly to excessively wet earlier in the summer season. Rain has actually fallen in a relatively favorable manner leading to some high production potentials. Drying has only removed some of the excessive moisture from Rajasthan and Gujarat favoring improved crop and field conditions.

The concern, though, is over the expectation that the drier biased conditions will continue through the end of August and another two weeks of such conditions will deplete topsoil moisture and begin stressing soybeans, rice, groundnuts and a few other crops; including guar.

If dryness prevails into early September when the monsoon normally withdraws many of the same crop areas that were rated abundantly to excessively wet earlier this summer will be faced with a poor finish to the growing season and the could cut into production.

Subsoil moisture is still rated favorably in the bulk of India, but the topsoil is quickly drying out and that will raise more concern as rainfall remains minimal over the next two weeks. Far southern India's dryness is not nearly as much of a concern because monsoonal precipitation in that region can continue through October and into November. Rainfall in northwestern India and Pakistan, though ends in September in a normal year, but can end earlier because of El Nino.

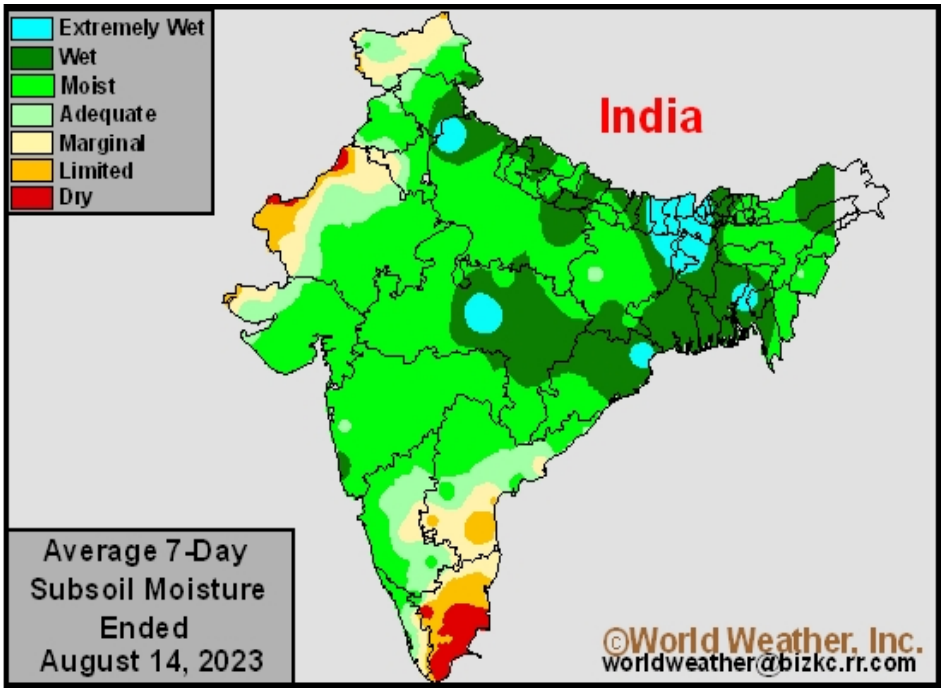
Leading the way of concern about September rainfall is the six-

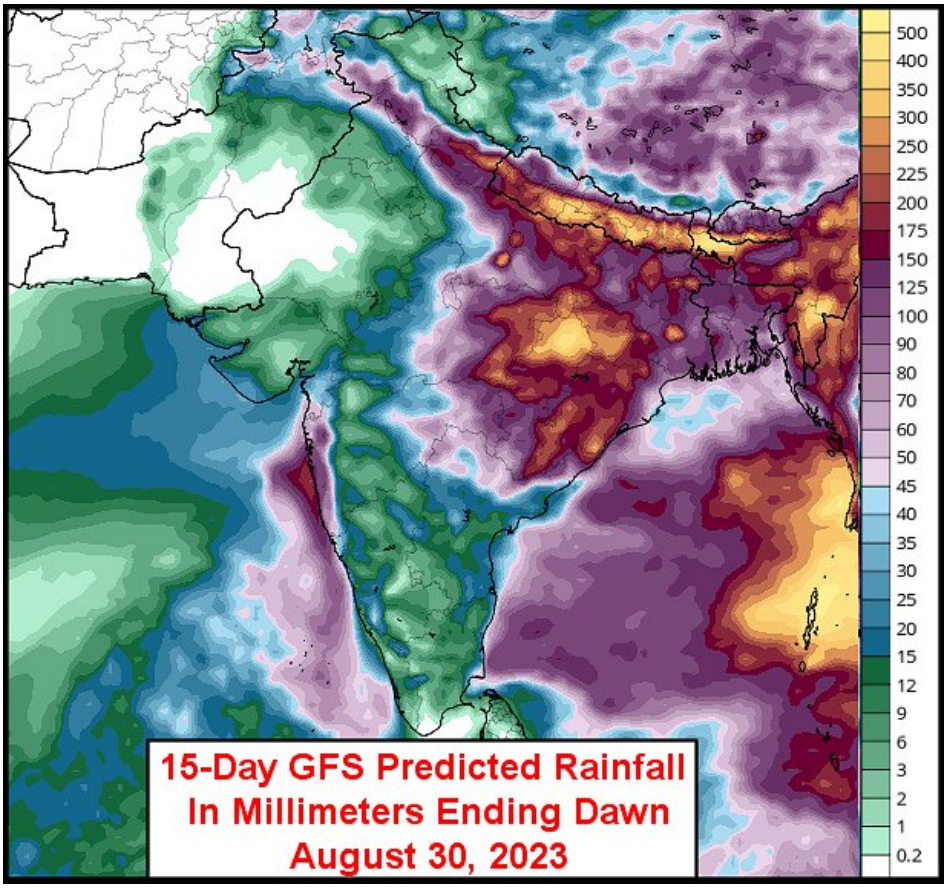
NW India, Pakistan Late Summer Rain To Disappoint (from page 8)

week forecast Ensemble model runs of the GFS and ECMWF. Both of those models along with the CFS and a few monthly forecast models are all suggesting a lighter distribution of rainfall for northwestern India and Pakistan through September, but in particular the first half of the month. This raises a great deal of concern because without follow up moisture many of the unirrigated crops in northwestern India and Pakistan would move through reproduction and filling in a declining soil moisture profile and without the prospects for a general soaking rain. That could impact many crops in the region as noted above and the situation must be closely monitored.

In the meantime, recent rainfall in Tamil Nadu and southern Andhra Pradesh was beneficial for crops that were previously struggling from moisture stress. The precipitation was too light to completely fix long term moisture deficits and much more precipitation is needed. Sugarcane and other early-season crop production may still be lower than normal due to the dryness earlier in the growing season. However, if southern India rainfall finishes with frequent rain of significance many late season crops will perform well or at least better than expected.

Portions of eastern and extreme northern India may be too wet to support ideal rice and other crop conditions. No significant production losses are suspected outside areas impacted by the most severe flooding. The remaining production areas in India had enough moisture lingering from recent substantial rainfall to support new growth, despite the recent drying trend. However, the need for timely rain will increase in the coming days in order to maintain favorable development conditions.





Mid-September To Be Next Coolest Period

A short term bout of cooler than usual air will push through the Prairies in association with the aftermath of Hurricane Hilary's remnants impacting the Prairies. That cooler bias may produce a brief bout of near frost temperatures in northwestern Alberta Sunday and/or Monday morning, but no serious crop threat exists with that event.

Other areas in the Prairies will not be impacted by threatening temperatures anytime soon. With that said, there is some potential for cool weather to return in September probably in the second and third weeks of the month, but by that time many crops will be mature enough to be safe from such conditions.

Temperatures in the final week of this month should be near to above normal and that should be followed by warmer than usual weather in the first week of September.

The rain coming up in the next week may stimulate a little new crop development in a few areas. That will keep some crops from maturing as fast as they once were and could prolong the final stages of crop development. That can be good for expanding yields in corn, soybean and flax, but it may also leave crops a little more immature when the September cooling arrives.

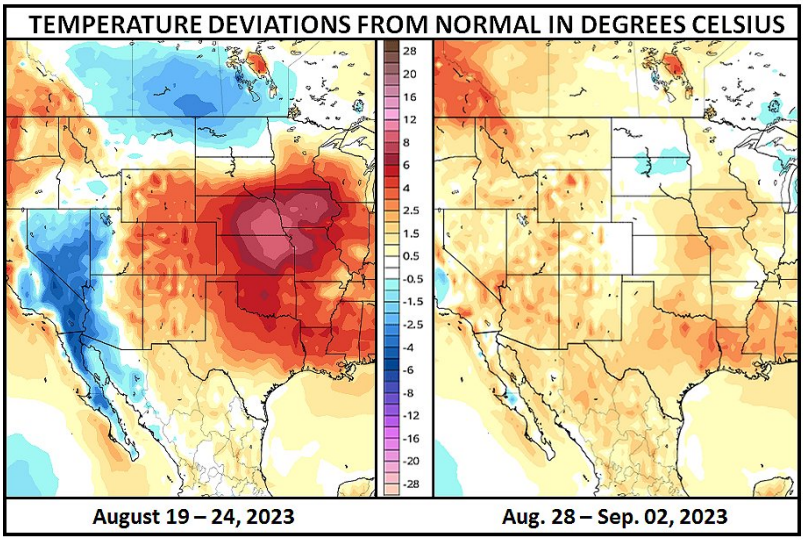
The cool down in the second and third weeks of September is not set in stone, but it does follow a trend that has been repeating in recent weeks centered on the middle of each summer month in which cooler than usual weather has tended to occur.

One of the biggest concerns that World Weather, Inc. has had about Prairie temperatures this autumn is relative humidity. Moisture in the air has been absent during much of the summer. Most of the precipitation has been quite erratic with small pockets of significant rain surrounded by dry or drier than usual conditions. This is why some fields have produced favorable yields while others have not.

The dry air and dry soil will allow the air to heat and cool much faster. Moisture is a great insulator and the more moisture that is suspended in the air the milder temperatures will be. Some of the wild temperature extremes seen this summer can be directly associated with the dryness and drought. All major droughts in recorded history in all parts of the world are associated with wildly swinging temperatures. Warm environments can lead to hotter than expected temperatures frequently and at the same time nighttime low temperatures can fall hard when atmospheric conditions are just right.

Remnants of Hurricane Hilary will do a fair job in putting some moisture into the air so that these wild temperature swings are reduced. However, sufficient drying time is seen coming in late August and early September to reduce atmospheric moisture once again raising the potential that temperatures could fall harder than expected when a strong surface high pressure system is present.

Hurricane Hilary's moisture may benefit some areas with improved soil moisture, but it will also attempt to slow the widely swinging temperatures that have occurred in the past. Mostly likely, though, frequent follow up rain events will be needed to ensure the air remains favorably moist enough to hold temperatures above the damage threshold until crops are fully mature.



As of this writing, there are no seriously cold air masses slated for the Prairies and there are no follow up rain events coming that would be great enough to further bolster soil moisture and/or moisten the air enough to reduce the potential for surprisingly cold air masses to evolve. In fact, there may be additional drying that takes place and because of that we should not turn our backs on the potential for a surprisingly cold airmass to settle into the Prairies.

If big bets had to be made today, though, World Weather, Inc. would suggest no crop damaging cold prior to the second week of September and the middle two weeks of the month would likely be most favored for the season's first frost and freeze event of significance.