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The Canadian Agriculture Weather Prognosticator

Volume XIII, Issue X | http://www.worldweather.cc | September 3, 2021

World Weather At A Glance

- Western U.S. corn and soybean areas have experienced a significant boost in topsoil moisture that has stopped the decline in soybean production potential
- Southeastern Europe's dry bias has also been briefly slowed by rain
- Brazil rainfall late this month through October will be very important for early corn and soybean planting
- Argentina is still drier biased in the west, despite recent rainfall
- Drought potentials in the U.S. Plains and western Midwest is still moderately high for 2022 with hard red winter wheat areas expecting to dry out this autumn
- India's Monsoon has performed well this year
- Australia's winter crop areas are poised for good crop performance this year, although worry over a wet harvest remains.

Improving Harvest Weather For Wet Areas

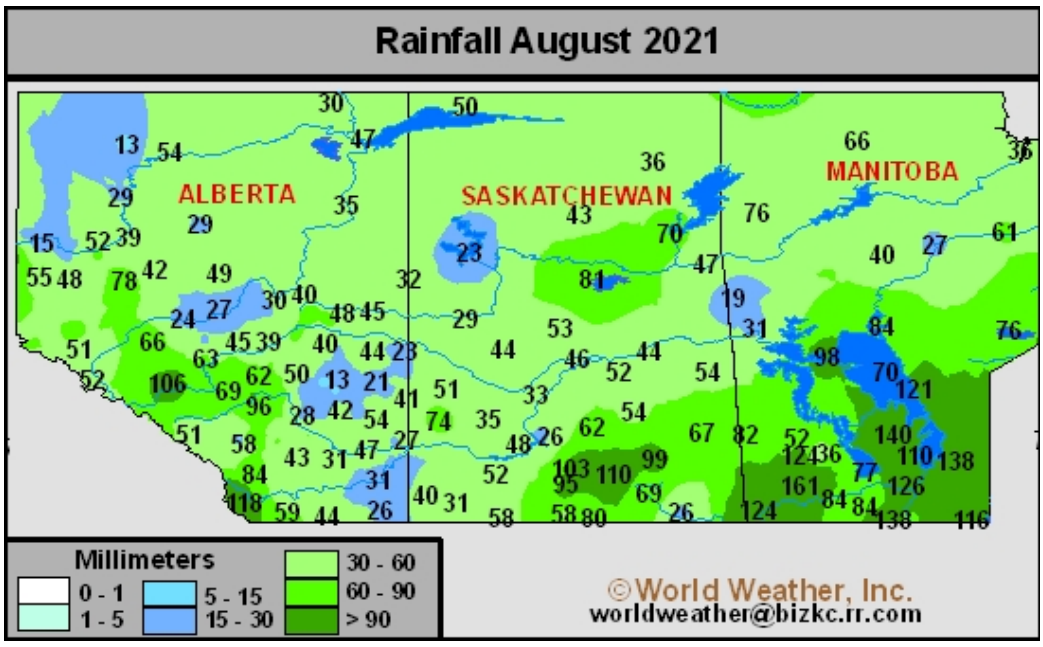
Weather conditions across the Prairies are trending drier now following a few weeks of frequent and sometimes significant rainfall. The drier weather will last at least the next ten days offering potential for improved field working conditions.

There will be another opportunity for rain later this month for those areas that missed recent rain, but concern remains that the overriding bias for the Prairies will be a northwesterly flow pattern aloft this autumn and winter that will perpetuate a limited precipitation pattern.

That may not bode very well for some of the areas in the Prairies that failed to get significant rain over the past few weeks. Some of the areas that missed out on the greatest rainfall were in the southwestern Prairies and in particular the east-central and southeastern parts of Alberta as well as some areas in west-central and southwestern Saskatchewan.

In contrast, areas in the southeastern Prairies and some in western Alberta actually received rain too often for a while and fieldwork was on hold for a while. This delay generated a little fear that the drought would be followed by an extended period of unsettled weather, but that is not going to be the case. For the next ten days most of the Prairies will not be bothered by much "serious" rainfall and most of the wettest areas will have a chance to dry down.

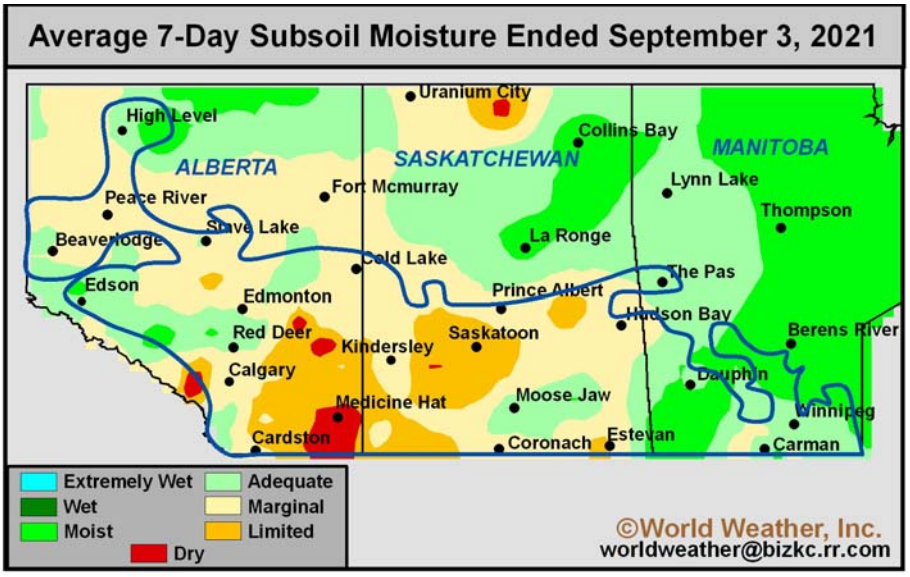
The most impressive boost in soil moisture in the Prairies has been in Manitoba and in a few eastern Saskatchewan locations where the outlook for next spring might be better if the moisture received can be conserved in the soil until then. Drying is expected to dominate a large part of the autumn and the situation will be closely monitored.



Prairies Drought Not Over; Worry To Carry Into 2022

No one in the eastern Prairies can complain too loudly about the rain that has fallen since mid-August. Manitoba and parts of eastern Saskatchewan received some badly needed rain that might have occurred too late for most crops, but the moisture as needed for 2022. Hopefully, the moisture will not be lost to evaporation between now and the winter freeze up.

In contrast, many areas in east-central and southern Alberta, southwestern and west-central Saskatchewan and a few pockets in other areas of the Prairies are still critically dry, despite a little rainfall recently. Some areas in this dry region received almost no rain over the past few weeks while others received some, but not nearly enough to change the bottom line.



Drought is certainly not over in the Prairies and World Weather, Inc. is concerned about the weather patterns that are expected this late autumn and winter. The patterns are not going to allow much additional relief for some areas and that leaves the drier parts of the Prairies in a very tenuous position for spring 2022.

Do not read more into this than what is being stated. There will be other opportunities for moisture prior to the annual freeze up and another round of unsettled weather should occur in the second half of this month. The problem with that period of unsettled weather is that there may be a little more cool air around which will push the jet stream to the south and that will reduce precipitable water in the atmosphere making it more difficult for a serious soaking of rain.

Now, most of us remember years in the past in which weather across the Prairies in the autumn became quite wet and that is always a possibility, but looking at the anticipated upper air wind flow pattern it may be difficult to get a general soaking to take place in October. Not impossible, but difficult.

A southwesterly flow pattern aloft is needed to induce a wet weather pattern this autumn. The 18-year cycle suggests that the periods in which we experience a southwesterly flow pattern aloft will be extremely short in duration and limited in number. That does not mean we cannot get significant moisture to fall, but it does mean the events will be of short duration which limits the potential for us to get enough moisture in the dry areas to remove the concern about early spring 2022.

La Nina is supposed return in October. Once that pattern is in place it will be reinforcing the northwesterly flow pattern aloft and that will restrict the amount of moisture that will be present in our atmosphere reducing the potential for the big storms, but not removing that as a potential entirely.

La Nina winters normally include cold temperatures and frequent snow of significance along the front range of mountains and nearby crop areas in southwestern Alberta, Those areas and far southern Alberta as well as the far southwestern corner of Saskatchewan and Montana will experience enough winter snowfall to improve runoff and spring moisture potentials. It would be best if the snow falls soon enough to blanket the ground before bitter cold air arrives. That way the moisture will soak into the soil as warming takes place periodically in the winter. If the ground freezes before the snow falls then the potential for the moisture to get into the soil will be much reduced.

The bottom line is this….net drying will occur for the next ten days followed by a new period of possible unsettled weather that may be centered on the second half of this month. That will be followed by the development of La Nina and a change in upper air wind flow that will not stop precipitation from coming, but reduce its frequency and significance. Winter will be cold and dry in the heart of the Prairies, but wet biased in the southwestern part of Alberta and extreme southwestern Saskatchewan. That will offer some moisture for use in the spring to those areas. The remainder of the central Prairies will likely come to spring with large moisture deficits still remaining and a deep concern over spring precipitation.

The colder winter this year should keep our snow around longer than last year even if it is light and the moisture as it melts will help at least a little in getting started in 2022.

September Weather Bias Too Familiar

September weather is expected look much like that of the entire summer with precipitation often being limited and temperatures warmer than usual. The driest part of the Prairies will be the same region that is already driest, including the southwest and west-central parts of Saskatchewan, southern and east-central Alberta and a few neighboring areas.

Precipitation elsewhere will be near to below average which does not translate into much potential for a notable boost in topsoil moisture. The exception will be in the southern Peace River region and in particular from Grand Prairie and Grande Cache to Slave Lake; including the Swan Hills, the Fox Creek, Whitecourt and Edson areas. Fieldwork may be delayed in that region additionally this autumn due to rain and eventually some snow. Much of the Highway 2 corridor in Alberta will see near normal precipitation as will the Interlake region of Manitoba. Most other areas will experience at least a slightly below average precipitation bias if not a more notable shortage of new moisture.

Temperatures in September will also be a little warmer than usual. The greatest warmth will occur in and near to the Number One Highway and areas south to the U.S.

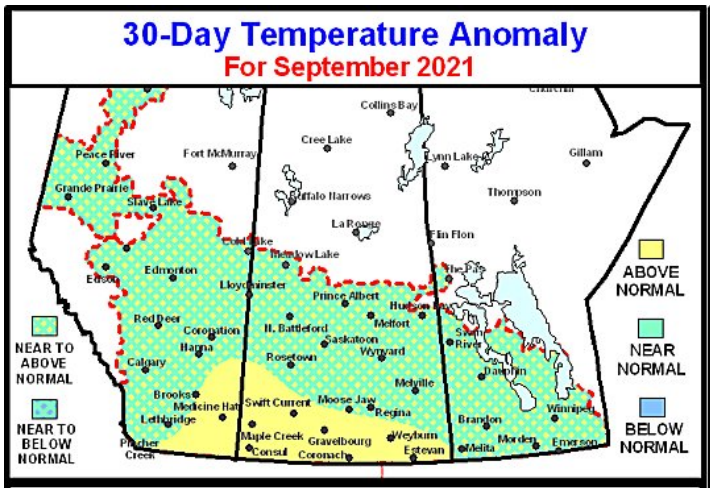
October will be the best month for some additional precipitation to impact the Prairies. The greatest moisture will fall near the Rocky Mountains in Alberta and from Slave Lake to Edson and westward to the Grand Prairie and Grande Cache areas.

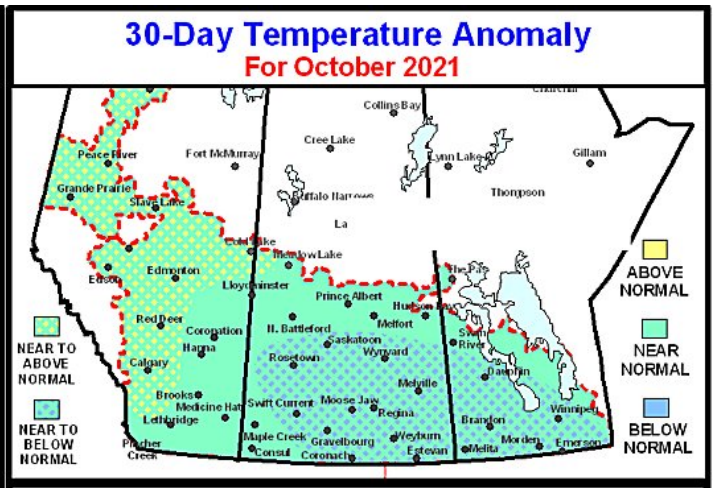
Another area of relatively normal precipitation will impact areas near the U.S. border from southern Alberta to the far southwestern Manitoba/U.S. border. That will not be enough precipitation to seriously change the moisture profile, but every drop of precipitation will be welcome.

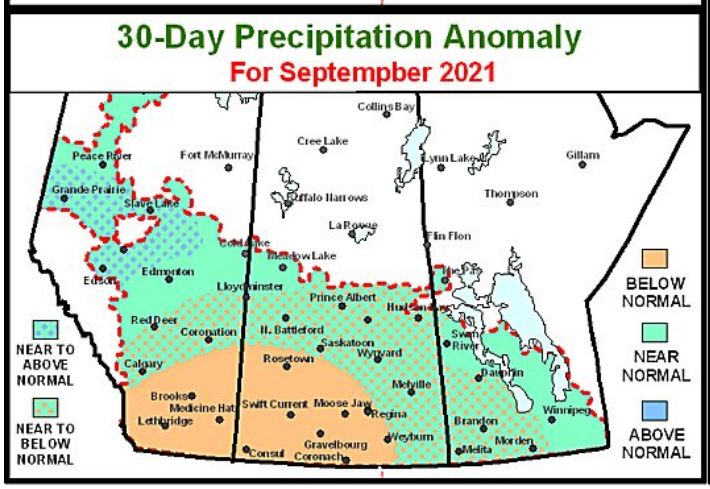
Farther to the north precipitation will be more limited once again. Much of west-central and northwestern Saskatchewan and east-central and far northeastern Alberta through Prince Albert and Saskatoon to Hudson Bay and Swan River, Manitoba will get below average precipitation along with west-central Manitoba and extreme east-central Saskatchewan.

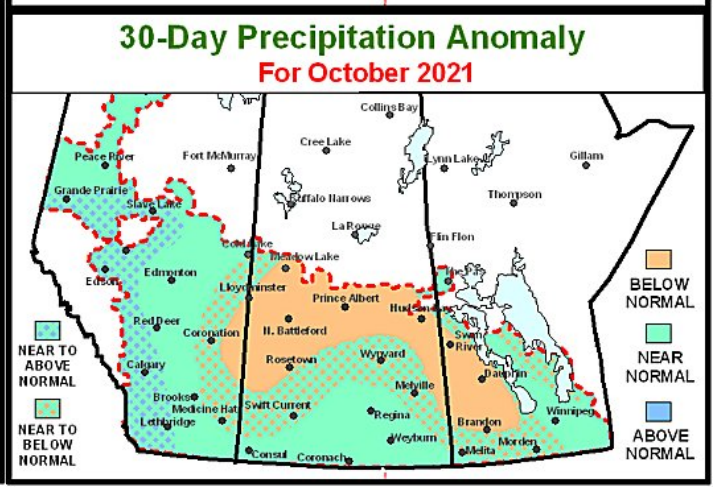
Temperatures in October will be cooler than usual in much of the eastern Prairies while near to above average out in the west.

Looking ahead into November, World Weather, Inc. sees some light precipitation and cooler biased weather.

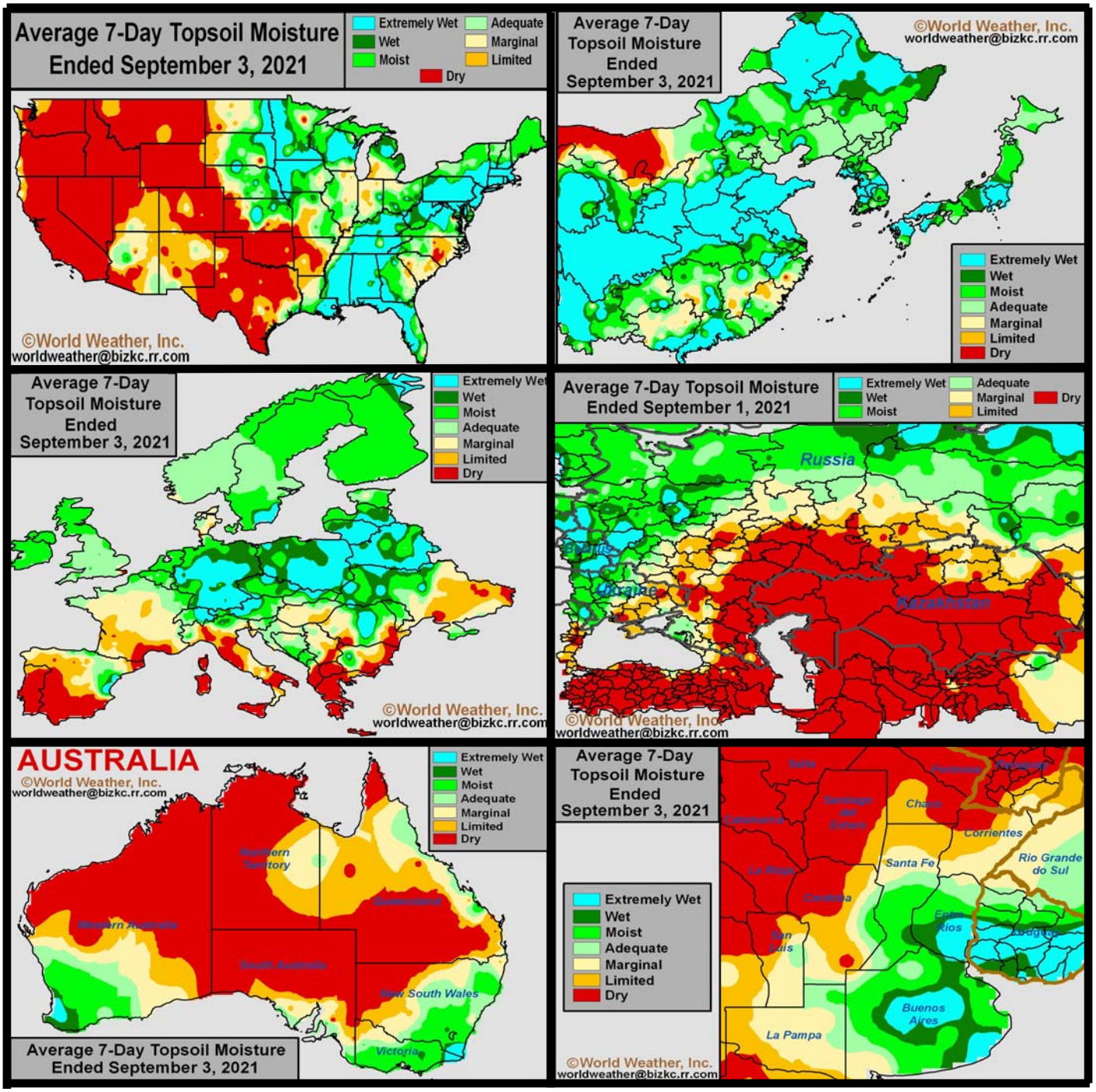








Selected Weather Images From Around The World



Canada's Prairies are still among the driest areas in the world, despite recent rain. Portions of central and eastern Russia's crop areas have dried out this summer and autumn and like trouble spots in North America this area may deal with dryness again next year. Dryness in the United States was eased across the western Corn and Soybean Belt while a part of the U.S. Plains were still drier than usual. Dryness in southeastern Europe, like the western U.S. Corn Belt has been partially eased from dryness in the past couple of weeks. Argentina also received some significant rain during the last days of August and first days of September lifting topsoil moisture ahead of new season wheat growth improving crop development potentials. Dryness is still a concern, though, in Cordoba and Santiago de Estero, Argentina and in Queensland, Australia. France has been drying out recently while a large part of central through northeastern Europe has trended wetter. Southern Brazil remains favorably moist while rain is needed elsewhere.

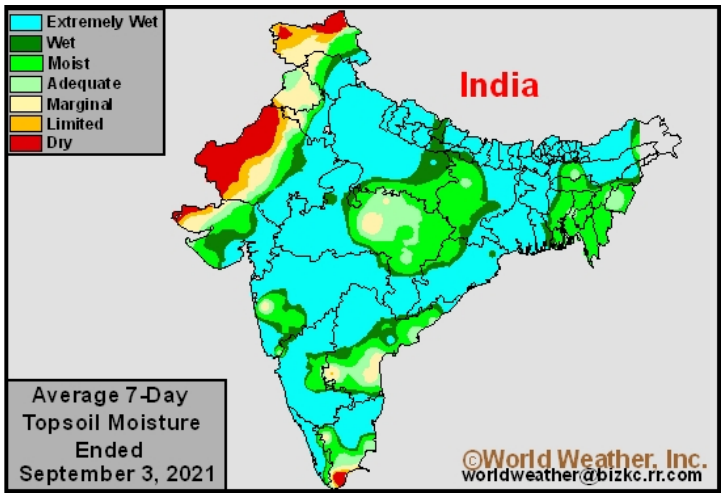
Central India May Get Too Much Rain

Gujarat and much of southern and eastern Rajasthan recently received much-needed rain. These areas were gradually drying down toward the end of August before recent rain replenished soil moisture. There were growing concerns over slowed crop development, most notably in some of the cotton and soybean areas of Gujarat. Development conditions improved as the rain fell. Additional precipitation is slated for these areas through mid-month that will maintain a favorable environment. Most other production areas saw good crop conditions during the past week and will see mostly favorable conditions persist through the end of next week; although flooding rain may evolve in parts of central India.

Two significant, late season monsoon depressions are expected to evolve in the Bay of Bengal during the coming ten days and move inland across the heart of India. These two systems will generate some heavy to excessive rainfall over ground that is already saturated and that may lead to some significant flooding. Each of these monsoon depressions will diminish over central India with remnants to drift farther to the west and northwest reaching into Gujarat and Rajasthan where some extremely beneficial late monsoon season rain will fall just head of the monsoon withdrawal. The moisture in Gujarat and Rajasthan will be ideal for late season crop development, but the rain in central India may culminate in some notable flooding.

The first monsoon depression is expected to move from Odisha and far northeastern Andhra Pradesh Sunday through southern Chhattisgarh to Madhya Pradesh by Tuesday morning and it should dissipate over southern Rajasthan shortly thereafter. Rain will fall heavily along this path and into some neighboring areas of Maharashtra and Gujarat to the west. Scattered showers and thunderstorms will occur often before and after this event and the combined rainfall for the week ending next Friday morning will range from 2.00 to 6.00 inches in much of central India. However, the greatest rain will fall to the left of the monsoon depression center suggesting 4.00 to 10.00 inches will occur across much of Telangana to central and northeastern Maharashtra

Flooding will be possible in many areas, but the region from Telangana and northeastern Andhra Pradesh to northeastern Maharashtra will be most impacted and some crop damage should be expected.



Gujarat and much of southern, central and eastern Rajasthan will also get rain from this first monsoon depression. Cotton, corn, sorghum, soybean, groundnut and rice crops will all benefit from the moisture as will some pulses. No flooding of significance will occur in these areas, but the ground will become saturated. The remaining areas in central India will have plenty of moisture for aggressive growth.

Western and northern Rajasthan into Punjab will only have a few opportunities for rain through the end of next week. Much of the rain will occur today and again toward the middle and latter part of next week. Moisture totals by next Friday morning will range from 0.25 to 1.00 inch and locally more. Western Rajasthan will remain too dry for aggressive growth and concern will remain high for production cuts in unirrigated production areas; including guar as well as some cotton, grain and oilseed crops. Portions of Punjab will also remain a little too dry for ideal growth, though the rain should help support some new development.

With that said, it is very important to remember that early season cotton is already in the open boll stage of development in northwestern India and too much rain now would harm some of those crops.

The remaining production areas in eastern, southern, and northern India will see a good mix of monsoonal rain and sunshine through the end of next week. Rainfall will range from 1.00 to 4.00 inches with local amounts of 6.00 inches or more from Uttar Pradesh into Bihar, Bangladesh, and the Eastern States. Portions of Tamil Nadu and southern fringes of Karnataka and Andhra Pradesh will also only receive 0.50 to 1.00 inch of rain. The environment will remain mostly favorable for aggressive development through the end of next week, though pockets in Tamil Nadu may trend a little too dry at times.

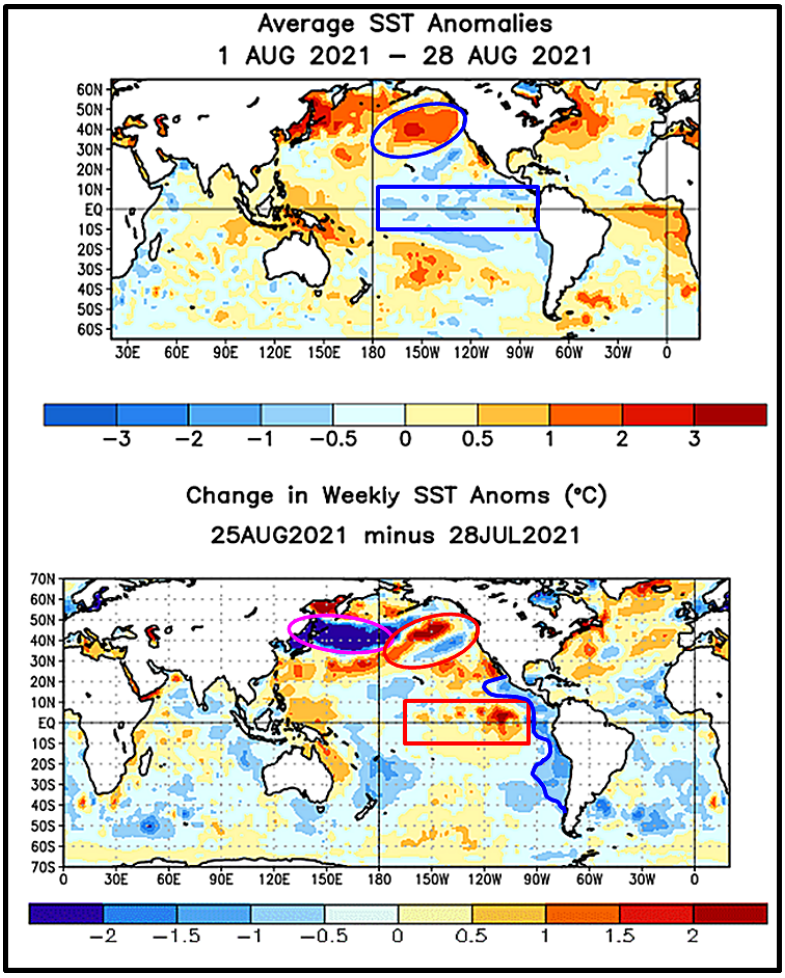
Some computer weather forecast models have suggested a second monsoon depression may evolve in the Bay of Bengal at the end of next week around Sep. 10. If that system evolves it could move on a path very similar to that of this coming week producing another wave of significant rain across central India and further raising concern over the condition of many crops. More flooding might occur if the second depression evolves as advertised.

La Nina's Slow Return Will Be Good For Some Areas

La Nina will be making a slow return to the world weather scene over the next several weeks. The event is expected to be weaker than last year's La Nina and its slower evolution should be timely for some crop areas to bypass some of the more threatening impacts that can occur in such an event. Brazil and Argentina should be among the bigger winners of a slower La Nina evolution, but eventually traditional anomalies are expected and that could bring a more classic response to crop areas around the world.

Neutral ENSO conditions were still present across the eastern equatorial Pacific Ocean at the end of August and the ocean surface temperature changes noted at that time were mixed enough to suggest no aggressive movement to La Nina conditions was going to occur in September. If that statement is true then Brazil's soybean country will have a much better opportunity to experience a relatively normal distribution of pre-monsoonal showers and thunderstorms in the second half of September and early October. An aggressive evolution into La Nina would hinder the rainfall and could result in a poor start to the rainy season like last year, but that does not seem very likely based on the latest data.

For Argentina, the slow evolution into La Nina will also help the nation's winter wheat crop get some timely rainfall in September. That moisture will be good for early season crop development. The moisture in Argentina will also help support a favorable start to early corn and sunseed planting late this month after some significant warming takes place. The bulk of planting will come after the nation becomes safe from frost and freeze events. Eventually, traditional La Nina conditions will evolve and that will dry out some important corn and sunseed production areas raising crop moisture stress potentials that might harm yields in time.



August ocean temperature changes in the eastern equatorial Pacific Ocean were mixed with areas near the coasts of South America and Central America turning cooler while warming occurred in a much larger part of the eastern equatorial Pacific Ocean. The warming trend occurred while ocean surface temperatures at the end of August were near to just slightly cooler than usual. The warming trend was expected to linger into early September which is the reason why aggressive La Nina development is not very likely.

However, the subsurface ocean water temperatures in the eastern equatorial Pacific Ocean were definitely cooler biased as they have been since late July. The cool ocean water pool beneath the surface in the eastern equatorial Pacific is poised to be lifted upward toward the surface by an upwelling current of water.

The upwelling current has not been very strong recently. Forecasters are looking for a strong easterly wind to develop across the surface of the eastern equatorial region of the Pacific Ocean to help enhance the upwelling current. A boost in easterly surface wind speeds will probably occur late this month and in October at which time the upwelling of cold ocean water will become more significant and La Nina will make a more notable advancement in its development.

Later this month there should also be potential for the cold water beneath the surface of the ocean to possibly intensify. However, there is a tongue of warmer ocean water that has shifted east of the International Dateline recently and that may reduce the intensity of the cool pool for a little while in early to mid-September. The warm tongue of water in the subsurface ocean water should break away from the larger pool of warm water in the western Pacific Ocean limiting the duration of any warming trend in eastern Pacific subsurface water

La Nina's Slow Return Good For Some Areas (continued from page 6)

temperatures.

NOAA's computer forecast model continues to be a leader in ENSO event predictions, although it gets a little too aggressive at times. The latest model forecast suggests aggressive evolution of La Nina conditions this month, but for the reasons we have already stated we believe that the more aggressive cooling of ocean surface water will be delayed until late this month and it will be greatest in October.

Because of this slower evolution in La Nina, the anomalies of weather around the world that are often associated with La Nina will not likely have a big presence until October. Mid-October through February is the period in which La Nina will likely have the greatest influence around the world. That means a boost in tropical rainfall for central Africa, Indonesia, Malaysia, parts of southern and eastern India and the tropical regions of South America. Mid-latitude reductions in precipitation should become noticeable in the late autumn and winter for the northern Hemisphere and for a part of the southern Hemisphere crops during their mid-summer.

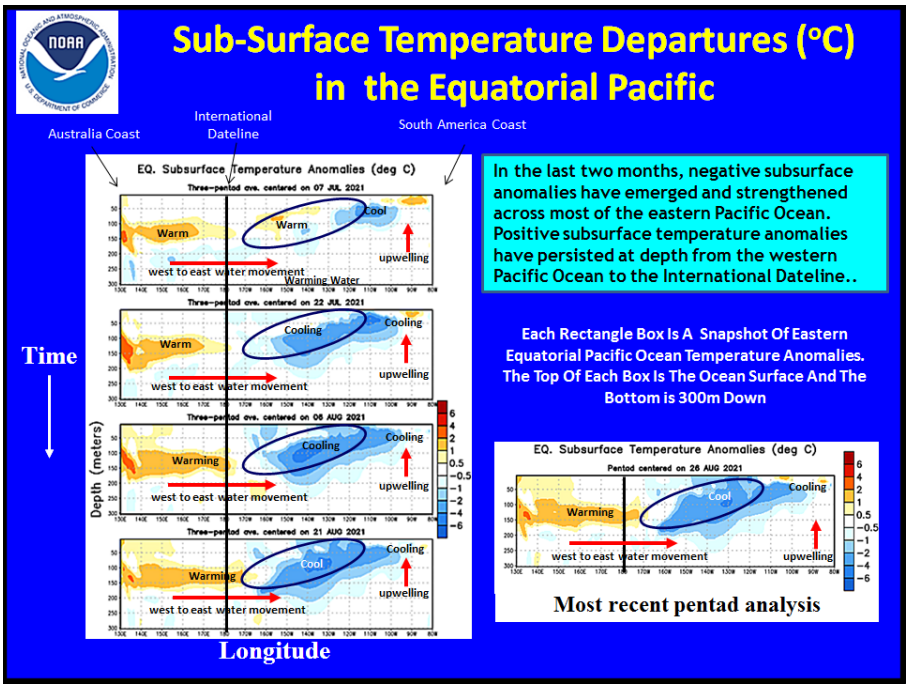
This year's La Nina will be playing out while a few other interesting weather phenomena are present and that too will alter the impact of this year's event. For North America, winter will be cold and drier biased and the same may be true for a part of central Asia. Western Europe may be warmer biased with less than usual precipitation and China weather will be mixed with a warmer bias to the winter, despite a few impressive drops in temperature infrequently.

Australia weather is expected to be fine through the spring, but this summer there will be a rising potential for excessive rainfall in Queensland and New South Wales. That wet bias may threaten wheat, barley and canola as they mature and are harvested. Flooding could evolve in some sugarcane and cotton production areas of eastern Queensland in the first quarter of 2022 and/or possibly in December.

In South America, the culmination of a peaking La Nina event and a few other anomalies in the atmosphere will set the stage for a dry bias to evolve in southern Brazil, southern Paraguay and Uruguay that will be more significant than that of last year. Argentina will have a dry bias in the east, but western crop areas where the largest portion of corn, soybeans, peanuts and sorghum are produced should experience a good distribution of rain this summer. Dryness in eastern Argentina, Uruguay, southern Paraguay and southern Brazil will result in some negative impact on summer crop yields.

Coffee, sugarcane and citrus areas of Brazil will experience an erratic start to the rainy season followed by a favorable distribution of rain. The amount of rain that falls in Sul de Minas and parts of Sao Paulo may be lighter than usual during the late spring and summer, but the timeliness of rain should be sufficient to support most crop needs. The flowering season for coffee and initial weather in sugarcane areas will be dominated by an erratic and uneven distribution of rain possibly resulting in some aborted coffee flowering and perhaps a s low start to aggressive sugarcane and citrus development.

Southern Europe and North Africa winter crop areas should experience a more favorable rainfall distribution during the heart of winter and the same may be true for the Middle East. Spain may be the exception with a warm and drier bias expected at times this year.



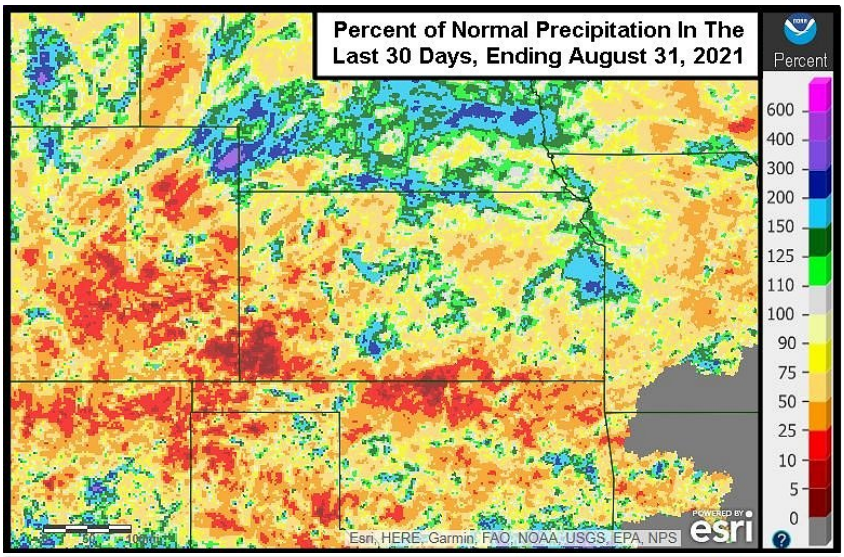
U.S. Dryness Could Become An Issue For Wheat

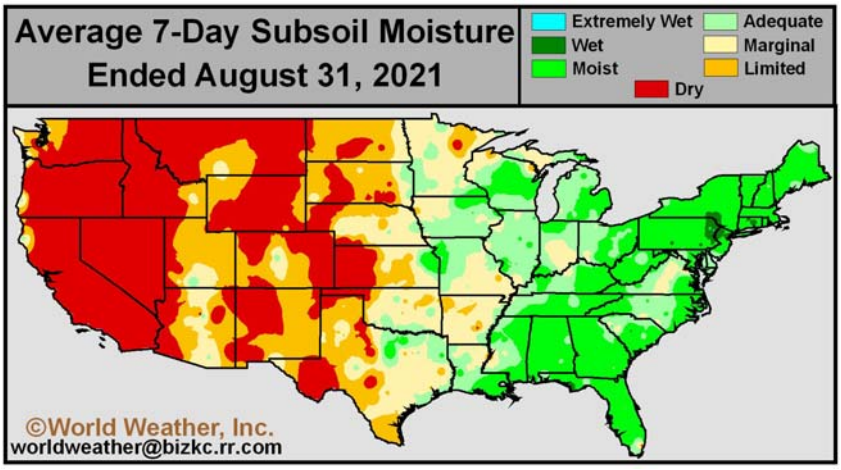
August was unusually dry across much of the Hard Red Winter Wheat Region. The drier bias was not just confined to August, but was also noted in portions of the region during June and July. As a result, of the drier bias this summer and some persistent warm to hot weather in August, top and subsoil moisture is rated short to very short in many hard red winter wheat areas.

A culmination of anomalous weather trends are coming together this autumn and winter to suppress rainfall and the dryness already present in the region could end up expanding greatly over the next few months. Drought in the region is expected to return and concern over the emergence, establishment and production potential for unirrigated winter wheat in the region will be rising as well. Some of this dryness is expected to reach into the western Corn Belt over time.

The dryness and warm to hot temperatures in August has led to a majority of the wheat region to have short to very short soil moisture. The only exceptions are in areas that have recently received heavier rainfall, but as noted earlier the greatest rainfall was a little blotchy across the region and the majority of crop areas will have need for significant rain this autumn before planting begins.

Some early autumn planting is about to begin in the southwestern part of the Hard Red Winter Wheat Region and greater rainfall would be beneficial for this due to the low topsoil moisture. The good news is that greater rainfall is expected today into Saturday due to a frontal boundary and a couple of weather disturbances. These weather disturbances will pull some monsoon and remnant moisture from Hurricane Nora into the central Plains from the southwestern states enhancing rainfall briefly.





Rain will move through western production areas of the Hard Red Winter Wheat Region today with some pockets of significant rain occurring late in the day through Friday. Some erratic showers and thunderstorms will then linger in southern parts of the wheat region into Saturday and Sunday. Total rain through Sunday will vary from 0.35 to 1.50 inches in the region. The wettest areas will likely be from the Oklahoma Panhandle, northwestern Texas Panhandle, and far southeastern Colorado through central Kansas. Some local totals in central Kansas will be greater than 2.00 inches. This rain will help support germination in early planted wheat fields in the southwest.

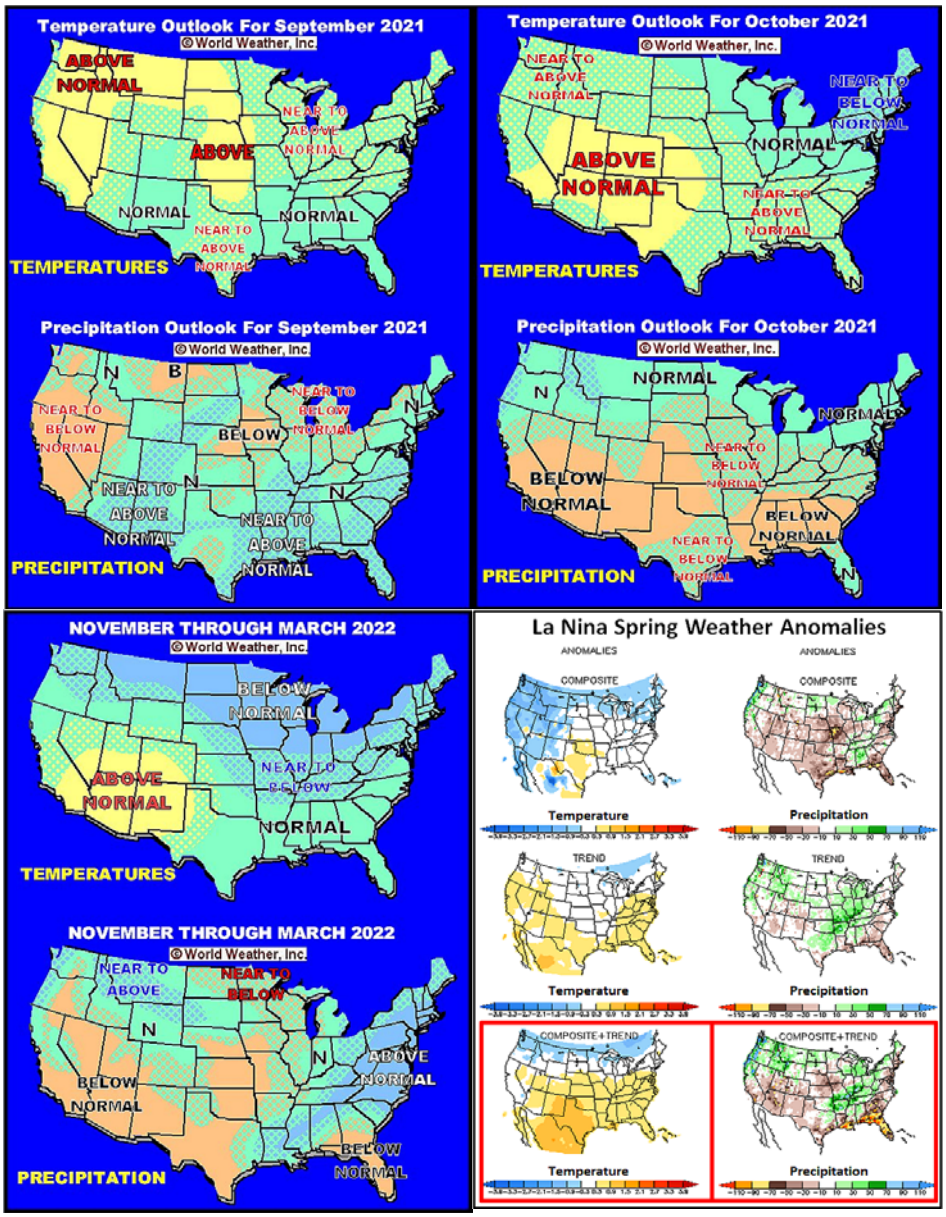
The rain this week will be beneficial; however, there is concern of a drier trend later in September and October when most of the winter wheat planting occurs. After this week's precipitation passes, a much drier weather pattern will evolve and temperatures will rise above normal. The drier and warmer weather bias should become a persistent feature during the balance of this month and into October. Moisture that has been feeding into the region from the southwestern states (monsoon moisture) is ending. Rain will not fall as often or as significantly in

U.S. Plains Dryness May Be A Wheat Issue (Continued From Page 8)

the central or southern Plains over the next few weeks as that of the past few weeks; although, a few showers will occur infrequently as frontal systems move across the region.

La Nina is expected to develop later this month and become greater influence on world weather during the October through February period. Most La Nina events that are in place during those months tend to downplay rainfall in hard red winter wheat areas. The 18-year cycle will promote a northwesterly wind flow pattern aloft during the late autumn and winter which also matches the bias that comes from La Nina. That will likely result in further support for below average precipitation.

Temperatures will be warmer than usual in September and October. The most anomalously warm weather is expected in October mainly because late September temperatures could drop below average for a little while. The October warm and dry weather will produce some aggressive drying at the time in which aggressive planting of wheat is normally occurring. As a result, soil moisture will be low and decreasing further when crops are planted and unirrigated fields may experience some delay in planting or (and more likely) there will be a delay in germination, emergence and establishment.



The drier bias in the Plains will prevail into winter and early spring raising much concern amount the fate of this year's crop. Many La Nina events end in the early spring and rainfall often kicks in rather significantly during the middle to latter part of spring saving crops after prolonged drier bias. 2022 spring rainfall could be hindered by a delayed break down in La Nina and/or by the negative phase of PDO and the prevailing 18-year cycle.

World Weather, Inc. has written before about the potential for a multi-year drought in North America because of the solar cycle and some other coincidental weather patterns and we still believe that to be true. There is reason to believe that late spring weather next year may not be as good as it should be in the central U.S. and by that time dryness will have spread from the Plains into the western Corn Belt raising worry not only about hard red winter wheat production, but also over the planting and early development prospects for 2022 corn and soybeans.