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The Canadian Agriculture Weather Prognosticator

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World Weather At A Glance

- Western and some central Argentina crop areas remain dry maintaining wheat and barley production
- Russia's Southern Region and Ukraine are quite dry along with the Volga River Basin threating winter wheat establishment
- Queensland and far northern New South Wales dryness has hurt wheat and barley production and the same has occurred in northern Western Australia
- Southern Australia has been drying, but the southeast should get rain this week
- India's Monsoon finished better than feared
- Portions of eastern and southern Europe are a little dry
- Drought in North America continues from Mexico through the Central U.S. to Canada's Prairies
- Improved rainfall coming to Brazil

September Provides Little Drought Relief

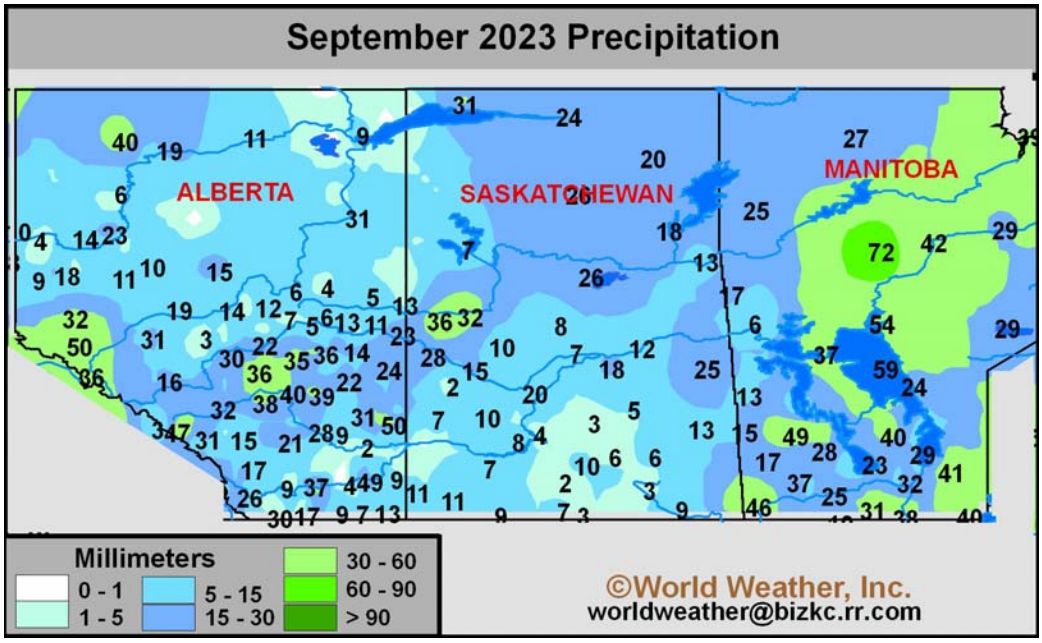
Frustration over the lack of change in the Prairies weather anomalies in September were partially hidden behind the nearly ideal environment for crop maturation and harvesting from southern Alberta into most of Saskatchewan.

Much needed drying also began to evolve in northern Alberta during September reducing fear of delayed harvesting that was becoming an issue in late August and early September. Rain still fell a little too often from southwest to northeast across Alberta slowing fieldwork at times, although progress was made.

Unusually warm temperatures during September kept evaporation rates high which allowed much of the precipitation that fell during the month a chance to evaporate limiting the disruptions to harvesting. With that said, though, there were some disruptions to fieldwork in a part of Manitoba and from southwest to northeast in Alberta as well as far northwestern Saskatchewan.

The dry and warm biased weather did leave drought stricken areas still dealing with poor soil moisture and poor water supply. The need for greater rain is rising almost every day especially with the usual freeze up dates slowly approaching.

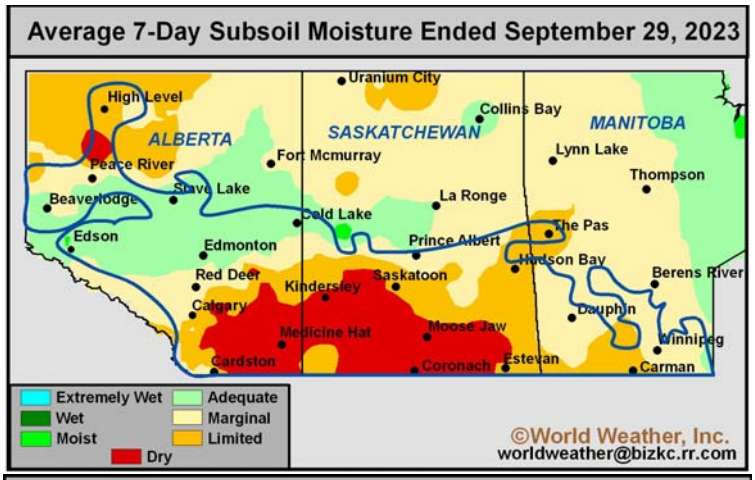
Drought in the Prairies needs to abate before the winter freeze up season arrives which is only a few weeks away. Some colder weather is already expected during the coming week, but it will not last long enough to make this the end of the growing season. However, rain must fall in great enough quantities soon to get the ground moist enough to support crops in early 2024. Concern is rising over the spring outlook since El Nino winters are warm and dry biased.

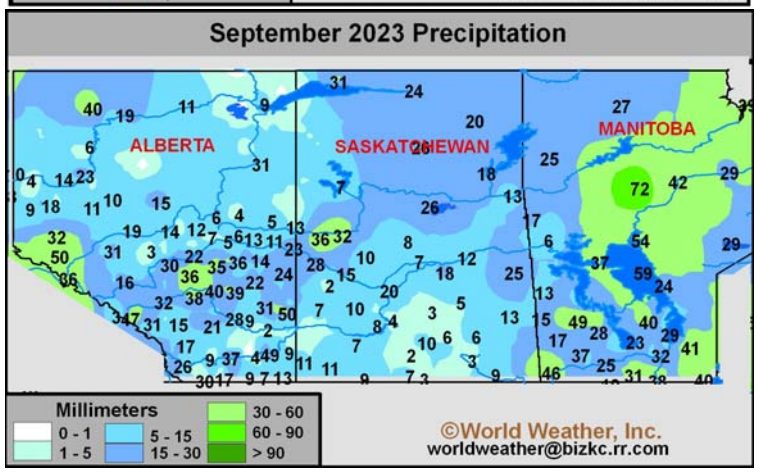


Winter 2023-24 Offers Little Recharge Soil Moisture

Worry is rising over the continued low moisture profile across a large part of the Prairies. Time is ticking away before the winter freeze up season arrives and there is no tremendous amount of rain coming for the driest areas. Some rain is expected early this week in the eastern Prairies and that will be beneficial moisture, but it will leave much of the southwest and central parts of the region still waiting for significant rain.

Soil moisture is still critically low from eastern and southern Alberta through the majority of Saskatchewan to portions of Manitoba. There is also dryness in the northern half to two-thirds of the Peace River region. The best soil moisture has been and continues in the west-central through northeastern parts of Alberta and into a small part of far northwestern Saskatchewan. These wetter biased areas were getting too much rain for a while during the summer, but the pattern has turned in recent weeks with less frequent and less significant rain supporting crop maturation and harvesting.





Northern and western parts of Alberta outside of the Peace River Region have continued to see showers often enough to keep the harvest pace in Alberta a little slower than the remainder of the Prairies, but few who farm in those areas dare to complain given the chronically dry conditions elsewhere in the Prairies. The weather in the western areas has improved enough to get harvest progress moving along better than feared and there is more dry weather coming to support crop maturation and harvesting.

A rain event under way now in he eastern Prairies may end up being the single greatest period of rain for the month of October. The rain amounts may be greater than usual for the coming few days, but relative to the entire month of October it will not be enough to finish the month wetter than usual. More dry weather is expected and it will be welcome to get the late harvest finished, but worry over the lingering low moisture profile will probably continue for a while because of the poor follow-up moisture and the expected return of warmer than usual weather after this week's brief cool off.

Additional rain this week will vary from 5 to 15 millimeters with local totals of 15-35 millimeters in eastern Saskatchewan and 10-20 millimeters with local totals of 20-50 in Manitoba. Fieldwork will be disrupted, but no one will complain.

Topsoil moisture will increase in eastern Saskatchewan and Manitoba as a result of this week's rain. The moisture will certainly be welcome and it will have time to soak into the ground relatively well with cooler temperatures expected immediately following the precipitation event. However, temperatures will rise above normal again by this time next week and the warmer bias may continue to dominate the month.

Cooler weather is expected to overtake the Prairies in November as it often does and that will limit the potential for a lasting increase in deep soil moisture because frost is likely to begin moving through the top layers of soil producing a barrier to moisture absorption. However, recent past winters that were equally dry showed a restricted amount of frost in the ground during early spring which actually helped snow melt get into the soil prior to the planting season. That is something that many producers in the Prairies will be hoping for again in this coming year.

There have been few times in recent history in which dryness has been so deep in the ground—not only in the Prairies, but throughout North America. Drought still has a grip on the entire continent from Mexico through the southern United States and then into the U.S. Plains and areas north into the heart of the Prairies. This dryness is so broad based that it is making it very difficult for any part of the region to get adequate relief. Comparative years of extremes are the 1930s and it was in

Winter 2023-24 Offers Little Moisture (continued from page 2)

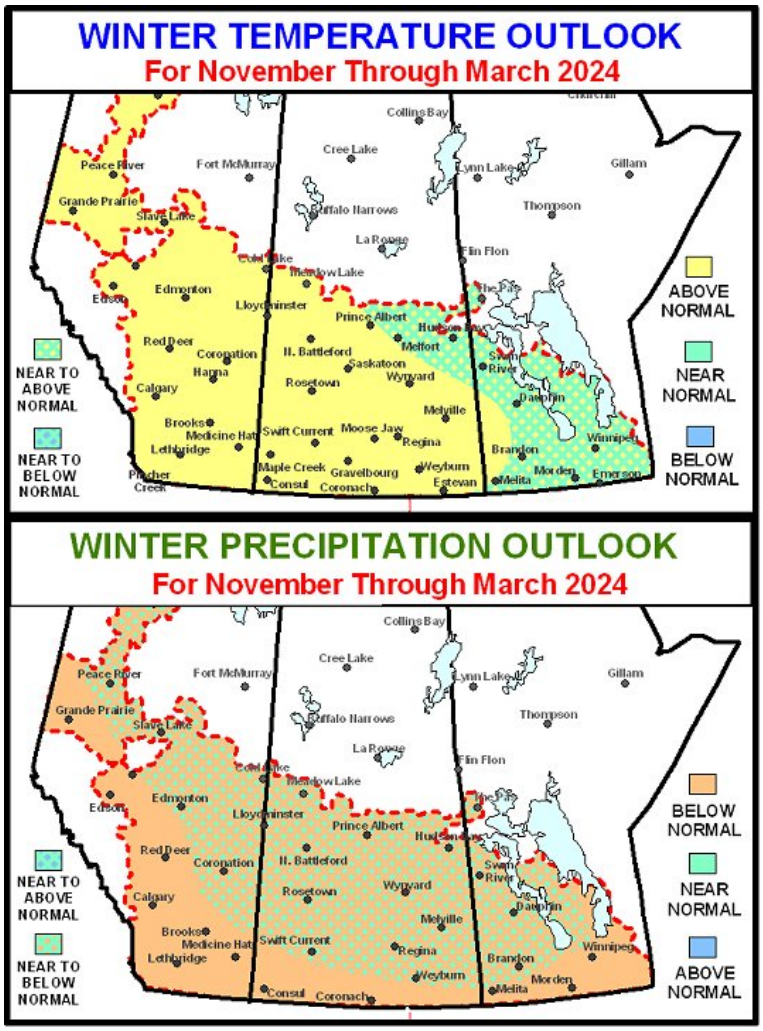
that era that there other socioeconomic issues in the world as there are today.

Concern over the winter ahead has been rising, not because of extreme cold and abundant snow, but due to the lack of precipitation and continued warm conditions. The environment is not going to present much opportunity for massive storms and improved soil moisture. The situation will not be the same in all areas, but just like this week's storm there will be relief, but in a limited manner.

El Nino is in control and even though this ENSO event is not all that impressive it may be the last thing that the Prairies need right now after seven years of drought in the southwest and two out of the past three year's resulting in drought reduced production over much of the region. Not all producers and farms have been faced with the same level of drought, but the impact has been felt nationwide and even farther to the south into the U.S. and Mexico.

El Nino events, by tradition, usually generate less precipitation than usual in the November through March period and temperatures are often warmer than usual. There is very little reason to expect anything different this year. In fact, evidence has been rising over the influence the Hunga Tonga Volcano had on this planet when it erupted in January 2022. That volcano sent huge amounts of moisture from the Pacific Ocean well into the stratosphere and scientists have been speculating that this past summer's extra heat noted worldwide may have been the by product of this phenomenon.

Unlike other volcanoes that have occurred from the continents, the Hunga Tonga Volcano occurred under water in the Pacific Ocean. The eruption, however, has been deemed the most violent and intense event of modern history. The volcano had worldwide attention for a brief few days when it occurred, but because of its remote location and limited impact on the human population at the time there was not much follow up information. However, geologist and atmospheric scientists have since discovered that the volcano was more intense than 100 atomic bombs like that which was dropped over Hiroshima, Japan in the 1940s.

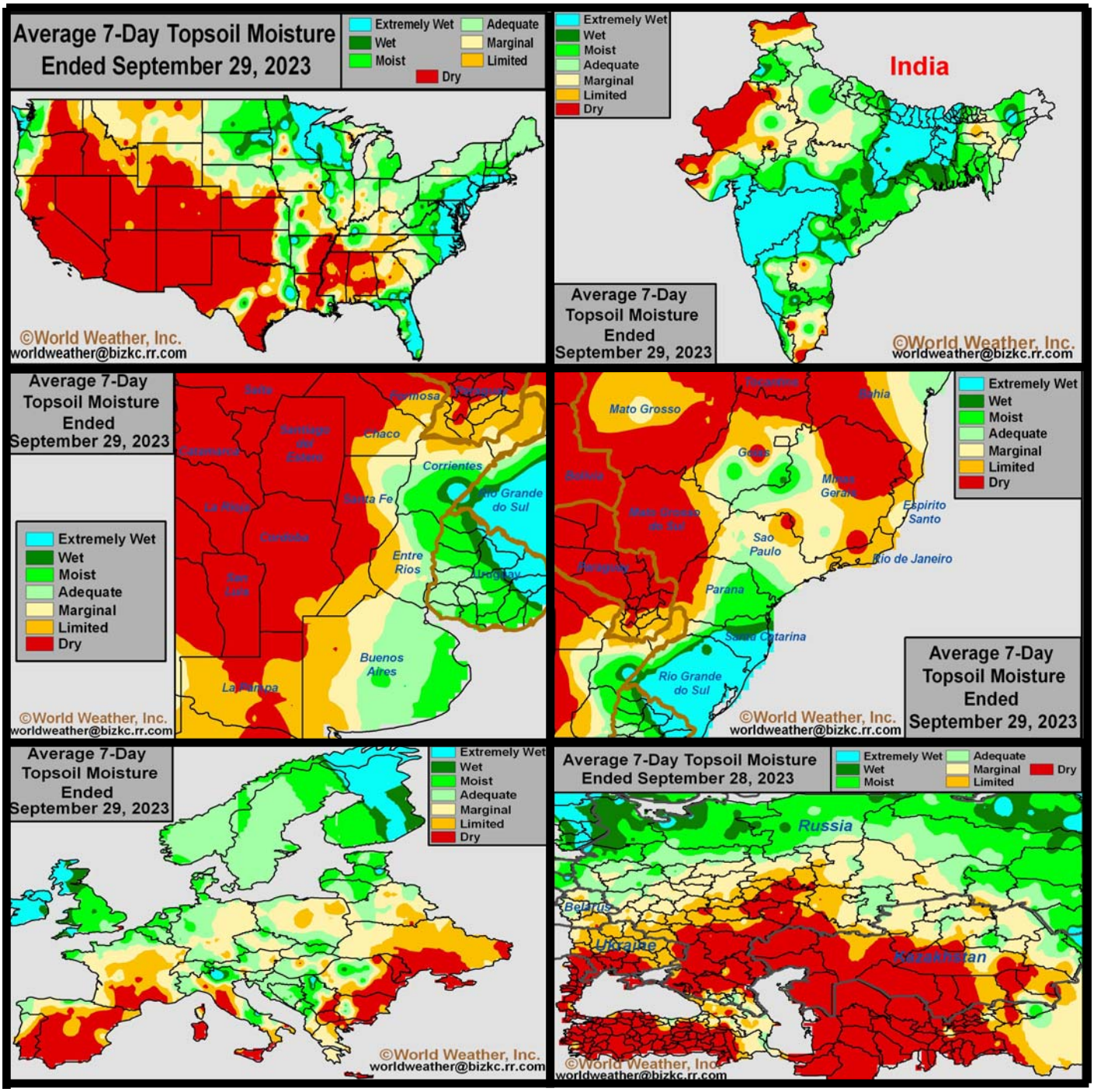


The volcano lifted huge amounts of water vapor and other particulate matter up to 36 miles into the atmosphere. This eruption was different from those above sea level in the sense that there was more water vapor put into the stratosphere than there was ash and that vapor has possibly helped to accelerate the earth's warming trend that has already been under way in recent decades. That is speculation for now, but the influence of that water vapor was suggested to last 1-5 years and during that period of time there would be at least one year of greater world warmth. World Weather, Inc. is speculating that year may have been 2023 and the lingering influence may continue into 2024.

Winter will be warmer than usual this year because of El Nino, but the stratospheric moisture may help keep the earth warmer than usual and that will include the Prairies. We will still have our colder days, but this winter may not be like those of the recent past keeping temperatures above the norm for extended periods.

El Nino events also usually induce less than usual precipitation and if that is the case this winter there is going to be little opportunity for a serious improvement in the moisture profile until spring. However, if temperatures are warm enough for a long enough period of time this autumn frost may not get into the ground until later than usual and that could leave the door of opportunity open for more weather systems like that of this week to bring rain and moisture into the soil before the annual freeze up takes place.

Selected Weather Images From Around The World



India late season rainfall ended up favoring many crops, although poor rainfall in June and August did stress some crops and yields for some of those will be lower than usual. U.S. soil moisture has been improving in recent weeks, but the change came too late and soybean yields may have slipped lower in the last 30-45 days of the growing season. U.S. hard red winter wheat areas will begin receiving erratic rain this week, though some areas will need more rain in the future. Russia and Ukraine dryness has become a concern due to low soil moisture and minimal rainfall for wheat, rye and barley emergence and establishment. Rainfall may continue limited for a while longer in Russia and Ukraine. Some dryness is also prevalent in southeastern and southwestern Europe. Relief from the dryness in parts of Europe and the CIS will occur late next week. China is plenty wet, but is beginning to dry down supporting summer crop harvesting and winter grain planting. Southern Indonesia remains quite dry along with Australia.

Early October Rain, Cooling Not Sustainable

Finally in the last days of September a series of storm systems brought at least some moisture to the Prairies and that will continue into these first days of October; however, there will be little to no follow up moisture. Outside of the early week storm under way at the time of this writing there will be no other significant rain or snow event in the Prairies through at least mid-October. Some smaller weather systems are expected to begin traversing the Prairies during the second half of this month, but resulting rainfall will be lighter than usual.

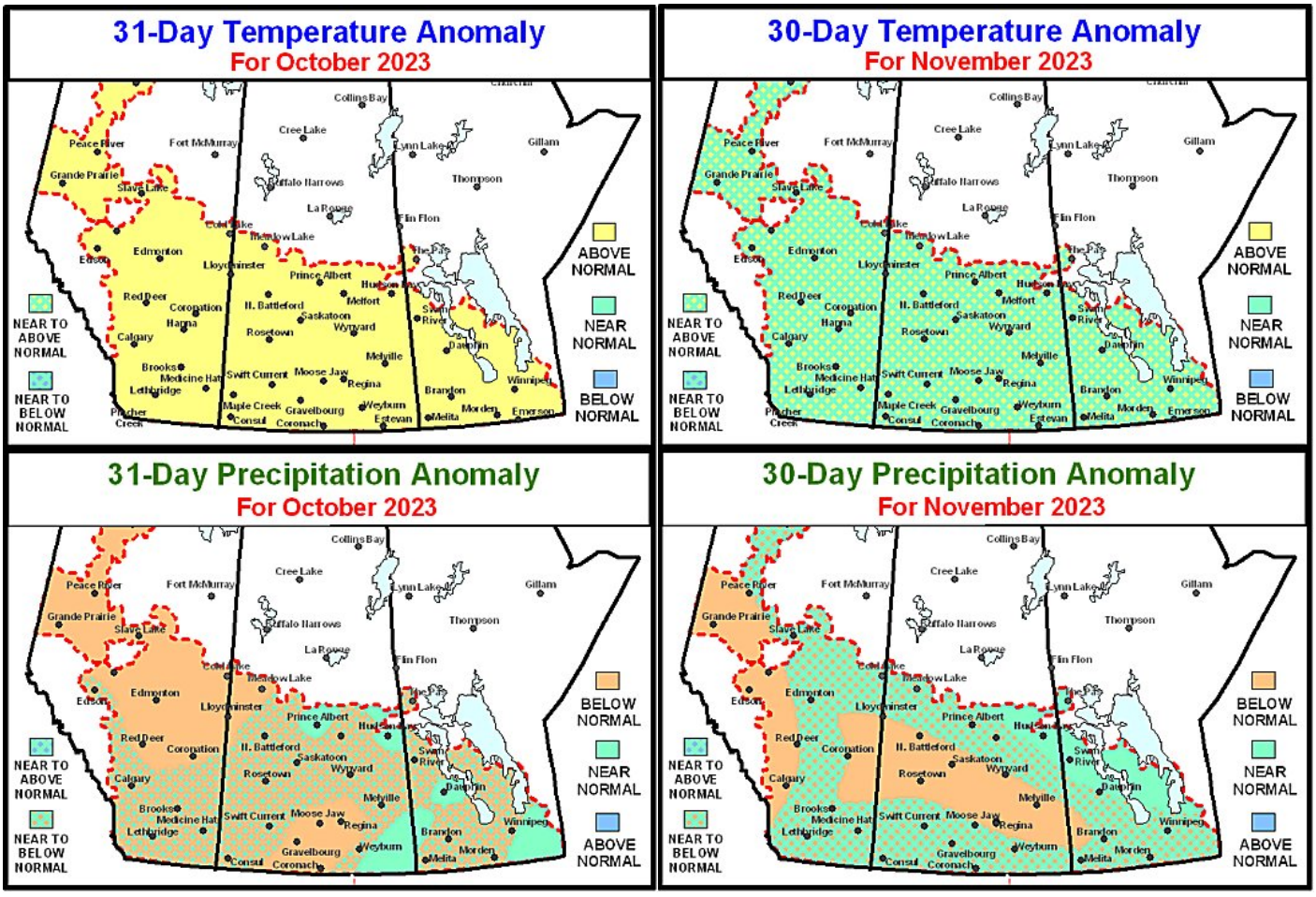
Cooling is expected this week, but it will not be sustainable. A big ridge of high pressure will return to the western parts of North America during the coming weekend and it will limit precipitation and return warmer than usual conditions to the Prairies through mid-month. After that the ridge may allow weak weather systems through from the Pacific Ocean into Ontario, but each storm will be subjected to weakening as it moves through the Prairies and interacts with the dry and warm air that is already present.

Not all hope is lost. There is potential that the warmer than usual October weather will bring a larger late month storm system to the Prairies that might attempt to produce another area of rain similar to that of this week, but confidence in that event is still low.

November temperatures will not be as anomalously warm and sufficient cooling should occur during the month to induce more routine occurrences of frost and freeze conditions. Frost will begin to get into the ground in some areas, but, not necessarily all areas. There will be some potential for snow cover to increase during November, though early indications suggest the accumulations will be lighter than usual.

Overall, precipitation in November is expected to be below normal with a few areas of near normal moisture. The area most favored for precipitation may be near the U.S. border and in the northeastern part of the Prairies. Northeastern Saskatchewan and northeastern Manitoba should get most of the precipitation.

Relief from persistent drought in southern and eastern Alberta and much of Saskatchewan seems doubtful at this time, but there is some encouragement coming from the warmer temperature. As long as bitter cold stays out of the Prairies there will at least some potential for a better than expected snow event.

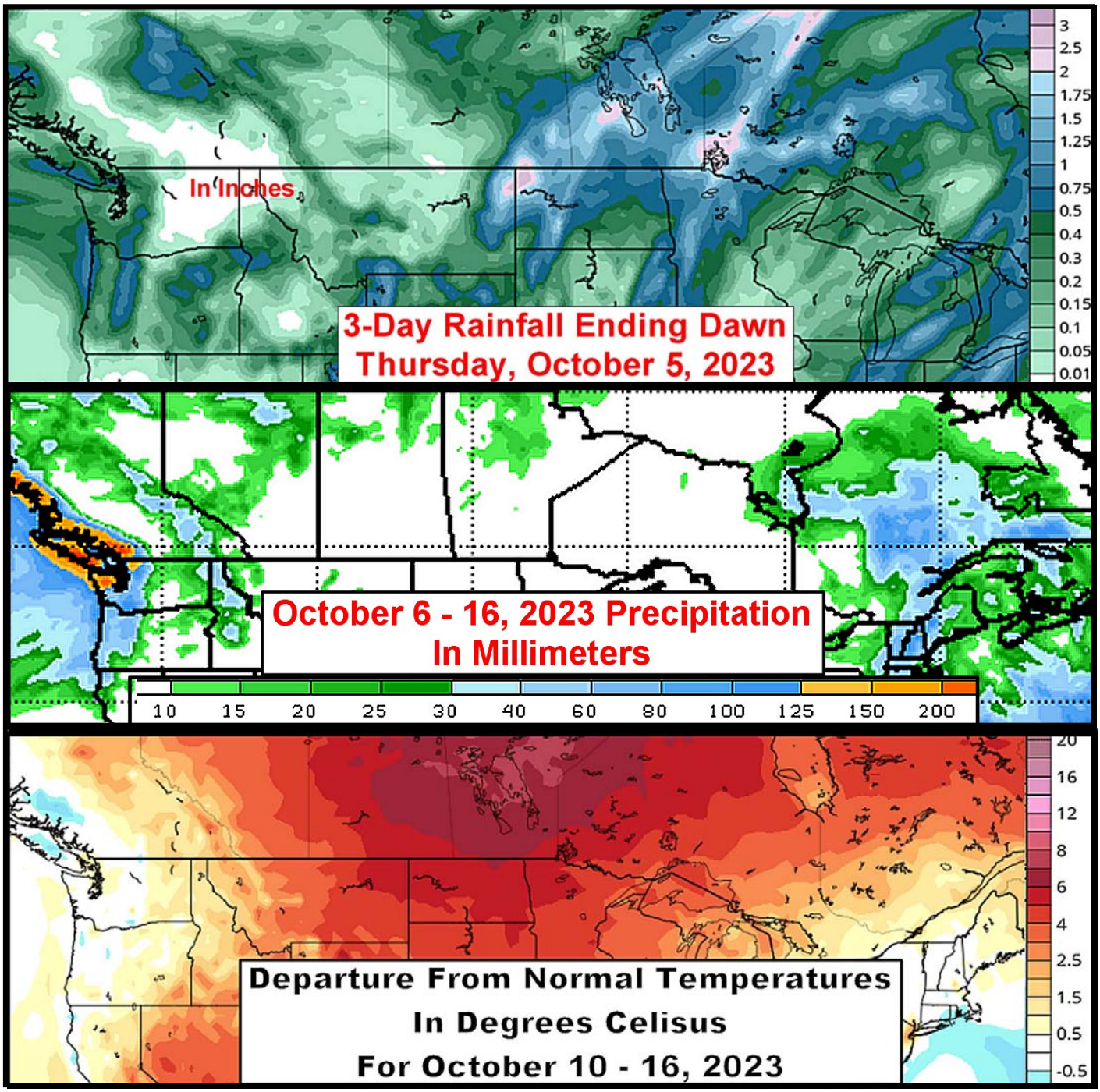


First Half Of October Prairies Weather

As beneficial as the rain coming to the eastern Prairies will be this week there is not much chance that the moisture will stay in the soil for very long. Net drying is expected in the second half of this week and it will continue through the middle part of this month.

Temperatures will be cooler than usual for a few days during mid– to late-week this week at which time there will be some frost and freezes, but that only conserves the moisture for a little while. The delay between when the rain falls this week and when temperatures start to heat up again will be the period in which this week's rain can soak as far into the soil as possible.

However, temperatures next week will be notably above normal bringing back stronger drying rates . Some of this week's moisture may get into the soil favorably, but the combined impact of low subsoil moisture and warmer than usual temperatures for next week will accelerate the drying trend and restore concern about long term moisture and water supply.

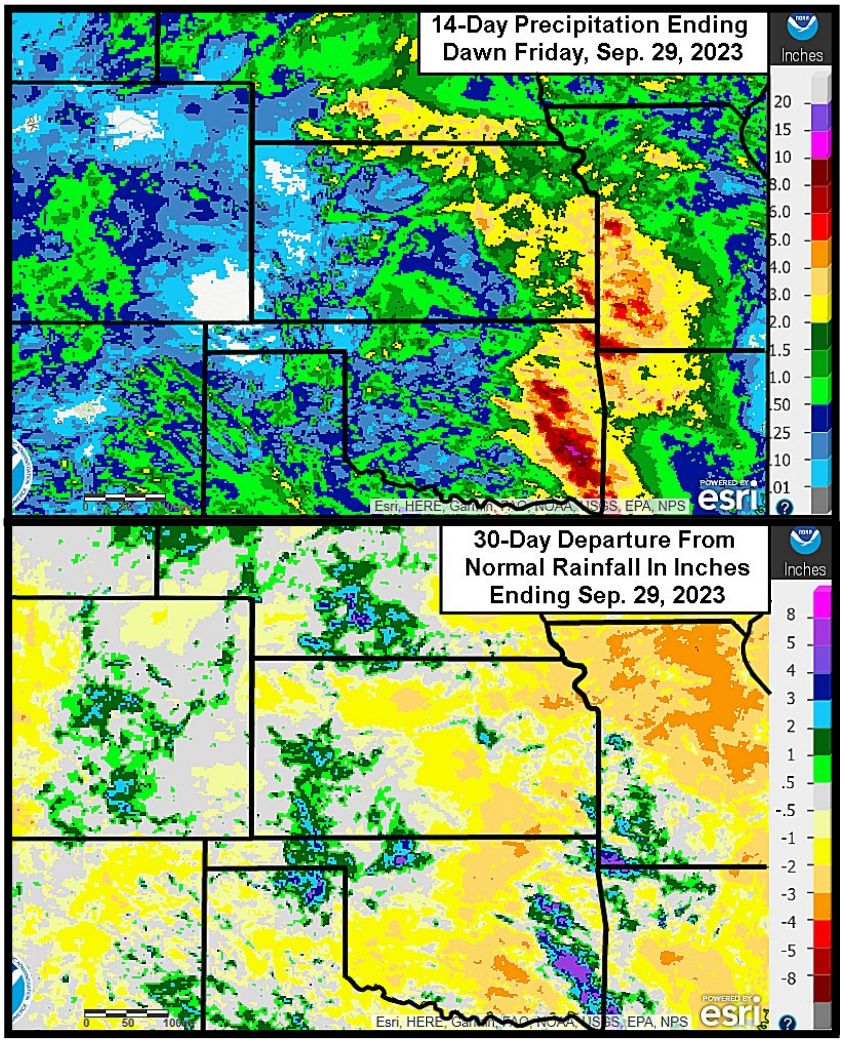


Parts Of U.S. Hard Red Winter Wheat To Get Rain

Central and southwestern portions of the U.S. Plains are notably dry once again – at least from a soil moisture perspective. Rain that fell earlier this month has evaporated because of recent very warm to hot temperatures. Some areas in the hard red winter wheat production region failed to get significant rain earlier this month when timely rain fell to start the planting season. Those areas still need significant moisture and showers and thunderstorms slated for next week will attempt to bring "some" relief to that dryness; although, more rain will be needed.

Top and subsoil moisture in the central and southwestern Plains is rated vary short and there is need for significant moisture to improve planting and emergence conditions. With that said, fieldwork has advanced relatively well so far this month with a few areas in Kansas and especially Oklahoma reporting wheat planting progress behind the five year average because of ongoing dryness. Much of the wheat that has been planted so far has emerged at a relatively good pace and that is more a reflection upon the beneficial moisture that fell early in the month for early planting than on recent rainfall because that has been light and more sporadic.

Rainfall over the past two weeks has been limited in southeastern Colorado, portions of western Kansas and in a number of other locations where it has been nearly dry. Rainfall since mid-September was lighter than that which fell early in the month with the exception of south-central Nebraska and a few neighboring areas of north-central Kansas where 2.00 to more than 4.00 inches fell. There were some other pockets of rainfall over the past couple of weeks that surpassed 1.00 inch, but most of that was sporadically dispersed and with temperatures rising into the 80s and 90s Fahrenheit recently much of the moisture has evaporated.



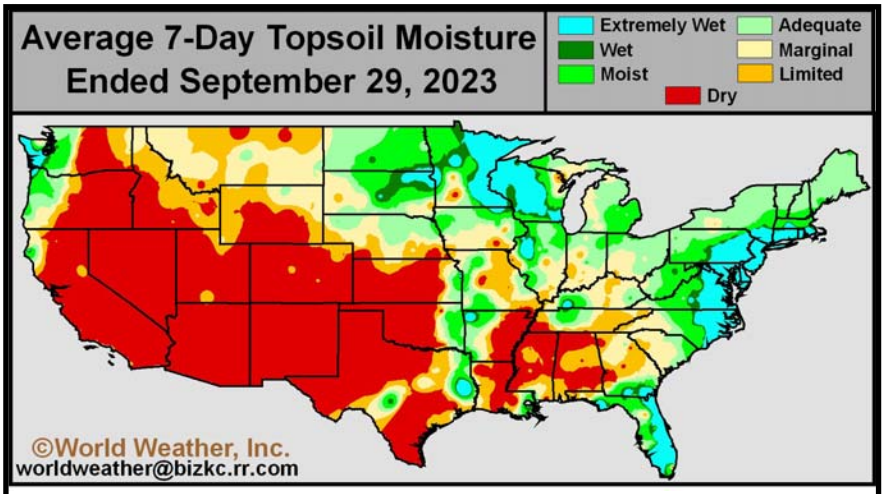
The greatest rain that fell earlier this month occurred from northeastern parts of the Texas Panhandle north through southwestern Kansas to west-central Kansas. That area has a moisture surplus for the month of September. Some of the heavier rainfall in Nebraska also resulted in greater than usual precipitation for the month. In contrast, though, portions of central Kansas southward into central Oklahoma are carrying moisture deficits of 1.00 to nearly 3.00 inches. Another region of below normal precipitation occurred in southwestern and west-central Oklahoma where 1.00 to 2.00 inches of moisture is needed to restore the moisture profile to normal.

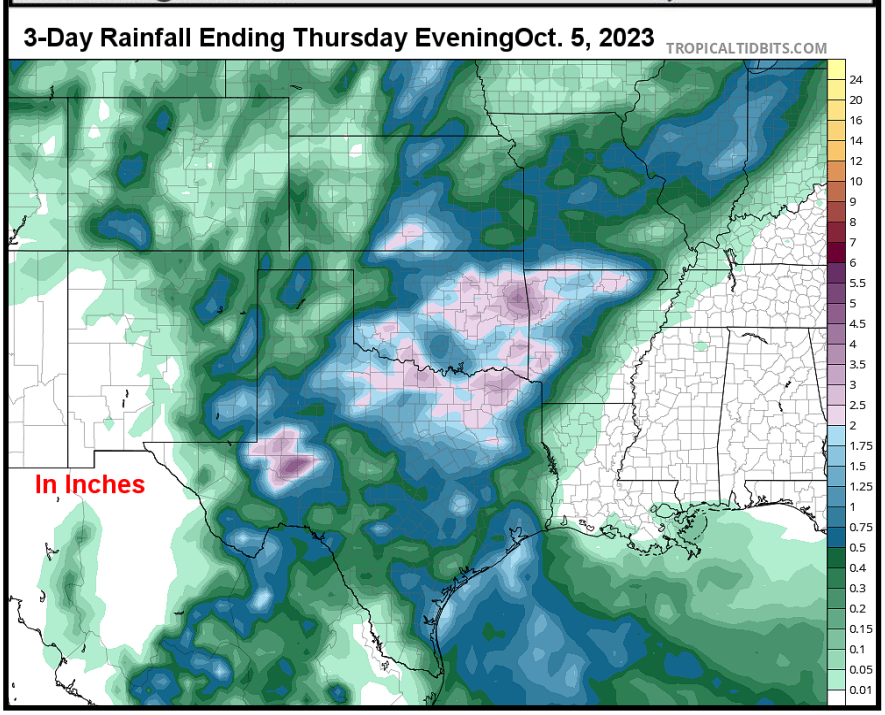
Despite the moisture deviations from normal recently, what matters most for winter wheat is having enough moisture to germinate and emerge with. Moisture must be present to induce these processes and for crops that were previously emerged the very short top and subsoil moisture profile provides no opportunity for new growth and development. Because of that situation, rain is needed in all of the

U.S. Hard Red Wheat Region To Get Rain (continued from Page 7)

hard red winter wheat production region to perpetuate planting, germination, emergence and establishment. That is why next week's rain event is so important.

In the next 10 days, scattered showers and thunderstorms are expected across the crop region, with the greatest rain expected Monday and Tuesday. Some of the precipitation may linger into Wednesday, but after that the balance of the 10-day forecast is dry. Rainfall from scattered showers this past weekend and the greater rain this week will vary from 0.25 to 1.10 inches in general with greater amounts of 2.00 to 3.00 inches possible in Oklahoma and northern Texas and near 2.00 inches in southeastern wheat areas of Kansas In contrast, some of the rainfall in northeastern Colorado and northwestern Kansas will be minimal staying less than 0.30 inch.





Every drop of rain will be cherished by producers in the region, but the most important rainfall will be that which is greater than 0.75 inch since it would have a lasting impact on supporting new wheat germination, emergence and growth. The moisture would also help to revitalize any dryland crops that have recently experienced stress because of hot and dry weather.

Interestingly, some of the rainfall in the Texas Panhandle might eliminate the recent moisture deficits that have accumulated, but other parts of hard red winter wheat country may have need for follow up moisture to ensure the best establishment. The moisture is also needed to promote new planting. World Weather, Inc. believes sufficient rain will fall to accomplish these things for a while, but parts of the region will need follow up moisture soon.

Long term dryness still prevails in the region with the Drought Monitor suggesting moderate to extreme drought conditions prevailing in southern Oklahoma, northern Texas and from a part of southeastern Nebraska's wheat region into central and a part of eastern Kansas wheat production areas.

Similar to Canada's Prairies, the U.S. hard red winter wheat region is not expecting much follow up moisture after this week unless a tropical cyclone that is forming off the southwest coast of Mexico turns toward the northeast into Mexico spreading additional moisture into Texas. That is possible, although not very likely. Drought will continue without greater rain with western Kansas, Colorado and the Texas Panhandle driest for a while. Temperatures will trend cooler this week and warmer next week.

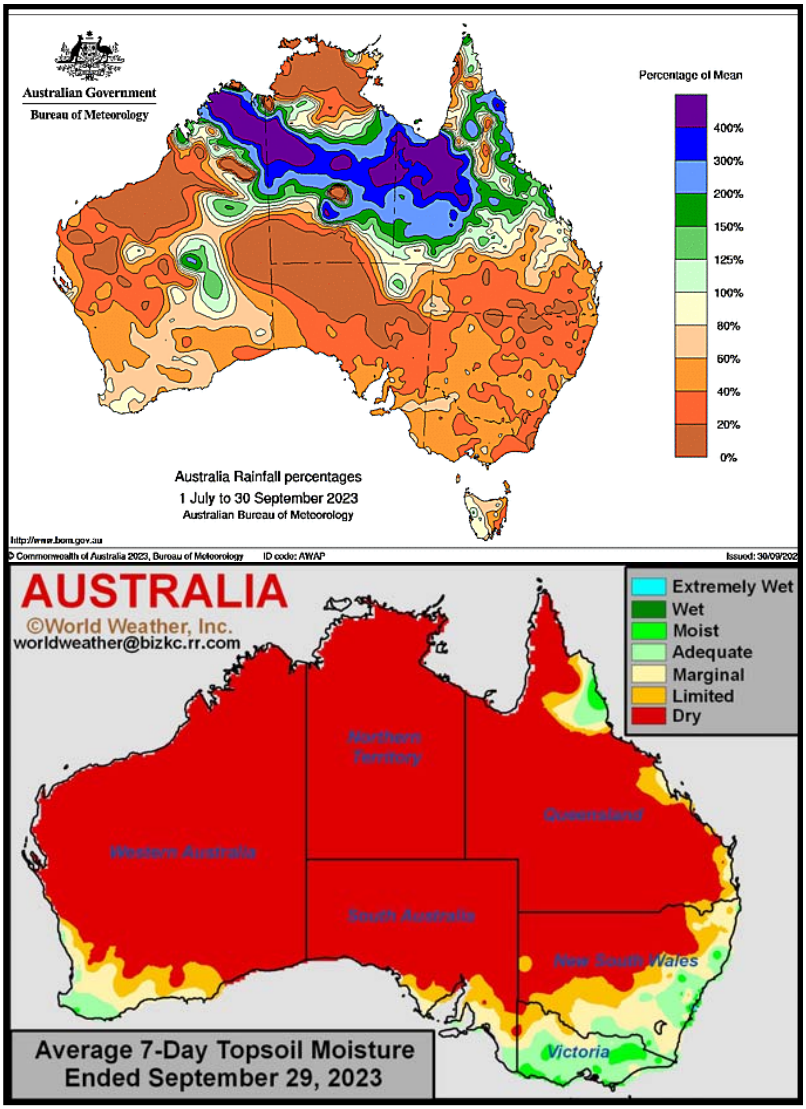
SE Australia To Get Needed Rain

Dryness continues to expand and intensify in Australia's winter crop areas as a pattern influenced by El Nino and a positive-phased Indian Ocean Dipole continues. Most production areas were either dry or only received light amounts of rain during the past week and temperatures were quite warm in some areas.

Queensland and northern New South Wales have already lost production in unirrigated areas because of dry and warm weather with limited soil moisture during reproduction. Other areas received timely precipitation over the winter before slowly drying down in recent weeks as rainfall decreased.

A strong frontal boundary is set to bring rain to Victoria and New South Wales this week that should bring some of the best rainfall this season. Eastern Victoria and southeastern New South Wales will likely receive the greatest amount of rain with totals ranging from 1.50 to 4.00 inches and locally more, although most of this will fall in the mountains and non-agricultural areas.

Central Victoria and the remaining locations in southern New South Wales into central and east-central New South Wales will receive 0.50 to 2.00 inches of rain and locally more. The greatest rainfall in these areas will be up against the western slopes of the Great Dividing Range. Other areas in New South Wales, Victoria, South Australia, Western Australia, and southern fringes of Queensland will receive 0.10 to 0.75 inch of rain with most of the greater amounts near the southern coast. Areas farther north in Queensland will remain dry or mostly dry. Although a few light showers may linger in eastern Australia later this week, drier than normal conditions will likely return to the main production areas October 6 – 12.



The week's rain event could be one of the most important events for New South Wales this spring. Support for the rain event comes from the positive-phase of Antarctic Oscillation and such occurrences are rare during El Nino events suggesting drier-biased conditions will return later this spring. The rain will help support better crop growth and development for a little while depending on how much hot weather evolves after the rain. Victoria is the one state in Australia that is expected to yield well this year because of its adequate moisture profile and the prospects for additional rain to fall periodically throughout the spring.

The coming week of rain will be limited in western portions of South Australia and southern Western Australia and net drying is slated for most locations. Short-term development conditions will remain favorable because of adequate topsoil moisture while long-term prospects remain less than ideal due to anticipated net drying. Queensland and far northern New South Wales will continue to see poor conditions for winter wheat and barley and there is growing concern over the planting of spring and summer crops in unirrigated areas.

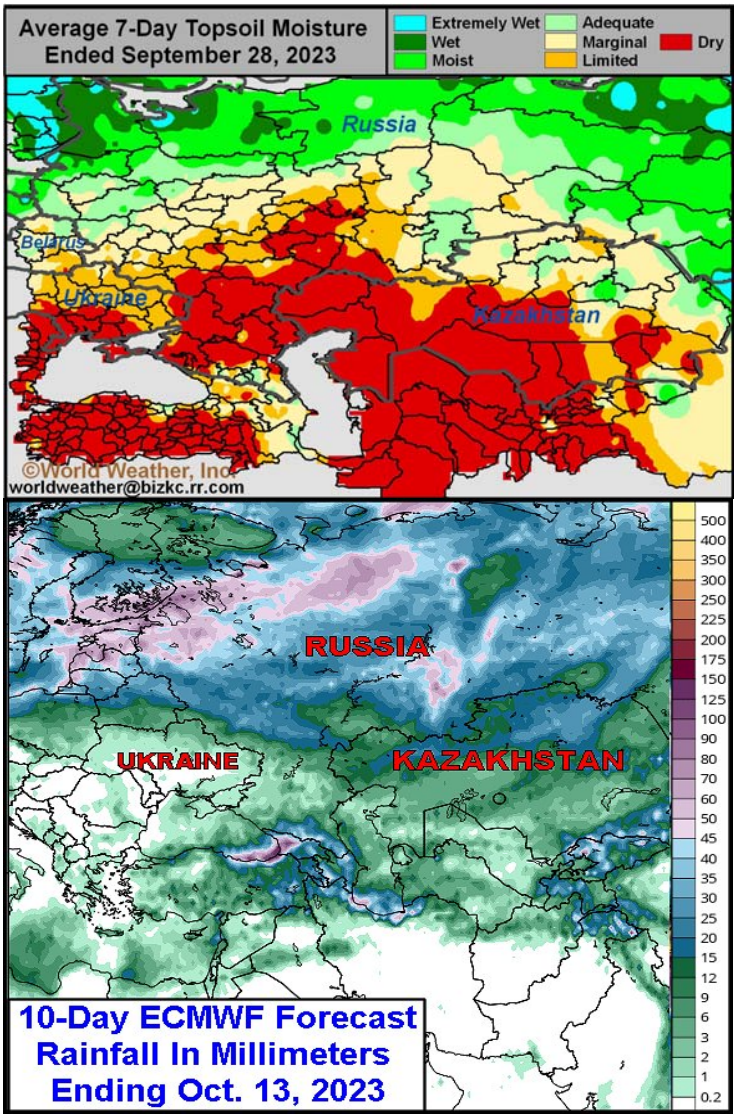
Southern Russia, Ukraine Too Dry For Wheat

Soil moisture is generally short to critically short from Russia's Southern Region and western Kazakhstan into much of eastern and southern Ukraine, the Volga River Basin, and portions of the Ural Mountains region. Other locations in Ukraine, along with northern Kazakhstan and the eastern New Lands, have adequate to marginally adequate moisture. Western Russia generally has adequate moisture.

Harvesting of summer grain and oilseeds is winding down in a large section of Russia. As of September 26, approximately 85% of the spring wheat was harvested in Russia. Significant harvest progress was likely made in the past week due to the lack of rain and warm weather. Periods of drier weather will be needed in the coming days to maintain favorable late-season harvesting.

Planting of the 2024 winter wheat, barley, rapeseed, and rye is ongoing in the western CIS. Establishment and early-season development conditions deteriorated across the main production areas in recent weeks as dryness expanded and intensified. The need for rain is increasing significantly in order to improve establishment before the ground freezes over. While there is still time for better rainfall in the coming weeks, abundant precipitation will be needed to completely fix the moisture deficits.

Some showers will push through a part of the grain and oilseed production region in the western Commonwealth of Independent States (CIS) over the coming week. The precipitation that results will be very light varying from a trace to 0.50 inch through Saturday. That is not likely to be of much use for some crops especially since the driest areas will not be seeing much of the precipitation. A better distribution of rain is possible late in this coming weekend and into next week. The rain will likely stay to the north of Ukraine and southern portions of Russia's Southern Region. These areas are already running short to very short on soil moisture and without rain soon winter crops might not be adequately established prior to winter dormancy.



Poorly established winter wheat, rye, barley and rapeseed can have a higher risk for winterkill if crops fail to establish well prior to the heart of winter when threatening cold conditions can occur. The situation this year is similar to that of 2019 and 2020 in which dryness dominated the autumn planting season. However, in both cases the growing season was extended late enough that when rain finally fell in late October and November there was sufficient time for crops to establish somewhat before dormancy set in. Temperatures in the following weeks and months were not threatening to the late planted crops and both Russia and Ukraine produced favorably in those years.

Years ago winter crops in Ukraine would turn dormant in late October, but that has not occurred for a while and if this year can be like those of 2019 and 2020 and stay warm longer than usual with no threatening cold the winter crops will have some favorable production potential. The situation, though, must be closely monitored because of the risk that exists if crops are not well established and temperatures turn bitterly cold without snow cover.