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The Canadian Agriculture Weather Prognosticator

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World Weather At A Glance

- Europe drought stands out as the most damaging event of the Northern Hemisphere summer growing season
- Relief is coming to Europe this week
- Many Russia areas have dried out which is good for summer crops, but not so great for winter wheat establishment
- China's Yangtze River Basin drought has been most serious to its rice crop rather than corn, soybeans or groundnuts
- India's monsoon is finishing more normally, but the impact of adversity this summer is still being assessed with too much rain in central areas and not enough in the northeast
- Australia has entered spring with moisture abundance and early season crop growth is off to a great start
- Western Argentina is still too dry
- U.S. Plains are too dry for wheat planting

Frost, Freezes Sep. 9-12 Or Sep. 18-22????

La Nina continues to dominate the world scene. Its influence on Canada during the summer season is normally not very direct, but its impact on the United States is usually more significant and Canada experiences some indirect influences.

La Nina's dominance in September proposes to leave our air across the Prairies drier than usual. Yes, there will be some rainfall, but in general the month should be drier biased with low relative humidity and a potential for temperatures to fall quickly in response to the drier biased conditions.

Two periods in this month will be favored for frost and freezes in at least portions of the Prairies. The first is just a week away, occurring September 9-12. The second more favored period for cold in the Prairies will be Sep. 18-22.

Producers from across the Prairies have reported highly varying degrees of crop maturity in recent weeks. The one region that seems to have the greatest need for a lengthy delay to the first frost and freeze event is Manitoba and a few east-central Saskatchewan locations. These are the areas where spring planting was most delayed because of wet and cold weather. Enough warm weather has occurred recently to accelerate crop development, but many crops in these two areas are still behind their usual maturity rate and could be harmed in a normal frost or freeze event which could happen next weekend.

La Nina does tend to provide a warmer bias to temperatures in the early autumn. However, a warm bias does not rule out a brief surge of colder than usual air. In fact, many La Nina events—especially those that have lasted multiple years—have tended to produce relatively normal frost and freeze events in the Prairies.

Now for northern Alberta it is already too late for a "normal" first frost and freeze event, but for the heart of the Prairies that is not true and if frost and freezes were to occur in portions of the Prairies there would be "some" potential for damage. No widespread huge loss in crop production is expected, though, due to the fact that the coldest air will not necessarily settle into the most immature crop areas. Some of the coldest conditions will occur in the heart of the Prairies over Saskatchewan where central and southwestern crops are more advanced because of the warm dry weather of late and the limited rainfall pattern that dominated the second half of summer. For some crop areas dryness has been present most of the growing season.

Help in supporting a cold surge a week from now is actually going to come from a Typhoon that is not far from Taiwan and southeastern China today (Sep. 3). That typhoon is a very large storm and it will move through the East China Sea this weekend and then across South Korea Monday and Tuesday before merging with a mid-latitude storm system over the northwestern Pacific Ocean during midweek next week.

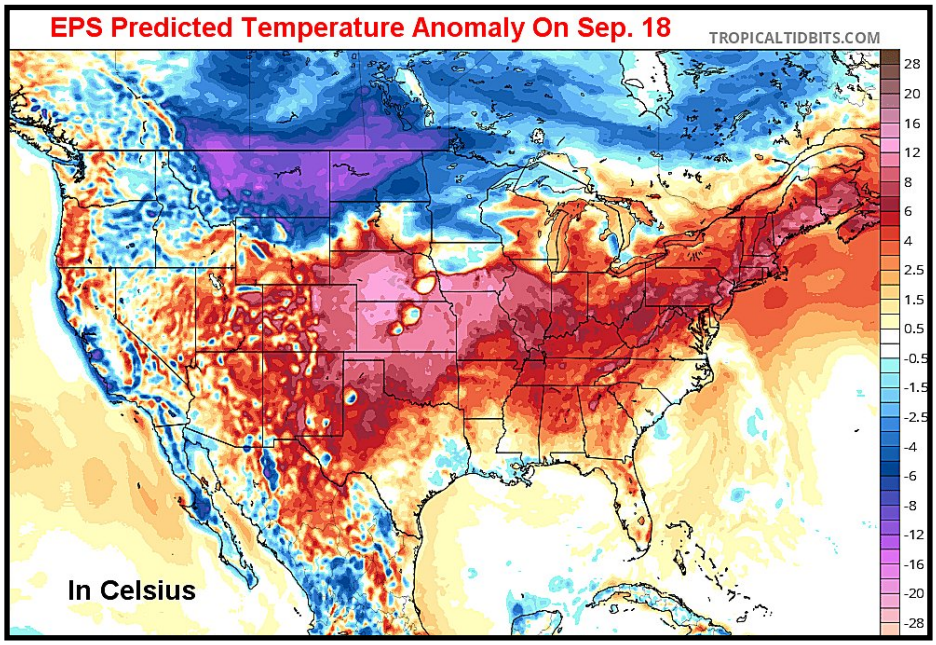
The merging of the typhoon remnants and the mid-latitude trough of low pressure will create a large storm system near the Aleutian Islands. An atmospheric response to the big storm will be to build a ridge of high pressure over the Gulf of Alas-

Canada Prairies Drying; Crop Stress Rising (continued from page 1)

ka forcing cool arctic air southward from northern Canada into the Prairies a week from now.

This kind of cold surge induced by a tropical cyclone in the western Pacific normally occurs in late September and/or October and it is a little early in the autumn season for this scenario to work as well as it usually does. For that reason cooling is expected a week from now, but it is unclear how significant the cool off will be.

Very low humidity is present across the Prairies this week. You should have noticed that during most days in this past week with very warm to hot afternoons and mild to cool nights. Temperature extremes ranged from the upper 30s Celsius in west-central and southern parts Saskatchewan Wednesday afternoon only to be followed by extreme low temperatures Friday in the range of +2 to +5. It was almost cool enough for frost this week in areas that peaked in temperature around 38 just 36 hours earlier.



The cool airmass present late this week was not that cold. However, the dry air allowed temperatures to fall precipitously. A similar scenario is possible late next week, but this time the atmosphere may cool quicker because of the influence of the typhoon that is moving northward in the western Pacific Ocean today.

There are no guarantees, but the odds favor at least frost in the Sep. 9-12 period in a part of the Prairies. If the typhoon remains strong enough for a long enough period of time it could get notably colder. However, because of the early date on the calendar World Weather, Inc. believes the typhoon will moderate rapidly leaving its influence on North America's cold shot next week a little subdued. Frost is still expected with a few light freezes, but a hard killing frost or freeze seems doubtful without the storm being stronger when it gets into the higher latitudes. Nonetheless, frost and a few freezes are expected.

The cold air that comes southward from northern Canada is also expected to moderate quickly because temperatures preceding the event will be in the upper 20s and 30s across most of the Prairies. Without a stronger insurgence of cold coming southward (from a stronger typhoon) the airmass will only be cold for a quick morning or two and then warmer air will return.

The moderation of this first shot of cold will help to hold temperatures above freezing for some areas a little longer buying a few more days of maturation time for some of the more immature crops in the Prairies.

Even though temperatures will warm back up after the brief bout of coolness in the Sep. 9-12 period another round of cooling is expected later this month that will return a better chance for frost and some freezes. Sep. 18-22 should be the next more favored period for threatening cold.

If there is no frost or freeze event in the more immature crop areas of Manitoba and eastern Saskatchewan until Sep. 18 the majority of crops will most likely not have a serious negative impact from the cold.

This article has focused mostly on Manitoba and eastern Saskatchewan for immature crops; however, there are some areas in Alberta that also need an extended growing season to protect damage from frost or freezes.

Some areas in northern and western Alberta were wet and mild during a large part of the growing season and crop maturation may not be complete in those areas either. Cool weather coming up could be a threat for those areas as well, but loss potentials may be higher for late season canola, flax, corn and soybeans in the eastern Prairies and in the far western parts of the Prairies.

As of this writing on Sep. 3, World Weather, believes the period from Sep. 18-22 will be coldest and that whatever chill gets into the air next weekend, Sep. 9 -12, is likely to be of short duration and maybe just limited enough to induce the least amount of crop damage. Some impact will occur next week, but loss potentials should be held low.

August Trends Drier, Warmer Improving Harvest Outlook

Rainfall in August was a little too much once again in southern Manitoba and a part of east-central Saskatchewan as well as some southwestern Alberta locations. Most of the moisture abundance occurred early in the month, though. Much-needed drying occurred in these wetter areas during the second half of the month bringing a better environment for drying fields, maturing crops and favoring early season harvest progress.

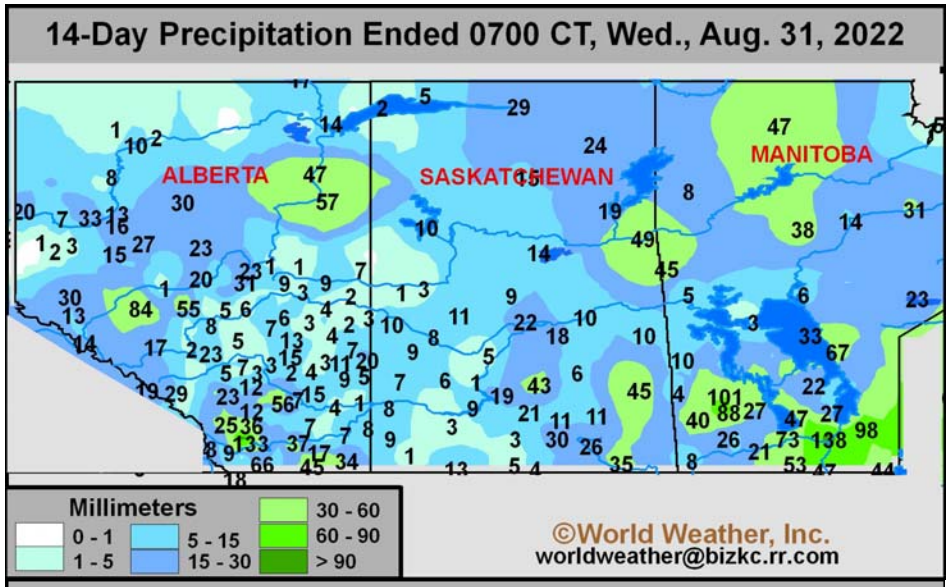
The largest below-normal rainfall anomalies in August were found in west-central, southwestern and central Saskatchewan and a few eastern Alberta areas. The second half of the month was driest and warmest.

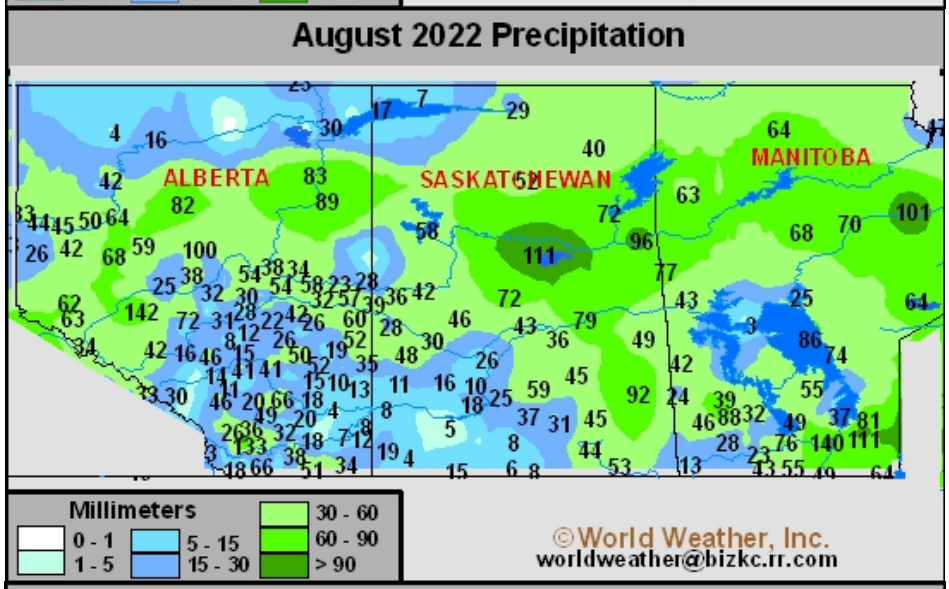
Moisture stress in the drier areas accelerated crop maturation and promoted quick harvest progress, but only at the expense of yields. Many of the drier biased areas were also drier biased in July and had it not been for greater precipitation earlier in the growing season, 2022 would have been another poor production year. It was still poor for some producers, but the majority of the Prairies ended the season much better than in 2021.

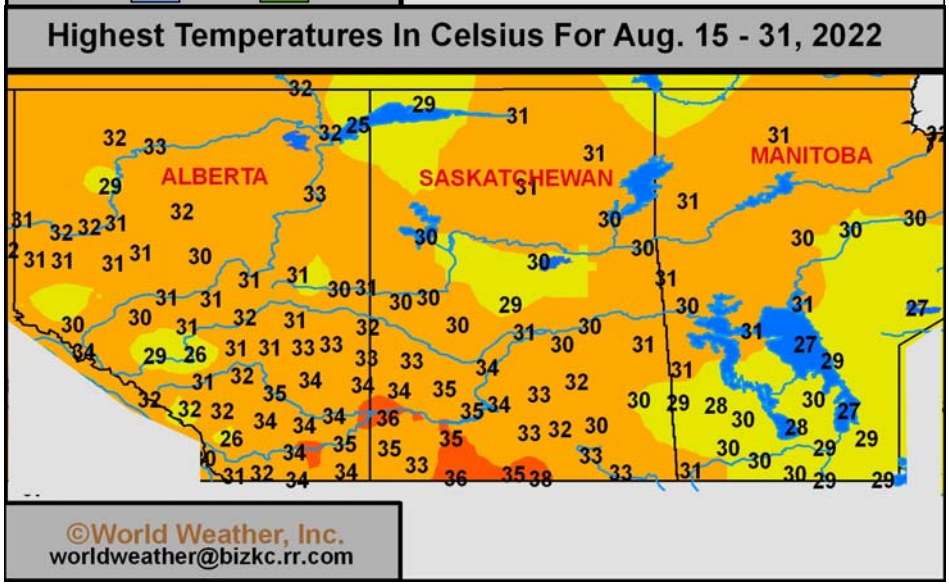
Even though it was a better production year there is still worry over rainfall for the balance of the frost free period. A notable boost in rainfall will have to occur before the ground freezes up in the driest areas to leave hope for a successful start to spring 2023. Some producers want to delay any rainy weather until harvesting is complete and then bring on the rain.

Continued La Nina conditions this autumn should leave the ground open and free of frost for several more weeks, but at some point significant rain will have to occur to get some favorable moisture in the ground.

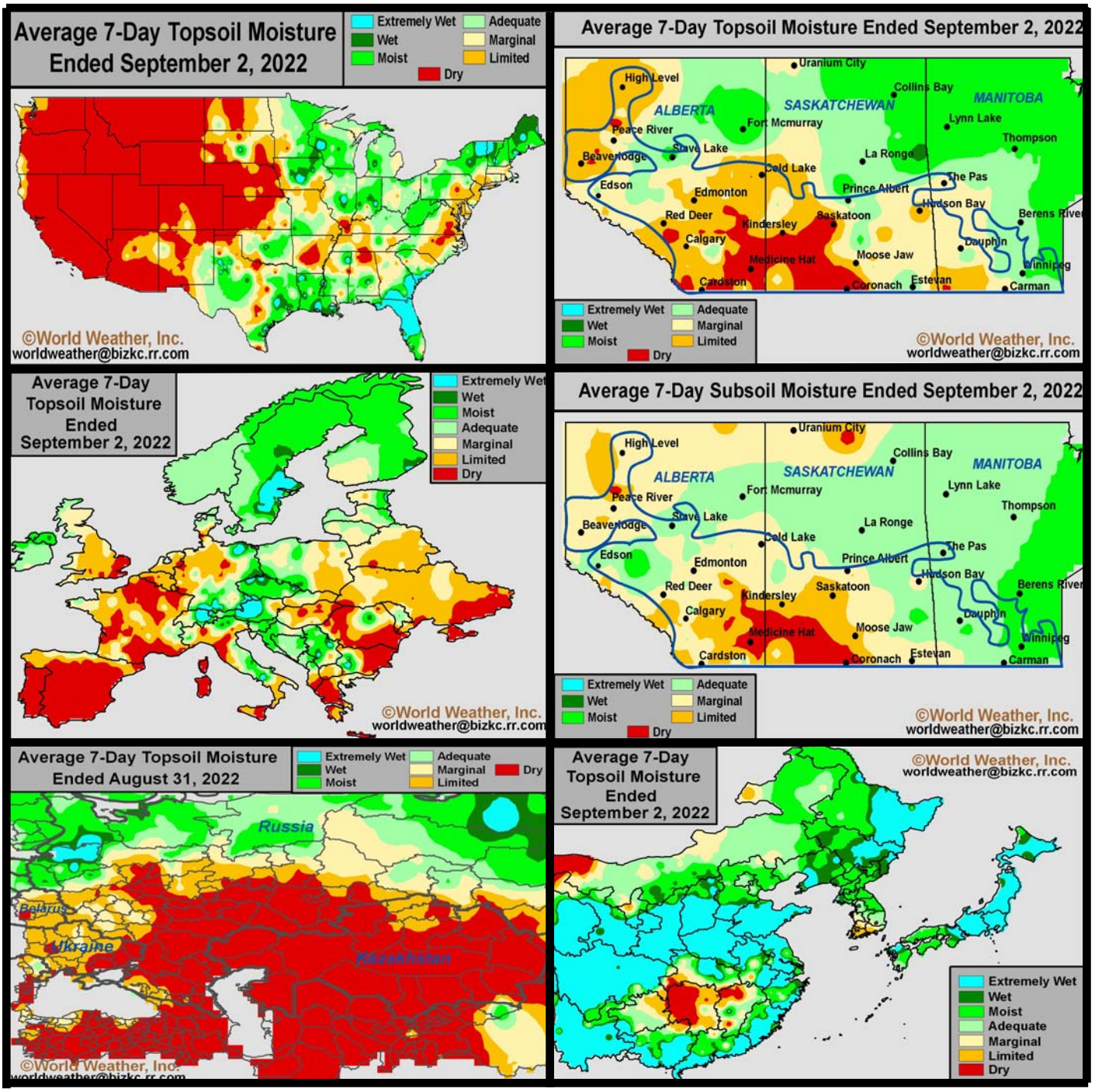
Manitoba, portions of eastern Saskatchewan, western and northern Alberta have very little need for moisture because of a favorably wet growing season, but other areas need more moisture.







Selected Weather Images From Around The World



Evidence of multiple years of La Nina are showing up around the world. Western Argentina and northern Brazil are still carrying some moisture deficits from their summer and dryness is quite prevalent in Europe, western Asia and western portions of North America. In contrast, most of Indonesia, Malaysia, Philippines, the mainland areas of Southeast Asia, many areas in northern China, India and Australia are plenty wet. The most talked about drought in the past few weeks has been in China's Yangtze River Basin, but that dryness is a rice problem and not a grain or oilseed production issue. Drought will prevail in that part of China for a while. Europe will get some rain this week to relieve summer drought, but little change is expected for a while in North America. The former Soviet Union will experience some improved soil moisture which is a must since it is winter wheat and rye planting season. Without moisture improvements in Europe, the CIS and western North America winter wheat might not establish well.

Favorable Harvest Weather To Continue

Weather conditions this autumn are expected to favor crop maturation and harvest progress. Rain is unlikely to occur abundantly and temperatures will be warm biased. The combination of these two features should translate into few delays of significance in the gathering of this year's crops.

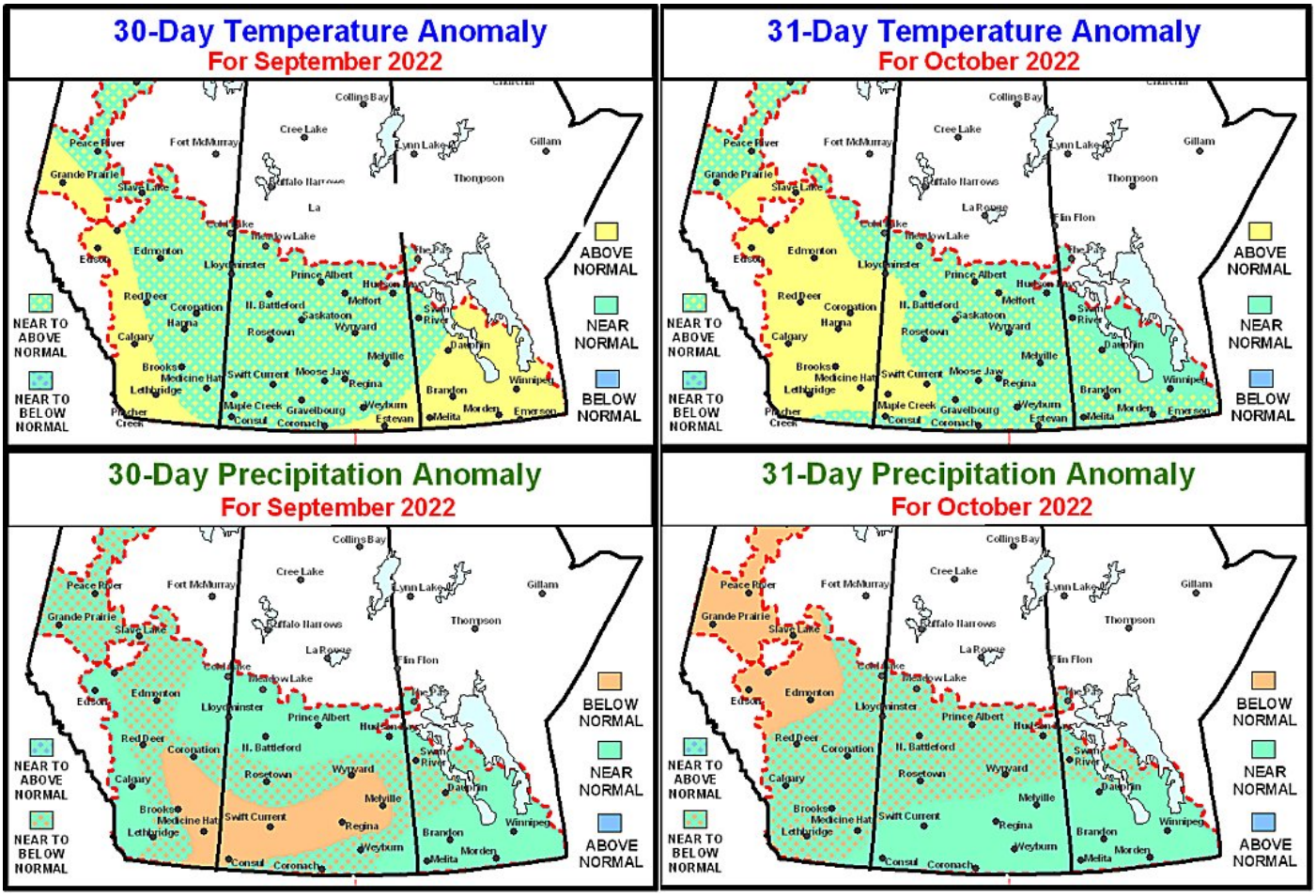
September will be warmer than usual, although the two periods of mild to cool weather noted in the page one article will pull back the temperatures at times leaving near to above normal readings for much of the Prairies. The period Sep. 17-24 may be a little cooler biased, but the remainder of this month should be mostly warm biased except for the brief bout of cooling predicted for next weekend.

Rainfall in September will be lightest and most infrequent in most of Saskatchewan excluding the north and far southeast where rain totals may be closest to normal. A few areas along the front range of mountains in Alberta will also receive a near normal amount of moisture along with far northeastern Alberta. The most anomalously dry conditions are still expected in the drought region of east-central and southeastern Alberta and west-central, southwestern and central parts of Saskatchewan. Some east-central Saskatchewan areas will also be drier than usual during the balance of this month.

October weather is expected to get a little better with normal precipitation in the southeastern half of the Prairies, but it will likely continue to be drier than usual in the northwest especially from the Peace River Region through the Swan Hills to the Edmonton region. Rainfall elsewhere is expected to be near to below normal

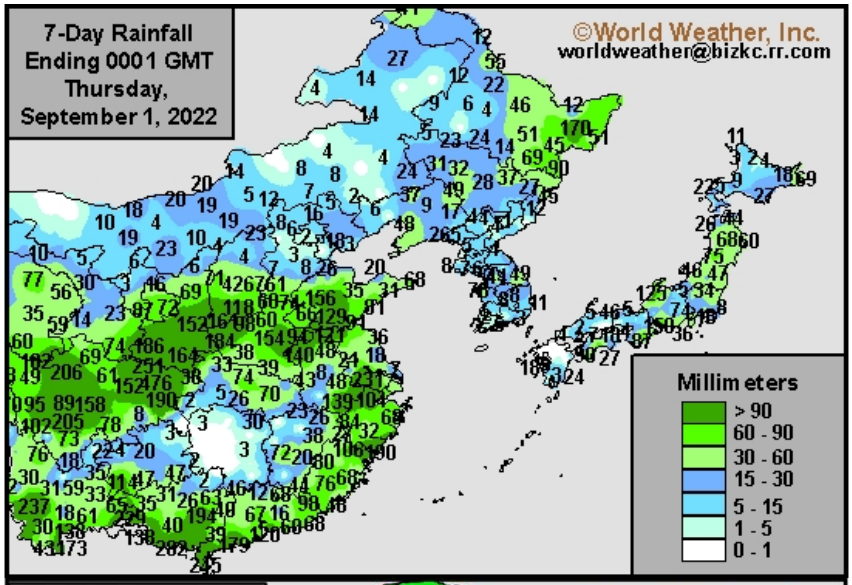
October could trend wetter than anticipated and a close watch on the trends is warranted later this month to get an early indication of the possible change. La Nina dominance does not usually allow much rain to fall, but quite often there is a little break early in the autumn before a high pressure ridge evolves over western Canada.

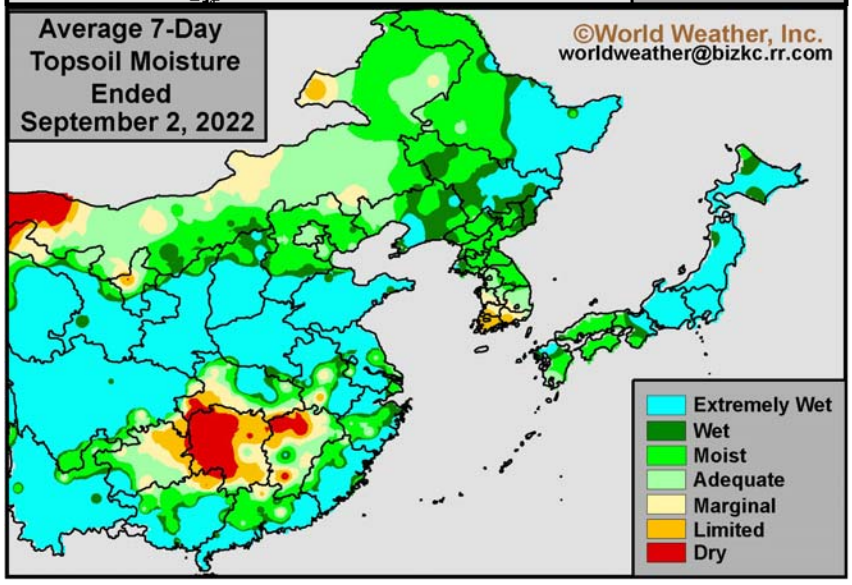
Warm water in the Gulf of Alaska this winter is going to perpetuate below normal precipitation in parts of the Prairies—especially away from the mountains. That will put more pressure on October precipitation to bolster topsoil moisture for use in the spring. Winter may also prove to the warm in the west and cool in the east with the most anomalously cool conditions coming early.



China's Yangtze River Basin Drought Area Shrinks

A large section of China from the Yangtze River Basin to the North China Plain will be drier than normal during the coming week. Some of the dryness will be attributed to Super Typhoon Hinnamnor as the disturbance slowly passes across the western Pacific Ocean and East China Sea through early next week. The disturbance will generate some significant rain in Zhejiang and southern Jiangsu, though crop impacts will be minimal. The environment will otherwise remain less than favorable to poor for crops in the Yangtze River Basin where drought is prevailing. Production is expected to be below or well below normal in the Yangtze Basin because of drought and excessive heat. Rice will be the most adversely impacted crop, although some grain and oilseed crops will also be impacted. In the meantime, the remaining production areas in the nation will have plenty of moisture to maintain aggressive growth despite the drying trend.





The area of drought in the Yangtze River Basin was reduced in size during this past week when significant rain developed on the northern side of the driest region. Some of the most significant rain fell in northeastern Sichuan which had been one of the hottest and driest areas in recent weeks. Rainfall in that region ranged from 3.00 to 10.00 inches with one location reporting 18.74 inches for the seven days ending Thursday morning. Some flooding likely occurred. Other areas in the northern Yangtze Basin reported rainfall of 0.30 to 1.50 inches and local totals to 3.00 inches. Another area of greater rain fell in southern Jiangsu, southern Anhui and northern Zhejiang where 2.00 to 5.47 inches resulted.

The areas of greater rain in northern and eastern parts of the Yangtze Basin helped shrink the driest area down to the region from northern Guizhou and western Hubei through Hunan to northern Guangxi and western parts of both Jiangxi and southern Anhui.

This past week's rain reduced the drought region by a little more than 30%. Top and subsoil moisture was still rated very short from western Hubei, extreme eastern Sichuan and northern Guizhou to Jiangxi and a few immediate bordering areas. Soil conditions in most other areas in the nation are rated quite favorably with some pockets of excessive rain resulting in some flooding.

Rice and a few other crops produced in the Yangtze River Basin will see lower than normal production this season due to the drought and heat wave that occurred earlier in the summer. While assessments are still ongoing, rice will likely see some of the largest production decreases in Hubei, Hunan, and neighboring areas where many paddies have not seen much relief from the dryness in recent days. In contrast, some of the flooding rain that occurred in the past week may have induced some of its own damage, especially in northeastern Sichuan.

A large section of China will see drier than normal weather during the coming week. The lack of rain will initially be attributed to Super Typhoon Hinnamnor slowly tracking from the western Pacific Ocean into the East China Sea today into early next week. Spotty rain will still occur in areas from the Yangtze River Basin to the North China Plain. Portions of Zhejiang and southern Jiangsu will also re-

China's Yangtze Basin Drought Area Shrinks (continued from page 6)

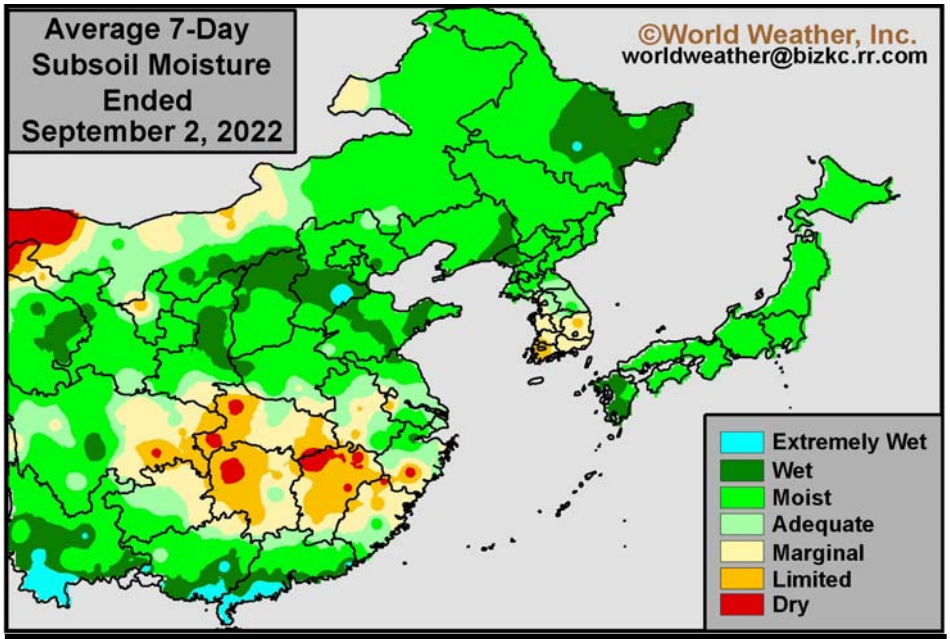
ceive rain this weekend as Super Typhoon Hinnamnor passes nearby. Drier biased conditions will persist Tuesday and Wednesday as the disturbance shifts away from the country, though portions of Northeast China will still receive rain.

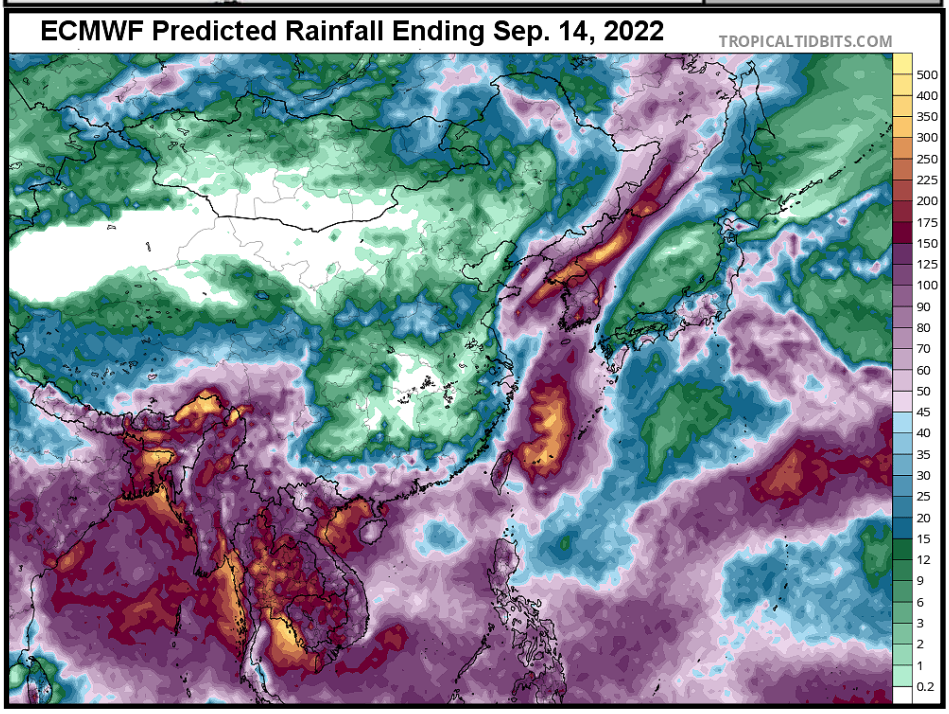
Several areas in Zhejiang and southern Jiangsu will receive 0.75 to 4.00 inches of rain with local amounts of 7.00 inches or more by next Friday with much of the rain occurring this weekend and early Monday. Heilongjiang and northeastern Inner Mongolia will receive 0.50 to 3.00 inches of rain with local amounts of 5.00 inches or more. Several areas in Yunnan and locations near the southern coastline will receive 0.50 to 2.00 inches of rain while the remaining crop areas will not receive enough rain to counter evaporation or impact long-term soil conditions.

Aggressive drying is slated for much of China through the end of next week. The fields that are already dry in the Yangtze River Basin will see late-season development conditions deteriorate further. Other locations in the Yangtze River Basin will have some moisture to support new growth, though production is still expected to be down. Maturation conditions will otherwise improve for the wettest areas in Sichuan, Zhejiang, and neighboring areas.

The environment will remain favorable for aggressive growth in the remaining portions of China through the end of next week despite the lack of rain. Most locations will have plenty of moisture to support new growth. Maturation and early-season harvest conditions will slowly improve as well once the ground firms.

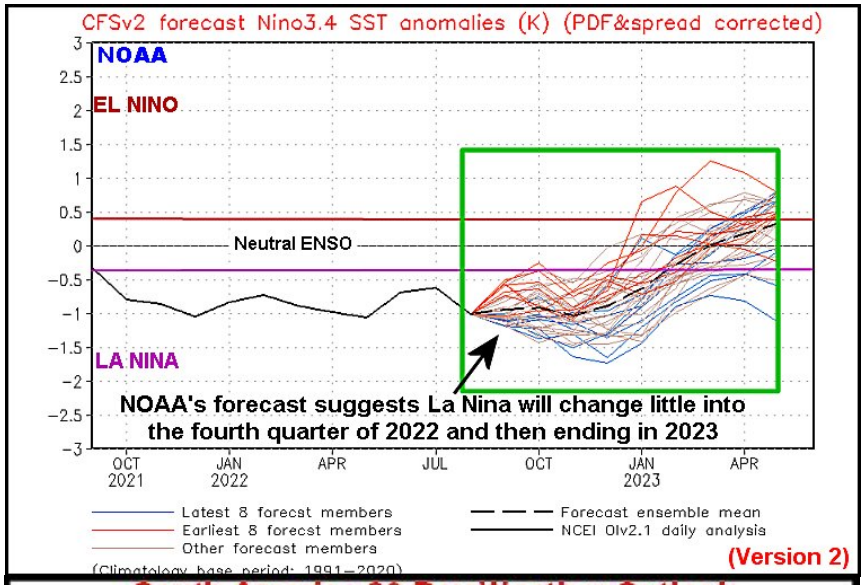
Winter wheat planting begins in the North China Plain later this month and continues in October. Today's soil moisture is favorable for wheat planting—if not a little too wet making the coming week of drying a good thing for getting fieldwork under way later this month. However, it will be important for timely rain to occur in October to ensure good establishment. In the meantime, northeastern China needs to dry down a little more to support crop maturation and harvest progress.

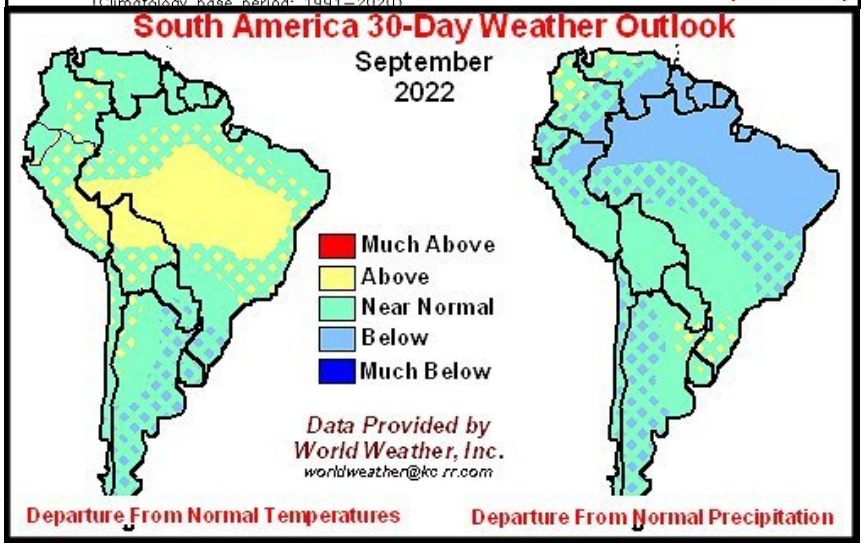




South America Spring Outlook 2022

Meteorological spring has arrived in South America. Some minor corn planting has already begun in parts of Brazil and some early season soybean planting can begin any time after September 15 – at least in Mato Grosso, Brazil's most important early season soybean and second season crop production state. That merits an update on the situation in South America and coming into the new growing season is going to be worrisome for producers and traders because of significant moisture deficits lingering from last summer and ongoing La Nina conditions. The outlook is not very good for October, but conditions may improve in November and December depending on the fate of La Nina.





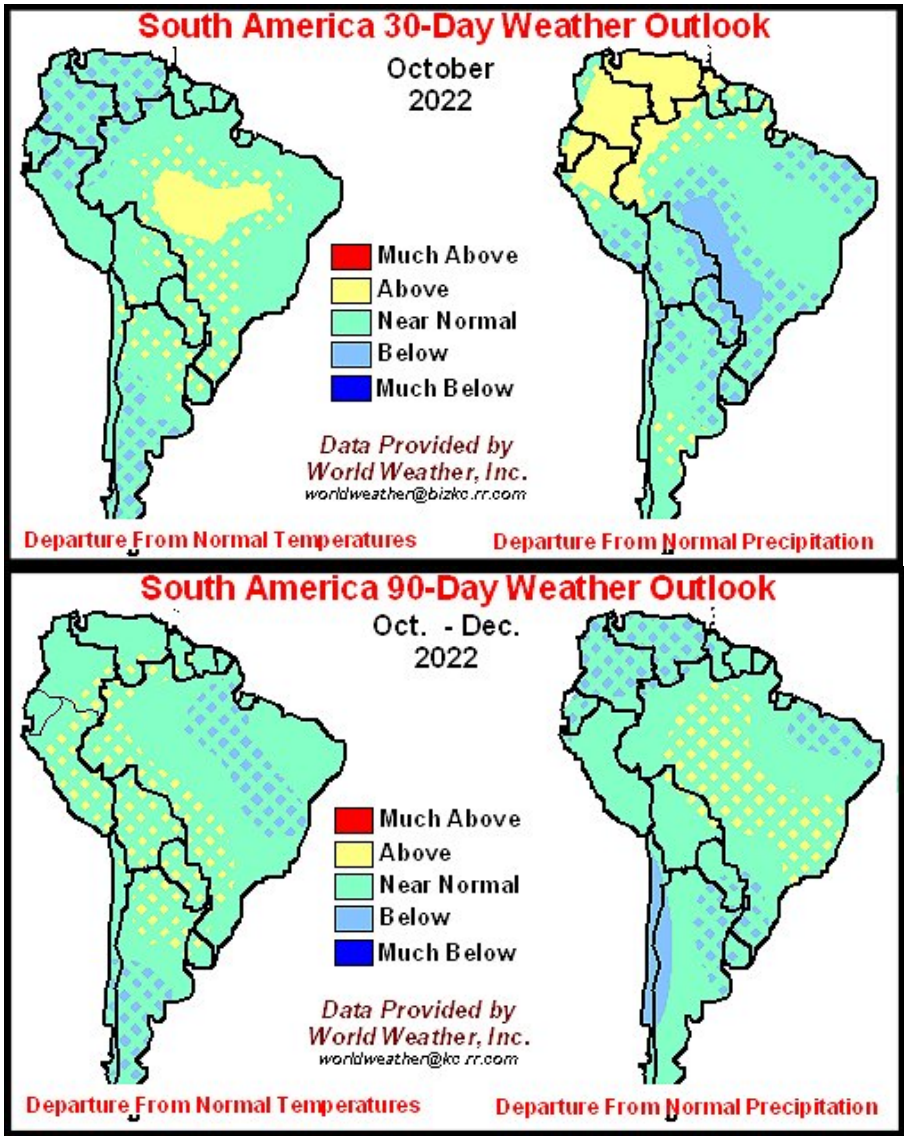
First, La Nina continues alive and well. The event is in its 25th month except for a short-term, 2-month, break that occurred briefly in the summer of 2021. Most La Nina events that have occurred in the post-solar minimum of this particular solar cycle have lasted no less than 29 months and as much as 36 months. December would be the 29th month and if we assume that this La Nina will be no sooner ending than those of the past then NOAA's (U.S. National Oceanic and Atmospheric Administration's) recent forecast for ENSO (El Nino/Southern Oscillation) keeping La Nina present through the fourth quarter is likely to verify. One has to wonder if there is much potential for La Nina to last deeper into 2023. For now, there is evidence that the event will steadily weaken in the fourth quarter, but if for some reason it lasts longer there would certainly be reason for concern about South America production for yet another growing season.

World Weather, Inc. has noted in past La Nina events that the period in which the phenomenon begins and ends is often the most significant in the sense of anomalous weather. In other words, some of the greatest anomalous precipitation associated with La Nina can occur when the event is just beginning and when it is ending. For South America that means dryness in eastern Argentina and southern and western Brazil tends to be most significant when the event is just beginning and in this case that was in the spring of 2020. If you recall seasonal rains were significantly delayed in the spring of 2020. Last year's spring rainfall occurred more normally, but rainfall was well below normal in southern Brazil during the bulk of the growing season from November into February.

La Nina events that are ending tend to allow greater amounts of rainfall to impact portions of South America especially if the event is ending quickly. That comment suggests that if NOAA's forecast is correct and La Nina will be quickly weakening in late November and December that rainfall may be improving during that period of time. (continued on page 9)

South America Spring Outlook 2022 (continued from page 8)

However, World Weather, Inc. believes with La Nina still strongly entrenched during September and October there is liable to be an issue with dryness once again in at least October. September rainfall is expected to be relatively normal, but October rainfall may be below normal from eastern Argentina through southern and center west Brazil; including a part of Paraguay. Northern parts of South America; including coffee, corn, sugarcane and other crop areas in Venezuela, Colombia and Ecuador could be notably wetter than usual at the same time.



The rainfall expected in October may be erratic and often lighter than usual and that could be a point of frustration for producers and traders. However, with rainfall in September being relatively close to normal the odds are good that early season planting of soybeans and corn should get under way relatively well. When the precipitation in October becomes lighter and more sporadic than usual it will slow down emergence, establishment and planting of soybeans and other crops. The slowdown will not be as great as that of 2020. It would not be surprising to see fieldwork advance slower than in 2021, but still notably better than in 2020, but only after a favorable progress rate in late September.

To complicate matters a little more some producers, traders and agronomists will be looking at the deep soil moisture profile and noting a general lack of subsoil moisture and poor groundwater in portions of Brazil and Argentina. Early spring rainfall is always of critical importance because the ground in center west and center south Brazil is normally quite dry and if early season rains are erratic and light early planted crops will struggle with moisture stress because there is no subsoil moisture to rely upon until the next rain occurs. The earlier-than- usual end to last summer's rainy season has left some significant moisture deficits behind and that will be a concern for deep-rooted crops like coffee and citrus trees, but the situation will be no more serious than usual for the short rooted crops because they are always starting spring too dry.

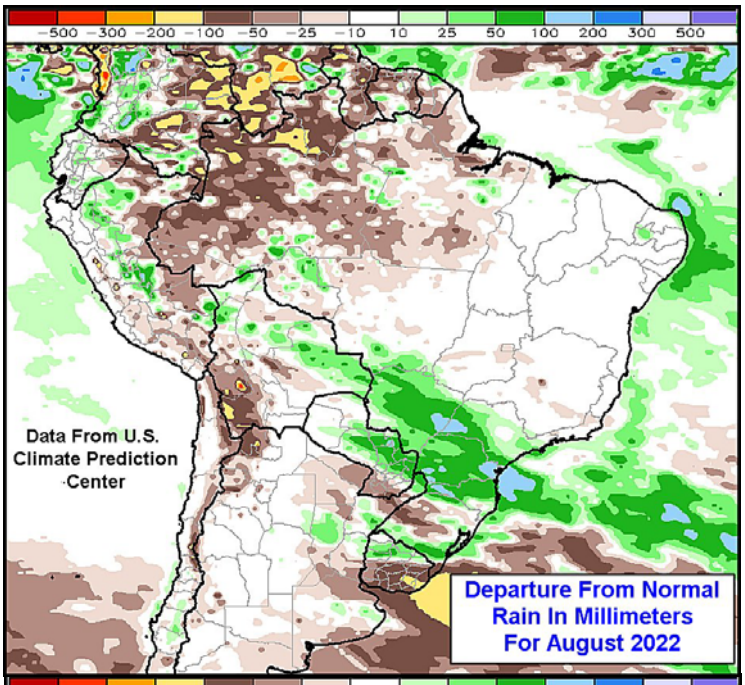
The erratic and poor distribution of rain in October must end in November to protect production potentials for many crops in eastern Argentina and southern and western Brazil. La Nina's weakening trend must get started as NOAA has suggested in order to offer hope of improved rainfall as quickly as possible. Most likely the improved rainfall is not going to evolve until later in November which may create a little more concern about crop health, although it will not be totally dry. (continued on page 10)

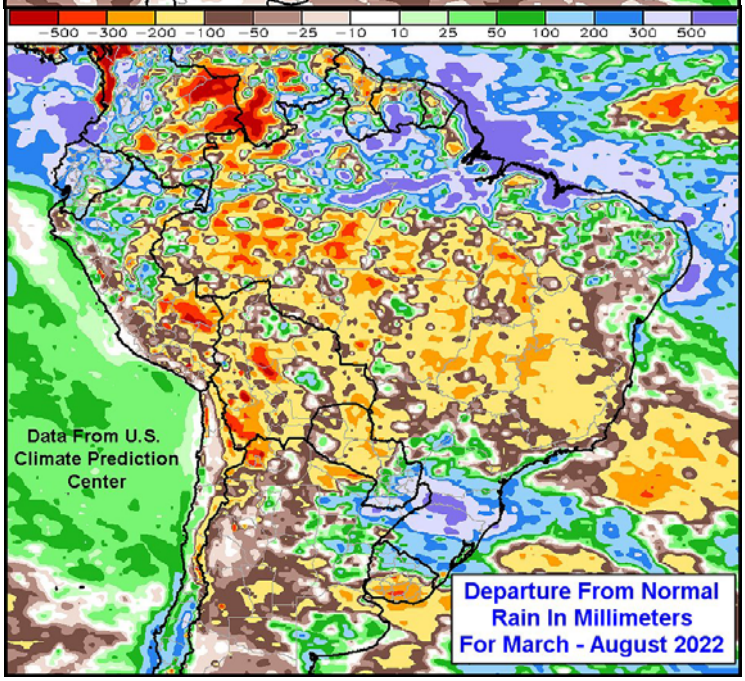
South America Spring Outlook 2022 (continued from page 9)

Weather in August was not nearly as anomalous as that of March through July. Eastern Argentina had the greatest deficits from normal along with Uruguay and some areas near and north of the Amazon River Basin. However, rainfall in August is never enough to bolster soil moisture and a normal month of rainfall will not and did not eliminate the huge moisture deficits that accrued during March through July.

November and December rainfall is expected to steadily improve across Brazil and Argentina. December will likely be the wetter month and even though La Nina should be winding down a shadow of its normal impact is expected with near to above normal rainfall occurring from Mato Grosso into Bahia, Minas Gerais and parts of Sao Paulo. There will also be a shadow of dryness still prevailing in southern Brazil and eastern Argentina during late November and December. However, there will be timeliness in rainfall across those areas and even though the rain might be a little lighter biased at times it should still be timely enough to support crops in a favorable manner.

Argentina weather over the next few months will start out stressful for wheat development in the west during September and for the planting of some summer crops in the region as well. Early season corn and sunseed from La Pampa and western Buenos Aires into Santa Fe will likely get off to a poor start for the third time in three years. Enough timely rain may occur to support wheat, but amounts may be a little too light for ideal conditions in some of the corn and sunseed areas.





Seasonal rainfall usually kicks in more favorably for Argentina soybeans in November and that should be the case again this year. A reversal in the pattern of wet in the east and dry in the west is expected during late October and early November so that eastern areas in Argentina are drier biased and the west trends wetter. The big difference in this year's spring weather and that of the past year is that rainfall in eastern Argentina will be timelier in November and December and the moisture deficits should be less significant allowing summer crop yields to creep higher.

The most important part of the spring and early summer forecast for South America this year is La Nina. Everything depends on La Nina diminishing in late November and December. If this diminishing trend occurs as advertised production will be better in 2022-23 than in 2021-22. If, however, La Nina lingers in a relatively significant manner into 2023 the potential for more dryness issues will rise. That makes the potential for revisions in this forecast relatively high a few weeks from now if it looks as though La Nina will linger longer.