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The Canadian Agriculture Weather Prognosticator

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WORLD WEATHER ISSUES

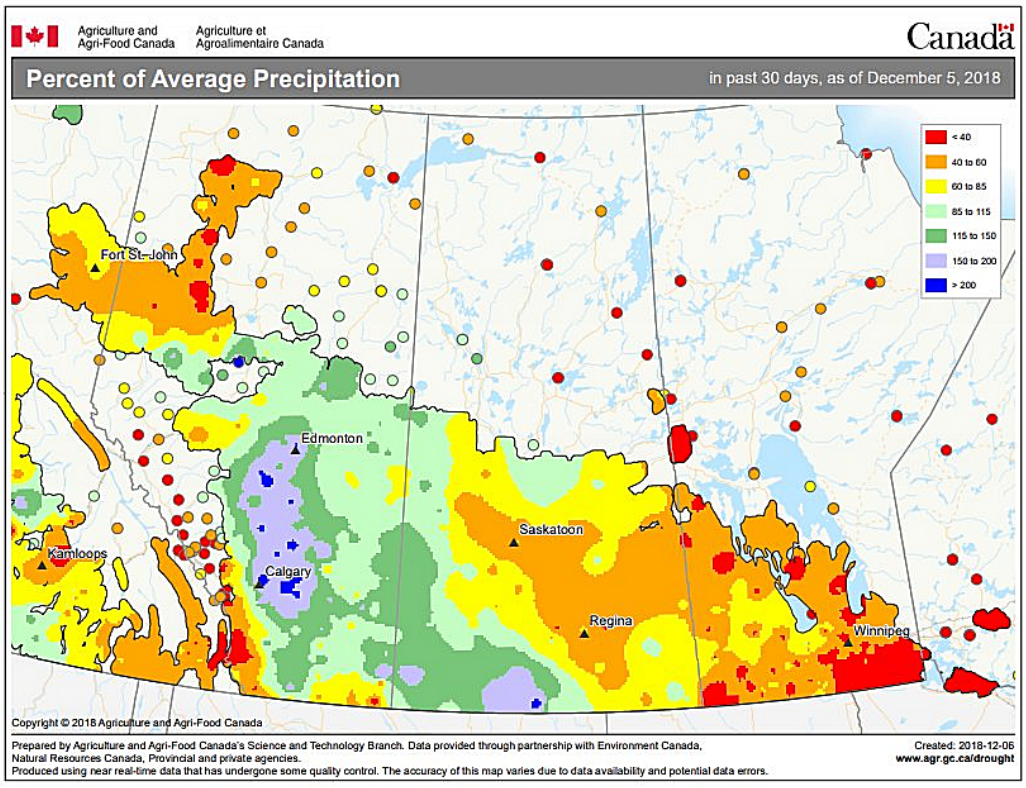
- Relief To Six Months of Drought Has Finally Reached Europe
- Drought Relief Also Reaches Eastern Ukraine, Western Kazakhstan And Southern Russia
- Eastern Australia, New Zealand, Indonesia, Malaysia And Parts of Philippines Were Wetter Biased In November While El Nino Was Developing. That Was Abnormal And Indicative Of The Weakness And Non-Traditional Behavior Of This Year's El Nino Event
- U.S. And SE Canada Weather Was Too Wet And Cold In November To Finish Summer Crop Harvesting; Winter Wheat Emergence and Planting Were Also Incomplete Because Of Weather
- Argentina and Brazil Weather Has Been Nearly Ideal So Far This Growing Season And Little Change Was Expected For A While
- South Africa Has Been Much Too Dry For Planting 2019 Crops In Some Areas And Dryness Will Prevail

November Weather In Review

Just enough improved weather occurred in November to support many producers across the Prairies in getting their crops harvested after it looked like there was going to be some significant crop left in the fields over the winter. The tribute needs to be put on to our amazing farmers in the Prairies because the window of opportunity for harvesting was never ideal and yet the job got done in most areas. Unfortunately for some, there is more harvesting left to be done, but on a Prairie-wide basis the November weather break was a Godsend and made a huge difference in how much crop will need to be harvested in the spring. Alberta was warmer biased during much of November, although it had a few impressive cold surges like other areas in the Prairies. The warmer bias helped firm the ground between precipitation events just enough to get fieldwork completed, but the environment was never ideal.

Precipitation in the eastern half of the Prairies was below or well below average in November and that was also extremely important after too many weather events and cool conditions in October.

The main focus for the Prairies will now shift to winter precipitation as many areas are still dealing with drought. The drought may linger into the spring for portions of Manitoba, Saskatchewan, and southern Alberta depending on the amount of



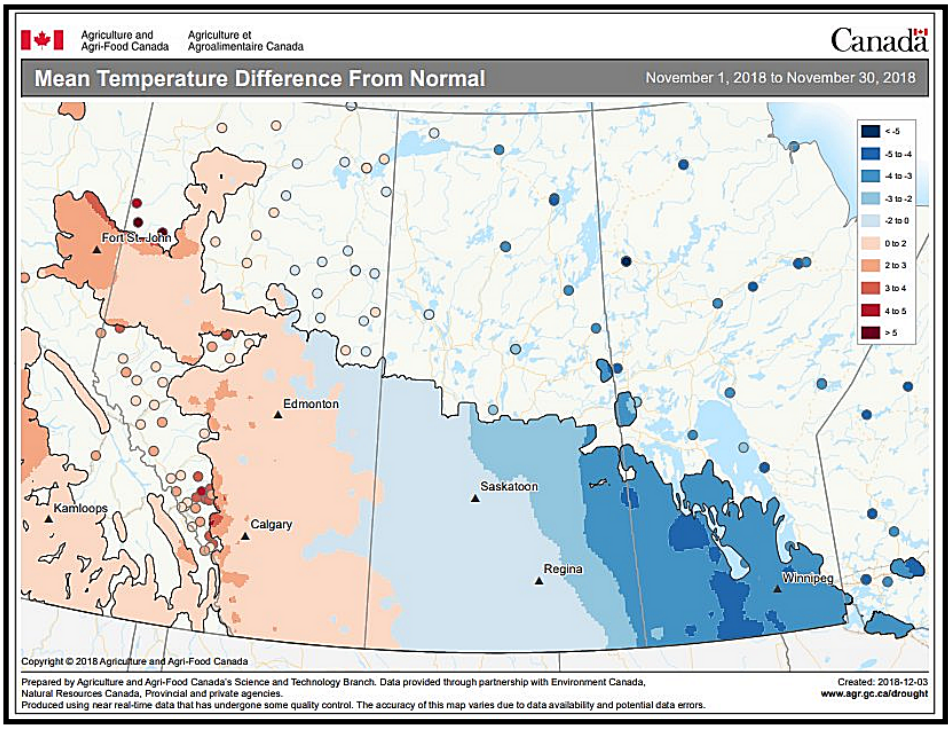
November Weather In Review (from page 1)

snow that occurs in winter.

Temperatures were variable across the Prairies in November. Manitoba and eastern sections of Saskatchewan were generally cooler biased with most areas seeing temperatures trend 2 to 4 degrees Celsius below average with pockets that saw temperatures 5 degrees below average. Western Alberta saw temperatures slightly above average while the remaining portions of Alberta and Saskatchewan reported temperatures that were near normal.

Precipitation varied across the Prairies during the past month as well. Northwest Alberta and a large portion of Manitoba through eastern, central, and northern Saskatchewan were drier biased during this time. Precipitation in the 30-day period ending December 5 was 40-85% of normal with several areas in Manitoba and pockets in northwestern Alberta receiving less than 40% of normal precipitation. Pockets in far southern and southwestern Alberta were also drier biased. Western and southern Saskatchewan into the remaining portions of Alberta received near to above normal precipitation. Several areas between Edmonton and Calgary, Alberta and pockets in southern Saskatchewan received 1.5 to more than 2 times' normal precipitation.

Long-term drought remains prevalent in a large portion of the Prairies. The lack of precipitation in the eastern Prairies probably did not change drought status because of the ground being frozen, but it certainly did not offer any improvement. Meanwhile, some of the wetter biased areas in November did have a chance to improve soil moisture when soil temperatures were warm, but many of the wetter areas in the west were already wet and did not need any more moisture. The Peace River region and portions of northern Alberta and Saskatchewan are the only areas that do not have some ongoing shortage of moisture.



The Prairies were generally covered in snow at the time of this report, but depths were very light from southern Alberta through south-central Saskatchewan where drought has been most persistent the past two years. Most other production areas have several centimeters of snow on the ground .

Wheat and other winter plantings were reduced this year by bad weather and the crop that did get planted was not well established which raises the potential for some winterkill if snow cover is not significant this winter during bouts of bitter cold.

Drier and warmer biased conditions are slated for the Prairies through the end of next week. A high-pressure ridge will settle over western North America through the end of the weekend and will help promote mostly dry weather. Only brief periods of light and erratic precipitation are slated for the Prairies next week once the ridge breaks down. Alternating periods of light precipitation and sunshine are then expected December 14 – 20 with temperatures alternating between near and above average.

Weak El Nino conditions are expected to prevail over the winter, which will have varying impacts on the Prairies. El Nino conditions can and usually do make the Prairies warmer than usual, but warm water in the Gulf of Alaska will help create an environment favoring a few impressive bouts of cold during the winter too.

The main concern in the coming weeks will be the lack of significant precipitation. Many areas in the western Prairies will warm enough to significantly reduce snowpack or completely melt the snow. Moisture from the melting snow is not expected to enter the soil and the snow-free winter crops may be susceptible to winterkill at times. There is still plenty of time for better precipitation later this winter. However, several areas will still be dealing with drought once the snow melts in the spring.

Rest Of December Will Be Quite Warm

A long-awaited break from the cold weather is finally kicking in across the Prairies. The remainder of December will be warmer than usual. There may be a late month insurgence of cold, but it will occur after a couple of warm weeks and that should leave us with a warmer biased month, especially in the west.

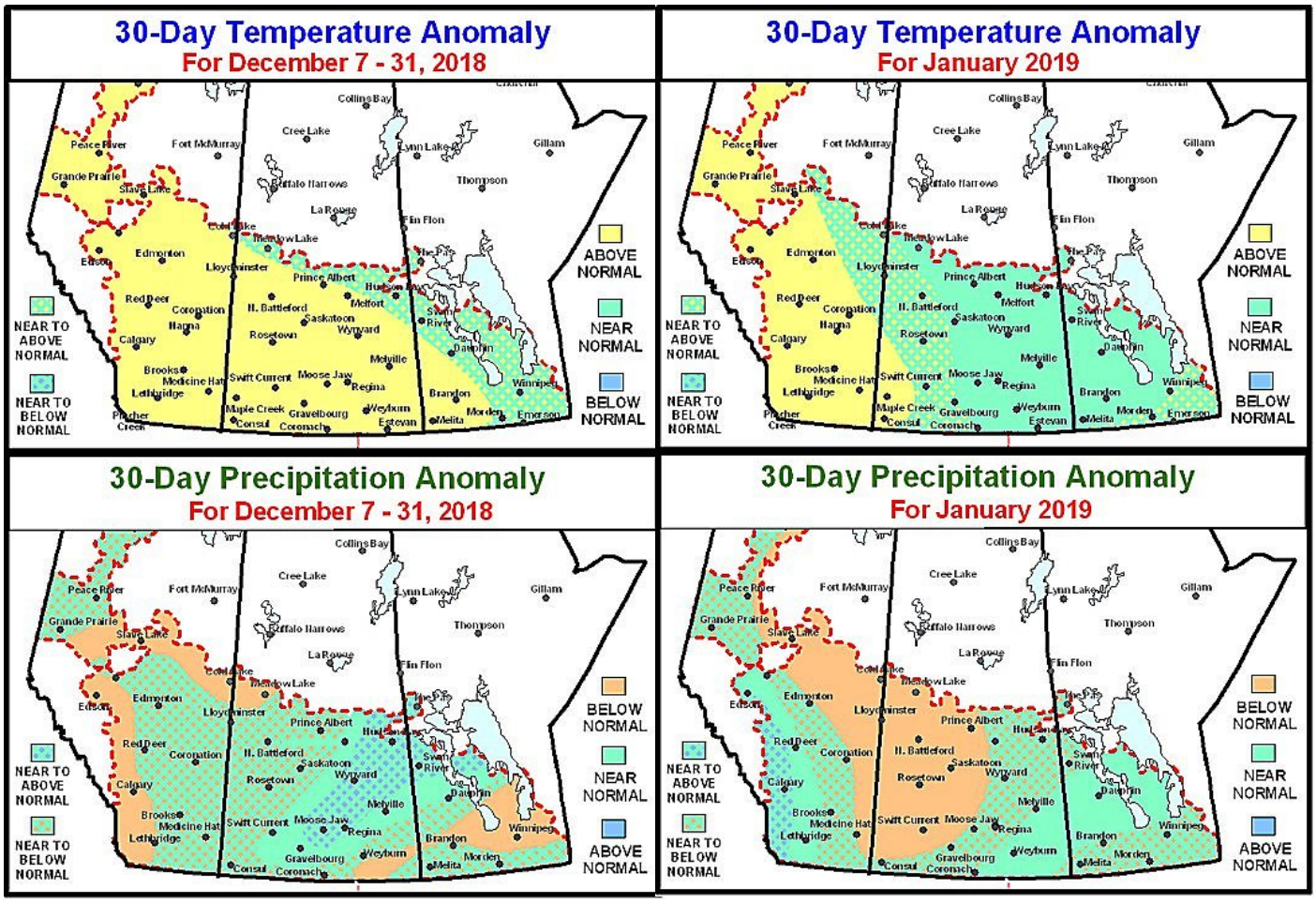
Temperatures have already been ebbing warmer than usual in the western Prairies in recent weeks and now it will spread east into Manitoba and eastern Saskatchewan.

The presence of warmer than usual ocean water in the Gulf of Alaska has had much influence on the Prairies' weather recently and it does not look like this feature is going away anytime soon. Because of that there will continue to be two branches of jet stream in North America. The northern branch will dominate our weather throughout the winter and the southern branch that will impact the United States. During October and November the northern branch of the jet stream was far more active and now that is changing with the southern branch becoming significant. As a result of this change, most of the storms that impact North America will pass to the south of the Prairies through much of winter.

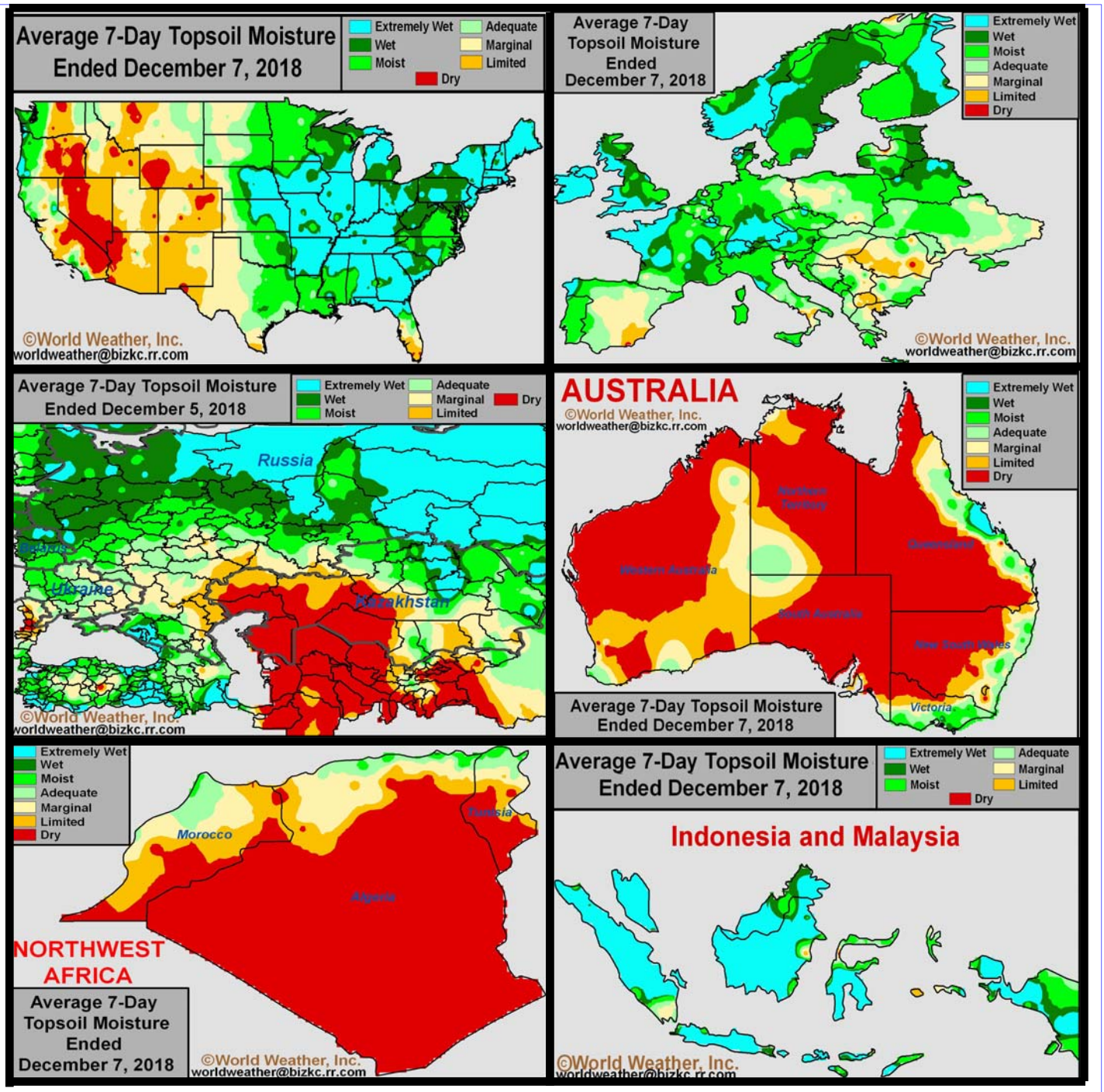
The more active southern branch of the jet stream will help push warmer air far to the north in the United States at times and some of that warm air will reach into the Prairies once in a while. However, every time the Northern branch of the jet stream becomes a little stronger we will have to endure a new surge of cold air and when the two air masses collide we are liable to receive some snow.

One of those colder surges of air may moving into the Prairies during late December and it will be at that time and that time only that a band of greater than usual precipitation will move across eastern Saskatchewan and northeastern Manitoba. The moisture for that precipitation will dissipate before getting all the way through the Prairies leaving most areas in a drier usual mode.

A similar scenario will occur in January and February. Because the southern branch of the jet stream will be the stronger branch most of the winter and because of El Nino conditions further evolving the bias for the Prairies will be warmer than usual temperatures and below average precipitation. Dryness will likely keep snow depths down and a little worry about early spring soil moisture will emerge for a third year in a row, but change is expected later in 2019 that should bring back the rain.



Selected Weather Images From Around The World



Frequent precipitation in the U.S. Midwest, Delta and southeastern states in recent weeks coupled with colder than usual temperatures has left the ground saturated. Additional storminess during the winter and spring will likely induce some flooding. In the meantime, late season farming activity has been delayed and drier weather is badly needed. Much better than expected rainfall has occurred in Indonesia, Malaysia and New Zealand in recent weeks, despite developing El Nino conditions. These areas are normally drier biased when El Nino is around. Eastern Australia has begun to dry down, too, but scattered showers and thunderstorms are likely next week and after mid-month to induce "localized" areas of improved soil and crop conditions. Both Europe and the Commonwealth of Independent States have seen their drought conditions eased in recent weeks. Europe topsoil moisture is much improved, but it came after many crops were dormant. Similar conditions occurred in southern Russia, eastern Ukraine and western Kazakhstan where crops were not well established prior to dormancy, but may improve in the spring.

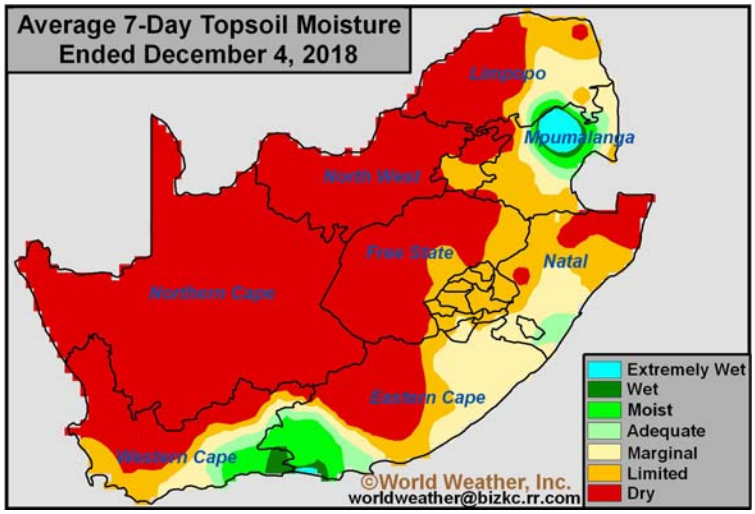
Western South Africa Facing Serious Dryness

Western grain, oilseeds and cotton production areas in South Africa have received very little rain of significance in recent weeks. Planting is behind the usual pace as a result of dryness and abundant rain is needed immediately to ensure the best production potentials possible. Many producers may not finish planting and the crops that are planted are not expected to establish well. Concern over potential production losses will steadily rise in coming weeks due to the drier biased environment continuing in many areas.

Eastern crop areas of South Africa have received sporadic rainfall in the past week with many crop areas in the region also quite dry. However, eastern crops have been planted more normally and recent bouts of rain have brought on favorable establishment, but rain must begin falling routinely to support normal crop development and production. Eastern South Africa will start getting rain more significantly over the next two to three weeks.

Precipitation was variable across South Africa during the past week. Portions of Limpopo and Mpumalanga reported 0.16 to 1.06 inches of rain with local amounts up to 1.97 inches near the border for the seven-day period ending this morning. Several areas in Natal, Free State and the eastern half of Eastern Cape received a trace to 0.75 inch of rain. Portions of Western Cape and southwest Eastern Cape received up to 0.28 inch of moisture while pockets in Northern Cape and eastern North West received a trace to 0.32 inch. Temperatures were often warmer biased with daytime highs peaking into the 80s and 90s Fahrenheit. Pockets in the south and east often warmed to the 70s while pockets in the north and northeast warmed above 100 degrees.

Northern Cape, Free State, North West, and western fringes of Mpumalanga and Limpopo are critically dry due to a lack of rain and periods of warmer weather in recent weeks. Much of the rain that occurred earlier this growing season was lost to evaporation, but crops did benefit from the moisture for a while. Other areas in eastern South Africa are not faring much better and have marginally adequate to very short soil moisture.



The only locations with adequate moisture are the pockets that received timely rain near the Mpumalanga and Limpopo border this past week.

Planting is well behind the usual pace in western production areas in Northern Cape, Free State, and North West due to the extended period of dryness. These areas represent over half of the cotton and a large portion of corn and sunseed produced in South Africa. Central Free State and North West also produce a small amount of soybeans. Crops that were planted earlier have established poorly and are stressed due to no moisture. Significant rain is needed immediately to reverse the impacts of drying and improve the production outlook. There is potential that some of the 2018-19 crop may not get planted this year if there is no big insurgence of moisture soon.

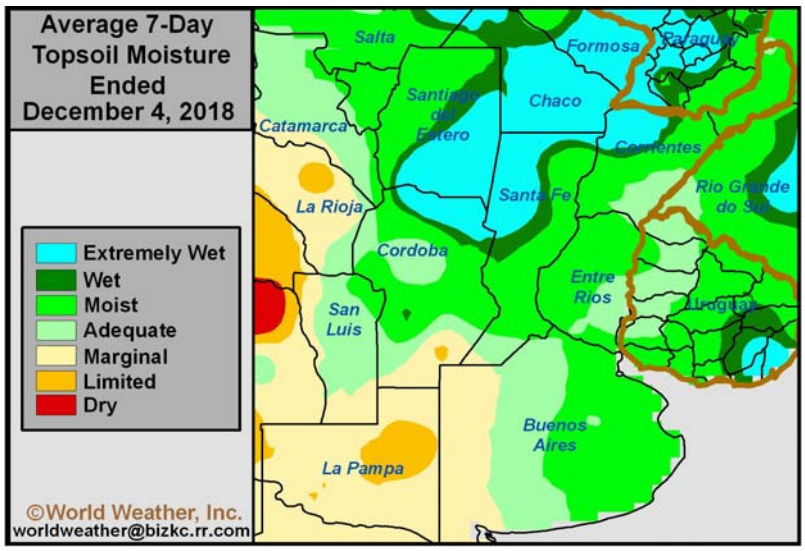
The eastern production areas are also too dry to support favorable establishment and growth, though the environment is not as dire compared to the western production areas. Timely rain was noted at times in November that supported crop establishment, though some areas were dry enough for some of the crop to establish unevenly. These areas are in need of better rainfall in the next few weeks as well.

The eastern production areas will see a good mix of rain and sunshine during the next two weeks. Scattered showers and isolated thunderstorms will evolve later this evening and continue on a frequent basis through the end of the weekend. Only brief periods of light rain are expected at the beginning and middle of next week, but soil conditions will be favorably moist to support better crop development. Moisture totals by next Thursday morning will range from 1.00 to 4.00 inches with local amounts up to 6.00 inches for Natal, Mpumalanga, Limpopo, and eastern fringes of Eastern Cape, Free State, and North West. Soil moisture will gradually increase during this period of time and crop establishment and early season growth should accelerate dramatically.

Northern Cape and the remaining portions of Free State and North West will remain drier biased during the next two weeks, although brief periods of light rain are expected at times. Most of the rain will be too light to counter evaporation and warm temperatures between rain events will be quick to return dryness to many areas. Crop planting, emergence and establishment will remain poor, despite the shower activity anticipated and many producers may not finish planting resulting in cuts in production potential.

Argentina Rain Next Week Very Important

Most of Argentina will dry out over the coming seven days, despite a few showers. Some areas will become a little too dry, but rain advertised during the middle to latter part of next week will prove to be extremely important in restoring favorable soil moisture. If the precipitation fails to occur or is more erratic and light than advertised there may be a few pockets of more significant dryness evolving later this month. Weather in the past week was already dry in southwestern Argentina which raises a greater amount of concern for crops in that region since they will have been two weeks without rain by this time next week.



Southern Argentina's cool weather at times in the past week conserved soil moisture through lower evaporation and drying rates. However, La Pampa, western Buenos Aires, and southern fringes of San Luis and Cordoba still managed to dry down a bit in the topsoil. Subsoil moisture was still rated favorably which supported all established crops. The drier topsoil may have slowed germination and emergence of recently planted crops and there is some potential for slower planting until rain falls. Additional drying over the coming week is expected to heighten awareness of the drying trend with a little greater crop stress expected in the driest areas.

Central and northern Argentina has received enough rain in recent weeks to keep soil moisture rated adequate to abundant. The environment remained favorable for most crops. A few locations from southern Santiago del Estero through Chaco and Formosa may have been a little too wet for a brief period of time and would benefit from some drying.

Argentina will be mostly dry through Saturday. Isolated showers will occasionally evolve in the west, but resulting rainfall will be too light to counter evaporation. Portions of the nation will then see a mix of rain and sunshine late this weekend and early next week. The precipitation is still expected to be erratic, but its coverage will be a little greater than that of the next few days.

Dryness in the topsoil will gradually spread across southern Argentina in the coming days as a result of the dry and warmer weather. Rainfall late this weekend and early next week will not be widespread or significant enough to notably improve topsoil moisture. Some crops will begin feeling a little stress due to developing dryness, but subsoil moisture will still be favorable in most of the nation except those areas in the south that have already been drying out. Early week stress will be greatest for crops in La Pampa, western Buenos Aires, southern San Luis and southern Cordoba where topsoil moisture may be rated very short while subsoil moisture is marginally adequate to short.

Argentina's need for rain will be rising sharply next week due to the warmer temperatures and declining soil moisture. Most of the nation will subjected to increasing showers and thunderstorms during the middle to latter part of next week. If the rain falls as significantly as advertised today there would a timely bolstering of topsoil moisture to restore ideal soil moisture and good crop development potential.

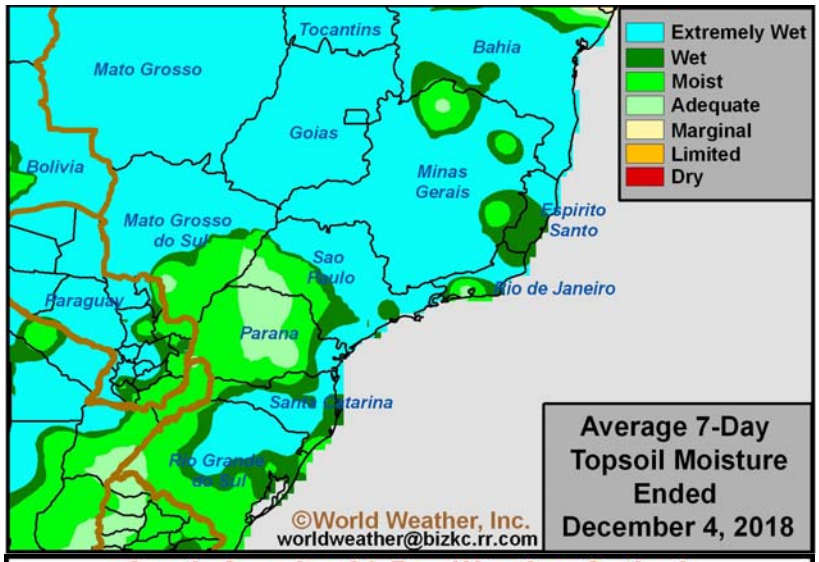
Most of the computer weather forecast models have suggested significant rain will fall in many of Argentina's key crop areas. The only exceptions may be in the southwestern corner of the nation. Some relief to dryness is expected in La Pampa, western Buenos Aires and southern Cordoba, but a part of this region will not get a general soaking of rain – not like areas to the northeast. As a result of the lighter rainfall bias, additional rain will be needed later this month to ensure crop stress does not come back to haunt crops in the region and threaten production potentials.

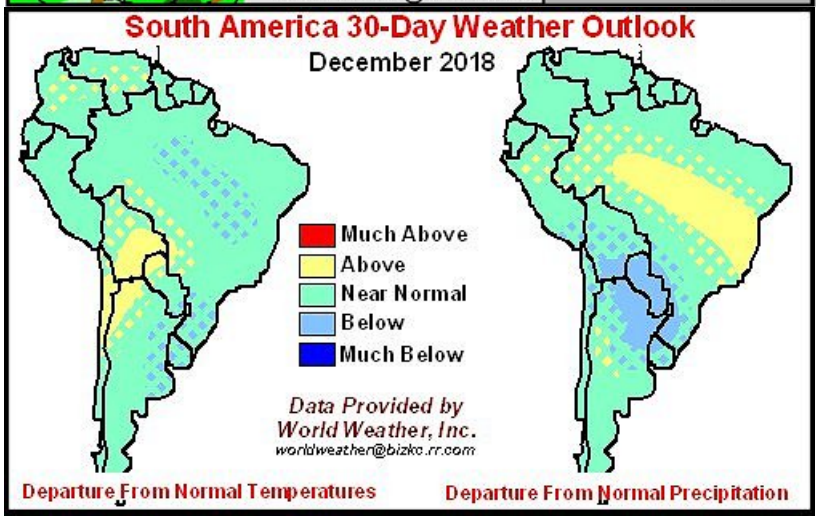
In the meantime, this week's drier weather bias offers opportunity for quicker summer crop planting and winter grain filling, maturation and harvesting. Next week's rain will only be good for immature wheat and it could raise a little grain quality concern in a few of the wetter areas. The moisture will be perfectly timed for recently planted summer crops and for their emergence and establishment. Previously planted summer crops will likely benefit from the moisture, as well with accelerated crop development expected.

Despite the highly favorable outlook for most of Argentina today, World Weather, Inc. looks for a few pockets of dryness to evolve in the second half of this month. However, weather conditions will stay mostly very good for the nation and there is no way that drought like that of last year will be repeated anytime soon.

Brazil Weather To Remain Good, Despite Drying

Many grain, oilseed and cotton production areas from Mato Grosso do Sul and western Sao Paulo to Uruguay and Paraguay will be dry or experience net drying conditions into mid-week next week. Favorable subsoil moisture will protect crops from serious moisture stress, but it will be imperative for rain to evolve near and beyond mid-month to maintain the best crop development and production potential. Center west and northeastern Brazil will be the only regions to continue receiving daily rainfall this week. Crop development will remain good across the country despite the lack of precipitation in many areas because of favorable soil moisture and temperatures that will be near to slightly below average.





Several pockets from Mato Grosso through southern Minas Gerais may have received enough rain during the past week to promote some local flooding and minor damage was suspected, but not widespread. Coarse grain, oilseed, and cotton conditions otherwise remained favorable for much of Brazil during the past week. The warm weather and periods of rain continued to promote aggressive growth. Northeast Brazil also received enough rain to improve topsoil moisture, but subsoil moisture remains a little low. There is still a long multi-year hydrologic drought prevailing in northeastern Brazil with water reservoir levels still well below average.

Drier biased conditions will evolve from Mato Grosso do Sul and southwestern Sao Paulo southward to Rio Grande do Sul this week. Brief periods of light rain will occur at times, though most areas will not receive enough precipitation to counter evaporation. Seasonable temperatures are slated for these areas as well. Daytime highs will peak into the 80s and lower 90s with pockets in the upper 90s. Rain potentials will gradually increase for these areas December 11-17.

The ground will gradually firm up in much of southern Brazil this week. Flooding will recede and many areas with abundant topsoil moisture will see conditions improve. There is plenty of moisture in the ground to maintain aggressive crop development. Fieldwork conditions will gradually improve as well. There are no major concerns as long as rain evolves in the drier areas during the second week of forecast, Dec. 11-17, as some forecast models are suggesting.

Bahia, the remaining portions of Minas Gerais, Goias, Tocantins and portions of Mato Grosso will receive rain on a frequent basis this week. Moisture totals through next Monday morning will range from 1.00 to 4.00 inches with local amounts over 6.00 inches. These areas will continue to see a mix of rain and sunshine December 11-17 as well.

Any pockets of dryness still present in Bahia's subsoil today will likely eliminated by the coming week to ten days of frequent rain. Significant runoff could lead to flooding, but will certainly increase runoff for better river and stream flow. Fieldwork in these wetter areas will continue slowly.