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The Canadian Agriculture Weather Prognosticator

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WORLD WEATHER ISSUES

- Flooding Has Already Occurred In Parts Of The U.S. This Winter And Spring Is Expected To Continue Wetter Than Usual Leading To Delays In Planting That Might Help Move Futures Prices Higher
- Argentina And Brazil Weather Has Improved Greatly Since January Stopping The Decline In Production
- Argentina Production Will Be Much Improved This Year And Will Help Counter Production Losses In Brazil To Leave The Total South America Crop Nearly As Big As Last Year Despite Weather Problems
- Eastern Australia Drought Remains In Place, But Wheat, Barley And Canola Planting Outlook For April Through June Looks Good In The South
- India Rainfall In February Bolstered Wheat And Other Crop Production; Pulse Crops Benefited Least And Losses Resulted From Previous Dryness
- North Africa Durum Wheat Areas Are Drying Out And Need Rain

El Nino's New Legs

El Nino has survived a period of significant weakening and has potential to regain some composure during March and April. The Southern Oscillation Index (SOI) became significantly negative in the February and this index is closely tied to El Nino events. The more negative this index becomes and the longer it is negative the more likely El Nino has either evolved or is evolving. In this particular case, World Weather, Inc. believes the phenomenon is beginning to strengthen.

As was mentioned in last month's prognosticator, El Nino events have a tendency to downplay precipitation in the southwestern and central Prairies during the spring while both the northwest and southeastern parts of the region are a little wetter biased. World Weather, Inc. presented evidence as to why El Nino was likely to remain rather than dissipating as was once advertised by the Australian Bureau of Meteorology.

Changes in El Nino conditions started to show up in late February with the fall in SOI, but also due to warming subsurface ocean temperatures. El Nino events tend to warm the surface of the ocean between the International Dateline and the coast of South America from subsurface levels of the ocean to the top of the ocean. Evidence of new warming in the subsurface ocean was presented in the second half of February at the same time the SOI was beginning to fall more significantly. Both of these factors combined with the association with El Nino events and the solar minimum has changed the minds of many forecasters.

The Australian Bureau of Meteorology retracted its comments in January stating that El Nino would soon demise. World Weather, Inc. applauded that reversal and interpreted it as a big victory in our research. In the meantime, NOAA forecast models have continued to advertise a new strengthening trend in El Nino that would last through the summer.

These changes since our last prognosticator and since our last Canadian Prairies Outlook meetings in the Prairies have reinforced our comments about spring weather. Today's Prognosticator only reiterates the forecast from last month.

March is expected to be a month of transition from the unusually cold weather to more seasonable readings. The first part of the month will begin drier biased as it was in the last week of February and then as we move into the last days of March a more typical influence from El Nino will begin.

El Nino's influence on the Prairies tends to be one of below average precipitation from central through southwestern portions of the Prairies during the spring season. That means many of the drought stricken areas from central Saskatchewan to southeastern Alberta and some southwestern and south-central Saskatchewan locations will receive lighter than usual amounts of precipitation late this month and into April and May.

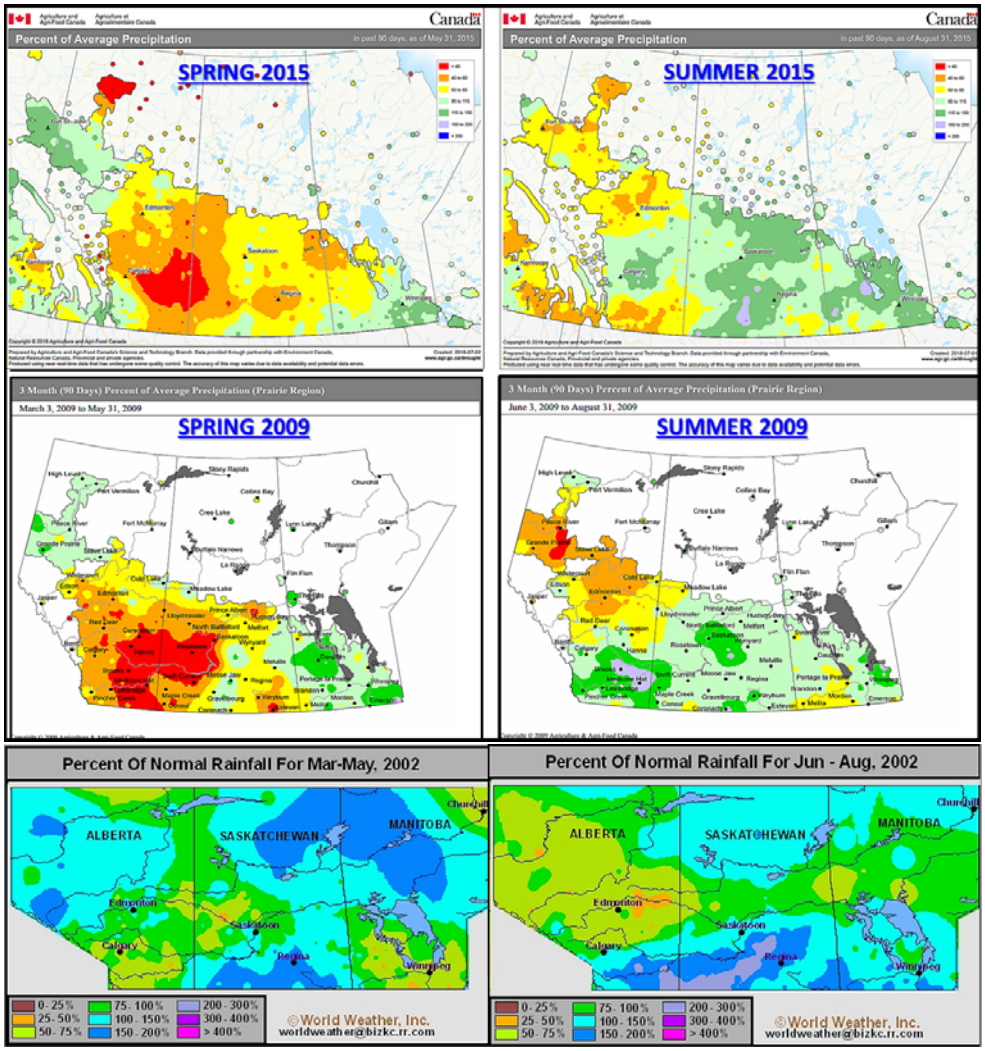
Less than usual precipitation does not mean a complete absence of precipitation, but restoring low soil moisture following the past two years of drought is not likely.

Some timely precipitation will occur in March through May, but the amount will not be enough

El Nino's New Legs (continued from page 1)

to restore low soil moisture. World Weather, Inc. believes planting moisture will be available from melting snow and from the brief bouts of precipitation that are expected. However, worry over long term soil moisture will likely evolve at times and that will keep the pressure on this spring for more improving soil conditions for crop development into the summer.

Some forecasters have suggested worsening drought this spring. A net loss in soil moisture will be possible during periods of warmer biased conditions, but there should be enough instability at times to provide some needed moisture. The situation is liable to become tenuous at times for a part of the drier biased areas and many producers will be living from rain event to rain event worrying about the long term moisture situation.



The El Nino events shown on this page vary in their significance. The event in 2015 was quite strong while that of 2009 was more moderate in intensity. The 2002 event may be more like that of this year, but a compromise between the 2002 and 2009 precipitation anomalies for spring are most likely and if that occurs there will be some precipitation events, but a part of the drought stricken region in the Prairies will continue to carry moisture deficits into the heart of the spring planting season. The success of early season crop development will be on the timeliness and significance of precipitation. Some areas in the lingering drought region will do much better with spring moisture than other areas.

In the meantime, late this month and more likely in April and May rain will increase in northern Alberta and in much of Manitoba. Both areas will experience a wetter than usual bias at times in the heart of spring. This tendency may result in delayed planting and or slower than usual planting progress because of wet fields. There is some potential for colder biased temperatures to return for a while during the heart of spring this year and if that occurs there will be some improvement in soil conditions in southern Manitoba and neighboring areas with less precipitation expected for a while.

Summer weather will come along and if El Nino still has influence on North America it will attempt to help increase rainfall in the southern Prairies for a while. The moisture boost will provide a much better finish to the growing season and some opportunity for better subsoil moisture.

This forecast is not set in stone, but confidence remains moderately strong. As the southern Prairies trend wetter there should be some drier biased conditions in western, central and northern Alberta where the past three growing seasons were plagued by wet biased conditions that ended in poor harvest weather that left some crops in the fields.

There is still potential for strong ridge building in the U.S. this summer and if that happens the wetter bias in the southern Prairies may shift to the north leaving some moisture deficits near the U.S. border.

March Weather Will Change For The Better

Call it "Climate Change", "Global Warming", "Solar Cooling" or God's "Wrath", but it has been a long cold winter. Complaints are being heard from the western Prairies to Quebec and southward into the northern and central United States. It has been a long while since such a persistent bout of cold weather occurred. Data from the northwestern U.S. Plains and the southwestern Prairies has suggested February was the coldest since 1936 which was the coldest on record going back 122 years.

Most of our lunar cycle years, 1965, 1983 and 2001 all suggest a colder February would evolve, but no one guessed it would be as brutal as it was. Now the question is what happens in March?

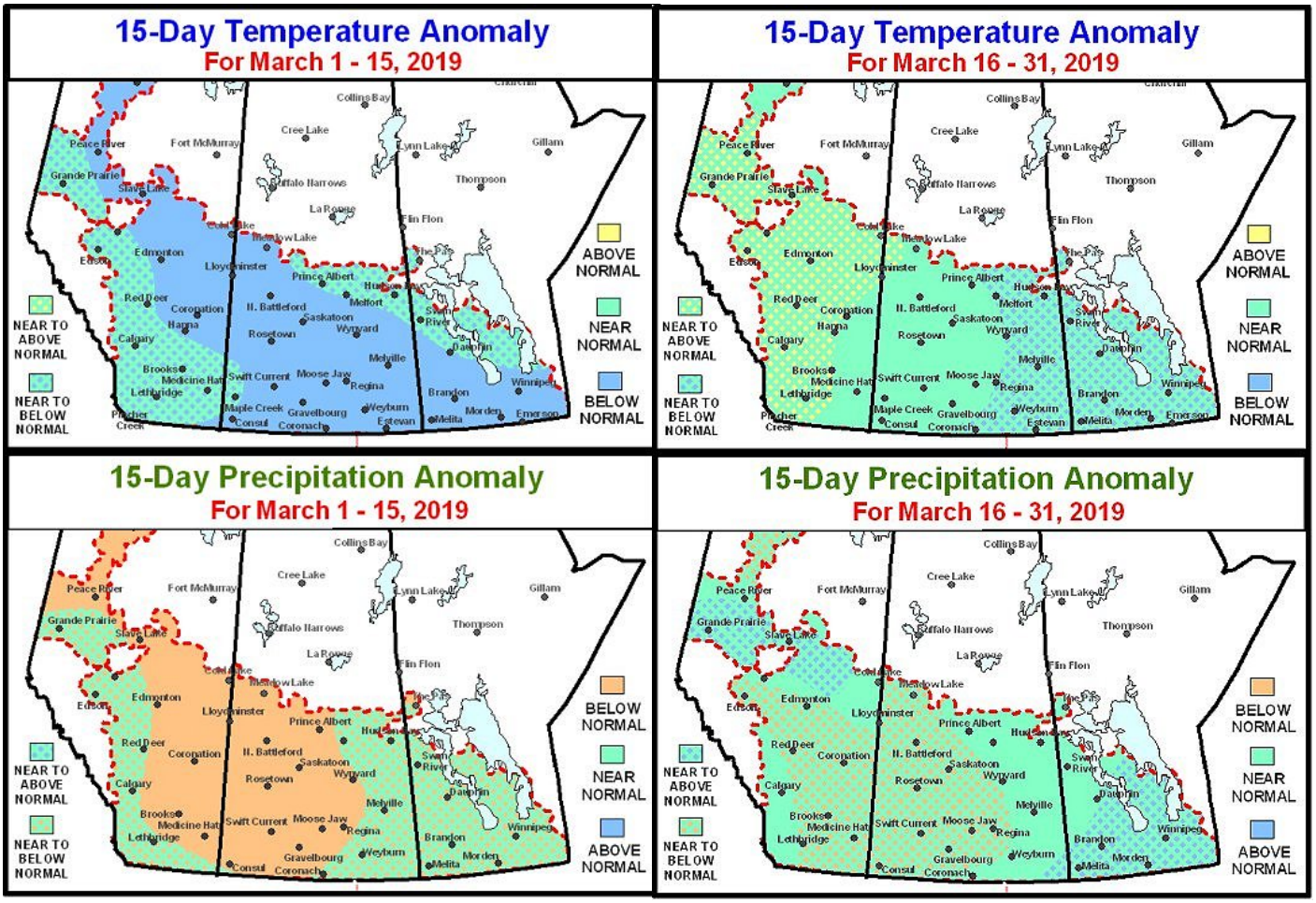
World Weather, Inc. believes we will transition out of the bitter cold into a more "normal" temperature regime in the next few weeks. However, This first week of the month will be as nearly as anomalously cold as that of late February, especially in the southwestern Prairies.

The second week of March will show some welcome moderation in temperature. It will still be cooler biased in many areas in the Prairies, but not nearly as anomalously cold as this first week will be.

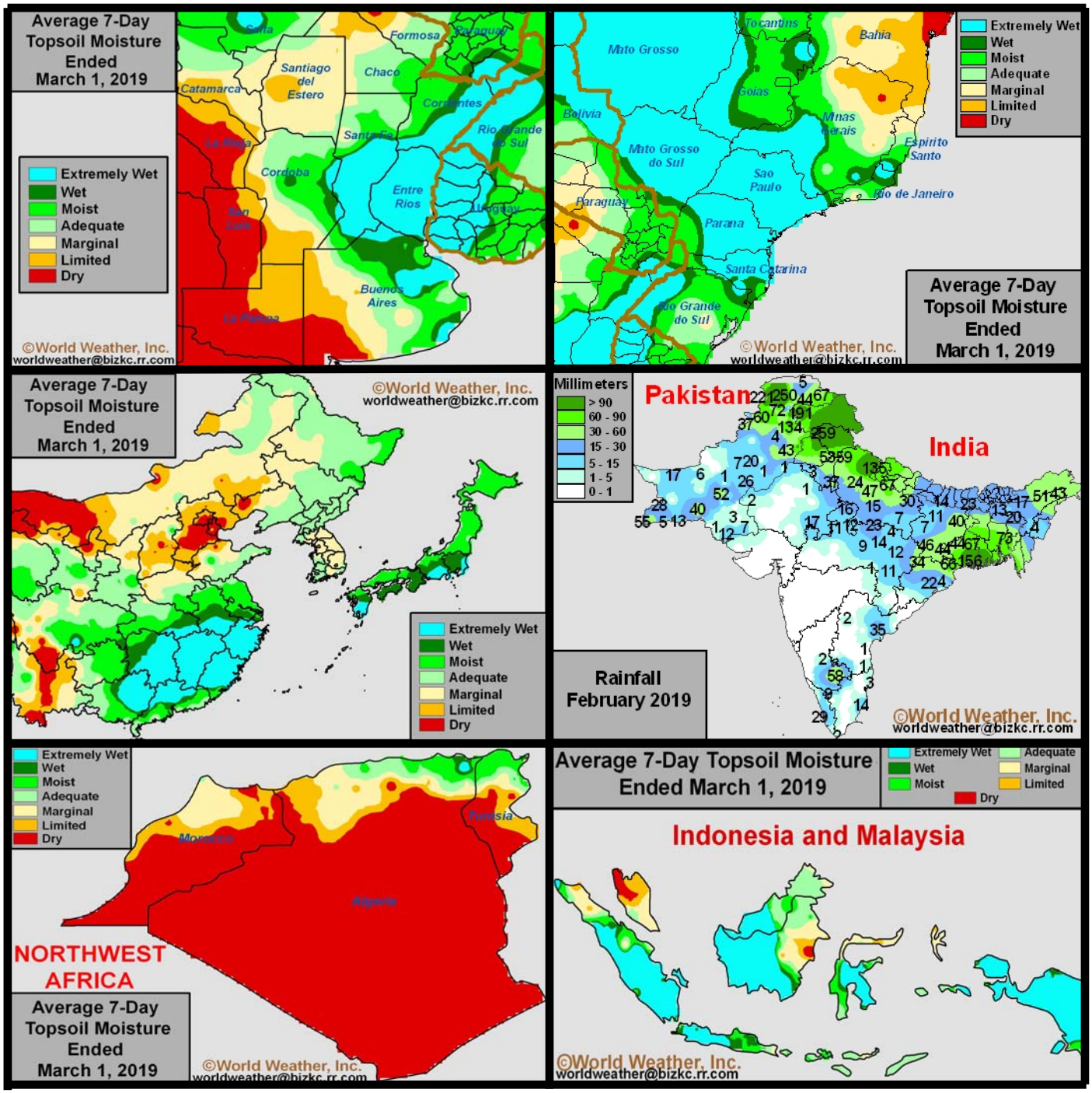
Slowly changing conditions will occur in the second half of the month resulting in a slight warmer bias in the western and a few northern parts of the Prairies. There will still be some quick shots of colder than usual air moving through the eastern Prairies that will hold back the recovery from extreme cold in those areas for a while longer. There will be a few warmer biased days in all of the Prairies during mid– to late– March, but they are unlikely to last long except possibly in a few western areas.

Precipitation in the first half of March will be very light and sporadic. Most of the region will receive little to no precipitation in the first week of the month and the second week will only be slightly more active.

The second half of the month is when El Nino may begin having a little more influence on the Prairies. However, the change may come too late in the month to seriously change the region's precipitation anomalies. If the change occurs early enough there will be some increase in precipitation in southeastern and far northwestern parts of the Prairies. This change is more likely to occur in April and if that is the case late March precipitation will continue near to below average.



Selected Weather Images From Around The World



Excessive soil moisture is present in southeastern China and heavy rain will fall in the first ten days of this month which will likely translate into some flooding. Damage to a few rice fields and some sugarcane is possible, but most of the flooding will occur ahead of spring planting. India rainfall during February was ideally timed with reproducing winter wheat and a few other crops. Yield potentials have been enhanced, but some pulse, rapeseed and millet yields will be off this year because of too much dryness from October through December and early January. North Africa has begun to dry out and needs significant rainfall soon to support reproducing winter crops later this month. Brazil soil conditions have improved greatly since early last month and no further production losses have occurred. Second season corn production potential is very high. Argentina's dryness will be eased late this weekend and next week, although some lingering dryness will prevail in the far southwest. Most of the dryness has not harmed production. Malaysia palm oil production areas have been drying out recently, but Indonesia remains favorably moist.

Central, SW Prairies: Dry Spring, Wetter Summer

April and May could be notably influenced by El Nino or El Nino like conditions, but seasonal changes in the atmosphere could lead to some beneficial changes in the pattern allowing some relief to occur. That relief will include a break from dryness in the central and southwestern Prairies that may bring just enough planting moisture to get crops seeded. Once the crops are in the ground there may be a period of dry biased weather for a little while, but as late April moves into May there will likely be some increase in rainfall. No big soakings are expected, but some very well timed precipitation will evolve to benefit planting, emergence and establishment.

Northern Alberta's battle with wet biased early spring weather may begin to break up a bit especially in late April and May, but the improving conditions will be all about timing. Some areas will need drier weather sooner rather than later to firm up the ground for planting while others may have infrequent enough precipitation to get aggressive with spring fieldwork.

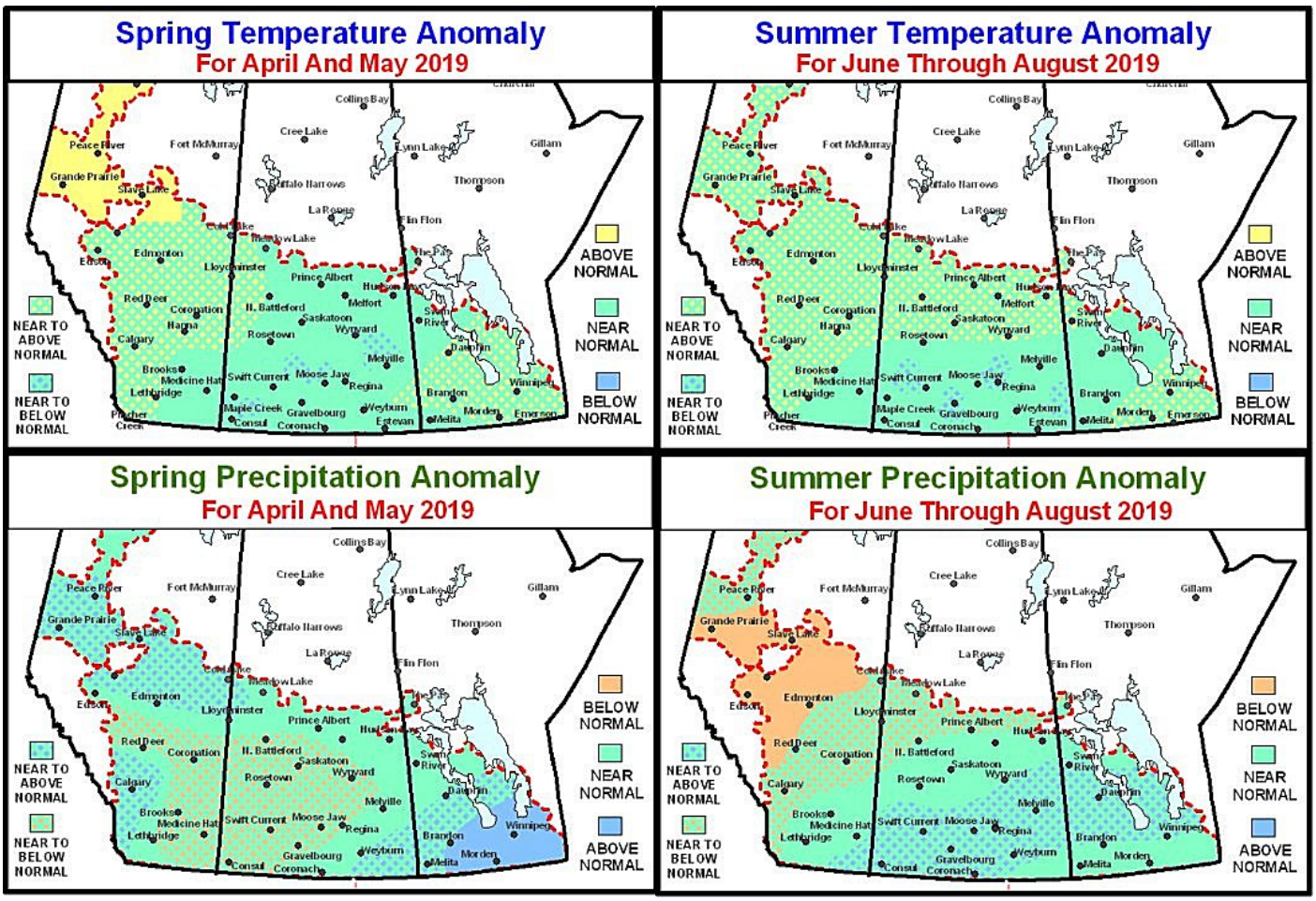
The temperature bias during spring will be above average in the western Prairies with the Peace River Region warmest relative to normal. That warmth will play a critical role in getting producers into the fields this spring. Faster drying rates than usual may occur between rain events which may lead to firmer topsoil over time and that should get producers into their fields just in time to avoid significant field working delays.

Manitoba, on the other hand will be trending wetter and that will lead to some spring planting delays. There may be some potential for flooding in southern Manitoba in April .

If summer weather is influenced by the presence of El Nino there should be a welcome shift toward drier biased conditions in the northwestern Prairies and a wetter biased pattern from southeastern Alberta through southwestern and central Saskatchewan to west-central and northwestern Manitoba. The change should bring an end to surplus topsoil moisture in the northwestern Prairies while bringing the larger moisture deficits in the central and southwestern Prairies to an end—at least for a little while.

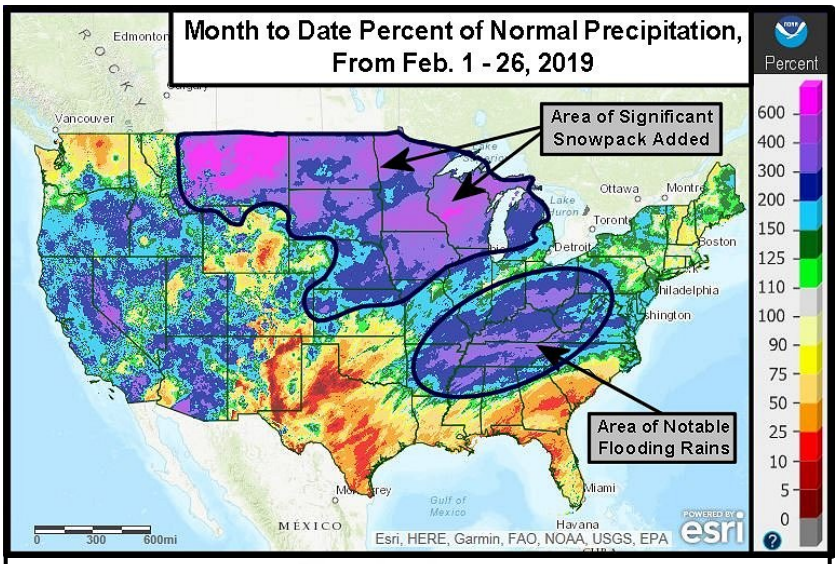
Southern Manitoba will dry down in the summer, but there should still be enough timely rainfall to support crops and farming activity.

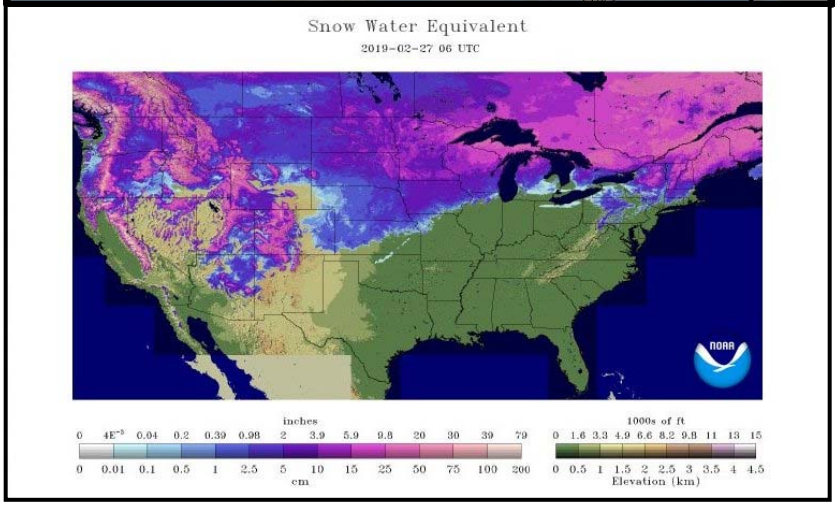
The summer should end with this same pattern in place supporting better harvest conditions northwest, but keeping the south a little moist.



U.S. Midwest Flood Potentials Remain High

Varying portions of the U.S. Midwest will likely experience flooding at times in coming weeks. Flooding was already noted in portions of the Ohio River Valley, Tennessee River Valley and northern Delta during February and a significant bolstering in snow depths occurred in the upper Midwest setting the stage for significant runoff in March and/or April. Winter wheat development is expected to get off to a sluggish start this spring due to saturated and nearly saturated soil conditions and additional frequent precipitation. Corn and some soybean planting may also be delayed for the same reason. In the meantime, the southern Plains remain dry with little relief in the next seven days. California will also see waves of precipitation in coming weeks that will further bolster snowpack and may cause flooding in the north.





The Ohio River Valley, northern Delta, and neighboring areas have been wetter than normal in recent weeks. Precipitation as a percent of normal for February 1-26 was two to four times' normal. Areas from Michigan, Wisconsin, Iowa, and eastern Nebraska into the Dakotas, Montana, Minnesota and neighboring areas were also wetter than normal this month. These latter areas received two to more than six times' normal precipitation with portions of Montana and pockets in Wisconsin reporting even greater anomalies.

Precipitation generally occurred as rain in the Ohio River Basin, northern Delta and Tennessee River Basin in recent weeks, although some bouts of snow were noted, as well. Flooding was ongoing during much of mid- to late February with a few rivers reaching major flood stages. Many low-lying areas in these river basins endured running or standing water during the latter half of February and some damage to winter wheat and some personal property was suspected. Drier weather is needed to get rivers and streams back within their banks and to begin firming the soil in water-logged and flooded winter crop areas. Net drying is also needed as the spring growing season approaches so that the wet field situation will not lead to planting delays.

The Upper Midwest and portions of Iowa, Minnesota, and eastern fringes of the Dakotas and Nebraska are also abundantly wet. Abundant snowpack is noted across these areas and significant flooding is expected this spring as the snow melts while additional precipitation falls. Planting will likely get off to a sluggish start this year if the wet weather pattern resumes as is expected.

Western portions of the Dakotas into Montana have marginally short top soil moisture. These areas had lower soil moisture last autumn before the ground froze than the upper Midwest and will handle the potential runoff from, melting snow much better than areas to the east. Nevertheless, melting snow in the middle Missouri River Basin will likely raise the Missouri River enough to induce some flooding farther downstream when the snowmelt runoff reaches an area that will be experiencing frequent spring rainfall.

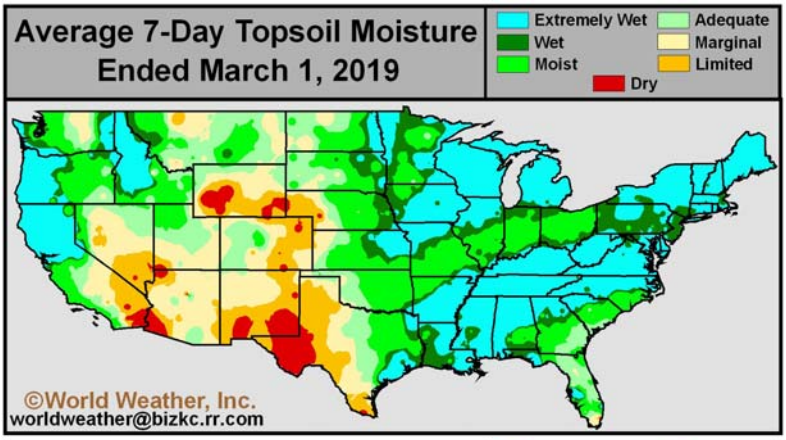
The next seven days will promote a drier biased weather pattern across the Midwest and northern Delta. There will still be periods of light precipitation, most notably in the Ohio River Basin, but the precipitation will be too light to significantly impact long-term soil conditions or bolster snowpack in a significant manner. Temperatures will also be colder or much colder than normal, which will limit drying and snowmelt. There is potential for more significant precipitation March 7-13 and a close monitoring of the

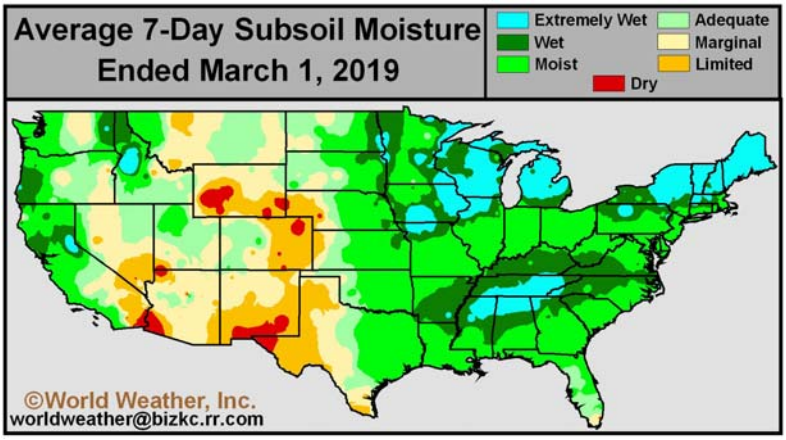
U.S. Flood Potentials Remain High (continued from Page 6)

situation is warranted because that precipitation may result in deepening snowpack in the northern Midwest while generating more rain in the water-logged lower Midwest where a new round of flooding might occur during mid-month.

California has also been wetter biased for much of the month with many areas reporting 1.5 to nearly 3.0 times' the normal precipitation. Portions of the Sierra Nevada received up to four times' normal precipitation with some very impressive snow accumulations during the month. Mountain snowpack is above normal for this time of year and soil conditions in northern California are abundantly wet.

The outlook for crops in California this year is mostly favorable with a very good water supply outlook for the spring and summer.





Snowpack in the Pacific Northwest has improved this month with many areas reporting near to slightly above normal snow water equivalencies. Parts of Washington are the exception with slightly less than usual snow water equivalents being reported at the end of February.

Northern and central California will see several disturbances advance into the region during the next week to ten days. The precipitation will further bolster mountain snowpack and soil moisture in the central valleys. Flooding will be a concern in some of the northern and central sections of the state while travel near or into the mountains will be hazardous at times. There will be a growing risk of avalanches as multiple feet of snow impact some of the mountains in the next week to ten days. California's water supply outlook for this year will remain favorable with many water reservoirs to be above historical levels during at least a part of the growing season because of the moisture situation.

The Pacific Northwest will see a mix of erratic precipitation and sunshine in the next ten days. Crop prospects will be mostly favorable this year for much of the region as well.

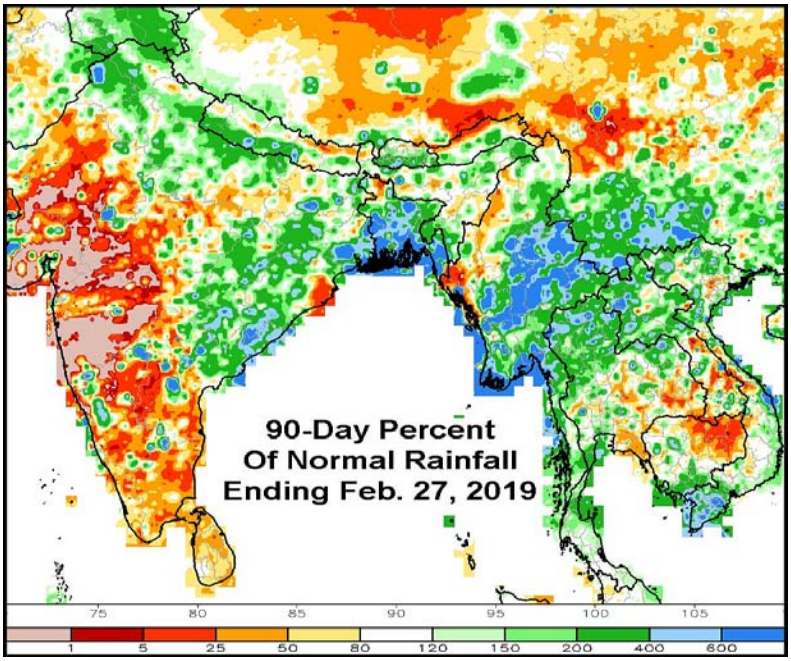
In contrast to all of the moisture surpluses, the southern Plains have been drier or much drier than normal since December. Oklahoma and the Texas Panhandles only received 10-75% of normal precipitation in February. Southern Kansas and extreme southeastern Colorado were also slightly drier than normal while other portions of the central Plains received near to above normal precipitation.

The Texas Panhandle, western Oklahoma, and other portions of the High Plains region have a shortage of moisture. Areas farther east in hard red winter wheat country have adequate moisture. There is snow on the ground from eastern Colorado and neighboring areas into southern Nebraska, which will help improve the moisture profile in the coming weeks as the snow melts and additional precipitation evolves.

Hard red winter wheat development "may" be sluggish in some of the driest areas in Texas and western Oklahoma at the start of spring. However, the odds are quite good that the region will experience more frequent and more significant precipitation in the last days of winter and early this spring. That should lead to improved winter crop development potentials and help ensure a favorable start to spring planting after soil temperatures rise. This is true for West Texas cotton, sorghum, corn and peanut areas as well as for winter wheat.

Southern India Winter Crops In Need Of Moisture

While northern and parts of eastern India have received greater than usual precipitation in recent weeks the far south and some western areas have been left quite dry. Unirrigated crops in the drier areas are expected to yield poorly and some reduction in area planted may have occurred. Very little rain is expected during the next two weeks as well which raises concern for production losses especially if little to no rain falls over the next few weeks as has been suggested by several computer weather forecast models. Irrigated crops are likely developing under more favorable conditions.



This is the "dry" season in India and getting significant rain to fall in some locations is always a challenge. However reports from the USDA and some other India sources have suggested that dryness during the planting and establishment season may have hurt some of the production potentials especially since rainfall in recent weeks has been poor. Unirrigated rice, sugarcane, sorghum and groundnuts have been impacted, although the situation is not viewed as being a "crisis" because of irrigation and at least "some" rain earlier this season.

The 90-day period ending February 27 was notably below average on rainfall for many areas in southern and western India. Rain was reported in several areas during January and there was a very small cluster of thunderstorms that occurred in southeastern Karnataka earlier this month, but these rain events were widely separated by abundant dry and warm weather which depleted soil moisture and brought on a little crop stress.

Portions of Telangana and Andhra Pradesh reported rain during the January 1 through February 22 period and one small area in southeast Karnataka also reported 2.28 inches of rain earlier this month. Tamil Nadu and the remaining portions of Karnataka and southern Maharashtra received little to no rain along with Gujarat and some immediate neighboring areas.

Portions of Andhra Pradesh and Telangana also reported periods of rain in December as two tropical cyclones made landfall over India. That moisture was used for planting, but dryness since then may have at least some crops a little stressed in dryness. Other areas in southern India generally missed out on significant rain from the tropical systems and dryness may be a little more significant.

Abundant precipitation was noted across southern India in November. There was plenty of moisture to support late summer crop development and at least some early season planting and establishment of winter crops. Much of the rice, groundnuts and sorghum planted early should have established favorably, although it needs rain now.

Rain-fed winter crop conditions will further deteriorate in much of southern India during the next two weeks possibly resulting in some negative production impact on rice, sugarcane, citrus, sorghum and groundnuts. Irrigated crops will likely develop under more favorable conditions.

Central and western India have also been drier biased for an extended period of time this winter. Winter crop development conditions have not been ideal and unirrigated fields may not yield as well as usual. With that said, it is extremely important to note that northern and eastern India has received routinely occurring rainfall this month and that has likely translated into better than usual yields for wheat and some rice. Millet, rapeseed and sorghum produced in the western parts of the nation may not yield as well because the beneficial rain occurred in wheat production areas to the east and not in the coarse grain or oilseed areas in the west.