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The Canadian Agriculture Weather Prognosticator

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Ontario And Quebec

Unusually Wet Autumn Weather Has Been Followed By Cold Conditions Leaving The Ground Saturated And In Need Of Drying. A Cool Bias May Prevail Into Spring With Some Short Term Bouts Of Warming.

WORLD WEATHER ISSUES

- SE Australia Weather Is Stabilizing After Widespread Rain Threatened Unharvested Wheat, Barley And Canola Recently
- India Will Receive Rain Over The Next Two Weeks Bolstering Soil Moisture For All Winter Crops, Including Pulses, Wheat And Rapeseed
- Northern Argentina Is Too Dry And Will Become Hot
- Brazil Crop Conditions Are Very Good, But The South Will Soon Dry Down For A While
- U.S., Hard Red Winter Wheat Areas Would Benefit From Moisture
- Spain, Portugal, Morocco, Algeria And Parts Of France Will Get Needed Rain Soon
- South Africa Rainfall Has Improved Crops

Prairies Warmth To Prevail Rest Of Month

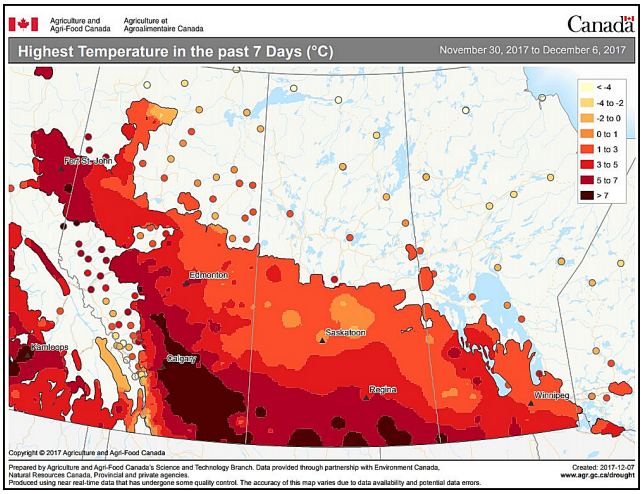
The first week of December has become much warmer across the Prairies and after the colder biased weeks of November the change was welcome. A change should be coming in January that will restore a colder than usual bias to much of the Prairies, but for the balance of this month temperatures will be warmer than usual while precipitation is restricted.

Precipitation over the past 30 days was above average in the Peace River region and near to above average in northwestern and north-central Saskatchewan. All other areas in the Prairies recorded below average precipitation with some areas well below average.

The combination of warm and dry weather fits well with El Nino events and not usually La Nina. La Nina winters are normally colder and wetter biased with the greatest anomaly in the south.

November weather certainly started off like traditional La Nina conditions, but the first week of December deviated in the opposite direction with most areas experiencing less precipitation and warmer weather

In the first seven days of December temperatures surpassed 7 degrees Celsius in much of southern Alberta and in several areas in southern Saskatchewan. In contrast, morning low temperatures were coldest in northeastern Saskatchewan where readings slipped to the lower negative 20s Celsius.



The arrival of warmer weather in early December was expected to be a part of a much larger trend that will likely prevail through the end of this month. Temperatures well above average will prevail along with a restricted amount of rainfall. The drier and warmer than usual weather will be great for travel across the Prairies, but will leave snowpack a little short in some areas.

January's cooler bias will allow snowfall to pile up more significantly in southwestern and far southern Alberta and in the northern U.S. Plains and southernmost parts of Saskatchewan. Some greater than usual snowfall will also impact southern Manitoba in January.

La Nina events of the past have produced their abundant snowfall in the January through March time period. December often had the lightest snowfall. Now these correlations are associated with strong La Nina events and the one under way right now would be classified as a weak to moderate event with weakening expected in January.

SE Australia Winter Crop Quality Slides

Abundant rainfall was reported in portions of Victoria and southern New South Wales during the past week. Farmers were busy with the wheat, barley, canola and pulse crop harvest before the recent rainfall. Fieldwork stalled when the rain became most significant late last week and during the weekend. Too much rain fell and the quality of some crops slipped because of the wet weather. The coming few weeks need to be dry so that no further decline in quality results and harvesting cane resume swiftly. Drought during the winter and spring already hurt production and now some of the remaining crop will experience a decrease in quality with some head sprouting possible in small grains. Harvesting will gradually improve once the ground has a chance to firm, but additional rain through mid-week may perpetuate the quality decline.

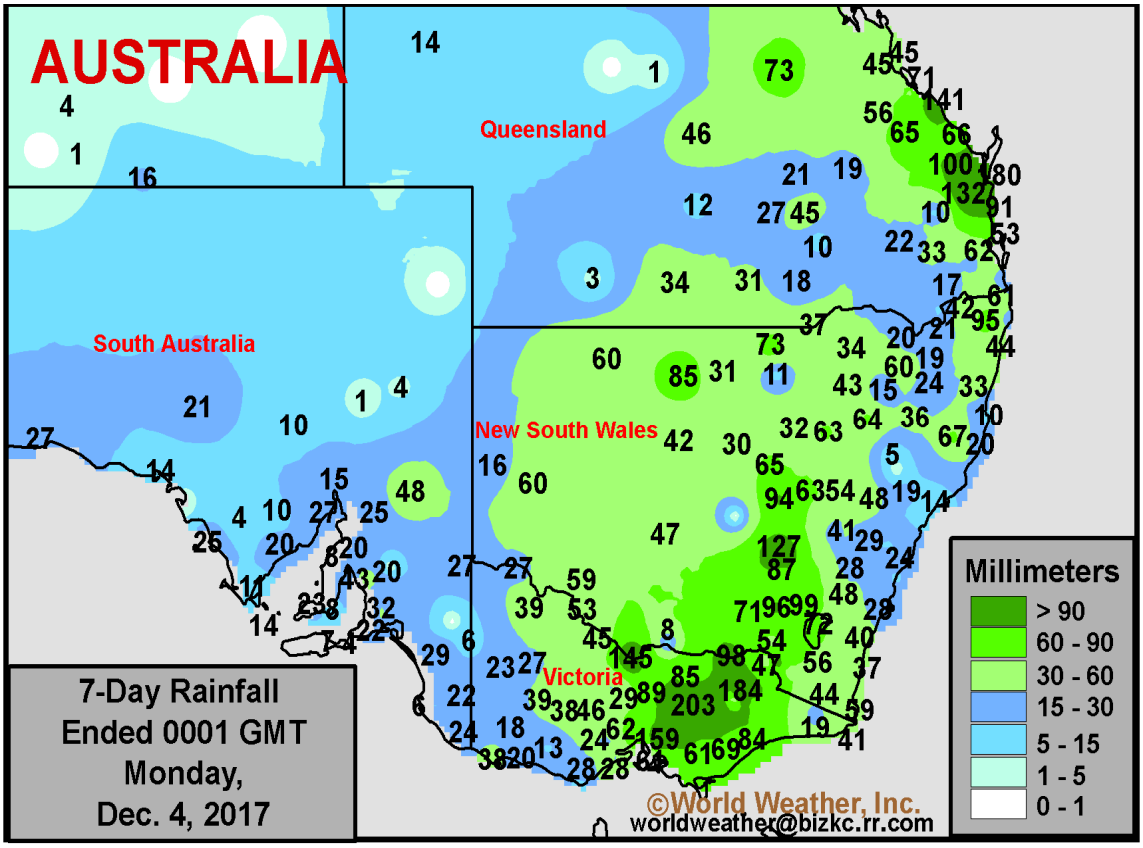
Eastern and central Victoria into southern New South Wales reported 1.00 to 4.00 inches of rain with local amounts up to 8.00 inches for the seven-day period ending this morning. The ground is abundantly wet in most areas due to the recent rainfall. The frequent precipitation stalled wheat, barley, canola and many pulse crop harvesting in much of the region and likely lowered grain and oilseed quality in the wetter biased locations. Yields this year were already expected to be lower due to the drought that was present during the winter and spring.

The wet weather bias was beneficial for the cotton, sorghum, and other crops that are growing during this time of year. Planting of summer coarse grain and oilseeds likely progressed slowly at times, although most crops will establish favorably. A few pockets in New South Wales may be a little too wet to support the best growth and a period of drier weather would be welcome and should evolve later this week. Similarly, not all summer crops received significant rain and there are many areas in Queensland and that still would benefit greatly from a general soaking of rain.

Western Victoria and South Australia reported 0.50 to 1.25 inches of rain with local amounts approaching 2.00 inches during the past week. These areas also produce a significant amount of winter crop. Quality declines in these areas were less likely, but concern over recent rain remains.

Northern New South Wales and Queensland reported timely rain during the past week. Moisture totals ranged from 0.75 to 3.00 inches with much of the rain falling in the past few days. Topsoil moisture is now adequate in much of New South Wales. Southern Queensland still has a slight shortage of moisture in the topsoil despite the recent rainfall. Corn, soybean, sunseed, peanuts, and other coarse grains and oilseeds are all planted at this time year. Recently planted crops will benefit significantly from the recent rain due to the lack of soil moisture earlier in November. Additional rain would still be welcome to promote the best environment for most crops.

Western Australia has been plenty dry and the few showers reported late in the weekend and today will not have much impact on fieldwork or crop conditions. The environment was beneficial for aggressive wheat, canola and barley maturation and harvesting. The region will remain in a mostly dry mode during the next week to ten days. Harvesting will advance swiftly in most locations.



Enjoy The Warmth It May Not Prevail In January

Unusually warm temperatures will occur in western and central portions of the Prairies during the balance of this month with the greatest anomalies expected in the next two weeks. Changes should occur in January to return colder biased conditions and there will be a boost in precipitation at the same time.

The moisture boost should be most significant along the front range of mountains in southwestern Alberta and in a small part of both northwestern and far southern Alberta. A part of southern Saskatchewan will also experience greater snowfall in January, but there is some potential for the Arctic Oscillation (AO) to become significantly negative during the month and if that occurs too much cold air will push through the Prairies taking the wetter biased conditions south into the northern Plains and reducing precipitation in the Prairies.

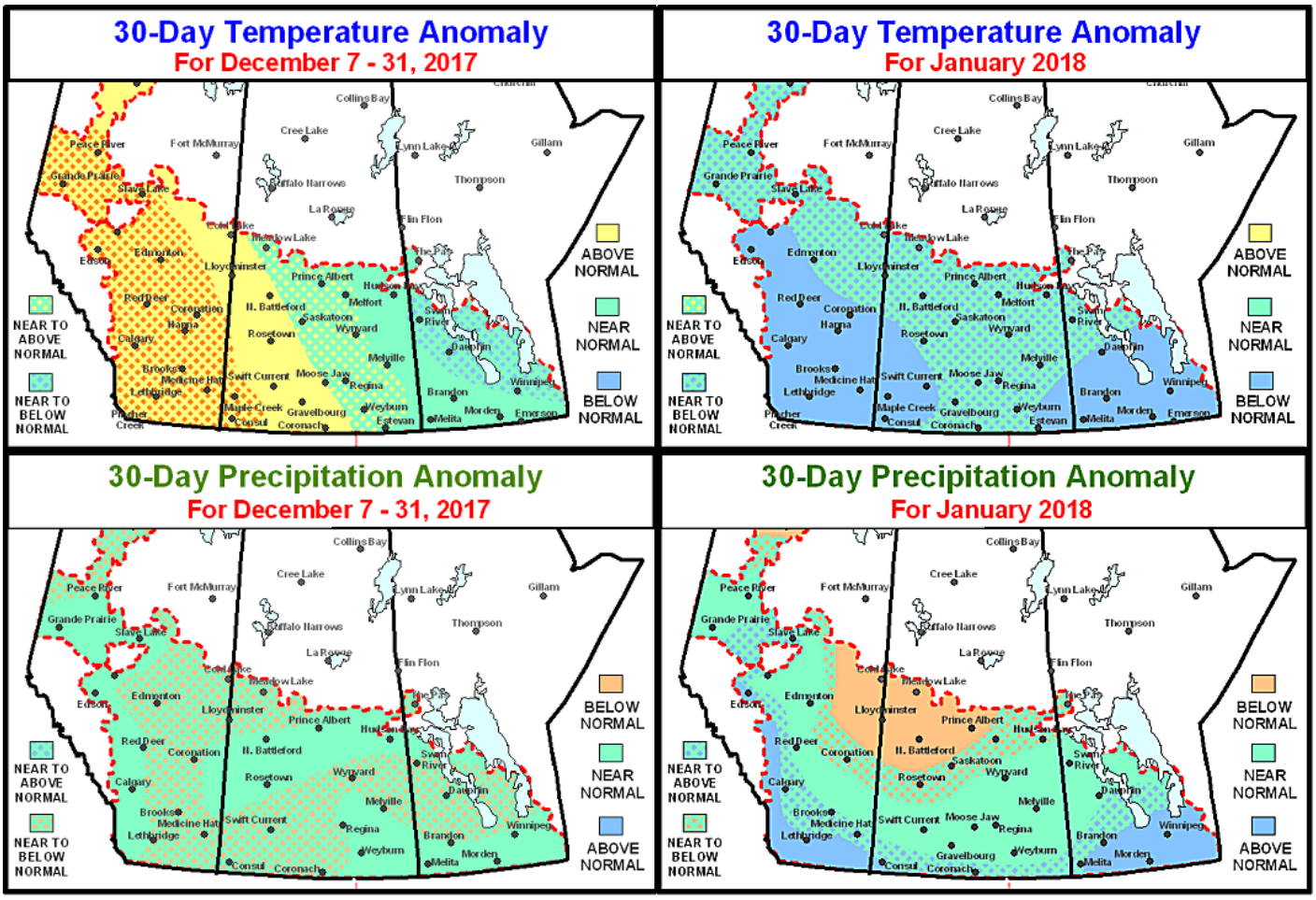
Southern Manitoba should also trend a little wetter in January, but confidence in this part of the forecast is very low because of the moderate potential for cold air to continue pushing through that part of the Prairies. The frequent frontal passages may leave precipitation amounts light even though precipitation will occur often.

A drier than usual bias is expected in the north-central parts of the Prairies in January.

Precipitation during the balance of December will be mostly below average. Normal precipitation during the month usually drops off significantly, but a succession of fast moving weather disturbances will still have some potential to produce near normal amounts of moisture, but not in a general manner. Much of the precipitation during the next three weeks will be limited, but not absent and that is the reason for the near to below average precipitation classification.

The recent pattern of colder biased weather in eastern North America and warm conditions in the west may return again later this winter. It is a strong pattern and if it prevails a little too much the influence of La Nina's normally colder and wetter bias will be minimized. The situation needs to be closely monitored.

The odds are very high that drought status will continue in many areas in the Prairies during the winter even though snow will fall. The dry bias will remain in the early weeks of spring, but should ease up later in the spring and summer, but that forecast is a work in progress.



South America Weather Getting Interesting

A ridge of high pressure is expected to evolve over Argentina this weekend and it will briefly shift into southern Brazil next week. As a result, northern Argentina, Paraguay and southern Brazil will experience a full week of dry weather .

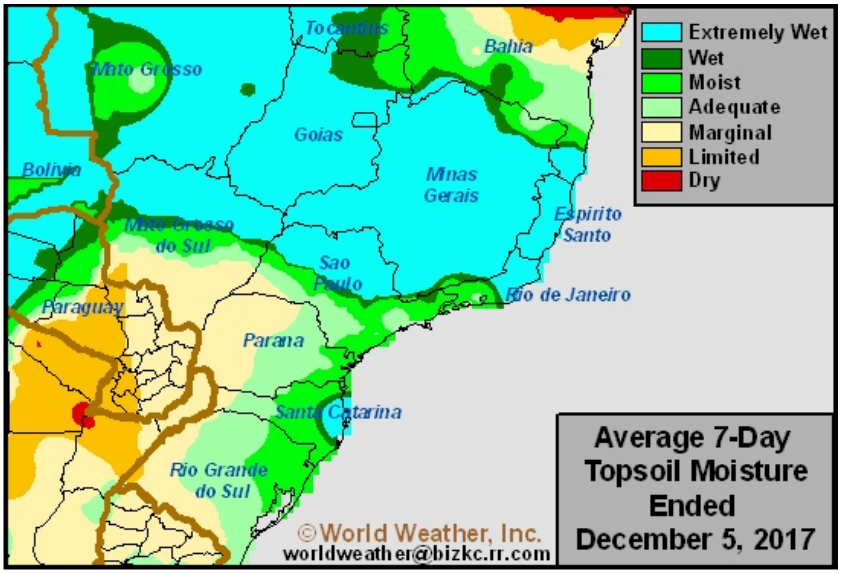
Some northern Argentina crops may not be able to handle the situation very well due to the short to very short topsoil moisture and the very short subsoil moisture that is present in parts of the region. Santiago del Estero only produces 4% of the nation's soybean crop and 2% of the corn which makes its extremely dry status not quite so important. However, the province produces 8% of the sorghum crop.

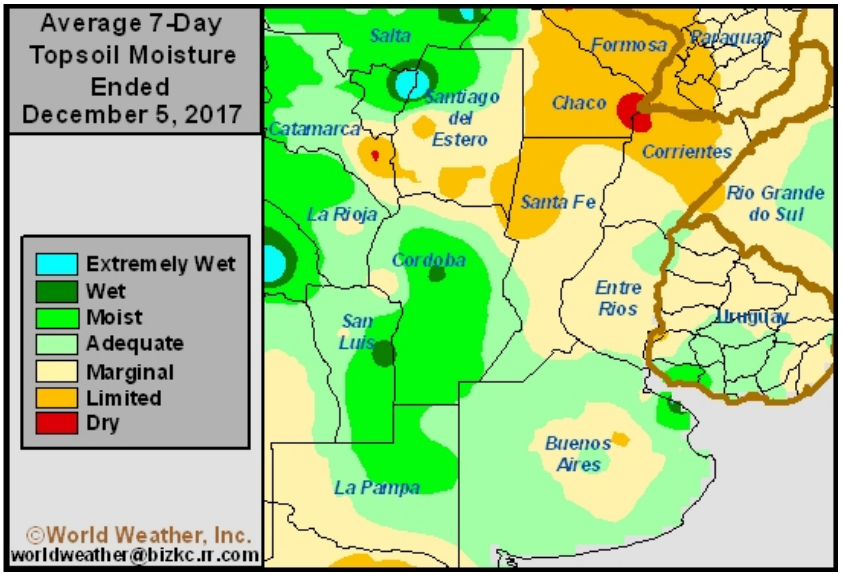
Santiago del Estero is the driest province in Argentina, but there is concern about crops in Chaco, northern Santa Fe, western Formosa and far northernmost Cordoba, as well. These areas have dwindling topsoil moisture, but subsoil moisture is a little better than that of Santiago del Estero. However, with that said, there is potential for daily high temperatures in the coming week to vary from 35 to 41 degrees Celsius and that kind of heat will quickly deplete topsoil moisture and stress crops.

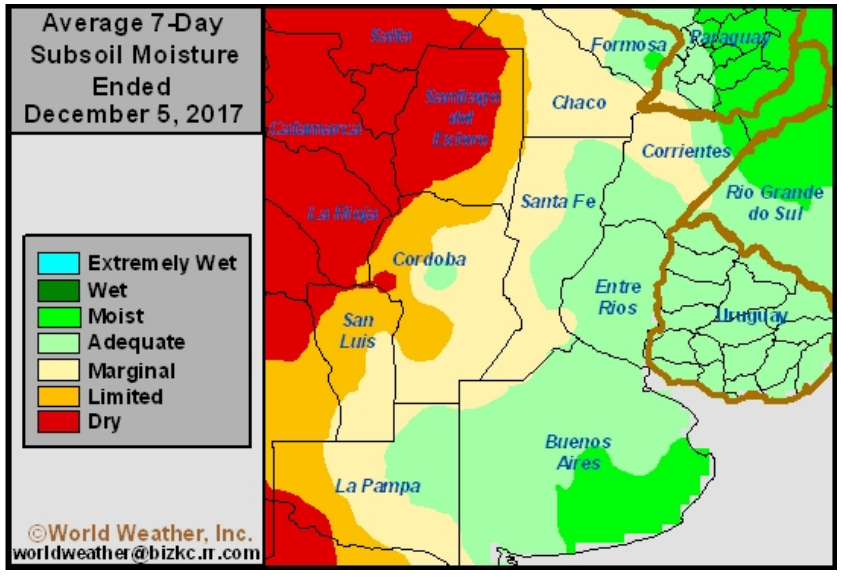
The heart of Argentina's corn, peanut, soybean, sunseed and sorghum production areas are farther south in central portions of the nation and those areas have better soil moisture to carry crops through the dry and warm period without permanently losing production potential.

Even though there is much market talk about Argentina's dry and warm bias, it is important to note that corn planting was only 55% complete at the time of this writing. Peanut planting was 74% done and soybean planting was 56% complete. Sorghum planting was only 39% done and most of these figures are a little behind last year's pace because of recent weather related disruptions to fieldwork. Wheat harvesting was 46% done and soybean planting will not conclude until the wheat is gone in late December or early January.

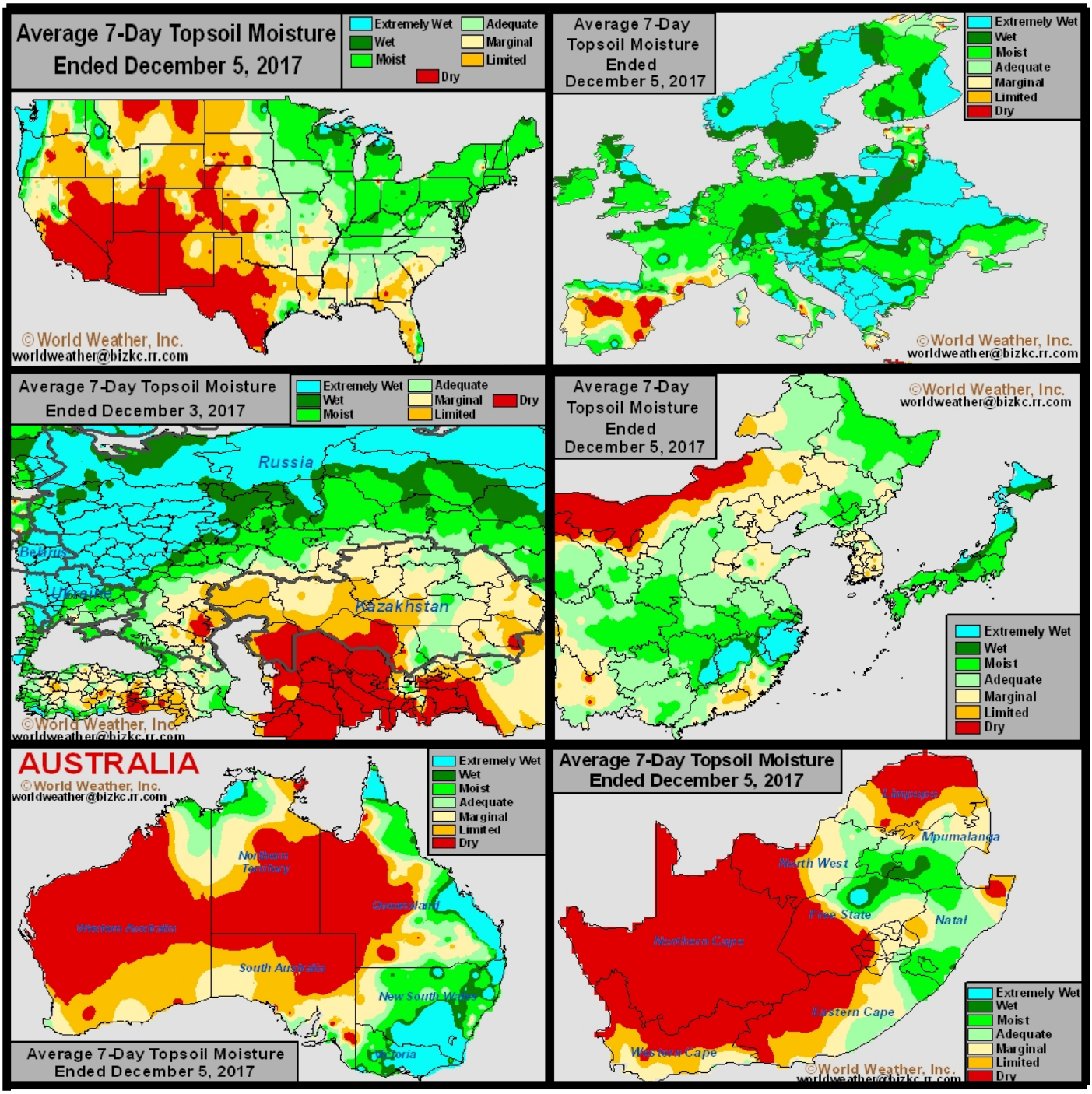
The fact that planting is not complete suggests Argentina can still plant and replant its crops if necessary leaving the dry situation far from a crisis. Timely rain is expected in Argentina and southern Brazil again starting Dec. 15 and continuing into the week of Dec. 18 and that too will curb some of the drought talk.







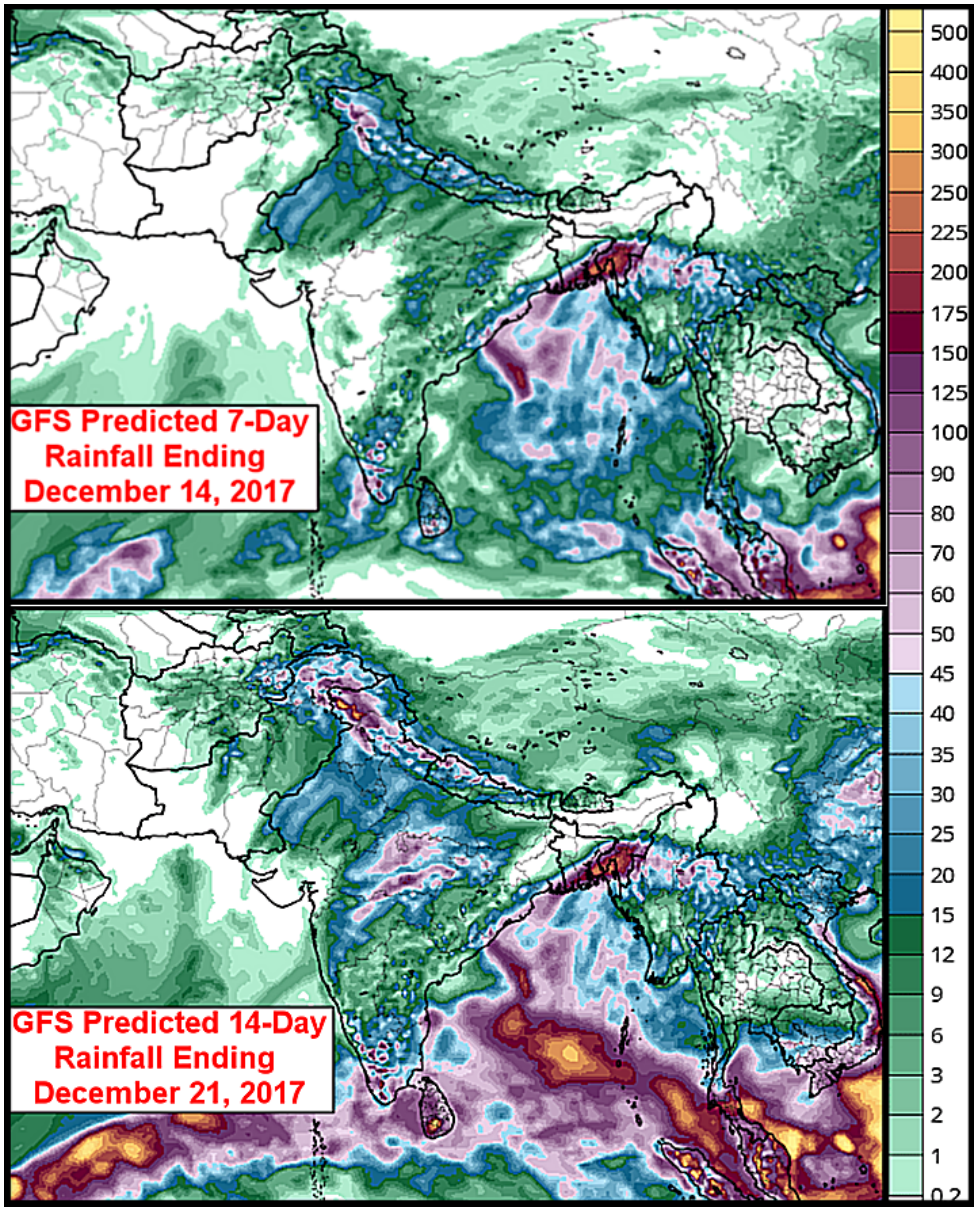
Selected Weather Images From Around The World



Australia rainfall in the last days of November and early December became a little excessive and while the moisture was good for summer crop development, it was a threat to unharvested winter crops. Some quality decline in wheat, barley, canola and some unharvested pulse crops was suspected. Drier weather is now evolving. South Africa weather has recently trended wetter, but only in the central and eastern part of summer crop country. Western summer cotton, peanut and other grain and oilseed crops are too dry in South Africa and rain must begin falling soon. Europe, western Russia, Belarus, the Baltic States and western Ukraine are excessively wet with snow cover increasing. The wet bias in parts of the Europe may lead to flooding in the spring, but increasing snow cover is likely to help protect winter crops from any harsh weather that evolves. China soil moisture has been favorably rated most of this autumn and winter wheat and rapeseed are poised to perform well in the spring. U.S. dryness will have to be closely monitored this winter because La Nina could leave spring precipitation below average in the central states.

Northern, Central India Winter Crops To Get Rain

The focus for India crops will shift to winter wheat, rapeseed, millet, lentils, and other pulse crops in the coming weeks. Some crops are irrigated while others are more dependent on timely rainfall to emerge, establish and produce favorably. Irrigated fields will welcome supplemental rainfall and the additional moisture should translate into better establishment and growth potentials. Most areas in the west, central, and northern production areas were dry in November outside a few pockets that reported light rain. Unirrigated fields need moisture to become better established. India winter crop production is always much higher in years where timely rainfall occurs in December, January and early February. Some of the best precipitation years are La Nina years and this year is not expected to be any different.



Much of western, central, and northern India will be dry through Saturday. However, a trough of low pressure will move across the nation next week to help promote scattered showers at the end of the weekend into Tuesday. Rainfall will range from 0.40 to 2.00 inches most often with pockets in far northern India receiving 4.00 inches or more. Portions of Gujarat and western Rajasthan will receive less than 0.25 inch of rain and that should help protect cotton fiber quality in unharvested areas. The precipitation will help supplement irrigation and promote a good environment for most crops. Central and northern India could potentially receive additional rain December 14 – 20 that will further supplement irrigation.

Rainfall will actually be a detriment for mature cotton in parts of India. Some of the rainfall will be enough to negatively impact cotton fiber quality.

The majority of winter grain, oilseed and pulse crop planting should be complete or will be complete in the next two weeks. There is no better time for significant rain to fall than after crops have been put into the ground. Rain expected next week will moisten the topsoil sufficiently for improved emergence and establishment and the rain that comes in the following week will be perfect in ensuring the moisture boost is sustainable.

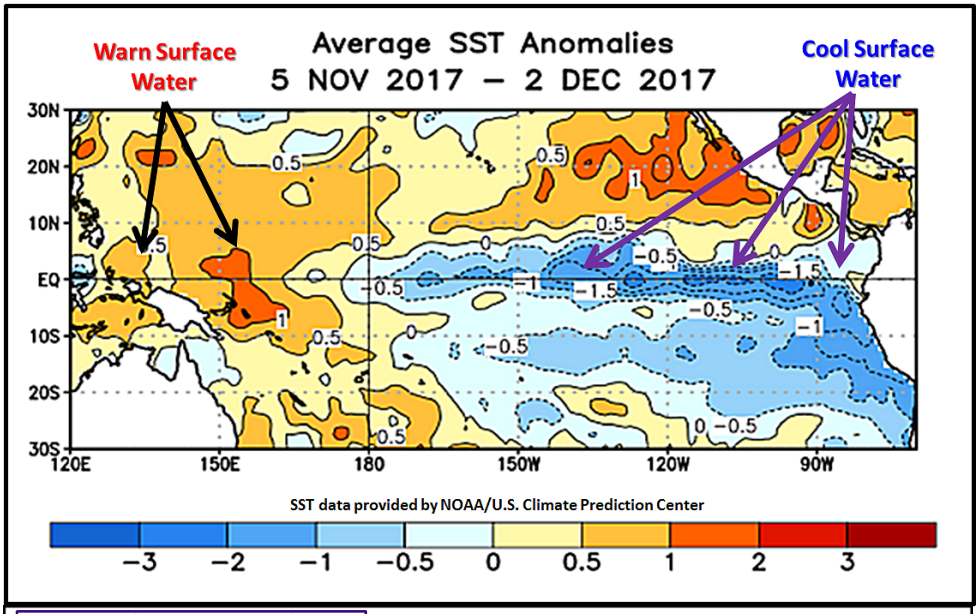
Production potentials for all winter crops will rise as a result of this two week rainfall outlook if it verifies and confidence is high that it will.

La Nina will likely provide additional opportunities for rain later this winter and if rain occurs in January or February it would likely be a huge boon to production potentials.

La Nina years do not usually get as hot in February and March as some years do and that will further support a good production year. In the meantime, confidence is high for the rain coming up in the next two

La Nina May Be Around Longer Than Some Believe

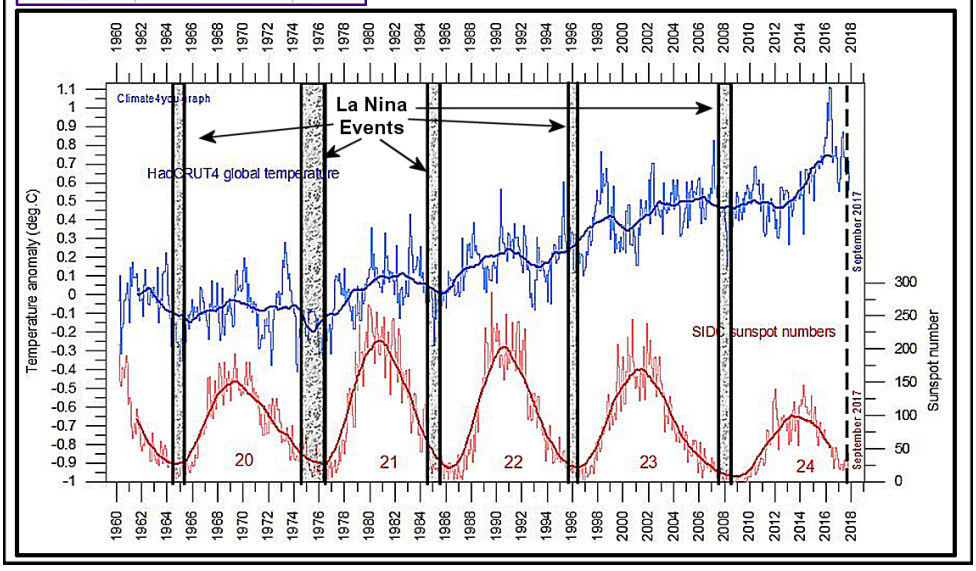
La Nina conditions continued to expand as expected in recent weeks, but there are signs that it may be nearing its peak of intensity– at least for a little while. The event had been predicted to last through the winter and then possibly weaken, according to the NOAA's CFSv2 model. However, World Weather, Inc. offers a different view on the event. A solar minimum is supposed to take place in 2019 and there is a very strong association with La Nina events and the solar minimum. If this relationship holds true as this new solar minimum approaches there will be a good chance that the current La Nina will either persist through the coming growing season or will weaken temporarily and then reassert itself on the world's weather a little later in the year.



SOLAR MINIMUM YEAR	Nearest La Nina Event	La Nina Duration
1954	May 1954 ==> Aug 1956	29 months
1964	May 1964 ==> Jan 1965	9 months
1976	Oct 1974 ==> Apr 1976	19 months
1986	Oct 1984 ==> Aug 1985	11 months
1996	Aug 1995 ==> Mar 1996	8 months
2008	Jul 2007 ==> Jun 2008	12 months
2019	?????	????

Since 1950 La Nina Events Tend To Occur In the Year Prior To...Or The Year Of... The Solar Minimum

2019 is likely To Be The Next Minimum



La Nina conditions have expanded and intensified in recent weeks. Nearly all ocean area within 10 degrees of latitude north and south of the equator and east of the International Dateline has trended cooler than usual the past few weeks, but there is new evidence that the expansion of La Nina may be coming to an end – at least for a little while. Subsurface ocean water temperatures are still below normal down more than 150 meters, but there is an intrusion of warmer than usual ocean water moving east from the western Pacific that may begin to reduce the volume of cooler than usual water for a while. The more warming that subsurface ocean water experiences in the next few weeks, the more likely that below average surface ocean temperatures will not be expanding much more. A new wave of reinforcing colder than usual ocean water will be needed to ensure the ocean surface temperatures stay below average for an extended period of time. That is the only way that La Nina will be able to prevail.

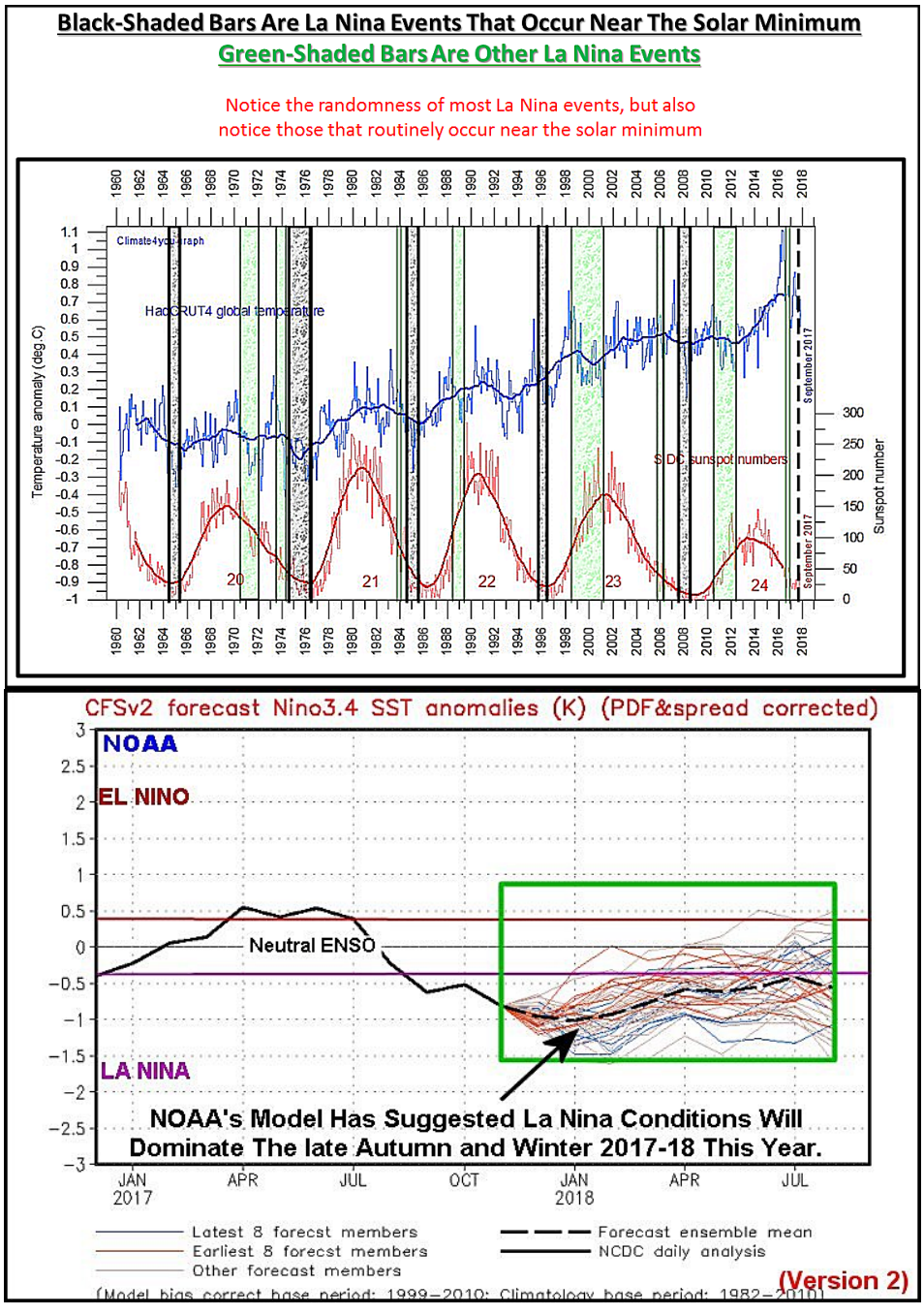
La Nina intensity will likely begin to decrease late this month and in January if the stated trend continues. A weakening trend in La Nina is to be expected, but the bigger debate is over how much weakening will occur and for how long. Computer forecast models are not very good in predicting ENSO events more than three months out into the future at a time. But traders, farmers and speculators want to know what the chances are that La Nina will last into the Northern Hemisphere growing season. World Weather, Inc. has reason to believe that at least some La Nina tendencies will remain into the spring and summer. (Continued on page 8)

La Nina May Prevail (continued from Page 7)

La Nina events have always been considered random events that occur periodically just like El Nino events. However, since 1950 there has been a very definite association between the solar or sunspot minimum and La Nina events. Statistically speaking, La Nina events have occurred either in the year preceding the solar minimum or during the year of the solar minimum without fail.

There have been six solar minimums since 1950 in each case a La Nina event occurred close to the year of minimal sunspots. If 2019 is going to be a solar minimum then that puts 2018 into a position to fit well within the statistics suggesting that some La Nina events occur in the year that precedes the minimum.

None of the La Nina events that have occurred near solar minimums have lasted less than 8 months. The La Nina event that occurred in conjunction with the 1976 solar minimum lasted 19 months and the one associated with the 1954 minimum lasted for 29 months. Four of the six La Nina events that occurred near the solar minimum lasted for 8-12 months. If this year's La Nina lasts for 8 months it would last into June and if it lasts for 10 months it would last long enough to have influence on summer weather patterns in North America and the remainder of the world.



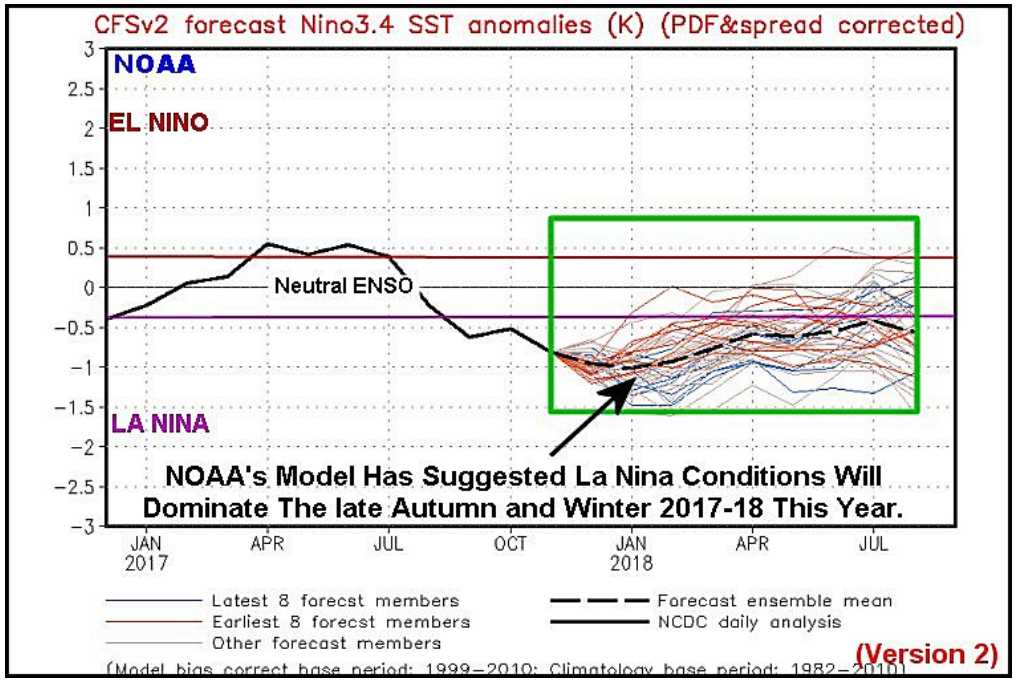
It is most interesting to note that most La Nina events seem to be random occurrences and will occur at just about any time in any year and can follow El Nino events or occur as independent events. Now, World Weather, Inc. will be first to admit that the sampling of data we have is much too small to make sweeping generalizations about the coincidence of La Nina and solar minimums. However, the short term record certainly offers some compelling evidence of an association.

If the association will verify again in the coming solar minimum forecasters, producers and traders should make preparations now for a La Nina influenced Northern Hemi-

La Nina May Prevail (continued from Page 8)

sphere growing season in 2018.

That could perpetuate some of the dryness that is present in the U.S. Plains, western Delta and southwestern Corn Belt today into the spring and early summer. With that said, World Weather, Inc. believes drought in the northern Plains and Canada's Prairies will linger into the spring, but will be relived during late spring. Dry weather present in a part of the central and southern Plains, western Delta and southwestern Corn Belt could fester into a more significant event when spring arrives if there is no sufficient rain to ease current dryness before the warmer days of summer arrive.



Strangely enough the latest ENSO forecast from NOAA's CFS v2 computer model this week has been trending in such a manner to prolong the La Nina event. Just one week ago the ENSO forecast model was suggesting La Nina would dissipate in April and neutral ENSO conditions would prevail during the summer of 2018. The latest changes are not reliable and caution is advised because the CFSv2 model is not very good in predicting ENSO events out more than 3 months. The sudden extension of La Nina conditions into July from this forecast model is an 8-month forecast and it may not be totally wrong, but more evidence is needed before this meteorologist buys into it.

That brings us back to the solar minimum and its apparent association with La Nina events. It could very well be that this La Nina has staying power and with the solar minimum coming up it might just prevail for long enough to influence the 2018 Northern Hemisphere production year.

If La Nina does prevail into the spring and summer growing season there may be some dryness in east-central China, but the rainy season in Indonesia, Malaysia, Philippines, mainland areas of Southeast Asia and India may be greater than usual. Dryness could evolve in a part of Russia and the United States beginning in May or June. West Central Africa's rainy season would be wetter than usual as would be that in Mexico and Central America.

It is too soon to know for sure what direction this La Nina event will take, but it is very important to pay attention to its potential staying power. It will also be important to follow other weather cycles in the atmosphere and see how they are likely to meld together. The summer forecast is quickly coming together with influence from the solar minimum, La Nina and a repeating pattern in the atmosphere that looks like they may come together and reinforce each other in the summer outlook 2018. The reinforcement could lead to a slightly milder summer in the eastern half of Canada while weather in the Prairies may be a bit wetter biased, but not until late spring and especially summer.

By the way, the weakening trend expected in La Nina during late December and January should not seriously change the South America, Australia or South Africa weather outlooks. Eastern Australia will trend wetter as will central and eastern South Africa. Brazil summer rainfall will be abundant from center west to center south crop areas and Argentina will see its dryness bias shift to the east and expand into southern Brazil.