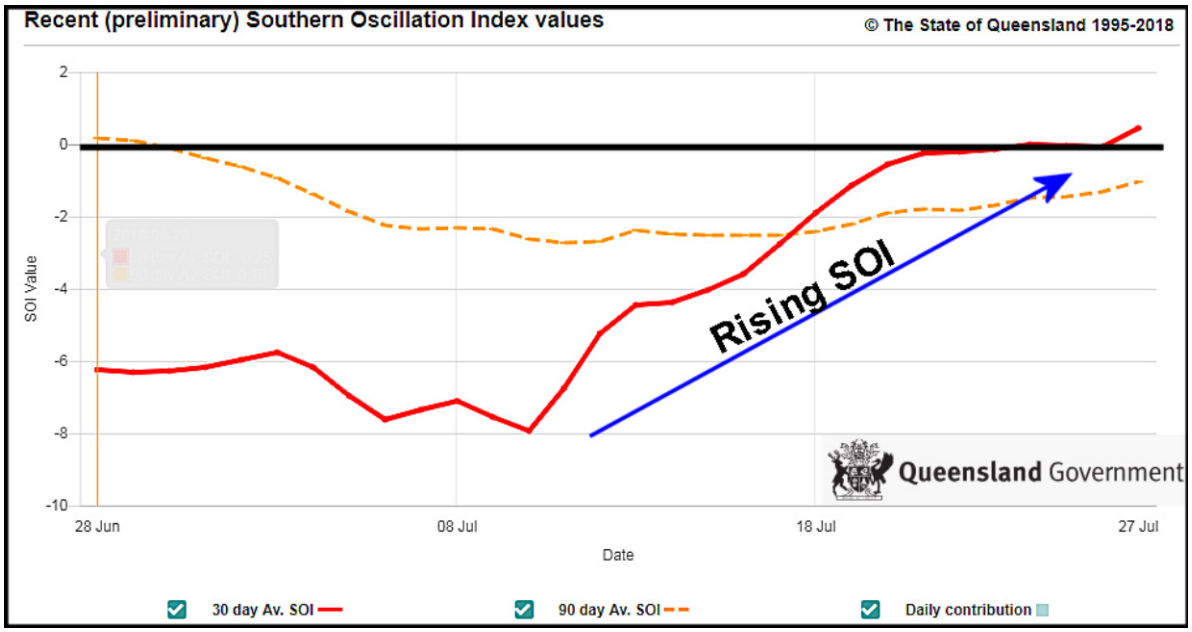
East Australia Rainfall May Improve, According To SOI Data

By Drew Lerner

Kansas City, July 27 (World Weather Inc.) – ***East-central Australia is still suffering from chronic dryness. Unirrigated areas of Queensland and northern New South Wales have been critically dry for an extended period of time and with El Nino possibly evolving later this year or in early 2019 there is concern that drought conditions will become much worse before they get better. The Southern Oscillation Index (SOI) is possibly offering a little short term hope for the region after being consistently negative earlier this month. A notable rise in the SOI since July 10 has left some potential that August rainfall will be more normal than that of recent months.***



The Southern Oscillation Index is most often used as an indicator of ENSO conditions. A significantly negative or falling SOI usually suggests El Nino conditions are present or developing – when the trend is sustained over a prolonged period of time. Similarly, a prolonged period of positive or significant rising SOI supports La Nina or developing La Nina conditions.

WHAT IS SOI AND HOW DOES IT APPLY

The SOI is based on air pressure differences between the island of Tahiti and Darwin, Australia. The index changes as the relative air pressure at these two locations changes. When air pressure is greater in Tahiti than it is over north-central Australia the SOI tends to be positive and when the pressure is higher near Darwin than it is in Tahiti the index is negative. The relative differences in air pressure are sometimes (not always) tied to sea surface temperature anomalies. When the ocean water is colder than usual north of Australia and surrounding areas of Indonesia the air pressure at Darwin is often high and the SOI tends to be a positive value if the ocean water is cold north of Australia and warmer than usual near Tahiti. Warm ocean water temperature anomalies are often associated with

greater rising air velocities and the air pressure tends to be lower in areas where the water is notably warm.

Ocean temperature changes of significance can change SOI values significantly and when the ocean does turn anomalously warm near Tahiti and cool north of Australia that tends to be strongly associated with El Nino events and the SOI in this scenario would usually be strongly negative. Similarly if the ocean surface water temperature anomalies near Tahiti were cold and warm water was near Indonesia and northern Australia there would likely be greater air pressure over Tahiti and less air pressure over northern Australia resulting in a positive SOI and these conditions are all closely tied to La Nina.

However, surface pressure differences between Tahiti and Darwin do not just change when El Nino and La Nina are around. Other weather features that move in and out of the tropical Pacific Ocean can change atmospheric pressure and the positioning of high and low pressure systems near Australia and Tahiti without any notable change in ocean temperature. The position of high and low pressure systems also determines whether the weather is sunny and warm or whether it is rainy and cool over any particular location.

In the absence of El Nino or La Nina, changes air pressure between Tahiti and Darwin occur more frequently and can provide false signals of El Nino or La Nina confusing the general public as to whether those ENSO phenomena are in place or evolving. However, changes in SOI can help predict changes in short term weather patterns.

The SOI in June fell significantly and many interpreted the change as an early indicator of coming El Nino conditions. However, that proved to be a false signal, but it did suggest that a large high pressure system was near northern Australia and rainfall has been consistently lacking in eastern and northern Australia during this period of time as one would expect when high pressure is in place.

RECENT CHANGES IN SOI AND THE IMPLICATION

The SOI has recently moved significantly higher and is now near zero which means air pressure over Tahiti and that in northern Australia are very similar. The lack of variance in air pressure suggests there are no significantly anomalous weather features influencing Australia and storm systems moving through the atmosphere should have a favorable chance to develop and move across the continent in a relatively normal fashion. At this time of year normal weather brings periods of rain to all of southern and east-central Australia crop areas. Rainfall in Queensland and northern New South Wales, however, is not usually very great limiting the benefit in long term soil moisture.

The recent rise in SOI has opened the door of opportunity for rainfall to occur more routinely in the drought stricken areas of eastern Australia. The next few weather systems that move from west to east across the nation should bring a relatively normal amount of rain to Queensland and northern New South Wales where rain has been nearly absent in the recent weeks.

Two weather features are expected to impact the drought stricken areas of eastern Australia in the coming week. The first will occur this weekend and the second occurs in the first weekend of August. Rainfall in both events is not likely be greater than usual, but relatively normal varying from 0.10 to 0.50 inch in the drought region. ***That should be sufficient moisture to induce better wheat establishment and to encourage some new crop establishment and improve the prospects for early spring development. The change will be welcome, but it will not be enough to end drought.***

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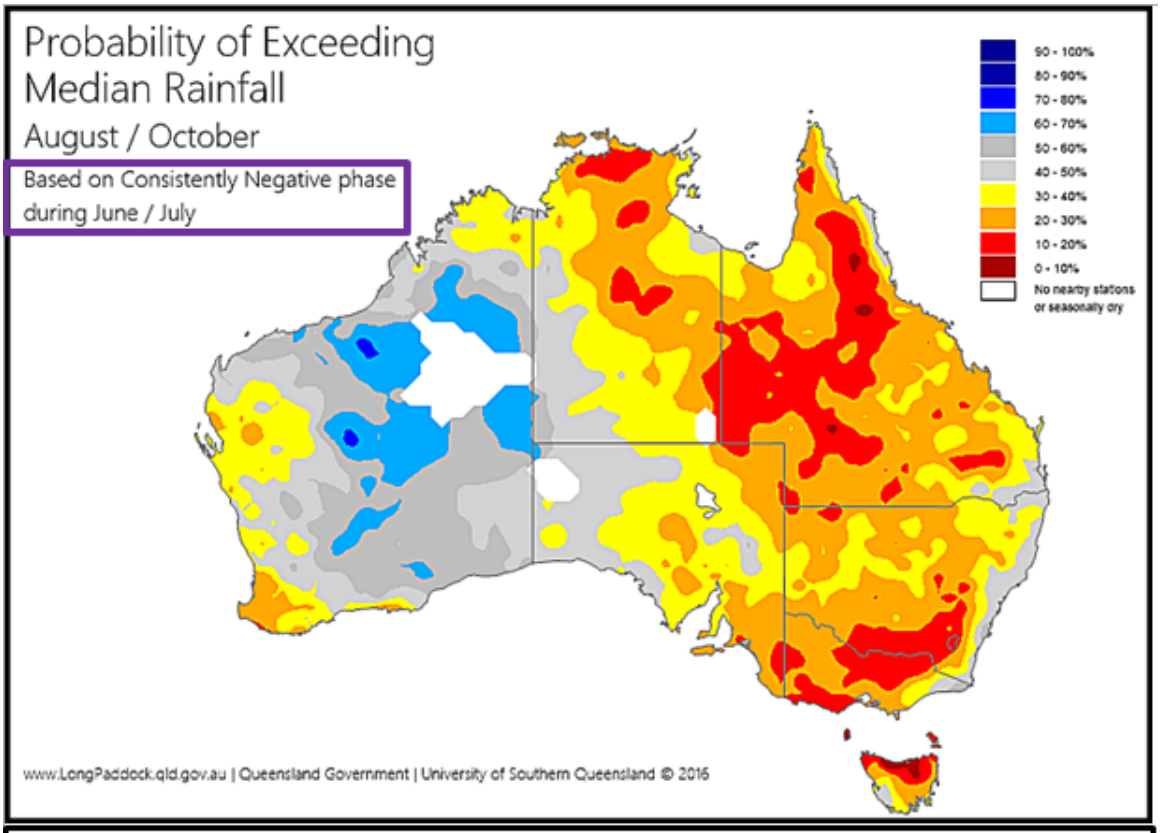

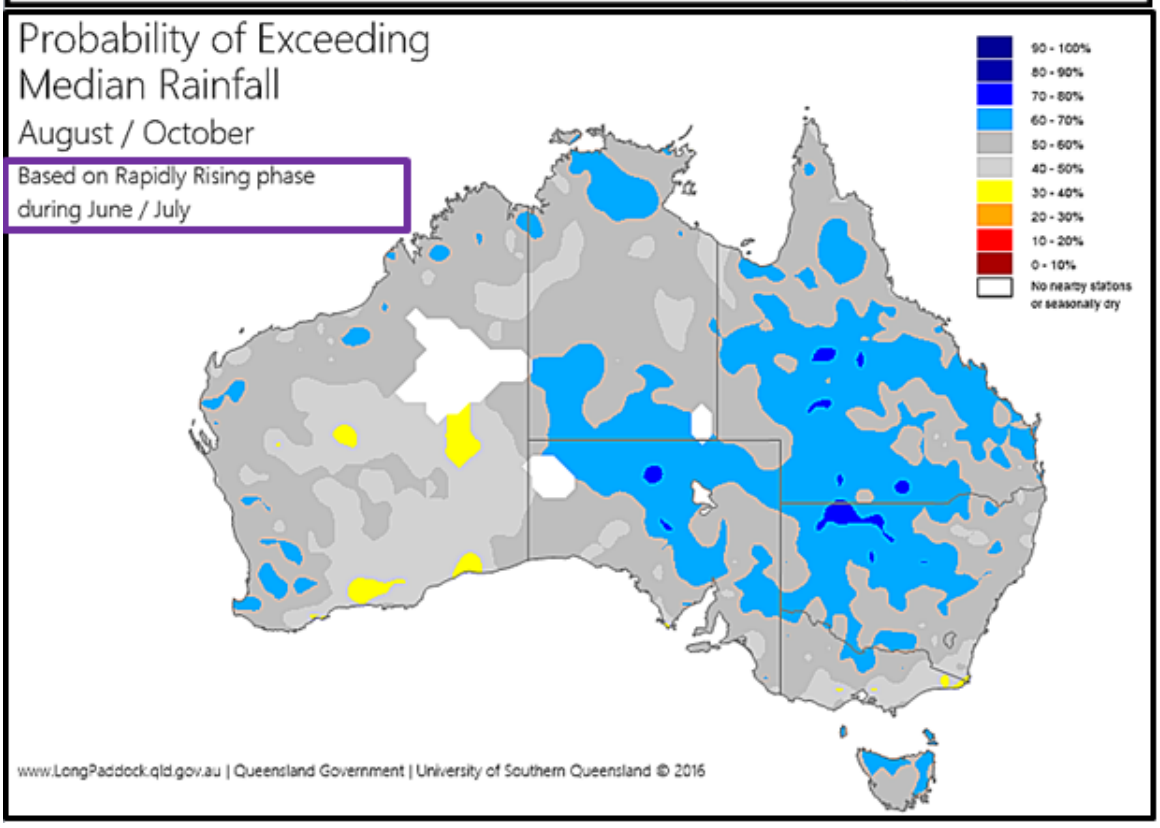

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Meteorologists at the Australian Bureau of Meteorology have studied the SOI and learned that certain changes in the index over a 30-day period result in specific changes in local and international weather patterns. ***This latest change in SOI from notably negative values in early July to near zero today suggests there is a little better chance for rain over the next 90 days in eastern Australia. World Weather, Inc. finds that these forecasts that the Australian Bureau of Meteorology make over 90 days are really much better for the immediate 30-day period except in times of El Nino and La Nin events at which time longer range forecasts can be made with a fair amount of verification.***

The bottom line is that, according the Australia Bureau of Meteorology the rising SOI over the month of July should translate into a more favorable period of rain in eastern Australia during August. Drought busting rain is not likely, but enough moisture may occur to improve winter crop conditions ahead of reproduction that usually occurs in September. ***Improved rainfall now comes too late for some wheat, barley and canola crops that are not irrigated and a full restoration of production is not very likely. However, crops that have emerged and survived the driest conditions of late would have a big potential to improve and could yield much better if the wetter bias were to prevail into the spring.*** Some planting did not occur this autumn and winter because of drought being so severe and that production, obviously, will not be made up by improved rainfall in August.

SOI changes will continue from week to week and month to month and its net change will likely have much to say about drought in eastern Australia. However, no change in SOI is more powerful than that associated with a significant El Nino event and that is when the weather in eastern Australia usually turns drier than usual and stays that way for an extended period of time. Most forecasters expect El Nino later this year and that implies a falling SOI will return soon. ***Once the SOI starts falling significantly and stays notably negative the chances for rain in eastern Australia will dry up with everything else and drought will continue or resume.***

The prospects for El Nino later this year places huge importance on the latest change in SOI and the potential for rain falling in the next few weeks. Queensland and northern New South Wales must receive substantial rain to restore soil moisture to normal and the odds of getting that much rain before El Nino kicks in is very low. But enough rain could fall to help support winter crop establishment and early growth enough to help recover some yield potential and that is what producers in Australia are hoping for.

Most likely El Nino will start evolving in September making improved Australia rainfall a short term benefit and deviation from serious dryness. More dry weather later this year will threaten all unirrigated crops in eastern Australia. The seriousness of ongoing drought may be largely determined by how much rain falls ahead of the developing El Nino in the next few weeks.

There are some international weather associations with an SOI that rises rapidly during July and those are shown on the graphic below. Most of the anomalies are not very significant with relatively normal weather expected in the U.S. Midwest, Argentina, Europe, the western CIS and South Africa while India and parts of Indonesia are a little wetter biased along with northeastern China. China's Yangtze River Basin tends to be drier than usual in August along with parts of center west Brazil and east-central Africa. Western U.S. precipitation excluding the southwestern desert region and including the western Plains tends to receive less than usual rainfall.

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