By Ken Kopp, Assistant General Manager; Water Rights / Source Water Protection Specialist

La Niña Could Spell a Continued Dry Winter and Spring

All the ingredients appear to be in place for continued drought in the central plains this winter and spring. Many areas of the state are already experiencing drought conditions, but the outlook appears bleak for any recovery in those areas and for further deterioration elsewhere this winter and spring. A key indicator of what to expect was a change occurring in the equatorial pacific known as the El Niño-Southern Oscillation (ENSO) cycle. This naturally occurring cyclical pattern oscillates between warm and cold ocean surface temperatures, a phenomenon which in turn affects global weather patterns. The warmer than normal phase of the cycle is known as El Niño (Spanish for the little boy), while the cooler phase is known as La Niña (the little girl.) Forecasters currently estimate a 95 percent chance that the current La Niña will persist through spring, and they say the event is likely to be a relatively strong one. After that, experts say, the picture is less clear.

According to the National Oceanic and Atmospheric Administration (NOAA), El Niño and La Niña episodes typically last nine to twelve months, but some prolonged events may last for years. While their frequency can be quite irregular, El Niño and La Niña events occur on average every two to seven years. Typically, El Niño events occur more frequently than La Niña. It should also be noted that La Niña does not necessarily mean a "quiet" winter weather pattern. There will continue be some extreme events and storms.

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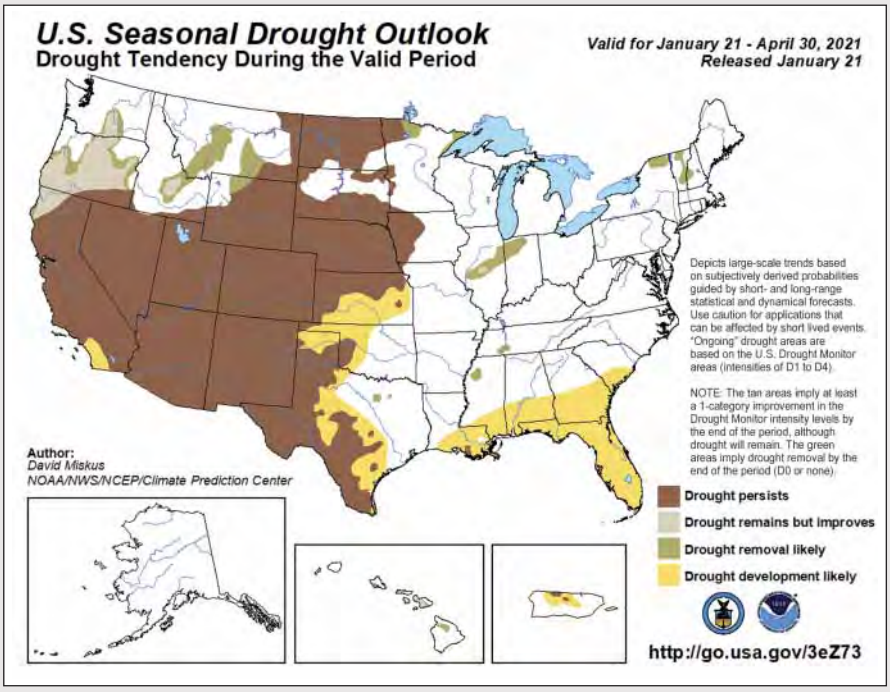
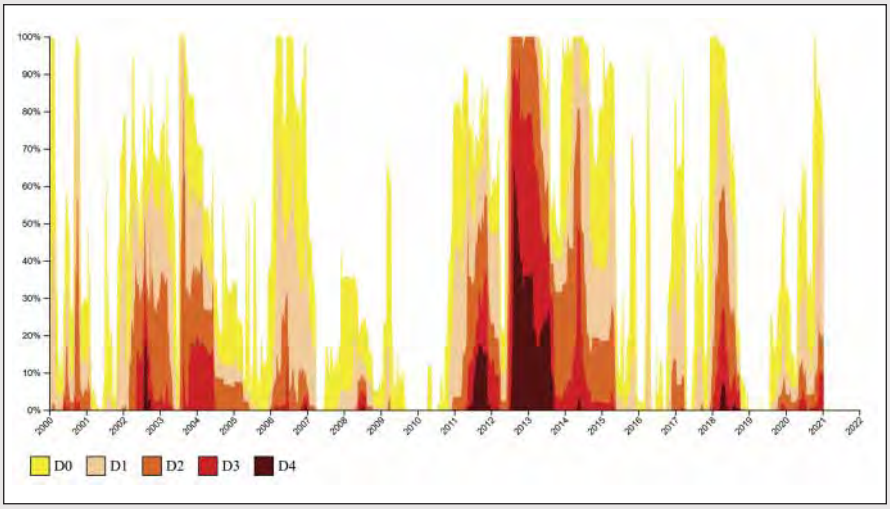


The U.S. Seasonal Drought Outlook, released Dec. 17, 2020, indicates drought conditions will persist and expand through early 2021.

While results in Kansas can vary greatly based on the intensity of the event and multiple other factors, a La Niña phase typically leaves Kansas with warmer than normal temperatures and below normal precipitation. The below normal precipitation component of La Niña is fairly predictable. Temperature patterns across the United States during La Niña winters, however, appear to be less consistent than those of precipitation. Intensity of the event is also an important ingredient. Some La Niña's are fairly weak and are less impactful. Moderate to strong events, such as the one currently being predicted, tend to have the greatest impact in our state. The most recent examples happened in 2011 and 2012, where back-to-back strong to moderate La Niña cycles resulted in severe drought conditions across the central plains and in Kansas. Conditions were already so severe during the summer of 2011, that the Division of Water Resources (DWR) invented a one-time only Drought Term Permit program to allow water right holders to pump more than their authorized annual quantities of water during 2011, provided they reduce the amount they pumped (or pay back that

overage) in 2012 to compensate for their overuse. Unfortunately, the 2012 moderate La Niña fueled drought was even worse. According to the U.S. Drought Monitor, the most intense period of drought in Kansas during the 2011-2012 droughts occurred the week of August 21, 2012, where Exceptional Drought (D4) affected 66.93 percent of the state. Modifications were then made to an already existing program called the Multi-Year Flex Account to allow water right holders to convert their Drought Term Permits to MYFAs and spread the 2011 and 2012 overages out over a five-year period. While not as attractive to municipal water right holders (public water suppliers) the Multi-Year Flex Account remains a tool that can be utilized by all water users to help manage water use during drought conditions.

Although the current La Niña event may not result in the exact same scenarios as 2011 and 2012, it is worth noting that it can and will happen again. Recent studies indicate drought conditions with heat waves and dust storms may be happening more frequently in the central plains. There is also research which indicates the plains may be headed into a mega-drought. Scientists fear a repeat of the 1930s feedback loops which resulted in dustbowl storms, where the wind-borne dust carried away vital nutrients from the soil, leading to crop losses and the need to plow up more terrain—thereby removing stabilizing ground cover and adding to the supply of dust.

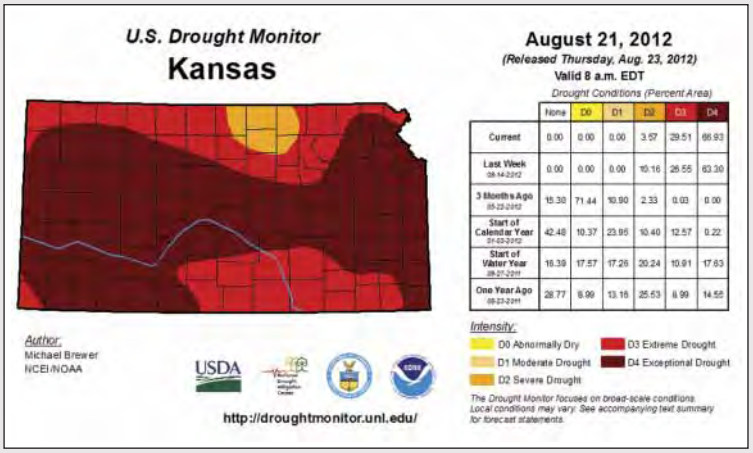


Since the inception of the U.S. Drought Monitor in 2000, the longest duration of drought in Kansas lasted 248 weeks, beginning on November 9, 2010 and ending on August 4, 2015. (Source: National Drought Mitigation Center)

An early or prolonged 2021 drought could spell water rights trouble

KRWA publishes a weekly E-Mail newsletter, which includes a brief summary of current drought conditions in Kansas. This is because drought conditions directly affect the amounts of water our systems' end-users are

consuming. Rural communities can experience higher demand for lawn watering. Rural water districts in Kansas can also experience a much higher demand from livestock producers in their districts as normal sourced of water, such as creeks and ponds, go dry. Every water operator should closely monitor the raw water being diverted from their authorized points of diversion, to ensure that no water right violations occur later in the year. It is also critically important to not wait and put off the review of water use until the end of the year, while you are filling out DWR's annual water use report. Ideally you should keep close tabs on your raw water diverted throughout the year, but if not, it would be a good idea to review water use around the end of September to see where you stand on water rights. That way you might have ample time to make adjustments if you have multiple water rights or points of diversion. KRWA staff can help water systems with any paperwork that might be needed to bring the city or water district into compliance with their water rights and to avoid enforcement actions and potential civil (monetary) penalties by DWR. Fines for overpumping of water rights have increased sharply in recent years. The agency has more tools available to help systems before they violate their water rights, but almost no ability to help after a violation has already occurred. Being proactive and communicating with KRWA and DWR as soon as you realize you might have a problem is extremely important.



The most intense period of drought in Kansas, since inception of the U.S. Drought Monitor in 2000, occurred during the week of August 21, 2012, where Exceptional Drought (D4) affected 66.93 percent of the state. (Source: U.S. Drought Monitor)

The time to prepare for a drought is not during the middle of one. The U.S. Drought Monitor is an easy resource to help you see the progression. The National Weather Service also has an Advanced Hydrologic Prediction Service with real-time maps showing precipitation information and trends. It is also a good idea to begin looking at the city's or RWD's Water Conservation Plan to make sure everyone understands the next steps that may be needed to take and to make sure they appear to be adequate for the needs.

I encourage any public water system that would like a review of their water rights or have any discussion concerning water rights, water conservation plans, etc. to give KRWA a call. Both myself and Doug Helmke and other staff are ready to provide guidance or whatever assistance is appropriate concerning water rights, water loss, emergency planning, etc.

Ken Kopp, P.G., Water Rights/Source Water Specialist, joined KRWA as Water Rights/Source Water Specialist in early 2016. He previous worked for twenty-three years at the Kansas Dept. of Agriculture, Division of Water Resources and most recently was New Application Unit Supervisor.