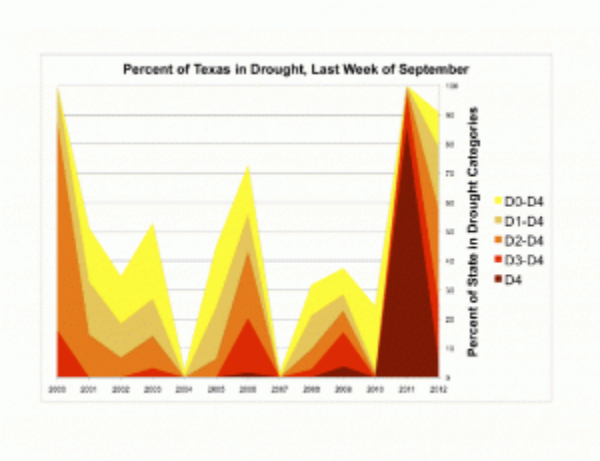
Winter Outlook for Texas Drought: Limber Up Those Fingers- September 28, 2012

Office of the State Climatologist Blog Post
http://climatexas.tamu.edu/index.php/news/817-winter-outlook-for-texas-drought-limber-up-those-fingers

Along about March of this year, someone emailed me complaining about how ridiculous my prediction of the possibility of an extended drought was turning out to be. Now here we are in September, and drought conditions are affecting almost 80% of the state. Indeed, at least 50% of the state has been in drought since December 2010. What was the worst one-year drought on record for Texas has lasted for two years so far.



US Drought Monitor categories for Texas: droughtmonitor.unl.edu

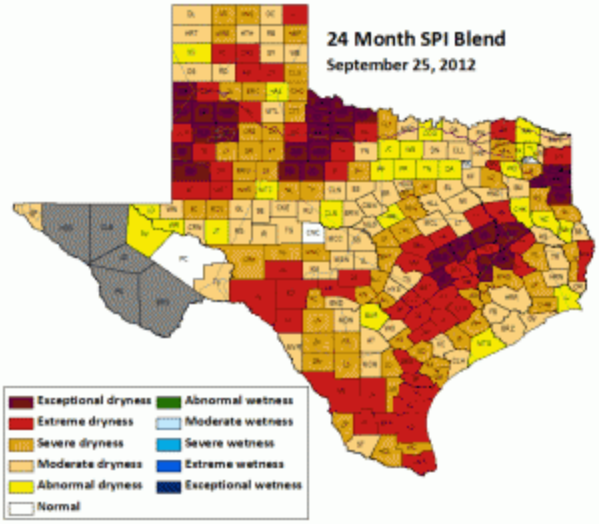
The conditions that led me to say that the drought could conceivably last for five to ten years have not changed. We still know that droughts have lasted that long or longer in the past. The Pacific Decadal Oscillation (PDO) is still strongly negative, meaning that temperatures are tending to run cool in the tropics and warmer at higher latitudes. The Atlantic Multidecadal Oscillation (AMO) is still strongly positive, meaning that temperatures are tending to run warm in the North Atlantic. The last time large-scale conditions were like this was during the 1950s.

The relationship between the PDO and drought in the south-central United States is well-established from the historical record and from computer models. If you plug in a negative PDO sea surface temperature pattern and run the model, it will generally produce below-normal rainfall. The connection with the AMO is more speculative because models have not yet been able to reproduce its effects accurately.

On the shorter term, tropical Pacific sea surface temperatures have been gradually inching their way upward. By at least one measure, El Niño conditions are already present in the tropical Pacific, and enough indicators may point that way to cause the Climate Prediction Center (CPC) to officially announce El Niño conditions. If they last several months, the El Niño conditions become an official El Niño event.

Historically, El Niño events tend to produce a cool and wet winter across the southern United States. So, if this year's El Niño holds true to form, Texas will get plenty of rain, and the drought will come to an end.

Okay, that's as optimistic as I can get. Now, unfortunately, I have to share with you five reasons to be pessimistic.

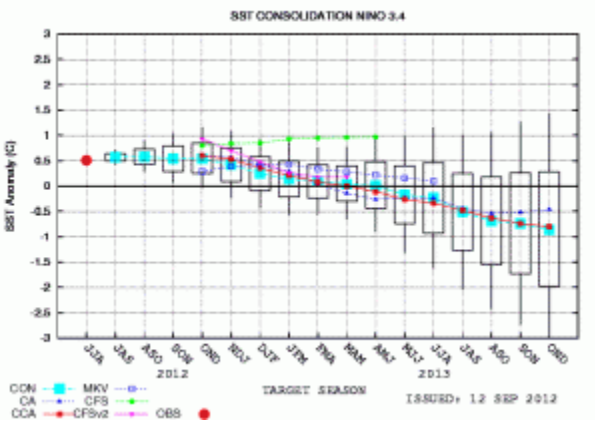


Current drought conditions based on lack of rainfall over the past two years. Does not consider drought enhancement due to high temperatures. Product available from the Office of the State Climatologist at http://atmo.tamu.edu/osc/drought/ Click to enlarge.

1. Much of Texas is so deep in drought that several months of above-normal rain may not be enough to end the drought. We saw this last winter when, despite above-normal rainfall statewide, reservoirs in central Texas didn't stop declining until January and reservoirs in western Texas continued to decline the whole time. To get plenty of runoff, you need to have the ground so soaked with rain that none of it sinks in anymore. That never happened in western Texas. An inch of rain here and there was enough to get the ground somewhat damp, but then it would dry out again before the next inch of rain.

2. El Niño is not a guarantee that Texas will receive above-normal rainfall, just as La Niña is not a guarantee that Texas will receive below-normal rainfall. We saw an example of this last winter: despite La Niña, Texas received above-normal precipitation. I suppose it was only fair, since the previous year's La Niña had left Texas with barely a drop of rain. But still, just as last year was that one winter out of five that is wet in spite of La Niña, this winter could be that one winter out of five that is dry in spite of El Niño.

3. This El Niño appears to be setting up to have its warmest temperature anomalies in the central tropical Pacific rather than the eastern tropical Pacific. In recent years, it has been recognized that there are two types of El Niño events, and the central Pacific type has been given the name "El Niño Modoki" (modoki means "similar, but different" in Japanese). The El Niño Modokis do not tend to produce as much rainfall across the southern United States as the regular El Niños do.



Climate Prediction Center consolidated outlook for El Nino. Sustained conditions above 0.5 C correspond to El Nino; sustained conditions below 0.5 C correspond to La Nina. Click for a larger image.

4. We may not get an El Niño after all. The latest forecast from the Climate Prediction Center has the odds of an El Niño event begin only slightly better than 50/50, and it's forecasted to probably be gone by the beginning of the new year. If we have neutral conditions rather than an El Niño, there's not much reason to favor above-normal rainfall over below-normal rainfall.

5. Next year we will probably have a La Niña again. The odds of La Niña conditions next fall are already running close to 60%, according to the Climate Prediction Center. That means, of course, increased likelihood of below-normal rainfall again. If this winter and spring doesn't come through for us, and Texas endures three years of drought, it is then highly likely to endure at least a fourth year of drought. At that point, we would be wondering how much worse than the drought of record the current drought might get.

Despite all this, it's still unlikely that the current drought will surpass the drought of record statewide. However, those odds keep growing and growing, and the chances of surpassing the drought of record are now large enough to start seriously worrying about it.

Based on all these considerations, there's a lot riding on Texas rainfall over the next nine months. This weekend will be a wet one, and that's a good start, but it's no answer to the drought. I, for one, expect to be keeping my fingers crossed for quite a while.

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