

Update on the Drought in Texas

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Drought rarely is as devastating to the landscape, and economy, of Texas as it has been in the past 16 months. In fact, the current “extreme to exceptional” drought is the worst 1-year episode in Texas’ history. In over half of the state, the drought of 2011 has been more intense than during the peak of the infamous drought of the mid-1950s.

Yes, the drought has eased somewhat in much of Texas over the past six weeks. After ten straight months of woefully meager rainfall, December delivered appreciable rainfall in many of the state’s ten climatic divisions. That rainfall (in some areas as much as 4 to 5 inches) was not enough, however, to keep the year of 2011 from being one of the three driest years since the end of the 19th century. In fact, in the South Plains and Permian Basin, rainfall for the whole of 2011 nearly reached historic lows. To illustrate the severity of dry weather last year in semi-arid West Texas, rainfall in the vicinity of Kermit totaled less than 2 inches for all of 2011. Only two locations in Texas have ever received less rainfall in a calendar year—and both are west of the Pecos. Last year, Seminole’s total rainfall of 3.49 inches was merely 19 percent of normal, and Lamesa’s total of 3 ½ inches all year is by far the least ever for that location. In virtually all of the High and Low Rolling Plains, yearly rainfall was barely a quarter of what normally is observed. In fact, in most of Texas, rainfall in 2011 was less than half of normal.

That is why the year was marked by an exceptionally ferocious drought that reduced lake water, stream flow, and water tables to alarmingly low levels. But the phenomenally hot growing season also played a major role in worsening the drought as the year ensued. Waco recorded its hottest year of the 20th century, and so did San Angelo. *The summer of 2011 in Texas was the hottest season in recorded weather history for any state in the Union.* All three summer months (June, July, August) were the hottest in our state’s weather history (which extends well over 100 years). When you combine the hottest July weather in history with rainfall statewide of merely 11 percent, drought becomes all the more aggressive. June and August were similarly stingy with rain while hotter than ever before, and the hurricane/tropical storm season in the Gulf gave nothing to Texas in the form of relief. One more piece of evidence that the year we just endured was, in the least, a once-in-a-lifetime experience, cities all over Texas counted more days of triple-digit heat than ever before: San Angelo witnessed 100 days of 100-degree heat, or 40 more days than the previous hottest summer. Austin, Waco, and Abilene likewise shattered records of intense heat, and the exceptionally hot weather scorched East Texas and the coastal plain as never before.

We understand the unparalleled heat and absence of ample rainfall are manifestations of a fairly intense episode of La Niña. I am referring to an abnormal cooling of the surface waters in the equatorial Pacific Ocean. La Niña episodes alternate with El Niño’s (warming of the sea water), and our weather has been under the influence of La Niña since the summer of 2010. La Niña’s historically have been synonymous with drier-than-normal weather in the American southwest, and the current La Niña has certainly behaved true to form. Undoubtedly, other factors are at play as well, including the presence of an influential oscillation of sea surface temperatures in the north Atlantic. But La Niña is a prime culprit for the drought we are enduring in Texas. Most La Niña episodes last between one and two years, and many of them have two or three

phases. The La Niña responsible for the current Texas drought peaked a year ago—then had a resurgence last summer. The more recent phase has not been as strong as the initial phase, but it was vigorous enough to prolong our drought through what is usually a reasonably wet autumn.

December's welcome rains did put a "dent" in Texas' agricultural drought. That is evident from the appearance of green grass where a hard freeze has not already struck. But despite beneficial rains before Christmas in large portions of Texas, the "hydrologic" drought has barely been impacted at all. Very little of December's rains reached our streams, so lake levels have not responded, and water tables underground continue to ease downward. It is why many of our aquifers, according to NASA's satellite data, are at levels so low that we see them only 1 or 2 percent of the time in history. We will not see the hydrologic drought ease until an abundance of thunderstorm days occur—and such days are quite uncommon in winter in Texas.

There is a ray of hope for Texas. The second phase of La Niña is now near its peak, and all of the computer models that predict its future point to a return to near-normal water temperatures in the central Pacific midway through 2012. It is true that La Niña can resurge a second time (for a third phase)—but that is rather unlikely. Instead, La Niña should be quite weak—if not vanished altogether—before spring is over. But that is not good enough for Texas' needs. La Niña's typically impact the flow of high-altitude westerly winds for several months even after the episodes have dissolved. Should El Niño follow this latest La Niña sometime later in 2012, we would expect the proverbial pendulum to swing in the direction of wet weather. But that is not foreseen for at least another one, two, even three seasons, and spring is usually the one season we rely upon to deliver the volumes of rainfall to quash a bad drought. So the bottom line appears to be this: The rest of this winter will be quite dry, and there is little to suggest spring will live up to its potential to end our drought. Even the approaching summer does not appear capable of producing the kinds of rains we need, especially if the hurricane season is as uneventful as last year's. We have little reason to expect major relief from drought—especially the "hydrologic" variety—until deep in 2012, if then.