

## WHAT THE DEVIL IS GOING ON WITH THE WEATHER OUT HERE?

by  
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Living on the edge of well-watered civilization as we do in Roger Mills County, we tend to obsess a bit on the weather, and especially on rainfall. I've written once before in this newsletter about what seems to be happening with our average annual rainfall in the last half of the 20th century (Thurmond 1993). The gist was, if you recall, that it seems to be getting wetter, especially if you look at the upward trend since 1950 in minimum (dry year) rainfall. Dry year rainfall has risen from about 12" in 1956 to plateau around 21" since 1981 (Ibidem: second graph).

Things have really gotten weird the last two years. The summer of 1995 was extremely wet, with serious valley flooding and upland erosion. The North Fork of the Red River floodplain was completely inundated for two days in May. Our rainfall total for the year was 47.90" (Oklahoma Climatological Survey, Cheyenne Mesonet Station). As a basis for comparison, the historic 48" isohyet, or average annual rainfall line, runs through the center of Pushmataha County in far southeastern Oklahoma (Morris, Goins and McReynolds 1976: Figure 7d). Our "normal" annual rainfall, going on records averaged from territorial days to the mid-1970s, is supposed to be half that at 24" (Ibidem).

The rain shut off the first week of October in 1995, and we received hardly any effective precipitation until the last week of May, 1996. The winter was unusually warm and extremely windy. In early May, no-precipitation thunderstorms came through, setting fires all over the county and overwhelming the local fire departments at times. Susie and I drove out with Don Wyckoff to the American Quaternary Association meeting in Flagstaff in May through country that had been in drought for the past five years, and looked it. We watched forests burn at Flagstaff and the west end of the Grand Canyon, and listened to Quaternary researchers talk about how Huascaran glacier in Peru, welded to bedrock for the last 20,000 years, is melting from the bottom up (Thompson 1996); how the oak trees in Sonora are dying from drought (Paul Martin, personal communication); and other equally encouraging things. By the time we drove back home through the desert, I was spooked.

When the rain came back in May, it did so with a vengeance. We've had 42.11" year-to-date as of this writing (October 11). Nearly 10" fell on one night on May 14 (OCS, Cheyenne Mesonet; neighbors to our immediate west reported 11-12" that night). Water has gone around the spillways of erosion control dams we have built in recent years in cooperation with the Natural Resources Conservation Service (the former Soil Conservation Service). These structures were designed to contain the maximum predicted rainfall for the region. Ponds which were quite low after the long, dry winter filled overnight. It has certainly been feast or famine.

Although the seasonal rainfall distribution seems to be gyrating into monsoonal extremes, it is clear that the long term trend is for greater average annual rainfall (Figures 1 and 2). A five year running average shows an unequivocal upward trend, from just above 20" in the early 1950s to the vicinity of 30" in the 1990s (Figure 1). Simple decadal averages show a similar trend, but the 1990s stand out more (Figure 2). Even if 1997-1999 are more "normal" years, with rainfall around 25" per year, the average for the decade will still be about 30".

All this rain is having visible effects on the landscape. The grass in areas of deep, well-drained soils is chest high, and is lush even on thin, rocky soils. Don Wyckoff and I walked down the middle reaches on Brokenleg Creek in Sections 27- and 34-13N-24W this past week, looking at Holocene valley fill. I had not walked this stretch on canyon in 15 years, and the changes were amazing. The canyon floor has filled in 1-3 feet in many places. Cattails and sedges now cover areas that were bare gravel or grass 15 years ago. The stream has always been spring-fed in historic times, heading up as it does in the Ogallala aquifer outcrop. However, spring discharge has generally not been sufficient in late summer to carry below the upper reaches of Brokenleg Creek. Not so the past three years; the stream flows strong all year. The channel is deeper and wider than it used to be, and is clearly continuing to enlarge. Even tributaries flowing off Permian bedrock outcrops along the Doxey Shale/Cloud Chief contact, with no contribution from the Ogallala aquifer, show significant spring flow (!?). There are channel catfish in the deeper holes

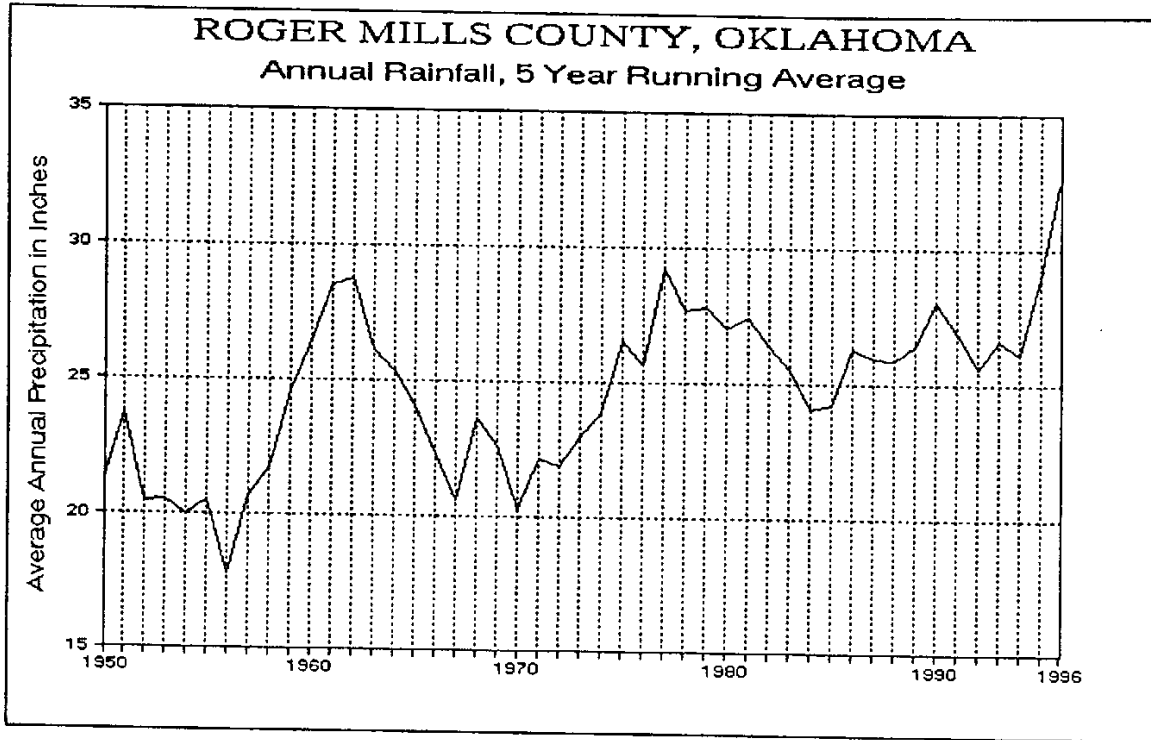


Figure 1

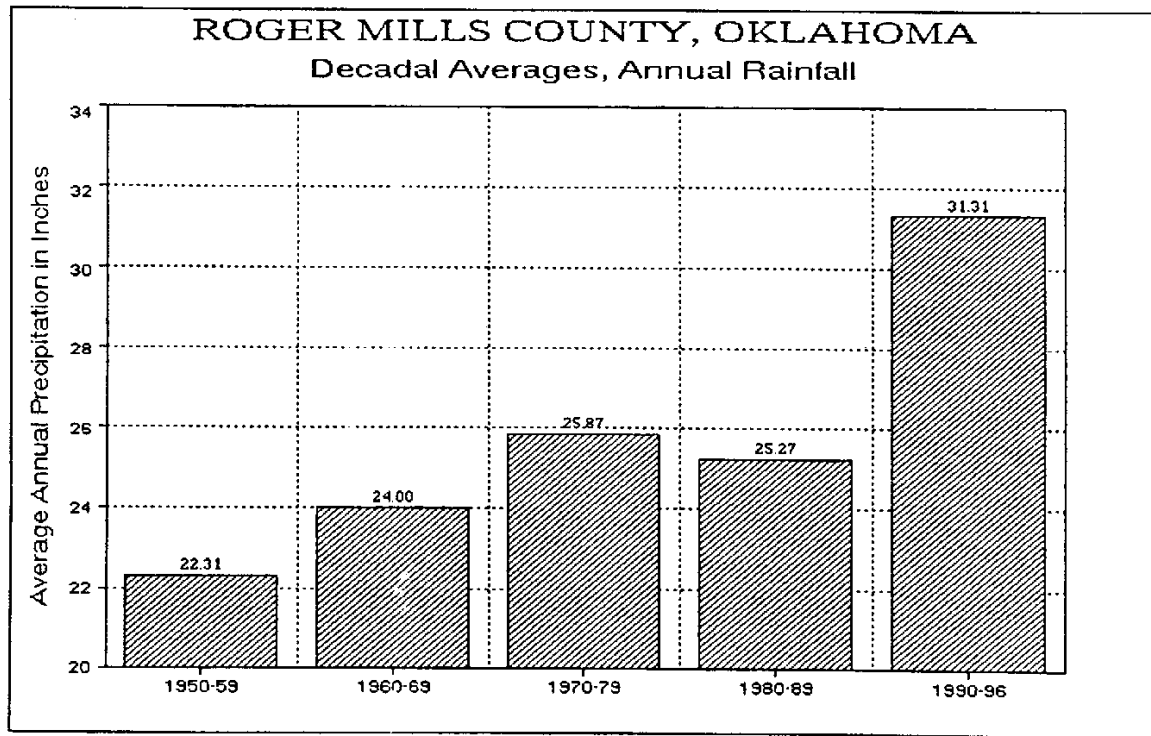


Figure 2

along the stream.

So what to think? Weather parameters can hit considerable annual extremes with no long-term significance (rainfall at the Kiamichi Tower in the Ouachitas topped 119" in 1949, and 84" in 1957; Morris, Goins and McReynolds 1976). However, it is also becoming clear from current research by paleoclimatologists that significant climatic change can occur quite rapidly, within a decade or two (Allen 1993, Allen and Anderson 1993, Laird 1996, O'Hara and Metcalfe 1995, Overpeck 1996). Rainfall can vary within a defined range for centuries, and then quite rapidly jump to a new, considerably drier or wetter range, again within a matter of decades or less (Curtis, Hodell, and Brenner 1996). Finally, there is disturbing evidence that the atmosphere is indeed heating up, with pronounced effects at high altitudes. High glaciers in the Alps and the Andes are rapidly retreating to and beyond their mid-Holocene Altithermal minima (Baroni and Orombelli 1996, Thompson 1996). I don't pretend to understand what this all means for western Oklahoma in years to come. But it certainly gives one something to ponder, living in country which swings from desert to prairie to woodland and back, as the dry American Southwest and humid Gulf of Mexico air masses duke it out over the centuries.

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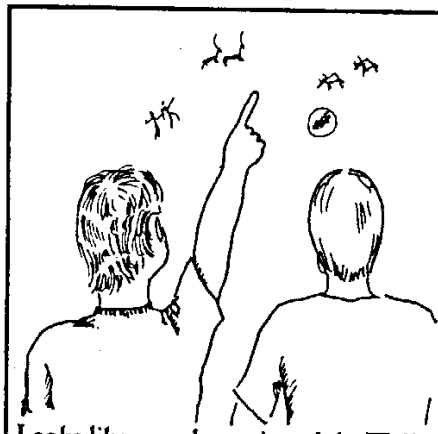
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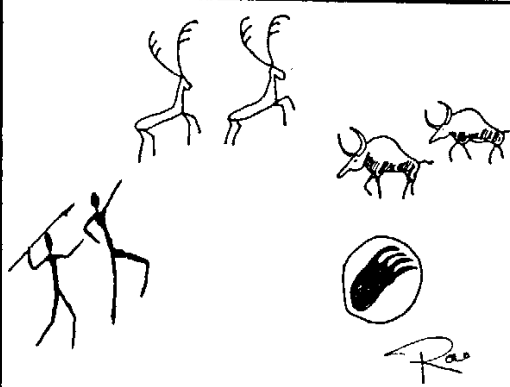
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## Interpeting Cave Drawings By Ron Ford



Looks like an early version of the Wall Street Journal.



If you are looking for the big bucks. Look to the bull market and avoid the bear market.