

2008 Spring and Summer Drought Outlook for Central NC
NOAA's National Weather Service Office in Raleigh
April 9, 2008

During 2007, central North Carolina received only 50-75% of the rainfall that would normally be expected in a year, and drought conditions were classified as 'Exceptional' (D4) over all of the area by year's end. Precipitation remained below normal early in 2008, but we began to see heavier, more frequent rainfall in March, which has persisted into April. This has resulted in much improved conditions across the area (Figure 1).

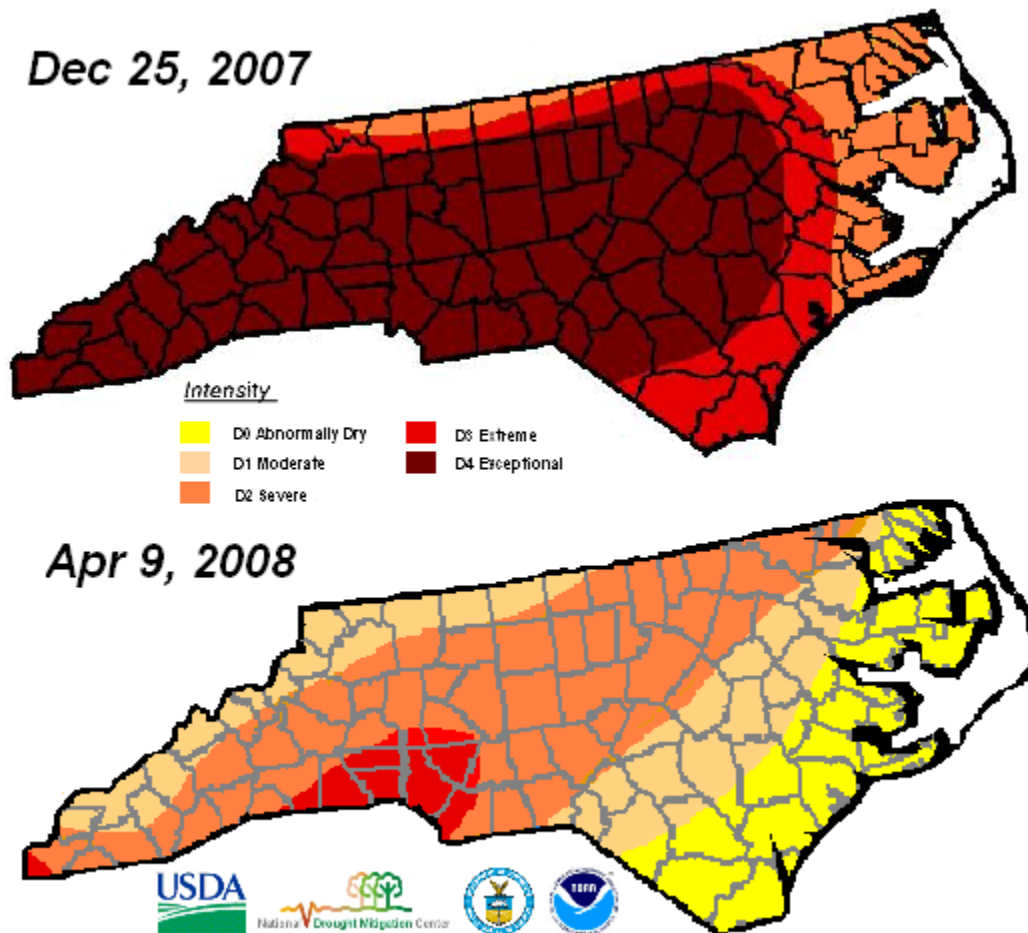


Figure 1: North Carolina Drought Monitor from 12/25/2007 & 4/9/1008. Image courtesy of <http://www.ncdrought.org>

Rainfall has ranged from 7 to 12 inches thus far for 2008 (Figure 2), which is a deficit of 1 to 3 inches. However, more than half of this rain has fallen since March 1st. These more frequent rains began as we moved into our critical late winter flood season. Water demand is reduced during this time of year due to cooler temperatures, which reduces evaporation. In addition, there is little agricultural activity and native plants are dormant, which also greatly reduces water demand. As a result, even normal rainfall amounts in early spring are very beneficial. A high percentage of the rain which falls in the winter and spring percolates into the soil, recharging groundwater, or runs off into streams and rivers, recharging water supply reservoirs.

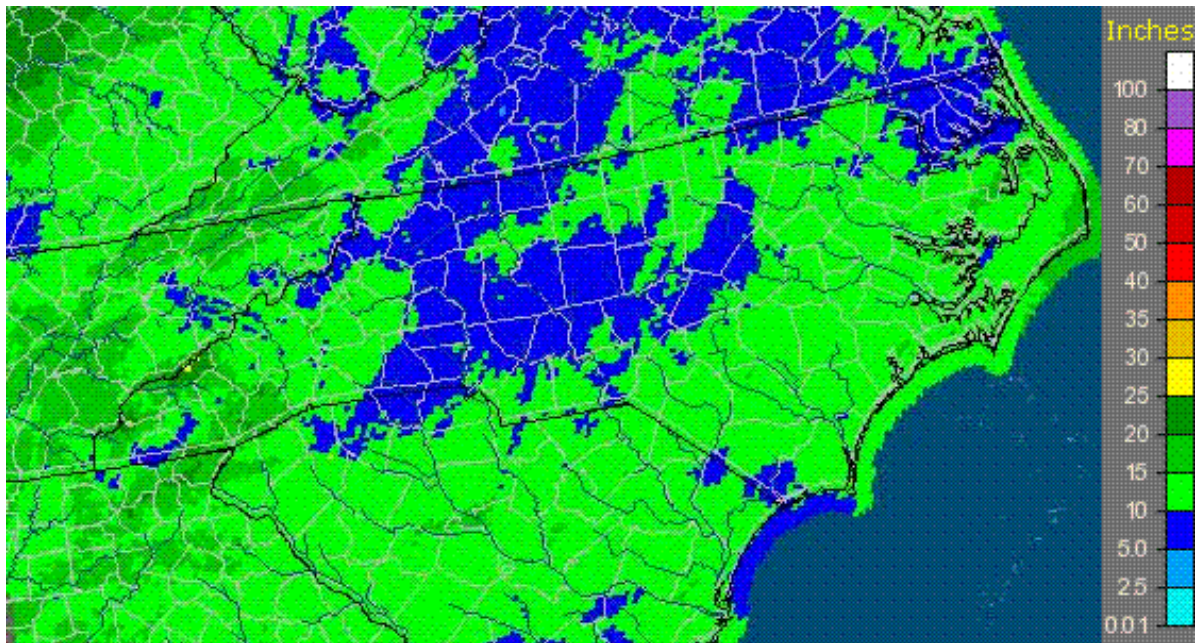


Figure 2: Rainfall Year-to-Date. Image courtesy of NOAA.

As noted above, drought impacts have eased considerably during the past 6 weeks. In particular, water supply reservoirs have risen significantly. Rainfall for the month of March was above normal (1 to 2 inches above normal in the Neuse and Tar River basins), and the water level in local reservoirs, which had been falling for months, finally began to rise. A fortuitous 3 day rain event early in April (Figure 3) provided the additional runoff needed to completely fill most of the reservoirs.

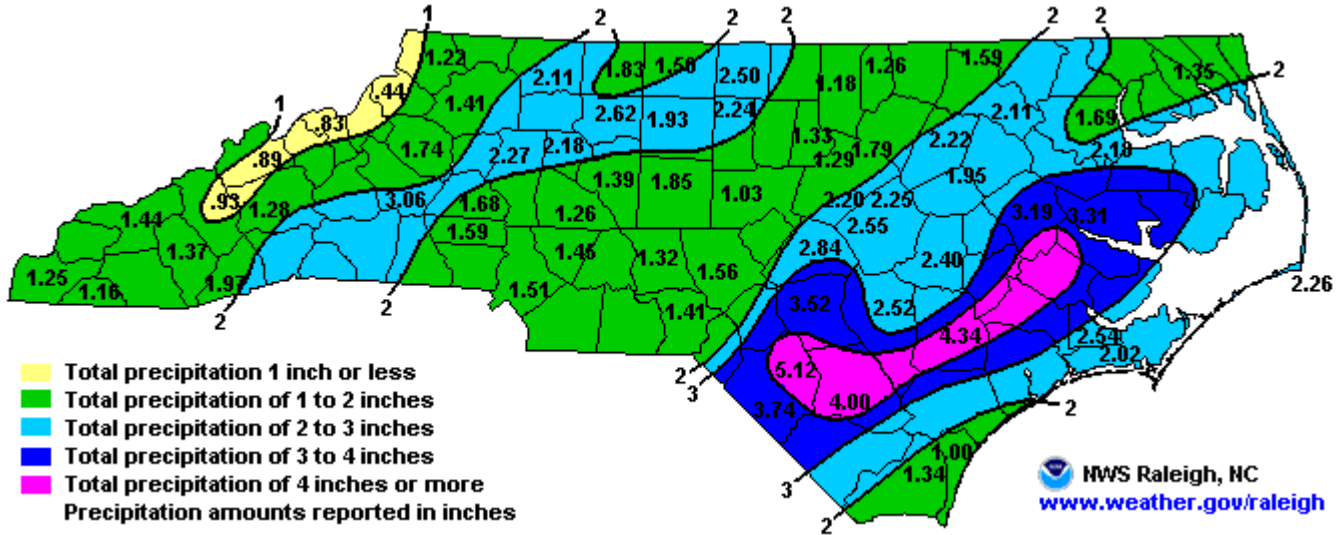


Figure 3: Rainfall from April 3 - 6. Image courtesy of NOAA.

Lake Michie and Little River Reservoir, the primary water supply reservoirs for Durham, completely filled just prior to the early April rainfall event. Since these reservoirs were full, Falls Lake, (the water supply reservoir for Raleigh) which is downstream of these reservoirs, received much more runoff than it had from previous rains as surplus amounts of water from Lake Michie and Little River flowed downstream. Falls Lake reached its target elevation (when it is considered full) for the first time since late May, 2007 (Figure 4).

Falls Lake Elevation

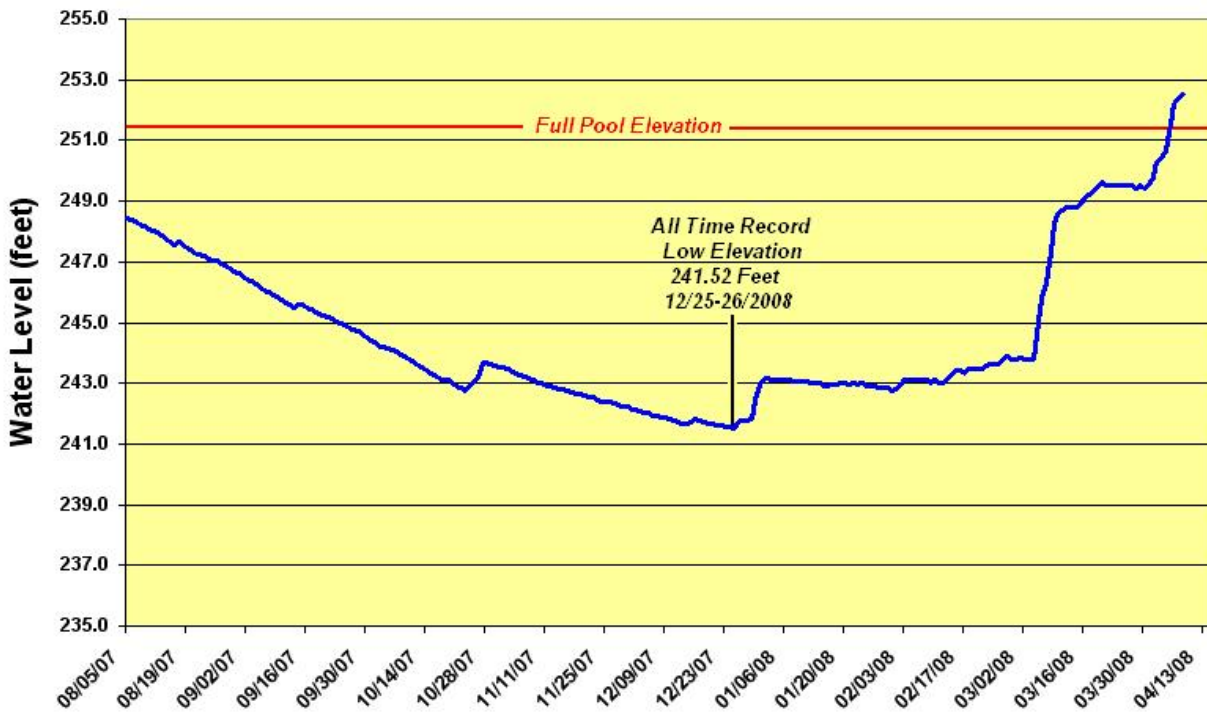


Figure 4: Falls Lake Elevation August 2007 to Date. Image courtesy of NOAA.

Local municipalities and water supply systems have begun to ease water restrictions as drought impacts have lessened recently. While this is good news for many, caution is still required, as there is still a long-term rainfall deficit across central North Carolina which has produced a deep soil moisture and groundwater deficit. These deficits are reflected in lower-than-normal mean stream flows and well water levels (Figure 5), and are not as readily apparent to the casual observer, as the plants are greening up and water restrictions are being eased. Surface and ground water supplies take much longer to replenish, and we can't declare that drought has ended until these indicators return to normal levels.

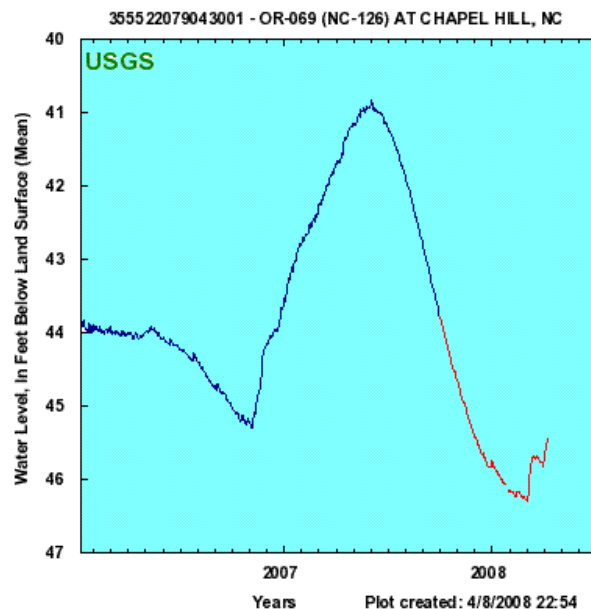


Figure 5: Water Level in USGS Well in Chapel Hill. Note the slow and minimal response to rain in 2008. Image courtesy of USGS.

Precipitation Outlook

Looking ahead to the remainder of this Spring, there is a good chance that the state will receive below normal rainfall through April as moderate La Nina conditions persist over the equatorial Pacific Ocean. La Niña, the cold phase of the ENSO cycle, occurs when cooler than normal sea surface temperatures over the central Pacific Ocean persist for several months (Figure 6). Past La Nina events occurring during the winter and spring months have resulted in an average rainfall deficit of 1 to 3 inches below normal rainfall for the period from February through April.

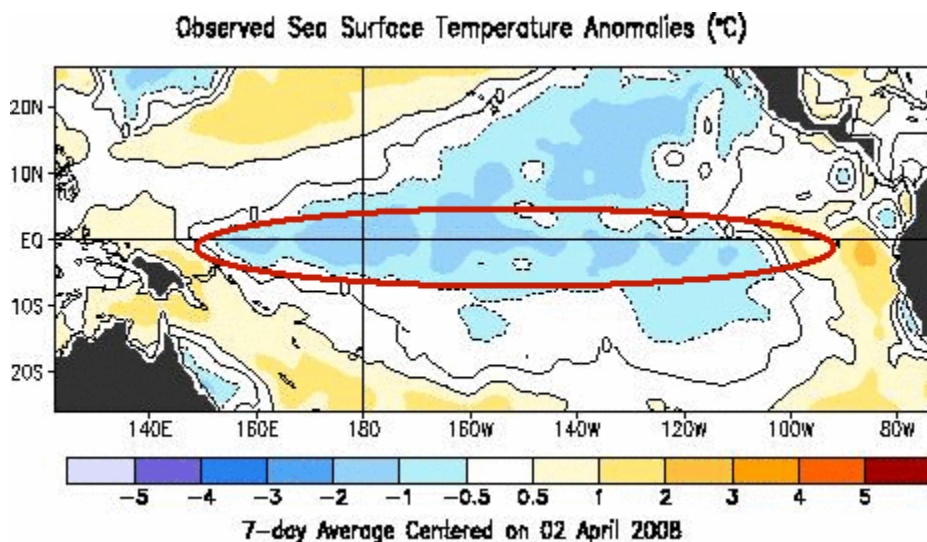


Figure 6. Sea surface temperature anomalies are colder than normal across most of the equatorial Pacific Ocean. Graphic provided by NOAA's Climate Prediction Center

On a more positive note, La Nina's influence on rainfall distribution across North Carolina weakens considerably as temperatures warm heading into late Spring. The precipitation outlook from NOAA's Climate Prediction Center for the remainder of Spring continues to call for a chance of below normal precipitation for April (Figure 7). As La Nina's influence weakens, there is no longer a strong indicator that would produce a precipitation anomaly (either surplus or deficit) for the 3 month period from April through June (Figure 8). Summer rainfall is highly dependent upon sporadic thunderstorm activity as well as occasional tropical systems such as hurricanes which can prove to be unreliable sources of needed rainfall.

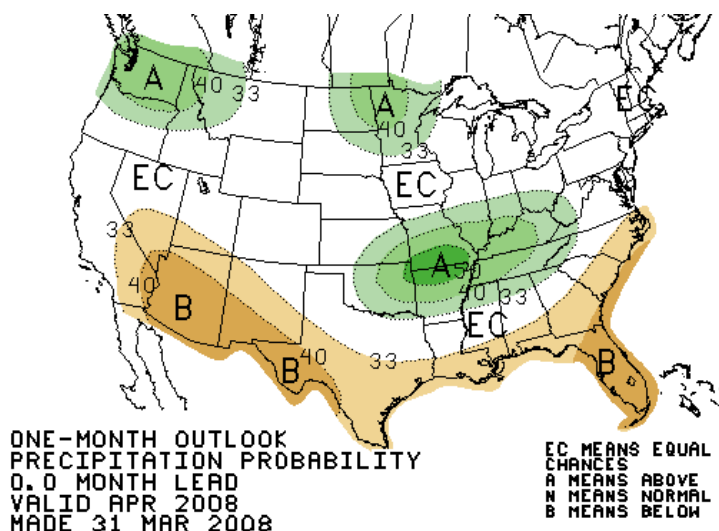


Figure 7. Precipitation Outlook for April. Courtesy of by NOAA's Climate Prediction Center

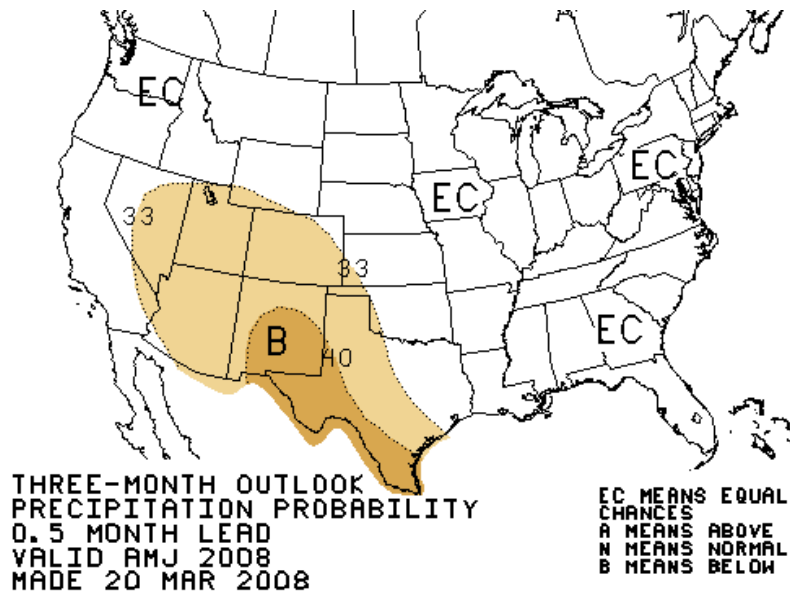


Figure 8. Precipitation Outlook from April through June. Courtesy of by NOAA's Climate Prediction Center

Due to low soil moisture and ground water levels in some areas, even near normal rainfall over the next 3 months **will not bring an end** to the current drought. Drought conditions, however, are forecast to continue showing improvement as we expect near normal rainfall into the early Summer (Figure 9).

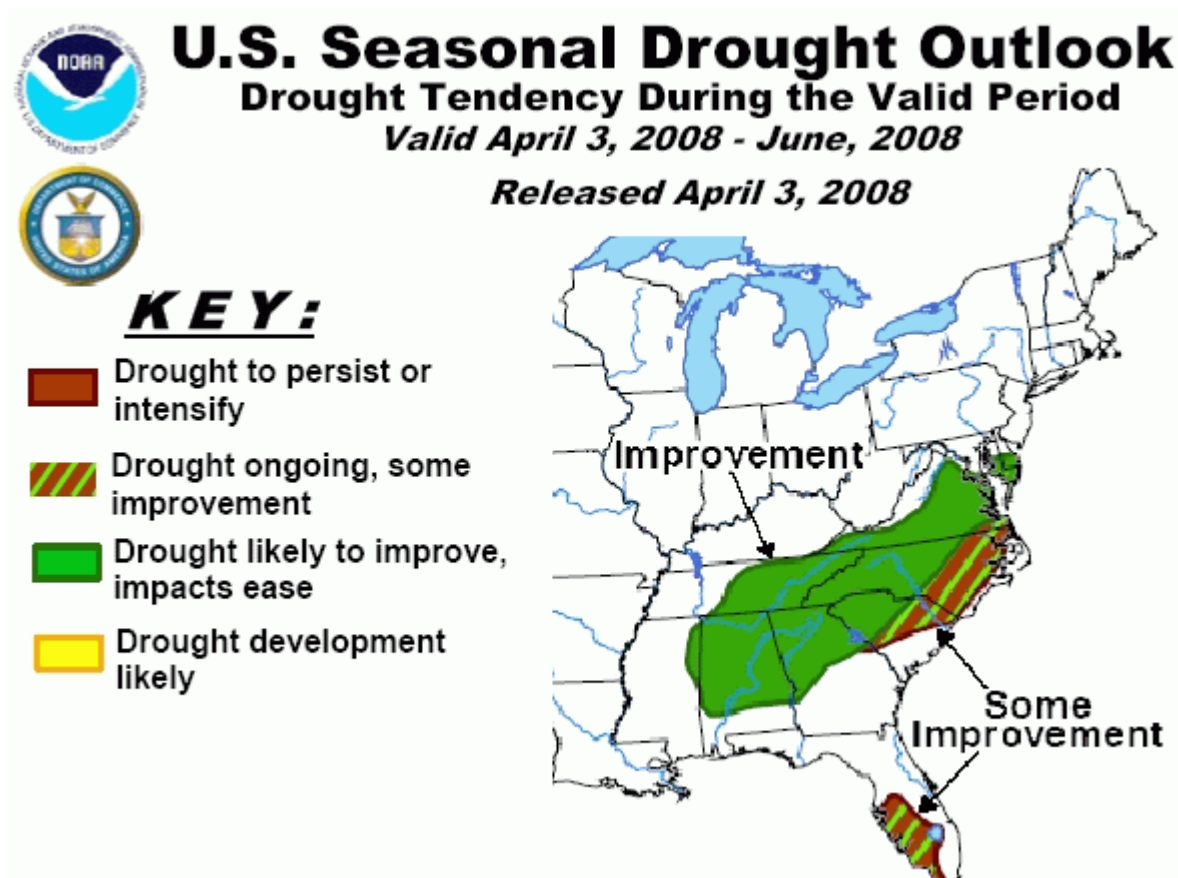


Figure 9. Drought Outlook April – June. Courtesy of by NOAA's Climate Prediction Center

Websites

National Integrated Drought Information System (NIDIS)

<http://www.drought.gov>

NC Drought Monitor

<http://www.ncdrought.org>

State Climate Office of North Carolina

<http://www.nc-climate.ncsu.edu/>

National Weather Service Raleigh, NC

<http://www.erh.noaa.gov/rah/>

Climate Prediction Center

<http://www.cpc.ncep.noaa.gov>

US Geological Survey

<http://www.usgs.gov>