December 2006 NC Weather Review

Overview

December 2006 was the fifth warmest December on record in Raleigh-Durham.

December 2006 will be remembered as one of the warmest on record across North Carolina. The monthly average temperatures turned out to generally range between 3 and 6 degrees above the 30 year mean. The December monthly average temperature for selected locations is depicted in figure 1. The month marked the fifth warmest December on record averaging 47.8 degrees (4.8 degrees above normal).

Unlike in previous months, there was a long extended period of dry weather to go along with the warmth. The dry period lasted for the first three weeks of the month. Locations such as Fayetteville, Greensboro, and Raleigh recorded only two days with measurable rainfall during this 3 week span. The rainfall was very light as Fayetteville tallied only 0.07 of an inch, Greensboro 0.19 of an inch, and Raleigh-Durham totaled only 0.55 of an inch. Much wetter conditions returned by the last week of the month as two significant rain events hit the state. The rainfall during the last week of the month was sufficiently heavy enough to thrust the monthly totals to at or above normal levels at many reporting stations. The December monthly rainfall for selected stations across the state is plotted in figure 2.

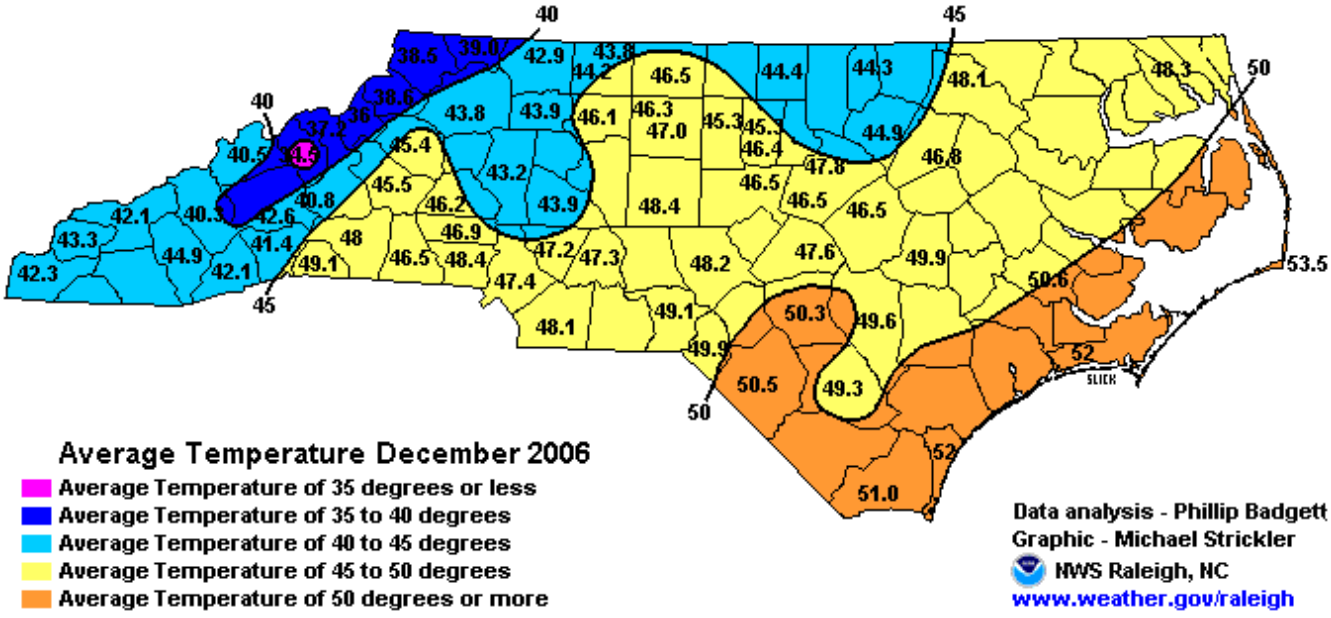

Figure 1. Average monthly temperatures during December 2006 across North Carolina.

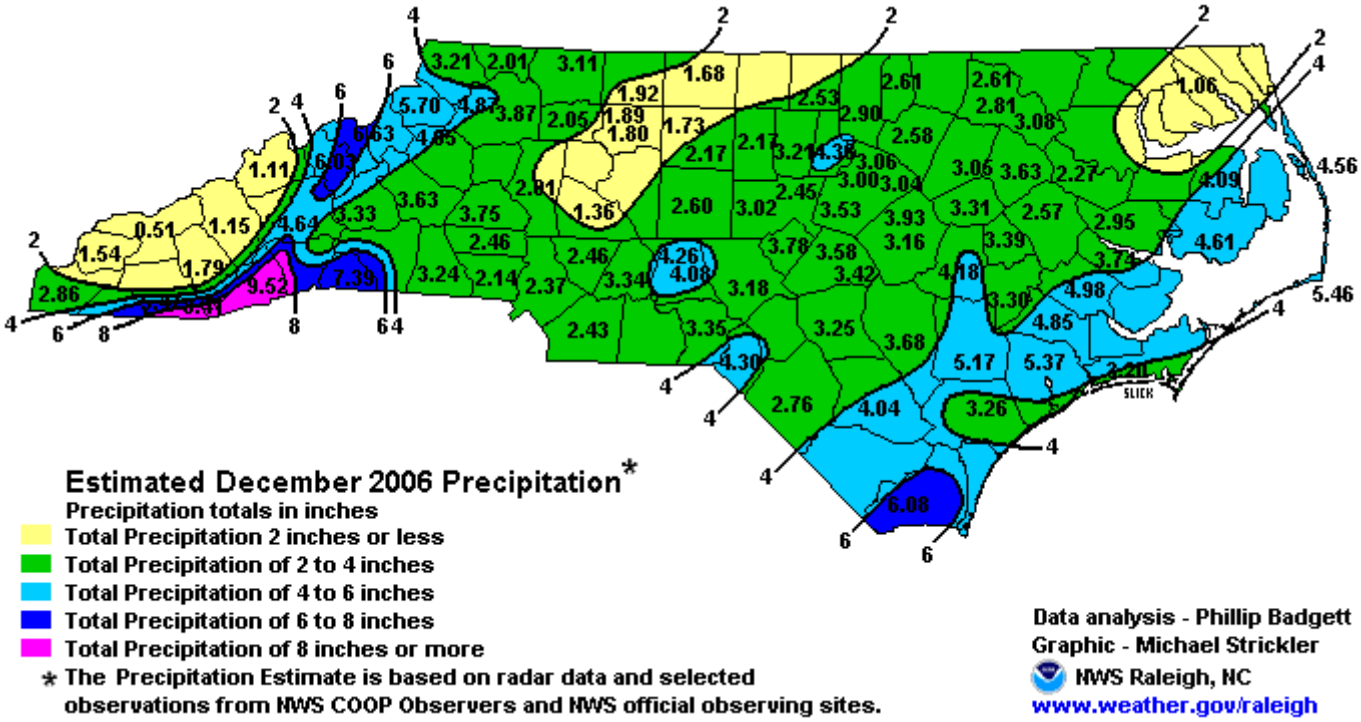

Figure 2. Estimated rainfall for December 2006. Plotted data was recorded by National Weather Service observation systems or cooperative observers.

Details

December 2006 Precipitation

The very dry weather that was observed during the first three weeks of December was a drastic turn of events from the wet weather that was so prevalent during November. There was very little in the way of precipitation during this 20 day stretch. There were some showers associated with a cold front on the 1st and 3rd of the month. These showers brought mostly light (less than 0.50 of an inch) rainfall amounts. There was a northwest flow (upslope flow) snow event over the Northwestern Mountains behind a polar frontal passage on December 8-9. Snowfall totals on the western facing slopes across Madison, Yancey, Mitchell, Avery, Watauga, and Ashe Counties generally averaged 3 to 5 inches with local amounts in excess of 6 inches. However, water equivalent for the snow totaled less than 0.25 of an inch. It was not until the last week of the month when significant precipitation returned to the state, and the temperatures were sufficiently warm enough that the precipitation fell in the form of rain.

There were two moisture laden storms that affected the state late in December. These two storm systems alone brought enough rainfall to send the December monthly rainfall totals to near or above normal levels at many locations. The final rainfall totals generally ranged from 3 to 5 inches, with lesser amounts (less than 1.5 inches) reported from the Northern Coastal Area around Elizabeth City, and over the Great Smoky Mountains. About 90 to 95 percent of the monthly rainfall came during these two events. The maximum rainfall totals (7 to 9 inches) occurred over the southern facing Mountains of the Blue Ridge. Figure 3 is a comparison of observed precipitation and normal precipitation for December 2006 at selected locations across North Carolina. Only Greensboro and Wilmington were more than 1 inch below normal for the month.

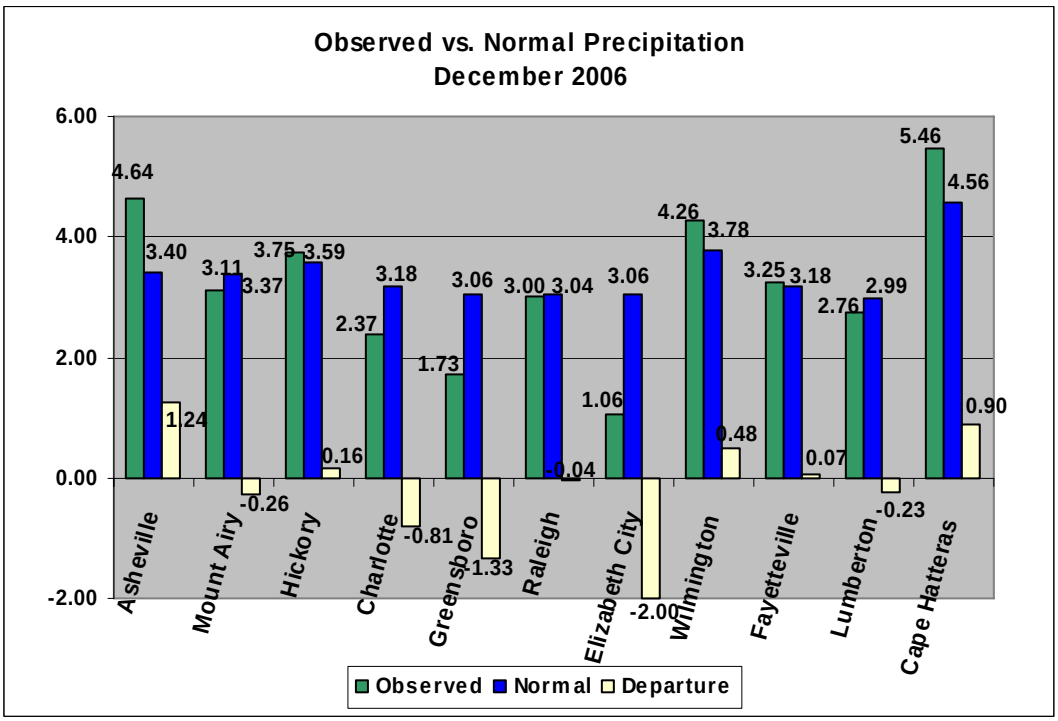

Figure 3. Comparison of observed precipitation and normal precipitation for December 2006 at selected locations across North Carolina.

December 2006 Temperatures

December is typically one of the coldest months of the year. Although the December 2006 average monthly temperatures ranged in the 40s to lower 50s, except for some 30s over the higher Mountains, these readings generally averaged a whopping 3 to 6 degrees above normal. The warmest areas were found across the interior portions of the state, including Lumberton (+5.8 degrees), Greensboro (+5.2 degrees), Mount Airy (+5.2 degrees), and Raleigh-Durham (+4.8 degrees). The northeast corner of the state averaged closer to normal, yet still exceeded normal by 2 to 3 degrees.

There was only one shot of very cold air from Canada that surged into the state. This occurred on December 8th. This cold air mass was intense but lasted only 36 to 48 hours. It was accompanied by snow and wind across the higher Mountains where some peaks received in excess of 6 inches of wind blown snow. The temperatures fell into the teens all the way to Wilmington and fell below zero in the Northern Mountains. Mount Mitchell fell to 6 degree below zero. Readings even fell to 30 degrees at Cape Hatteras and Manteo along the Outer Banks. The lowest minimum reported temperatures recorded during this early cold snap are shown in figure 4.

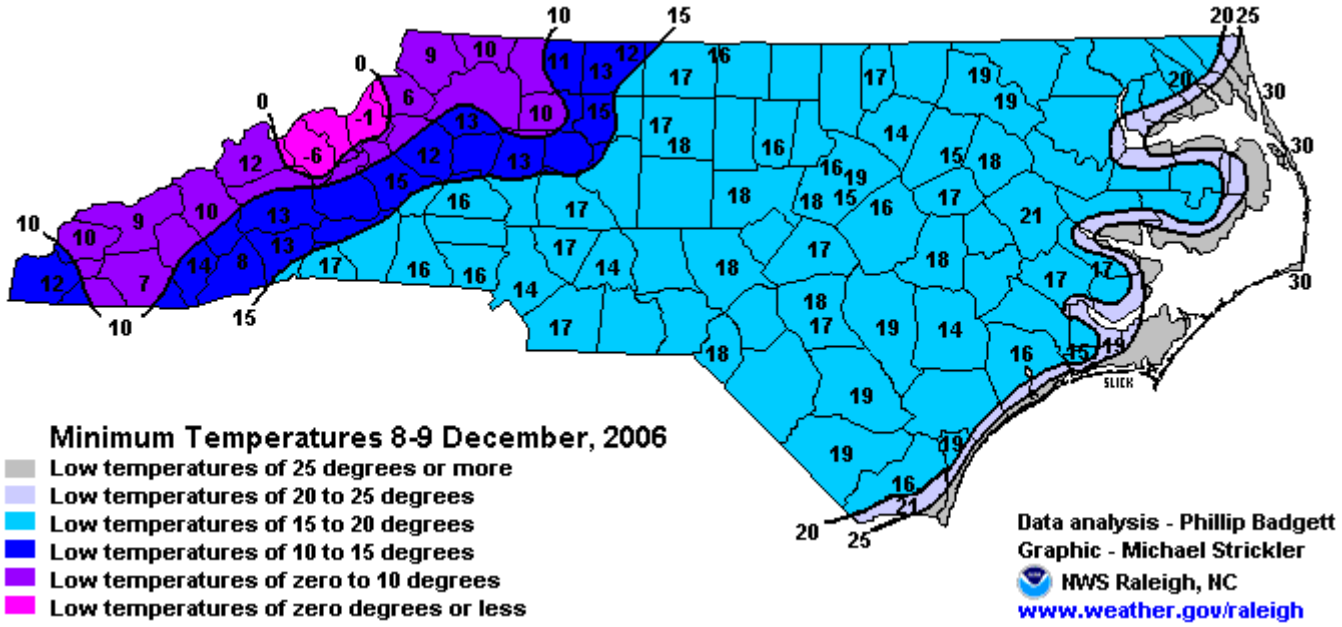

Figure 4. Minimum temperatures recorded during the lone cold spell for the month of December. Lows were recorded on December 9, 2006.

As it turned out, this would be the only major cold shot of air for the month. Following the cold spell, the temperatures warmed to above normal levels for the balance of the month. During the stretch of days between December 10 and 31, there was only one day (December 20th) with below normal temperatures recorded at Raleigh-Durham and Greensboro. There were new daily record highs set at both Greensboro and Raleigh-Durham on December 17th. Greensboro also set a daily record high on December 1.

Figures 5 and 6 shown on the following page depict the daily maximum and minimum temperatures observed at Raleigh-Durham (RDU) and Greensboro (GSO) during December 2006. The dashed lines represent the normal maximum temperature (red) and the normal minimum temperature (blue).

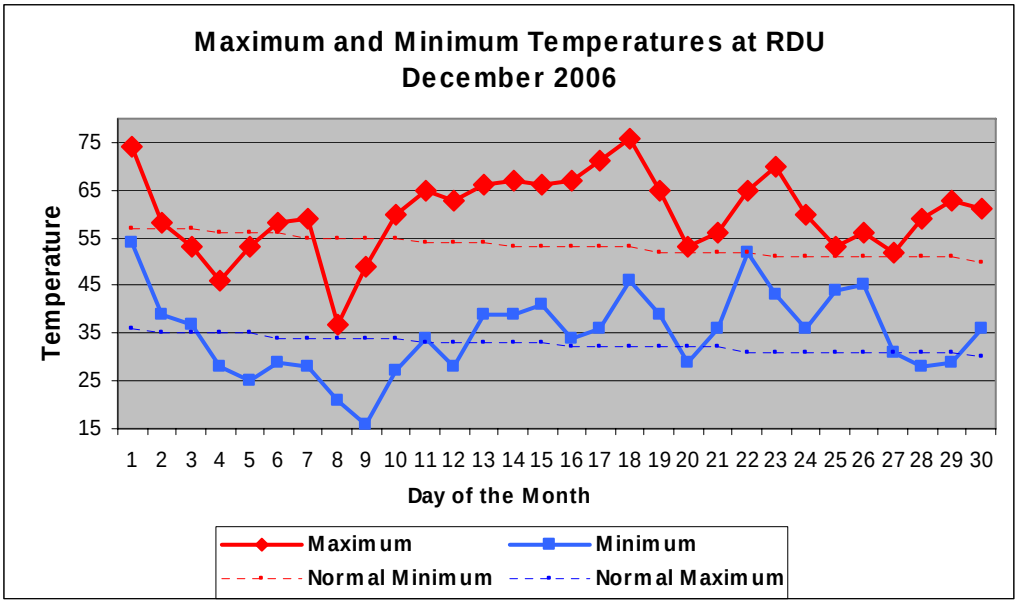

Figure 5. Daily maximum and minimum temperatures observed during December 2006 at Raleigh-Durham (RDU).

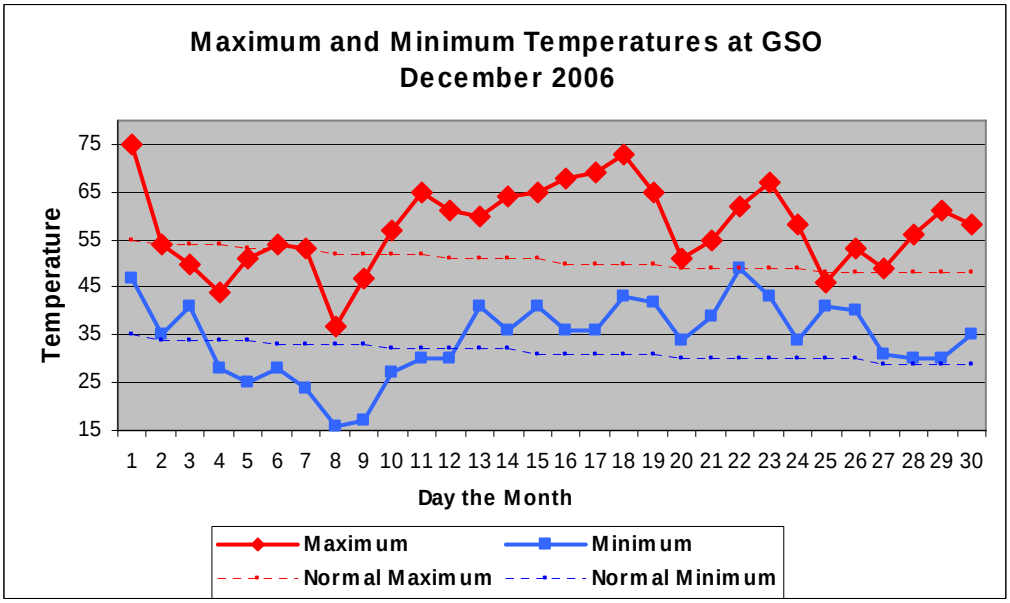

Figure 6. Daily maximum and minimum temperatures observed during December 2006 at Greensboro (GSO).

Current, Semi-Annual and Annual Temperature Trends

The warmer than normal temperatures in December made it two consecutive months with above normal temperatures to end the year of 2006 at both Raleigh and Greensboro. Four of the past six months have been warmer than normal at Raleigh, while five of the past six months have been above normal at Greensboro.

Figure 7 illustrates the monthly temperature departures from normal at Raleigh-Durham and Greensboro. Nine of the past twelve months have been warmer than normal at Raleigh-Durham. Ten of the past twelve months have been warmer than normal at Greensboro.

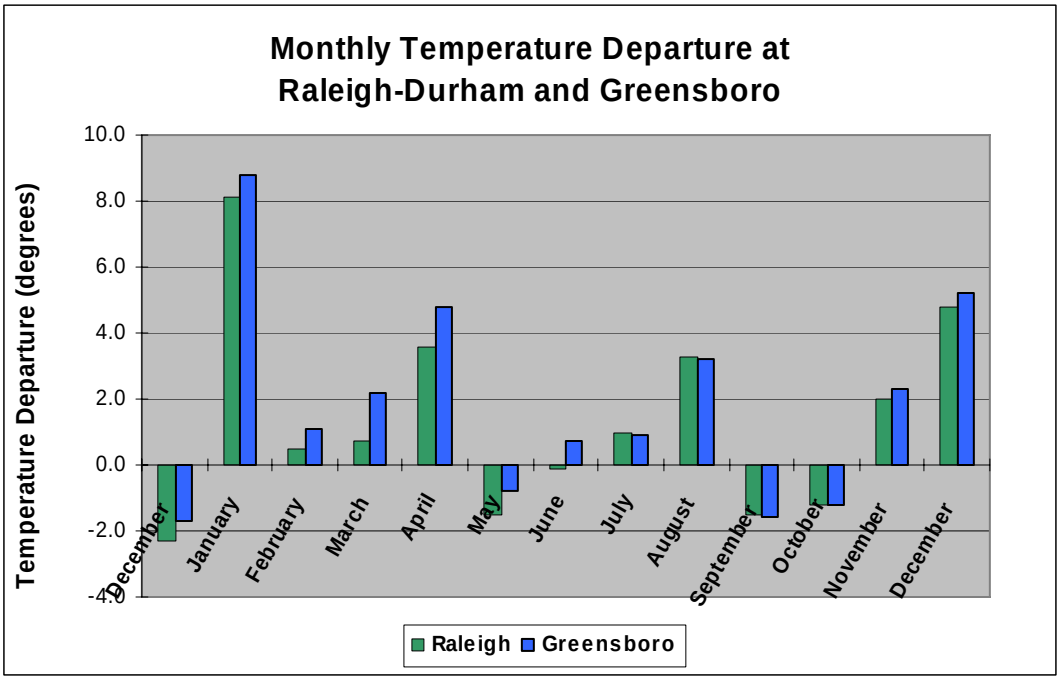

Figure 7. Monthly temperature departures from normal at Raleigh-Durham and Greensboro from December 2005 through December 2006.

Current, Semi-Annual, and Annual Precipitation Trends

The trend of above normal rainfall that began in the summer season, continued through the end of the year throughout much of North Carolina. However, the 3.00 inches of rain recorded at Raleigh-Durham was 0.04 inches below the normal for December. This marked only the 2nd time in the past 6 months in which rainfall averaged below normal at Raleigh. RDU finished the year with a rainfall surplus of 10.64 inches. Figure 8 depicts the precipitation trends at RDU during the past 12 months. The dry pattern the first half of 2006 was replaced by wet conditions beginning in June and lasting through the end of the year.

Greensboro also averaged a bit below normal for December (-1.33 inches). This was only the 2nd time in the past 6 months with sub par rainfall at Greensboro. Greensboro completed a dramatic turn from a 7.50 inch rainfall deficit for 2006 at the start of June, to an 8.55 inch 2006 rainfall surplus by November 30. Greensboro ended 2006 with a final surplus of 7.22 inches. Figure 9 depicts the monthly precipitation totals and the departure from normal during the past 12 months at Greensboro. Note the huge surplus in rainfall since June, after 5 consecutive very dry months.

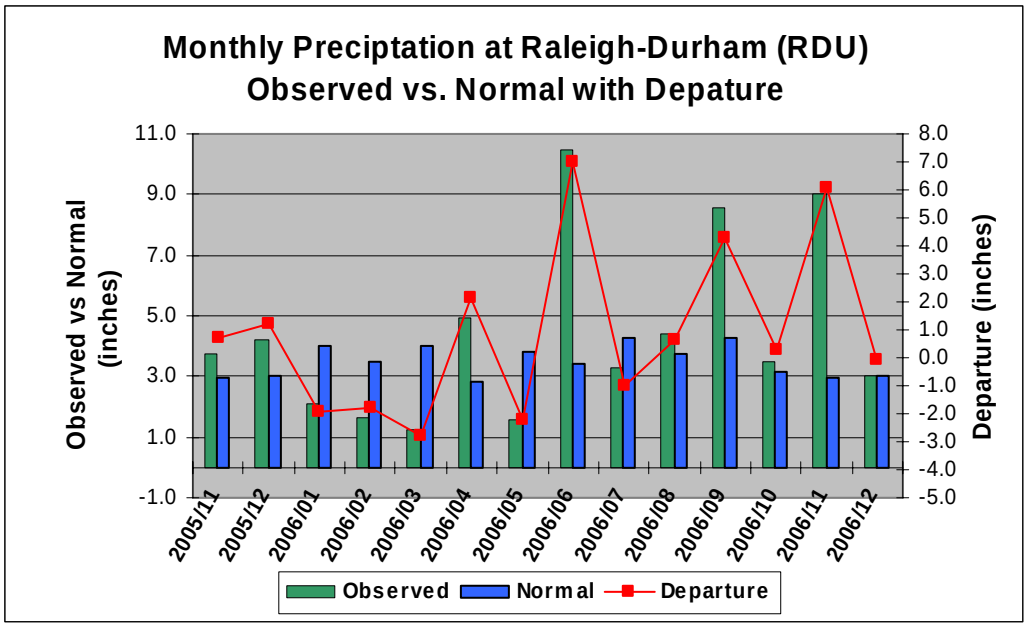

Figure 8. Semi-annual and annual precipitation trends at Raleigh-Durham (RDU).

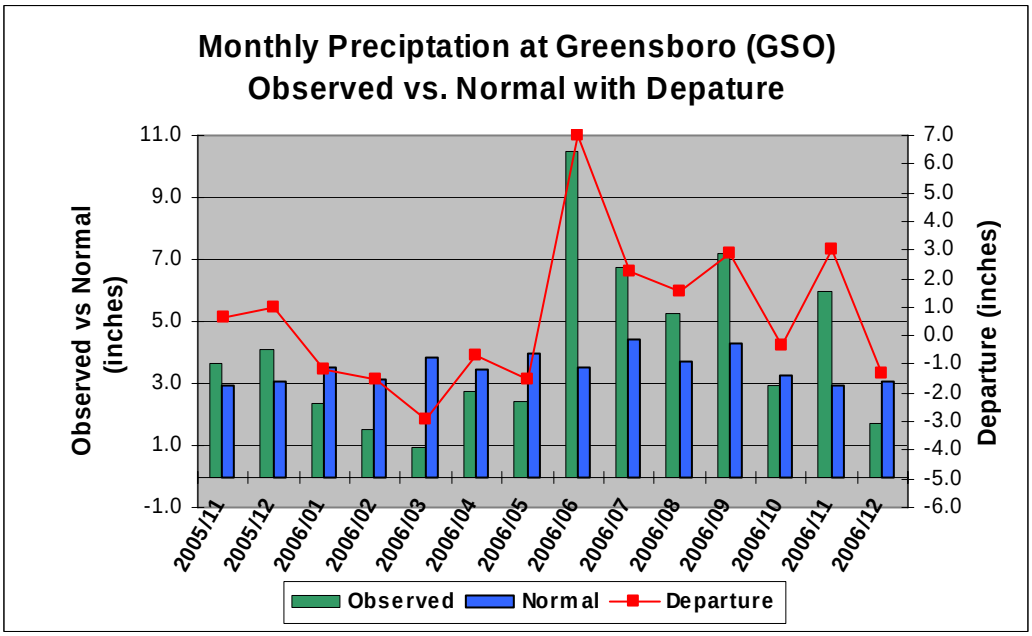

Figure 9. Semi-annual and annual precipitation trends at Greensboro (GSO).

North Carolina Water Resources Information and Outlook

Due to the wet conditions that were observed in the second half of 2006, drought was no longer a concern anywhere in North Carolina as the end of the year approached. Many of the reservoirs that supply water to major metropolitan areas of the Triad and Triangle regions topped full pool levels by October 31. Many begin releasing water during November, as the heavy rain events brought significant runoff. Although December was a bit drier than normal over portions of the Northern Piedmont, water levels in area lakes, rivers, and streams remained at or above normal at the end of 2006. For the latest information concerning the drought, visit http://www.ncwater.org/drought/

Climate Outlook for the winter 2006

The Climate Prediction Center recently released the final winter outlook. Details concerning this forecast can be found at the web address below:

http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/page2.gif

The headline for this winter season continued to be the comeback of El Nino in recent months. Moderate El Nino conditions (sea surface temperatures 0.5°- 1.0° Celsius warmer than normal) were observed in the critical regions of the Equatorial Pacific as of the first week in December. Confidence has increased that moderate El Nino conditions will continue through the spring of 2007.

Recent research indicates that moderate to strong El Nino's typically bring an enhanced chance of above median precipitation across the Southeastern U. S., including much of North Carolina during the winter season. The temperature forecast for the winter season indicates that temperatures should average near normal across the Southeastern U.S. including North Carolina. As is typically the case during the winter season across North Carolina, there should be large variability in temperatures from week to week. Some weeks will average above normal, while others will be below normal. The temperature and precipitation outlooks for the United States during the upcoming winter season can be viewed in Figure 10.

You can keep up with latest monthly and seasonal forecasts by visiting the Climate Prediction Center website at http://www.cpc.ncep.noaa.gov/.

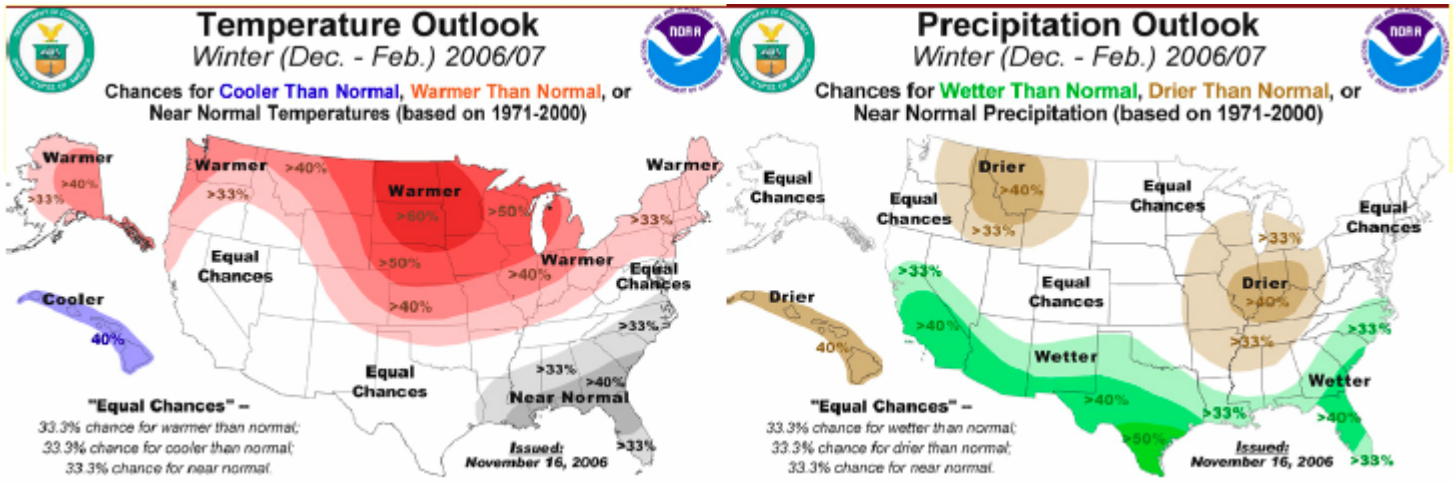

Figure 10. The U.S. Temperature and Precipitation Outlooks from the Climate Prediction Center for the winter of 2006-2007.

NC Weather Review Team

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