National Weather Service
Southeast River Forecast Center

Location: **Inflows into Lake Lanier – Georgia**

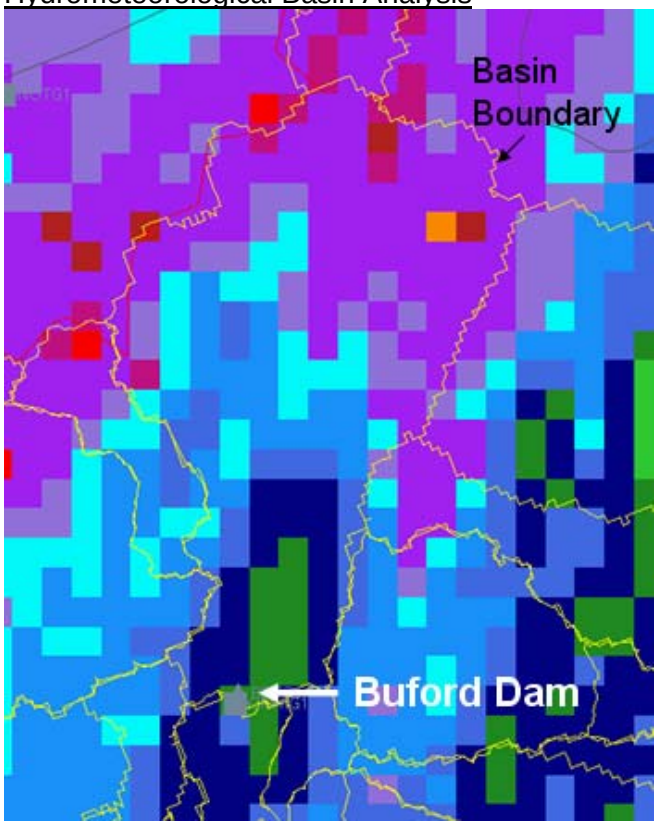
Issued: October 31, 2007

…Significant Drought Relief Not Expected Through November…

Our Forecast – Key Points

- Less than a 2% chance for average inflows into Lake Lanier to reach current average outflows through November.
- Below-normal rainfall predicted in November.
- 4 Inches or more of rain before significant rises on Lake Lanier, and well over a foot to bring it back to normal levels.

Hydrometeorological Basin Analysis

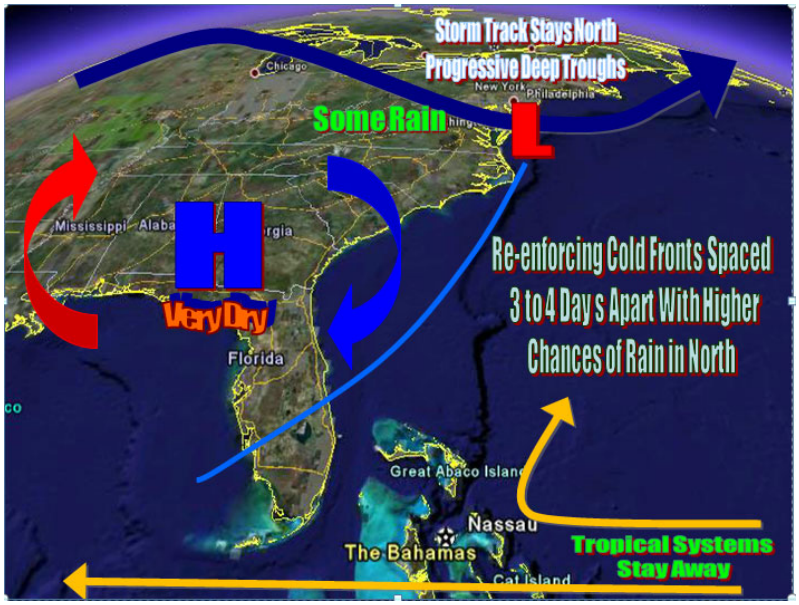


The graph to the left is a multi-sensor rainfall accumulation analysis of the Lake Lanier Basin. It is derived from radar and rain gage estimates, adjusted as needed by SERFC hydrometeorologists.

This graphic shows rainfall over the Lake Lanier basin for the past two weeks. Northern portions of the basin received from 2 to as much as 4 inches of basin-averaged rainfall (purple and red areas), while lower parts of the basin, near Buford Dam, received less than 2 inches (blue and green areas).

While this was a welcome rain, it only resulted in a small degree of reservoir recharge.

Looking Ahead Through November



While some welcome rain fell over North Georgia the last two weeks of October, unfortunately, it does not look like this will be the start of a new trend towards a wetter pattern.

As heavy rain made its way across Mississippi and Alabama to the west, and the Carolinas and Virginia to the northeast, most of North Georgia missed out. The month of November is looking to be another dry month, with below-normal rainfall. November will look more like October for the North Georgia area – cool and dry. Peak autumn colors are still a few weeks away, which is indicative of the warmer than normal October temperatures.

Numerical weather models are indicating a very dry atmosphere the first half of November. While evaporation is tapering off this time of the year, the ample sunshine may actually result in a bit more evaporation from Lake Lanier than normal.

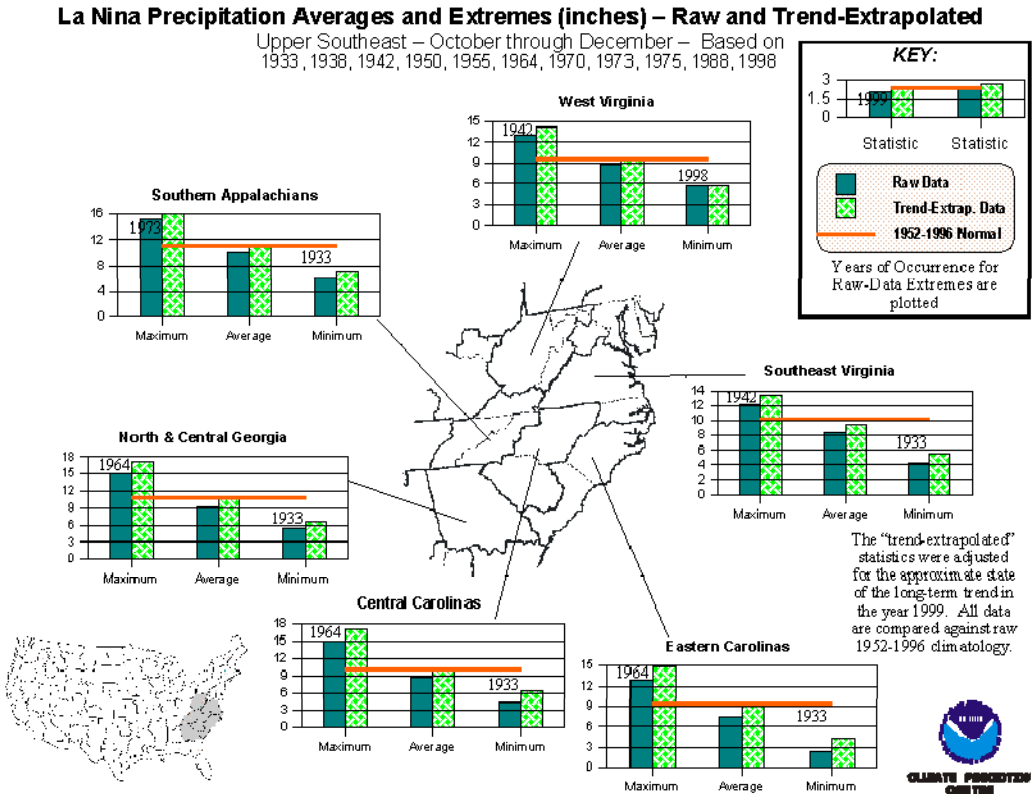
For the first half of November, a progressive jet stream across Canada and the northern United States will bring quick-hitting deep troughs and fast-moving cold fronts to the southeast U.S every three to four days. However, these cold fronts will only bring slight-to-moderate rain chances to north Georgia. This speed of the fronts will not allow sufficient time for moisture to be transported northward. Models indicate that total basin average rain accumulations through mid November will be no more than ¾ inch over the Lake Lanier Basin.

After the mid part of November, there is some uncertainty, but dry conditions are highly likely to continue through December 1st.

Longer-Term Outlook

The Climate Prediction Center's (CPC) forecast for November through January continues to show an elevated chance for below-normal precipitation. An explanation of what these percentages mean can be found in the last two Critical Water Watch issuances. This forecast is based on strengthening La Nina conditions in the equatorial Pacific Ocean. Signals from previous La Ninas are represented in figure 1. The north and central Georgia regions are represented in this schematic produced by CPC.

Average rainfall for the October through December time frame is near 11 inches, with the average during La Nina years being between 9 and 10 inches. There have been years that have been well above and well below normal based on a La Nina signal. The Ohio and Tennessee River Valley areas tend to be wet during the winter during a La Nina event. Therefore, the gradient between above and below normal is just north of Georgia. This leaves north and central Georgia with more potential for improvement for the rest of the fall season and early winter.



As we shift out of the dry fall season and move towards winter with lower evapotranspiration rates, December and January should offer a better opportunity to see improvement. The next Critical Water Watch in mid November will begin to look at winter rainfall potential.

Technical Discussion

The figures below are two Ensemble Streamflow Prediction (ESP) forecasts for inflows into Lake Lanier. Figure 2 was initiated on 10/15 and Figure 3 on 10/29. There are two reasons for a change in the graphs over this two-week period. First, there was some rainfall over the basin since 10/15 which affected soil moisture conditions, making it more conducive to runoff. The second reason is that our 45-day window has shifted into the first half of December, which (climatologically) receives more rain than October and November.

It is important to remember that the Lake Lanier Basin will receive some degree of rainfall this winter. Even below-normal rainfall will result in runoff, increased inflows, and higher pool elevation levels. The more critical issue is how much improvement will we see over the winter months, and will it be enough to get us through another summer, especially if the trend of below-normal rainfall continues.

Figure 2

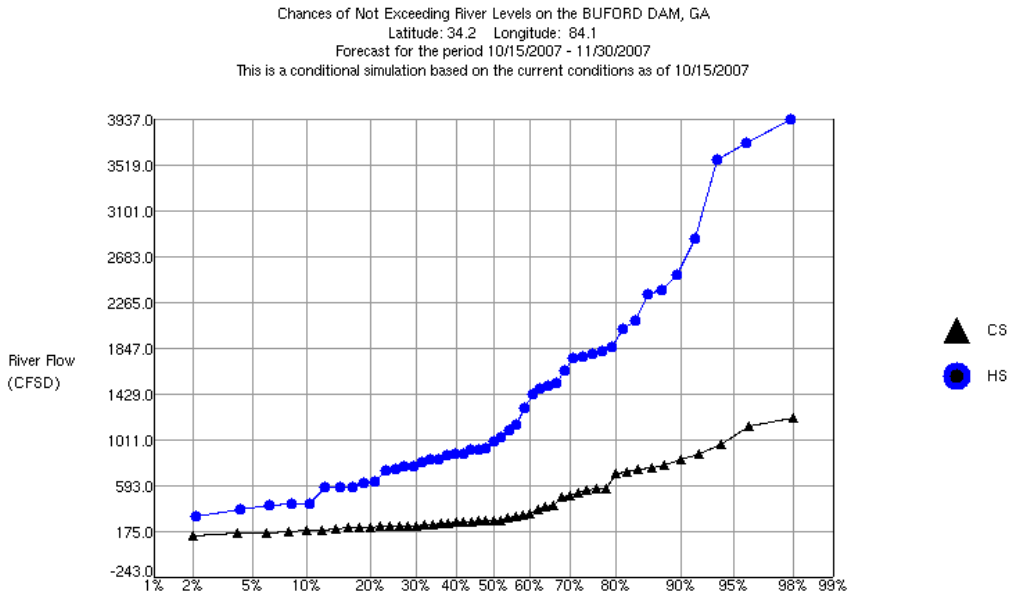
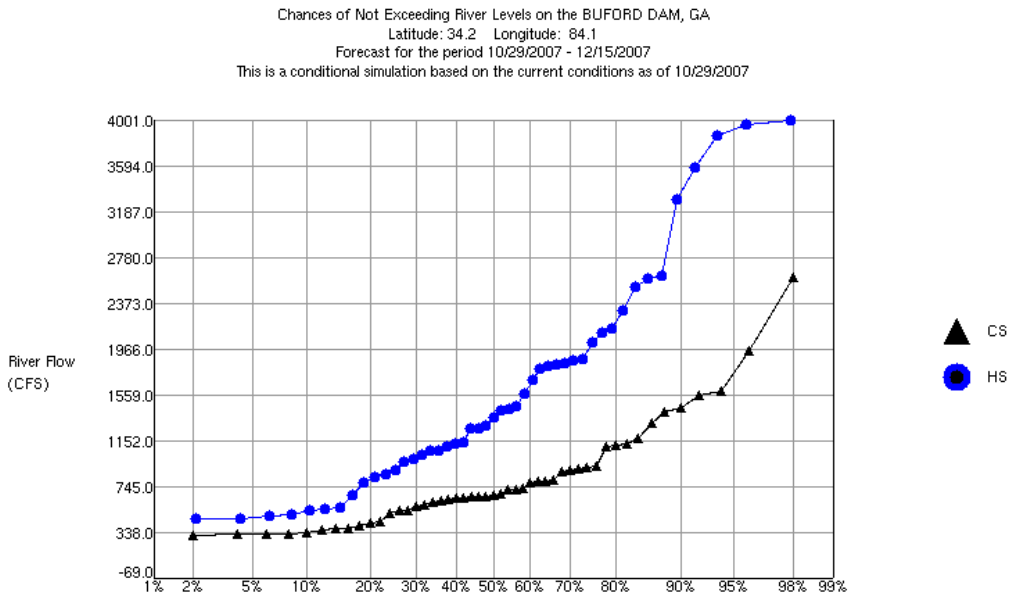


Figure 3



In the following table, the SERFC has put together several scenarios to illustrate what magnitude of rainfall it will take based on soil moisture conditions and current regulated outflows by the Corps of Engineers. It is important to note that we incrementally increased the rainfall from 1 to 4 inches and distributed the amounts equally over four 6-hour periods in the model.

These estimated results provide guidance as to what it will take to end the prolonged lake elevation falls and start to raise pool levels. Remember that it is normal for lake levels to be dropping during this time of year if there is minimal tropical activity. One inch of rainfall over 24 hours barely slowed the current rate of fall. This is indicative of the current dry soil moisture conditions. Four inches of rainfall over a 24-hour period produced enough runoff to raise the pool 1.4 feet over 5 days. After that rise, with no more rainfall, the pool began to fall again, albeit slower than its current recession.

So this gives rise to the big question that everyone has: What will it take to fill North Georgia reservoirs, specifically, Lake Lanier? The exact number of inches of rain is difficult to determine due to many variables. However, receiving small amounts of rain spaced a week or more apart will not significantly improve conditions. Significant improvement will come with heavy rain events every 3 to 4 days so that soils stay wet and most of the rainfall is converted to runoff. It would take a cumulative total of over a foot of rain, from multiple rain events, to raise the pool back to normal levels. That is the short-term answer to filling the reservoirs. Longer-term issues are a little different. Long-term relief will require receiving significant amounts of rainfall over a prolonged period of time.

Lake Lanier Scenarios

The following scenarios are based on rainfall distributed evenly over a 24-hour period for the entire basin.

Rainfall rate	Scenario
1 inch	No impact. Lake would continue to fall, but the rate of fall would decrease by 50% for about 2 days
2 inches	Only minimal impact. The lake elevation would start to only very slowly rise. It would rise by 0.2 feet within 1.5 days, then start to slowly fall again.
3 inches	Only minimal impact. The lake elevation would rise by 0.7 feet over 3 days then hold steady.
4 inches	Start of a more significant rise. The lake elevation would rise 1.4 feet over 5 days then hold steady.

This information will be updated bi-weekly. For additional information, contact the SERFC at (770) 486-0028 X1.

SERFC Water Watch Team
Todd Hamill, Jack Bushong, Brad Gimmestad, John Feldt, Jeff Dobur, Nene Robertson