



North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

John E. Skvarla, III
Secretary

October 1, 2014

MEMORANDUM

TO: NC GOVERNOR
Pat McCrory

NCDENR SECRETARY
John E. Skvarla, III

ENVIRONMENTAL REVIEW COMMISSION
The Honorable Brent Jackson, Chair
The Honorable Ruth Samuelson, Co-Chair
The Honorable Make Hager, Co-Chair

FROM: Neal Robbins, Director of Legislative Affairs

SUBJECT: 2014 Drought Management Advisory Council Report on Water Resources Act

DATE: October 1, 2014

Pursuant to G.S.143-355.1(g), the Drought Management Advisory Council shall submit a report to report on the implementation of this section to the Secretary, the Governor, and the Environmental Review Commission. Please consider the attached as the formal submission of this report.

If you have any questions or need additional information, please contact me by phone at (919) 707-8618 or via e-mail at neal.robbs@ncdenr.gov.

cc: Mitch Gillespie, Assistant Secretary for the Environment, NCDENR
Tom Reeder, Director of Water Resources, NCDENR
Fred Steen, Office of the Governor
Alice Miller, Executive Assistant to the Secretary

**North Carolina Department of
Environment and Natural Resources
Division of Water Resources**

**STATUS REPORT TO THE GENERAL ASSEMBLY
ON
THE NORTH CAROLINA DROUGHT MANAGEMENT ADVISORY COUNCIL
JULY 1, 2013 THROUGH JUNE 30, 2014**

Introduction

This is the ninth annual report of the North Carolina Drought Management Advisory Council required by North Carolina General Statute 143-355.1. In accordance with statutory requirements, the council submits the report to the Secretary of the N.C. Department of Environment and Natural Resources, the Governor of North Carolina and the N.C. Environmental Review Commission by Oct. 1 of every year.

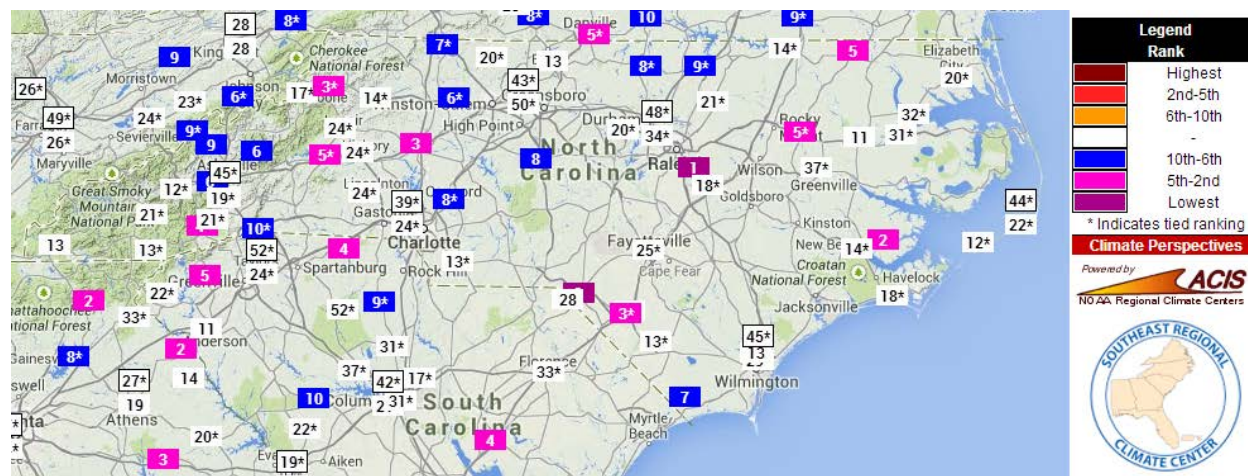
Climate Summary: July 2013-June 2014

The summer of 2013 was cool and wet across the state, ranking the 3rd wettest since 1895. Many places saw maximum temperatures that ranked in the top 10 coolest.

The fall of 2013 was generally dry, but cooler temperatures prevented many drought impacts from occurring. November 2013 was the 26th coldest since 1895 for the state and many locations saw maximum, minimum, and mean daily temperatures that ranked in the top 10 coldest on record.

Winter brought a mixture of weather to the state, including frozen precipitation, severe storms, single-digit low temperatures, and a few maximum temperatures that neared 80 degrees. A series of several events from December through March brought snowfall to nearly the entire state with the season ranking the 45th wettest since 1895.

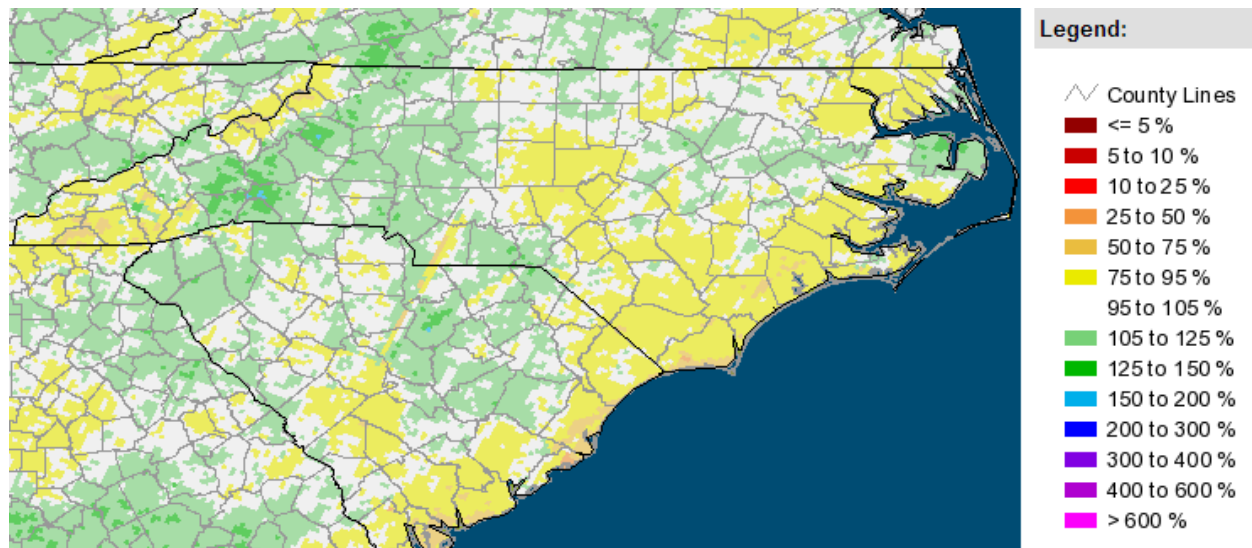
The spring of 2014 started out cool, with March ranking as the 11th coldest, and ended warm, with May ranking the 29th warmest, overall ranking as the 30th coldest spring since 1895 across the state. The state was generally drier in the western and southern portions of the mountains, where less than 50 percent of normal precipitation fell, and wetter in the piedmont and coastal plain. Statewide the spring season ranked as the 34th wettest on record.



Mean temperature rankings for the 12-month period ending June 30, 2014.

www.sercc.com/perspectives

Overall, the period from July 2013 through June 2014 can be characterized by generally cooler temperatures across the state, with some stations recording mean temperatures that ranked in the top 5 and top 10 coolest. Precipitation across the state was greater than 75 percent of normal for the time period, with many places seeing more than 100 percent of normal and some stations in the southern mountains ranking in the top 10 wettest.



Percent of normal precipitation for the 12-month period ending June, 2014, based on estimates from NWS Radar; Data Courtesy NWS/NCEP. www.nc-climate.ncsu.edu/mpe_departure

Streamflow and Groundwater Conditions

Streamflow conditions at U.S. Geological Survey (USGS) continuous-record streamgages were commonly in the normal and above-normal ranges across much of North Carolina during July 1, 2013, through June 30, 2014. There were some relatively brief exceptions when conditions fell to below-normal conditions in various regions of the state, particularly across parts of the Piedmont and Coastal Plain.

Following an unusually wetter and cooler than normal summer in 2013, streamflow conditions were generally above normal across all parts of the state during July and August. However, below-normal precipitation during the late summer and fall seasons resulted in a decline of streamflow to below-normal levels across eastern North Carolina. The return of more beneficial precipitation across the state during the winter and spring periods was sufficient to raise and maintain overall streamflow conditions in the normal ranges. There were areas of below-normal conditions near the end of June 2014, primarily across the central parts of the state.

~~The graph shown below~~ The graph on the last page of this report indicates the percentage of U.S.G.S. streamgages in North Carolina with 7-day flows less than the 25th, 10th, and 1st percentiles, or record-lows for the calendar date, during the annual period.

An expansion of below-normal streamflow conditions began to occur in early October with declines reaching levels by late November 2013 that resulted in up to 47 and 18 percent of U.S.G.S. streamgages within the state with percentiles for 7-day average flows below the 25th and 10th percentiles, respectively. These percentages are much lower than the maximum values (94 and 72 percent, respectively) observed during the previous annual period. Most of the streamgages with below-normal conditions during the fall season were located across the Piedmont and Coastal Plain. During February and March of 2014, streamflow conditions in the Piedmont and Coastal Plain regions once again dropped to below-normal levels at some U.S.G.S. streamgages. Late spring and early summer of 2014 brought about a pattern of overall normal conditions with pockets of below-normal conditions observed across central North Carolina.

Examination of provisional daily discharges indicates that no new record minimum daily mean discharges for the period of record were set at the U.S.G.S. streamgages across North Carolina during July 1, 2013 through July 31, 2014. However, a provisional new monthly minimum average streamflow was set at one streamgage in Mecklenburg County in October 2013.

Water levels monitored at 16 U.S.G.S. observation wells within the N.C. Climate Response Network were likewise in the normal and above-normal ranges on a weekly basis during July 1, 2013, through June 30, 2014. Groundwater conditions commonly echo streamflow patterns, but on a generally slower timescale, partly dependent on the depth of the well as well as the permeability of the surrounding soils that adsorb runoff following precipitation events.

Exceptions to this characterization were noted in below-normal water levels observed at some of these wells. Two examples are at the Marble well in Cherokee County and Pisgah Forest well in Transylvania Count during spring of 2014 and at the Marston well in Scotland County and Southport well in Brunswick County during the winter season. Inspection of provisional water level records indicate that new monthly minimum and maximum water levels were observed at three and seven wells, respectively, during the annual period. One of the wells where new maximum monthly levels were observed was the 70-foot deep well at Blantyre in Transylvania County. New monthly maximums were observed each month from July 2013 through February 2014.

Agriculture

Overall, the 2014 growing conditions have been good for North Carolina. Early in the year the

state experienced significant rainfall keeping the topsoil moisture rated as adequate to surplus levels through April. However, some farmers suffered delays in plantings, but were able to make up ground as the spring transitioned to summer. Corn and tobacco experienced delays, but by mid-May were back in-line with the previous year and 5-year averages. The mountain area of the state dipped into abnormally dry conditions during late spring and early summer and the Piedmont area developed abnormally dry conditions during July. Timely widespread rain events during late July and early August have helped with the dry conditions. As of mid-August soybeans, cotton and tobacco are in-line with the 5-year averages, while corn remains slightly behind last year and the 5-year averages. Currently, the overall outlook for crops in North Carolina is rated good.

Forest Resources

The state experience few substantial drought and precipitation-related impacts to forestry this past year. Activities such as prescribed burning, site preparation and tree planting were generally not limited by drought or high precipitation levels.

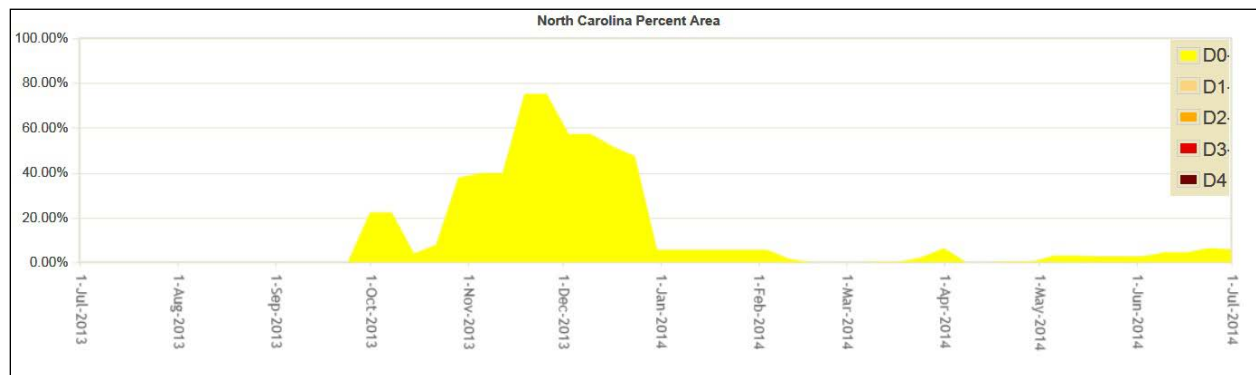
From July 1, 2013 to June 30, 2014, the N.C. Forest Service responded to 4,584 wildfires across the state that burned approximately 11,484 acres. The number of fires was very close to the 10 year average for the state; however the total number of acres burned was less than half of the 10 year average. The favorable fire control weather was also beneficial for prescribed burning, enabling 68,738 acres on state and private lands to be treated with prescribed fire during the past fiscal year.

Weather conditions during the past year were favorable for healthy forest growth. Except for areas of Ips engraver beetle-killed drought stressed trees in the Sandhills and scattered Ips/drought stress mortality elsewhere, evidence of past drought effects on forest trees has diminished. It appears from informal surveys that most trees that were weakened, but not killed, by drought stress have recovered. Commonly, drought stressed trees are susceptible to infections of root and trunk rotting fungus. Effects of these infections such as dieback, decline, and mortality, normally do not show up until ample moisture and low temperature favor fungal growth. During July 2013 through June 2014, there were no observations of these post-drought phenomena.

Drought Conditions

During the past year in North Carolina, the worst drought conditions occurred in the month of November 2013, and the best conditions occurred during the month of September 2013 with no drought designations. During the week ending November 26, 2013 72 water systems were under abnormally dry conditions. Abnormally dry is not a drought designation, but means conditions

are drier than normal. All counties within the state remained drought-free from July 2013 through June 2014.



Council Meetings

Drought conditions in North Carolina are updated weekly through an audio-video telecon with a Technical Drought Advisory Team, which is a sub-group of the N.C. Drought Management Advisory Council. The team consists of experts on climate, weather, geology, water supply, forestry and agriculture that report each week on streams flows, groundwater levels, reservoir levels, wildfire activity and crops. Based on this information, the team makes a recommendation to the U.S. Drought Monitor author on the state's drought conditions for that week, which is used to create the national drought map each Thursday. To see a copy of the current drought map, go to the state's official drought website at: www.ncdrought.org.

The Drought Management Advisory Council is required by law to meet at least once each calendar year. The annual council meeting was held on April 10, 2014 with 16 representatives and associates of the council in attendance. Items discussed at the meeting included current impacts on stream flow and ground water levels, lake and reservoir levels, agriculture, forestry and impacts to public water systems.