CHAPEL HILL STREAM TEAM

MONITORING REPORT

Fall 2023 - Summer 2024

Over four seasons, 37 volunteers monitored water quality at 10 creek sites across Chapel Hill. Volunteers assessed temperature, pH, dissolved oxygen, electrical conductivity, and habitat.

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Executive Summary

Chapel Hill Stream Team 2.0, launched in October 2023, empowers Chapel Hill residents to become stream scientists and protectors of our local waterways. Through community education and data collection, Stream Team tackles crucial water quality issues. This report highlights the program's achievements in its first year, outlining progress towards its four key goals:

- fostering public understanding of water quality,
- identifying potential pollution sources,
- contributing to scientific research, and
- providing valuable data for regional monitoring efforts.

Over 40 dedicated volunteers received comprehensive training on water quality monitoring protocols. They then diligently collected data quarterly on key parameters like temperature, dissolved oxygen, conductivity, pH, and stream habitat health at 10 designated stream sites throughout Chapel Hill.

This data has already played a vital role in identifying potential pollution hotspots based on conductivity readings, prompting further investigation by the Town of Chapel Hill Stormwater department. With a strong foundation established in year 1, and exciting plans for year 2, the Stream Team program is poised to make a lasting impact on the health of Chapel Hill's streams and the surrounding environment.

Introduction (Updated)

To the Stream Team:

Chapel Hill Stormwater is thrilled to share the results of our Fall, Winter, Spring, and Summer seasons of monitoring in 2023-2024. Your dedication and hard work provided valuable data that will contribute to our understanding of stream health in our community. And of course, y'all made it fun[1].

In this report, we give an overview of the Stream Team, highlight the key findings from the season, and discuss the next steps in our monitoring program.

What is Stream Team?

Stream Team 2.0 is a volunteer water quality monitoring program that helps the Town of Chapel Hill better understand stream health. Volunteers visit stream sites four times a year to test for different water quality parameters. This data helps the Town identify pollution problems and monitor the overall health of its streams.

Program Goals

The goals of Stream Team are:

- Increase public understanding of water quality by engaging volunteers with water quality indicators, stream health, data analysis, and pollution prevention
- Identify potential pollution hotspots for Town of Chapel Hill Stormwater staff follow-up
- Contribute to scientific studies and research by providing trends and early detection for water quality issues in local streams
- Contribute Tier II data to regional monitoring efforts, such as NC Stream Watch[2], NC Department of Environmental Quality (NCDEQ), Haw River Assembly[3], and Cape Fear River Watch[4].

The data from Stream Team 2.0 also helps the Town's Illicit Discharge Detection and Elimination Program (IDDE)[5] by identifying potential pollution issues. For example, in 2013, conductivity results from Stream Team 1.0 alerted Town staff to the fact that a local pool was discharging directly into the stormwater system.

[1] Your pictures continue to be great.
[2] https://www.deq.nc.gov/about/divisions/water-resources/water-resources-public-information/water-education-programs/water-education-and-outreach/nc-stream-watch
[3] https://hawriver.org/projects/stream-monitoring/
[4] https://capefearriverwatch.org/creekwatchers/
[5] https://www.townofchapelhill.org/government/departments-services/public-works/stormwater-management/water-quality/illicit-discharges#ad-image-0

Progress on Program Goals (New!)

In just one year of Stream Team 2.0 programming, we have made progress on several of our program goals.

Goal 1: Increase Public Understanding of Water Quality

Year 1 Accomplishments

- Stream Team trained 40 volunteers on water quality monitoring protocols, including testing for essential parameters like pH, conductivity, dissolved oxygen, and temperature, and conducting thorough habitat assessments.
- Volunteers participated in two comprehensive training events focusing on water quality parameters and habitat assessments.
- Volunteers monitored their assigned streams quarterly throughout the year.

Plans for Year 2

- Staff will train an additional 17 volunteers on our water quality monitoring protocols.
- We are exploring incorporating macroinvertebrate education and monitoring into the program.

Goal 2: Identify Potential Pollution Hotspots

Year 1 Accomplishments

- Stream Team data played a role in identifying two sites with consistently high conductivity levels. This information was promptly communicated to the Stormwater staff in charge of illicit discharges and detection.
- Chapel Hill Stormwater coordinated with UNC to identify potential contamination sources.

Year 1 Challenges

- Staff replaced malfunctioning equipment with more reliable equipment, ensuring data accuracy for future endeavors.

Plans for Year 2

- Improve our response system by developing a new automated survey. This survey will directly notify the Stormwater department of any high readings, eliminating delays in the QA team's review process. This will allow for quicker investigation into potential pollution sources.

Goal 3: Contribute to Scientific Studies and Research

Year 1 Accomplishments

- Stream Team successfully established a strong foundation for contributing to scientific studies and research by collecting valuable baseline data on local stream health. Baseline data is crucial for tracking trends in water quality over time and identifying emerging environmental challenges.

Plans for Year 2

- Begin outreach to professors at UNC who are also collecting water quality data. Explore potential collaborations where our data sets could complement their research efforts.

Goal 4: Contribute Tier II Data to Regional Monitoring Efforts

Year 1 Accomplishments

Stream Team established a calibration and sampling protocols, a quality assurance program plan, and a data management plan to ensure high-quality Tier II data that meets regional monitoring program standards.

Plans for Year 2

- Our first bi-annual data submission to the NC Department of Environmental Quality (NCDEQ) is scheduled for June 2025. This data will contribute to a comprehensive understanding of regional water quality trends.
- In the meantime, explore partnerships with other volunteer water quality monitoring programs and community science initiatives in the region for data sharing and collaborative analysis.
- Continue to participate in training opportunities offered by regional monitoring programs to further enhance data collection and reporting practices. This will ensure our data remains valuable and readily usable by scientists who access the data hub after submission.

What do volunteers do?

Volunteers agree to the following:

- **Monitor one of 10 Chapel Hill creek sites** for at least one year in October, January, April, and July
- **Attend two trainings**, one in the fall and one in the spring, to learn how to measure physical criteria and assess habitat.
- **Help the Town identify pollution hotspots**

What parameters do volunteers measure?

Stream Team 2.0 measures **temperature**, **dissolved oxygen (DO), pH**, **electrical conductivity**, and, during spring **habitat**. Staff chose these parameters to complement that Town's annual Bug Monitoring program.

Figure 2 - Riffles are shallow, faster moving sections of the stream. Riffles tend to move over rocks, such as this one in Bolin Creek at Umstead Park.

Volunteers measure these parameters at each site below a riffle, using pens and meters approved by the NC Aquatic

Datahub. For more information about the equipment and field data form, check out the Volunteer Handbook[6].

The expected and concerning thresholds for each parameter are determined by the Town's Illicit Discharge Detection and Elimination (IDDE)[7] plan per the Clean Water Act.

Where are the 10 monitoring sites?

Stream Team centers on nurturing our relationships with our land and waters.

- Site 1: Cole Springs Branch near Cedar Street
- Site 2: Crow Branch below Ashley Forest Road
- Site 3: Schoolhouse Creek at Library Drive
- Site 4: Booker Creek at Martin Luther King Jr. Blvd
- Site 5: Jolly Branch below Chapel Hill High School
- Site 6: Bolin Creek at Umstead Park
- Site 7: Dry Creek at Silver Creek Trail
- Site 8: Booker Creek at Willow Drive
- Site 9: Fan Branch near Scroggs Elementary
- Site 10: Bolin Creek near Community Center

For an interactive site map, scan the QR code or go to https://bit.ly/StreamTeamMap

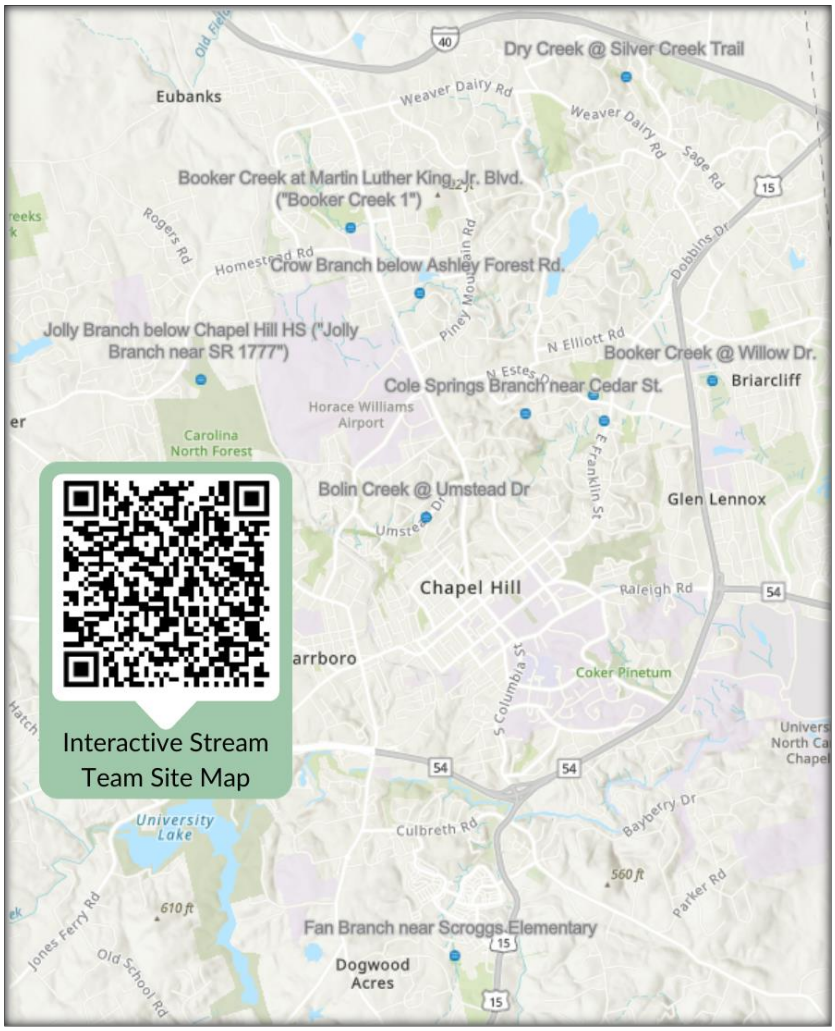


Figure 3 - Map of the Monitoring Sites

To select the sites, staff asked the following questions:

1. **Are these sites representative of the stream as a whole?** These sites are in a typical location within the water body and are not unduly influenced by any local factors, such

[6] https://www.townofchapelhill.org/home/showpublisheddocument/54760/638351228373430000
[7] https://www.townofchapelhill.org/government/departments-services/public-works/stormwater-management/water-quality/illicit-discharges#ad-image-0

as point sources of pollution. No sites should be chosen that are directly below a culvert, for example. Sites should be distributed across the Town subwatersheds.

2. **Are these sites accessible?** The sites are in a safe and secure area that is easy for volunteers to access. None of these sites are on private property.
3. **Do these sites complement the Town's Tier III Bug Monitoring program?** Six of the sites are also monitored during Bug Monitoring. More frequent monitoring at these sites would be helpful in identifying sources of pollution in these areas.

What can the data tell us about stream health? (Updated)

All ten teams monitored their sites during these dates:

- Fall: October 15 to November 18, 2023
- Winter: December 31, 2023 to February 3, 2024
- Spring: April 9 to May 4, 2024 during the Spring season.
- Summer: July 7 to 31, 2024 (with one team monitoring on August 24)

This was our first year of monitoring, which means we now have **baseline measurements** for the fall, winter, spring, and summer seasons. We can't discuss trends yet, but we are building a foundation.

Our primary analysis will be **looking at changes at each site over time**; we are not comparing the sites to each other[8]. Our goal for the first year is for each team to become familiar with their site and gather baseline measurements that can be used to track changes over time. Comparing sites to each other based on the data collected this season may not be particularly useful for a few reasons.

Why might results differ across sites?

Different sites may show variations in water quality due to several factors. Here are some key factors to consider:

- **Location (upstream vs. downstream):** Upstream sites generally have better water quality compared to downstream sites due to the cumulative effects of pollution sources.
- **Land use (undeveloped vs. developed):** Forested areas tend to have better water quality due to vegetation filtering runoff and reducing erosion, while developed areas can contribute to more stormwater runoff and pollution.
- **Weather conditions (rainfall, temperature):** Heavy rainfall can increase runoff and transport pollutants into streams, while high temperatures can reduce dissolved oxygen levels. Conversely, a very dry fall can result in low flows and low dissolved oxygen levels.
- **Geological Differences (Caroline Terrane vs. Triassic Basin):** Geological differences can make comparing sites to each other challenging. The geological history of North Carolina has resulted in diverse topography, soil composition, and stream substrate materials.

[8] Not yet, at least.

Some sites are in the Carolina Terrane (previously called Carolina Slate Belt), while others are in the Triassic Basin. Streams in the Carolina Terrane tend to be steeper with rocky substrates (stream bottoms), while Triassic Basin streams tend to be flatter and sandier. These geological features can impact dissolved oxygen levels, with higher levels in the Carolina Terrane and lower levels in the Triassic Basin.

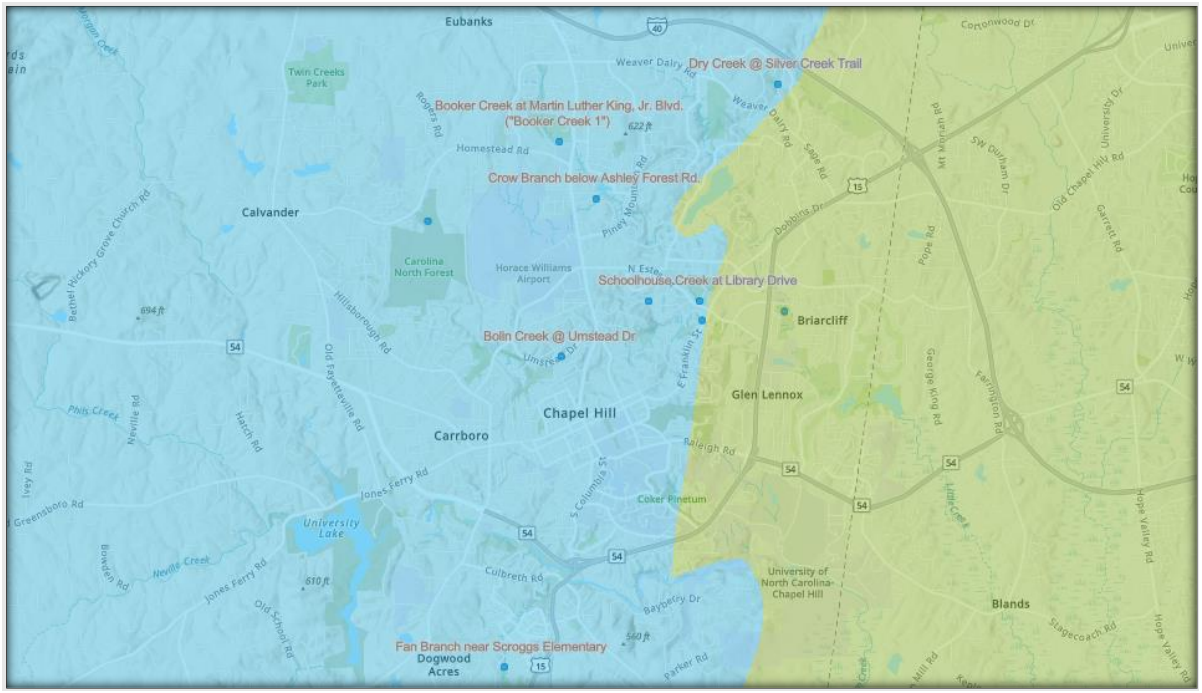


Figure 4 - Carolina Terrane (blue) streams tend to be steeper and rockier. Triassic Basin (green) streams tend to be flatter and sandier. Several Stream Teams sites are in a transition zone

During Spring training, volunteers learned about the geological differences at their sites. To learn more about our geologic history, check out NCDENR's Geology Storymap[9] and/or The (Brief) Geologic Story of the Chapel Hill, Hillsborough, and Durham Area[10].

Where can we find the data?

In the section titled, "What do the data say about stream health?" on www.townofchapelhill.org/StreamTeam, you will find:

- This report
- A simple app that includes all the field forms
    - The 'Streams' layer contains more information about the streams volunteers are monitoring. Toggle on this layer and click a stream to see the type: perennial, intermittent, or ephemeral.

Want the data in another format? Let us know and we will send it to you.

[9] https://ncdenr.maps.arcgis.com/apps/MapSeries/index.html?appid=0a7ccd9394734ff6aa2434d2528ddf12
[10] http://www.ncgeology.com/Rocks_of_NC/pages/geologichistory_chapelhill_hillsborough_durham.html

Coming soon: an interactive data dashboard!

What does the data tell us about stream health?

Rainfall Data (Updated)

Rainfall affects stream flow and levels of water pollution. October 2023 was dry, which means all streams had low flow. Rain flushes stormwater pollution off the ground and into our streams. The longer we go between rain events, the higher volume of pollution that washes into our creeks during the next rain.

January 2024 was a relatively wet month, which means streams had higher flow than in October. Because of this, we should expect lower pollution levels than in October and higher DO readings.

April 2024 was a relatively dry month in Chapel Hill, which means streams had lower flow than in January. Because of this, we can expect higher conductivity levels than in January, and potentially lower DO readings than in January.

July 2024 was a wet month in Chapel Hill, which means streams had higher flow than in previous seasons. Because of this, combined with higher temperatures, we may expect higher DO readings and lower conductivity readings than in previous seasons.

The table[11] below compares rainfall during:

- October 12 to November 18 from 2019-2023
- December 28 to February 3 2019-2023
- April 6 May 4 from 2020-2024
- July 4 July 31* from 2020-2024

*One team could not monitor until August 24 during Summer monitoring. For this report, we will not include this outlier date in our data analyses.

Given the fall 2023 drought conditions, volunteers will report a 72-hour rainfall period moving forward. Staff retroactively adjusted the data from the 48-hour period reported in the first monitoring season. For the Winter, Spring, and Summer monitoring seasons, volunteers recorded the 72-hour rainfall average prior to their monitoring date using the Bolin Creek at Village Drive and Booker Creek at Piney Mountain Road rain gauge data.

Why does rainfall data matter?

If it has not rained within 48 hours, we are likely seeing a baseflow of groundwater. Due to soil composition, groundwater flow can impact our readings for different parameters.

If it has rained within 48 hours, we are also seeing stormwater runoff flowing in the streams. Since much of Chapel Hill is developed, this means we may find evidence of water pollution.

In drought conditions, finding riffles may be challenging.

[11] The rainfall ranges are 72 hours before the first monitoring day to the final monitoring day of each season

Table 1 - Rainfall amounts in inches (in) by year from October 12 to November 18, from December 28 to February 3, from April 6 to May 4, and from July 4 to July 31

October 12-November 18	**Booker Creek at Piney Mountain Road**	**Bolin Creek at Village Drive**	**Average**
2023	1.59 in	1.57 in	1.58 in
2022	2.27 in	2.31 in	2.29 in
2021	1.70 in	1.40 in	1.55 in
2020	5.40 in	4.43 in	4.92 in
2019	6.99 in	6.20 in	6.60 in
December 28-February 3	**Booker Creek at Piney Mountain Road**	**Bolin Creek at Village Drive**	**Average**
2023	7.26 in	6.82 in	7.04 in
2022	4.08 in	3.94 in	4.01 in
2021	3.65 in	4.34 in	4.00 in
2020	5.37 in	4.90 in	5.14 in
2019	5.54 in	4.79 in	5.17 in
April 6-May 4	**Booker Creek at Piney Mountain Road**	**Bolin Creek at Village Drive**	**Average**
2024	1.00 in	1.54 in	1.27 in
2023	8.58 in	8.63 in	8.61 in
2022	2.17 in	1.94 in	2.01 in
2021	2.05 in	1.95 in	2.00 in
2020	3.43 in	4.19 in	3.81 in
July 4 - July 31	**Booker Creek at Piney Mountain Road**	**Bolin Creek at Village Drive**	**Average**
2024	9.70 in	8.51 in	9.11 in
2023	3.48 in	3.23 in	3.36 in
2022	7.68 in	7.76 in	7.72 in
2021	4.28 in	5.07 in	4.68 in
2020	5.73 in	3.71 in	4.72 in

Note 1 - October 15-November 18 is the Fall 2023 monitoring timeframe. December 28-February 3 is the Winter 2023/24 monitoring timeframe. April 6-May 4 is the Spring 2024 monitoring timeframe. July 4-July 31 is the Summer 2024 monitoring timeframe. This table starts with 72 hours before the first monitoring day.

Sources: Booker Creek at Piney Mountain Road USGS rain gage[12]; Bolin Creek at Village Drive USGS rain gage[13]

See appendix 2 for drought maps of North Carolina during this same timeframe from 2019 to 2023.

Temperature (Updated)

October 2023 was a warm month for air temperature, which affects water temperature. Rainfall also impacts water temperature, particularly in more developed areas with flashy streams where the water levels rise and fall quickly.

January 2024 was a relatively cold month for air temperature. In the table below, we see lower water temperatures in January than in October at every site except for Site 8: Booker Creek at Willow Drive.

Overall, April 2024 was a warmer month for air temperature than both October 2023 and January 2024. For most sites, we have the warmest air and water temperatures recorded so far. However, we see that in some sites, the air and water temperature in April 2024 was still a bit colder than the values recorded in October.

July 2024 was a warmer month for air temperature than all previous seasons. For all the sites, we have the warmest air and water temperatures recorded by the Stream Team so far.

Table 2- Fall 2023, Winter 2023/24, Spring 2024, and Summer 2024 Air and Water Temperatures in °F by Site

Site	Site 1: Cole Springs Branch near Cedar Street	Site 2: Crow Branch below Ashley Forest Road	Site 3: Schoolhouse Creek at Library Drive	Site 4: Booker Creek at Martin Luther King Jr Blvd
Fall Air Temp	Missing	55.00°F	73.00°F	71.00°F
Fall Water Temp	60.40°F	N/A*	59.70°F	61.30°F
Winter Air Temp	46.00°F	28.00°F	N/A (blank)	62.00°F
Winter Water Temp	47.03°F	43.50°F	57.00°F	56.00°F
Spring Air Temp	70.00°F	82.00°F	71.00°F	61.00°F
Spring Water Temp	61.20°F	66.40°F	57.40°F	60.70°F
Summer Air Temp	81.00°F	85.00°F	80.00°F	76.00°F

[12] https://waterdata.usgs.gov/monitoring-location/355631079025645/#parameterCode=00045&period=P7D&showMedian=true
[13] https://waterdata.usgs.gov/monitoring-location/355520079035845/#parameterCode=00045&period=P7D&showMedian=true

Summer Water Temp	75.60°F	75.20°F	72.60°F	75.90°F
Site	**Site 5: Jolly Branch below Chapel Hill High**	**Site 6: Bolin Creek at Umstead Drive**	**Site 7: Dry Creek at Silver Creek Trail**	**Site 8: Booker Creek at Willow Drive**
Fall Air Temp	67.00°F	76.00°F	57.00°F	72.00°F
Fall Water Temp	68.80°F	59.00°F	55.00°F	51.80°F
Winter Air Temp	32.00°F	55.00°F	51.00°F	62.00°F
Winter Water Temp	41.20°F	47.30°F	49.28°F	56.00°F
Spring Air Temp	72.00°F	66.00°F	68.00°F	72.00°F
Spring Water Temp	59.70°F	62.42°F	57.20°F	70.00°F
Summer Air Temp	88.00°F	97.00°F	90.00°F	81.00°F
Summer Water Temp	79.20°F	81.90°F	74.30°F	80.00°F
Site	**Site 9: Fan Branch near Scroggs Elementary**	**Site 10: Bolin Creek near Community Center**	*Due to Fall drought conditions, Site 2 was completely dry so the team could not measure the parameters.	
Fall Air Temp	70.00°F	56.00°F		
Fall Water Temp	63.50°F	59.60°F		
Winter Air Temp	50.00°F	45.00°F		
Winter Water Temp	51.62°F	51.00°F		
Spring Air Temp	75.00°F	49.00°F		
Spring Water Temp	61.00°F	60.20°F		
Summer Air Temp	75.00°F	76.00°F		
Summer Water Temp	72.00°F	77.00°F		

Dissolved Oxygen (DO) (Updated)

Dissolved oxygen is the amount of oxygen available to aquatic animals living in streams. It is measured in units of milligrams per liter (mg/L) and/or parts per million (ppm)[14].

DO levels to look for:

- *Acceptable Range: 4-10 mg/L*
- *Concerning Range: below 4 mg/L*
- *Report Immediately: 0 mg/L*

Summer 2024

DO levels ranged from 5.61 at Crow Branch (Site 2) to 10.70 at Booker Creek at Willow Drive (Site 8). Levels were fairly high given the hot summer air temperatures, likely due to the amount of rainfall right before the teams took measurements. Higher flow tends to churn in more oxygen from the air.

Spring 2024

In Spring 2024, DO levels were high at most of the sites. There were a couple of unsurprising exceptions to high DO readings – for example, Dry Creek tends to have low flow, impacting its DO, and Willow Drive tends to lack riffles, impacting its DO.

Winter 2023/24

In Winter 2024, DO levels were high at most of the sites, which we expect due to high water flow and low temperatures.

Fall 2023

In fall 2023, DO levels were low at some sites due to low flow conditions.

Table 3 - Fall 2023, Winter 2023/24, Spring 2024, Summer 2024 Dissolved Oxygen Results in mg/L by Site

Site	**Site 1: Cole Springs Branch near Cedar Street**	**Site 2: Crow Branch below Ashley Forest Road**	**Site 3: Schoolhouse Creek at Library Drive**	**Site 4: Booker Creek at Martin Luther King Jr Blvd**
Fall DO Level	Error (93.4)	N/A*	3.08 mg/L	3.12 mg/L
Winter DO Level	11.91 mg/L	11.63 mg/L	9.5 mg/L	N/A**
Spring DO Level	10.16 mg/L	9.72 mg/L	N/A**	5.01 mg/L
Summer DO Level	8.40 mg/L	5.61 mg/L	6.16 mg/L	8.41 mg/L
Site	**Site 5: Jolly Branch below Chapel Hill High**	**Site 6: Bolin Creek at Umstead Drive**	**Site 7: Dry Creek at Silver Creek Trail**	**Site 8: Booker Creek at Willow Drive**
Fall DO Level	6.90 mg/L	8.88 mg/L	8.35 mg/L	3.55 mg/L

[14] These units are interchangeable so we reference both in various places.

Winter DO Level	11.80 mg/L	10.80 mg/L	10.94 mg/L	9.18 mg/L
Spring DO Level	14.00 mg/L	10.63 mg/L	4.20 mg/L	3.50 mg/L
Summer DO Level	9.35 mg/L	7.80 mg/L	8.26 mg/L	10.70 mg/L
Site	**Site 9: Fan Branch near Scroggs Elementary**	**Site 10: Bolin Creek near Community Center**	*Due to drought conditions in the Fall, Site 2 was completely dry so the team could not measure the parameters. **DO meters didn't calibrate properly because their electrode membranes needed replacing.	
Fall DO Level	7.95 mg/L	8.80 mg/L		
Winter DO Level	10.31 mg/L	12.4 mg/L		
Spring DO Level	7.80 mg/L	9.50 mg/L		
Summer DO Level	6.50 mg/L	9.50 mg/L		

Electrical Conductivity (Updated)

Conductivity is a measure of the water's ability to pass an electrical current. It is measured in microsiemens per centimeter (µS/cm).

Conductivity can be an indicator of water pollution problems and/or related to soils and geology. Soils with more metals can increase conductivity.

Conductivity levels to look for:

- *Acceptable Range: 100-300 µS/cm*
- *Concerning Range: 300+ µS/cm*
- *Report Immediately: 700+ µS/cm*

Summer 2024

The conductivity at Site 5: Jolly Branch below Chapel Hill High was fairly high at 337 µS/cm. The conductivity at Site 2: Crow Branch below Ashley Forest Road is the lowest we've seen all year. According to the team, this site had been totally dry a few days prior, so the rains could have diluted any conductive materials remaining in the streambed. Many sites saw a decrease in conductivity from the spring.

Spring 2024

The conductivity at Site 1: Cole Springs Branch near Cedar Street was high. Chapel Hill Stormwater staff also monitored this site in April for our tier 3 bug monitoring program and noted high conductivity. We are working to investigate these high readings. The conductivity at Site 2: Crow Branch below Ashley Forest Road was slightly lower than in Winter 2023/24, which is a bit unexpected because we had less rain in April, and therefore the stream had lower flow and pollution was less diluted than in January. We are still working with UNC Stormwater to determine the cause for consistently high conductivity at this site.

Winter 2023/24

The conductivity at Site 2: Crow Branch below Ashley Forest Road was high. Based on our benthic monitoring, we are aware that there are times when Crow Branch has high conductivity. We are

working with UNC Stormwater to monitor the conductivity here more often and determine the cause. No other sites' conductivity values are a cause for concern.

Fall 2023

The Fall 2023 levels show no red flags for this area.

Table 4 - Fall 2023, Winter 2023/24, Spring 2024, and Summer 2024 Conductivity Results in µS/cm by Site

Site	**Site 1: Cole Springs Branch near Cedar Street**	**Site 2: Crow Branch below Ashley Forest Road**	**Site 3: Schoolhouse Creek at Library Drive**	**Site 4: Booker Creek at Martin Luther King Jr Blvd**
Fall Conductivity	Broken equipment	*N/A	210.0 µS/cm	240.0 µS/cm
Winter Conductivity	210.0 µS/cm	380.0 µS/cm	80.0 µS/cm	106.2 µS/cm
Spring Conductivity	417.0 µS/cm	328.0 µS/cm	171.3 µS/cm	180.6 µS/cm
Summer Conductivity	281.0 µS/cm	160.4 µS/cm	187.0 µS/cm	191.9 µS/cm
Site	**Site 5: Jolly Branch below Chapel Hill High**	**Site 6: Bolin Creek at Umstead Drive**	**Site 7: Dry Creek at Silver Creek Trail**	**Site 8: Booker Creek at Willow Drive**
Fall Conductivity	250.0 µS/cm	200.0 µS/cm	255.0 µS/cm	200.0 µS/cm
Winter Conductivity	220.0 µS/cm	101.0 µS/cm	120.0 µS/cm	106.2 µS/cm
Spring Conductivity	244.0 µS/cm	158.3 µS/cm	238.0 µS/cm	171.1 µS/cm
Summer Conductivity	337.0 µS/cm	171.7 µS/cm	219.0 µS/cm	114.3 µS/cm
Site	**Site 9: Fan Branch near Scroggs Elementary**	**Site 10: Bolin Creek near Community Center**	*Due to drought conditions in the Fall, Site 2 was completely dry so the team could not measure the parameters.	
Fall Conductivity	120.0 µS/cm	125.0 µS/cm		
Winter Conductivity	110.0 µS/cm	90.0 µS/cm		
Spring Conductivity	139.0 µS/cm	196.0 µS/cm		
Summer Conductivity	174.4 µS/cm	220.0 µS/cm		

The conductivity pen in Kit 1 broke in October 2023. Staff replaced it with a new pen that measures conductivity and pH in time for winter monitoring.

Staff replaced all conductivity pens used in Fall and Winter with new dual pH/conductivity pens before Spring monitoring.

pH (Updated)

pH is a measure of acidity or alkalinity. It is measured on a scale of 1 to 14; 1 being the most acidic, 7 being neutral, and 14 being the most alkaline, or basic.

pH levels to look for:

- *Acceptable Range: 6.0-9.0*
- *Report Immediately: below 6.0 or above 9.0*

Summer 2024

The pH results at every site are closer to neutral (7.0) than in the Fall or Winter. This is an excellent sign. None of the values recorded this season are cause for concern.

Spring 2024

The pH results at every site are closer to neutral (7.0) than in the Fall or Winter. This is an excellent sign. None of the values recorded this season are cause for concern.

Winter 2023/24

Winter 2024 results include a couple of basic values. This could be because of chemical inputs (fertilizers) that contain phosphorous, which is basic and attaches to sediment. No other readings are unusual or concerning.

Fun fact: this is why laundry detergents no longer have phosphorous/phosphates anymore. They cause a lot of water pollution.

Fall 2023

Fall 2023 results include several acidic values, which is not unusual with low flow based on the State's water quality standard. During low rainfall conditions, groundwater is the primary water source of these streams. This means we can see lower pH due to the soils and geology.

Table 5 - Fall 2023, Winter 2023/24, Spring 2024, and Summer 2024 pH Results by Site

Site	Site 1: Cole Springs Branch near Cedar Street	Site 2: Crow Branch below Ashley Forest Road	Site 3: Schoolhouse Creek at Library Drive	Site 4: Booker Creek at Martin Luther King Jr Blvd
Fall pH Level	6.20	N/A*	6.60	6.60
Winter pH Level	8.90	6.80	6.50	6.97
Spring pH Level	7.99	7.20	7.32	7.12
Summer pH Level	7.68	7.07	7.20	7.26
Site	**Site 5: Jolly Branch below Chapel Hill High**	**Site 6: Bolin Creek at Umstead Drive**	**Site 7: Dry Creek at Silver Creek Trail**	**Site 8: Booker Creek at Willow Drive**
Fall pH Level	6.90	7.70	7.40	6.00
Winter pH Level	6.40	7.70	6.00	N/A**

Spring pH Level	7.30	7.47	7.44	6.90
Summer pH Level	7.00	7.20	7.42	7.32
Site	**Site 9: Fan Branch near Scroggs Elementary**	**Site 10: Bolin Creek near Community Center**	*Due to Fall drought conditions, Site 2 was completely dry so the team could not measure the parameters. **Team 8's pH meter did not calibrate properly, so we've omitted their result.	
Fall pH Level	6.50	6.70		
Winter pH Level	8.00	N/A		
Spring pH Level	7.45	7.24		
Summer pH Level	7.31	7.55		

Spring 2024 Stream Habitat Assessments

Our teams completed their first habitat assessments in April 2024. Below, we have included their individual scores for each parameter and the total stream habitat scores for each site. Overall, most sites scored in the 'Good' category, with two rated as 'Excellent': Site 3: Schoolhouse Creek at Library Drive and Site 5: Jolly Branch below Chapel Hill High School.

These are the general breakdowns of what total stream habitat scores mean.

Stream Habitat Score	**Excellent (69-90)**	**Good (46-68)**	**Fair (23-45)**	**Poor (0-22)**
What does this mean?	A score in this range signifies a thriving aquatic ecosystem with exceptional features that support a diverse and abundant community of life.	A score in this range suggests that the stream is providing valuable ecological services and is relatively resilient to disturbance. It's a positive indication of the overall health of the stream ecosystem	A score in this range indicates that the stream habitat has some limitations in supporting aquatic life, but it's not necessarily in poor condition.	Scores in this range indicate significant limitations in its ability to support aquatic life. A score in this range highlights the need for significant restoration efforts to improve the stream's health.

Site	**Site 1: Cole Springs Branch near Cedar Street**	**Site 2: Crow Branch below Ashley Forest Road**	**Site 3: Schoolhouse Creek at Library Drive**	**Site 4: Booker Creek at Martin Luther King Jr Blvd**
Rocky or Muddy Bottom	Rocky	Rocky	Rocky	Muddy*
Epifaunal Substrate Score	7	6	7	5
Epifaunal Substrate Comments	There are a lot of exposed roots along the bank and rocks on the bottom. There is a kind of 'fur' covering the creek bed though. It doesn't look clean.	N/A	N/A	Some vegetation, rocks, and roots
Riffle/Run/Pool Score	7	6	7	10
Riffle/Run/Pool Comments	N/A	N/A	N/A	All 3 observed

Embeddedness Score (Rocky Bottom Streams ONLY)	4	6	8	N/A
Embeddedness Comments	See comment above about the 'fur.' There is something covering all the rocks.	N/A	N/A	N/A
Sediment Deposition Score	2	7	5	10
Sediment Deposition Comments	The point bars immediately at our monitoring site are large and no vegetation is growing on them.	N/A	N/A	N/A
Channel Flow Status Score	3	5	3	4
Channel Flow Status Comments	Much of the bank is exposed, tree roots are exposed and larger trees are at risk of falling into the creek.	N/A	N/A	N/A
Channel Alteration Score	10	6.5	9	10
Channel Alteration Comments	N/A	N/A	N/A	N/A
Channel Sinuosity Score (Muddy Bottom Streams ONLY)	N/A	N/A	N/A	8
Channel Sinuosity Comments	N/A	N/A	N/A	N/A
Bank Stability Score	3	6.5	6	4
Bank Stability Comments	Left bank: 2 Right bank: 1 The banks are eroded and there is a lot of undercutting of tree roots.	N/A	N/A	N/A
Vegetative Protection Score	9	7.5	6	6

Vegetative Protection Comments	Left bank: 4.5 Right bank: 4.5 There seems to be a large variety or fairly dense vegetation on both sides of the creek.	N/A	N/A	N/A
Riparian Vegetative Zone Width Score	10	7	10	5
Riparian Vegetative Zone Width Comments	See comment above.	N/A	N/A	N/A
Nonnative vegetation spotted?	Unsure	Unsure	Unsure	Yes
Total Stream Habitat Score	55	57.5	71	62
Additional Habitat Assessment Comments	N/A	N/A	N/A	N/A
Site	**Site 5: Jolly Branch below Chapel Hill High**	**Site 6: Bolin Creek at Umstead Drive**	**Site 7: Dry Creek at Silver Creek Trail**	**Site 8: Booker Creek at Willow Drive**
Rocky or Muddy Bottom	Rocky	Rocky	Rocky	Muddy
Epifaunal Substrate Score	9	5.67	5	8
Epifaunal Substrate Comments	Lots of rocks and gravel; saw fish	Not a huge diversity of coverage but enough.	N/A	N/A
Riffle/Run/Pool Score	8	6.33	7	10
Riffle/Run/Pool Comments	Multiple pools, and riffles	Definitely a riffle and a run questionable about a pool though.	N/A	N/A
Embeddedness Score (Rocky Bottom Streams ONLY)	6	8.3	8	N/A
Embeddedness Comments	Good amount of cobble; very rocky	A lot of big rocks but some smaller rocks. Diversity of rocks.	N/A	N/A

Sediment Deposition Score	3	7.3	6	10
Sediment Deposition Comments	One or two bars and islands	Found one small point bar upstream that has a lot of vegetation present.	N/A	N/A
Channel Flow Status Score	10	5	4	4
Channel Flow Status Comments	Really low and eroded (though all 3 seasonal Measures)	Noticed the water level based on obvious erosion was significantly lower.	N/A	N/A
Channel Alteration Score	7.5	3.33	9	6
Channel Alteration Comments	No evidence of human interference	There's a bridge, a whole greenway, a road, huge rocks no way they were naturally there. Additionally there's a concrete path leading to stream.	N/A	N/A
Channel Sinuosity Score (Muddy Bottom Streams ONLY)	N/A	N/A	N/A	7
Channel Sinuosity Comments	N/A	N/A	N/A	N/A
Bank Stability Score	10	6.17	5	4
Bank Stability Comments	Lots of overhanging vegetation but banks are deep and significant	Some trees starting to fall on both sides.	N/A	N/A
Vegetative Protection Score	10	8.5	9	10

Vegetative Protection Comments	Variety of vegetation surrounding area	Both sides relatively have a lot of vegetation and based on looks there seems to be great diversity.	N/A	N/A
Riparian Vegetative Zone Width Score	10	4.83	10	7
Riparian Vegetative Zone Width Comments	Large variety extends far beyond steam	One side has a significant buffer while the other has nothing but an incline leading to a road.	N/A	N/A
Nonnative vegetation spotted?	Yes	Yes	No	Unsure
Total Stream Habitat Score	74.5	55.5	63	66
Additional Habitat Assessment Comments	Font is too small for us older folks who generally don't bring reading glasses to the woods.	N/A	N/A	N/A
Site	**Site 9: Fan Branch near Scroggs Elementary**	**Site 10: Bolin Creek near Community Center**	*Site 4: Booker Creek at Martin Luther King Jr Blvd is in the Carolina Terrane and is a rocky bottom stream.	
Rocky or Muddy Bottom	Rocky	Rocky		
Epifaunal Substrate Score	6	6		
Epifaunal Substrate Comments	N/A	Lots of cobble, some leaf packs, and submerged roots.		
Riffle/Run/Pool Score	10	8		

Riffle/Run/Pool Comments	N/A	There are some pools, runs and riffles present.	
Embeddedness Score (Rocky Bottom Streams ONLY)	5	8	
Embeddedness Comments	Different in different areas.	Lots of cobble, half embedded.	
Sediment Deposition Score	3	7	
Sediment Deposition Comments	N/A	We are standing on one right now, there are sand bars and some have green on them.	
Channel Flow Status Score	3	7	
Channel Flow Status Comments	N/A	Last time we came was a lot higher because we came after a storm. Recent rain enhances the flowing water.	
Channel Alteration Score	10	2	
Channel Alteration Comments	Could be children moving things sometimes though.	There is a pipe and rocks thrown on the side.	
Channel Sinuosity Score (Muddy Bottom Streams ONLY)	N/A	N/A	
Channel Sinuosity Comments	N/A	N/A	
Bank Stability Score	5	8.5	

Bank Stability Comments	Lots of undercutting, especially on left bank.	There is no evidence of bank failure, and there is moss and vegetation.	
Vegetative Protection Score	9	6	
Vegetative Protection Comments	N/A	There is a lot of vegetation	
Riparian Vegetative Zone Width Score	8.5	6	
Riparian Vegetative Zone Comments	Close to a Paved greenway (but with buffer in between).	There is a wall, lots of vegetation.	
Nonnative vegetation spotted?	Yes	Yes	
Total Stream Habitat Score	59.5	58.5	
Additional Habitat Assessment Comments	N/A	N/A	

Training Corner

What are signs of recent high-water marks?

We know that our creeks often pop over their banks into the floodplain[15]. Luckily for us, fallen leaves and pine needles give us a glimpse into the recent past. This woody debris[16], called **debris/wrack lines or river roses**, often gets caught on trees and other structures in the floodplain. Fallen leaves don't last long, so we can assume they fell during the last fall and winter seasons.

Why are they also called "river roses[17]?" Because the river rose THIS high (points to debris line).

[15] Floodplains be floodplainin'.
[16] And sometimes trash
[17] The term "river rose" was coined by stream ecologist, Dave Penrose.

Where do we note high-water marks in the habitat assessment?

See a river rose out in the wild during Spring monitoring? Let us know in the comment section of Parameter 5: Channel Flow Status.

5- Three examples of wrack lines. Left: Wilson Creek, Chapel Hill. Right: Both along the Eno River in Hillsborough. Notice how the waterway in the bottom right isn't even visible in the photo. How high might the river have gotten to deposit leaves so far?

What do sewer manholes tell us about water levels?

Ever wondered why so many sanitary sewer manholes by creeks are tall? Chances are, they're designed to so their lids are above the 100-year (1% annual chance) flood water level. That can give you an idea of how high the water can rise.

6- Sanitary sewer murals along the Booker Creek Trail. Left by Calvin Ulrich. Right by Sampada Kodagali Agarwal.

These sewers carry sewage from households and businesses to the nearest wastewater treatment plant. They are not connected to the storm sewer system. When floodwaters overtop the lids, raw sewage can leak into the waterway.

What is next for the Stream Team?

We just wrapped up our first year of monitoring our local streams and we're pumped to have even more volunteers joining us! We're starting fall training in September and can't wait to see how the data compares to our baseline 2024/2025 data.

An **interactive data dashboard** is in the works. Are you a data visualization wizard? Join the small team working on this critical piece of science communication.

It takes a village to raise a community science program. **Have suggestions for improving this report and/or the program?** Let us know!

Appendices

Here are some extra goodies to scratch that curiosity itch.

Appendix 1: Qualitative data and staff responses from the field forms

Summer 2024

"Recently impacted by Hurricane Debby. See lots of minnows and some larger fish (10cm or so). Lots of brownish green algae in the pool section (not on surface of water, just on rocky/sandy bottom)"

- **Staff response:** Thank you for sharing your observations following Hurricane Debby. The increased presence of minnows and larger fish is a positive sign. The brownish green algae might be a result of increased nutrient runoff or changes in water flow due to the hurricane. It's important to monitor this algae growth as it could affect the overall health of the aquatic ecosystem.

"The lane leading to the creek is dry instead of muddy now, and there are tadpoles!"

- **Staff response:** It's great to hear that the tadpoles are thriving!

"One of our calibration devices had issues with providing correct measurements."

- **Staff response:** Thank you for sharing! We will compare this meter's measurements with 2 other Stream Team meters and our office meter. We will work to resolve this issue before October monitoring.

Winter 2024

"We are concerned by how cloudy the Cole Spring Branch becomes, especially after rainfall, due to runoff from the construction on the corner of Estes Drive and MLK Junior Boulevard. We assume this is where it is coming from."

- **Staff response:** Thank you for sharing your observation about the cloudiness in Cole Spring Branch after rainfall. We appreciate you bringing this potential concern to our attention.

"A lot of mud and squishiness from the rain!"

- **Staff response:** Thanks for reporting the increased muddiness and squishiness in the area! While not necessarily a direct indicator of water quality, this observation can be valuable in understanding the overall health of the ecosystem. Heavy rain events can lead to increased erosion and runoff, potentially impacting water clarity and aquatic life.

"Everything worked and new tool for ph and conductivity is nice!"

- **Staff response:** Fantastic! We're glad to hear everything went smoothly during your monitoring session.

"We couldn't get the PH results because of equipment (we think)"

- **Staff response:** Don't worry, it sounds like equipment might have been the culprit. We hear your frustrations, and guess what? We're jumping for joy to announce that ALL pH meters will be getting an upgrade by next season! You deserve to have the best tools for the job, and we can't wait to see the amazing data you collect with the new equipment. Thanks for hanging in there

“Ph is very slow”

- **Staff response:** Next season everyone will be equipped with brand new pH meters, so those slow readings will (hopefully) be a thing of the past! Thanks for your patience and for sticking with it to collect your data.

“Our site was dry in the fall and now has water. Today we removed several small fallen trees blocking the stream before I took the photo. The foam I observed was located at the blocked section of the stream.”

- **Staff response:** Yay! We’re glad you had water to monitor this time. We appreciate your initiative and understand your concern about fallen trees impeding stream flow. However, we wouldn’t advise moving them because they provide valuable habitat for critters. In the future, if there's a concern about the trees significantly impacting water flow, please let us know. We can discuss potential solutions that prioritize both maintaining healthy habitat and ensuring proper water flow. Thanks again for your observations!

“It would have been helpful in the fall training to have tested a sample of stream water to practice reading results. Also, having more kits/less people per kit would help give us more hands on practice.”

- **Staff response:** Thank you for sharing this feedback! We'd love to incorporate stream water testing in future training sessions, allowing everyone a chance to practice with real samples. While adding more kits currently isn't feasible due to cost limitations, we're happy to share that we'll be gradually acquiring additional kits over time. Thank you for your continued participation and for helping us improve this program!

“The fishy/sewage smell from last time is gone. There was much less trash, and the foam is only right after the riffles.”

- **Staff response:** That's wonderful news! Thanks for the update and sharing your observations on the improved conditions of the stream. If you continue to notice the foam in future visits, feel free to take photos and document its location if possible.

“We had a lot of trouble calibrating our pH pen this time. I don't know if it was us or the pen but we struggled to get an accurate reading. I'll report what we got, but please take into account that it is likely inaccurate.”

- **Staff response:** Thank you for reporting the challenges you encountered while calibrating the pH pen. We, too, have been hazed by these meters, so we understand how frustrating that can be. While we won't be including the reported reading in the data analysis due to the potential inaccuracy, we appreciate you bringing this to our attention.

“Recent rains seem to have washed away last falls leaves”

- **Staff response:** What an excellent observation! Recent rainfall likely played a significant role in clearing away the leaves from last fall. This is a natural process in streams, where flowing water helps remove accumulated organic matter like leaves. It's important for maintaining healthy stream ecosystems, as excessive leaf litter can impact oxygen levels and aquatic life. Thank you for sharing this observation!

“Temperature reading between the two devices varied by about 3°F.”

- **Staff response:** We notice similar discrepancies with our bug monitoring equipment. Feel free to record the average of the temperatures or the median.

“The DO meter never flashed 101.7 during the calibration process as the instructions specified it ought to. It did flash SA, which both the town instructions and the meter's manual say indicates successful calibration, but it did not indicate 101.7”

- **Staff response:** We’ll be sure to try calibrating this meter before we send it out next season.

“I don't think we got an accurate DO reading. The meter did not calibrate normally on any of our three attempts to calibrate it, it only stabilized on one of our two attempts to get a reading, and even then it wasn't stable for very long. I do not think this reading is in any way accurate or a cause for concern about the health of the creek, because the meter's behavior was not consistent. The result is included for completeness.”

- **Staff response**: We will not include the reported DO reading in the data analysis. We appreciate your diligence and responsible approach to data collection.

“I don't know if this was intentional, but there was not a standard conductivity tester in our kit, instead we used the new meter. The new meter is great by the way, intuitive, consistent, user friendly. We were able to calibrate and use it easily. I had intended to compare its results to the monitors we had been using, but the old pH meter wouldn't provide a reading and the old conductivity meter was absent. Our only team picture was taken through the survey, not saved locally, and when the previous submission failed, that image was lost. Also, weather for past days hasn't been posted for 2/3 yet on the NWS resource, and I didn't note that down because I didn't realize it would become unavailable, so I don't have an air temp. Sorry about that. This is our second attempt to submit this form for the 2/3 monitoring day.”

- **Staff response:** The new meter measures both pH and conductivity, eliminating the need for separate tools! Thank you for your persistence in submitting the report.

Our dissolved oxygen level was above 10 though, which I think puts it out of range. Before returning the kit, should we redo this test to get something more accurate? I wonder if we were putting the equipment too close to the riffle, which was why oxygen was so high. We can redo it and make sure we are below the riffle.

- **Staff response:** This DO reading is not a cause for immediate concern because the meter can measure up to 20.00 mg/L. The ranges we provided in the training were just typical ranges, and it's quite possible to see DO values above 10 in Chapel Hill. Other groups this season got similar values, which makes sense given the recent rain. The high flow and low temperatures can contribute to higher DO levels. We will discuss this in more detail during the Spring training, but in general, high DO levels are good. They indicate that the stream can support life. The only exception is in the Summer when high concentrations of algae and high water temperatures can create high DO levels that indicate a problem. However, since we have low temperatures right now, that's not a concern with your results. As for where you're measuring, it's fine to measure in or below the riffle. We just avoid measuring above the riffle because we might get a lower DO reading that doesn't accurately represent what's happening.

Fall 2023

"You're right about [calibrating] the demonic pH [meter], but it ended up being fine so we're all good!"

- **Staff response:** Calibration can be tricky and we applaud everyone's perseverance with the equipment.

"I notice your example for dissolved oxygen is 10.04. Is our reading of 93.4 way off?"

- **Staff response:** You are correct! This feedback reminded staff to include expected and concerning thresholds on the cheat sheets and field form.

"[We] would value a refresher on how to calibrate the equipment. If we visit the stormwater management offices and do this with a member of staff so that we know we are doing it right, that would be really helpful and would give us more confidence."

- **Staff response:** Absolutely! If we have a kit in the office, we're happy to go through it with you. If all the kits are checked out, we can do a phone call while you are calibrating your equipment to troubleshoot as a team. We also made several training videos on how to calibrate the equipment. Check out the volunteer resources section on the website at www.townofchapelhill.org/StreamTeam

"Water unable to be tested due to lack of water."

- **Staff response:** Thank you for documenting the conditions! Monitoring when streams dry up provides on-the-ground evidence of the local impact of drought.

"The flip instructions would be easier to work with if they were in booklet form"

- **Staff response:** We will think about how to convert these laminated sheets into a booklet. In the meantime, a copy of the resources lives in the Volunteer Handbook.

"There was lots of leaf debris, does decomposition affect the data?"

- **Staff response:** It can! The bacteria who decompose organic material use a LOT of dissolved oxygen. This is one of the reasons why algal blooms can be bad for aquatic animals. This is also why we keep grass clippings and loose leaves out of storm drains and stream buffers. These yard trimmings are free fertilizer for lawns but often become nutrient pollution when washed into streams.

"Hurray! We found a riffle and the devices calibrated!"

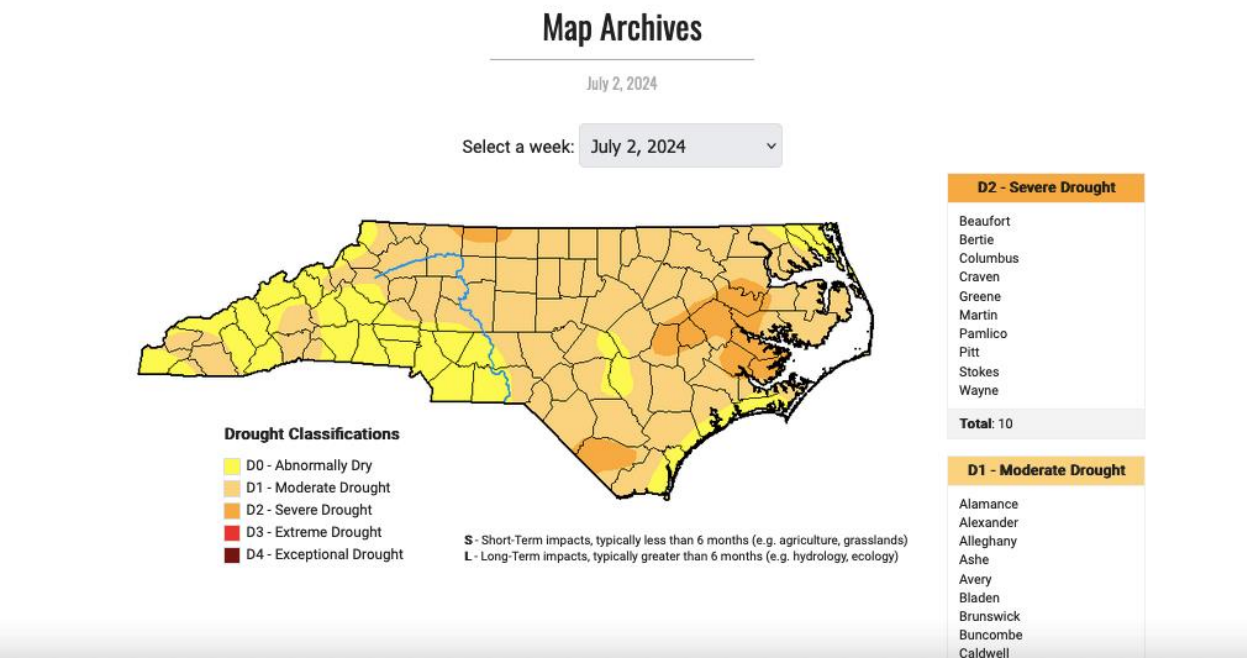
- **Staff response:** We celebrate your success 😊

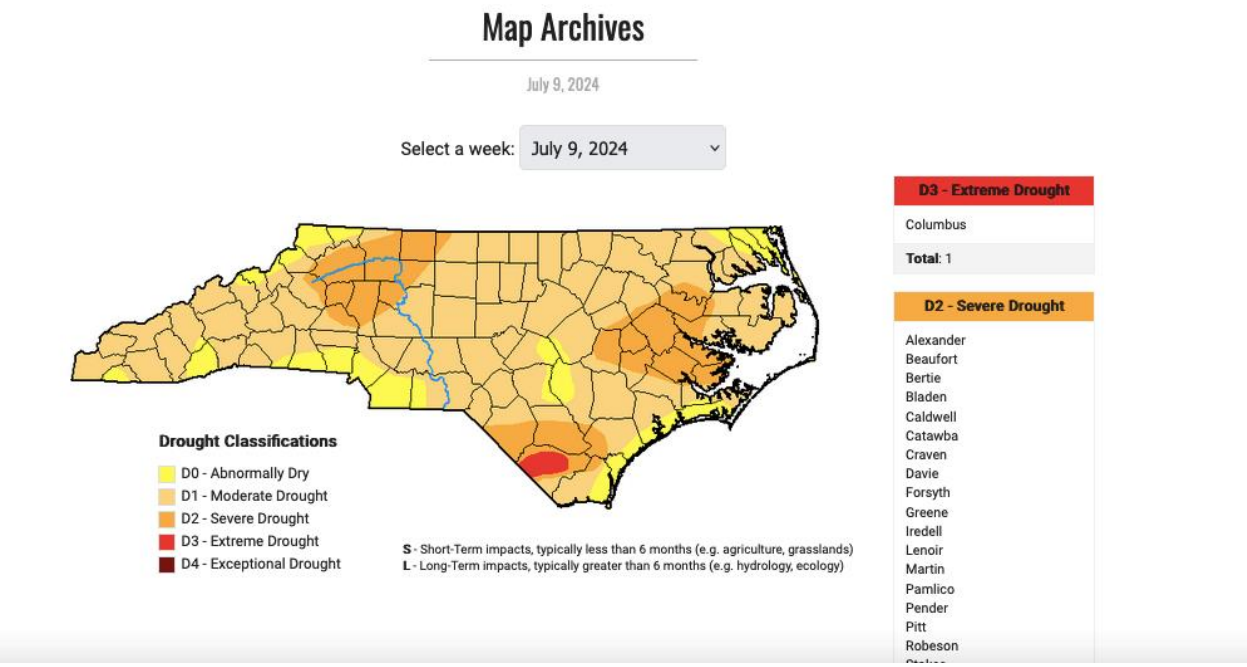
Appendix 3: Drought Maps (Updated)

These maps come from the North Carolina Drought Management Advisory Council[18]. We can use them to compare drought conditions for this season's monitoring timeframe over a few years.

[18] https://www.ncdrought.org/

The weeks of July 2, 2024 through July 30, 2024

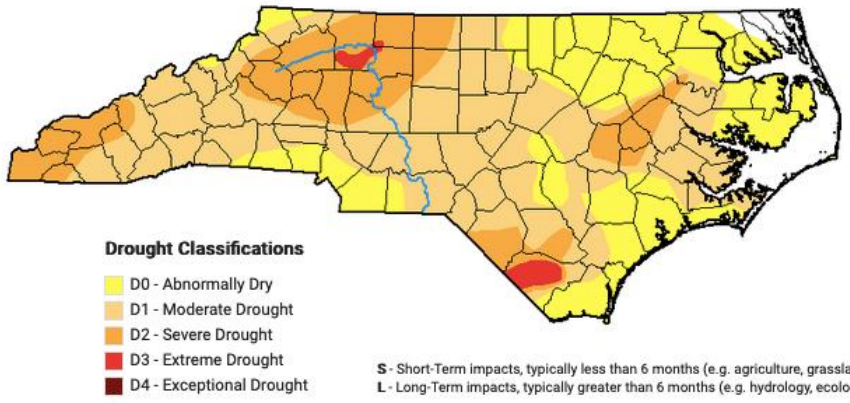




Map Archives

July 16, 2024

Select a week: July 16, 2024



D3 - Extreme Drought

Columbus
Yadkin

Total: 2

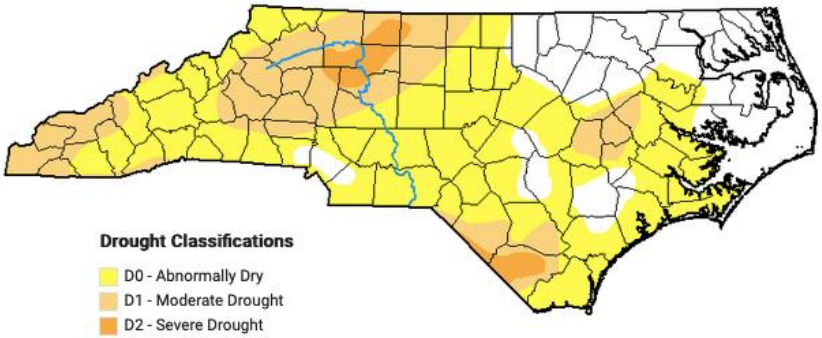
D2 - Severe Drought

Alexander
Bladen
Burke
Caldwell
Catawba
Cherokee
Clay
Davidson
Davie
Forsyth
Graham
Greene
Guilford
Haywood
Iredell
Lenoir
Pitt

Map Archives

July 23, 2024

Select a week: July 23, 2024



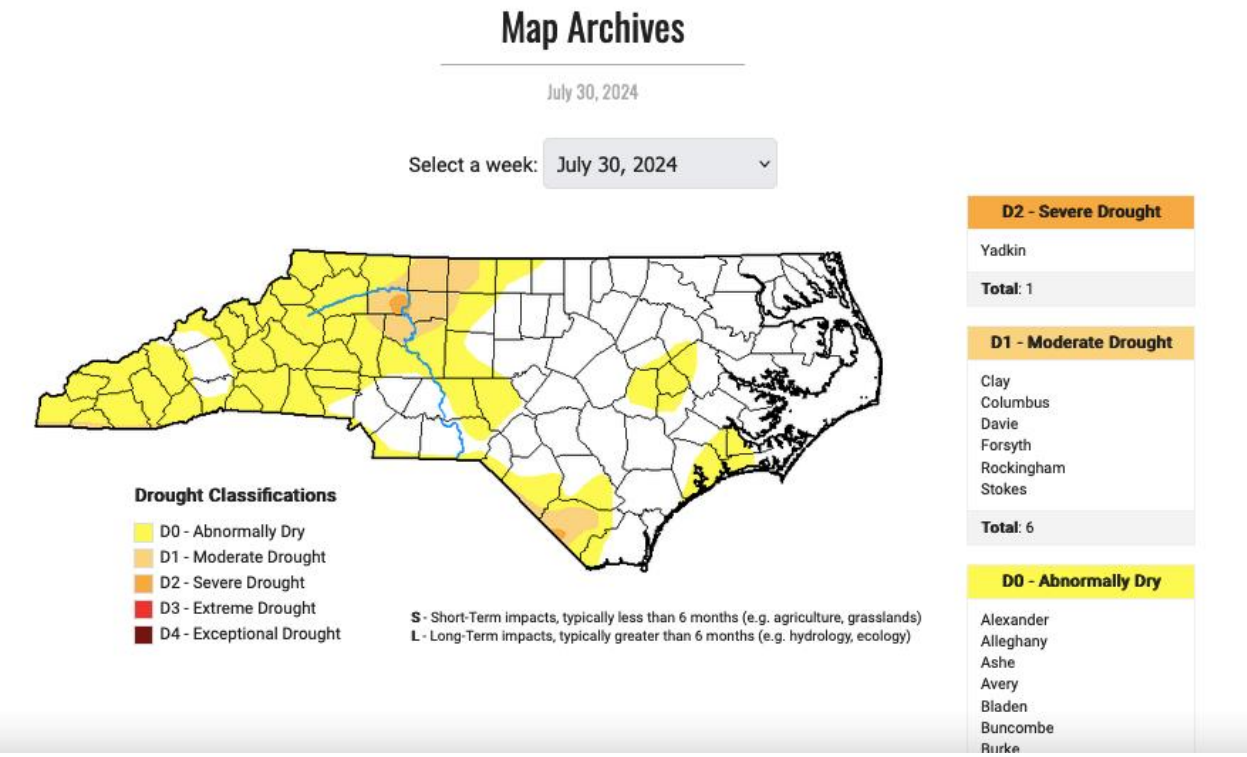
D2 - Severe Drought

Columbus
Davie
Forsyth
Stokes
Yadkin

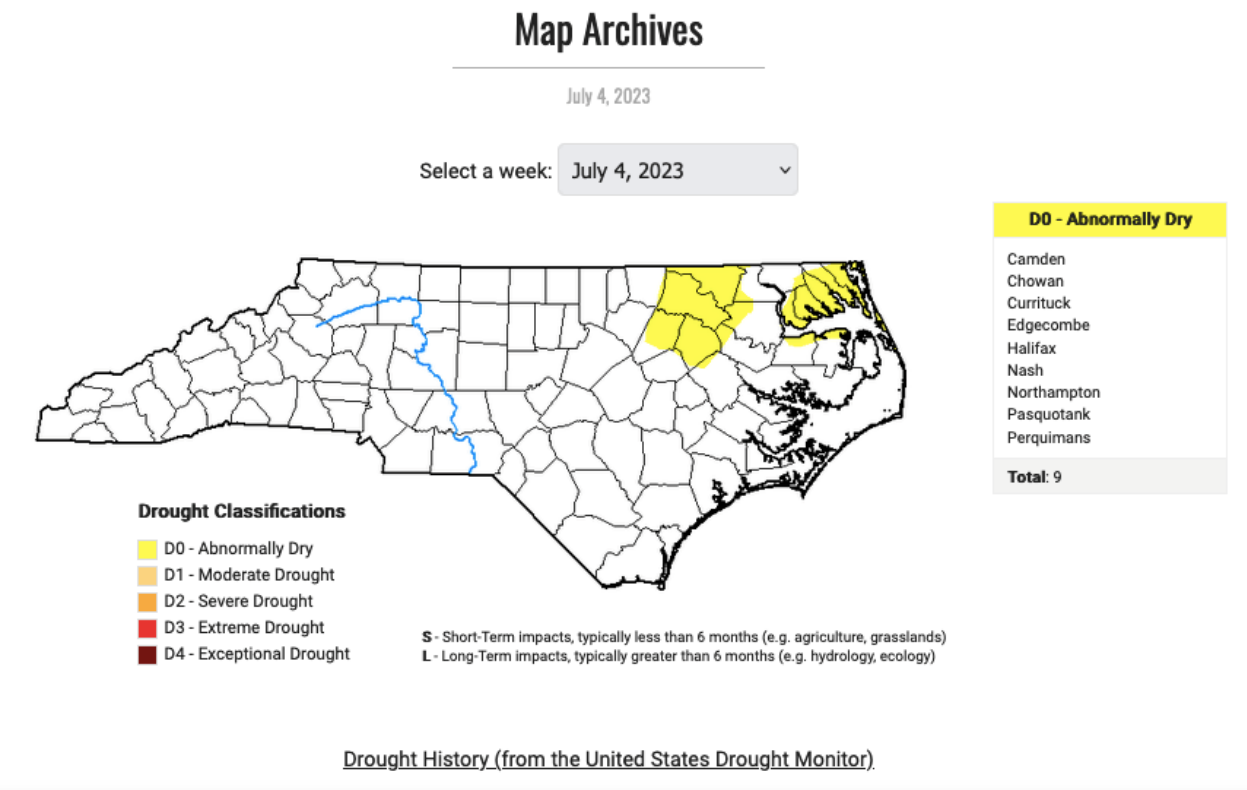
Total: 5

D1 - Moderate Drought

Alexander
Avery
Bladen
Burke
Caldwell
Caswell
Catawba
Cherokee
Clay
Davidson
Graham
Greene
Guilford



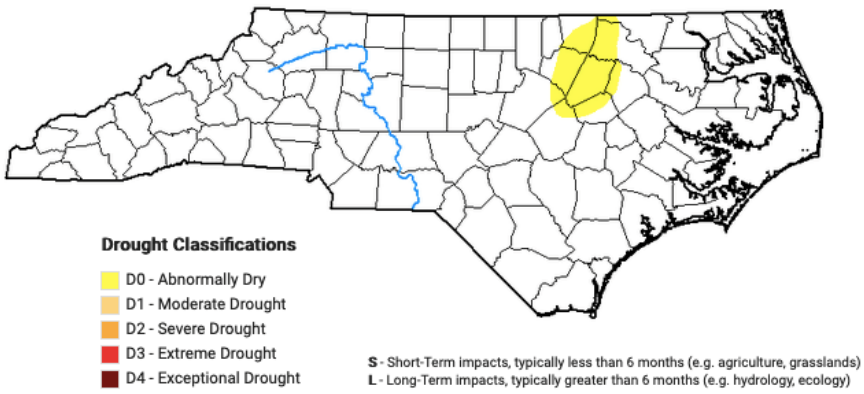
The weeks of July 4, 2023 through July 25, 2023



Map Archives

July 11, 2023

Select a week: July 11, 2023



D0 - Abnormally Dry

Franklin
Halifax
Nash
Warren
Wilson

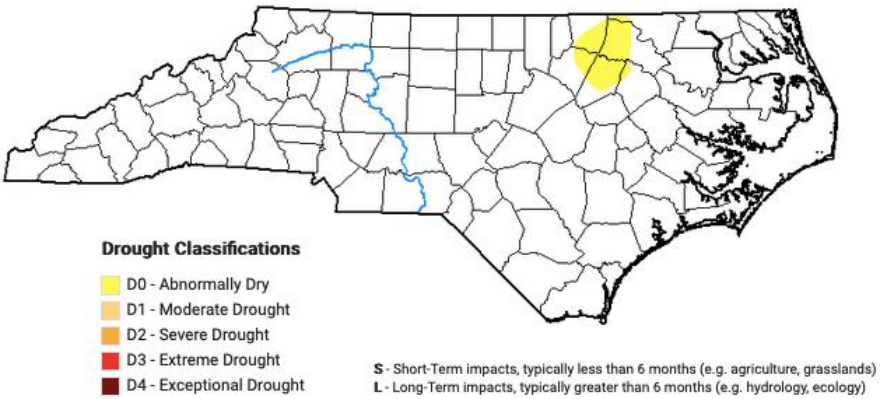
Total: 5

Drought History (from the United States Drought Monitor)

Map Archives

July 18, 2023

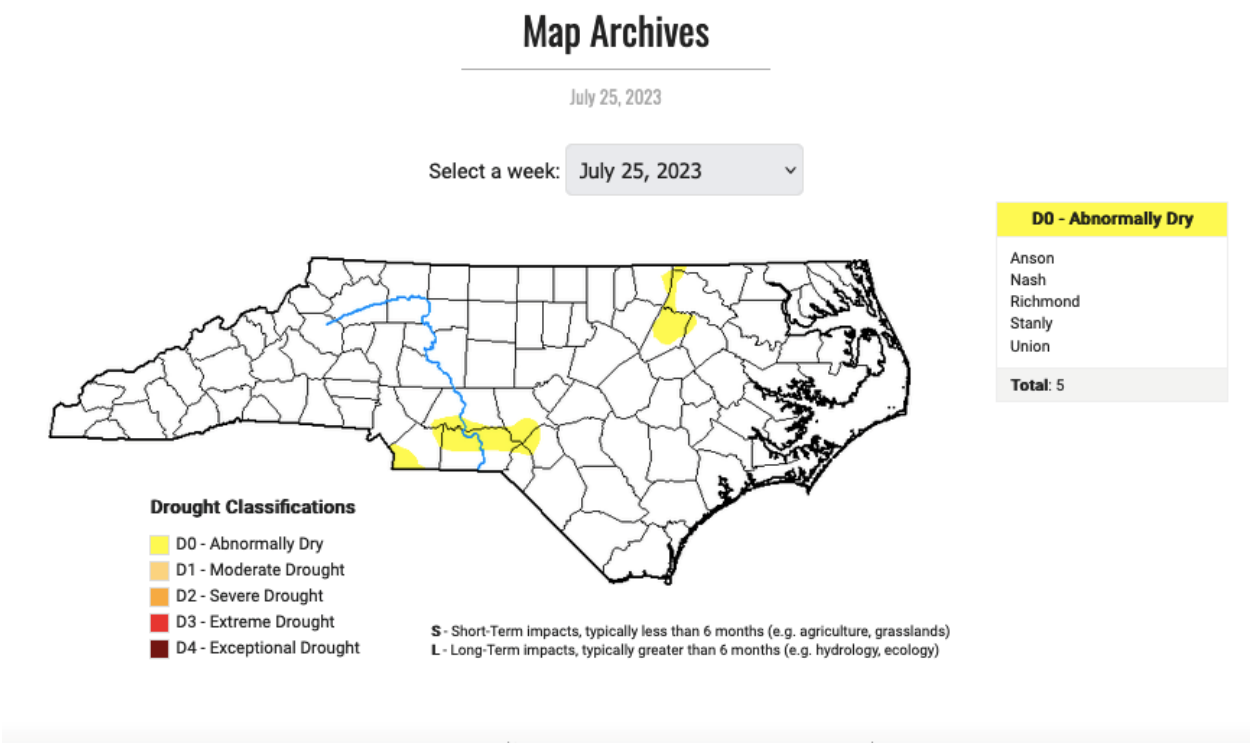
Select a week: July 18, 2023



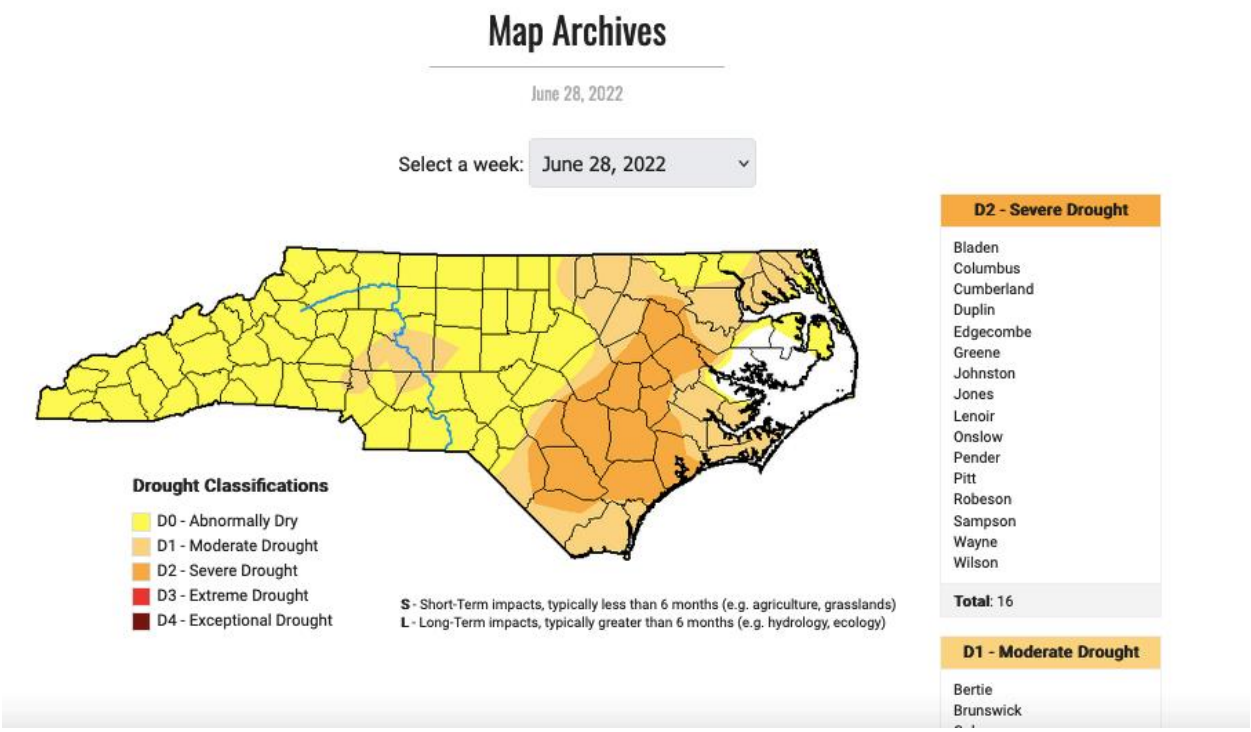
D0 - Abnormally Dry

Franklin
Halifax
Nash
Warren

Total: 4



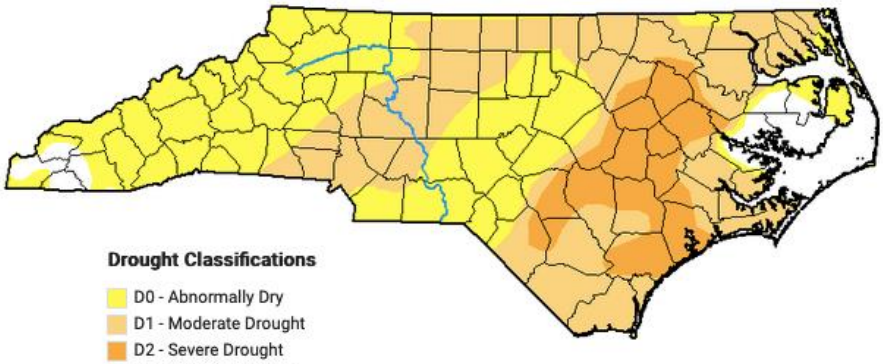
The weeks of June 28, 2022 through July 26, 2022



Map Archives

July 5, 2022

Select a week: July 5, 2022



Drought Classifications

- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D2 - Severe Drought

Cumberland
Duplin
Edgecombe
Greene
Johnston
Jones
Lenoir
Nash
Onslow
Pender
Pitt
Sampson
Wayne
Wilson

Total: 14

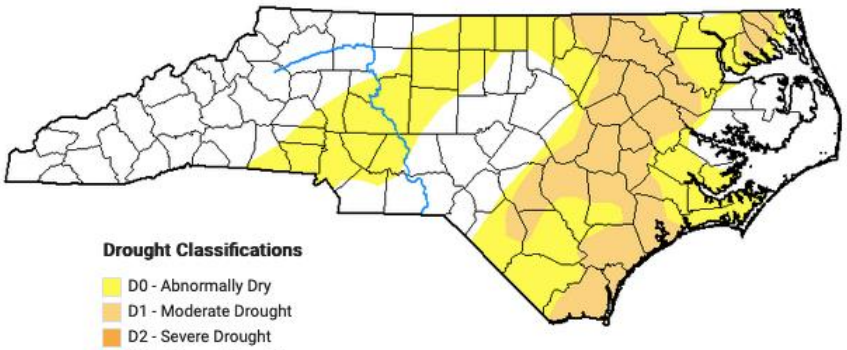
D1 - Moderate Drought

Alamance
Bertie
Bladen
Brunswick
Cabarrus

Map Archives

July 12, 2022

Select a week: July 12, 2022



Drought Classifications

- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

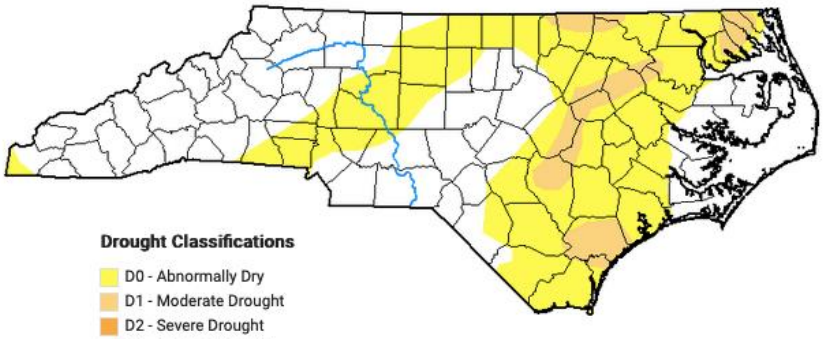
D1 - Moderate Drought

Brunswick
Camden
Cumberland
Duplin
Edgecombe
Greene
Halifax
Johnston
Jones
Lenoir
Martin
Nash
New Hanover
Northampton
Onslow
Pasquotank
Pender
Perquimans
Pitt
Sampson
Warren
Wayne
Wilson

Map Archives

July 19, 2022

Select a week: July 19, 2022



Drought Classifications

- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D1 - Moderate Drought

Camden
Edgecombe
Johnston
New Hanover
Pasquotank
Pender
Perquimans
Sampson
Warren
Wayne
Wilson

Total: 11

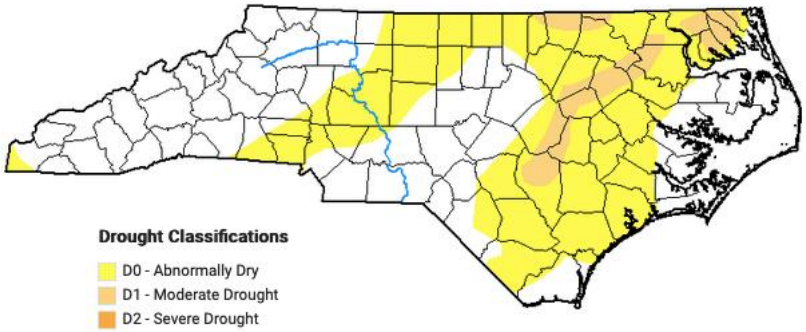
D0 - Abnormally Dry

Alamance
Bertie
Bladen
Brunswick
Cabarrus
Caswell
Cherokee
Chowan

Map Archives

July 26, 2022

Select a week: July 26, 2022



Drought Classifications

- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D1 - Moderate Drought

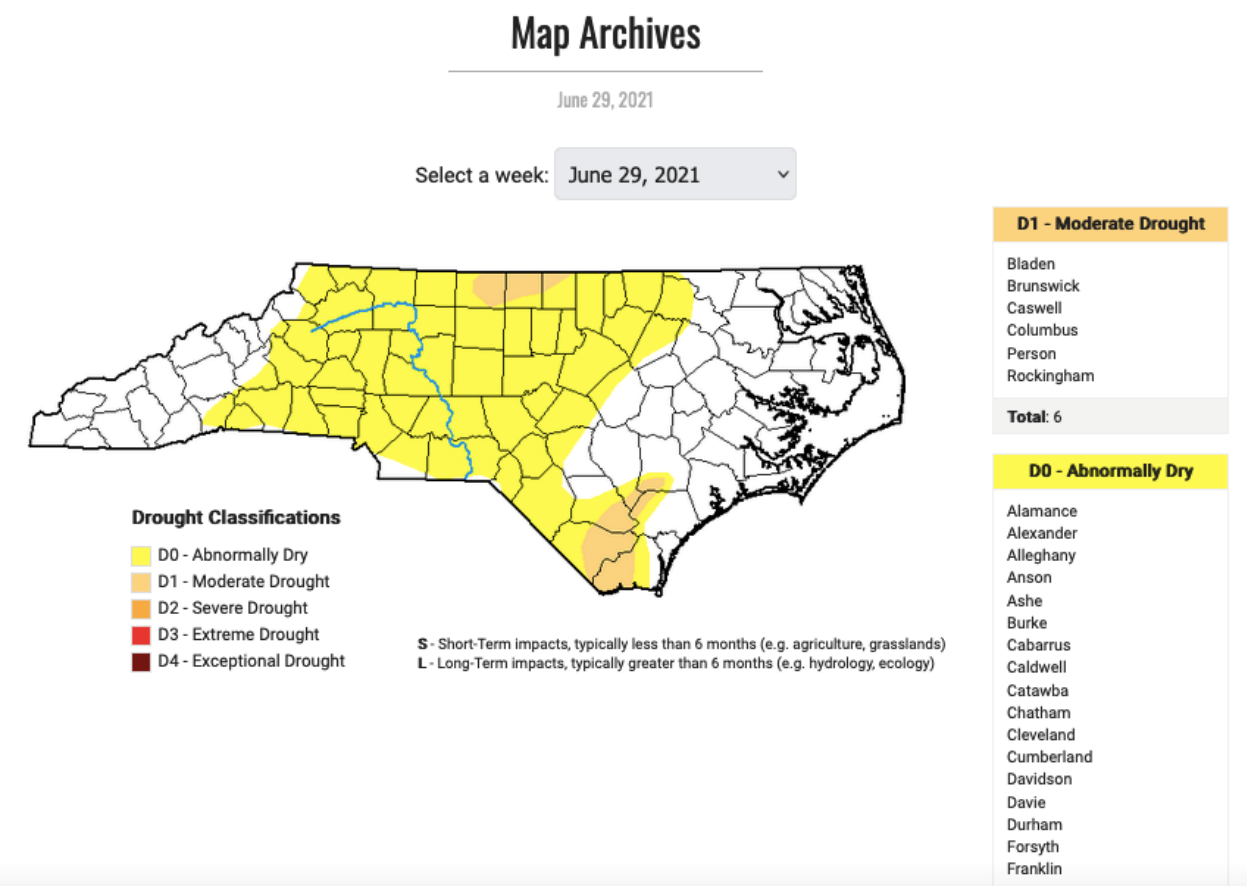
Bertie
Camden
Edgecombe
Gates
Halifax
Johnston
Pasquotank
Perquimans
Sampson
Warren
Wayne
Wilson

Total: 12

D0 - Abnormally Dry

Alamance
Bladen
Cabarrus
Caswell
Cherokee
Chowan
Cleveland

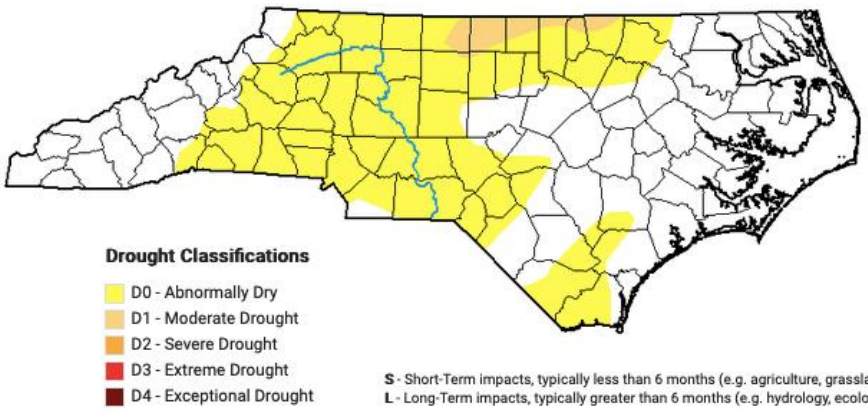
The weeks of June 29, 2021 through July 27, 2021



Map Archives

July 6, 2021

Select a week: July 6, 2021



D1 - Moderate Drought

Caswell
Person
Rockingham
Vance
Warren

Total: 5

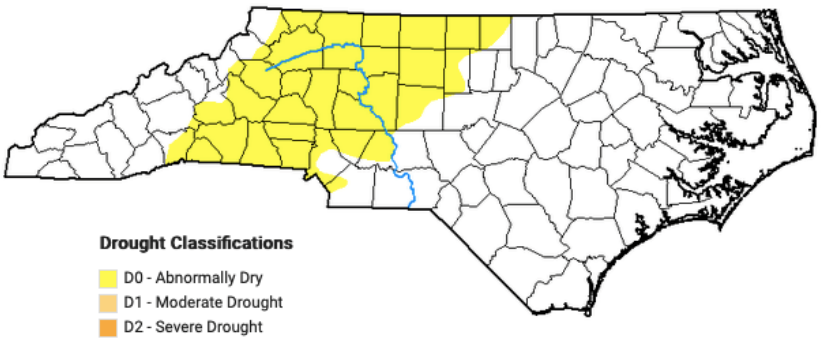
D0 - Abnormally Dry

Alamance
Alexander
Alleghany
Anson
Ashe
Bladen
Brunswick
Burke
Cabarrus
Caldwell
Catawba
Cleveland
Columbus
Cumberland
Davidson
Davie
Durham
Forsyth
Franklin
Gaston
Granville

Map Archives

July 13, 2021

Select a week: July 13, 2021



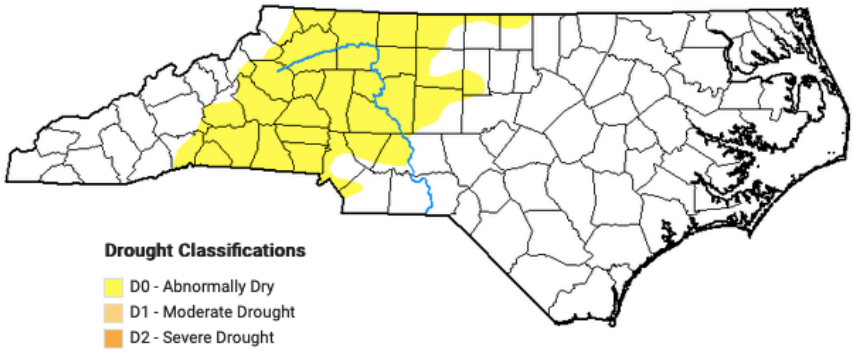
D0 - Abnormally Dry

Alamance
Alexander
Alleghany
Ashe
Burke
Cabarrus
Caldwell
Caswell
Catawba
Cleveland
Davidson
Davie
Forsyth
Gaston
Guilford
Henderson
Iredell
Lincoln
McDowell
Mecklenburg
Person
Polk
Randolph

Map Archives

July 20, 2021

Select a week: July 20, 2021



S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

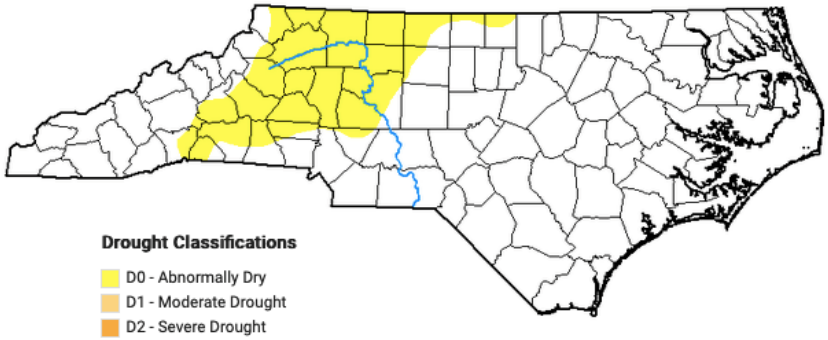
D0 - Abnormally Dry

Alamance
Alexander
Alleghany
Ashe
Burke
Cabarrus
Caldwell
Catawba
Cleveland
Davidson
Davie
Forsyth
Gaston
Guilford
Henderson
Iredell
Lincoln
McDowell
Mecklenburg
Person
Polk
Randolph
Rockingham

Map Archives

July 27, 2021

Select a week: July 27, 2021

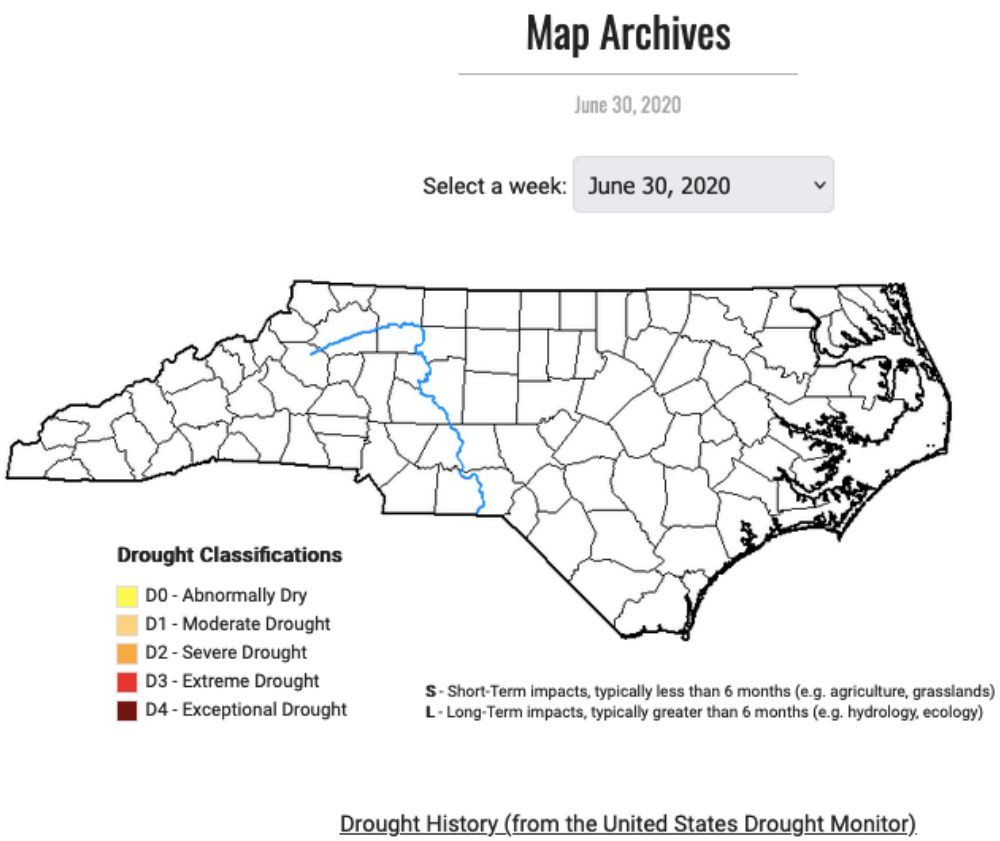


S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D0 - Abnormally Dry

Alexander
Alleghany
Ashe
Burke
Cabarrus
Caldwell
Catawba
Cleveland
Davidson
Davie
Forsyth
Henderson
Iredell
Lincoln
McDowell
Person
Polk
Rockingham
Rowan
Rutherford
Stokes
Surry
Wilkes
Yadkin

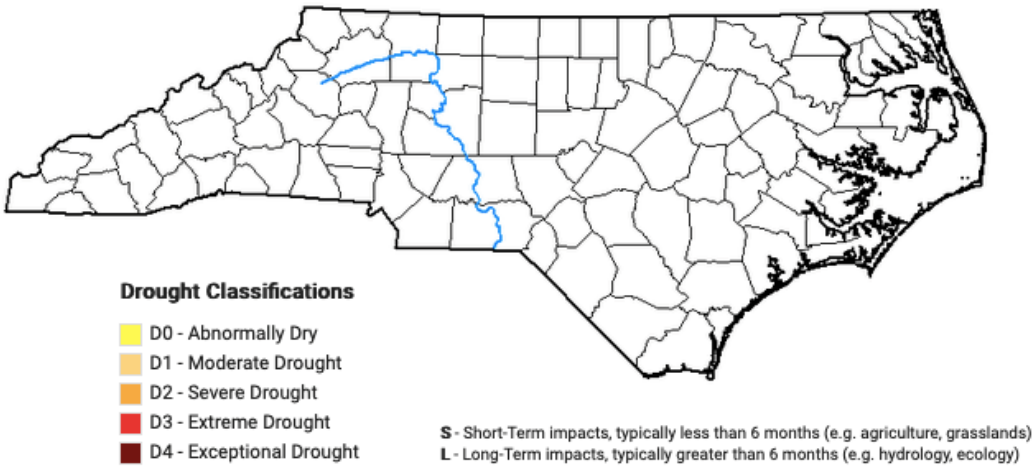
The weeks of June 30, 2020 through July 28, 2020



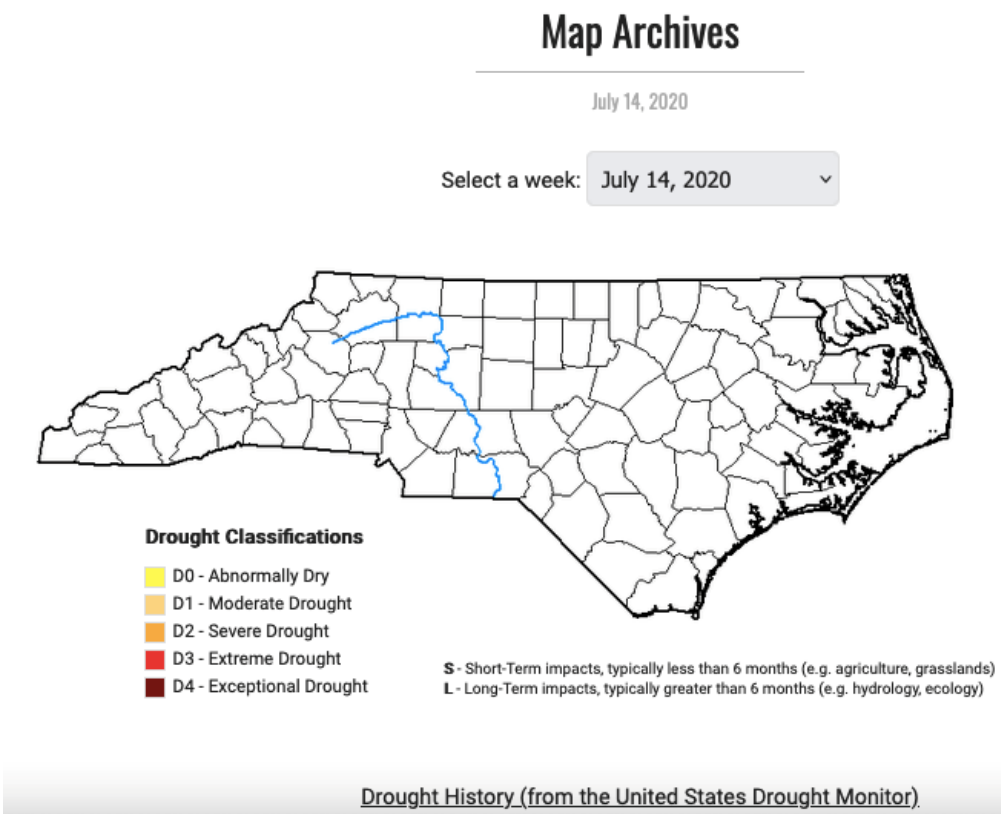
Map Archives

July 7, 2020

Select a week: July 7, 2020



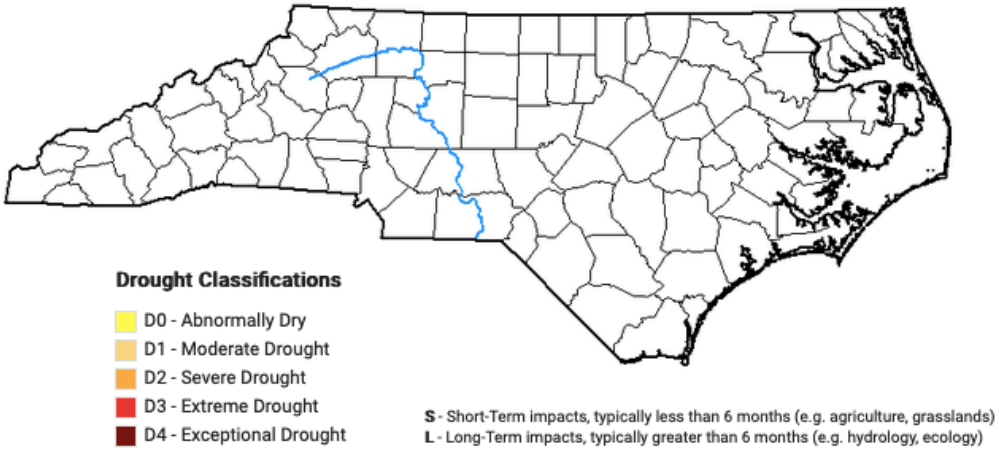
Drought History (from the United States Drought Monitor)


Map Archives
July 14, 2020
Select a week: July 14, 2020
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
Drought History (from the United States Drought Monitor)

Map Archives

July 21, 2020

Select a week: July 21, 2020

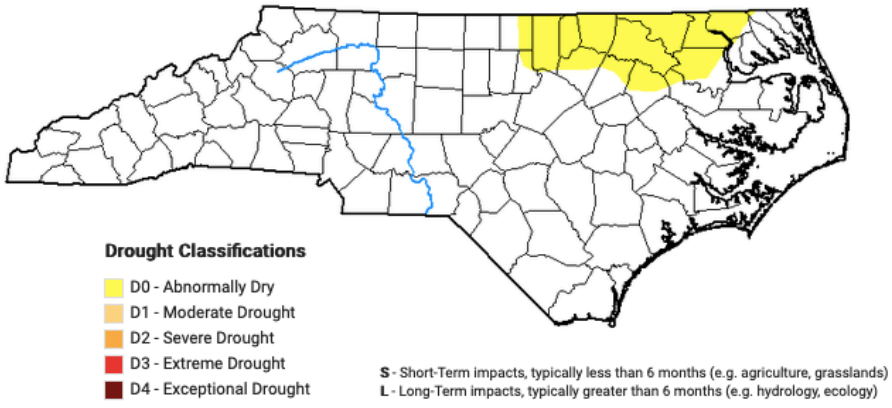


Drought History (from the United States Drought Monitor)

Map Archives

July 28, 2020

Select a week: July 28, 2020



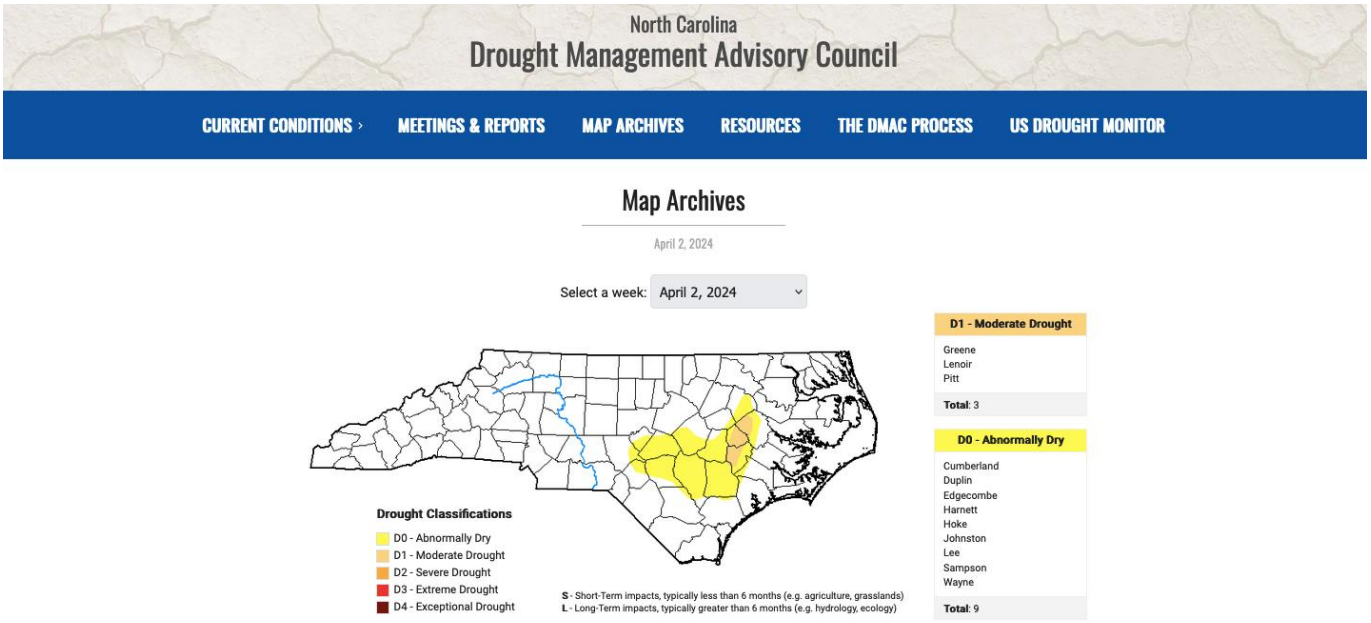
D0 - Abnormally Dry

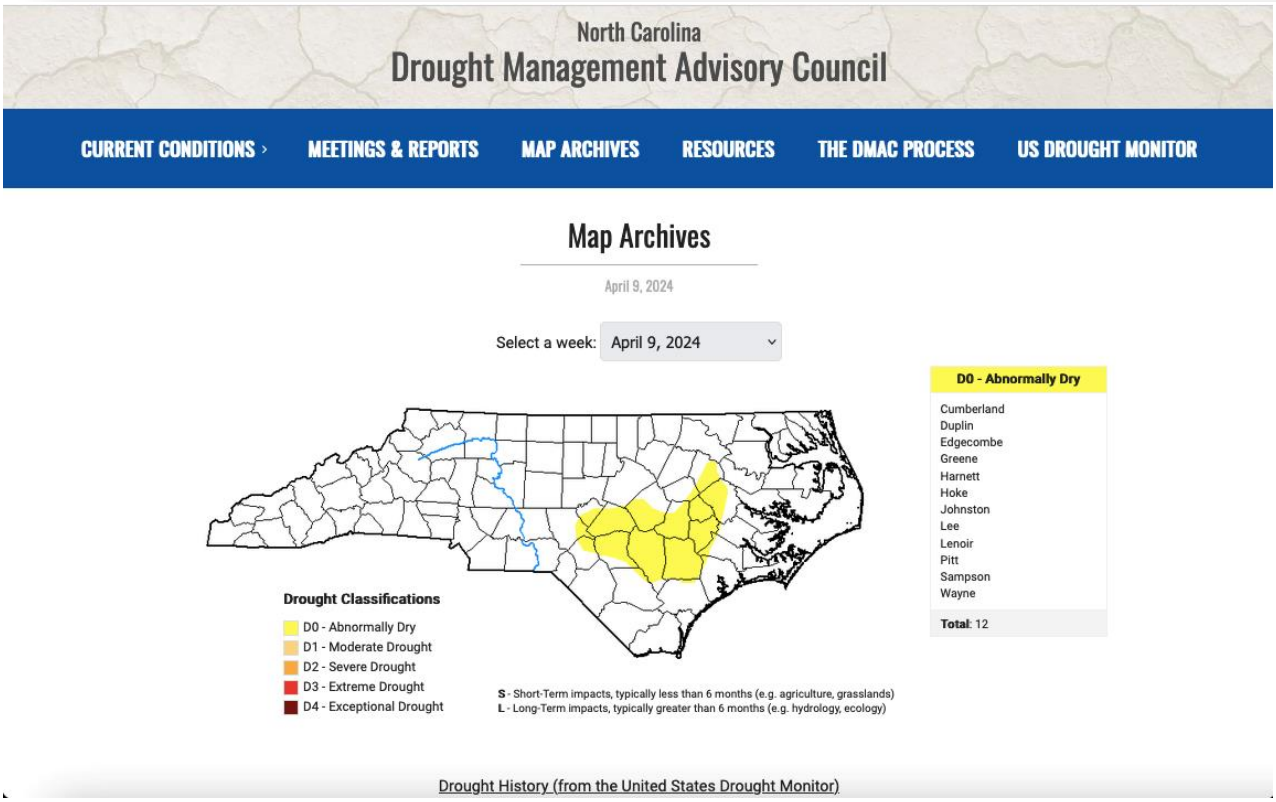
Bertie
Edgecombe
Franklin
Gates
Granville
Halifax
Hertford
Nash
Northampton
Person
Vance
Warren

Total: 12

Drought History (from the United States Drought Monitor)

The weeks of April 6, 2024 through May 4, 2024





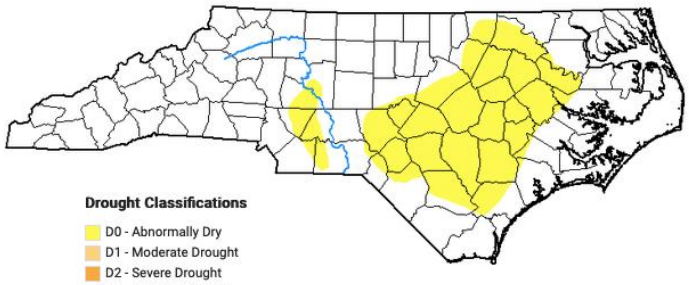
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › | MEETINGS & REPORTS | MAP ARCHIVES | RESOURCES | THE DMAC PROCESS | US DROUGHT MONITOR

Map Archives

April 16, 2024

Select a week: April 16, 2024



D0 - Abnormally Dry

Anson
Bladen
Cabarrus
Cumberland
Duplin
Edgecombe
Franklin
Greene
Halifax
Harnett
Hoke
Johnston
Lee
Lenoir
Martin
Moore
Nash
Pender
Pitt
Rowan
Sampson
Scotland
Stanly
Wake

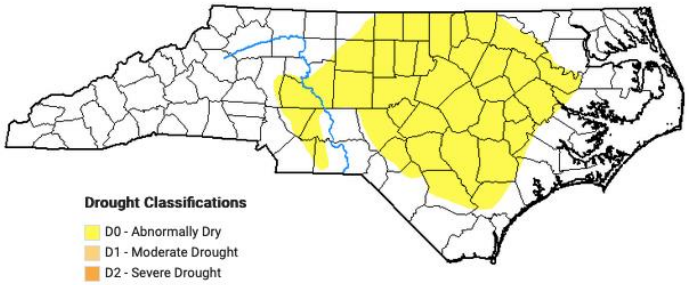
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › | MEETINGS & REPORTS | MAP ARCHIVES | RESOURCES | THE DMAC PROCESS | US DROUGHT MONITOR

Map Archives

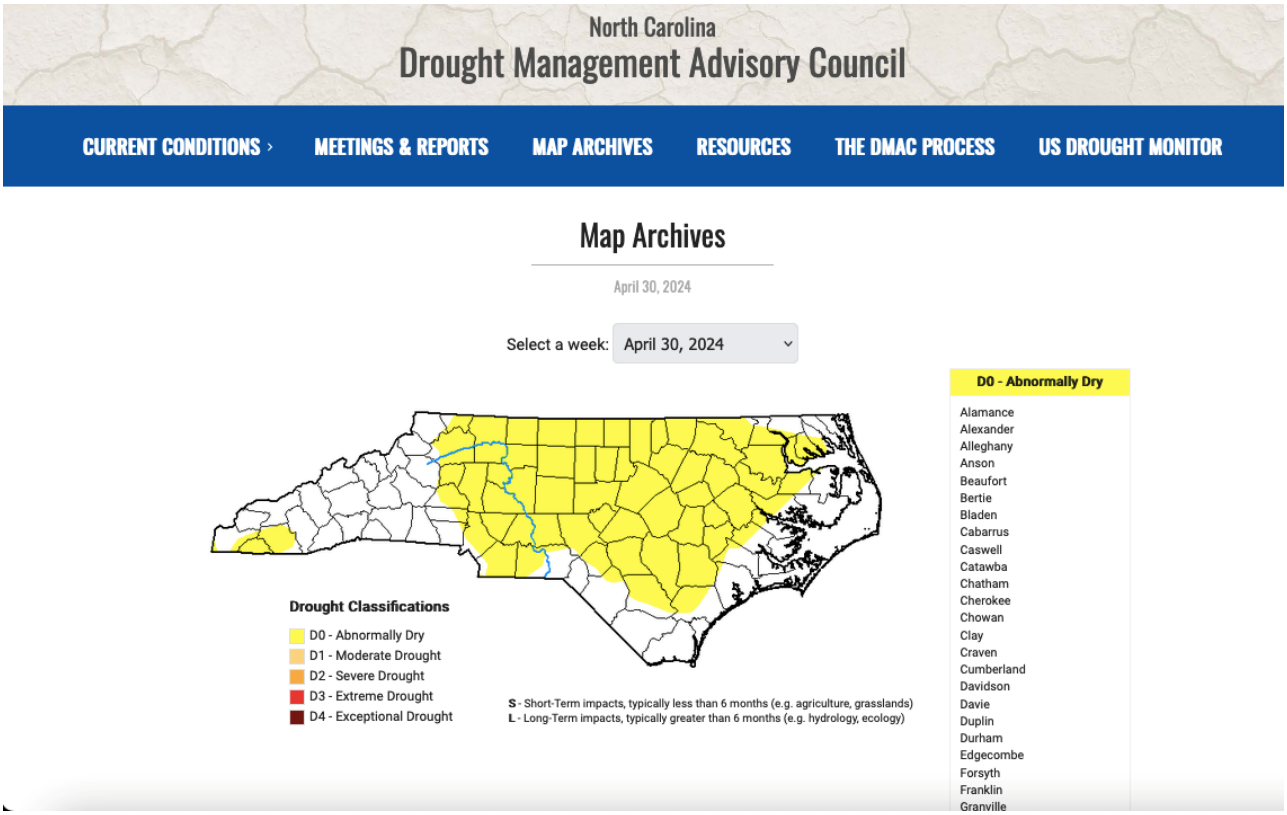
April 23, 2024

Select a week: April 23, 2024



D0 - Abnormally Dry

Alamance
Anson
Bladen
Cabarrus
Caswell
Chatham
Cumberland
Davidson
Duplin
Durham
Edgecombe
Franklin
Granville
Greene
Guilford
Halifax
Harnett
Hoke
Johnston
Lee
Lenoir
Martin
Moore



The weeks of April 6, 2023 through May 4, 2023

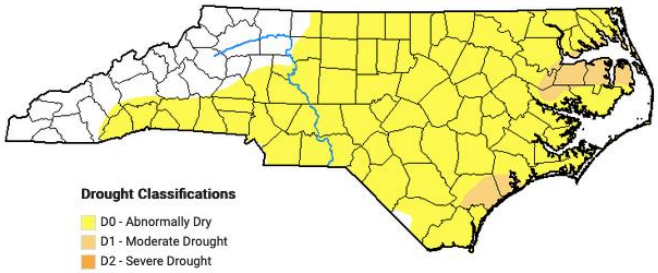
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › MEETINGS & REPORTS MAP ARCHIVES RESOURCES THE DMAC PROCESS US DROUGHT MONITOR

Map Archives

April 4, 2023

Select a week: April 4, 2023



D1 - Moderate Drought

Dare
Martin
Onslow
Pender
Tyrrell
Washington

Total: 6

D0 - Abnormally Dry

Alamance
Anson
Beaufort
Bertie
Bladen
Brunswick
Buncombe
Cabarrus
Camden
Carteret
Caswell
Catawba
Chatham

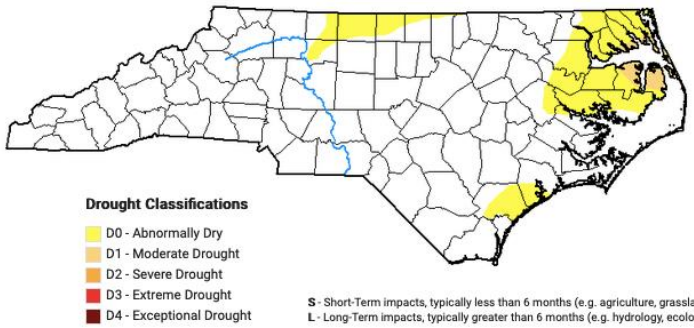
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › MEETINGS & REPORTS MAP ARCHIVES RESOURCES THE DMAC PROCESS US DROUGHT MONITOR

Map Archives

April 11, 2023

Select a week: April 11, 2023



D1 - Moderate Drought

Dare
Tyrrell

Total: 2

D0 - Abnormally Dry

Beaufort
Bertie
Camden
Caswell
Chowan
Currituck
Forsyth
Gates
Hertford
Hyde
Martin
Onslow
Pasquotank
Pender
Perquimans
Person

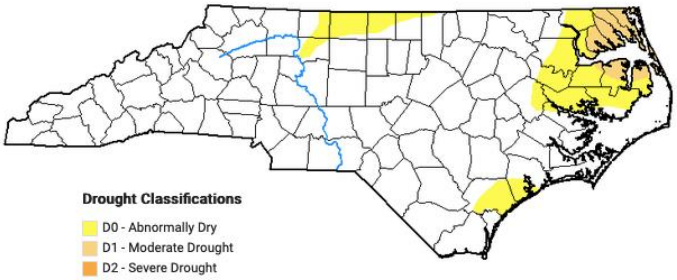
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › MEETINGS & REPORTS MAP ARCHIVES RESOURCES THE DMAC PROCESS US DROUGHT MONITOR

Map Archives

April 18, 2023

Select a week: April 18, 2023



Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D1 - Moderate Drought

Camden
Currituck
Dare
Pasquotank
Perquimans
Tyrrell

Total: 6

D0 - Abnormally Dry

Beaufort
Bertie
Caswell
Chowan
Forsyth
Gates
Hertford
Hyde
Martin
Onslow
Pender
Person
Pitt

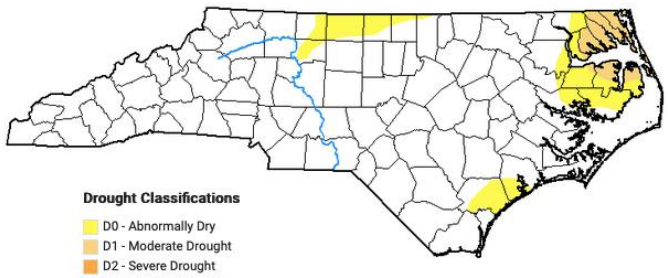
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › MEETINGS & REPORTS MAP ARCHIVES RESOURCES THE DMAC PROCESS US DROUGHT MONITOR

Map Archives

April 25, 2023

Select a week: April 25, 2023



Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D1 - Moderate Drought

Camden
Currituck
Dare
Pasquotank
Perquimans
Tyrrell

Total: 6

D0 - Abnormally Dry

Beaufort
Bertie
Caswell
Chowan
Forsyth
Gates
Hyde
Onslow
Pender
Person
Rockingham
Stokes
Washington

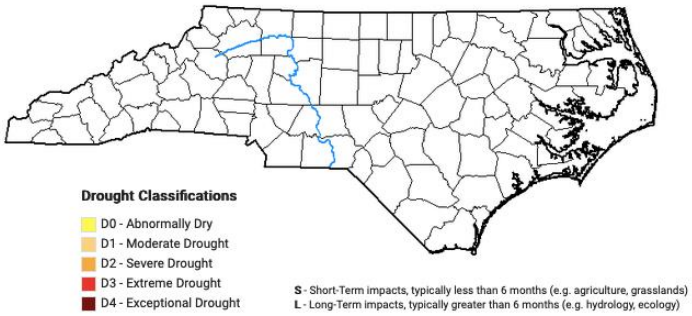
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › MEETINGS & REPORTS MAP ARCHIVES RESOURCES THE DMAC PROCESS US DROUGHT MONITOR

Map Archives

May 2, 2023

Select a week: May 2, 2023



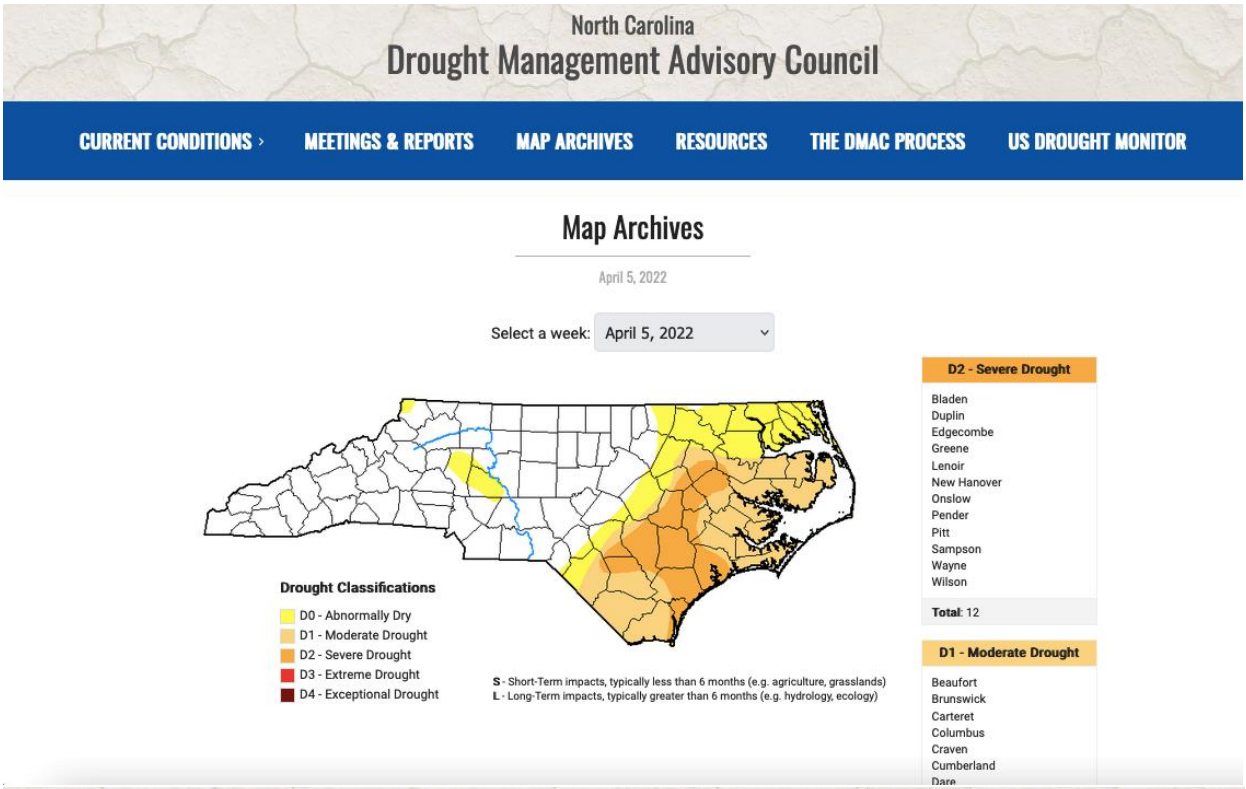
Drought Classifications

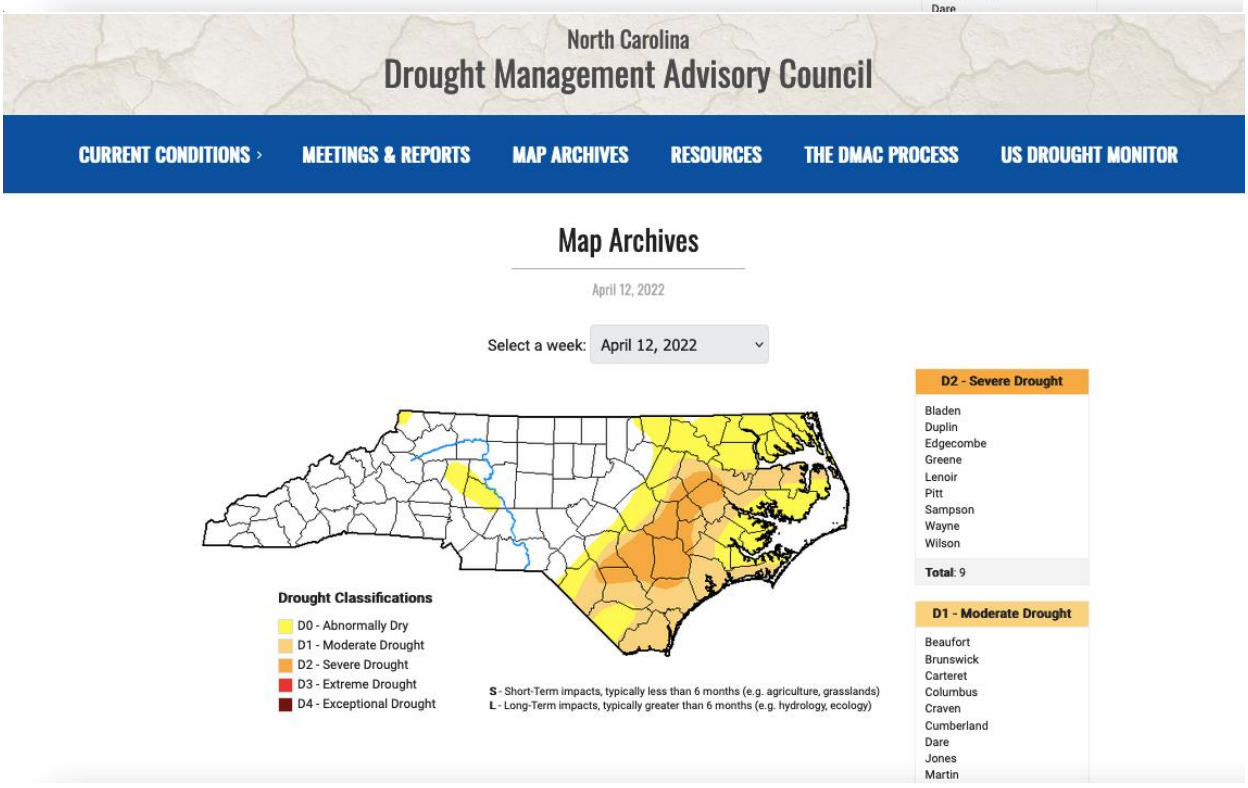
- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

Drought History (from the United States Drought Monitor)

The weeks of April 6, 2022 through May 4, 2022





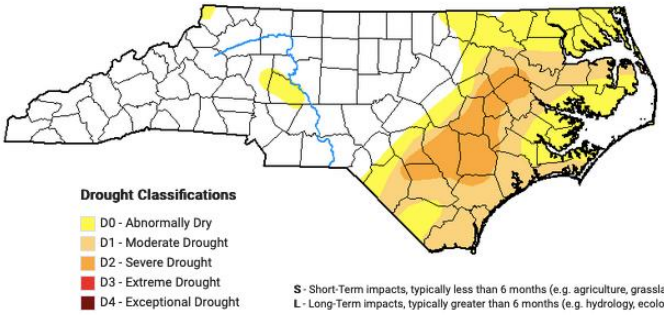
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › | MEETINGS & REPORTS | MAP ARCHIVES | RESOURCES | THE DMAC PROCESS | US DROUGHT MONITOR

Map Archives

April 19, 2022

Select a week: April 19, 2022



S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D2 - Severe Drought

Bladen
Duplin
Edgecombe
Greene
Lenoir
Pitt
Sampson
Wayne
Wilson

Total: 9

D1 - Moderate Drought

Beaufort
Bertie
Brunswick
Carteret
Columbus
Craven
Cumberland
Dare
Jones

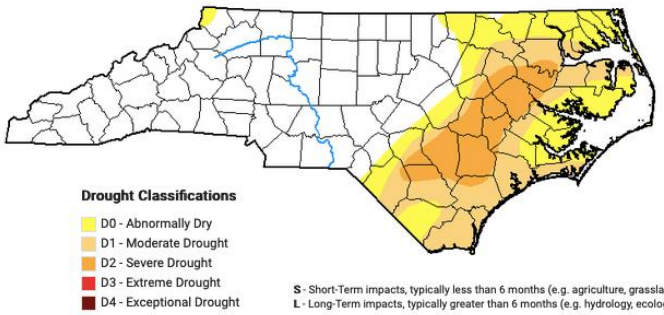
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › | MEETINGS & REPORTS | MAP ARCHIVES | RESOURCES | THE DMAC PROCESS | US DROUGHT MONITOR

Map Archives

April 26, 2022

Select a week: April 26, 2022



S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

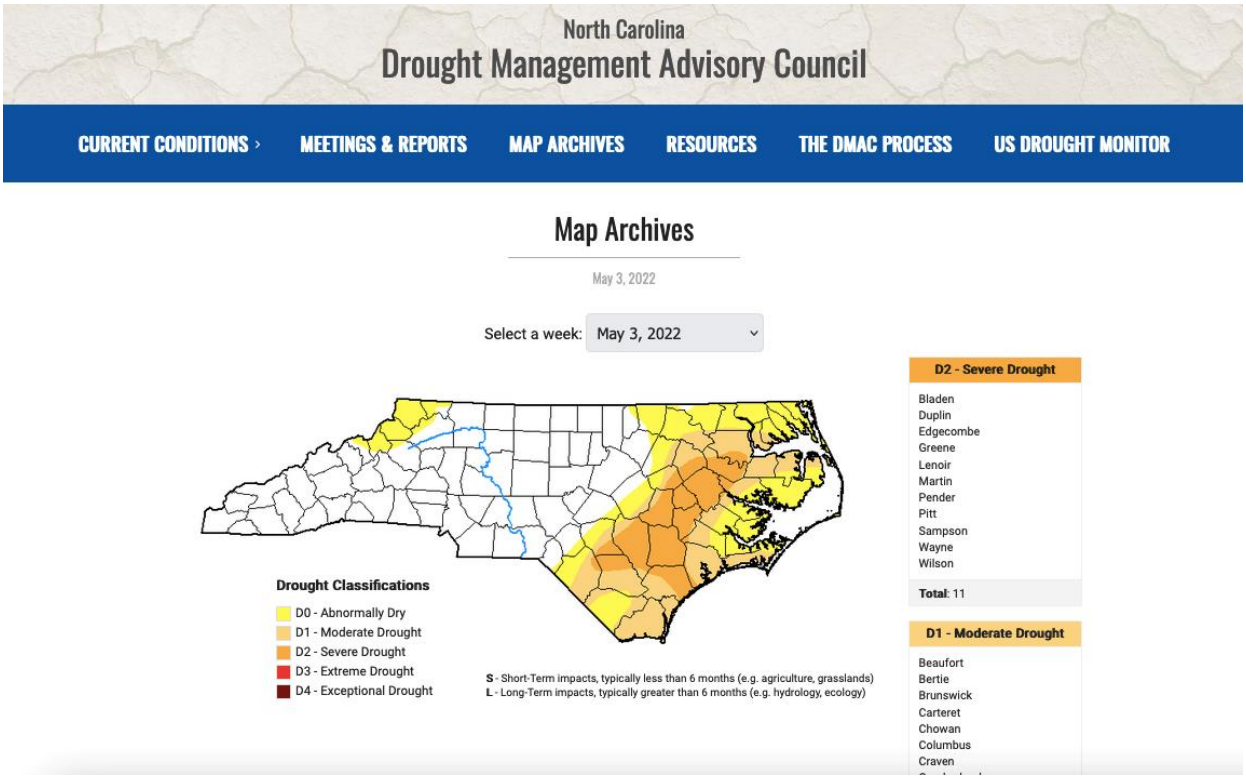
D2 - Severe Drought

Bladen
Duplin
Edgecombe
Greene
Lenoir
Martin
Pitt
Sampson
Wayne
Wilson

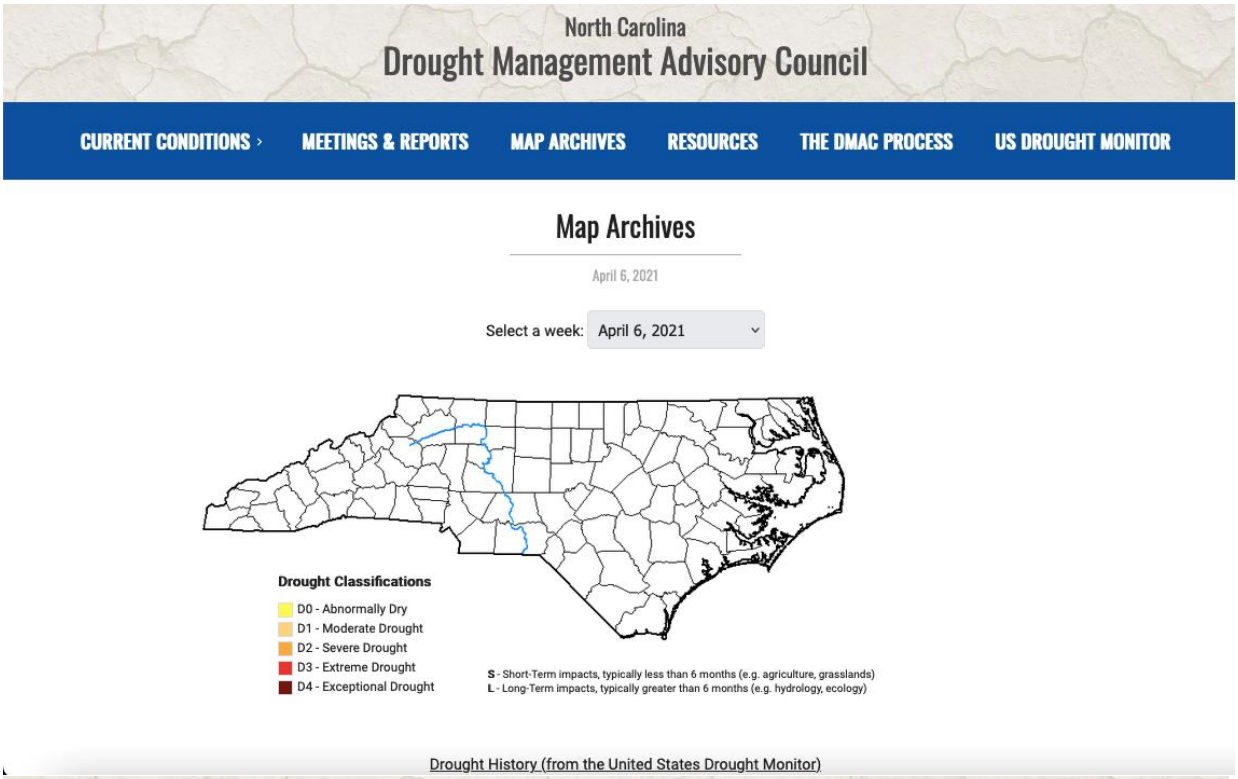
Total: 10

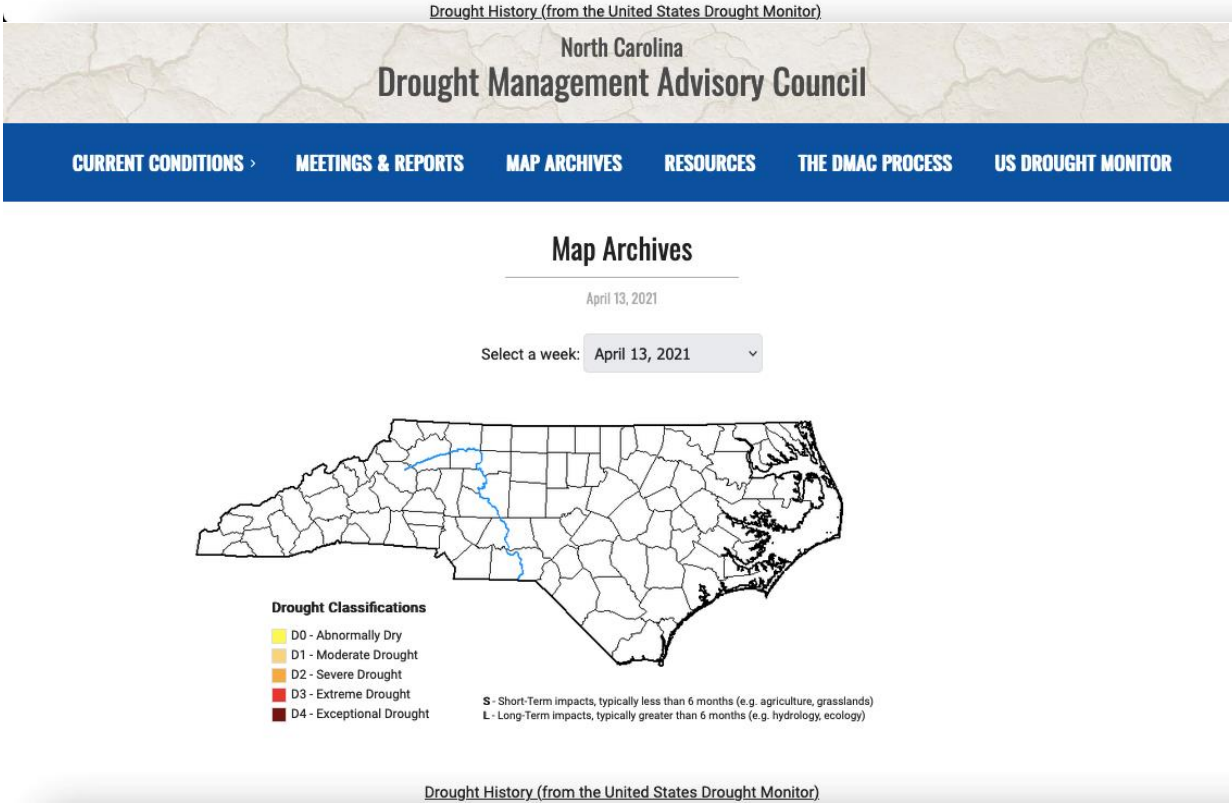
D1 - Moderate Drought

Beaufort
Bertie
Brunswick
Carteret
Chowan
Columbus
Craven
Cumberland


North Carolina
Drought Management Advisory Council
CURRENT CONDITIONS ›
MEETINGS & REPORTS
MAP ARCHIVES
RESOURCES
THE DMAC PROCESS
US DROUGHT MONITOR
Map Archives
May 3, 2022
Select a week: May 3, 2022
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
D2 - Severe Drought
Bladen
Duplin
Edgecombe
Greene
Lenoir
Martin
Pender
Pitt
Sampson
Wayne
Wilson
Total: 11
D1 - Moderate Drought
Beaufort
Bertie
Brunswick
Carteret
Chowan
Columbus
Craven

The weeks of April 6, 2021 through May 4, 2022





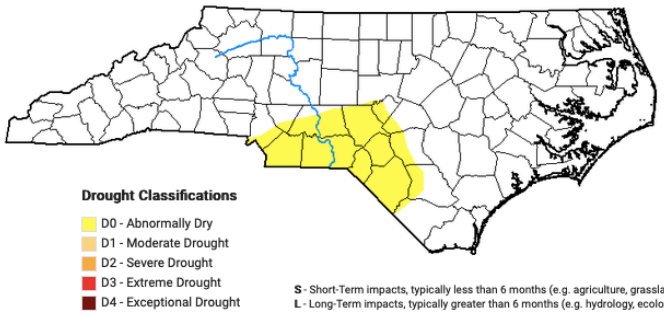
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › | MEETINGS & REPORTS | MAP ARCHIVES | RESOURCES | THE DMAC PROCESS | US DROUGHT MONITOR

Map Archives

April 20, 2021

Select a week: April 20, 2021



D0 - Abnormally Dry

Anson
Bladen
Cumberland
Hoke
Lee
Mecklenburg
Montgomery
Moore
Richmond
Robeson
Scotland
Stanly
Union

Total: 13

Drought History (from the United States Drought Monitor)

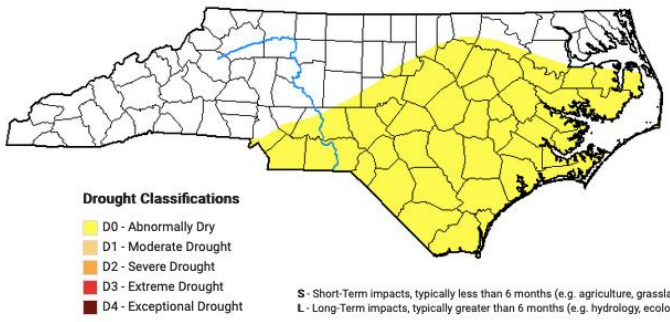
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › | MEETINGS & REPORTS | MAP ARCHIVES | RESOURCES | THE DMAC PROCESS | US DROUGHT MONITOR

Map Archives

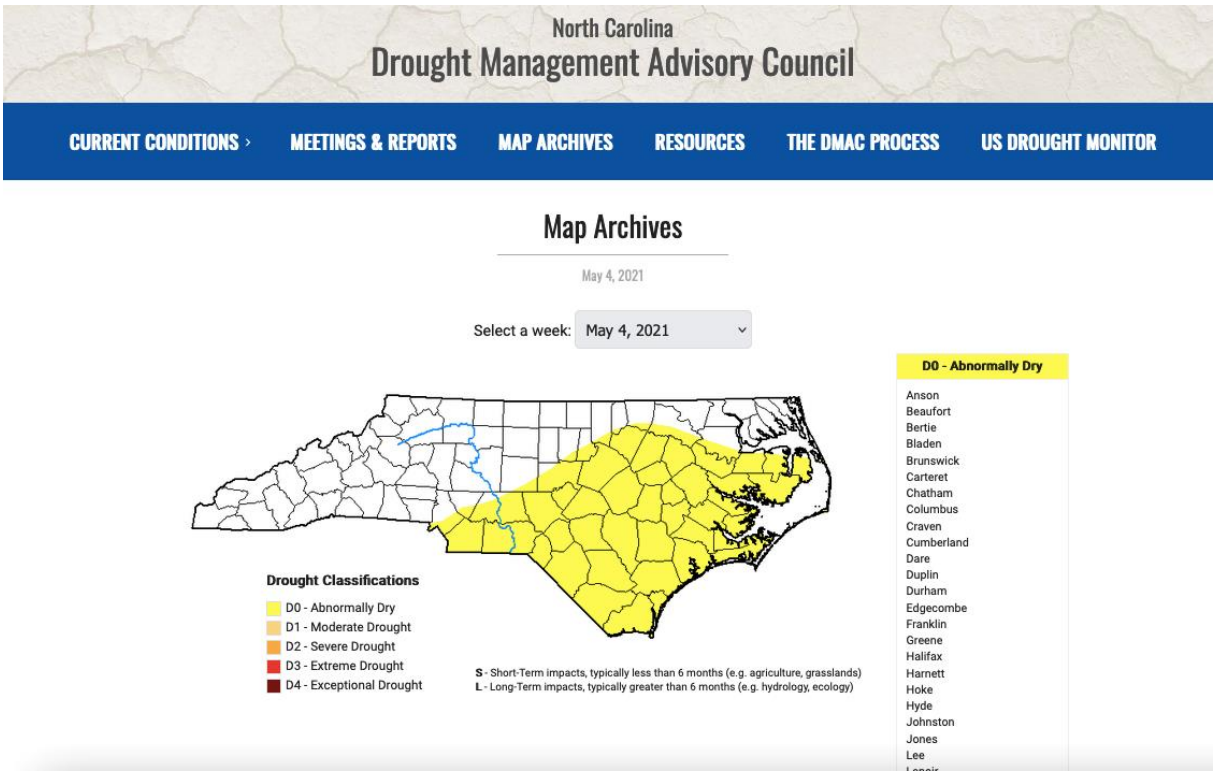
April 27, 2021

Select a week: April 27, 2021



D0 - Abnormally Dry

Anson
Beaufort
Bertie
Bladen
Brunswick
Carteret
Chatham
Columbus
Craven
Cumberland
Dare
Duplin
Durham
Edgecombe
Franklin
Greene
Halifax
Harnett
Hoke
Hyde
Johnston
Jones
Lee
Lenoir


North Carolina
Drought Management Advisory Council
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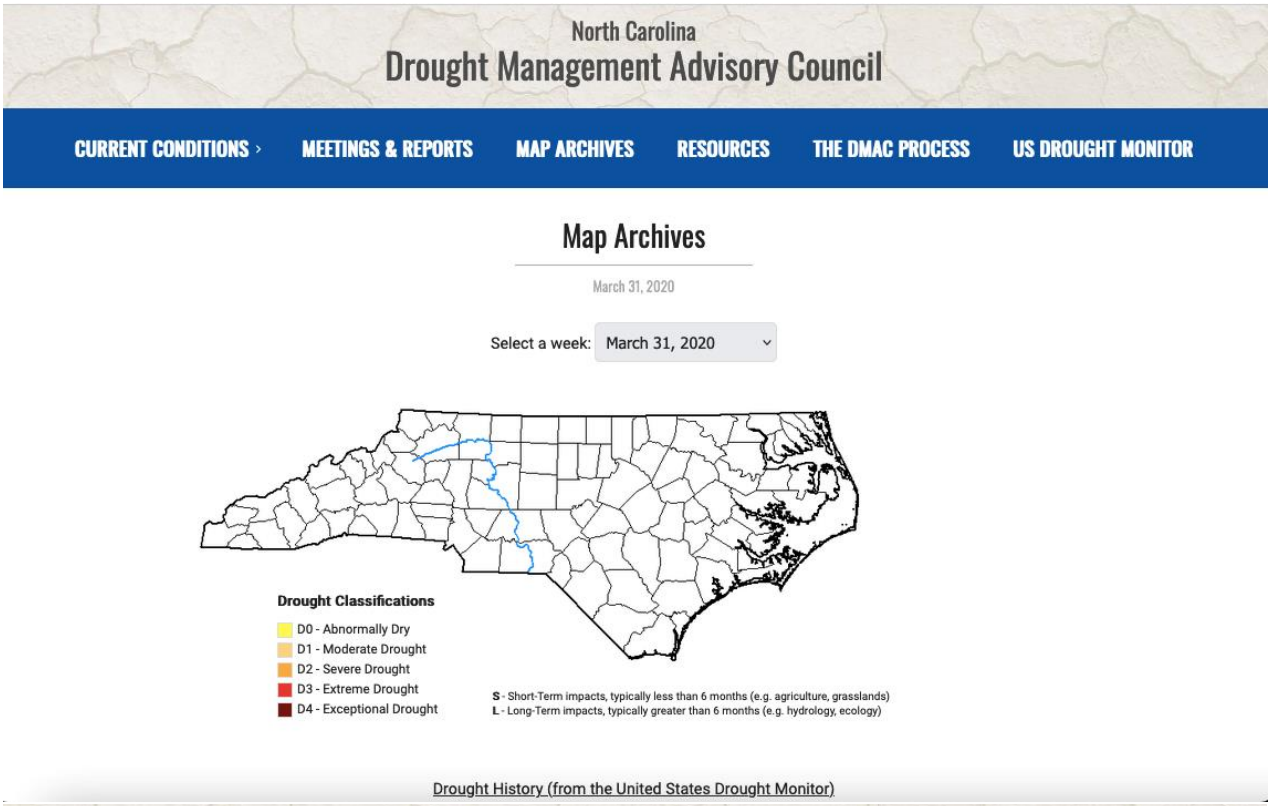
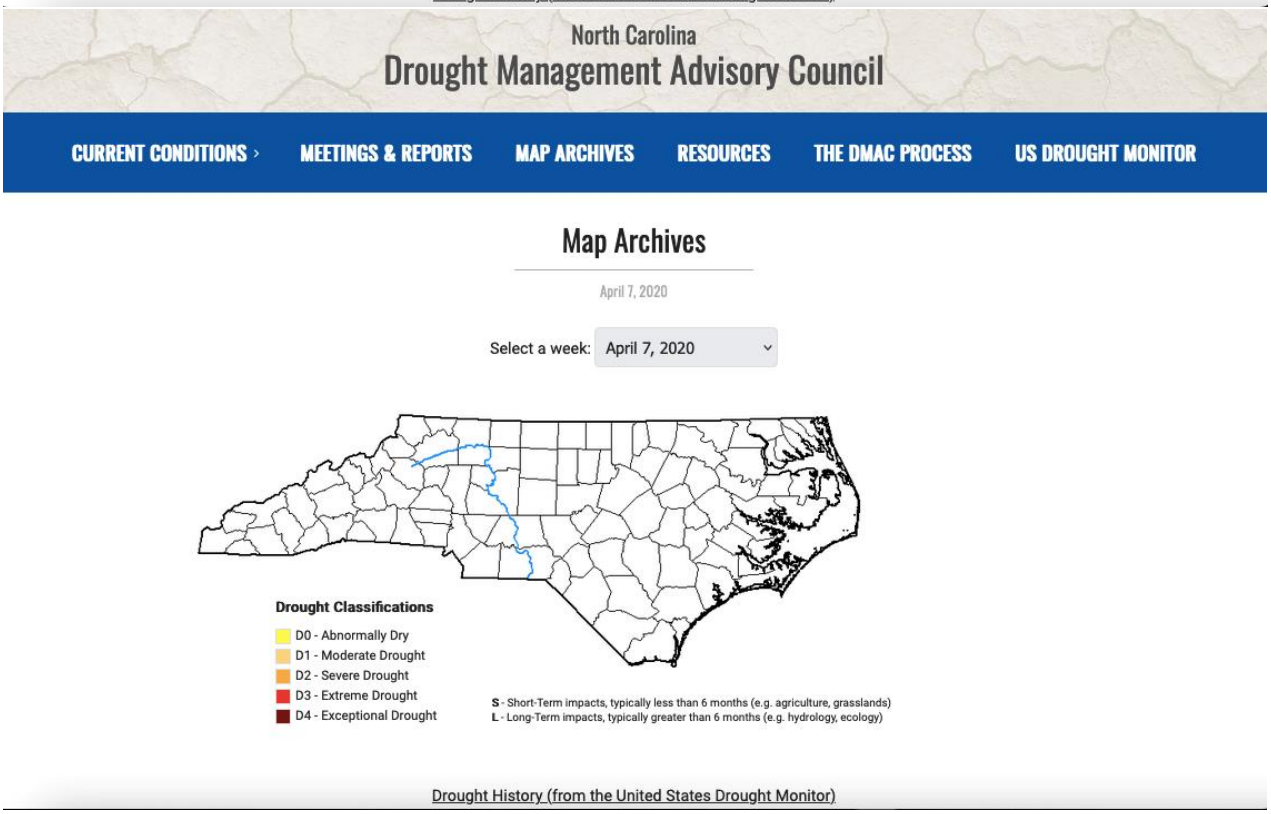
May 4, 2021
Select a week: May 4, 2021
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
D0 - Abnormally Dry
Anson
Beaufort
Bertie
Bladen
Brunswick
Carteret
Chatham
Columbus
Craven
Cumberland
Dare
Duplin
Durham
Edgecombe
Franklin
Greene
Halifax
Harnett
Hoke
Hyde
Johnston
Jones
Lee

The weeks of April 6, 2020 through May 4, 2020





North Carolina
Drought Management Advisory Council

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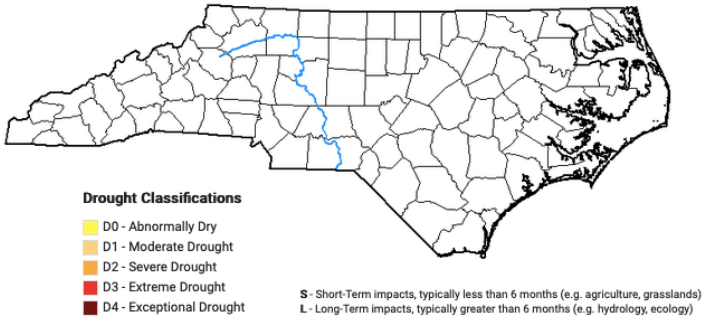
April 14, 2020

Select a week: April 14, 2020



Drought History (from the United States Drought Monitor)

North Carolina
Drought Management Advisory Council

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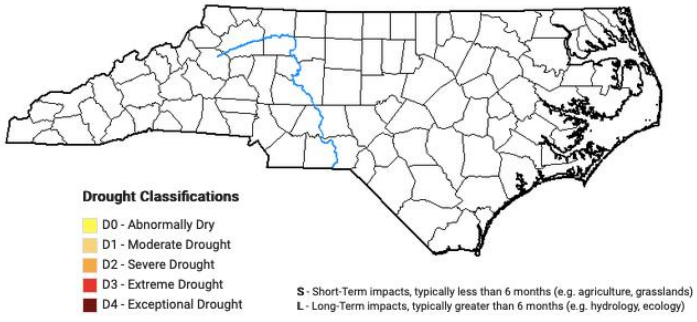
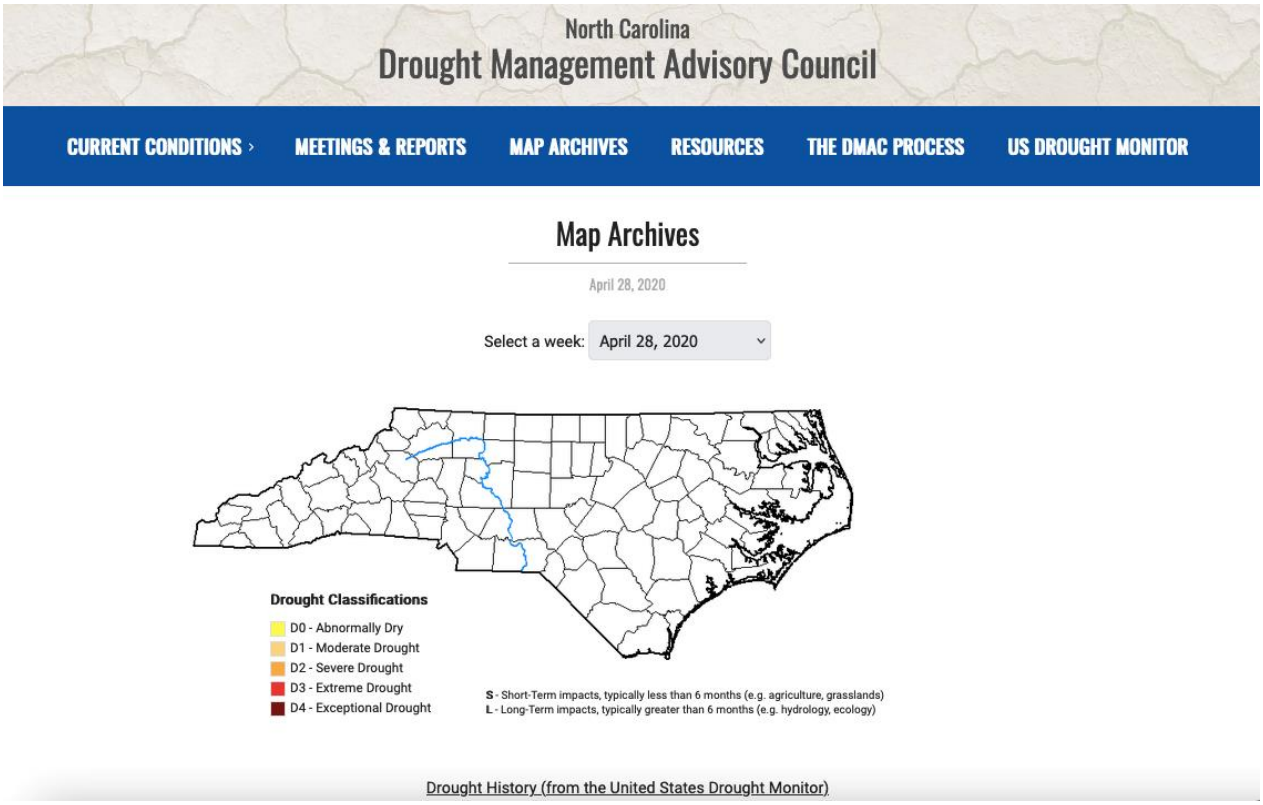
April 21, 2020

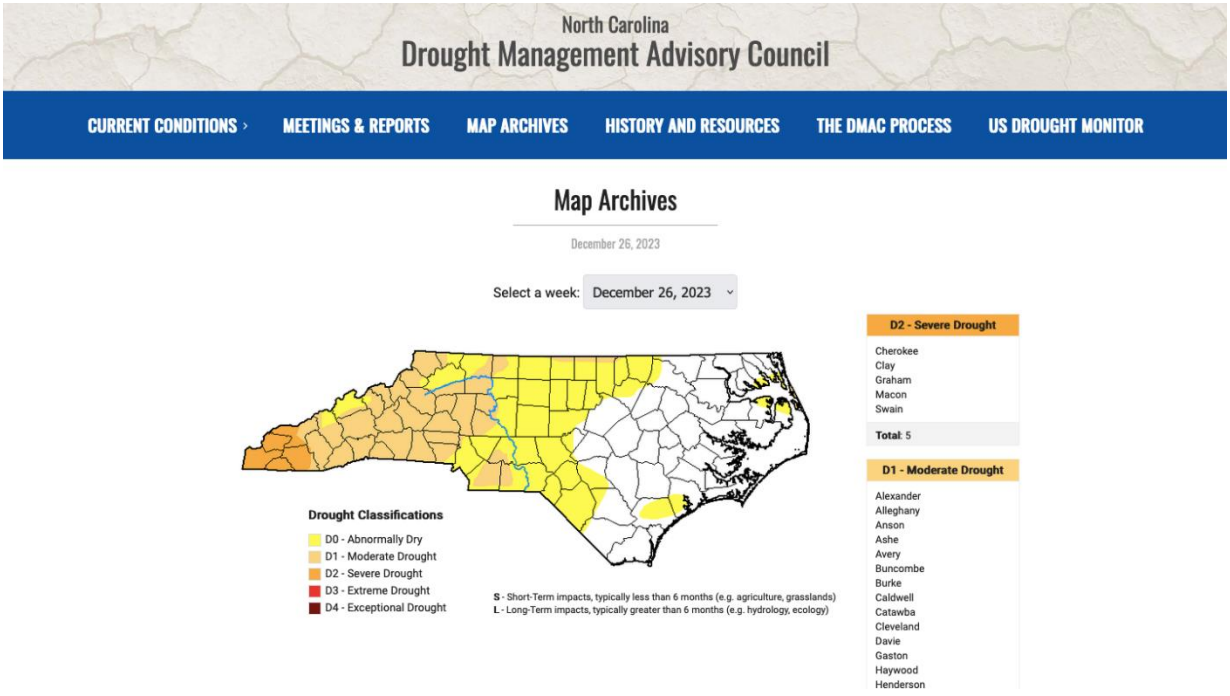
Select a week: April 21, 2020

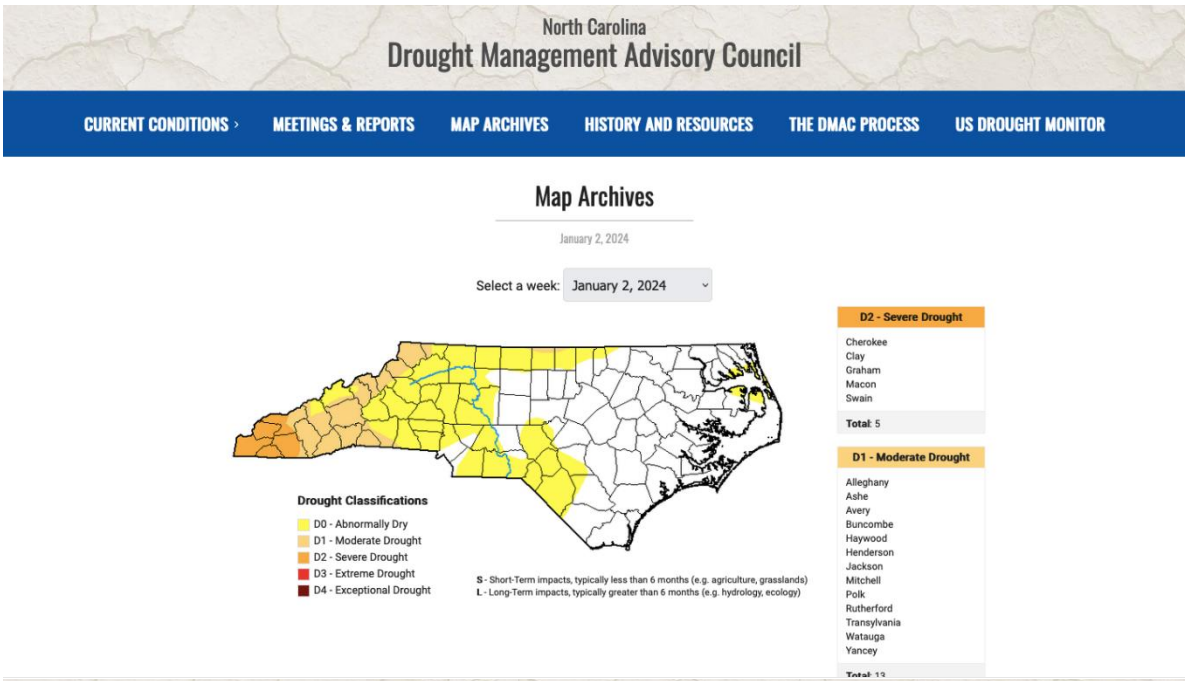


Drought History (from the United States Drought Monitor)



The weeks of December 26, 2023 through February 6, 2024




North Carolina
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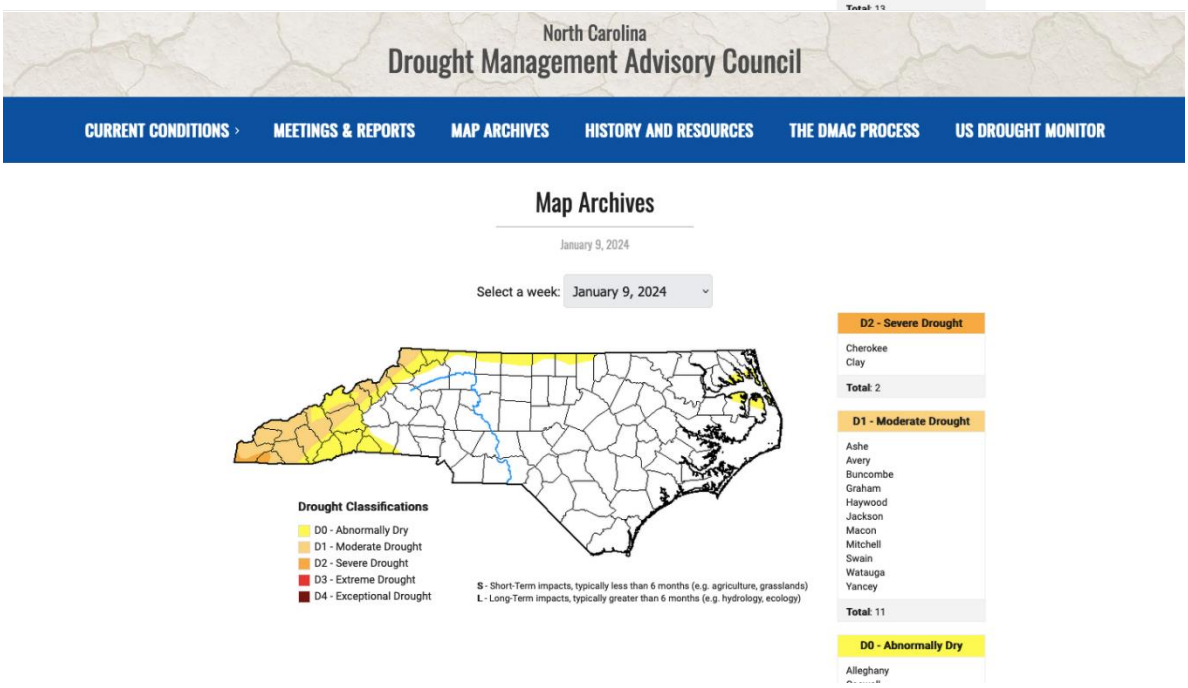
January 2, 2024
Select a week: January 2, 2024
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
D2 - Severe Drought
Cherokee
Clay
Graham
Macon
Swain
Total: 5
D1 - Moderate Drought
Alleghany
Ashe
Avery
Buncombe
Haywood
Henderson
Jackson
Mitchell
Polk
Rutherford
Transylvania
Watauga
Yancey


North Carolina
Drought Management Advisory Council
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Map Archives
January 9, 2024
Select a week: January 9, 2024
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
D2 - Severe Drought
Cherokee
Clay
Total: 2
D1 - Moderate Drought
Ashe
Avery
Buncombe
Graham
Haywood
Jackson
Macon
Mitchell
Swain
Watauga
Yancey
Total: 11
D0 - Abnormally Dry
Alleghany

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Drought Management Advisory Council

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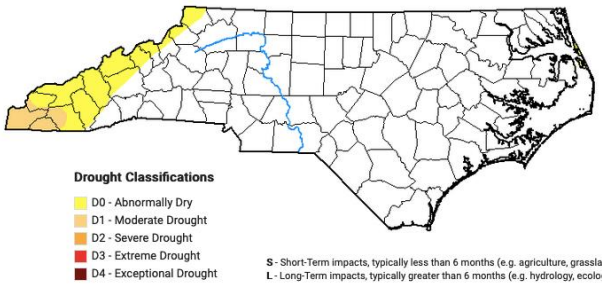
Map Archives

January 16, 2024

Select a week: January 16, 2024



D1 - Moderate Drought

Cherokee
Clay
Graham
Macon

Total: 4

D0 - Abnormally Dry

Ashe
Avery
Buncombe
Haywood
Jackson
Madison
Mitchell
Swain
Watauga
Yancey

Total: 10

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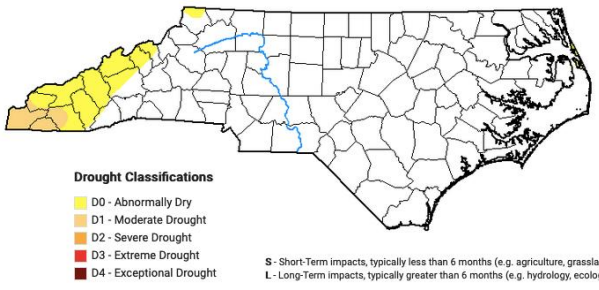
January 23, 2024

Select a week: January 23, 2024



D1 - Moderate Drought

Cherokee
Clay
Graham
Macon

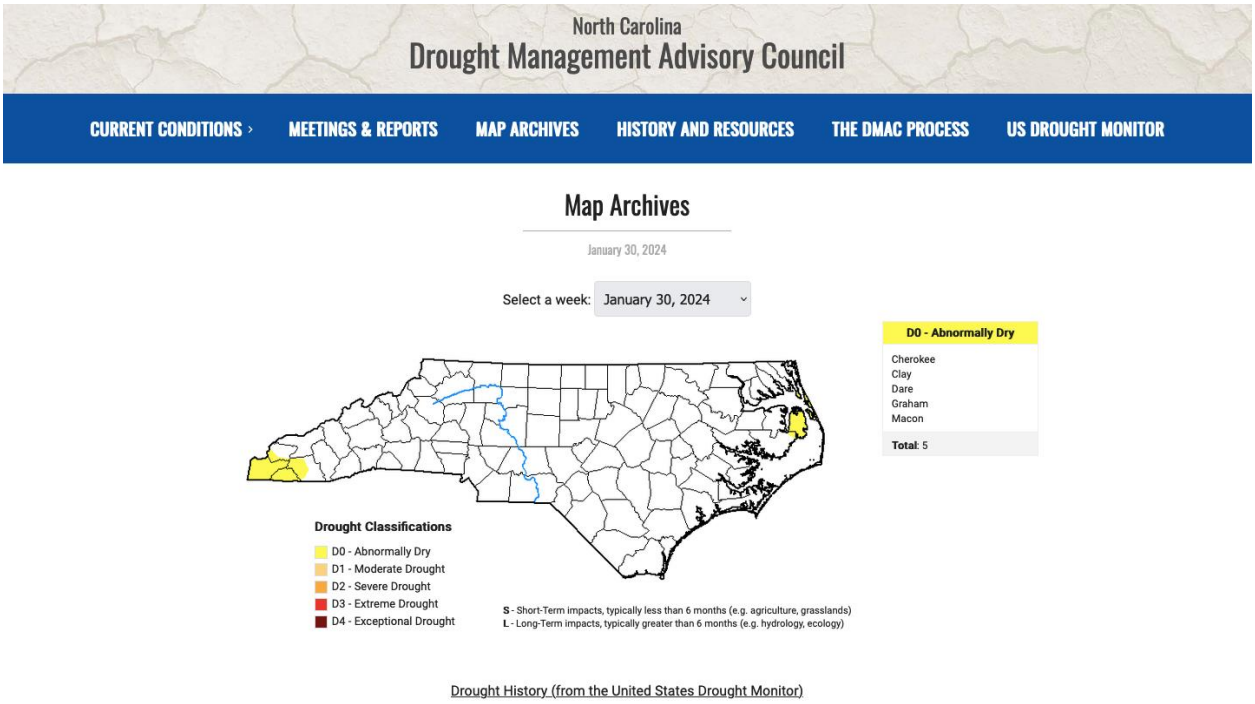
Total: 4

D0 - Abnormally Dry

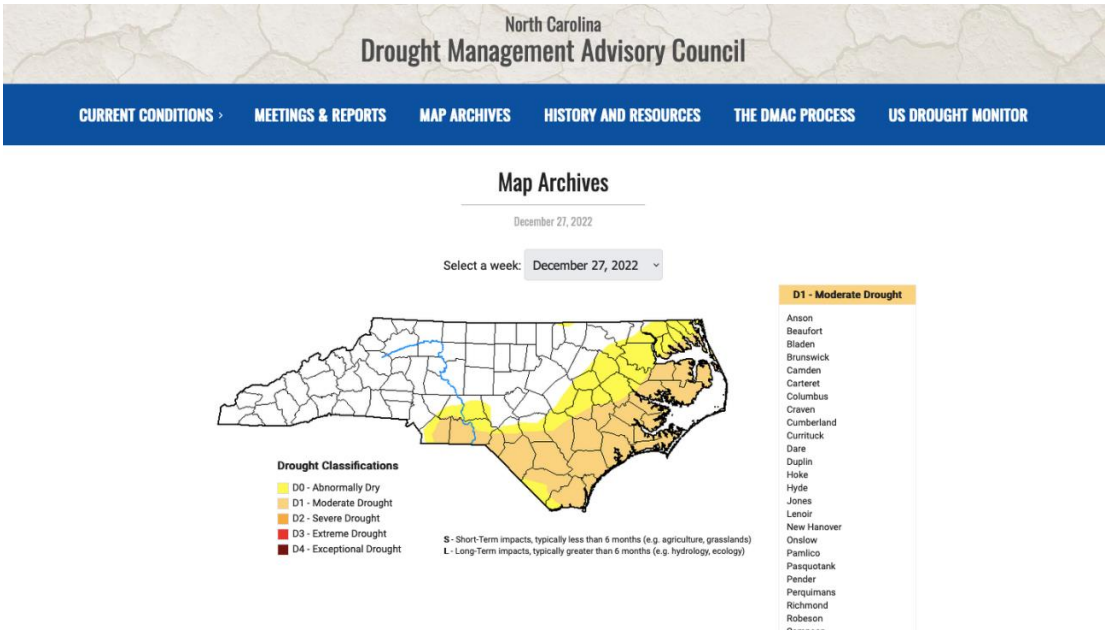
Ashe
Buncombe
Haywood
Jackson
Madison
Mitchell
Swain
Yancey

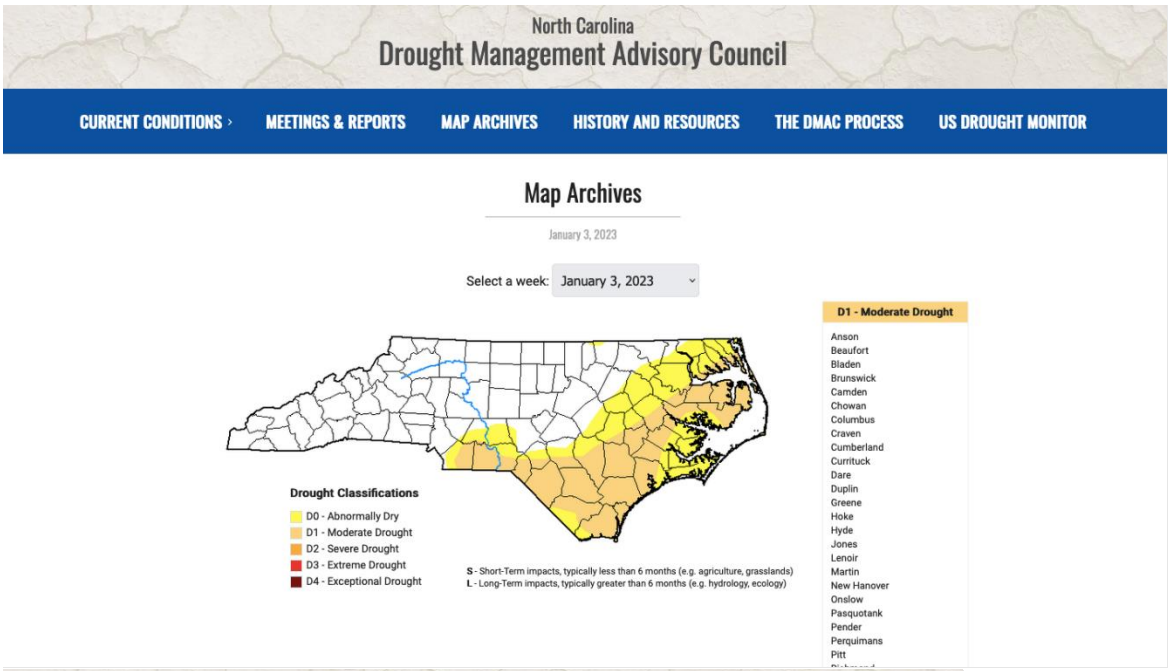
Total: 8

Drought History (from the United States Drought Monitor)



The weeks of December 27, 2022 through Feburary 3, 2023

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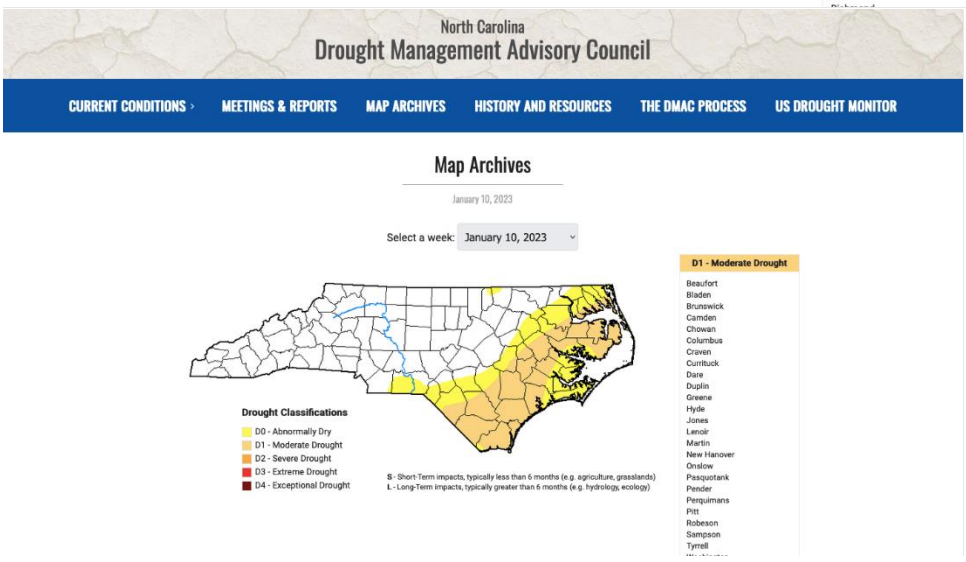
January 3, 2023
Select a week: January 3, 2023
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
D1 - Moderate Drought
Anson
Beaufort
Bladen
Brunswick
Camden
Chowan
Columbus
Craven
Cumberland
Currituck
Dare
Duplin
Greene
Hoke
Hyde
Jones
Lenoir
Martin
New Hanover
Onslow
Pasquotank
Pender
Perquimans
Pitt


North Carolina
Drought Management Advisory Council
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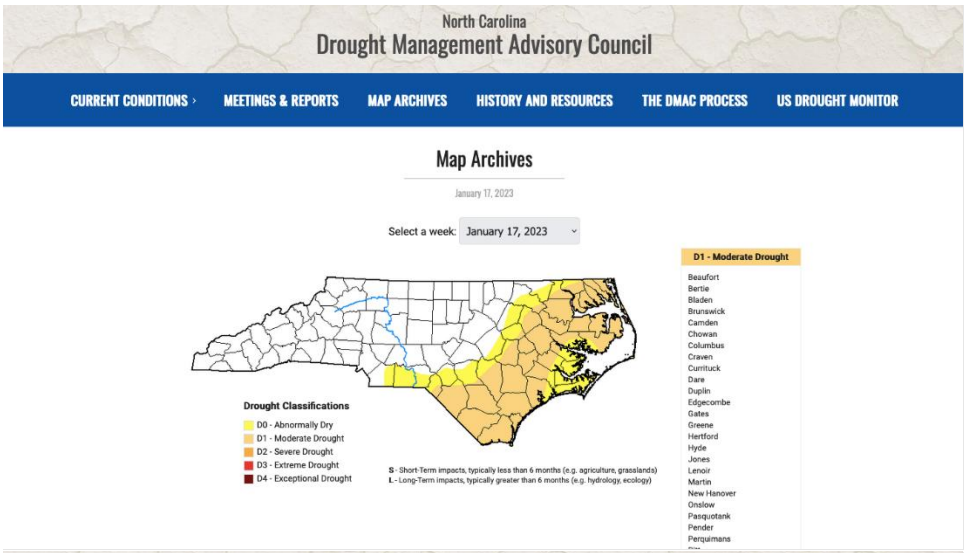
January 10, 2023
Select a week: January 10, 2023
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
D1 - Moderate Drought
Beaufort
Bladen
Brunswick
Camden
Chowan
Columbus
Craven
Currituck
Dare
Duplin
Greene
Hyde
Jones
Lenoir
Martin
New Hanover
Onslow
Pasquotank
Pender
Perquimans
Pitt
Robeson
Sampson
Tyrrell


North Carolina
Drought Management Advisory Council
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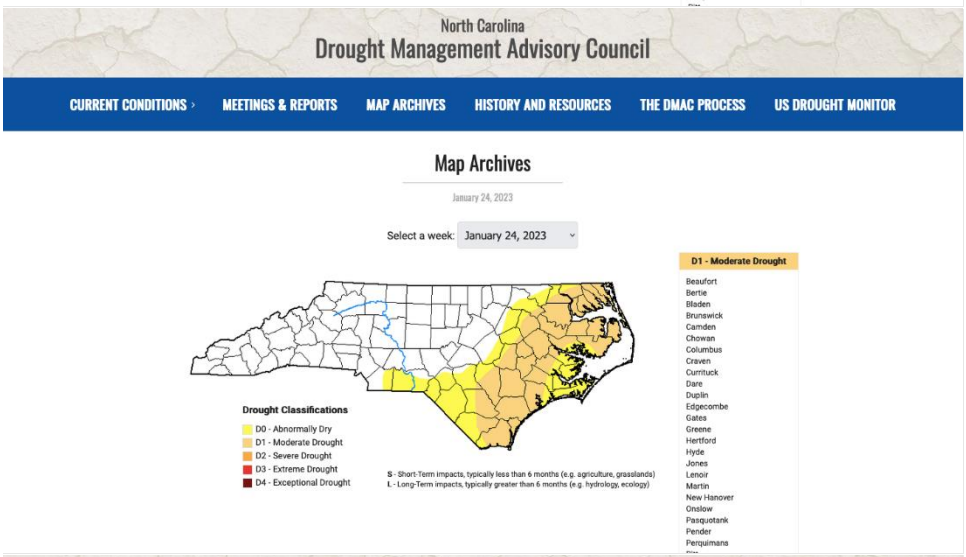
Map Archives
January 17, 2023
Select a week: January 17, 2023
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
D1 - Moderate Drought
Beaufort
Bertie
Bladen
Brunswick
Camden
Chowan
Columbus
Craven
Currituck
Dare
Duplin
Edgecombe
Gates
Greene
Hertford
Hyde
Jones
Lenoir
Martin
New Hanover
Onslow
Pasquotank
Pender
Perquimans


North Carolina
Drought Management Advisory Council
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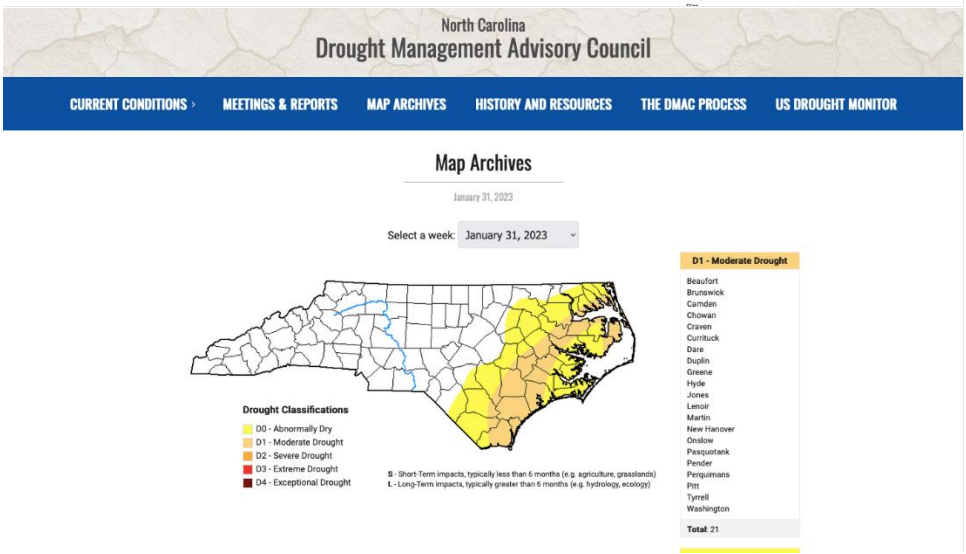
Map Archives
January 24, 2023
Select a week: January 24, 2023
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
D1 - Moderate Drought
Beaufort
Bertie
Bladen
Brunswick
Camden
Chowan
Columbus
Craven
Currituck
Dare
Duplin
Edgecombe
Gates
Greene
Hertford
Hyde
Jones
Lenoir
Martin
New Hanover
Onslow
Pasquotank
Pender
Perquimans


North Carolina
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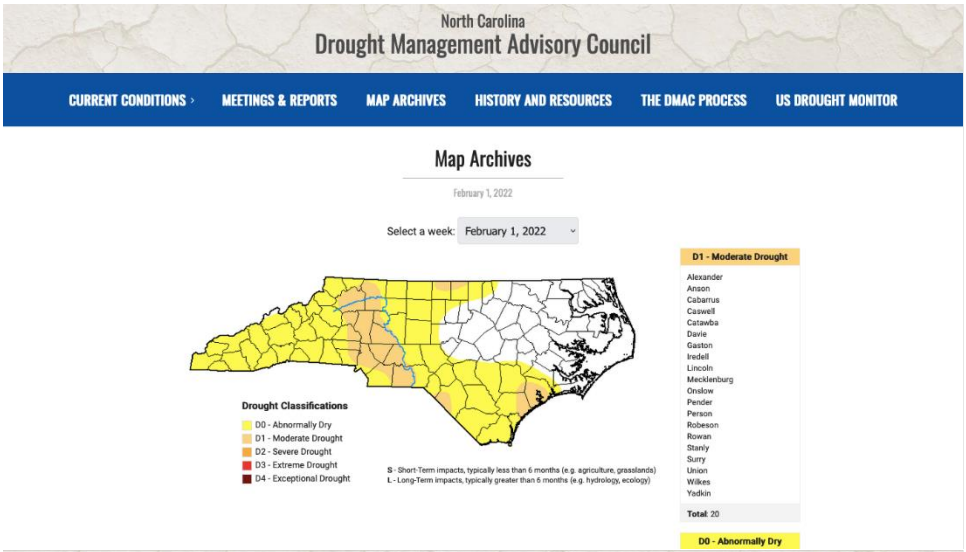
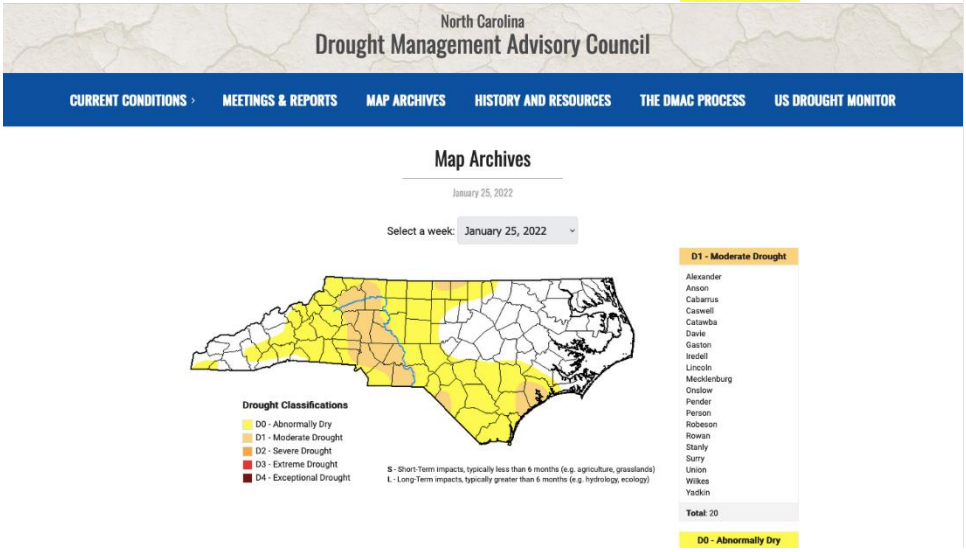
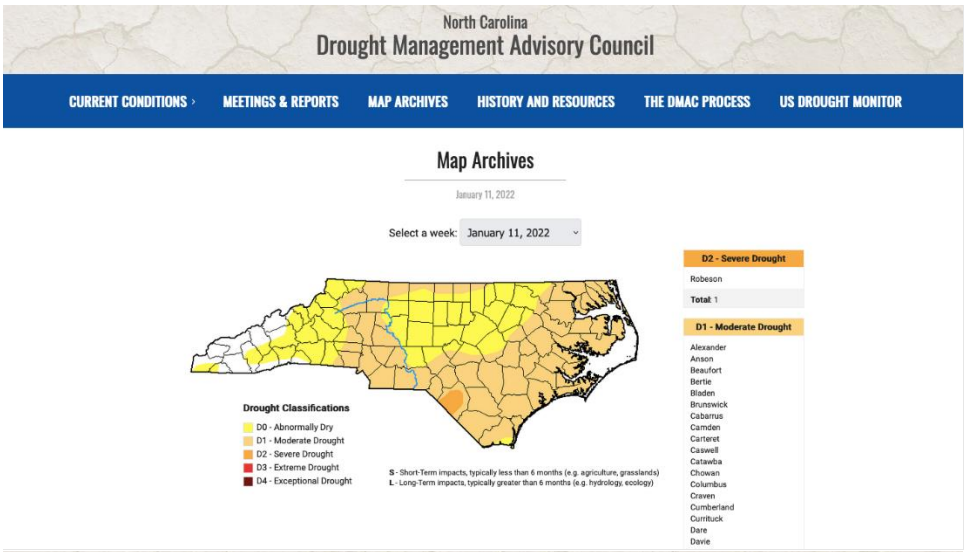
Map Archives
January 31, 2023
Select a week: January 31, 2023
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
D1 - Moderate Drought
Beaufort
Brunswick
Camden
Chowan
Craven
Currituck
Dare
Duplin
Greene
Hyde
Jones
Lenoir
Martin
New Hanover
Onslow
Pasquotank
Pender
Perquimans
Pitt
Tyrrell
Washington
Total: 21

The weeks of December 28, 2021 through Feburary 3, 2022






North Carolina
Drought Management Advisory Council
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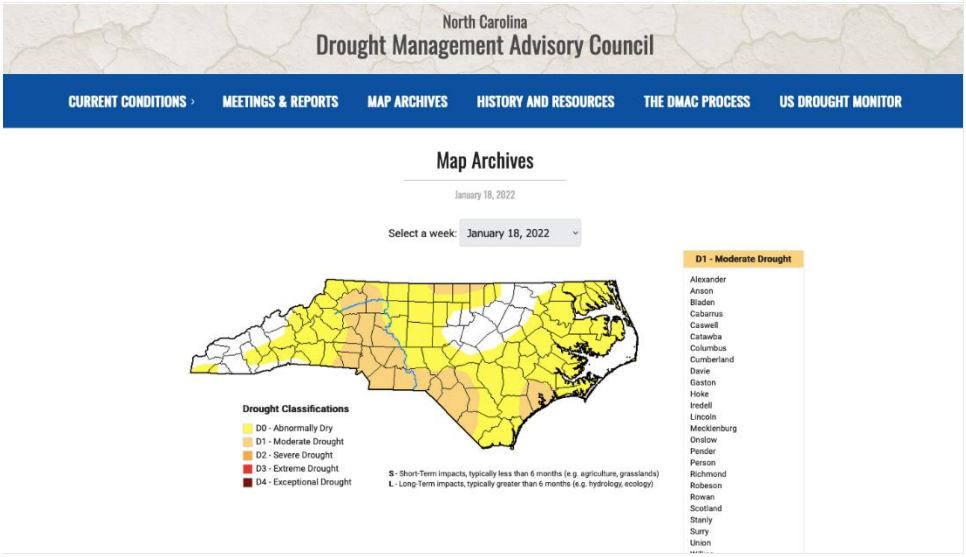
Map Archives
January 11, 2022
Select a week: January 11, 2022
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
D2 - Severe Drought
Robeson
Total: 1
D1 - Moderate Drought
Alexander
Anson
Beaufort
Bertie
Bladen
Brunswick
Cabarrus
Camden
Carteret
Caswell
Catawba
Chowan
Columbus
Craven
Cumberland
Currituck
Dare
Davie


North Carolina
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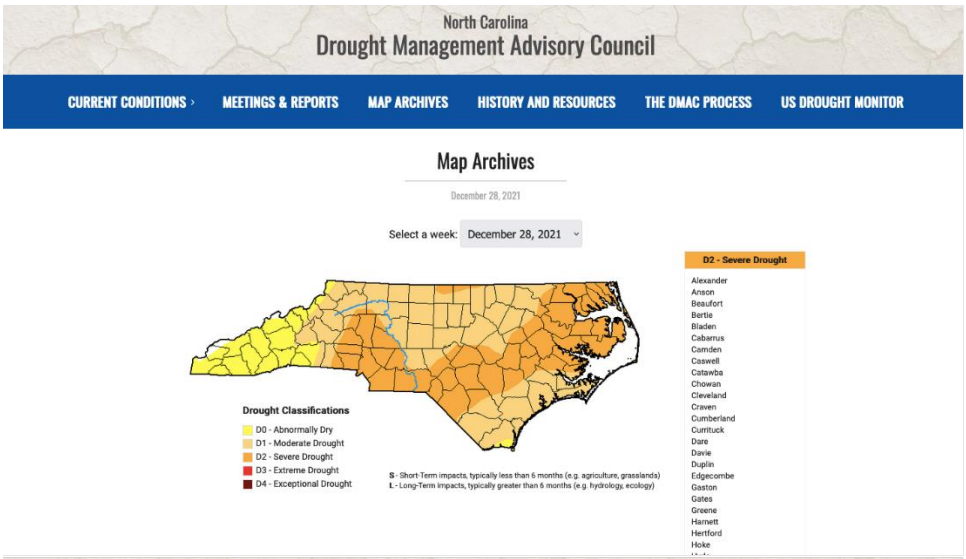
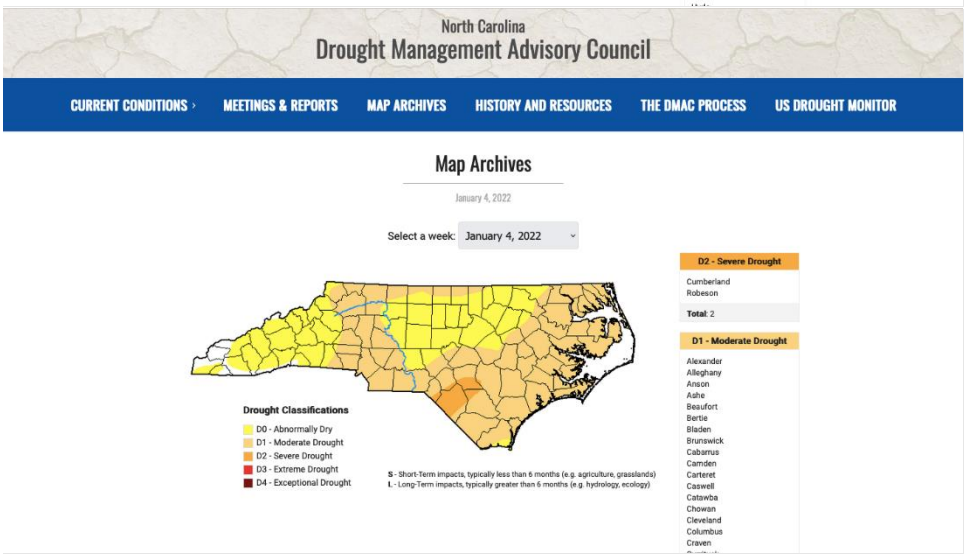
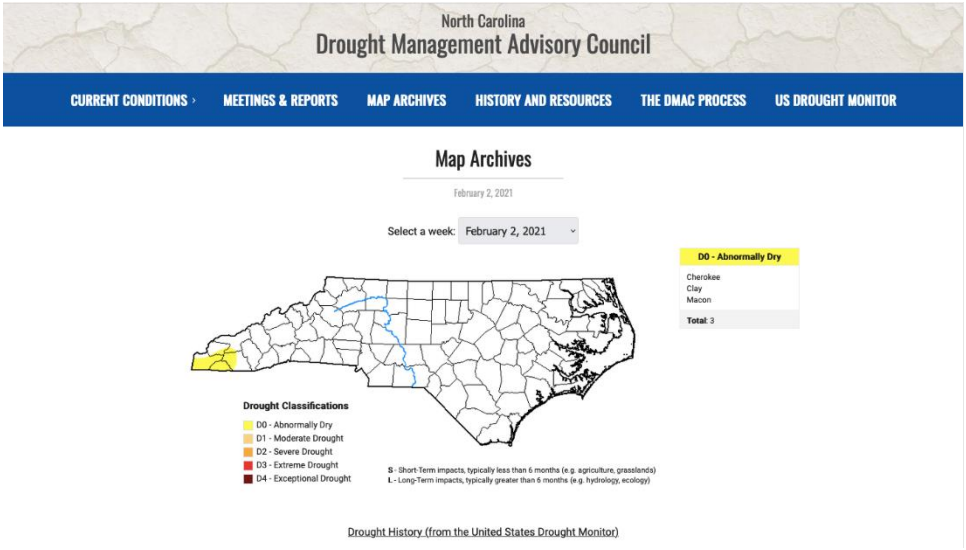
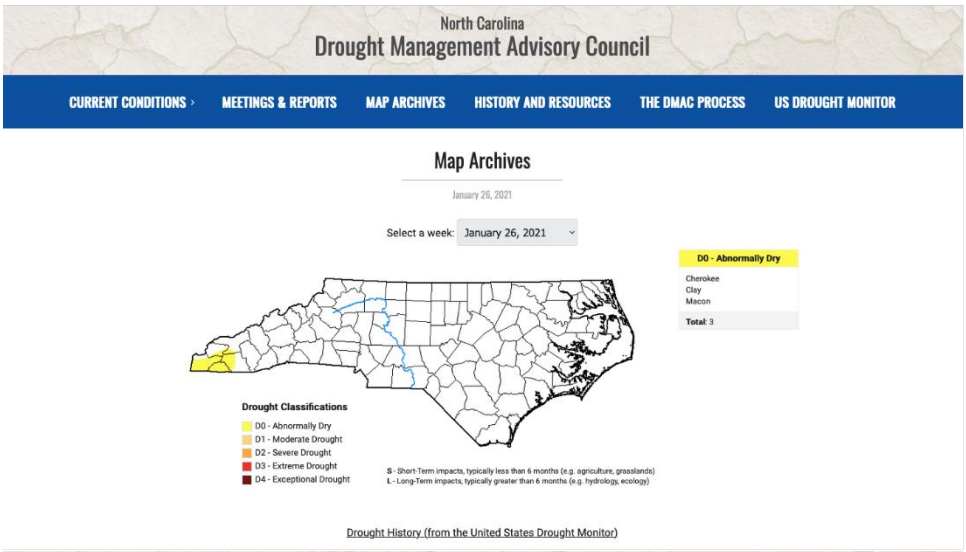
January 18, 2022
Select a week: January 18, 2022
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
D1 - Moderate Drought
Alexander
Anson
Bladen
Cabarrus
Caswell
Catawba
Columbus
Cumberland
Davie
Gaston
Hoke
Iredell
Lincoln
Mecklenburg
Onslow
Pender
Person
Richmond
Robeson
Rowan
Scotland
Stanly
Surry
Union





The weeks of December 29, 2020 through Feburary 3, 2021




North Carolina
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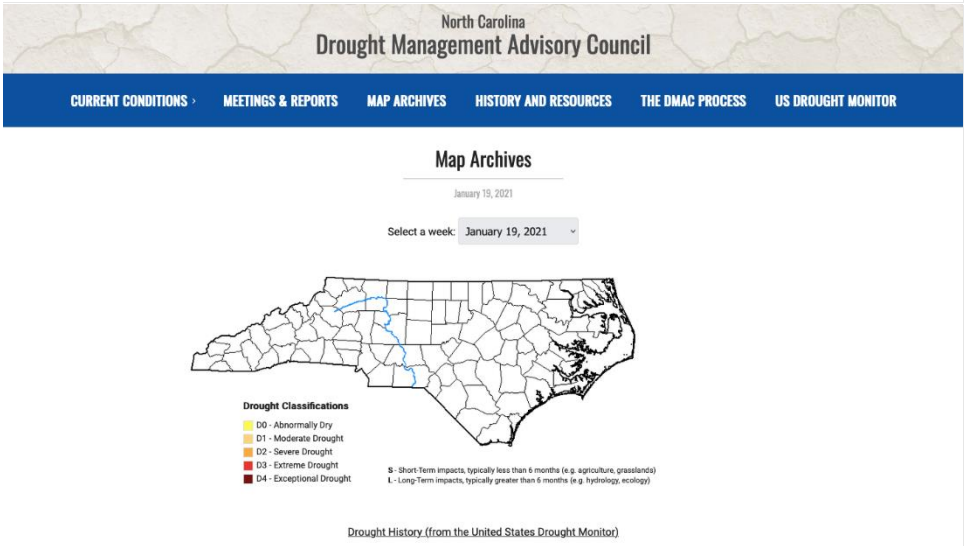
January 26, 2021
Select a week: January 26, 2021
D0 - Abnormally Dry
Cherokee
Clay
Macon
Total: 3
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
Drought History (from the United States Drought Monitor)


North Carolina
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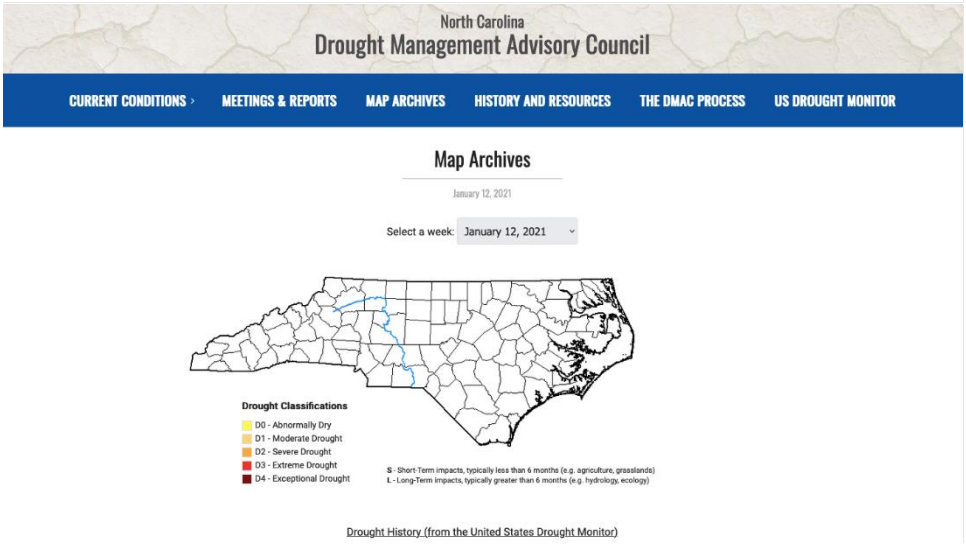
January 19, 2021
Select a week: January 19, 2021
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
Drought History (from the United States Drought Monitor)


North Carolina
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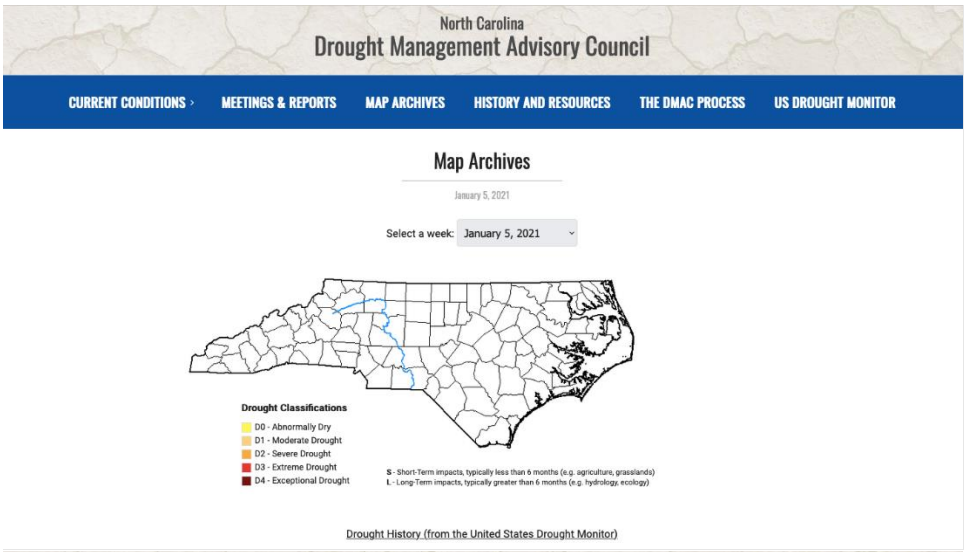
January 12, 2021
Select a week: January 12, 2021
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
Drought History (from the United States Drought Monitor)


North Carolina
Drought Management Advisory Council
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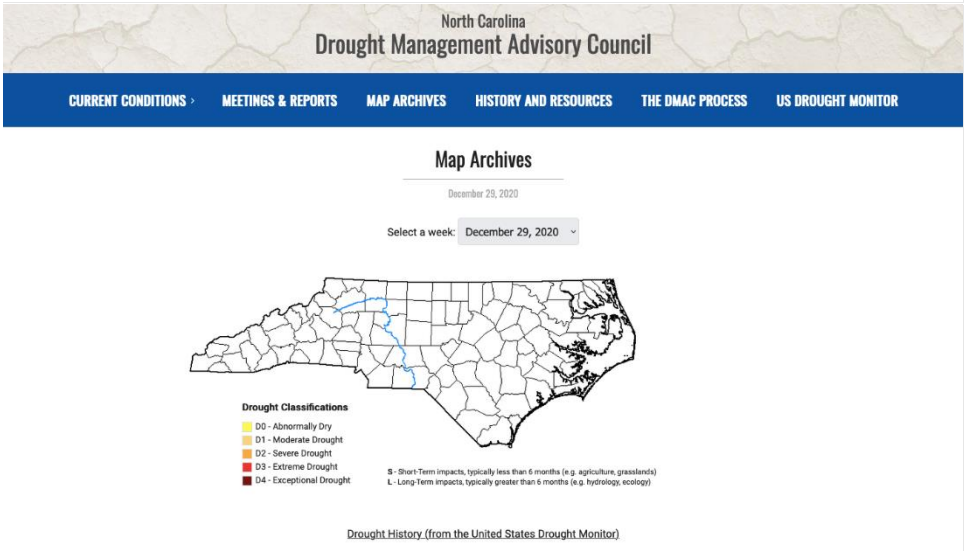
Map Archives
January 5, 2021
Select a week: January 5, 2021
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
Drought History (from the United States Drought Monitor)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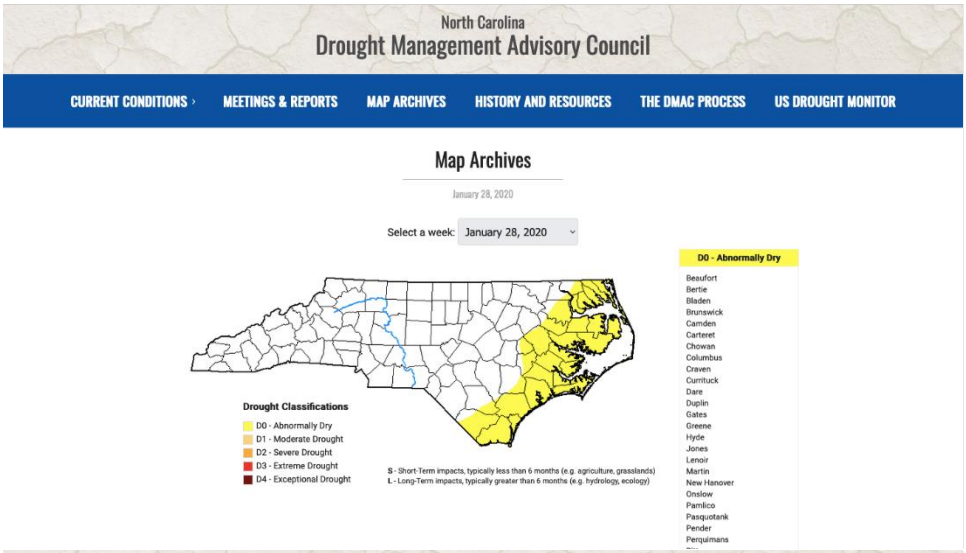
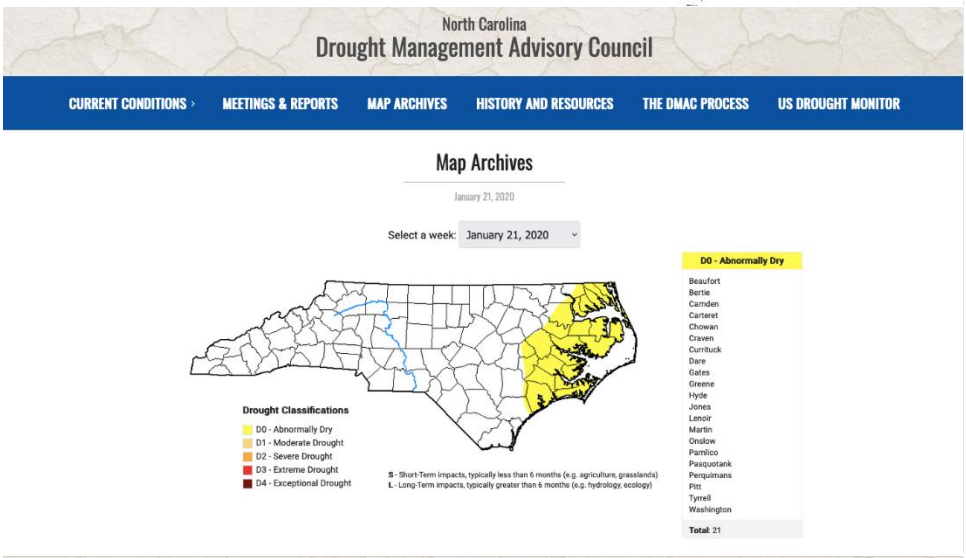
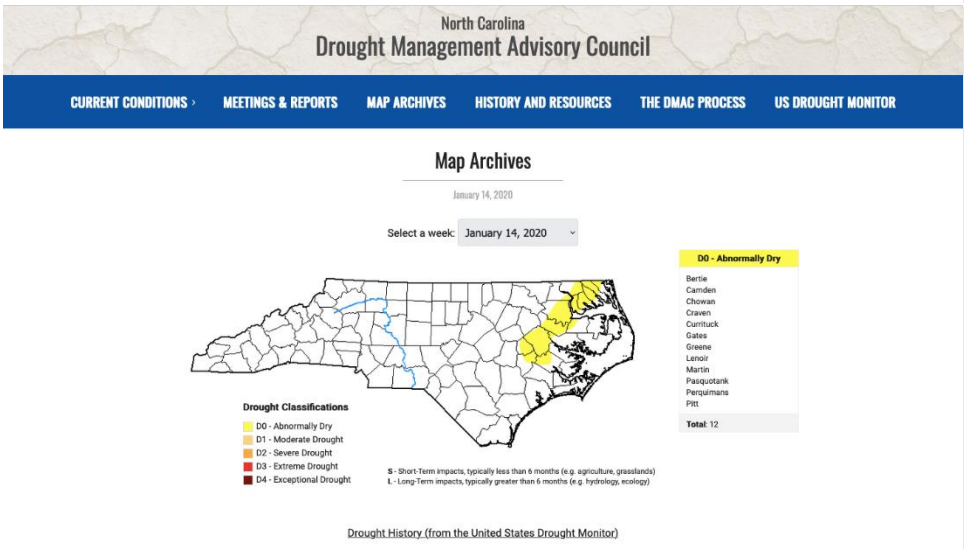
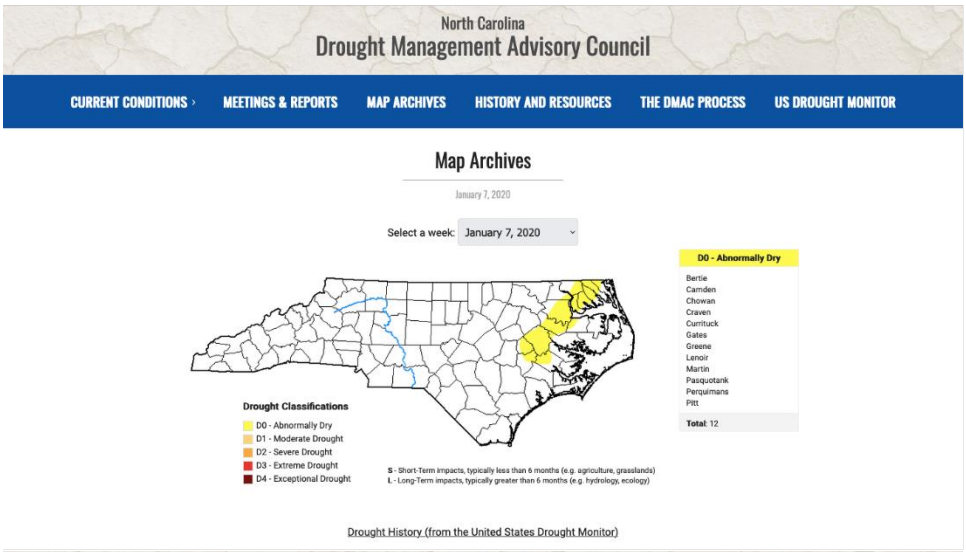
December 29, 2020
Select a week: December 29, 2020
Drought Classifications
D0 - Abnormally Dry
D1 - Moderate Drought
D2 - Severe Drought
D3 - Extreme Drought
D4 - Exceptional Drought
S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)
Drought History (from the United States Drought Monitor)

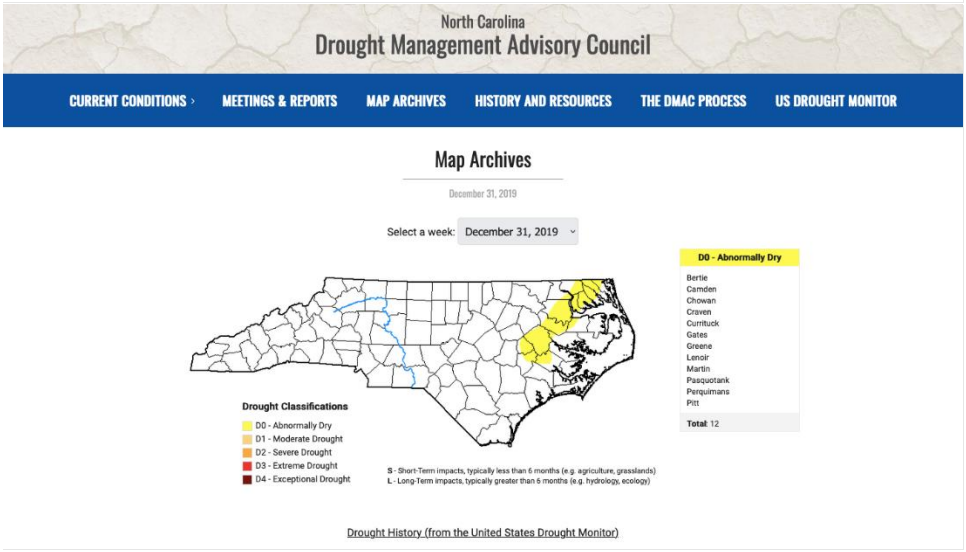
The weeks of December 26, 2019 through Feburary 3, 2020











2023 for the weeks of October 10 through November 21

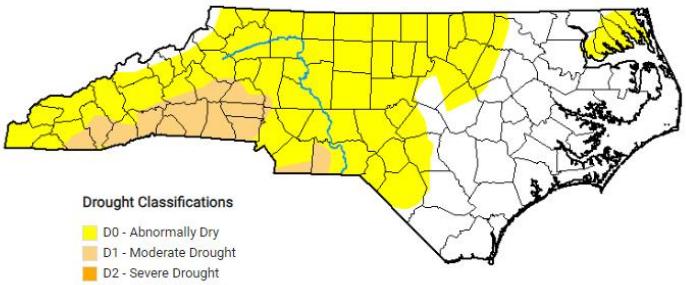
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › | MEETINGS & REPORTS | MAP ARCHIVES | HISTORY AND RESOURCES | THE DMAC PROCESS | US DROUGHT MONITOR

Map Archives

October 10, 2023

Select a week: October 10, 2023



S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D1 - Moderate Drought

Anson
Burke
Catawba
Cleveland
Gaston
Henderson
Jackson
Lincoln
Macon
McDowell
Polk
Rutherford
Transylvania
Union

Total: 14

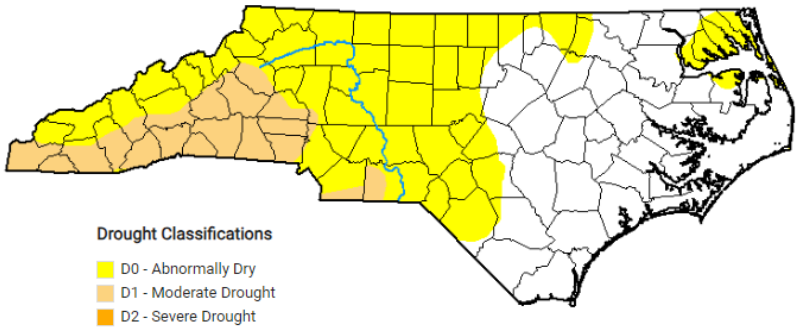
D0 - Abnormally Dry

Alamance

Map Archives

October 17, 2023

Select a week: October 17, 2023



S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D1 - Moderate Drought

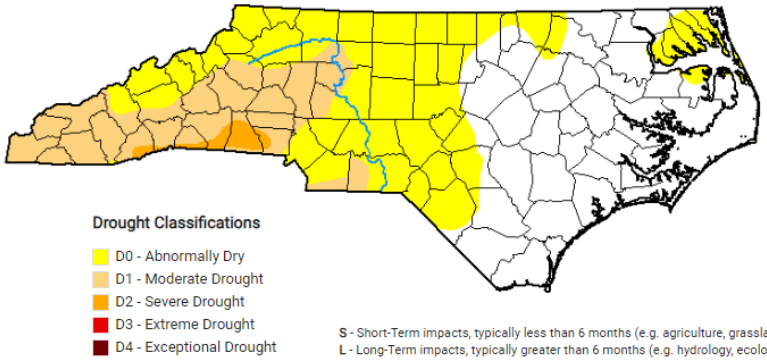
Anson
Buncombe
Burke
Caldwell
Catawba
Cherokee
Clay
Cleveland
Gaston
Haywood
Henderson
Jackson
Lincoln
Macon
McDowell
Polk
Rutherford
Transylvania
Union

Total: 19

Map Archives

October 24, 2023

Select a week: October 24, 2023



D2 - Severe Drought

Cleveland
Polk
Rutherford
Transylvania

Total: 4

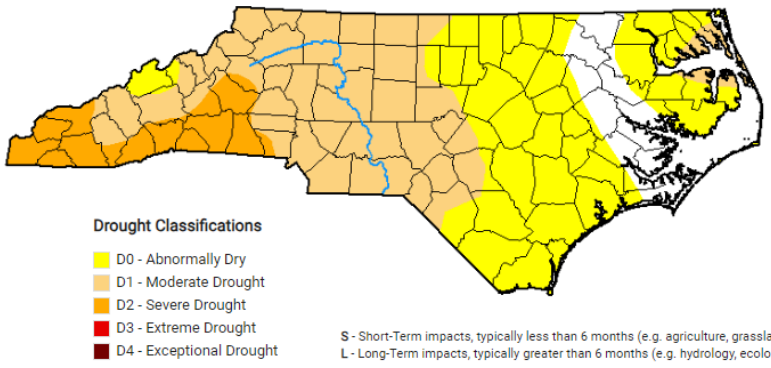
D1 - Moderate Drought

Alexander
Anson
Buncombe
Burke
Caldwell
Catawba
Cherokee
Clay
Davie
Forsyth
Gaston
Graham
Haywood
Henderson
Iredell
Jackson

Map Archives

October 31, 2023

Select a week: October 31, 2023



D2 - Severe Drought

Burke
Cherokee
Clay
Cleveland
Gaston
Graham
Henderson
Jackson
Macon
McDowell
Polk
Rutherford
Swain
Transylvania

Total: 14

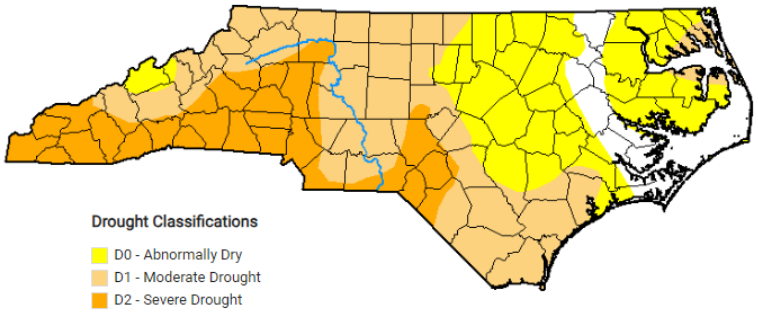
D1 - Moderate Drought

Alamance
Alexander
Alleghany
Anson

Map Archives

November 7, 2023

Select a week: November 7, 2023



Drought Classifications
- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

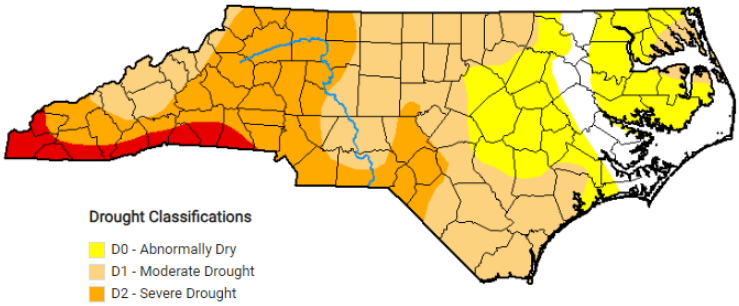
D2 - Severe Drought

Alexander
Anson
Burke
Cabarrus
Caldwell
Catawba
Cherokee
Clay
Cleveland
Davie
Gaston
Graham
Henderson
Hoke
Iredell
Jackson
Lincoln
Macon
McDowell
Mecklenburg

Map Archives

November 14, 2023

Select a week: November 14, 2023



Drought Classifications
- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

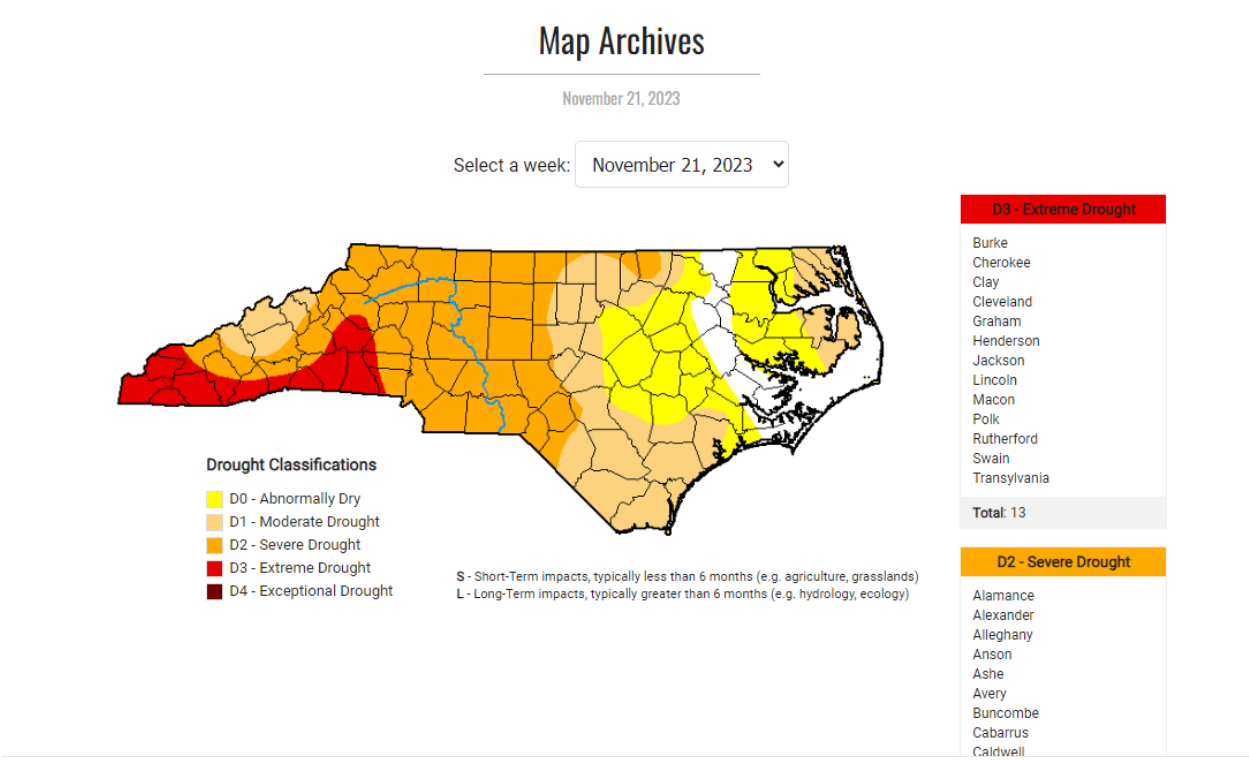
D3 - Extreme Drought

Cherokee
Clay
Cleveland
Graham
Henderson
Macon
Polk
Rutherford
Transylvania

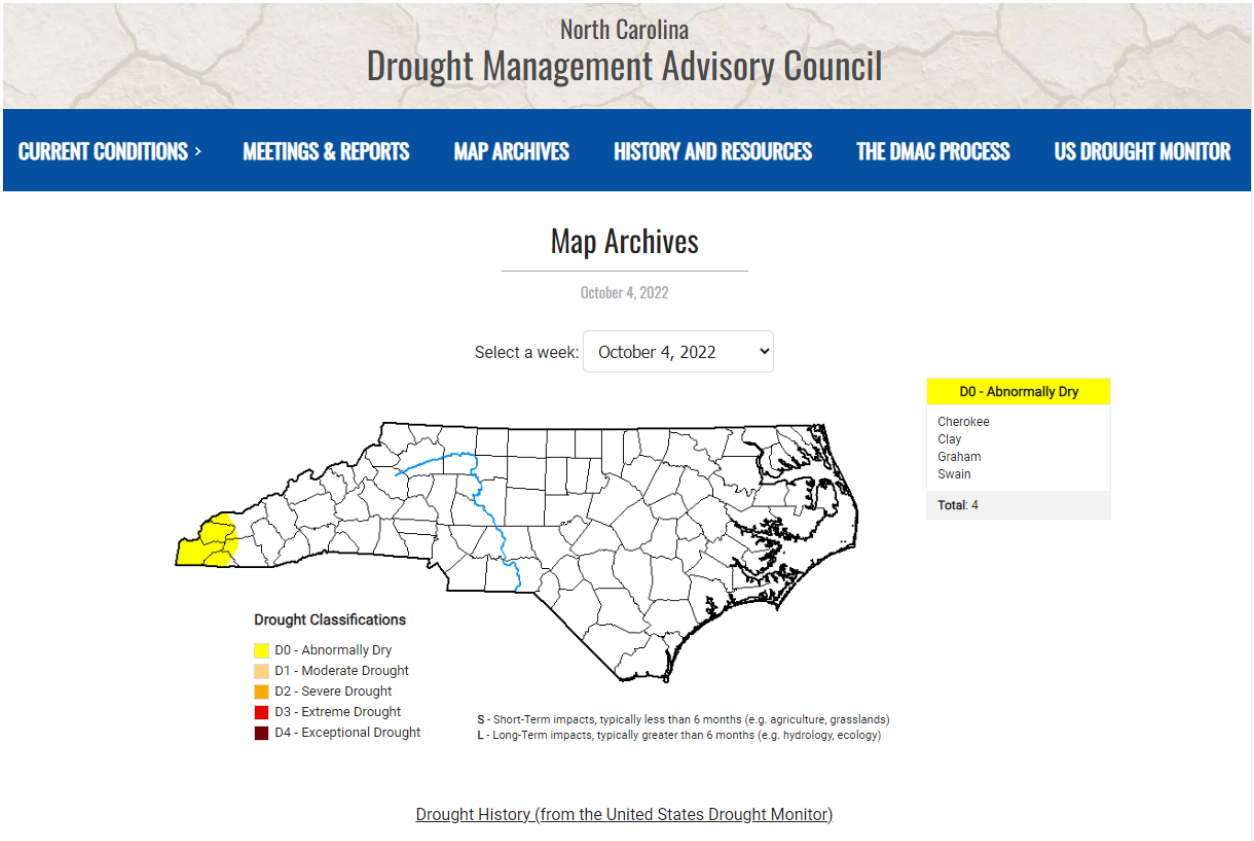
Total: 9

D2 - Severe Drought

Alexander
Alleghany
Anson
Ashe
Avery
Burke
Cabarrus
Caldwell
Catawba



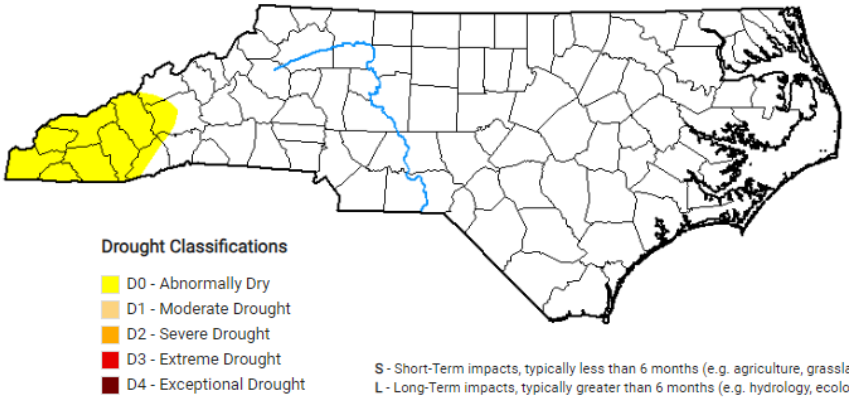
2022 for the weeks of October 4 through November 15



Map Archives

October 11, 2022

Select a week: October 11, 2022



D0 - Abnormally Dry

Buncombe
Cherokee
Clay
Graham
Haywood
Jackson
Macon
Swain
Transylvania

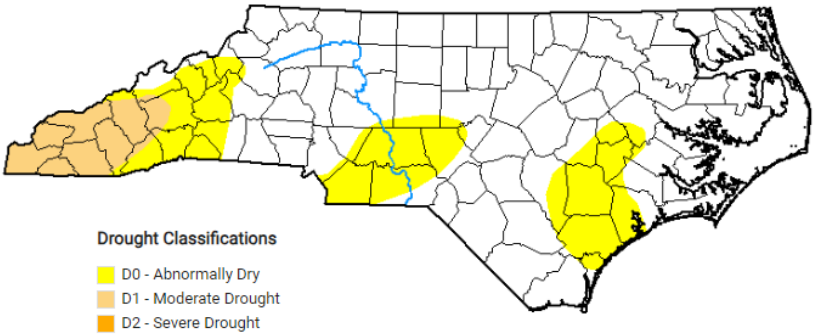
Total: 9

Drought History (from the United States Drought Monitor)

Map Archives

October 18, 2022

Select a week: October 18, 2022



D1 - Moderate Drought

Buncombe
Cherokee
Clay
Graham
Haywood
Jackson
Macon
Swain

Total: 8

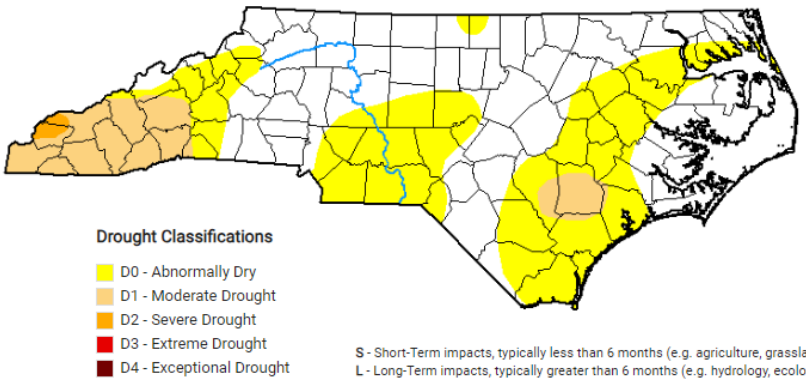
D0 - Abnormally Dry

Anson
Avery
Cabarrus
Duplin
Greene
Henderson
Lenoir
Madison
McDowell

Map Archives

October 25, 2022

Select a week: October 25, 2022



D2 - Severe Drought

Graham

Total: 1

D1 - Moderate Drought

Buncombe
Cherokee
Clay
Duplin
Haywood
Henderson
Jackson
Macon
Polk
Sampson
Swain
Transylvania

Total: 12

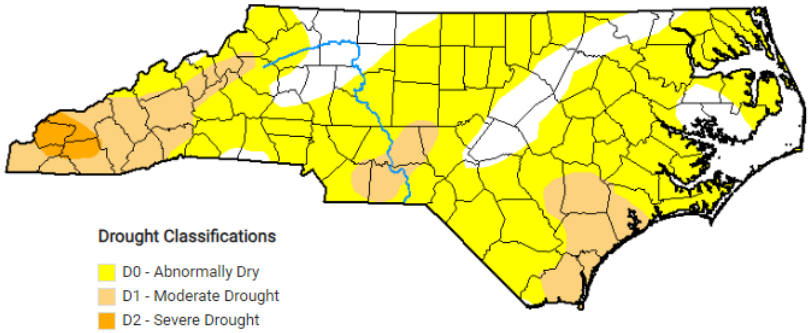
D0 - Abnormally Dry

Anson

Map Archives

November 1, 2022

Select a week: November 1, 2022



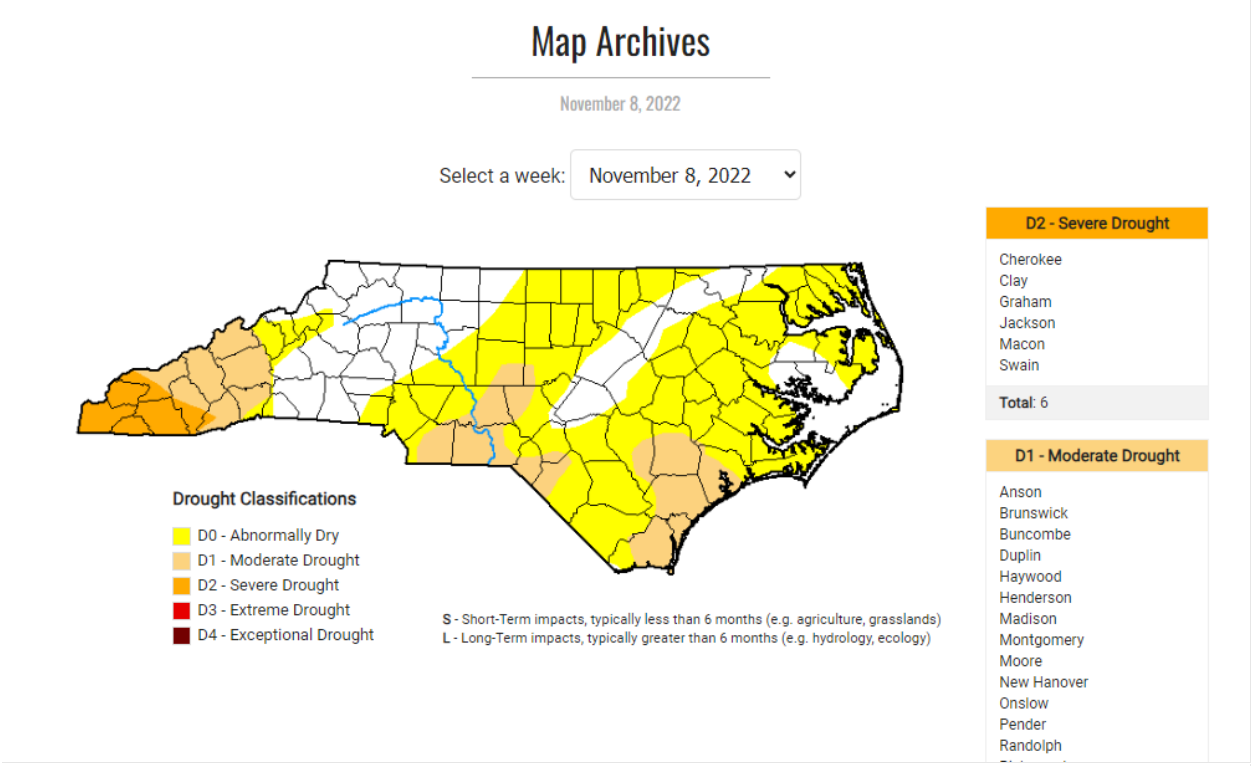
D2 - Severe Drought

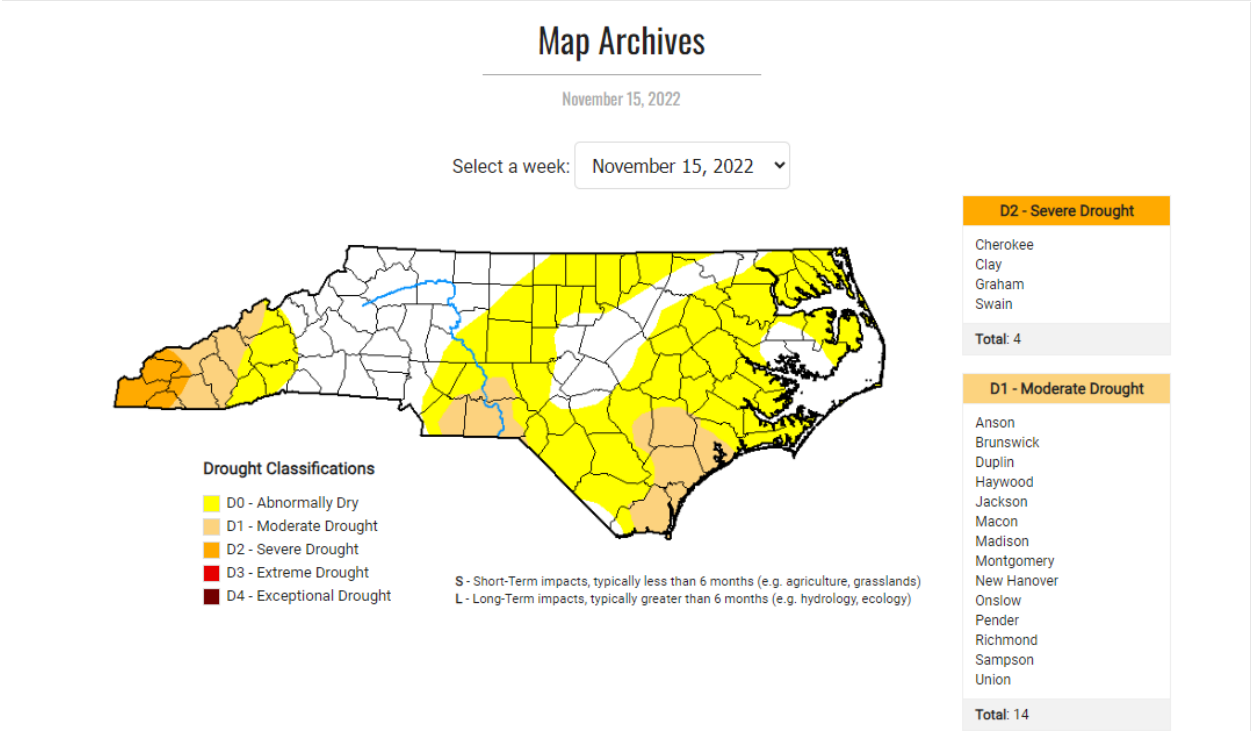
Graham
Macon
Swain

Total: 3

D1 - Moderate Drought

Anson
Avery
Brunswick
Buncombe
Cherokee
Clay
Duplin
Haywood
Henderson
Jackson
McDowell
Mitchell
Montgomery
New Hanover
Onslow





2021 for the weeks of October 16 through November 16

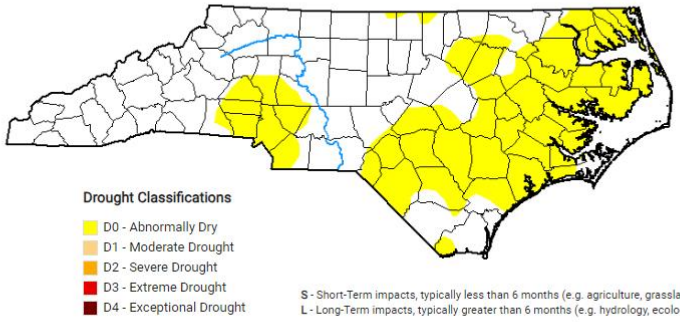
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › | MEETINGS & REPORTS | MAP ARCHIVES | HISTORY AND RESOURCES | THE DMAC PROCESS | US DROUGHT MONITOR

Map Archives

October 12, 2021

Select a week: October 12, 2021



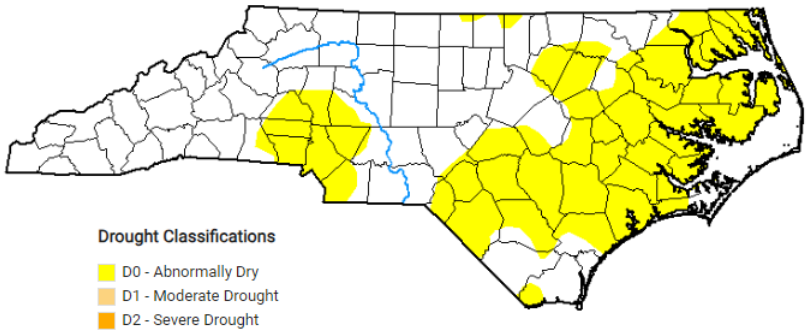
D0 - Abnormally Dry

Beaufort
Bertie
Bladen
Cabarrus
Camden
Carteret
Catawba
Chowan
Cleveland
Craven
Cumberland
Currituck
Dare
Duplin
Edgecombe
Franklin
Gaston
Gates
Greene
Halifax
Harnett
Hertford
Hoke

Map Archives

October 19, 2021

Select a week: October 19, 2021



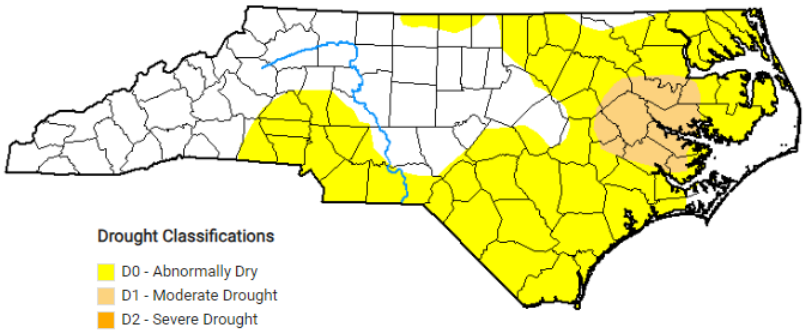
D0 - Abnormally Dry

Beaufort
Bertie
Bladen
Cabarrus
Camden
Carteret
Catawba
Chowan
Cleveland
Craven
Cumberland
Currituck
Dare
Duplin
Edgecombe
Franklin
Gaston
Gates
Greene
Halifax
Harnett
Hertford
Hoke
Hyde

Map Archives

October 26, 2021

Select a week: October 26, 2021



Drought Classifications
- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D1 - Moderate Drought

Beaufort
Craven
Edgecombe
Greene
Lenoir
Martin
Pamlico
Pitt
Washington

Total: 9

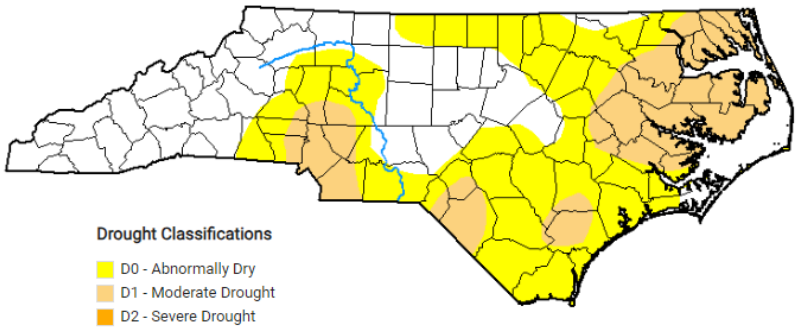
D0 - Abnormally Dry

Anson
Bertie
Bladen
Brunswick
Cabarrus
Camden
Carteret
Caswell
Catawba
Chowan
Cleveland

Map Archives

November 2, 2021

Select a week: November 2, 2021

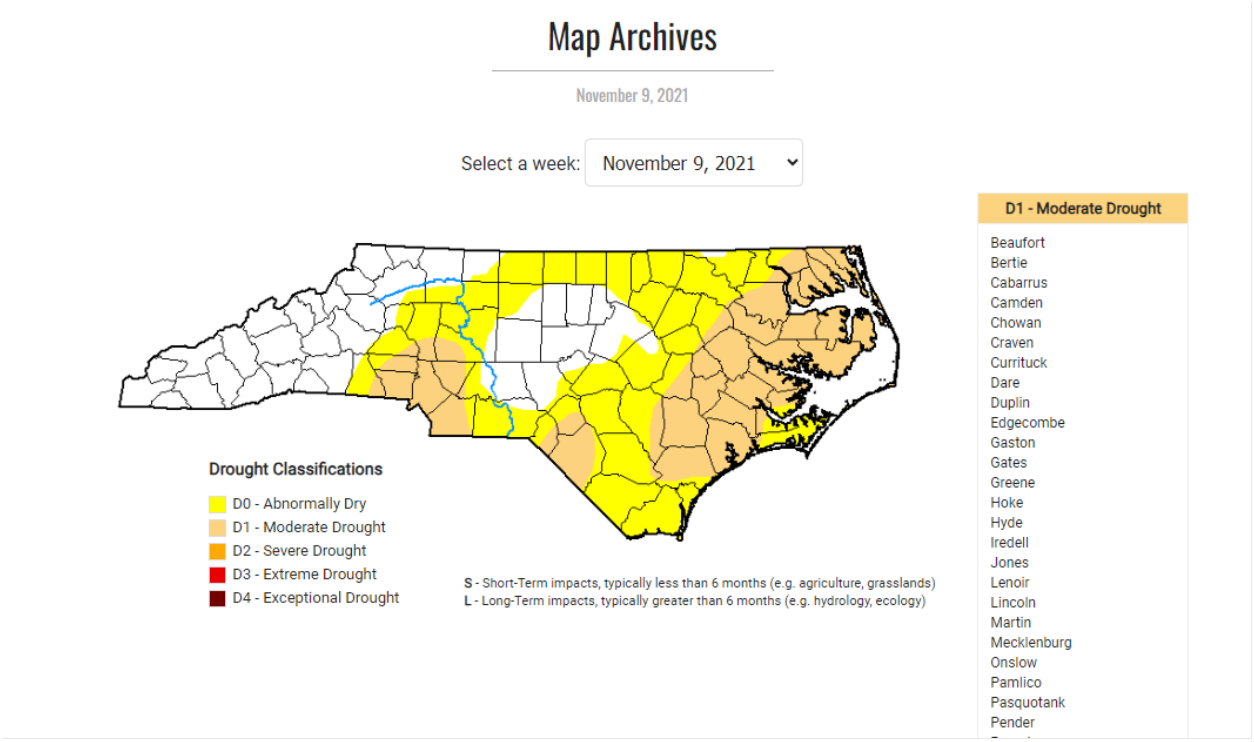


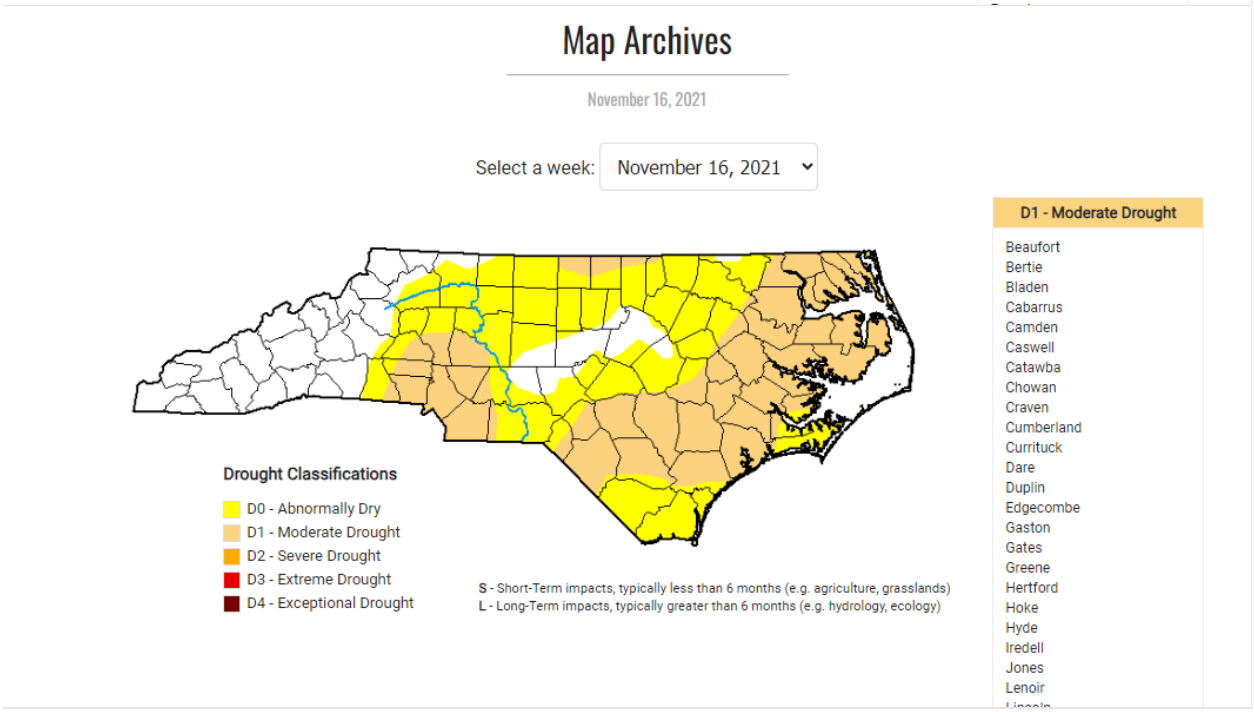
Drought Classifications
- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D1 - Moderate Drought

Beaufort
Bertie
Cabarrus
Camden
Chowan
Craven
Currituck
Dare
Duplin
Edgecombe
Gaston
Gates
Greene
Hoke
Hyde
Iredell
Lenoir
Lincoln
Martin
Mecklenburg
Pamlico
Pasquotank
Pender
Perquimans
Pitt





2020 for the weeks of October 10 through November 10

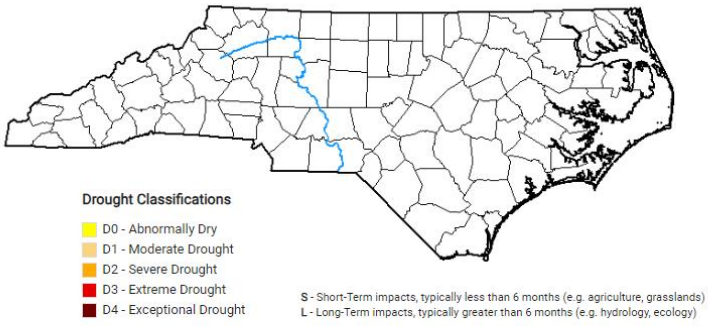
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › | MEETINGS & REPORTS | MAP ARCHIVES | HISTORY AND RESOURCES | THE DMAC PROCESS | US DROUGHT MONITOR

Map Archives

October 6, 2020

Select a week: October 6, 2020

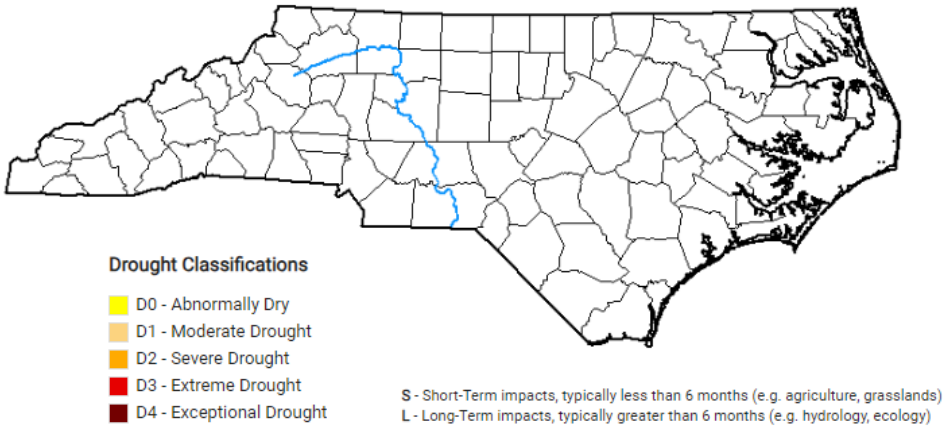


Drought History (from the United States Drought Monitor)

Map Archives

October 13, 2020

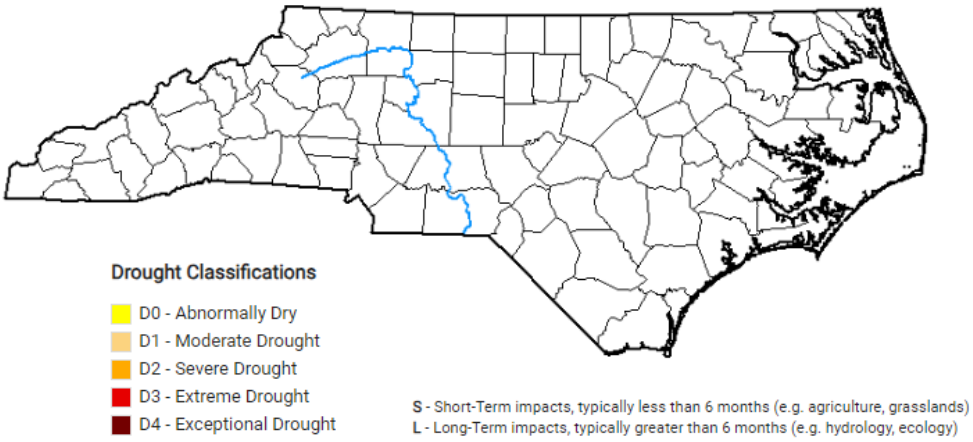
Select a week: October 13, 2020



Map Archives

October 20, 2020

Select a week: October 20, 2020

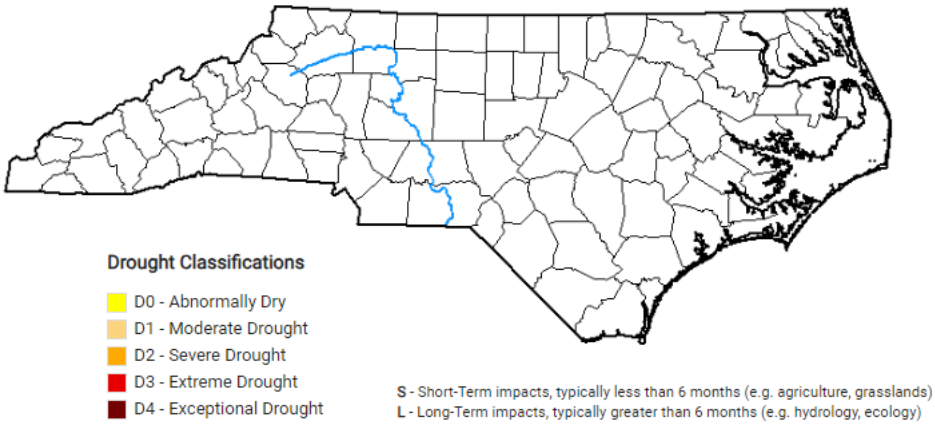


Drought History (from the United States Drought Monitor)

Map Archives

October 27, 2020

Select a week: October 27, 2020

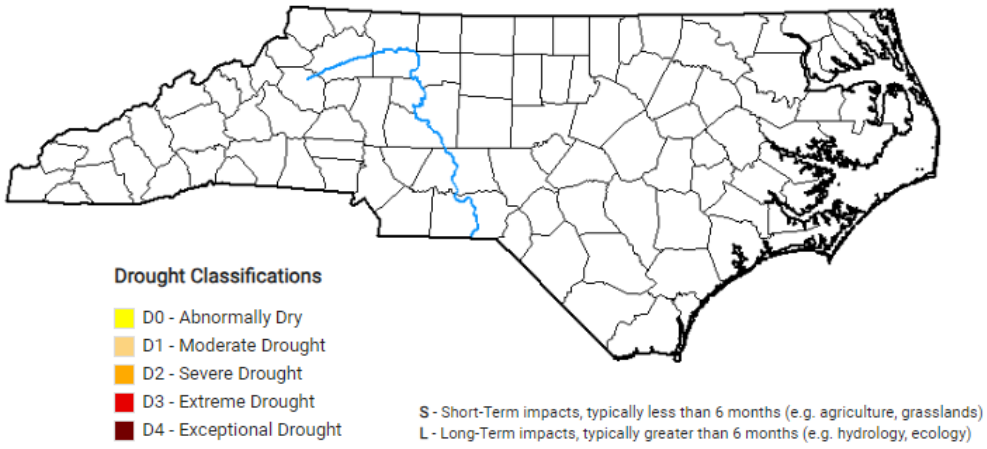


Drought History (from the United States Drought Monitor)

Map Archives

November 3, 2020

Select a week: November 3, 2020

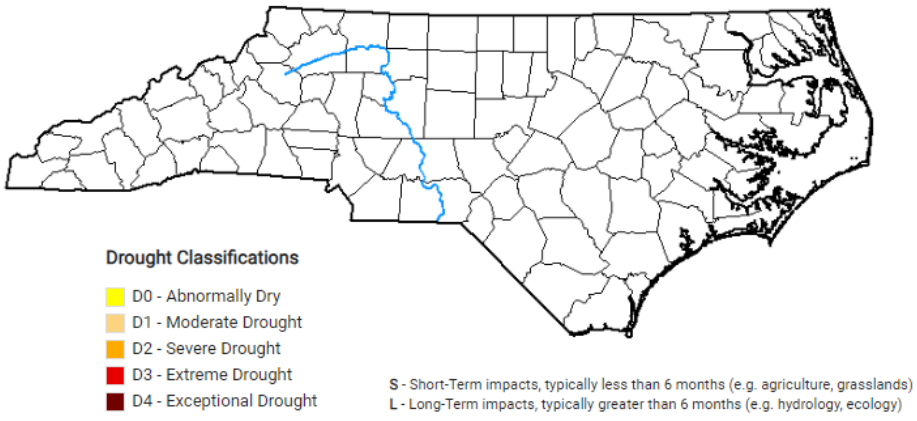


Drought History (from the United States Drought Monitor)

Map Archives

November 10, 2020

Select a week: November 10, 2020



Drought History (from the United States Drought Monitor)

2019 for the weeks of October 8 through November 12

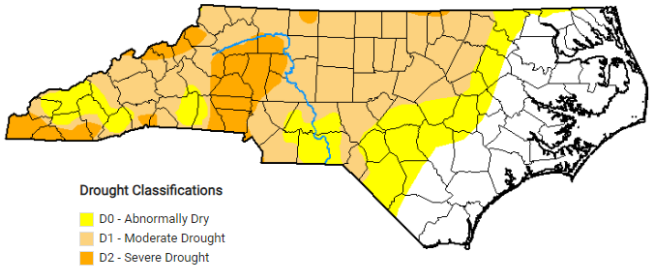
North Carolina
Drought Management Advisory Council

CURRENT CONDITIONS › | MEETINGS & REPORTS | MAP ARCHIVES | HISTORY AND RESOURCES | THE DMAC PROCESS | US DROUGHT MONITOR

Map Archives

October 8, 2019

Select a week: October 8, 2019



D2 - Severe Drought

Alexander
Avery
Caldwell
Catawba
Cherokee
Clay
Cleveland
Davie
Gaston
Iredell
Lincoln
Macon
Mitchell
Rowan
Stokes
Watauga
Wilkes
Yadkin
Yancey

Total: 19

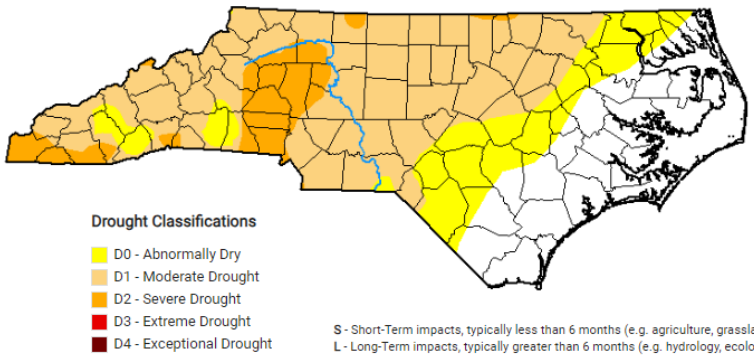
D1 - Moderate Drought

Alamance
Alleghany
Ashe

Map Archives

October 15, 2019

Select a week: October 15, 2019



D2 - Severe Drought

Alexander
Caldwell
Catawba
Cherokee
Clay
Cleveland
Davie
Gaston
Iredell
Lincoln
Macon
Rowan
Stokes
Wilkes
Yadkin

Total: 15

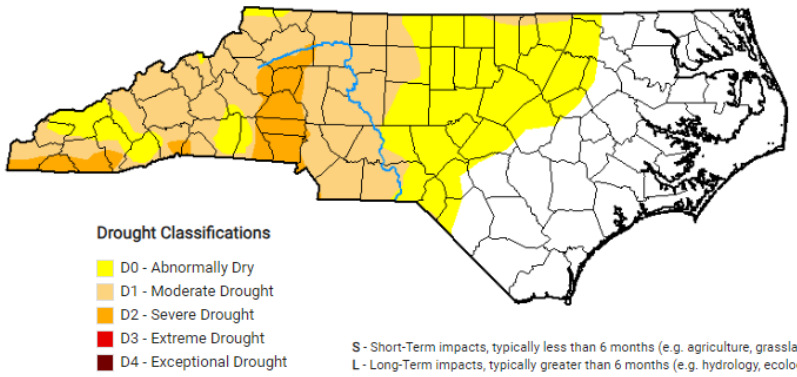
D1 - Moderate Drought

Alamance
Alleghany
Anson
Ashe
Avery

Map Archives

October 22, 2019

Select a week: October 22, 2019



D2 - Severe Drought

Alexander
Caldwell
Catawba
Cherokee
Clay
Cleveland
Gaston
Lincoln
Macon
Wilkes

Total: 10

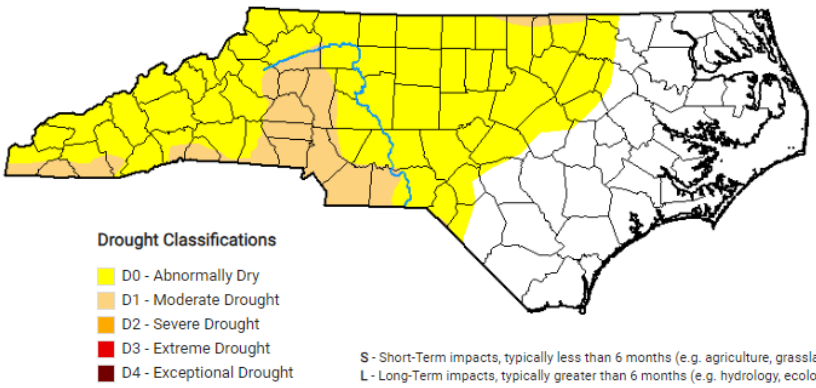
D1 - Moderate Drought

Alleghany
Anson
Ashe
Avery
Buncombe
Burke
Cabarrus
Davidson
Davie
Forsyth

Map Archives

October 29, 2019

Select a week: October 29, 2019



D1 - Moderate Drought

Alexander
Anson
Caldwell
Catawba
Cherokee
Clay
Cleveland
Gaston
Henderson
Iredell
Lincoln
Macon
Mecklenburg
Polk
Union
Warren
Wilkes

Total: 17

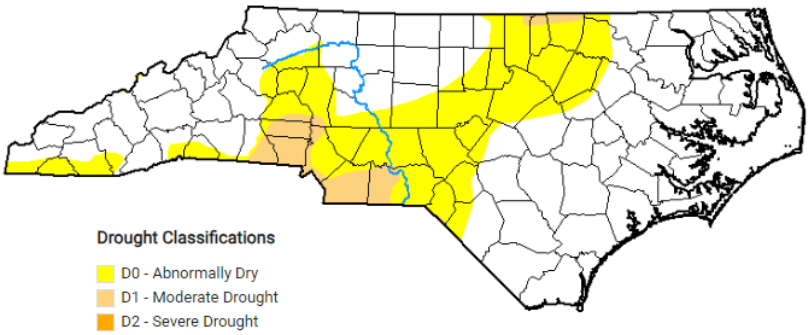
D0 - Abnormally Dry

Alamance
Alleghany
Ashe
Avery
Buncombe

Map Archives

November 5, 2019

Select a week: November 5, 2019



Drought Classifications
- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D1 - Moderate Drought

Anson
Cleveland
Gaston
Lincoln
Mecklenburg
Union
Vance
Warren

Total: 8

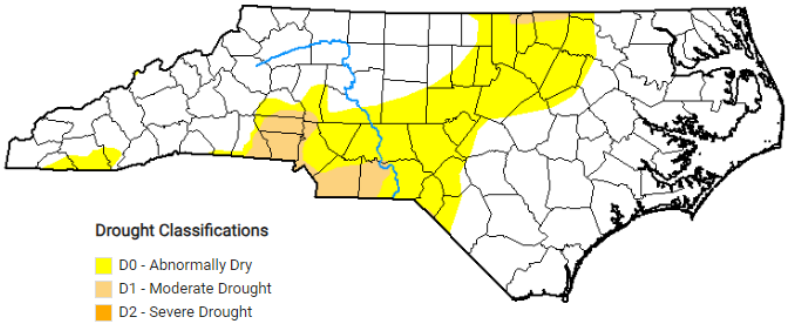
D0 - Abnormally Dry

Alexander
Cabarrus
Caldwell
Catawba
Chatham
Cherokee
Clay
Durham
Franklin
Granville
Halifax
Harnett
Henderson

Map Archives

November 12, 2019

Select a week: November 12, 2019



Drought Classifications
- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

S - Short-Term impacts, typically less than 6 months (e.g. agriculture, grasslands)
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)

D1 - Moderate Drought

Anson
Cleveland
Gaston
Lincoln
Mecklenburg
Union
Vance
Warren

Total: 8

D0 - Abnormally Dry

Cabarrus
Catawba
Chatham
Clay
Durham
Franklin
Granville
Halifax
Harnett
Hoke
Iredell

Appendix 4: Photos from Previous Seasons

Spring 2024

Spring 2024 monitoring pictures

Winter 2023/24

Winter 2023/24 monitoring pictures

Fall 2023

Fall 2023 monitoring pictures, starting in the upper lefthand corner: Team 1, Team 2, Team 3, Team 4, Team 5, Team 6, Team 7, Team 9, Team 10