

# Communicating drought: Innovating approaches through engagement with decision makers

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## Abstract

During recent droughts in North Carolina, decision makers have articulated needs for drought information, including current or anticipated impacts, geographic extent and timing, and how and who monitors drought in the state. This is despite the abundance of online information and data that can answer these questions. Feedback from sectors heavily impacted by drought in the state - namely, agriculture, forestry, and water resources - suggests that information users perceive existing drought information as unavailable, inaccessible, or insufficient to meet their needs. We are collaborating on a project to increase the accessibility of existing information through the development of resources that resonate with water resource managers, extension agents, and other decision makers in North Carolina, are discoverable through their preferred communication channels, and help them and their constituents better understand and respond to drought events. We identified and prioritized new information resource ideas through an initial needs assessment conducted via surveys and webinars with stakeholders in target sectors. We then developed and refined prototypes (e.g., infographics, factsheets, story maps) through multiple rounds of feedback, which included focus group discussions and eye tracking studies. Key findings of the project include (1) scientific information must be translated into less-technical terms to be useful, but users must be able to connect to the original source of the information; (2) decision makers want current conditions placed into a longer temporal context that includes the recent past (trends over past weeks to months) and anticipated changes to conditions in the future (forecasts with lead times of days to months); and (3) despite the increasing popularity of social media as a way to share information, more traditional formats (e.g., local broadcast and news media, websites) are still valuable to decision makers. In this presentation, we will describe project outcomes, including our process for engaging with decision makers to co-produce new drought information resources and strategies for creating and disseminating these to ensure that they will last beyond the project's end date.



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## Background

In North Carolina, the NC Drought Management Advisory Council (DMAC) makes recommendations on the current drought status to US Drought Monitor authors in consultation with state and federal agencies, including the agriculture, forestry, and water resources sectors.

Despite the multi-agency effort and availability of information about drought online, questions seem to arise with each drought that impacts the state (image below). To address the questions and needs identified during past droughts, the State Climate Office of North Carolina, which is a member organization of the NC DMAC, and the Carolinas Integrated Sciences and Assessments are partnering on a NOAA-funded project.

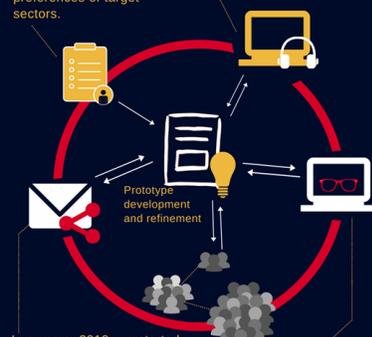
The goal of this project is to provide relevant, accessible, and actionable

## Iterative Process

We used an iterative process with user engagement and evaluation to systematically develop and refine drought communication resources to best meet the unique needs and preferences of each of our target sectors: agriculture, forestry, and water resources.

Initial surveys identified drought information needs and communication preferences of target sectors.

We employed shorter, virtual engagements to share project findings and collect quick feedback.



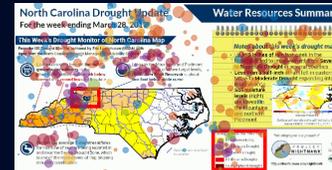
In summer 2019, we started to pilot dissemination strategies for prototype information resources, while collecting feedback on their use from participants.

We collected usability information on prototype resources during eye tracking studies in spring and fall 2019.

During in-person feedback sessions, we collected detailed feedback on resources and communication strategies. These have ranged from small groups (<5) during workshops to larger conference settings.

## Showcase: Eye Tracking

In addition to more "traditional" forms of evaluation, we used this project to assess the feasibility and utility of a relatively new method for collecting usability information: eye tracking.



The image above shows participant gaze fixations for one of the initial prototypes (legend not shown).

## Takeaways

Don't just create, evaluate!

By integrating evaluation through systemic user engagement throughout our project, we are ensuring that the final products will not only be *read*, but *used* by our target audiences.

Translate technical information – but know when to stop.

Feedback from participants indicated preferences for partially translated technical and scientific information, but that some technical information was still preferred, particularly if it could be used as a learning opportunity. We've incorporated this by, for example, including definitions for flash drought and explanations for the connection between prolonged high pressure and drought development in North Carolina.

## Prioritized Resources

This project focuses on developing and effectively disseminating informational resources to communicate drought- and drought-related information. The goal is not to create new information or datasets for drought monitoring. Through initial engagements with stakeholders, we identified five priorities for resources to develop under this project.

The first of these are narratives to *the week map*, which is published each Thursday morning as part of the US Drought Monitor. The examples in this poster will focus specifically on this informational resource.

## North Carolina Drought Update

For the week ending October 15, 2019

This Week's Drought Monitor of North Carolina Map

From the US Drought Monitor, authored by Richard Heim (National Centers for Environmental Information) with input from the North Carolina Drought Management Advisory Council (Gardner/2019)

Rain along the Tennessee border helped remove Severe Drought, but streams are still running low.

With less than an inch of rain the past month, streamflows across the northern coast have fallen much below normal.

Nearly two inches of rain plus cooler temperatures last week in western NC slowed evaporation from soils.

Without regular rainfall since Dorian, vegetables, such as collards and sweet potatoes, have been growing slowly.

Last Week's Drought Map

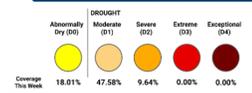
## Statewide Condition Summary

What's Changed? Last week's rain brought drought improvement in the northern Mountains, but parts of the southern Piedmont and northern Coastal Plain missed out and are now in Moderate Drought.

What's New? While Wednesday's rains brought additional relief, they came after the US Drought Monitor's Tuesday morning data cutoff. Their impacts will be reflected on next week's map.

What's Next? Rain chances continue with a coastal low on Sunday and a cold front on Tuesday. Most areas can expect at least 0.75 inches in total.

## Statewide Coverage By Category



This version of the infographic incorporates icons for indicators and uses arrows and colors to indicate the direction of changing conditions (or an equals sign to indicate no change). We created an identical version without the icons and tested both during an eye tracking study with NC Cooperative Extension Agents in fall 2019. The results of this study will inform use of icons in future infographics. Analysis is currently underway.

ABSTRACT

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