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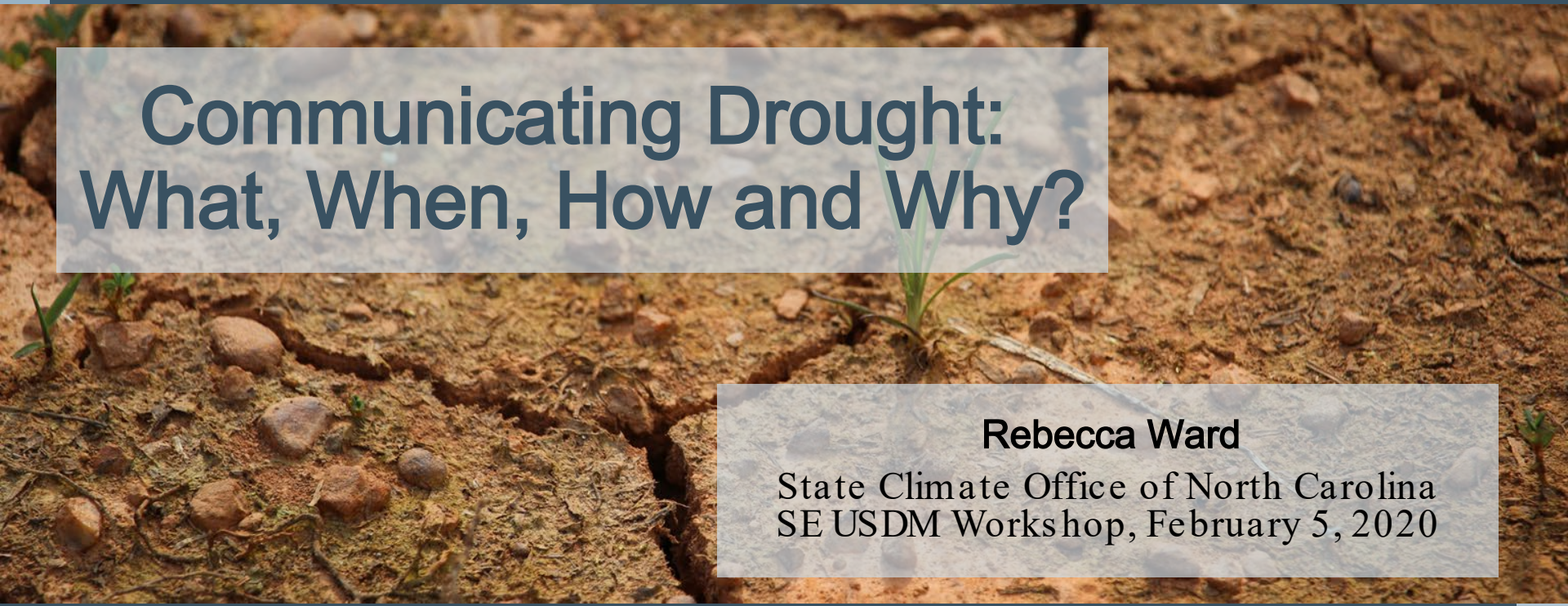


Communicating Drought: What, When, How and Why?

Rebecca Ward

State Climate Office of North Carolina

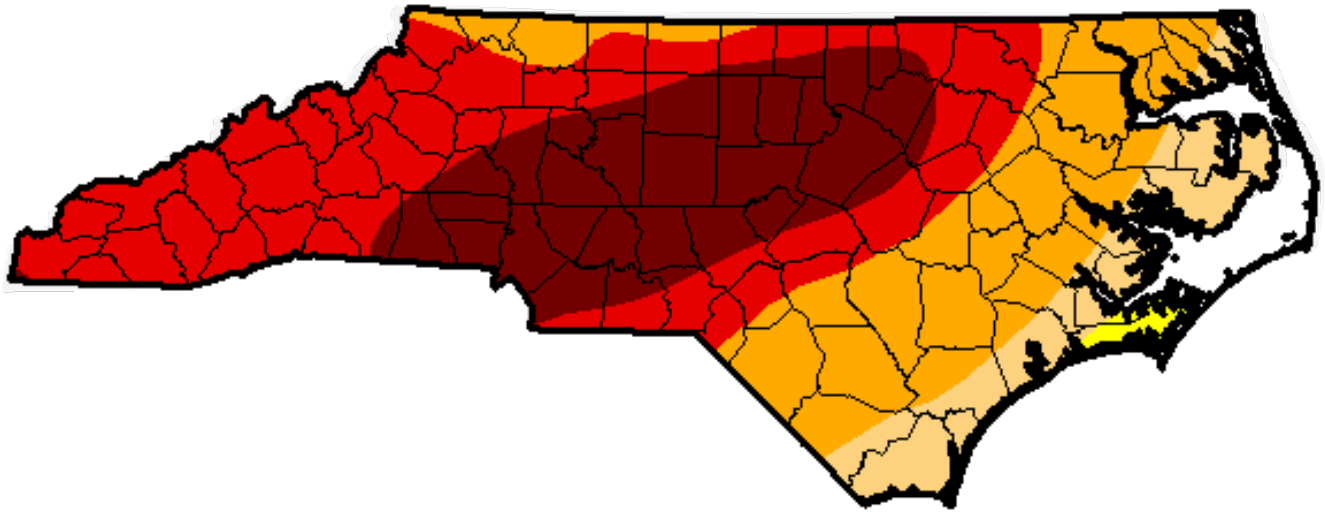
SE USDM Workshop, February 5, 2020

NORTH CAROLINA CLIMATEOFFICE

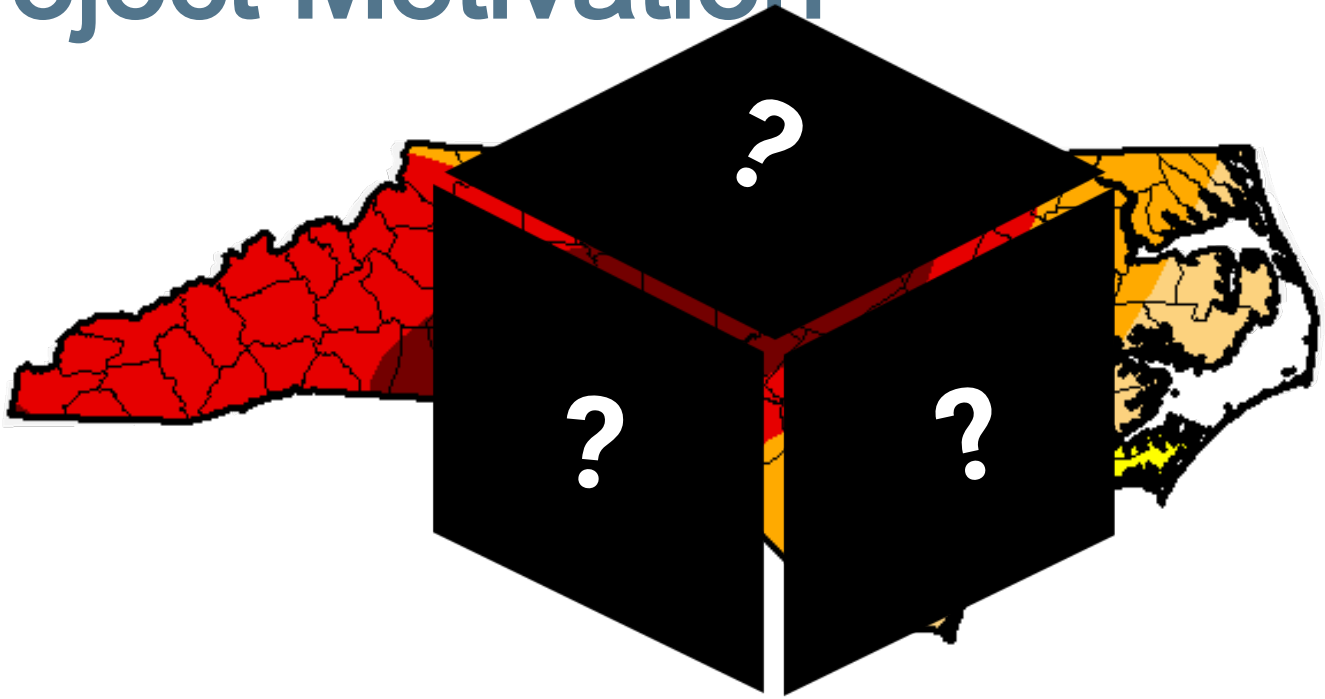
Project Background: Goals

- **Connect** decision makers in **agriculture**, **forestry**, and **water resources** sectors to information by making that information **more accessible**, rather than creating new information or data.

Project Motivation



Project Motivation



Project Background

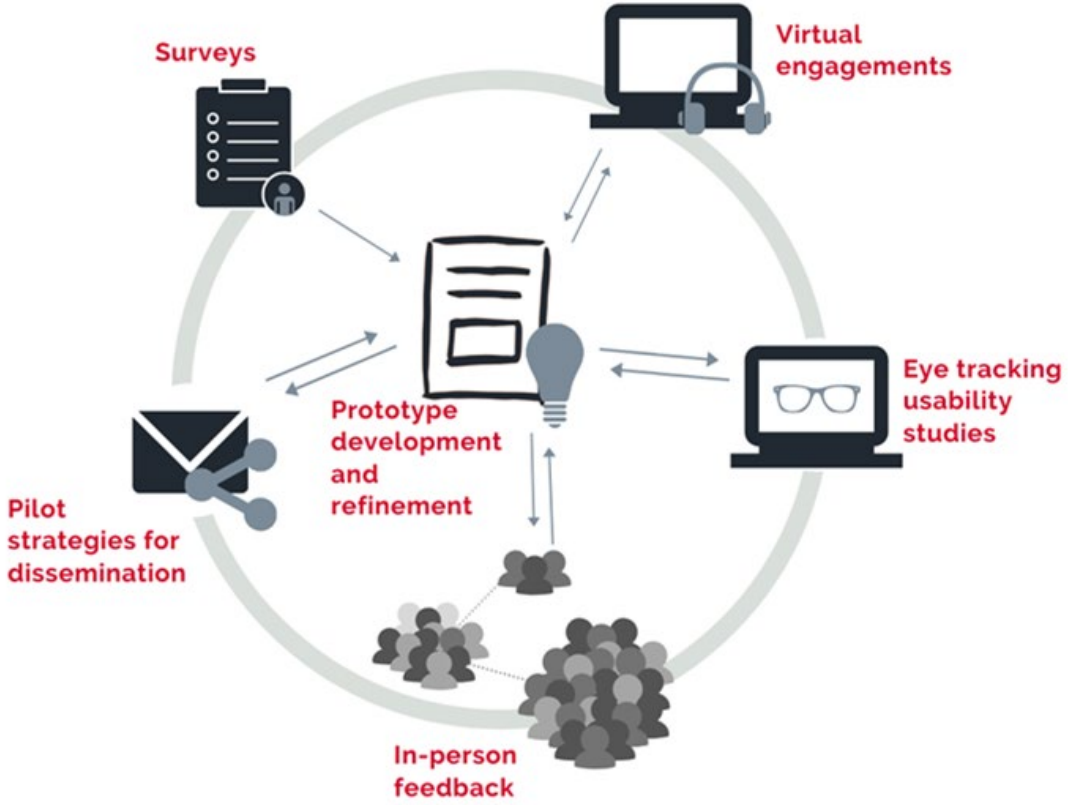
Official Title: *"Innovating Approaches to Drought Communications with North Carolina Decision Makers"*

Code Name: *Project Nighthawk*

Project Team: Corey Davis (SCONC), Kirsten Lackstrom (CISA)

The common nighthawk. Photo by Andy Reago and Chrissy McClarren, shared under CC BY 2.0.

Our Process


Surveys
Virtual engagements
Prototype development and refinement
Eye tracking usability studies
Pilot strategies for dissemination
In-person feedback

What have we learned?

What to communicate?

- What's the status? And ***why?***
- How does this affect ***me***?
- What can we expect in the future?
- About the drought monitoring process

Communications Formats (How)

Preferred:

- Email and/or text alerts (short text messages)
- Infographics, maps/graphs
- Story maps
- Factsheets

Less **preferred:**

- Blog posts/newsletters
- Webinars
- Audio/podcasts
- Written reports
- Twitter*

North Carolina Drought Update

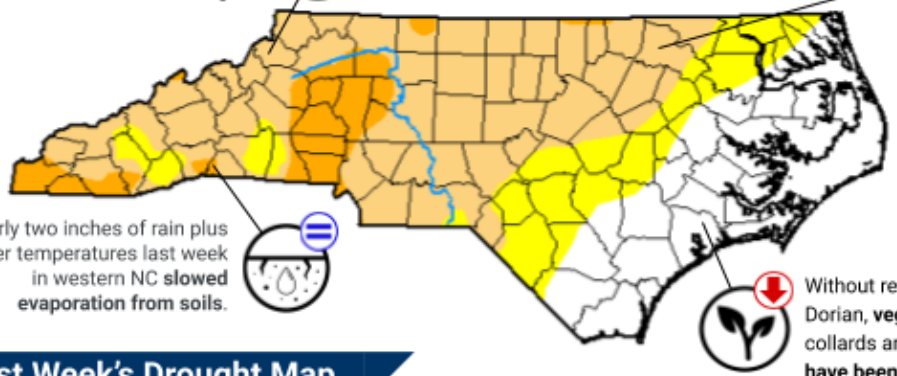
For the week ending October 15, 2019

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 (ncdrought.org)

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

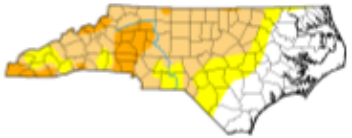
With less than an inch of rain the past month, **streamflows across the northern coast have fallen** much below normal.



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



A Product of Project Nighthawk

https://climate.ncsu.edu/nighthawk

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

		DROUGHT			
	Abnormally Dry (D0)	Moderate (D1)	Severe (D2)	Extreme (D3)	Exceptional (D4)
Coverage This Week	18.01%	47.58%	9.64%	0.00%	0.00%
(Change Since Last Week)	(-2.10%)	(+7.19%)	(-1.19%)		

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Short-Range Outlooks for North Carolina

Week 1: December 5 to 11

Forecast Confidence

Cloud cover on Sunday could limit our high temperatures, and uncertainty remains about how much precipitation we see on Monday and Tuesday.

Rain Early Next Week: Moisture moving in from the south on Monday and a **cold frontal passage on Tuesday** will bring rainfall across the state. The Mountains could see 2 to 3 inches while the coast may see half a

Warming Up Th
shifting from n
steadily increa
50s on Saturd
Temperatures
after the cold f

Week 2: December 12 to 18

Forecast Confidence

Some forecast models show Arctic air moving into the US Midwest. If that air mass reaches farther south, temperatures could be colder than expected.

More Weekend Gulf moisture cold front, with **on Saturday, D** lasting through

Seasonable, Th begin the week **in the 50s** befo front brings a overnight lows the 20s by Tue

Weeks 3 and 4: Dec. 19 to Jan. 1

Forecast Confidence

This variable pattern is difficult to predict weeks in advance. Cold air outbreaks are unlikely, but otherwise a wide range of conditions are possible.

Warmer Weath subtropical jet shifting farther our **temperatu normal** overall.

A Drier Pattern shift, that wou track northward as well, **keeping us from seeing as many storm systems**. However, cold fronts could still clip the state and bring some rainfall.

Forecast guidance from the NWS Climate Prediction Center and the Climate Forecast System model

http://climate.ncsu.edu/nighthawk

Week 2: December 12 to 18

Forecast Confidence

Some forecast models show Arctic air moving into the US Midwest. If that air mass reaches farther south, temperatures could be colder than expected.

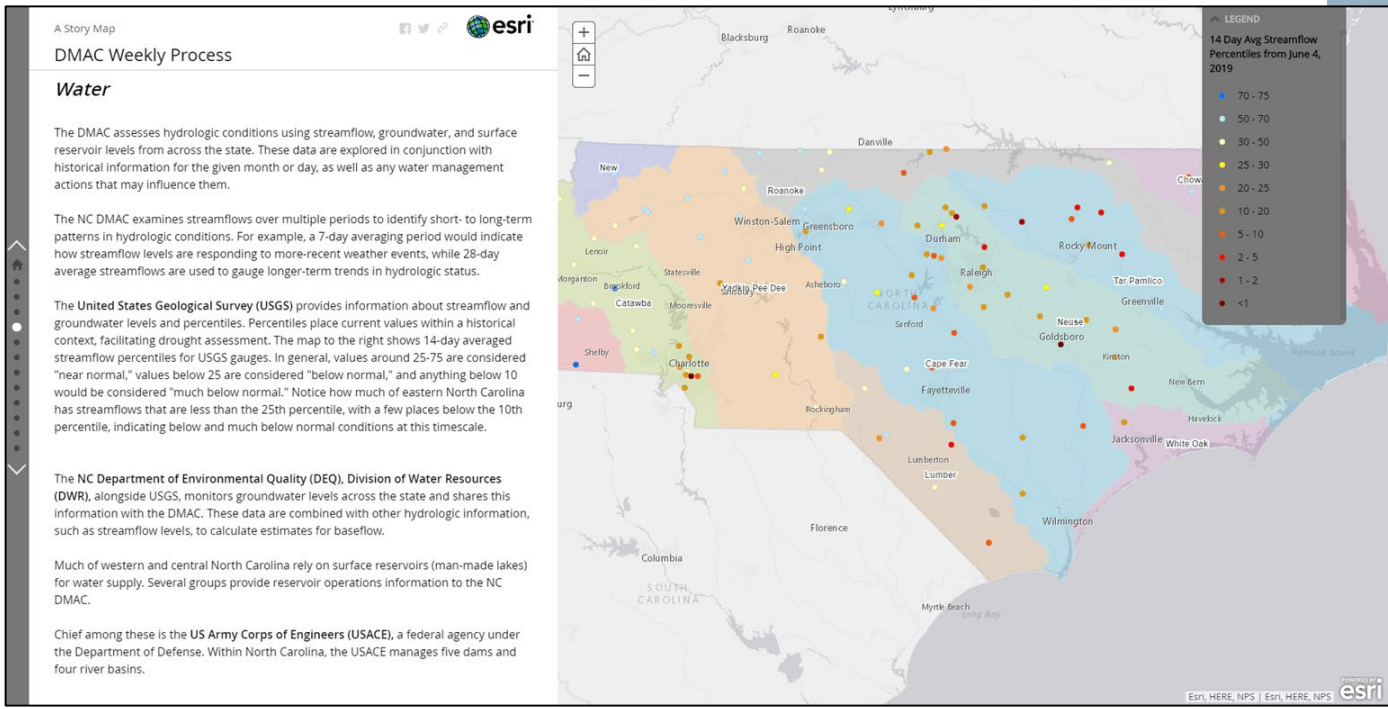
More Weekend Rain: Another batch of Gulf moisture may move in ahead of a cold front, with **rain possible beginning on Saturday, Dec. 14** and potentially lasting through the weekend.

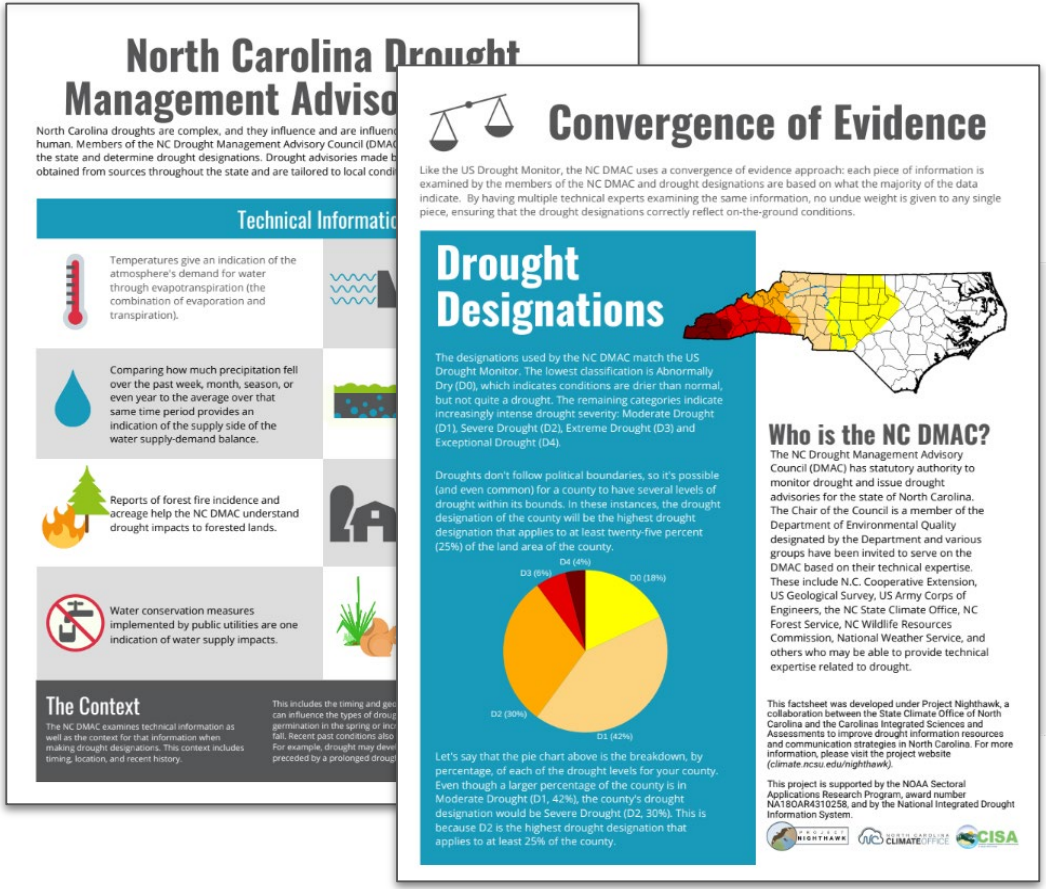
Seasonable, Then Cooler: We should begin the week with **near-normal highs in the 50s** before the weekend cold front brings a shot of colder air, with overnight lows possibly dropping into the 20s by Tuesday and Wednesday.

Forecast guidance from the NWS Climate Prediction Center and the GFS and CMC computer models

Story map describing NC DMAC and weekly process.

Ideas for content and layout of ncdrought.org website





Also:

- Collaboration with NC State University graduate-level design course
- Drought information on a basin-wide or statewide scale

When to communicate?

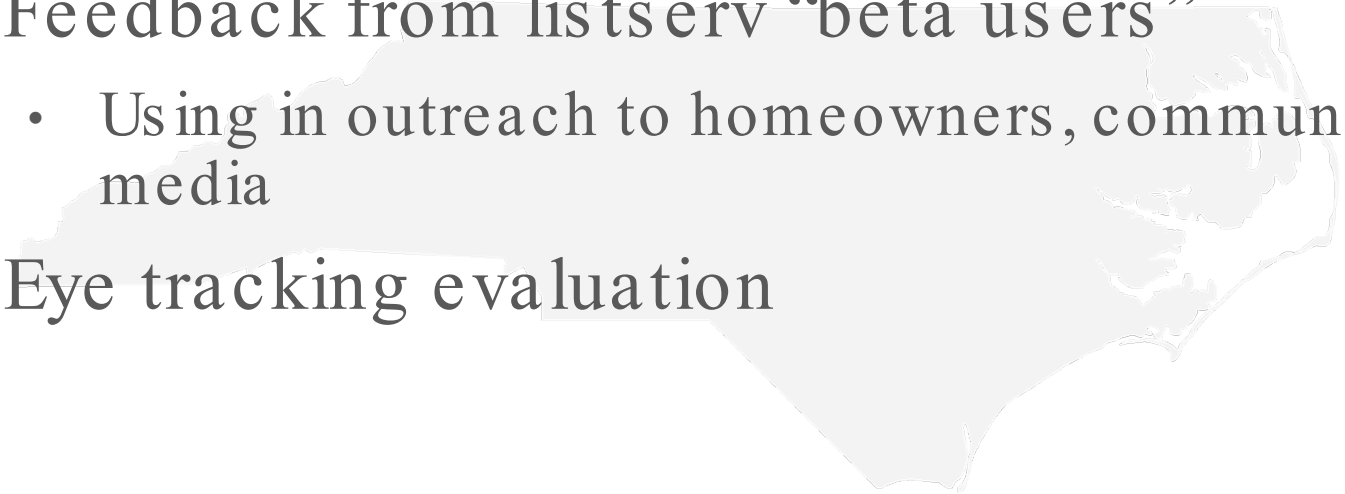
- Water resources:
  - When there is a drought
  - When the drought is affecting them
- Agriculture and Forestry:
  - When we're in a drought or not
  - What to expect in the future? (forecast)

Where to communicate?

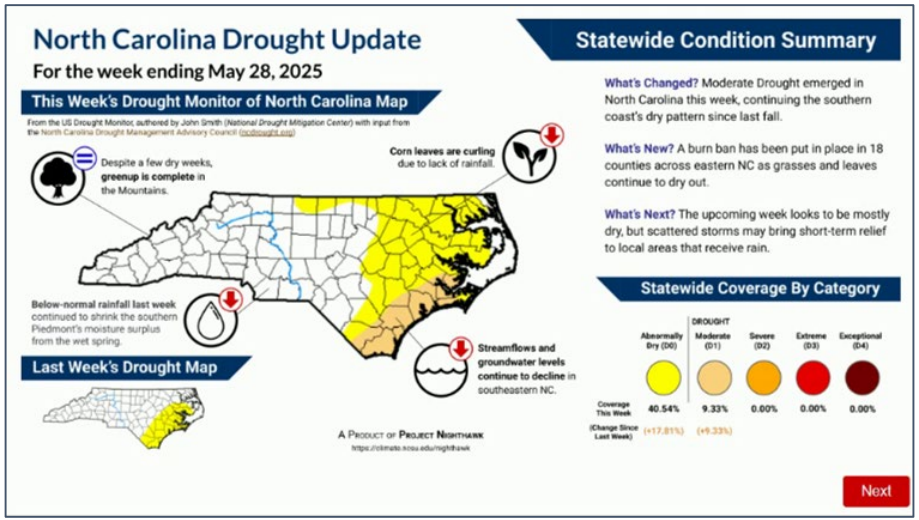
- Tune into existing channels:
- Emails via listservs
  - Testing with a group of ~40 participants
- Social media (Facebook, Twitter)
- Websites (ncdrought.org)

Is it working?

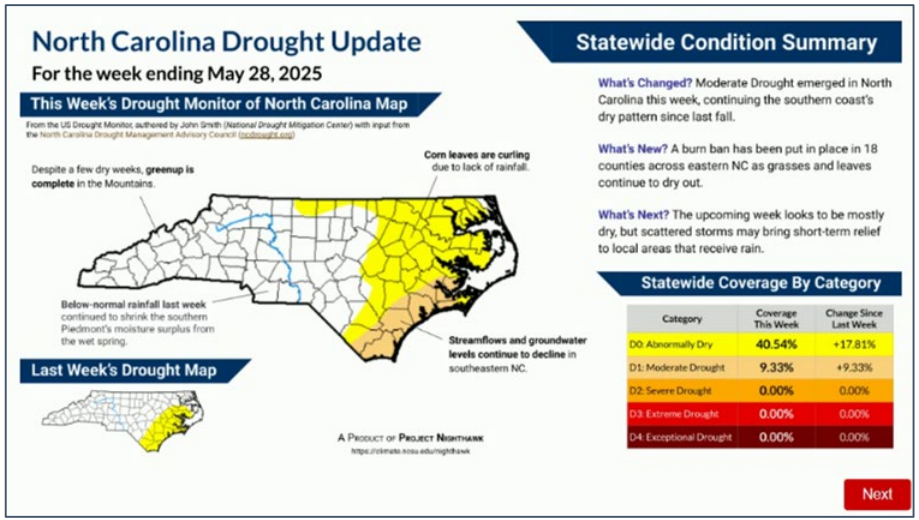
- Feedback from listserv "beta users"
  - Using in outreach to homeowners, community, media
- Eye tracking evaluation



Eye tracking - Fall 2019

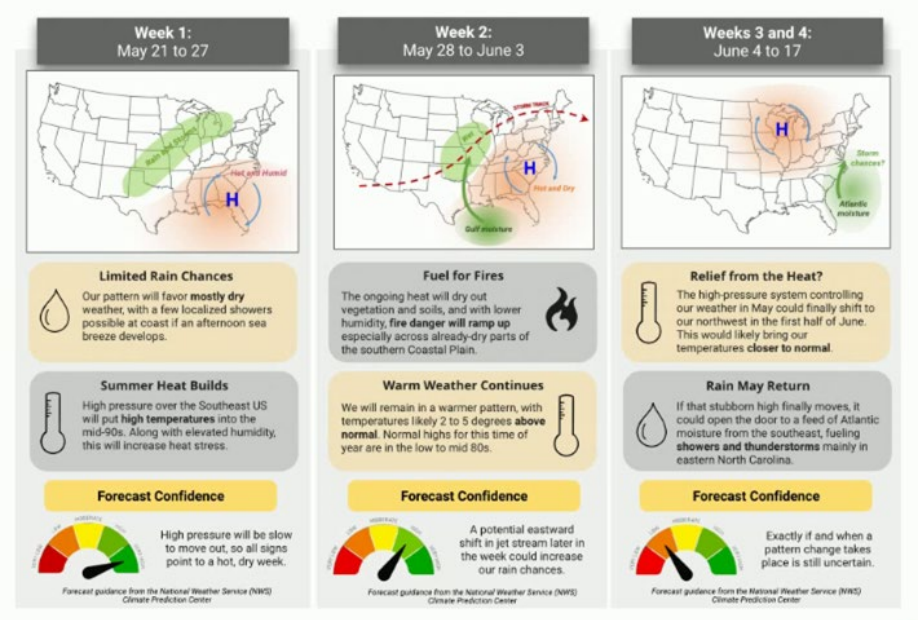


"Icons"

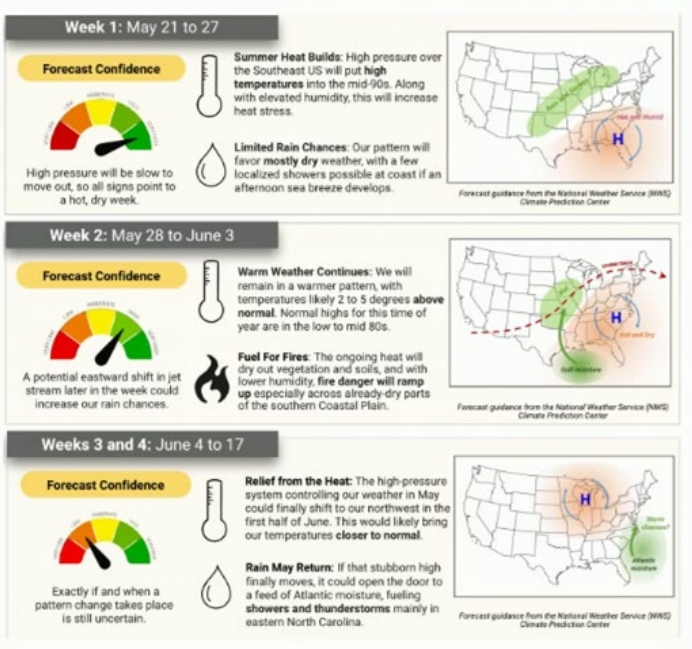


"No Icons"

Insights from eye tracking



"Vertical"



"Horizontal"

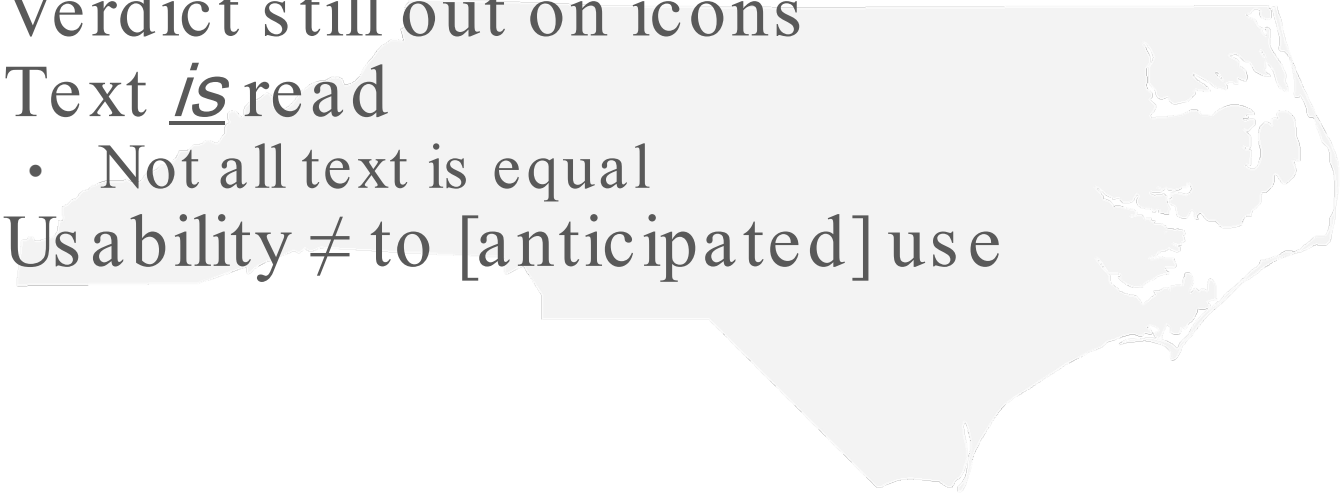
Preliminary

Insights from eye tracking

- No significant differences in responses (accuracy, perceptions of ease)
- Participants who viewed infographics with icons took longer to answer questions

Takeaways - Eye Tracking

- Verdict still out on icons
- Text *is* read
  - Not all text is equal
- Usability ≠ to [anticipated] use

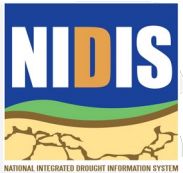


Communicating Drought Takeaways

- Don't just create; **evaluate**!
- Translate technical information, but know where to **stop**
- Know your audience
  - **When** will they use your products, and **for what purpose**?
    - Consider a **variety of formats** to meet their needs
    - May not please everyone 100%

Acknowledgements:

- Project Support:



- Participants and Stakeholders:
  - NC DMAC
  - Water Utilities, N.C. Cooperative Extension, NC Forest Service
  - Many more!

https://climate.ncsu.edu/nighthawk