NC STATE UNIVERSITY

Innovating Drought Communications with North Carolina Stakeholders

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CISA
A NOAA RISA TEAM

NOAA

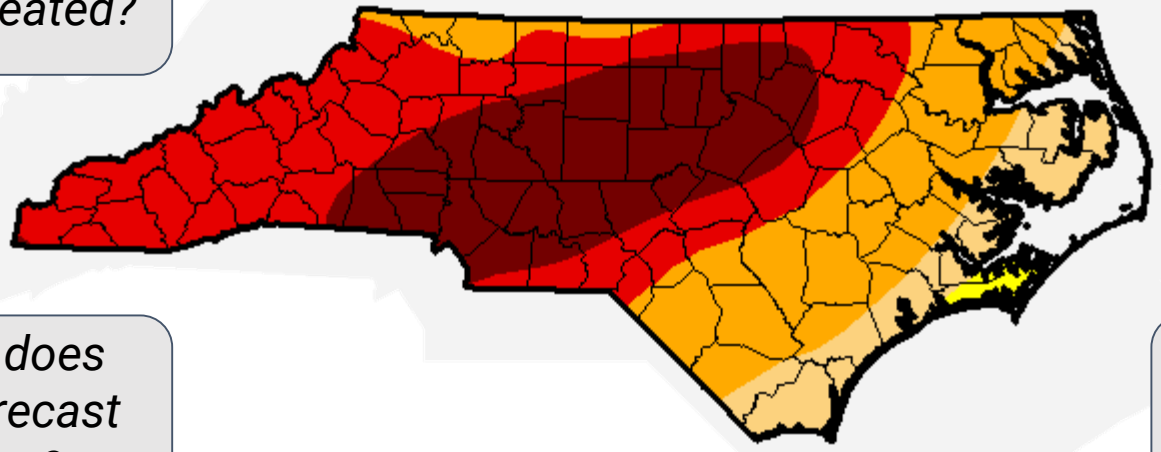
NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM
NIDIS

Project Background

How was this map created?

Who is discussing drought in NC, and how often?

*How is this affecting **my** sector?*



What does the forecast show?

*Why doesn't this map reflect conditions I'm seeing in **my** area?*

How can I find out about local conditions?

Project Background

Goal: Provide ***relevant***, ***accessible***, and ***actionable*** drought-related information to decision makers in the ***agriculture***, ***forestry***, and ***water resources*** sectors

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

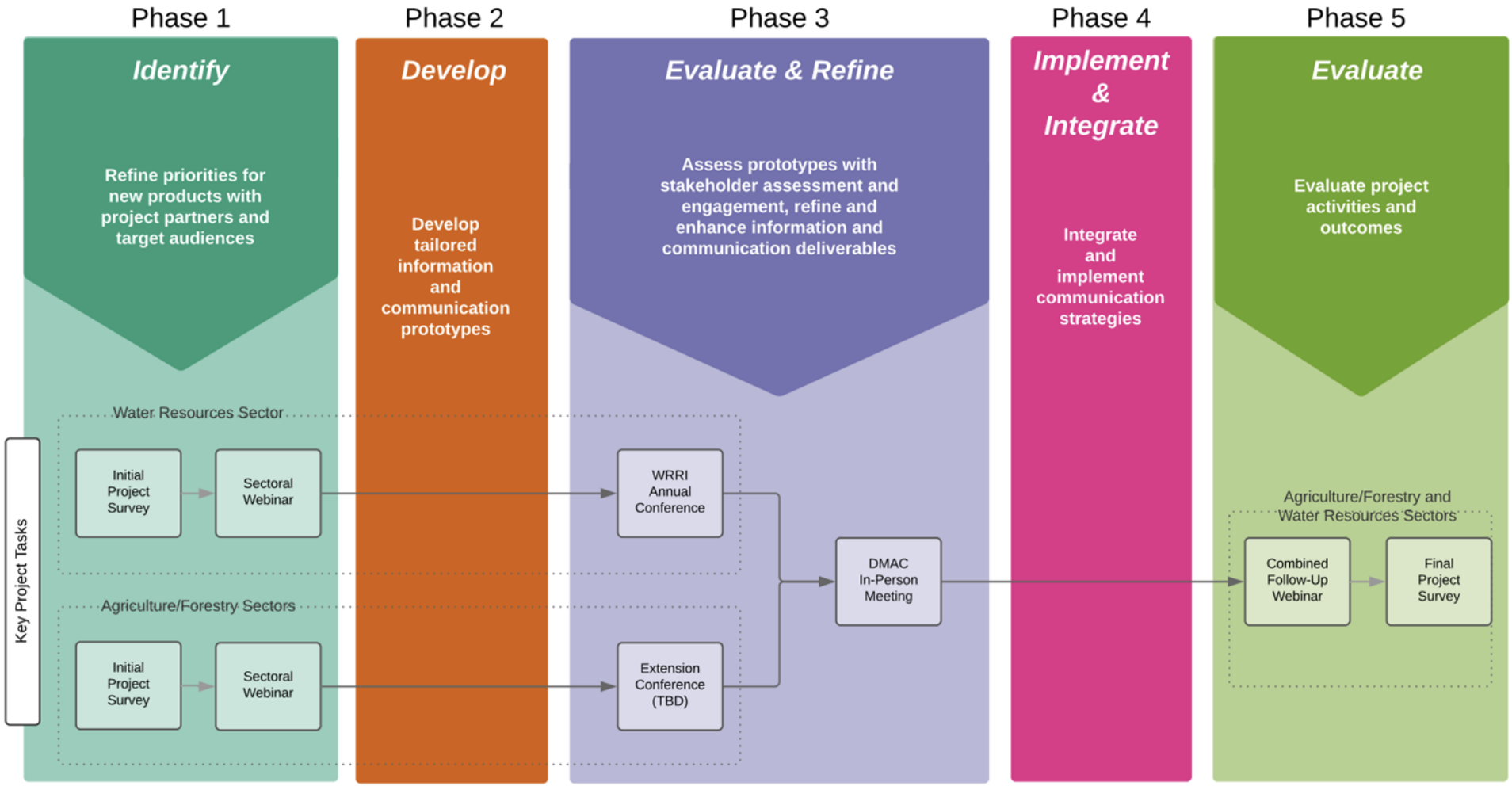
Code Name: *Project Nighthawk*

Project Team: Rebecca Ward (SCO), Kirsten Lackstrom (CISA)

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

Project Nighthawk Phases

Fall 2018 — *Summer 2020*

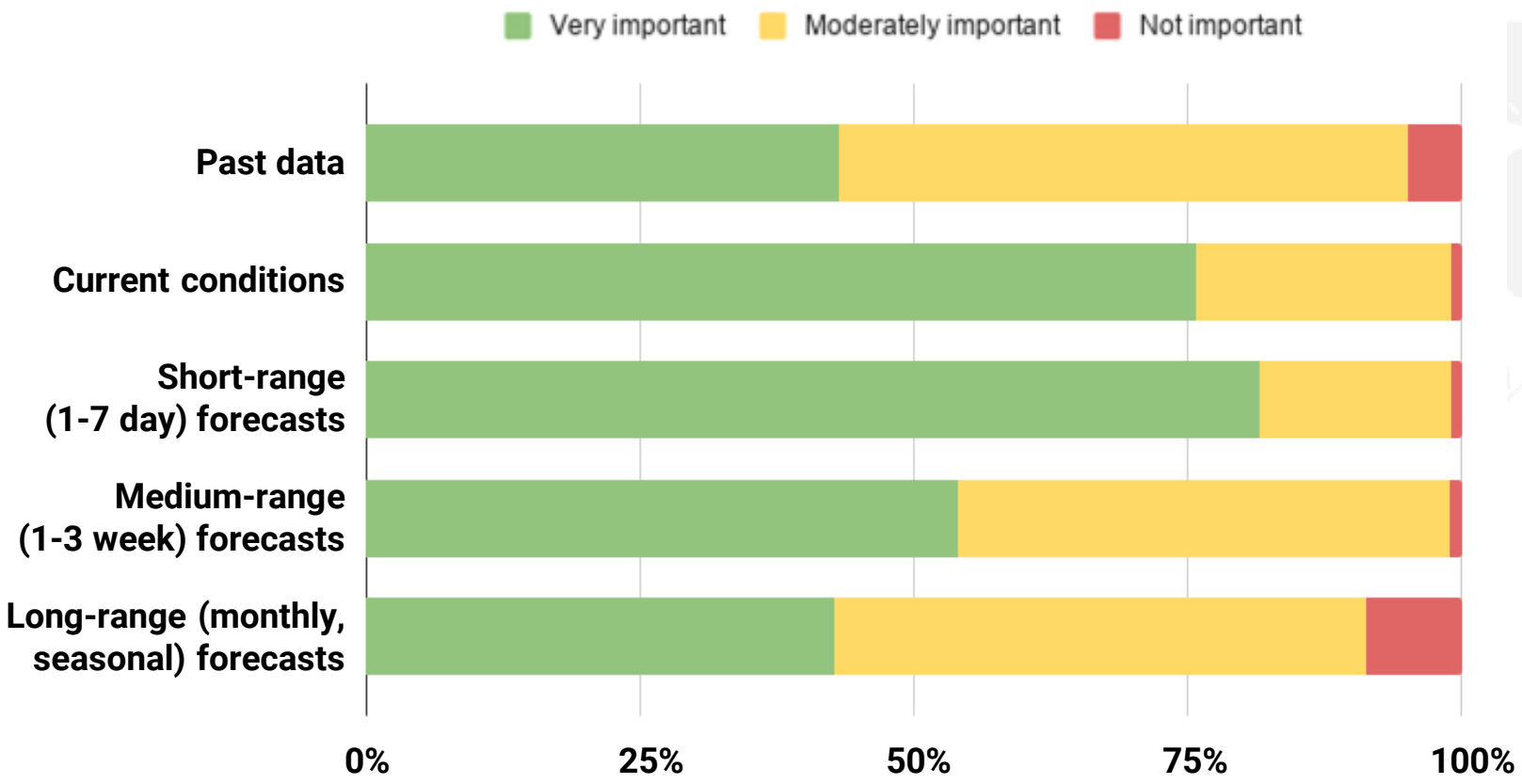


Pre-Project Surveys

- Last September, we sent **501 survey invitations** to representatives from our target sectors
  - NC Cooperative Extension agents & specialists
  - NC Forest Service regional & district foresters
  - Managers of large public water systems
- **140 surveys** were fully or partially completed (28%)

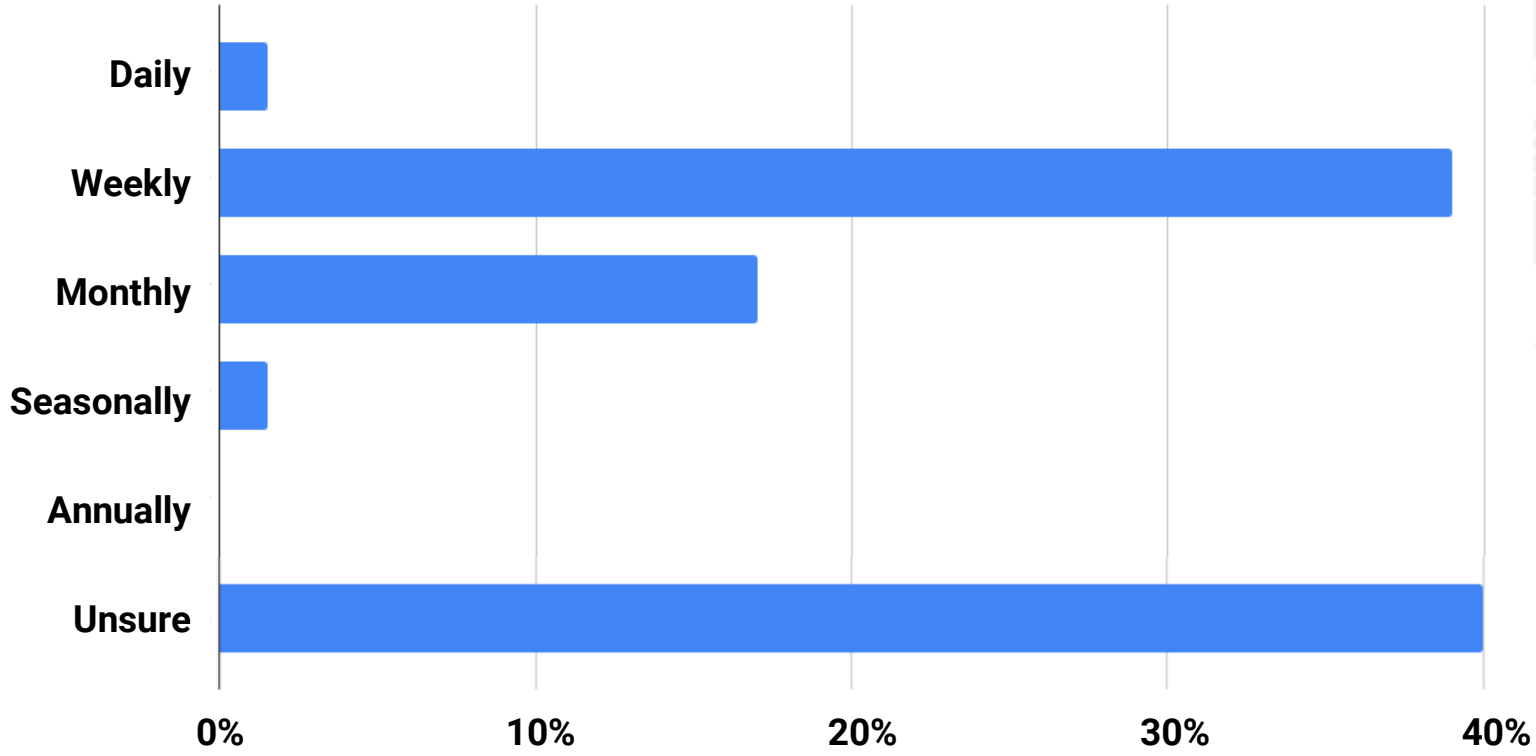
Information Timescales

For your sector, how important are the following types of weather, climate, and drought info.?



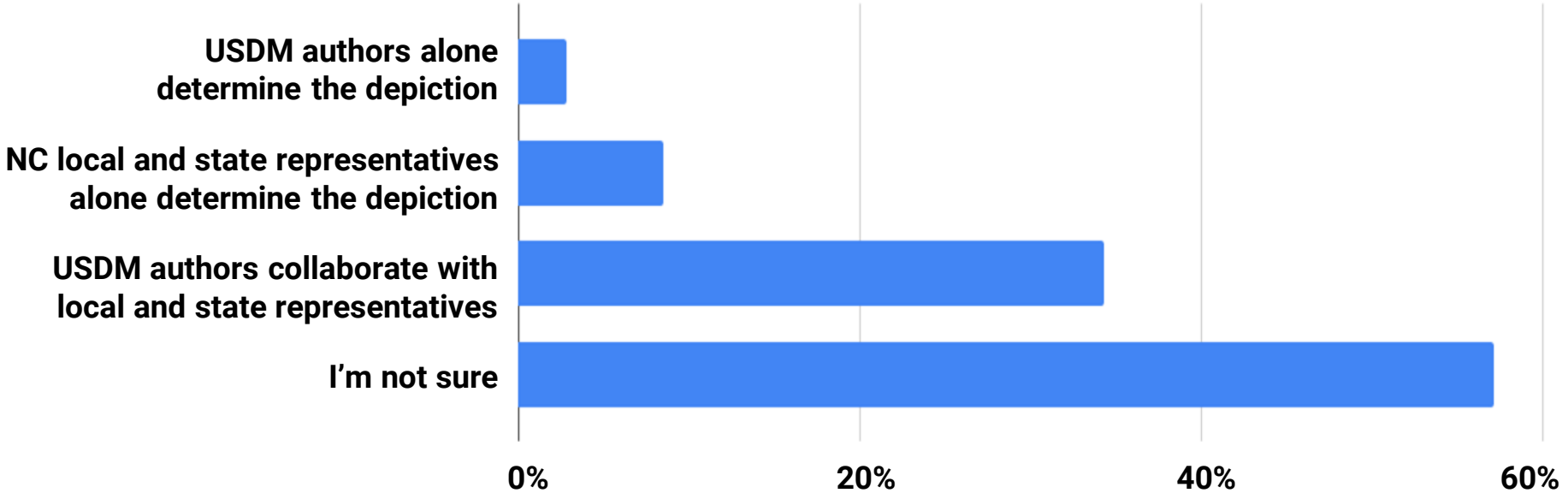
Drought Monitoring

To your knowledge, how often is the US Drought Monitor updated?



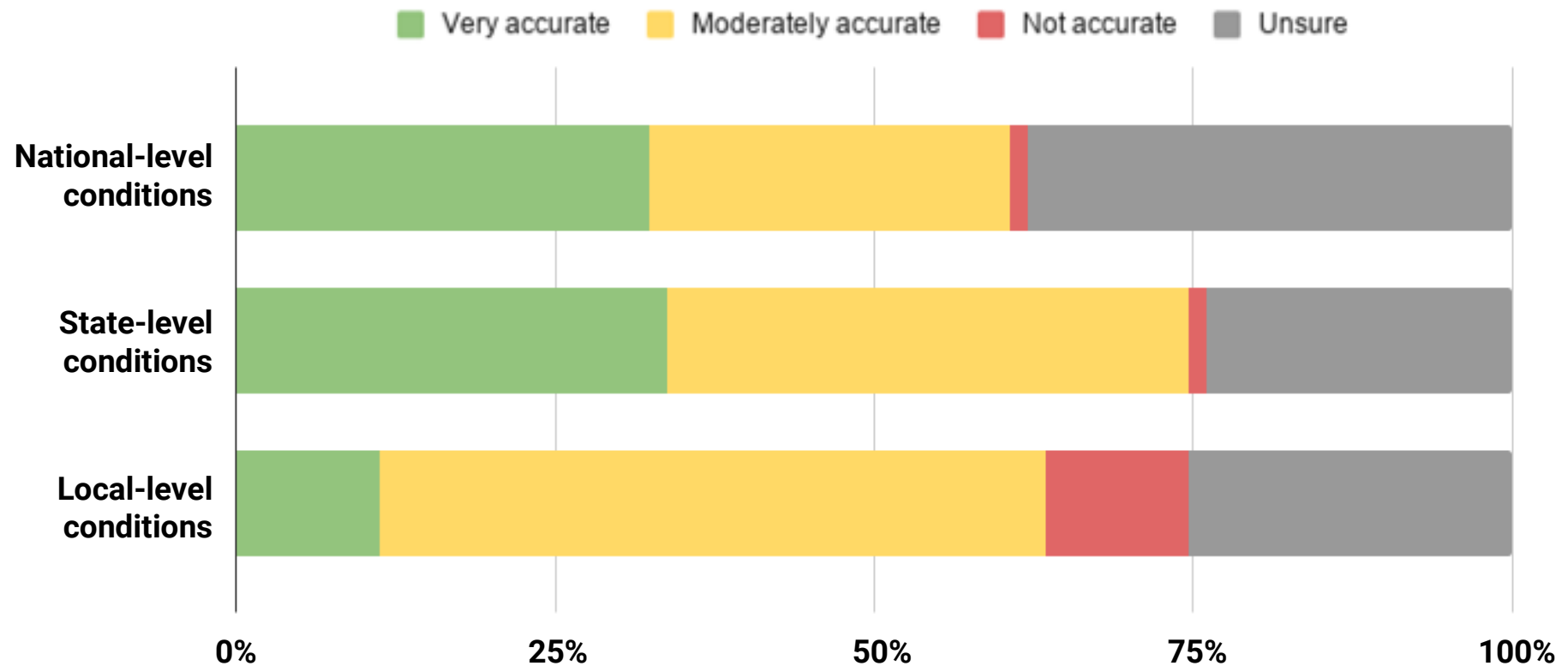
Drought Monitoring

To your knowledge, how is the US Drought Monitor's depiction of conditions in North Carolina determined?



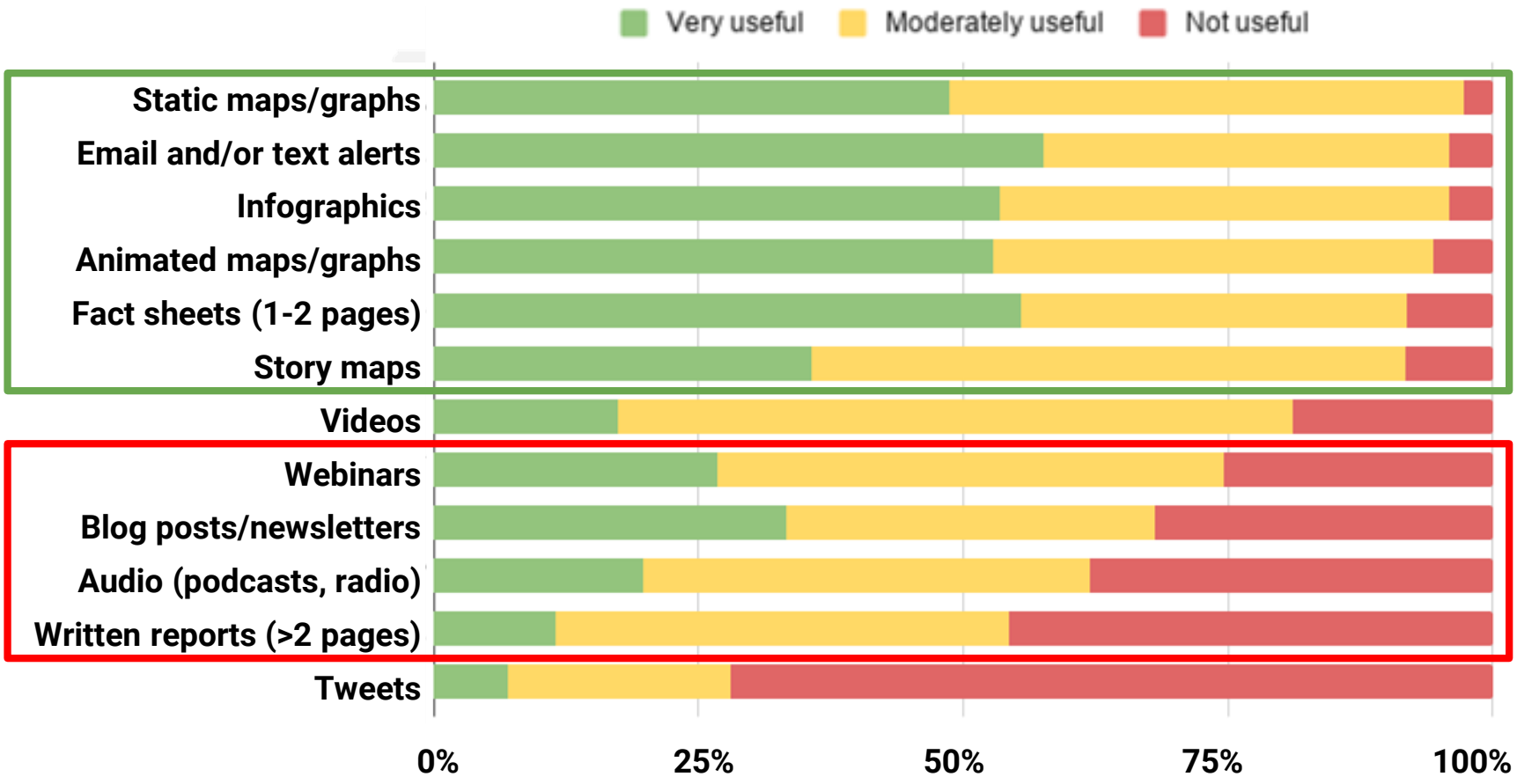
US Drought Monitor

How would you rate the accuracy of the US Drought Monitor in capturing:



Communications Channels

Please rate how useful each drought information format is for you.



Weekly Drought Updates

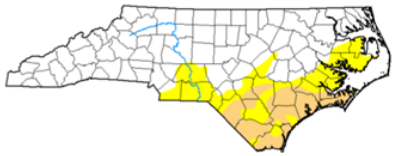
North Carolina Drought Update

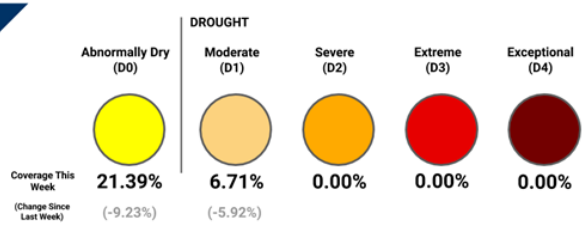
For the week ending August 20, 2019

This Week's Drought Monitor of North Carolina Map

From the US Drought Monitor, authored by Jessica Blunden (*Ntl. Centers for Environmental Information*) with input from the North Carolina Drought Management Advisory Council (ncdrought.org)

Last Week's Drought Map





Statewide Condition Summary

Rain last weekend helped improve drought conditions in many areas, although Moderate Drought remains in the southern Coastal Plain. Elsewhere, a few hot, dry weeks has parts of the western Piedmont on the verge of Abnormal Dryness.

Good News: Heavy rainfall along the coast led to improvements in short-term streamflow conditions. Three-month precipitation deficits in places such as Wilmington were effectively cut in half.

Bad News: While conditions improved with last week's rainfall, longer-term dryness continues to impact crops planted earlier this summer.

Relief on the Way: Forecasts show more rain possible across the state this weekend as a cold front sags southwards. Tropical development is also becoming more likely as we near the typical peak of hurricane season.

A Product of Project Nighthawk
https://climate.ncsu.edu/nighthawk

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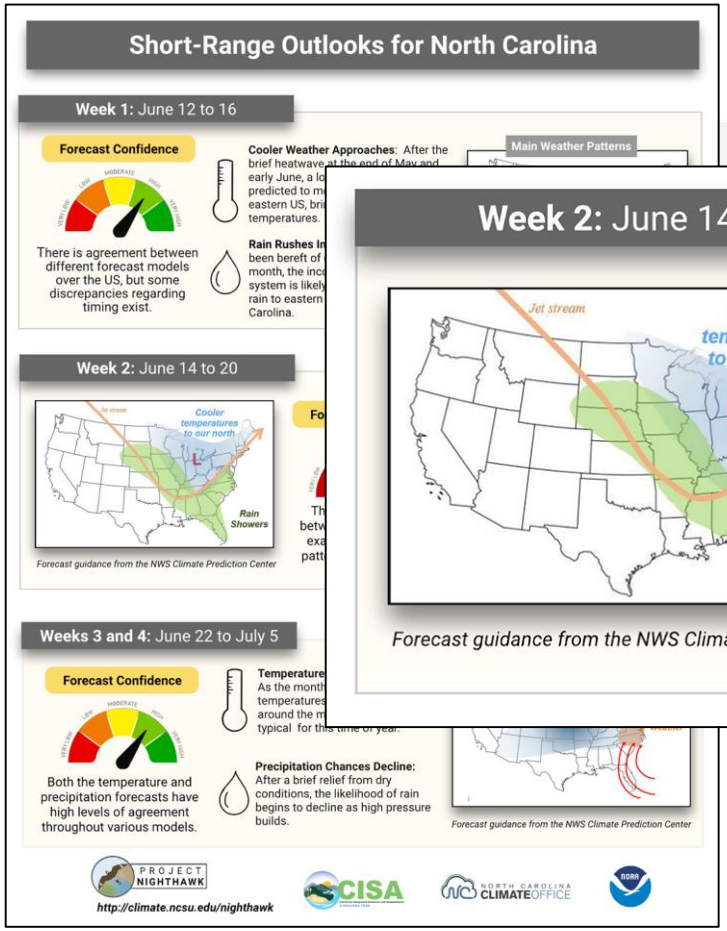
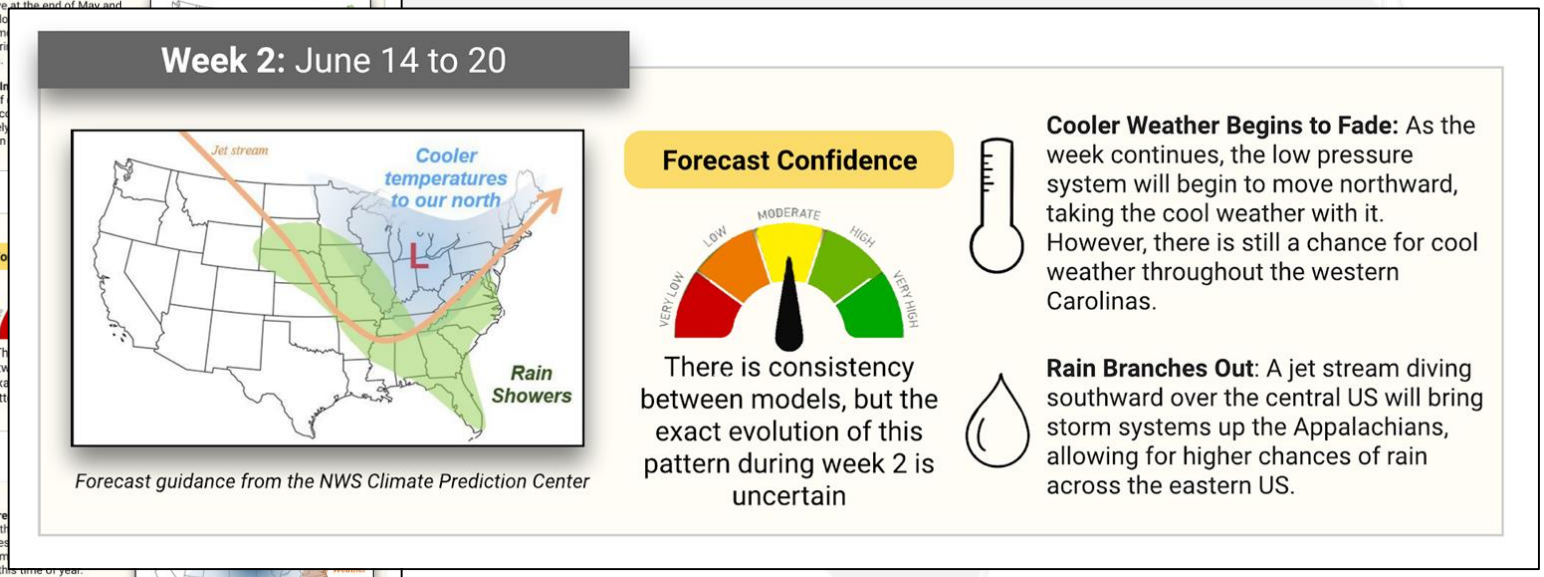
Short-Range Outlooks





NC DMAC Background

A Story Map

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DMAC Weekly Process

Water

The DMAC assesses hydrologic conditions using streamflow, groundwater, and surface reservoir levels from across the state. These data are explored in conjunction with historical information for the given month or day, as well as any water management actions that may influence them.

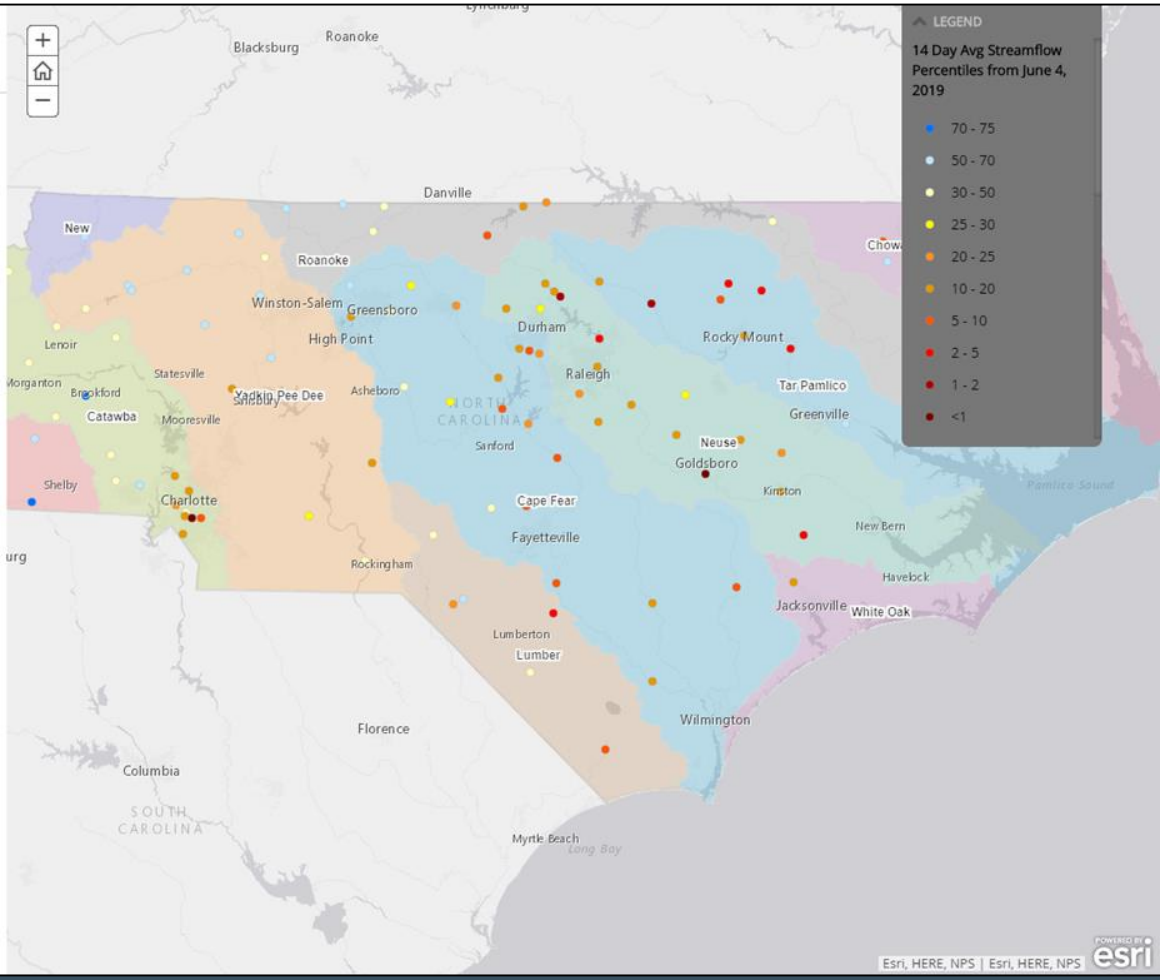
The NC DMAC examines streamflows over multiple periods to identify short- to long-term patterns in hydrologic conditions. For example, a 7-day averaging period would indicate how streamflow levels are responding to more-recent weather events, while 28-day average streamflows are used to gauge longer-term trends in hydrologic status.

The **United States Geological Survey (USGS)** provides information about streamflow and groundwater levels and percentiles. Percentiles place current values within a historical context, facilitating drought assessment. The map to the right shows 14-day averaged streamflow percentiles for USGS gauges. In general, values around 25-75 are considered "near normal," values below 25 are considered "below normal," and anything below 10 would be considered "much below normal." Notice how much of eastern North Carolina has streamflows that are less than the 25th percentile, with a few places below the 10th percentile, indicating below and much below normal conditions at this timescale.

The **NC Department of Environmental Quality (DEQ), Division of Water Resources (DWR),** alongside USGS, monitors groundwater levels across the state and shares this information with the DMAC. These data are combined with other hydrologic information, such as streamflow levels, to calculate estimates for baseflow.

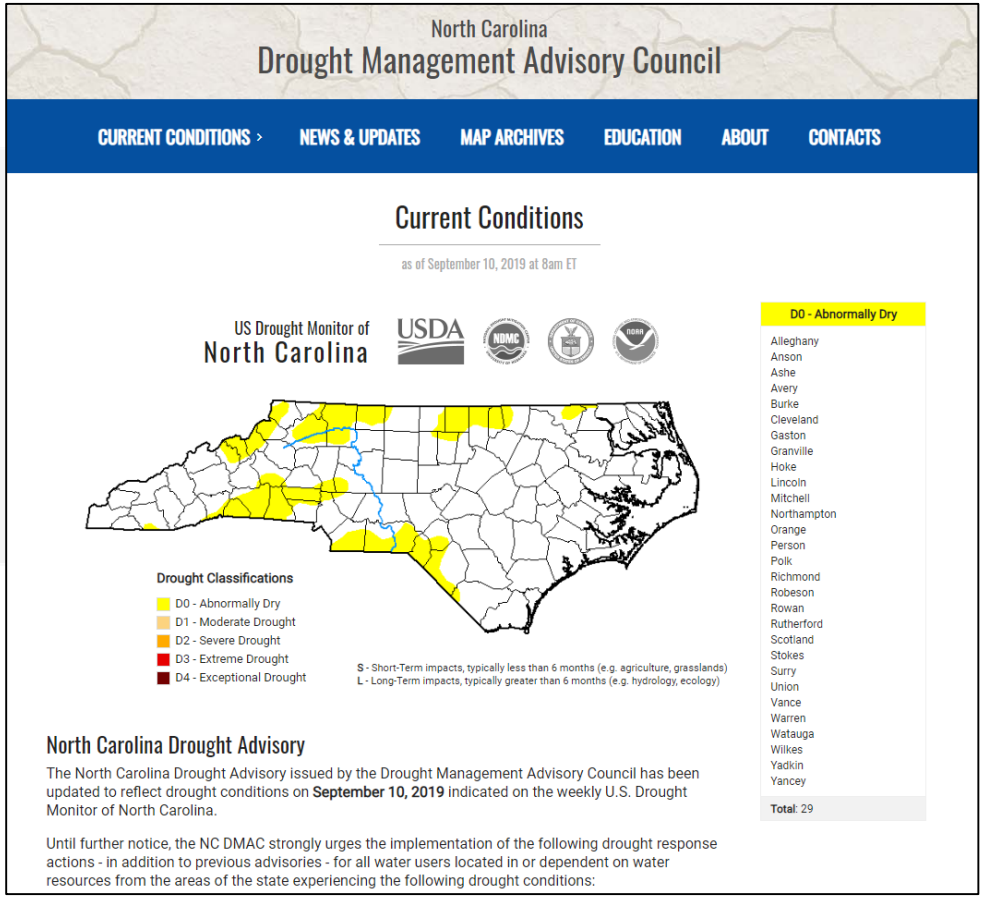
Much of western and central North Carolina rely on surface reservoirs (man-made lakes) for water supply. Several groups provide reservoir operations information to the NC DMAC.

Chief among these is the **US Army Corps of Engineers (USACE),** a federal agency under the Department of Defense. Within North Carolina, the USACE manages five dams and four river basins.



Next Steps

- Continue updating the new NC DMAC website
- Create weekly drought updates and outlooks
- Conduct usability testing of prototypes
- Final webinar and survey



www.ncdrought.org

Takeaways for State Drought Committees

- Do people understand how the drought monitoring process works in ***your*** state?
  - Only ~33% do in North Carolina
- Do you have a state drought website? Is it easy to use?
  - Consider story maps for sharing background information

Takeaways for USDM Authors

- People ***DO*** look at the US Drought Monitor!
  - It informs decisions about planting, harvesting, forest management, water conservation, etc.
- But the raw maps don't have context about the potential impacts or response
- Only ~10% of respondents consider local conditions very accurately represented

Takeaways for Info. Intermediaries

- People prefer partially translated or synthesized information
  - Not time-consuming or text-heavy formats
- Which communication and delivery formats work best for your audience(s)?
  - Use a combination, such as web-based and email
- Where does social media fit in?

Thank you!

https://climate.ncsu.edu/nighthawk