CAROLINAS CLIMATE CONNECTION

QUARTER 3 | SEPTEMBER, 2020

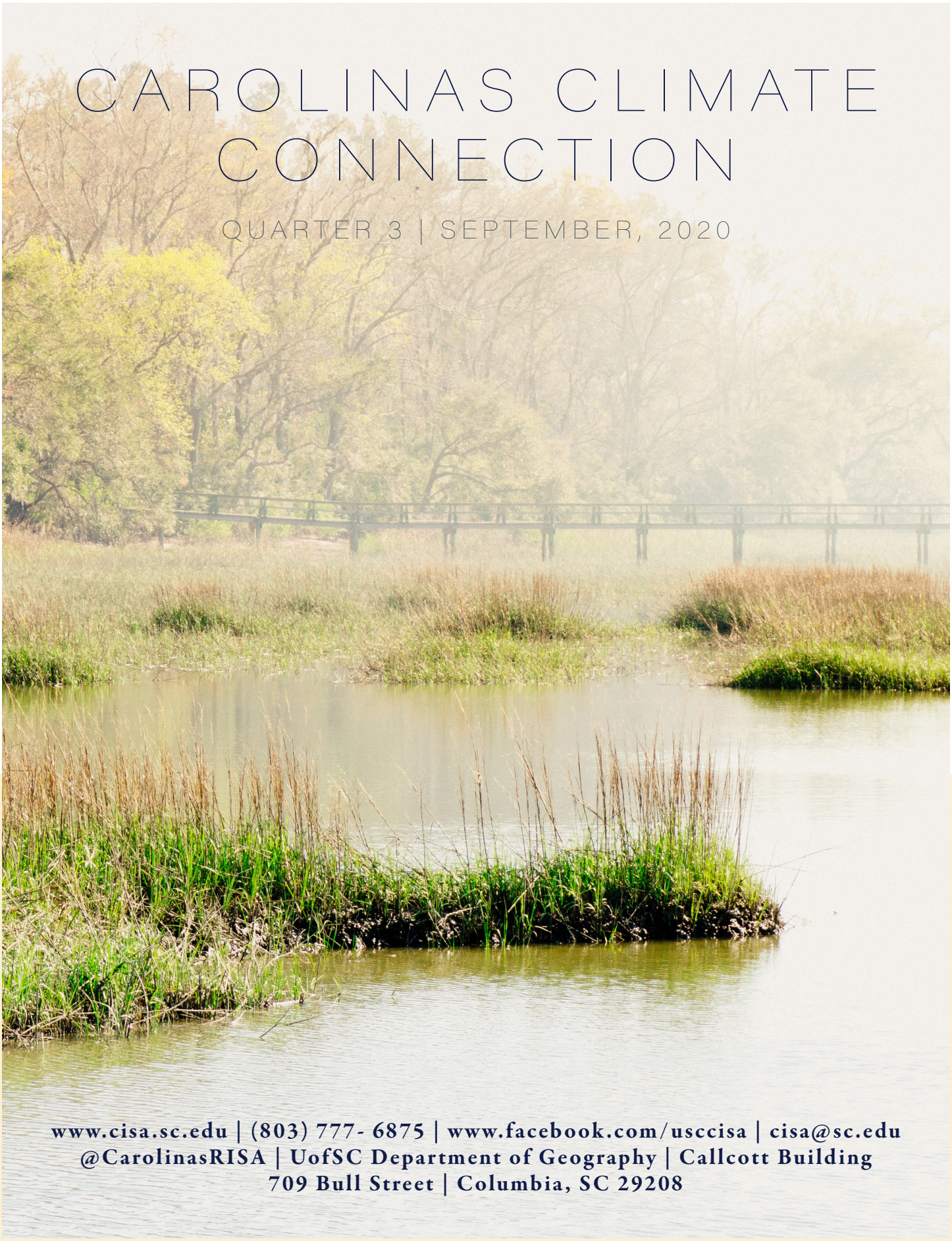

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Photo by Eric Muhr on Unsplash

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CISA FEATURED RESEARCHER

MEET MATTIE HIBBS

Mattie recently graduated from the University of South Carolina as a double major in statistics and geography. She has been working with CISA PI, Dr. Carbone, since Fall of 2018, primarily looking at drought transition probabilities and related statistical methods for drought forecasting in the Carolinas. Her recent work with CISA focuses on detecting the sensitivity of IDF curves to different time scales in the historical record. For example, she is looking at the most fifteen years record, during which rainfall intensities have increased, to assess differences in the IDF curves in comparison to those using the thirty year record.

She is currently working part time for CISA and part time for the University of California, Irvine in the Biosphere-Atmosphere Interactions lab.

Mattie is in the process of applying to atmospheric sciences master's programs for next year. Mattie loves to read, hike, and travel. The places she misses most in Columbia are Curiosity Coffee Bar, A Peace of Soul Vegan Kitchen, and the Whig.

CISA CLIMATE NEEDS ASSESSMENT

In June 2020, CISA surveyed the climate needs of 313 respondents across North Carolina and South Carolina. The respondents came from a variety of communities and organizations and provided a wealth of information on climate impacts of concern, climate adaptation information needs, and climate adaptation actions they are undertaking.

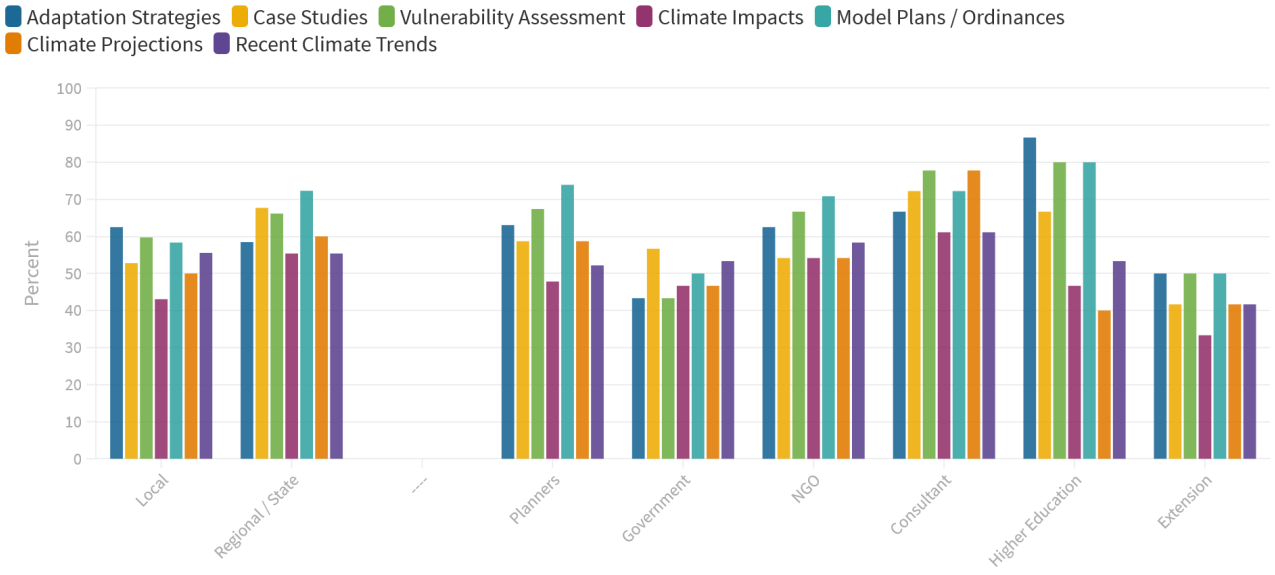
Access the Report Here

The report contains a variety of insights into the climate needs of those working on climate adaptation in the Carolinas.

Many respondents expressed high levels of concern with extreme events such as heavy precipitation, are seeking action oriented information, and are actively incorporating climate into multiple types of planning. We encourage you to review the full report and explore the information might inform your own work as we collectively build adaptive capacity and support climate resilience in the Carolinas.

Would additional information about any of the following help support your organization's climate resilience work?

Most helpful, by subgroups



Source: CISA Needs Assessment • Numbers represent those who selected "yes"

The needs assessment covered a variety of topics. In this figure, respondents indicate which information could be most helpful to their climate resilience work.

CCRC CALL FOR ABSTRACTS REOPENS

carolinas climate resilience conference

Request for Presentation and Session Submissions

We are pleased to announce that we have re-opened the request for presentation and session ideas for the Carolinas Climate Resilience Conference (CCRC).

We are monitoring the ongoing pandemic closely and adapting our plans for the 2021 CCRC accordingly. We are committed to making the conference accessible for as many as possible and plan to offer both in-person and virtual participation options for speakers and attendees.

Submit your Abstracts Today

May 10 - 12, 2021
Durham, NC

Cross Cutting Themes and New Formats

This year's conference program will include workshops and training sessions for climate resilience skill building in the Carolinas as well as a student poster competition.

Cross Cutting Themes for the CCRC:

- Actionable Climate Science
- Climate Resilience Planning & Recovery
- Collaborative Climate Adaptation
- Communication & Engagement
- Economics of Climate Adaptation
- Equitable Adaptation
- Policy, Governance & Law

REGIONAL ADAPTATION LEADERSHIP AWARD FINALISTS ANNOUNCED

RALA Finalists
Carolinas

Albert George
Director of Conservation,
South Carolina Aquarium

Sushma Masemore
Deputy Assistant Secretary and State Energy Director,
NC Department of Environmental Quality

Queen Quet
Chieftess, *Gullah/Geechee Nation*
& Founder, *Gullah/Geechee Sea Island Coalition*

Lori Ziolkowski
Associate Professor,
University of South Carolina

The American Society of Adaptation Professionals have announced the four finalists for the Carolinas Regional Adaptation Award. The four finalists pictured here represent a diverse set of leaders working towards climate adaptation in our region. There will be a virtual celebration of the finalists at 12:00 p.m. ET on Wednesday, October 28th. To learn more about the award finalists, visit the website celebrating the winners by clicking here.

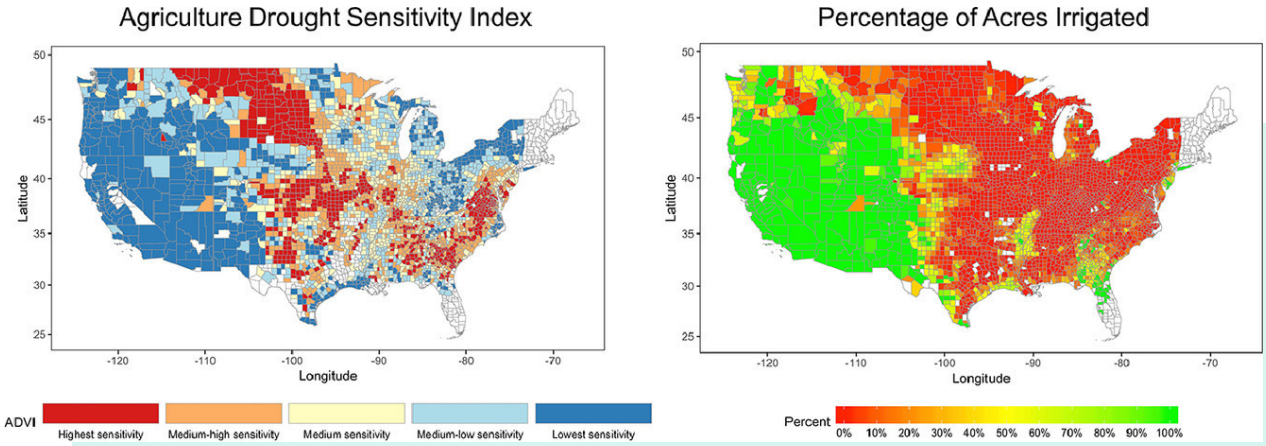
CISA RESEARCH EXAMINES DROUGHT IMPACTS ON AGRICULTURE

CISA research on the nexus of drought and climate imacts has been published in the Journal *Agricultural and Forest Meteorology*. You can access the full article on the journal's webpage or by sending a request for a copy to CISA researchers.

ACCESS THE FULL ARTICLE HERE

Research Summary

Drought impacts on agriculture depend on its intensity, duration, and timing relative to crop growth stages. Often investigation of these impacts occurs at the field level with controlled experiments across a range of growing seasons characterized by interannual variability over several years. Alternatively, crop simulation models can be used to determine plant response to drought stress with a longer climatological record. Quantifying crop sensitivity to drought across large regions and for multiple crops requires a different approach, one that draws from long observed records of climate variability and crop yield.



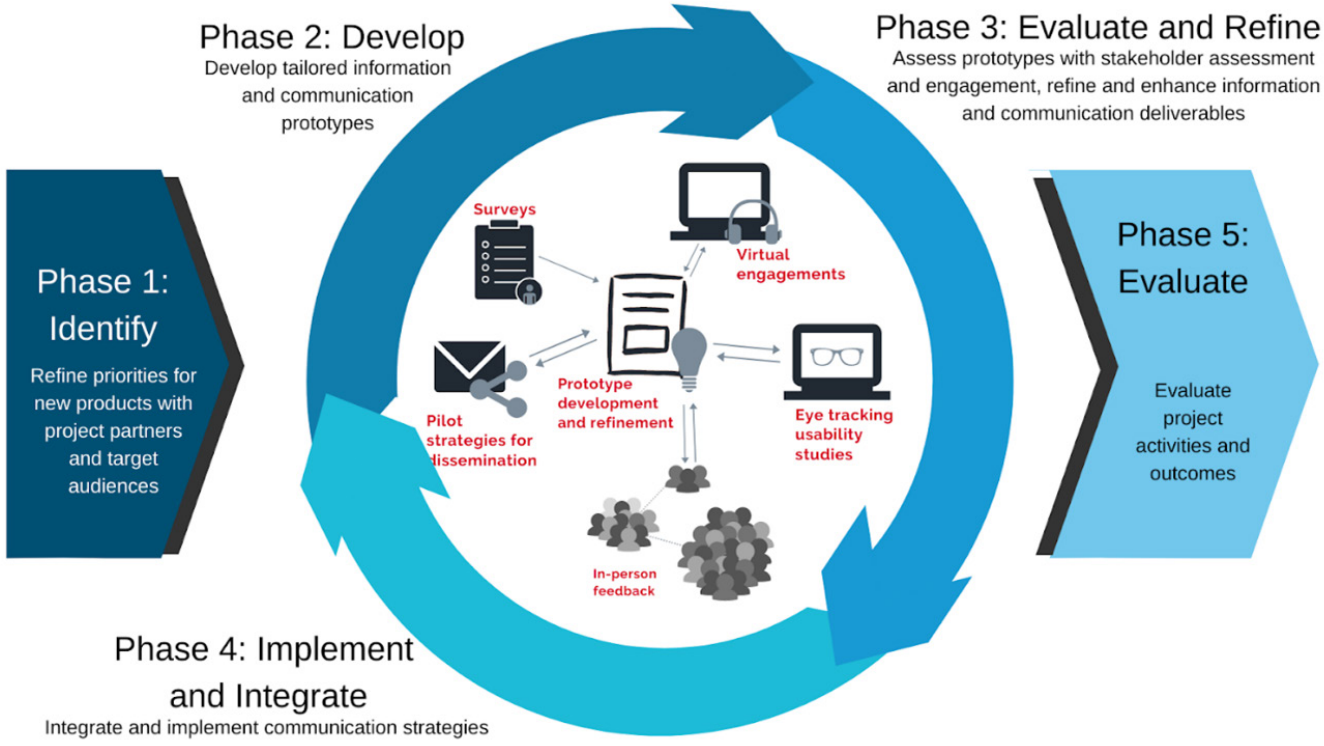
A graphical summary of the paper shows the spatial links between drought sensitivity and crop irrigation.

A recent investigation by CISA researchers uses state- and county-level crop data for ten major US crops from 1950 to 2016. They developed an agricultural drought sensitivity index that quantitatively measures sensitivity to drought stress. An important step in this work is quantitative consideration for technological changes during the nearly seventy-year record. The authors find strong relationship between crop yield anomalies and the Standardized Precipitation Evapotranspiration Index for most crops and that soybeans and grain corn are most sensitive to drought. Drought stress during July is crucial for most crops, based on sensitivity during important growth stages. The paper's data analysis shows that the response of crop growth to drought is complex. Non-irrigated crops are more sensitive to droughts than irrigated crops, particularly in severe drought conditions, and in semi-arid regions. This provides a quantitative measure of the importance of irrigation as an adaptation and coping strategy to mitigate drought impacts on agriculture in the US.

INNOVATING APPROACHES TO DROUGHT COMMUNICATIONS WITH NORTH CAROLINA DECISION MAKERS: PROJECT NIGHTHAWK COMPLETES FINAL PHASE

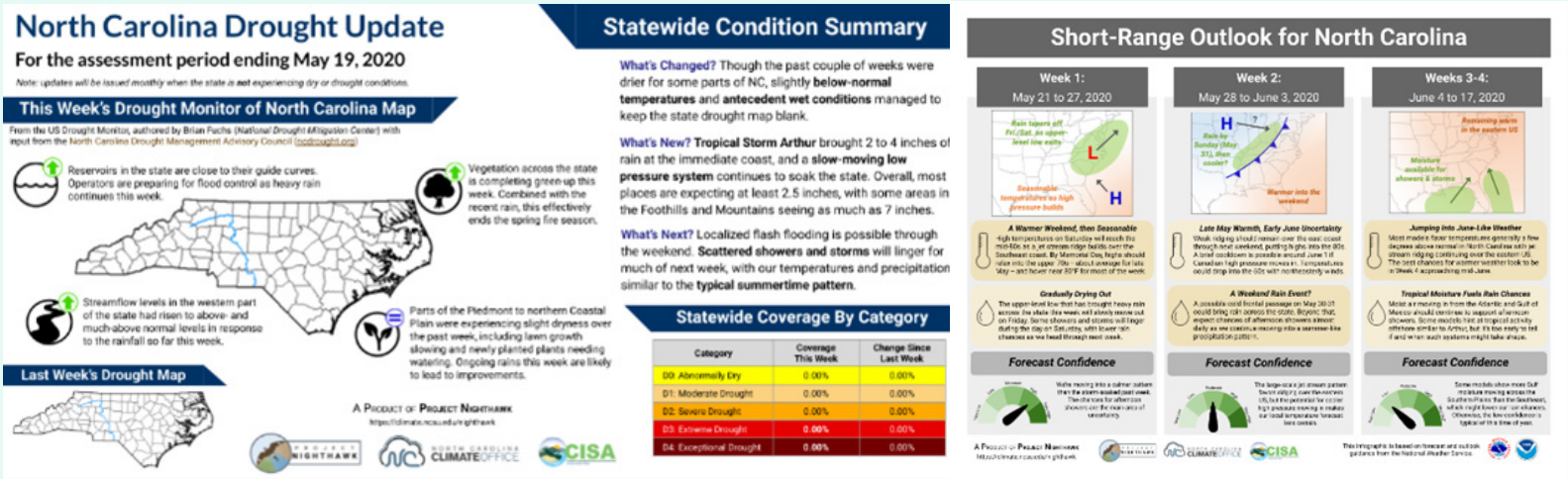
The State Climate Office of North Carolina (SCONC) and CISA recently completed the final evaluation phase of Project Nighthawk, named after a native bird species that showcases drought resilience. The goal of the project was to innovate approaches to drought communications in North Carolina for the agriculture, forestry, and water resources sectors. Data visualizations and other information products have been adopted for use by the North Carolina Drought Management Advisory Council (DMAC), extension agents, and other groups for drought monitoring and related planning.

The team continually iterated and refined these communications products using feedback from decision makers. Project Nighthawk reached across sectors and organizational types for feedback using surveys, usability studies, eye-tracking studies, participant discussions, and emails. In an eye tracking usability study, 95% of participants found that the infographics were either "very" or "somewhat" effective. New products were disseminated to 74 individuals on a weekly basis, from May 2019 to August 2020.



A diagram showing the iterative process of developing drought communications from Project Nighthawk.

Over the course of the project, a variety of resources were developed including infographics, story maps, factsheets, and educational resources. Two of the most popular products developed are the Weekly Drought Update and Short Range Outlook infographics. Project participants expressed interest in these two products, which use a mix of graphic displays of data, icons and text to communicate the current week's drought assessment or forecasted confidence in future drought conditions (respectively).



Left: A sample of the weekly drought update infographic. A combination of text, icons and graphics display key developments in the past week. Right: A sample of the short range outlook infographic. A grid of panels forecasts future drought conditions and confidence in those predictions.

In the final project evaluation, the team found that tailored resources like the ones above add value by addressing user needs for drought information. Communication strategies and designs can resonate with decision makers from different sectors if they respond to their concerns and common questions about drought in a targeted fashion.

Key takeaways from the Project Nighthawk evaluation include knowledge both about communication products and the people they serve. Infographics should be evaluated and re-created to respond to user feedback and incorporate a blend of technical information and translated science. Users are a critical piece of the puzzle, and structured and repeated engagement requires effort, resources, and understanding your users' communications channels and preferences. The payoff for this investment is a product that blends design and user requirements to make the drought monitoring process more transparent. Participant feedback indicated the graphics and explanations are interpretable and relevant, but there remains continued room for improvement or modification of graphics with interactivity or social media in mind.

The SCONC will continue to produce the Weekly Drought Updates as part of their role in the NC DMAC and State's drought monitoring process and seek additional funding opportunities to continue the Short Range Outlooks. Partners such as the NC Forestry Commission, Internet of Water, and NIDIS Southeast Drought Early Warning System are interested in Project Nighthawk and may serve as outlets to leverage the detailed knowledge gained by the team about infographic design and communicating drought to decision makers. The project website contains an archive of infographic examples; a full report detailing the project outcomes will be posted there when completed.

This project is in collaboration with the State Climate Office of North Carolina (SCONC) and was funded through a grant from the NOAA Sectoral Applications Research Program (SARP) and the National Integrated Drought Information System (NIDIS).