



NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM
COASTAL CAROLINAS
 DROUGHT EARLY WARNING SYSTEM

Developing a Drought Early Warning System (DEWS) for the Coastal Carolinas

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THE COASTAL CAROLINAS DEWS APPROACH

Launched in 2012, the Coastal Carolinas DEWS is a collaborative federal, state, and local interagency effort to improve early warning capacity and resilience to drought with an emphasis on the unique coastal ecosystems of North and South Carolina. Drought in coastal areas can contribute to changing water quality conditions, particularly increased salinity levels and fluctuations, and changes in the availability and timing of freshwater to support animals, plants, and habitats.

Coastal Carolinas DEWS activities focus on improving the understanding of drought's effects on coastal environmental resources and developing information to enhance drought monitoring and planning processes. DEWS priorities (Table 1) were developed with stakeholder guidance. See page 2 for a listing of specific projects.

2016 STRATEGIC PLAN

In summer 2016, Coastal Carolinas DEWS stakeholders initiated the process to develop a strategic plan that will serve as a "road map" for activities through 2018 with a one-day meeting in Wilmington, NC in June. Participants were asked to refine priorities and major tasks for the DEWS, develop ideas and input that will be incorporated into a Coastal Carolinas Strategic Plan, and discuss how best to foster communications, collaborations, and coordination around coastal drought issues and activities. This process will continue through fall 2016, with a target plan completion date of December 2016.



Photo Credit: CoCoRaHS Observer Christopher Lump

What is NIDIS?

The National Oceanic and Atmospheric Administration's (NOAA) National Integrated Drought Information System (NIDIS) program was authorized by Congress through Public Laws 109-430 and 113-86. NIDIS has an interagency mandate to coordinate and integrate drought research, building upon existing federal, tribal, state, and local partnerships in support of creating a national drought early warning information system.

What is a Drought Early Warning System (DEWS)?

A DEWS utilizes new and existing partner networks to optimize the expertise of a wide range of federal, state, local and academic partners in order to make climate and drought science readily available, easily understandable and usable for decision makers; and to improve the capacity of stakeholders to better monitor, forecast, plan for and cope with the impacts of drought.

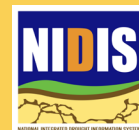
Priority	Key Need
Evaluate and develop drought indicators appropriate for coastal ecosystems	Many of the commonly used drought indices were developed with agriculture, reservoir management, and water supply in mind, rather than the unique characteristics of coastal ecosystems.
Facilitate the use of drought forecasts and other products for decision making	Numerous drought, hydrometeorological, and climate products exist, but potential users may not be aware of all available products, have the products they need to make decisions (i.e. the spatial or temporal scale may not be adequate), or know the best way to tailor the products to their location or situation.
Improve drought impacts monitoring and reporting	Drought monitoring and planning would benefit from increased awareness of drought, improved documentation of drought impacts, and better understanding of the linkages between drought indicators and impacts.

FOR MORE INFORMATION: <https://www.drought.gov/drought/dews/coastal-carolinas>

Contact Kirsten Lackstrom, lackstro@mailbox.sc.edu, for more information about the Coastal Carolinas DEWS projects and the strategic planning process.

ACKNOWLEDGEMENTS

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COASTAL CAROLINAS DEWS PROJECTS & ACTIVITIES

Coastal Salinity Index: The location of the freshwater-saltwater interface in surface-water bodies along the coast is an important factor in ecological and socio-economic dynamics. Utilizing real-time salinity data from USGS gages in coastal riverine systems, the Coastal Salinity Index (CSI) can be used to characterize and monitor drought conditions in coastal areas.

Ecological drought indicators: It is important that a CSI be correlated to coastal drought response variables for monitoring and planning purposes. This project is taking the Coastal Salinity Index one step further by investigating how ecological indicators vary according to salinity levels expressed by the CSI.



Photo Credit: Ben Haywood



Photo Credit: Michael Childress

Forecasting the SC Blue Crab Fishery: This project developed a model to improve understanding of the complex relationship between crab abundance and drought. The model can be used as a decision support tool to examine how the rate of declining flow and the degree of interannual variability in freshwater discharge and salinity might interact to influence crab abundance, commercial landings, and disease prevalence.

Drought indicators for coastal zone fire risk: Objective drought indicators were examined to assess how they represent local fire risk in coastal areas, where soils are high in organic content and become increasingly hydrophobic as they dry out. Additional work is necessary to identify which combination of parameters (e.g., surface fuel moisture, soil conditions, and groundwater levels), in conjunction with other monitoring tools and networks, will provide more meaningful information for managing coastal zone fire risk.

Citizen Science Condition Monitoring: Citizen science volunteers report daily precipitation measurements and weekly reports about local conditions to connect weather and climate with on-the-ground drought impacts. Information is submitted through the Community Collaborative Rain, Hail and Snow (CoCoRaHS) network. These reports generate valuable baseline and drought impacts information that can be used in drought monitoring. Between September 2013 and December 2015, over 1500 condition monitoring reports were submitted through CoCoRaHS as part of this project.

An Atlas of Hydroclimate Extremes for the Carolinas: The web-based atlas will be available in 2017, providing useful visual and quantitative information on patterns of drought and extreme precipitation events and the impacts associated with these events. The atlas will be tailored to meet decision maker questions and information needs related to resource management and planning.



Photo Credit: Kathy Stone