NIDIS CAROLINAS DROUGHT INDICATORS AND INDICES

NOTE: *This project description is expected to evolve as we gather more expert and stakeholder input.*

Committee:

- Ryan Boyles, State Climate Office of North Carolina, North Carolina State University
- David Chalcraft, Dept. of Biology, East Carolina University
- Ed Christopher, Pocosin Lakes National Wildlife Refuge
- Paul Conrads, USGS SC Water Science Center
- Jennifer Dorton, Coastal Ocean Research and Monitoring Program, UNCW Center for Marine Science
- Richard Heim, NOAA/National Climatic Data Center
- Callion Maddox, Division of Emergency Management, NC Dept. of Public Safety
- Hope Mizzell, South Carolina State Climatology Office
- Dan Tufford, Carolinas Integrated Sciences and Assessments, Dept. of Biological Sciences, Univ. of South Carolina

Goals: (1) Determine which current drought indicators and indices are appropriate for assessing drought in coastal ecosystems; (2) Investigate the benefits and feasibility of creating a drought index based on real-time salinity data; (3) Collaborate with Richard Heim on the North American Drought Indices and Definitions study

Background: Many of the commonly used drought indices were not developed with the unique characteristics of coastal ecosystems in mind. There are drought indices and indicators for agriculture, reservoir management, and water supply, among others, but there is no similar set for coastal ecosystems. Predicting the onset, intensification and demise of a drought could be improved with more knowledge of drought indicators and indices in coastal ecosystems.

Questions to consider:

(1) Participants noted that a first step in the development of this project would be to evaluate what drought indicators and indices are currently being used to assess drought in the Carolinas coastal ecosystems and their effectiveness. The State of Knowledge report, which included a review of current indicators and indices and the lack thereof, was indicated as a good starting point for this information. In addition, assessing the extent to which current indicators or indices might be adapted for better performance in coastal ecosystems was suggested.

(2) Determining the viability of a new drought index based on real-time salinity data in helping to provide drought early warning was suggested during group discussion of the project. The opportunity to use this type of index to further understand the impacts of drought on coastal ecosystems was noted as an important consideration, and may be a useful way to collaborate with the Drought Impacts pilot project.

(3) A drought sensitivity map (similar to oil spill vulnerability maps) that indicates species and/or ecosystem vulnerabilities to drought conditions was suggested as a way to communicate this information to stakeholders.

(4) Species which respond to drought in such a way as to provide indicators of drought severity and other drought characteristics were suggested as a research focus. Grass shrimp and dolphins were cited as specific species which might be considered.

(5) Determining leading versus lagging indicators was reiterated by participants as a key element of this project. In addition, determining whether to investigate biotic or abiotic indicators was raised as a point to consider during project development.

(6) Some suggestions to determine the scope of the project at the workshop included geography, ecosystem type and data availability. What other parameters could be used to define the scope of the project?

(7) Participants from the 'Ties to Climate Change Adaptation' developed a pilot idea for updating existing tools to include future projected climate scenarios in planning processes. There may be opportunities to integrate this project idea into the adaptation project idea as the pilot is developed.

Potential partnerships:

North Carolina Drought Management Advisory Council
South Carolina Drought Response Committee
USGS
NERRs
Public land managers
NOAA/NCDC

Synergies with other NIDIS-Carolinas projects:

This pilot may be developed to determine the appropriate drought indicators and indices to use for a seafood safety forecast.

Collaboration with the Drought Impacts group was suggested as a way to help relate indicators and indices to drought impacts.

Collaboration with the Drought Forecasting group may be useful in finding ways to communicate our findings on best practices on using drought indicators and indices.

Next steps:

Establish a steering committee
Steering committee planning calls and brainstorming
Refine the attached questions / Decide which questions to address