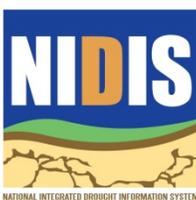


NIDIS Coastal Drought Monitoring Knowledge Assessment Workshop: USGS Real-Time Salinity Drought Index

Center for Coastal Environmental Health and Biomolecular Research
Charleston, SC

<http://www.chbr.noaa.gov/>

January 7, 2014
8:30 am to 3:00 pm



Workshop Background:

The monitoring of drought in coastal regions presents new challenges for the National Integrated Drought Information System (NIDIS). Drought indices have been developed incorporating data such as rainfall, streamflow, soil moisture, groundwater levels, and snow pack. These drought indices were developed for upland areas and may not be appropriate indices for characterizing coastal drought. Because of the uniqueness of drought impacts on coastal ecosystems, there is a need to develop a coastal drought index. With the availability of many real-time and historical salinity datasets, there is an opportunity to leverage these datasets for the development of a coastal drought index using salinity data.

The USGS is set to begin a pilot study on the development of a new drought index based on real-time salinity measurements obtained at USGS gages. The development of this index is important for many reasons. The location of the freshwater-saltwater interface in surface water bodies along the coast is an important factor in the ecological and socio-economic dynamics. Salinity is a critical coastal response variable that integrates hydrological and coastal dynamics including streamflow, precipitation, sea level, tidal cycles, winds, and tropical storms. The position of the interface determines the freshwater and saltwater aquatic communities and the quality and quantity of freshwater availability for municipal and

industrial water intakes and agricultural use. Freshwater tidal marshes support a larger biodiversity as compared to brackish and saltwater tidal marshes.

The goal of the workshop is to identify the challenges and opportunities to use salinity indices in monitoring coastal drought conditions and to provide guidance to NIDIS on how to advance the use of salinity indices in managing coastal drought. The goal for this coastal drought index pilot project is for the USGS to develop site specific salinity indices for a limited number of selected sites along the South Carolina coast. The analysis of salinity time-series data also leverages the opportunity to collaborate with researchers from the University of South Carolina-Carolinas Integrated Sciences and Assessments (USC-CISA) and East Carolina University on effects of drought in southeastern coastal ecosystems.

Additional Workshop Goals:

- To assess current coastal drought monitoring capabilities and develop recommendations for using salinity indices in coastal drought monitoring.
- Introduce to potential users a new USGS coastal drought index that is currently under development. This new index will be based on real-time salinity measurements.
- Provide examples of how this coastal drought index may be used for the NIDIS Carolinas Coastal Ecosystems Drought Early Warning Pilot.
- Understand the relevance of drought and salinity issues for other agencies by identifying related activities, needs, and opportunities for future work.

AGENDA

8:30 am **Check-in and Continental Breakfast**

9:00 am **Welcome, Logistics, and Introductions**

Geoff Scott (NOAA/CCEHBR), Kirstin Dow (CISA), and Lisa Darby (NOAA/NIDIS)

Presentations

9:20 am **Introduction to the National Integrated Drought Information System (NIDIS)**

Lisa Darby (NOAA/NIDIS)

9:40 am **Overview of the NIDIS-Carolinas Coastal Ecosystems Drought Early Warning Pilot**

Kirstin Dow (CISA)

9:50 am **Challenges in Monitoring Coastal Drought and the Potential for Salinity Indices**

Kirsten Lackstrom (CISA)

10:10 am **Coffee Break**

10:30 am **Overview of the Development of the USGS Real-time Salinity Drought Index**
Paul Conrads (USGS, South Carolina Water Science Center)

Example Applications

11:00 am **Connecting Ecological Linkages to the USGS Real-time Salinity Drought Index**
Dan Tufford (CISA)

11:20 am **Health, Water and Environmental Quality: The Importance of Real-time Salinity Data for Vibrio Modeling and Other Issues**
Geoff Scott (NOAA/CCEHBR)

11:40 am **Forecasting Blue Crab Distributions Using an Individual-based Population Model**
Michael Childress (Clemson University)

12:00 to 1:00 **Lunch – Box lunches will be provided**

Facilitated Discussion

1:00 to 2:30 pm *Robert Webb (NOAA) - facilitator*

- (1) How might the incorporation of an enhanced coastal drought index such a USGS salinity drought index fit into your agency's mission?
- (2) What similar efforts are already underway in your agency?
- (3) What is your agency's related needs regarding real-time information on drought and salinity conditions?
- (4) What management decisions could be informed by access to a real-time coastal drought index such as the USGS Salinity drought index?
- (5) What research questions could be informed by access to a real-time salinity drought index?
- (6) How could your agency contribute to and support USGS' work on the index?
- (7) What are your thoughts on the transferability of the index to other geographical regions?

Next Steps

2:30 to 3:00 pm *Lisa Darby (NOAA) and Paul Conrads (USGS)*

- (1) Who is interested in joining a working group, either as a potential user of or contributor to the development of the salinity drought index?
- (2) What preliminary steps could (or should) be taken by this working group to help move this project forward?
- (3) Can we come up with a name for this coastal drought index that results in a cool acronym?