

# National Integrated Drought Information System NIDIS

*Lisa Darby<sup>1,2</sup>, Veva Deheza<sup>1,3</sup>, Chad McNutt<sup>1,4</sup>,  
Roger Pulwarty<sup>1,4</sup>, Jim Verdin,<sup>1,5</sup> and Robin Webb<sup>1,2</sup>*

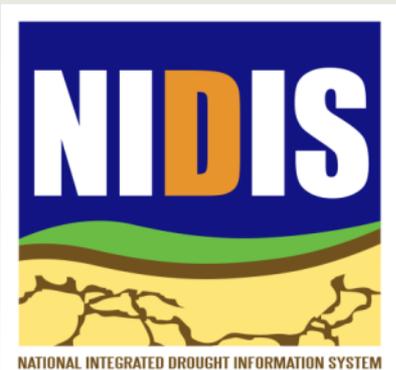
*<sup>1</sup>NOAA/NIDIS Program Office*

*<sup>2</sup>NOAA/ESRL/Physical Sciences Division*

*<sup>3</sup>Cooperative Institute for Research in Environmental Sciences*

*<sup>4</sup>NOAA/Climate Program Office*

*<sup>5</sup>USGS*



# National Integrated Drought Information System **NIDIS**

## *Outline*

- What is NIDIS?
- Recent NIDIS publications
- Carolinas Coastal Ecosystems Drought Early Warning Information System
  - Drought Indicators and Indices
  - Seafood Safety Forecast
  - Drought Forecasting
  - Drought Impact Reporting
  - Next Steps

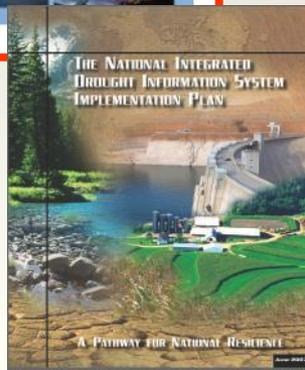
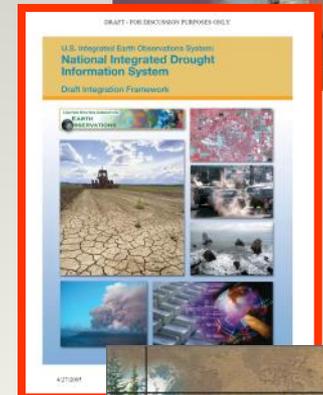
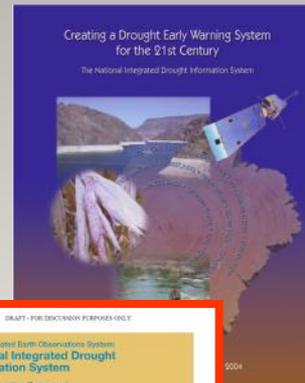
# National Integrated Drought Information System

## What is NIDIS?

- Multi-agency program with the goal of establishing a national drought early warning information system
  - Program Office located at NOAA/ESRL in Boulder
- Supports drought research
- Establishes regional drought early warning systems
- Holds drought outlook workshops (regional and national)
- Supports a drought portal – [www.drought.gov](http://www.drought.gov)
- Established by Public Law 109-430 (The NIDIS Act of 2006)

“Enable the Nation to move from a reactive to a more proactive approach to managing drought risks and impacts”

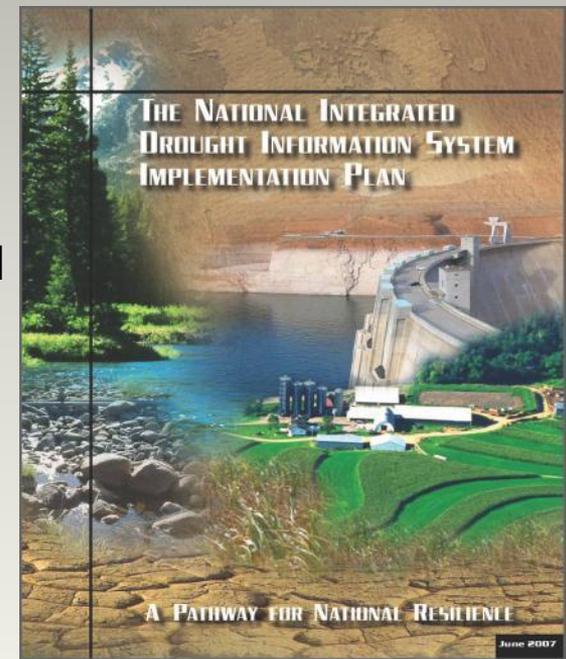
“...better informed and more timely drought-related decisions leading to reduced impacts and costs...”

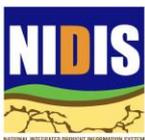


# NIDIS Objectives

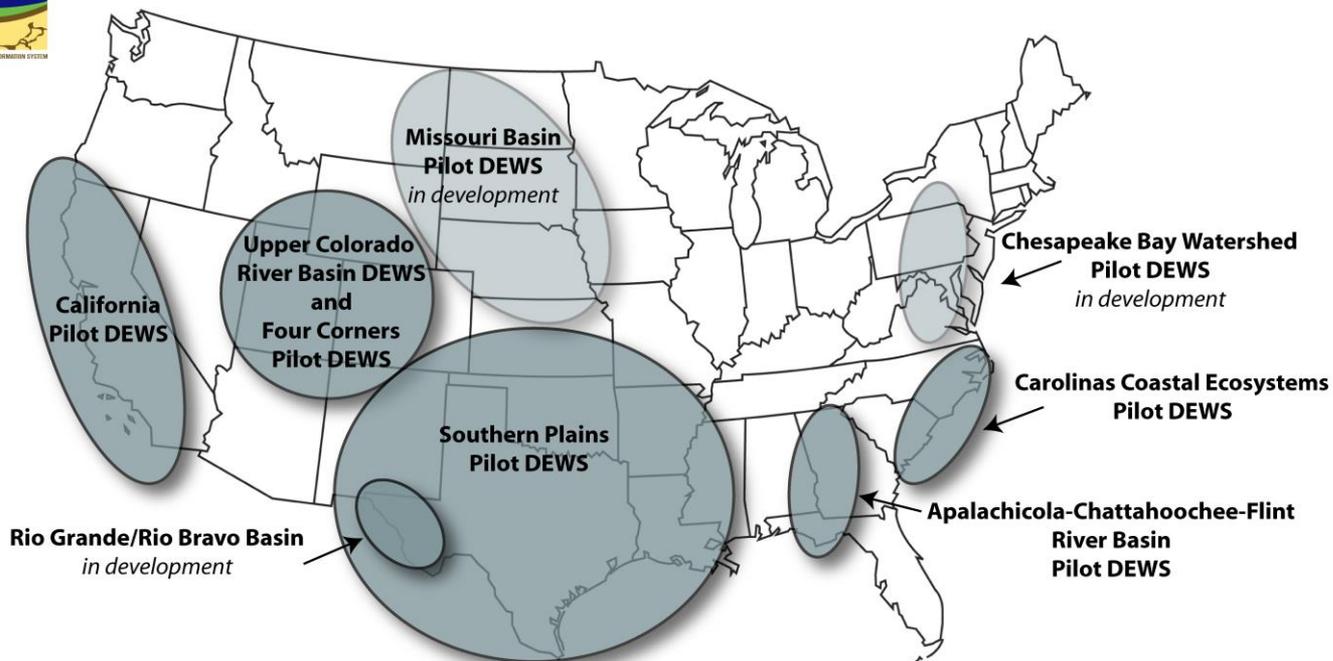
Create a drought early warning information system

- Coordinate national drought monitoring and forecasting systems
- Provide an interactive drought information clearinghouse and delivery system for products and services—including an internet portal and standardized products (databases, forecasts, Geographic Information Systems (GIS), maps, etc)
- Design mechanisms for improving and incorporating information to support coordinated preparedness and planning





## National Integrated Drought Information System (NIDIS) Regions in the US where NIDIS is currently developing drought early warning information systems



NIDIS is working toward a fully national drought information system through national, tribal and state partnerships

NIDIS-supported research and monitoring is conducted across the nation

For monitoring, forecasting, data products, research activities and information on NIDIS webinars and meetings, visit the drought portal - [www.drought.gov](http://www.drought.gov)

Following talks...

Keith Ingram – ACF

Chad McNutt – Southern Plains

# Drought Early Warning

“A drought early warning system is designed to identify climate and water supply trends and thus to detect the emergence or probability of the occurrence and likely severity of drought. This information can reduce impacts if delivered to decision makers in a timely and appropriate format and if mitigation measures and preparedness plans are in place ([WMO](#)). *With careful coordination at local, regional and national levels, stakeholders can monitor various early warning indicators and implement more efficient and effective drought-relief interventions.*”

<http://www.agriskmanagementforum.org/farmd/>

- Monitoring
  - Hydrological and Meteorological
    - Climatology or Historical Context
- Forecasts/Outlooks
  - Drought onset, intensification, or recovery
  - Knowledge of teleconnections (e.g., ENSO)
- Drought management triggers
  - Assumes a drought plan is in place
- Anticipated drought impacts
- Effective communication with stakeholders

# Recent NIDIS Publications

## An Interpretation of the Origins of the 2012 Central Great Plains Drought

### Assessment Report

NOAA Drought Task Force  
Narrative Team

Lead: M. Hoerling  
Co-Leads: S. Schubert and K. Mo

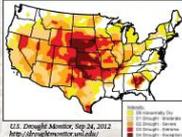
20 March 2013

### An Interpretation of the Origins of the 2012 Central Great Plains Drought

An Assessment Report of the  
NOAA Drought Task Force Narrative Team

Historical Context - How do 2012 rainfall amounts and high temperatures compare to years past?

Precipitation deficits for the period May through August 2012 were the most severe since official measurements began in 1895, edging the driest summer of 1934 and 1956 that occurred during the height of the Dust Bowl. This prolonged period of precipitation deficits, along with above normal temperatures, resulted in the largest area of contiguous United States in drought since the U.S. Drought Monitor began in January 2000. By early September, over three-quarters of the contiguous U.S. was experiencing at least abnormally dry conditions with nearly half of the region (the Central Plains in particular) experiencing unprecedented severe drought.



For a longer-term perspective, the Palmer Drought Severity Index (PDSI) for August 2012 is compared to a long-term PDSI average spanning from 1895 to 2009 (left) and identifies the core region of the drought to be the central Plains region, with the most extreme moisture deficits occurring over the western Plains (consistent with the Drought Monitor map). A central U.S. epicenter for the drought is also affirmed by the May-August standardized rainfall deficits (middle) with -2 standardized departures from the 1981 to 2010 long-term average being widespread from Colorado to Missouri. Much of the dry region also experienced hot temperatures (right). The combination of low rainfall and high temperatures is typically seen during summertime droughts over the central U.S.

#### What caused the 2012 Central Great Plains Drought?

The central Great Plains drought during May-August of 2012 resulted mostly from natural variations in weather.

- Most Gulf of Mexico air failed to stream northward in late spring as cyclones and frontal activity were shut out unusually northward.
- Summertime thunderstorms were infrequent and when they did occur produced little rainfall.
- Northern ocean states nor human-induced climate change factors that can provide long-lead predictability appeared to play significant roles in causing severe rainfall deficits over the major corn producing regions of central Great Plains.

Contact: Mark Hoerling (mark.hoerling@noaa.gov)  
Arielle Marshall (arielle.marshall@noaa.gov)



This report can be downloaded from  
<http://www.drought.gov/publications/assessment>

### National Drought Early Warning Outlook

April 12, 2013

#### Current Drought Conditions and the Seasonal Drought Outlook

#### U.S. Drought Monitor

April 9, 2013



Moderate (D2) to exceptional (D4) drought continues to linger over the central U.S. The drought has eased considerably over Georgia, South Carolina and the panhandle of Florida. Moderate drought has developed in the panhandle of Florida and abnormally dry conditions have rapidly expanded in California. Abnormally dry (D0) to exceptional drought (D4) conditions exist over 63% of the contiguous U.S.

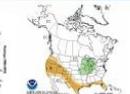


Drought will persist or intensify in much of the western U.S. (D3 or greater). Improvement is anticipated in the center of the U.S. (D0 to D2) given an outlook showing... However, this designation of improvement does not imply abatement of drought, but a possible easing of conditions.

#### Temperature and Precipitation



The heaviest March precipitation may indicate how dry it has been in the West, especially in northern California where drought is likely to develop. Florida and the northwestern U.S. have not received below normal precipitation since the start of 2011. Precipitation was wet and above normal along the Mississippi River Valley, leading to one drought condition to much of that area.



Some parts of the western U.S. and a portion of the region along the Gulf Coast are expected to receive below-normal precipitation. The ongoing drying in California is likely to continue. Above-normal precipitation is expected in the Great Lakes region and surrounding states.



Warmer than-normal temperatures are anticipated over much of the U.S. over the next four months. Warming impacts in regions with ongoing drought conditions. In the northern cooler temperatures are expected. "TC" indicates temperatures have equal chance of being below normal, normal or above normal.

Created by: Use Drought.gov (drought.gov) and Drought.gov (drought.gov) and National Drought Early Warning Outlook (drought.gov) and Drought.gov (drought.gov)

## NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM

A Pathway for National Resilience



**Drought in 2012**

As the United States experienced large areas of moderate to exceptional drought throughout the year, the National Integrated Drought Information System (NIDIS) provided a variety of drought-related services to stakeholders across the nation. In this issue of the NIDIS Newsletter we will update you on NIDIS activities throughout the year 2012.

Lisa S. Darby and Roger S. Pulwarty, NIDIS Program

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**The National Integrated Drought Information System**

The National Integrated Drought Information System Act of 2006 (NIDIS Act PL 109-430) prescribes an interagency approach, led by NOAA, for the development and coordination of drought risk information to support proactive decision-making. The NIDIS goal as stated in the Act is to "enable the Nation to move from a reactive to a more proactive approach to managing drought risks and impacts." NIDIS was developed in partnership with the Western Governors Association, but has national in scope. NIDIS has three general tasks under its authorization: (I) Provide an effective drought early warning system that (a) collects and integrates information on the key indicators of drought and drought severity; and (b) provides timely information that reflect state and regional differences in drought conditions; (II) Coordinate Federal research in support of a drought early warning system; and (III) Build upon existing forecasting and assessment programs and partnerships.

# NIDIS Carolinas Coastal Ecosystems Drought Early Warning Information System

Kirstin Dow

Kirsten Lackstrom

Amanda Brennan

carolinas  
integrated  
sciences &  
assessments

cisa



<http://www.cisa.sc.edu/>

# CISA's Work to Support NIDIS

## Spring 2010

- Stakeholder workshops held to identify needs for a drought early warning system
  - Municipal water supplies
  - Coastal ecosystems

## State of Knowledge Report

- *The Impact of Drought on Coastal Ecosystems in the Carolinas* (Gilbert et al., 2012 – can be downloaded from [www.drought.gov](http://www.drought.gov))



## The Impact of Drought on Coastal Ecosystems in the Carolinas

State of Knowledge Report January 2012

## **Spring 2012**

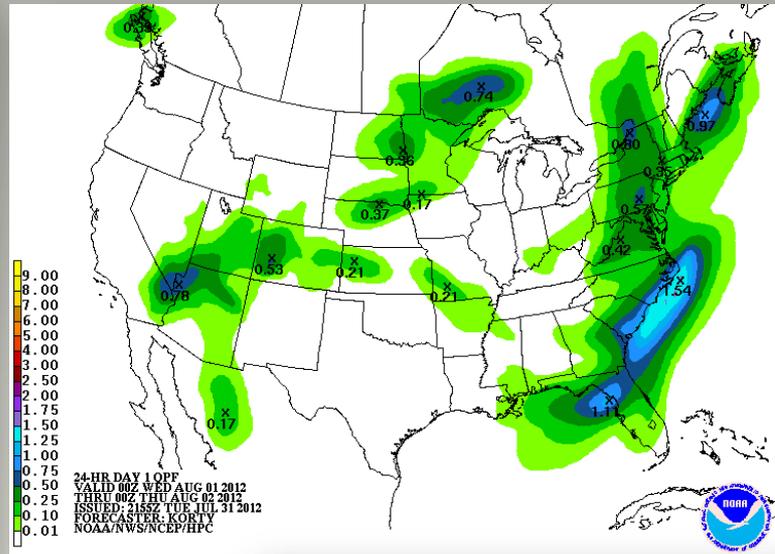
- Informal discussions at the NOAA in the Carolinas meeting at Fort Johnson, March 15, 2012
- Steering committee meeting at Fort Johnson, May 1, 2012
- Identified interested organizations, agencies, and individuals for the scoping workshop



## **July 31 – August 1, 2012 ~ Wilmington, NC**

- Drought Early Warning System Scoping Workshop
- Goal: To develop pilot project ideas for a drought early warning system for coastal ecosystems in the Carolinas

# Carolinas Scoping Workshop Wilmington, NC July 31/Aug 1 2012



## Agencies represented at our Wilmington Workshop

- Audubon South Carolina
- Beaufort-Jasper Water & Sewer Authority
- DOI Southeast Climate Science Center\*
- East Carolina University
- Gullah/Geechee Nation
- Lumbee Tribe of North Carolina
- National Climatic Data Center
- National Drought Mitigation Center\*
- NC Coastal Reserve & National Estuarine Research Reserve
- NC DENR, Division of Coastal Management
- NC DENR, Division of Water Resources
- NC Department of Health & Human Services, Division of Public Health
- NC Department of Public Safety, Division of Emergency Management
- NC Sea Grant\*
- NC State Climate Office\*
- NC Water Resources Research Institute
- NOAA Center for Coastal Environmental Health & Biomolecular Research\*
- NOAA Fisheries, Southeast Regional Office\*
- NOAA National Centers for Coastal Ocean Science, Center for Human Health Risk\*
- NOAA National Weather Service
- NOAA Regional Climate Services, Eastern Region\*
- NOAA Southeast and Caribbean Regional Team\*
- North Inlet - Winyah Bay National Estuarine Research Reserve
- Pocosin Lakes National Wildlife Refuge
- South Atlantic Landscape Conservation Cooperative
- SC Sea Grant Consortium\*
- SC State Climate Office\*
- Southeast Regional Climate Science Center\*
- The Nature Conservancy, NC & SC\*
- US Army Corps of Engineers
- US EPA, Region 4\*
- UNC Wilmington, Center for Marine Science
- USC Public Health Research Center, Dept. of Environmental Health Sciences
- US Fish & Wildlife Service, SC Coastal Program\*
- US Fish & Wildlife Services, SC Lowcountry Refuges Complex\*
- US Marine Corps, Camp Lejeune
- USGS NC Water Science Center
- USGS SC Water Science Center\*

\* Steering Committee Member Organization

# Scoping Workshop

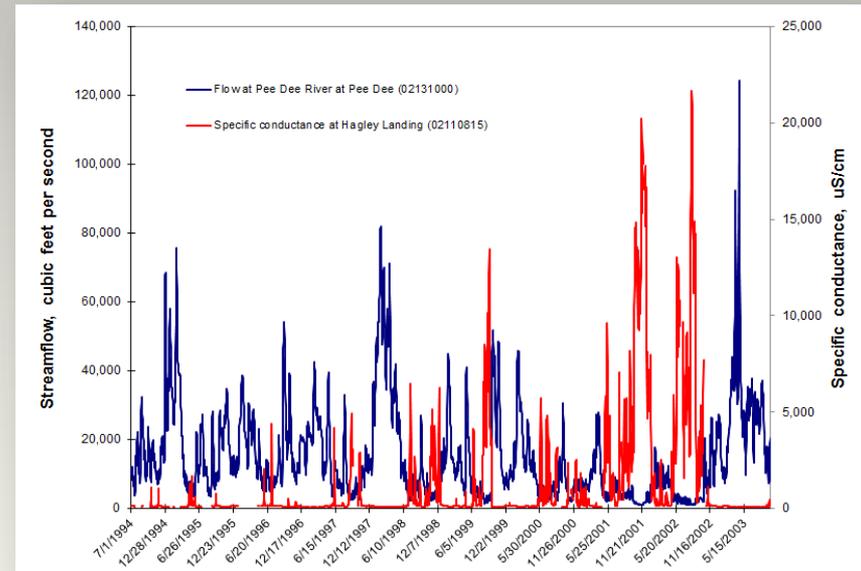
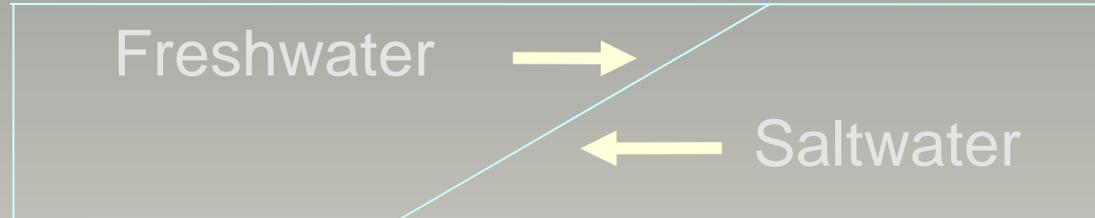
- Speaker presentations to discuss implications of drought in coastal ecosystems
  - Public lands & drought
  - Ecological and human health during drought
  - Salinity intrusion associated with drought
  - North Carolina's drought response
  - South Carolina's drought response
- World Café style breakout sessions to brainstorm pilot project ideas
- Participants used the Turning Technologies Audience Response System to vote for pilot project ideas
- 4 projects were chosen to move forward



# Evaluation of Drought Indicators & Indices

## Project Goals

- Determine which current drought indicators and indices are appropriate for assessing drought in coastal ecosystems
- Investigate the benefits and feasibility of creating a drought index based on real-time salinity data
- Collaborate with work being done on the North American Drought Indices and Definitions Study



*Development of a salinity index based on real-time USGS data – Paul Conrads USGS*

# Seafood Safety Forecast

## Project Goal

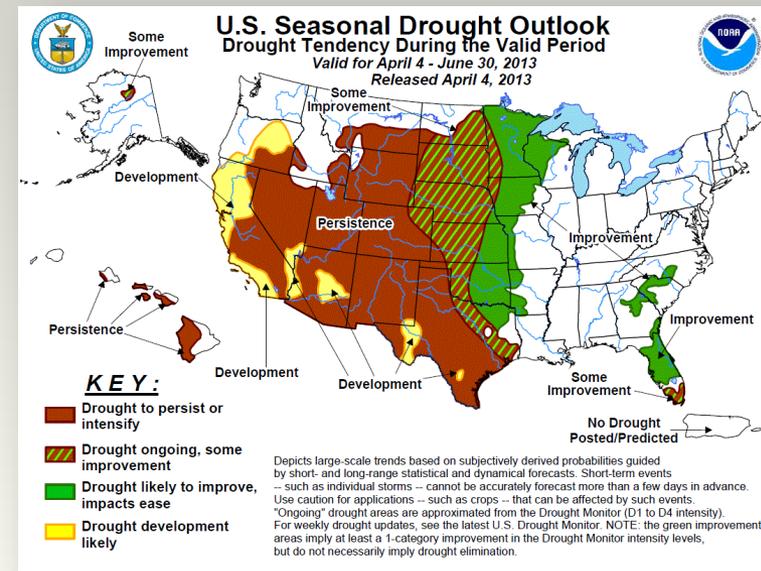
- Provide an early warning system for commercial, recreational and subsistence fishermen who harvest drought-sensitive seafood in both fresh and salt waters in the coastal regions of the Carolinas
  - Vibrios – contaminates shellfish
  - HABs
  - “Drought buster” events
  - Outreach



# Drought Forecasting Communications

## Project Goals

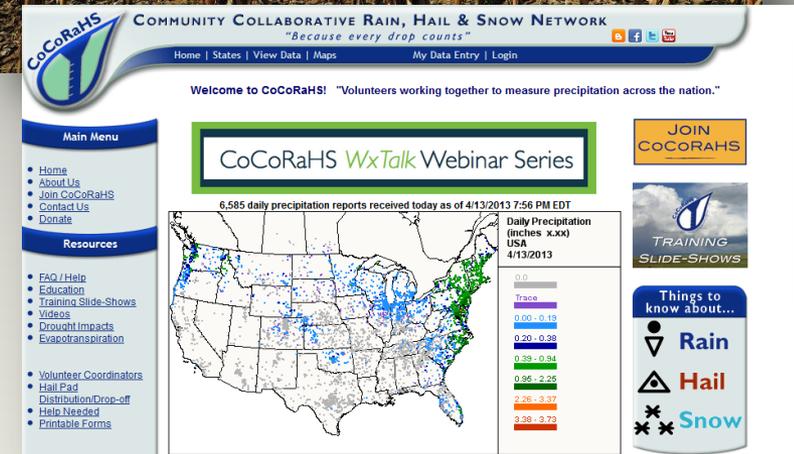
- Introduce stakeholders to current products used for drought forecasting, step them through the process of how a drought outlook is prepared, and educate them on the caveats and uncertainties in the outlook
- Ascertain what additional drought forecasting products stakeholders need and what time scales are of most interest to them



# Drought Impacts Reporting

## Project Goal

- How does drought affect coastal ecosystems and the people who live there and make their living there? We will assess ways in which drought impacts might be monitored through stakeholders and citizen science engagement and investigate ways to improve the communication of coastal ecosystem drought impacts



Related activity:

Cross-RISA Drought Impact Reporting Workshop  
March 2013 in Tucson, AZ

- Summary in the works
- Build a community of practice
- You will hear more tomorrow....

# Next Steps

- The Wilmington Scoping workshop report is available online
- For each pilot project:
  - Steering committee conference calls have begun
  - Specific sectors and geographic focus areas are being refined
    - Beaufort County (SC)
  - Descriptions posted online
- Potential partnerships and existing resources are being identified
- Project action plans are being developed

The screenshot shows the U.S. Drought Portal website. The header includes the NIDIS logo, the text "U.S. Drought Portal" with the URL "www.drought.gov", and a search bar. Below the header is a navigation menu with categories: "WHAT IS NIDIS?", "PRODUCTS", "TOOLS", "REGIONAL PROGRAMS", and "RESOURCES". Under "WHAT IS NIDIS?", there are sub-links for "Drought in the News", "Events and Announcements", "Regional Drought Webinars", and "Regional Drought Early Warning Systems". The main content area features a large image of a desert landscape. Below the image, the "Coastal Carolinas Region" section is highlighted. It contains text about NIDIS and the Carolinas Integrated Sciences and Assessments (CISA) program, key concerns related to drought and coastal ecosystems, and activities to develop a drought early warning information system. To the right, there are sections for "Drought Early Warning Systems" with a list of basins (ACF River Basin, California, Coastal Carolinas, etc.), "Drought Monitor Time Series" with a "Larger View" link, "Carolinas Announcements" with a "Larger View" link, and another "Carolinas Announcements" section with a "Larger View" link. The footer contains links for "Contact Us", "Site Disclaimers", "Privacy Policy", "Accessibility", and "FOIA".

# Thank you

Lisa Darby (lisa.darby@noaa.gov)

carolinas  
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