

Streamflow Monitoring Workshop

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South Carolina Department of Natural Resources

March 10th, 2016

Columbia, SC



Workshop Agenda

1:30 – 1:45 Welcome and Introductions – Ken Rentiers and Scott Harder, SCDNR

1:45 – 3:15 Presentations

1:45 – 2:15 *“Workshop Goals and an Overview of Streamflow Monitoring Needs in South Carolina”*

Scott Harder, SCDNR

2:15 – 2:45 *“Demonstration of the NC Flood Inundation Mapping and Alert Network”*

Hope Mizzell and Maria Cox, SCDNR

2:45 – 3:15 *“Beyond the Streamgage”*

John Shelton, USGS

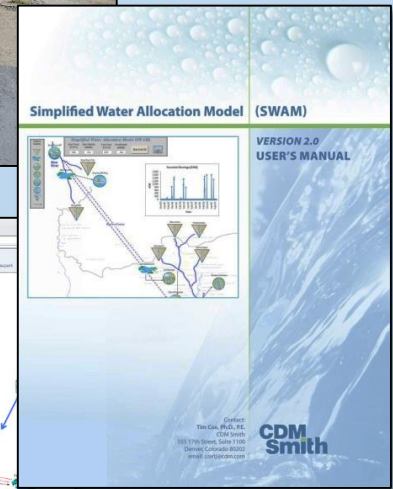
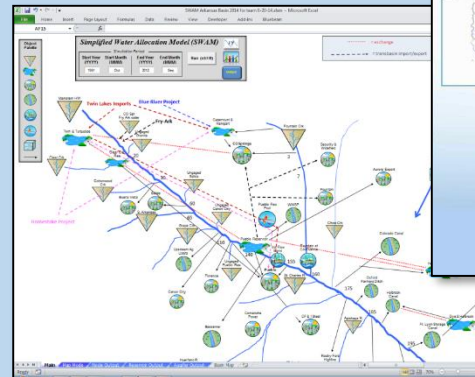
3:15 – 4:30 Group Discussion on Additional Monitoring Needs

Background/Motivation

- Main Drivers:
 - October 2015 Floods
 - Surface Water Availability Assessments (SCDNR and SCDHEC)
- List of Proposed Sites:
 - Initially produced by the SCDNR and the USGS
 - Received additional recommendations from several state and federal agencies at a workshop in early February
- 2nd Workshop:
 - Solicit feedback from additional stakeholders

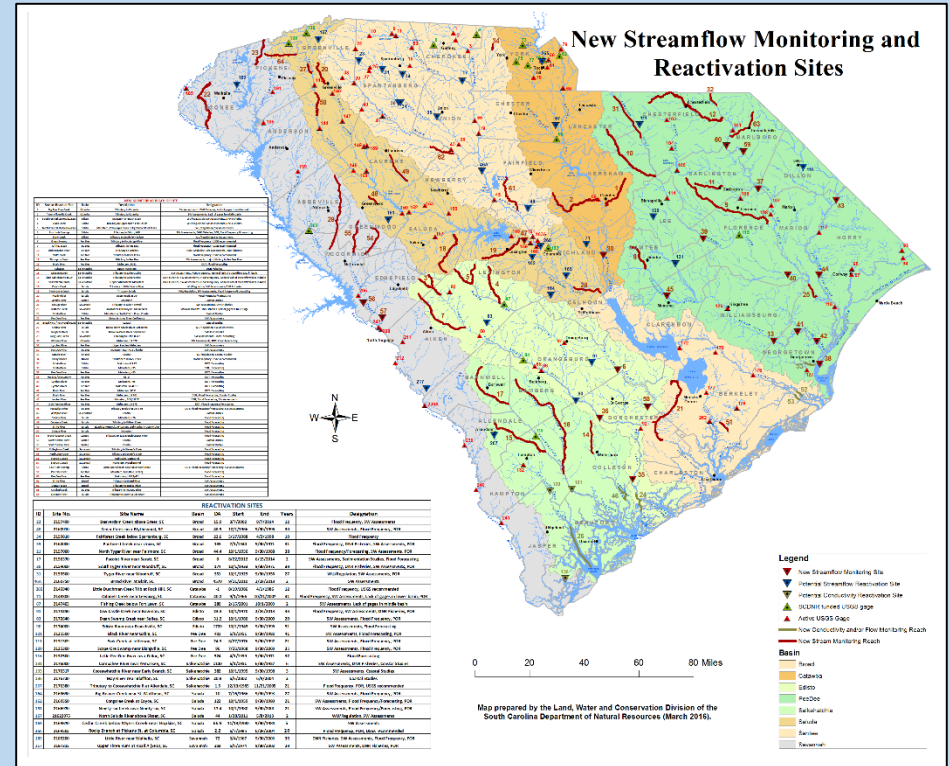


Photos from Wes Tyler



Goals of Workshop

- Collect feedback on proposed list of new monitoring sites developed by SCDNR and other government agencies
- Produce an estimate on the number of gages (and their locations) needed to address water resource concerns in the State



Presentations from 1st Workshop:

“An Overview of High- and Low-flow Statistics and Why Record Length Matters”

Toby Feaster, USGS

“Coastal gaging – Monitoring the effects of Riverine and Tidal Forces”

Paul Conrads, USGS

“SERFC Operations - Forecasting in South Carolina”

Todd Hammill, NOAA – Southeast Regional Forecast Center

“Workshop Goals and How SCDNR uses Streamflow Data”

Scott Harder, SCDNR

***These presentations are available upon request*

“An Overview of High- and Low-flow Statistics and Why Record Length Matters”

Toby Feaster, USGS

- Highlighted importance of record length in determining:
 - Flood frequencies and magnitudes (N-year events or annual exceedance probabilities)
 - Low flow metrics – 7Q10, for example
- Discussed regionalization studies
 - Determines flow characteristics on ungaged basins using gaged basins
 - Highlighted lack of data compared to neighboring states – NC and GA

Availability of peak flow data in South Carolina compared to neighboring states

USGS SIR 2009-5156:

Peakflows through water year 2006:

GA = 310

NC = 303

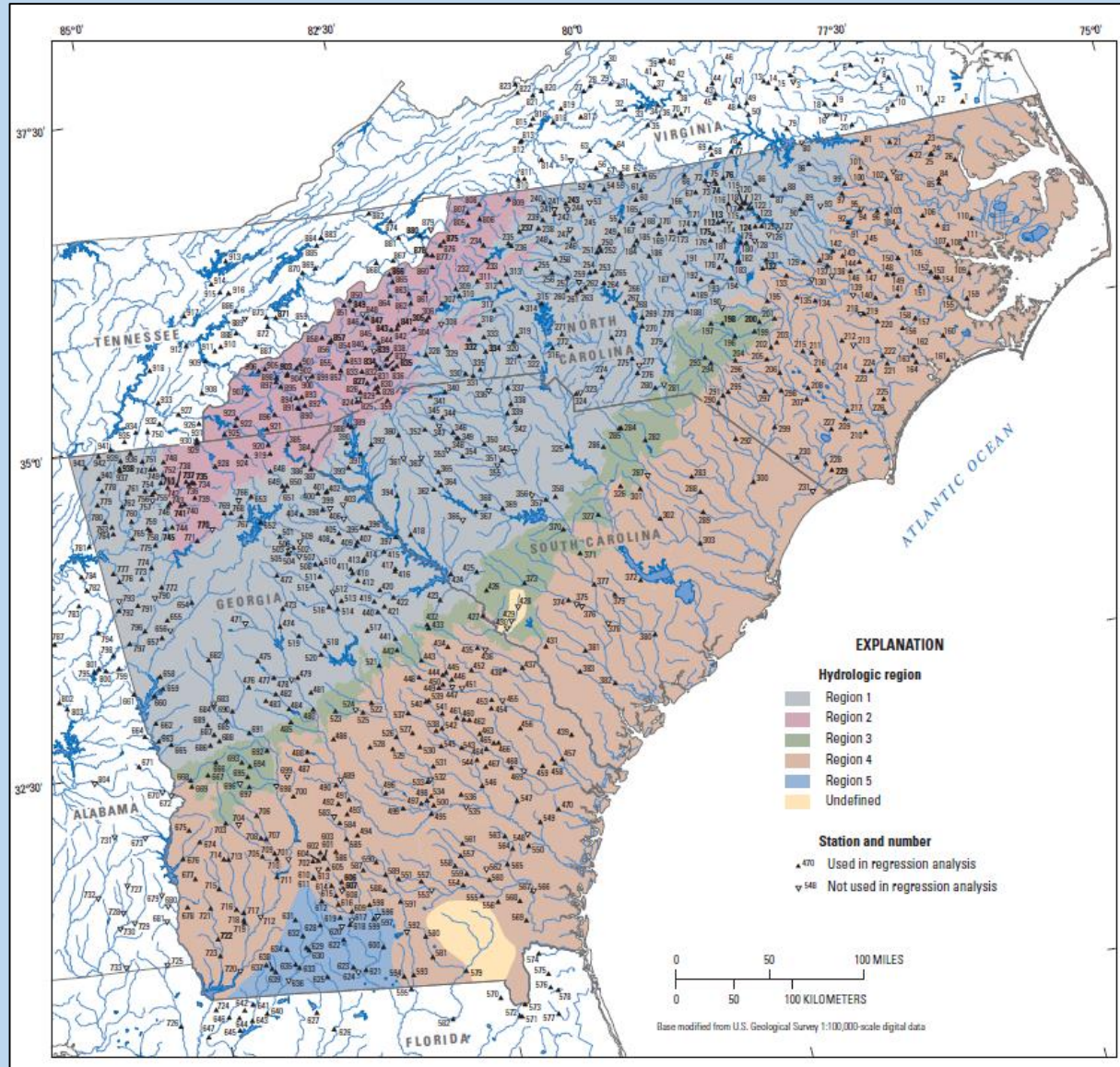
SC = 64

Total area divided by number of gages:
(mi²/gage)

GA = 192

NC = 178

SC = 500



“Coastal Gaging – Monitoring the effects of Riverine and Tidal Forces”

Paul Conrads, USGS

- Over the last 30 years, the USGS coastal network has played an important data and information role in major water-resources decisions along the coast.
- The network has been centered around urban centers. Few gages along undeveloped stretches of the coast.

History of USGS Gaging:

1980s

- Charleston – salinity alert
- Grand Strand – freshwater availability

1990s

- Grand Strand – DO TMDL
- Charleston – start of 10+ year DO TMDL development

2000s

- Beaufort – DO TMDL
- Savannah Harbor Deepening

2010s

- Charleston Harbor Deepening
- Savannah Harbor Deepening
- Climate Change

“SERFC Operations – Forecasting in South Carolina”

Todd Hammill, NOAA – Southeast Regional Forecast Center

National Weather Service River Forecast Center
Southeast RFC

SERFC Home News Organization Search for: NWS All NOAA Go

Social Media Dashboard
Twitter Facebook

Local forecast by "City, St" or Zip Code
City, St Go

XML RSS Feeds
Rivers and Hydrology
Observed and Forecast River Conditions
Quick Briefing
5-Day Flood Outlook
Flash Flood Guidance
Nat'l AHPS Page
Forecaster Resources
48 Hour Outlook
Water Resource
Lakes & Reservoirs
Ensemble Forecasts
Precip & Weather
Observed Precip
Forecast Precip
Weather Forecasts
Radar
Nat'l Snow Cover
Hourly Precip
Daily Precip
Severe Weather
Tropical Weather
Meteorology Models
Climate & History
Nat'l Drought Info
Local Drought Info
Historical Floods
Long Range Forecast
Rain and Flood Climate
Additional Info
Related Links
Weather Ranger
Technical Papers
High Water Mark
NWS Text Products
About Our RFC
Contact Us

Minor flooding occurring or expected

48 Hour Outlook Forecast River Conditions Observed Precipitation Forecast Precipitation

Click here to access the "old" SERFC legacy page

Map Satellite

Experimental (Take Survey)
Show/Hide Left Hand Menu
Turn All Layers Off

Click for product legends.
 Auto-show legends

River Information
Click location for AHPS hydrograph page

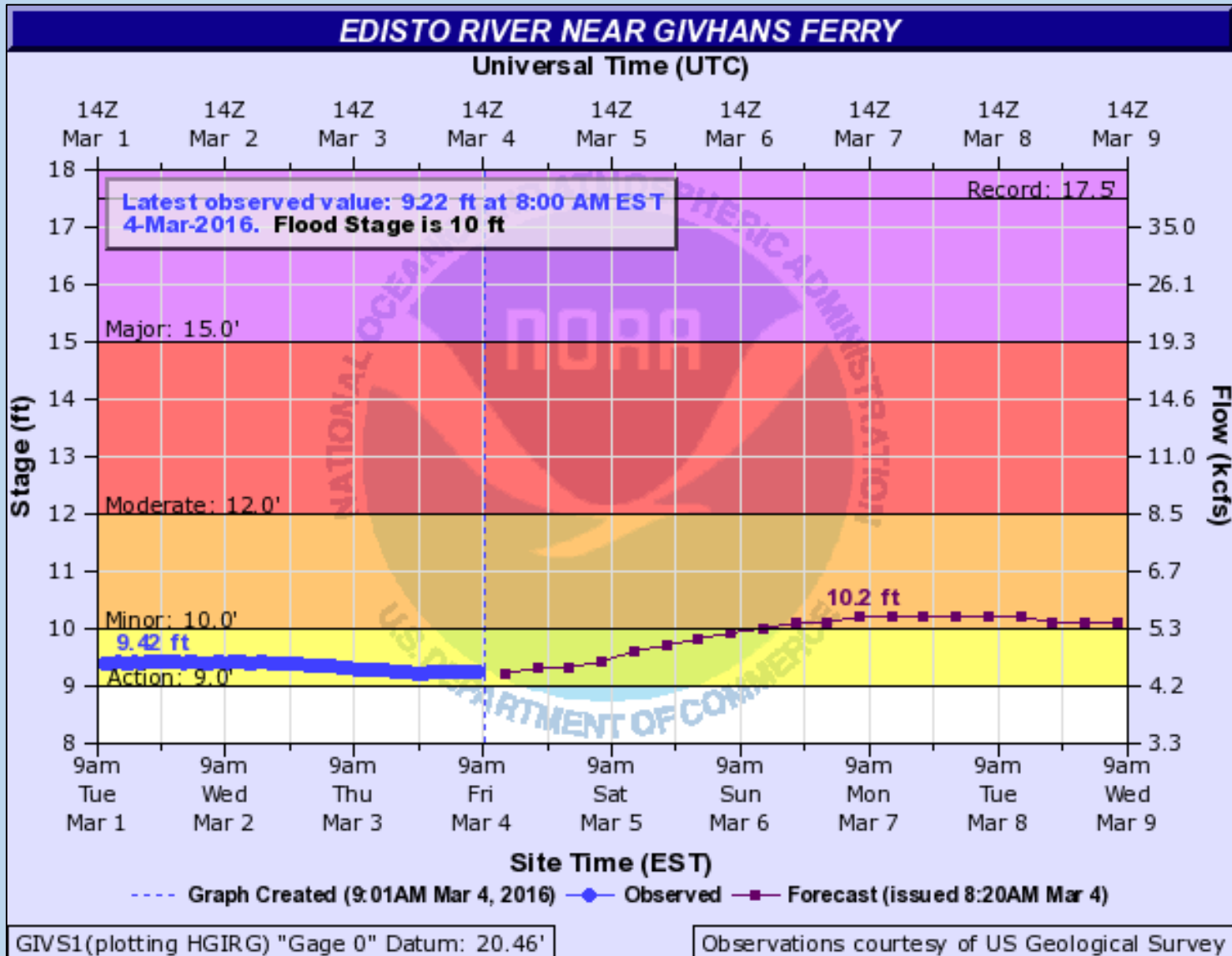
Off
 Forecast USGS
 Forecast and Observed
Last Updated: March 04 2016 13:37 UTC

Mouse Hover Options:
 Hydrograph (Stage and Flow)
 Criteria Table (Stage and Flow where available)
 Off
 Plot only near or above flood

Observed Precipitation
Forecast Precipitation
Current Conditions
Flood Guidance
Long-Range Outlooks
Local RFC Products

SERFC Home page : www.weather.gov/serfc

River Forecasting



“Workshop Goals and How SCDNR Uses Streamflow Data”

Scott Harder, SCDNR

Primary Uses for Streamflow Data:

- Surface Water Assessments:
 - Streamflow data are the building blocks for the SWAM model
 - Data also used for model calibration/verification
- Low flow studies and drought monitoring
- Coastal Studies: determining location of saltwater/freshwater interface and rate of saltwater intrusion
- Assessing flood frequency/risk
 - River forecasting tool (National Weather Service)
 - USGS flood frequency and magnitude studies
- Fisheries studies, management, and protection

Workshop Recommendations:

- 95 sites or reaches were recommended
 - 68 originally proposed by SCDNR/USGS
- Recommendations from other state and federal agencies emphasized:
 - Flood forecasting – public safety
 - Transportation and infrastructure concerns (DOT)

Designation	Purpose
Flood Frequency Site	Will be used to determine flood frequencies and magnitudes.
Flood Forecasting Site	Will be used for forecasting flood events and are important for public safety.
SW Assessment Site	Will be used to improve UIFs (Unimpaired Flows) for model development as part of the State's Surface Water Assessment Project. These UIFs are used to develop inflows to the surface water allocation models being developed by the SCDNR, SCDHEC, and a consultant (CDM Smith).
POR Site	Period of Record (for reactivation sites only) - site has 20 or more years of historic data from which to compare new streamflow data.
DNR Fisheries Site	Will be used by SCDNR biologists for monitoring and fisheries assessment, management and protection.
Coastal Studies Site	Will help define location of the saltwater/freshwater interface and help determine rate of salt water intrusion.
WU/Regulation Site	Site is regulated or has impairment (downstream of a reservoir, notable water use/withdrawals, ect.), and data will be used to assess water availability concerns.
DOT Site	Will be at a bridge crossing and will address DOT infrastructure and transportation concerns.

While additional gages are needed to improve flood analyses, the Earth Science Group of the SCDNR considers the needs for water planning (Surface Water Assessments) and environmental monitoring (along the coast, for example) to be equally important.

Questions?

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