Assessment of Hydrologic Model Availability in the SALCC

Mary M. Davis, Ph.D.
Aquatic Ecologist
Southern Instream Flow Network

SOUTHEAST AQUATIC RESOURCES PARTNERSHIP
SARP

WebEx Objectives

- Background for the hydrologic model assessment
- Review the of status of hydrologic models in the SALCC region
- Solicit your input on how the SALCC should establish a hydrologic foundation

Southern Instream Flow Network

Purpose - To implement protective instream flow policies in 15 southern states by providing science-based resources and opening lines of communication.

SOUTHEAST AQUATIC RESOURCES PARTNERSHIP
SARP

More information at:
www.southeastaquatics.net/programs/sifn/

Southern Instream Flow Research Agenda

www.southeastaquatics.net/programs/sifn

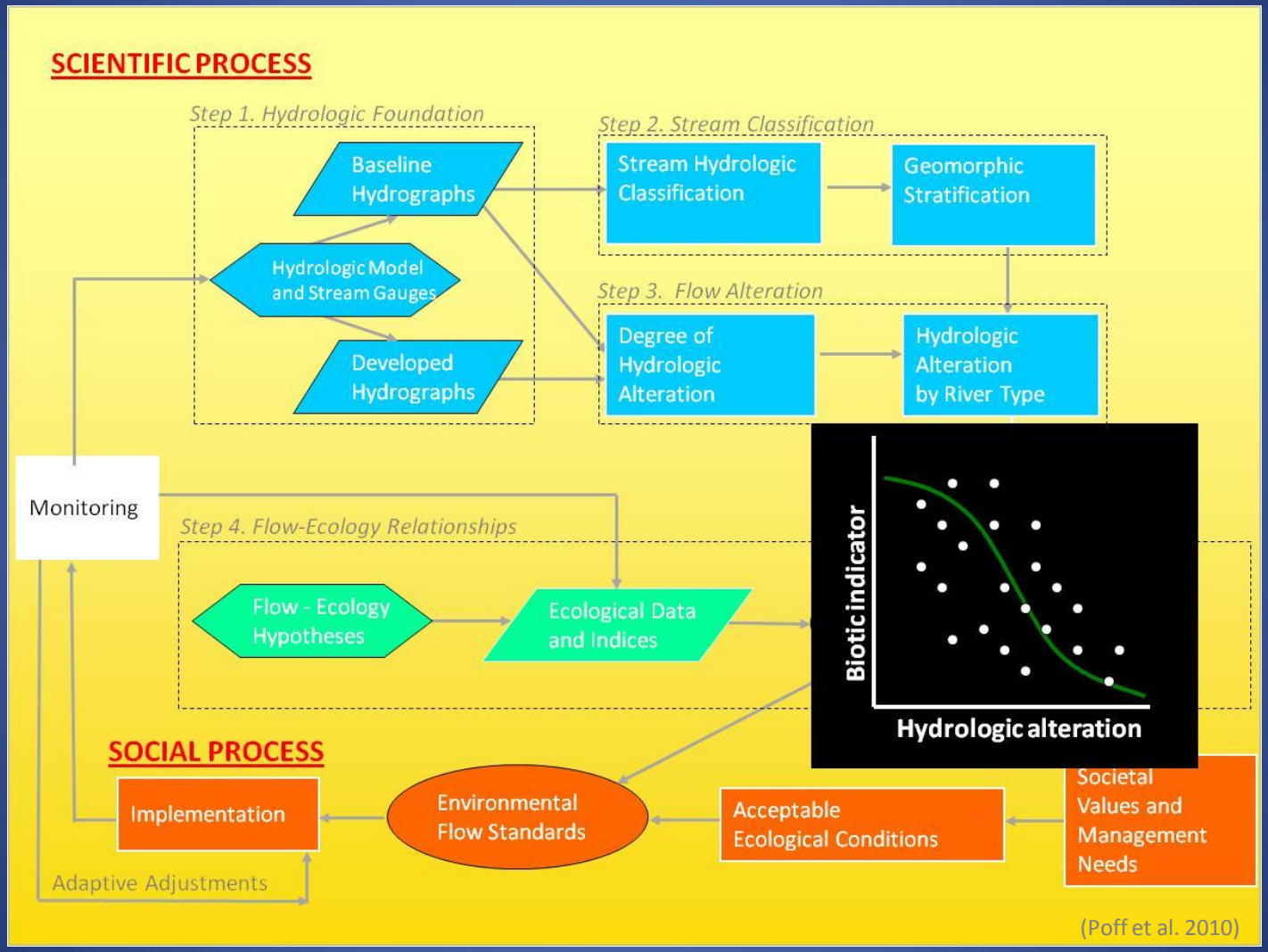
- **Problem:** The limited focus on research and funding for instream flows has resulted in a lack of science to support protective instream flow standards.

- **Objective:** to highlight research needs and coordinate sources of funding and research to address these needs.

- **Goal:** to ensure that instream flow research is focused on the needs of water resource managers for scientifically credible and protective state instream flow standards and practices.

SOUTHEAST AQUATIC RESOURCES PARTNERSHIP
SARP

Ecological Limits of Hydrologic Alteration (ELOHA)



http://conserveonline.org/workspaces/eloha

Managing Instream Flows and Developing Hydrological Information for the South Atlantic Landscape Conservation Cooperative

A project by the
Southern Instream Flow Network
Southeast Aquatic Resource Partnership

The objectives of this work are to:

1. develop baseline information on hydrologic alteration and ecological responses to alteration in rivers and streams across the SALCC, and

2. prepare a long-term SALCC instream flow research plan.

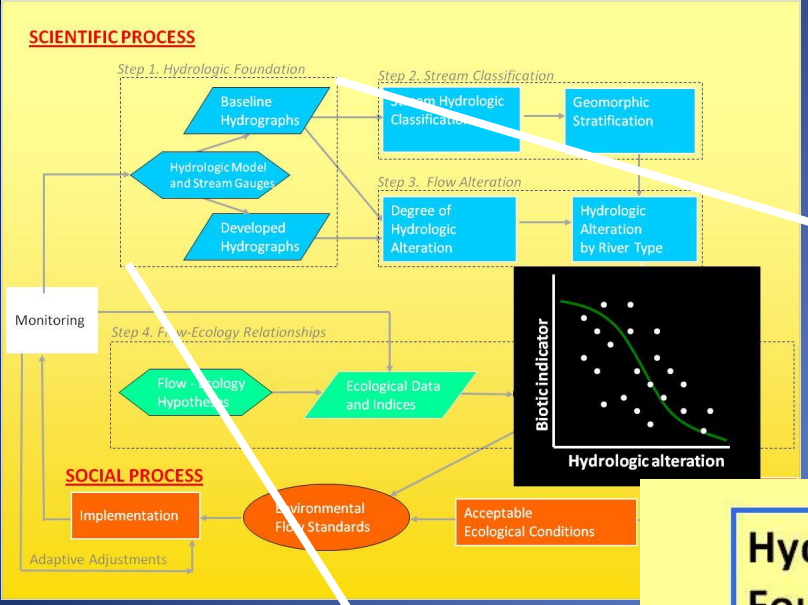
SALCC Water Resource Project Tasks

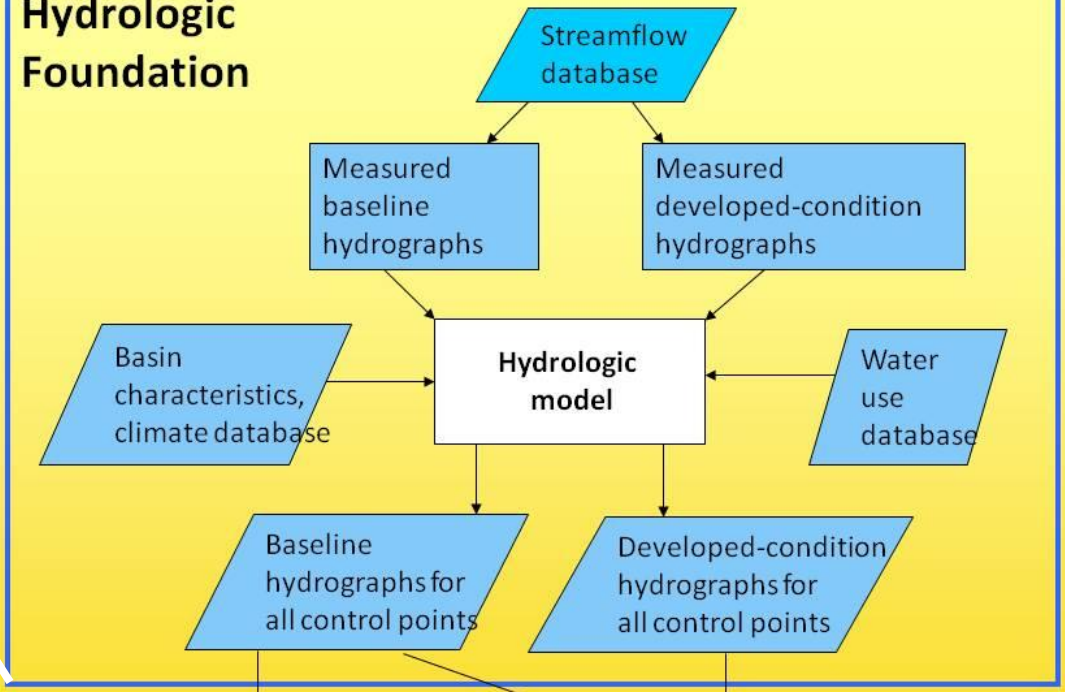
Obj 1. Develop baseline information:

1. Compile existing hydrologic foundations
2. Compile and summarize existing studies of ecological responses to flow alteration and other relevant information sources
3. Classify freshwater and estuarine resources
4. Identify conservation areas where altered flow is a threat
5. Identify the ecologically significant flow alterations in the SALCC that are amenable to management

Obj 2. Develop a long-term instream flow research plan for the SALCC to meet the needs of water resource managers and policy makers:

1. Initiate the SALCC instream flow research consortium
2. Advise development of baseline information
3. Identification of information gaps
4. Formalize SALCC instream flow research plan
5. Promote the SALCC instream flow research plan and this project


SCIENTIFIC PROCESS
Step 1. Hydrologic Foundation
Baseline Hydrographs
Hydrologic Model and Stream Gauges
Developed Hydrographs
Step 2. Stream Classification
Geomorphic Stratification
Step 3. Flow Alteration
Degree of Hydrologic Alteration
Hydrologic Alteration by River Type
Monitoring
Step 4. Flow-Ecology Relationships
Ecological Data and Indices
Biotic indicator
Hydrologic alteration
SOCIAL PROCESS
Implementation
Environmental Flow Standards
Acceptable Ecological Conditions
Adaptive Adjustments


Hydrologic Foundation
Streamflow database
Measured baseline hydrographs
Measured developed-condition hydrographs
Basin characteristics, climate database
Hydrologic model
Water use database
Baseline hydrographs for all control points
Developed-condition hydrographs for all control points
River classification
Analysis of hydrologic alteration

To provide an adequate foundation for ELOHA, hydrologic information needs to (Kendy 2009):

- be spatially comprehensive so as to include both locations where water managers may want to make allocation or other water management decisions, as well as sites where ecological data have been collected;
- represent historical (unaltered), current, and future conditions;
- include the range of ecologically-relevant flow characteristics; and
- address ground-water and estuarine flows where appropriate.

Three types of hydrologic models provide this information:

- Statistical
- Process (e.g., HSPF, TOPMODEL)
- Decision Support Systems (e.g., HEC ResSim, OASIS)

Status of Models and Data to Establish a Hydrologic Foundation in the SALCC Region

SALCC State	Statewide Process Hyd. Model	Watershed Decision Support Systems	Water Management Data
Alabama	TopModel	TopModel, ResSim	
Georgia	HSPF	ResSim, River Basin Planning Tool	
Florida	HSPF	WMDs	
North Carolina	GWLF	OASIS	
South Carolina		CHEOPS	
Virginia	HSPF	(HSPF?)	

SALCC Hydrologic Foundation Issues

1. Coverage
   - SC missing
   - Multiple process model platforms
   - Limited DSS extent

2. Timeframes
   - Limited – but improving - management data

3. Spatial Scale
   - adequate

4. Temporal Scale
   - adequate

5. Accessibility
   - To be determined

Recommendations for SALCC Hydrologic Foundation

1. Access to and compilation of hydrologic models
2. Availability for users
3. Maintenance of models and water management information
4. Others?

For more information or to contribute comments, contact:

Mary Davis at

mary@southeastaquatics.net

Or 404.213.3122

SOUTHEAST AQUATIC RESOURCES PARTNERSHIP

SARP