

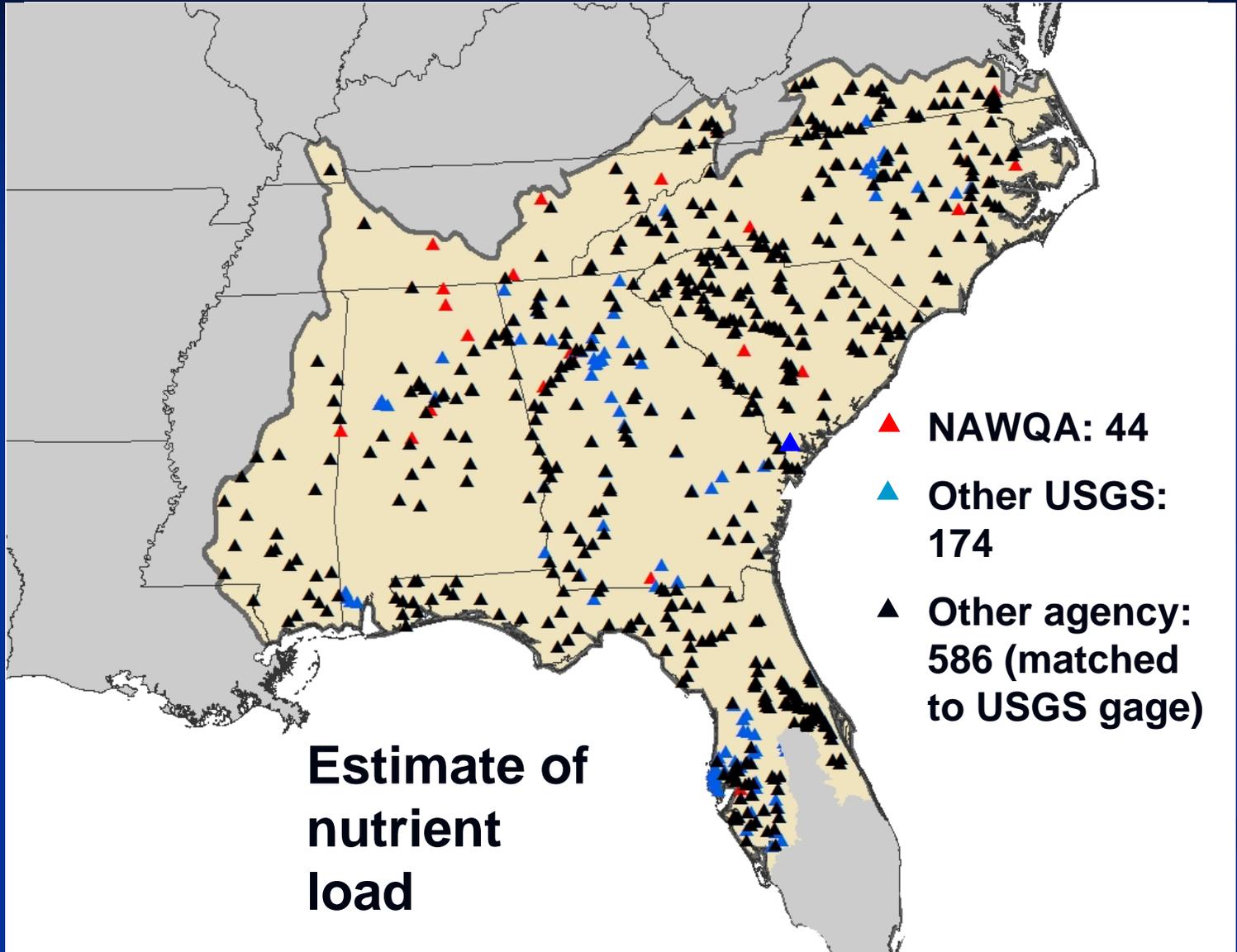


South Atlantic Gulf and Tennessee Region

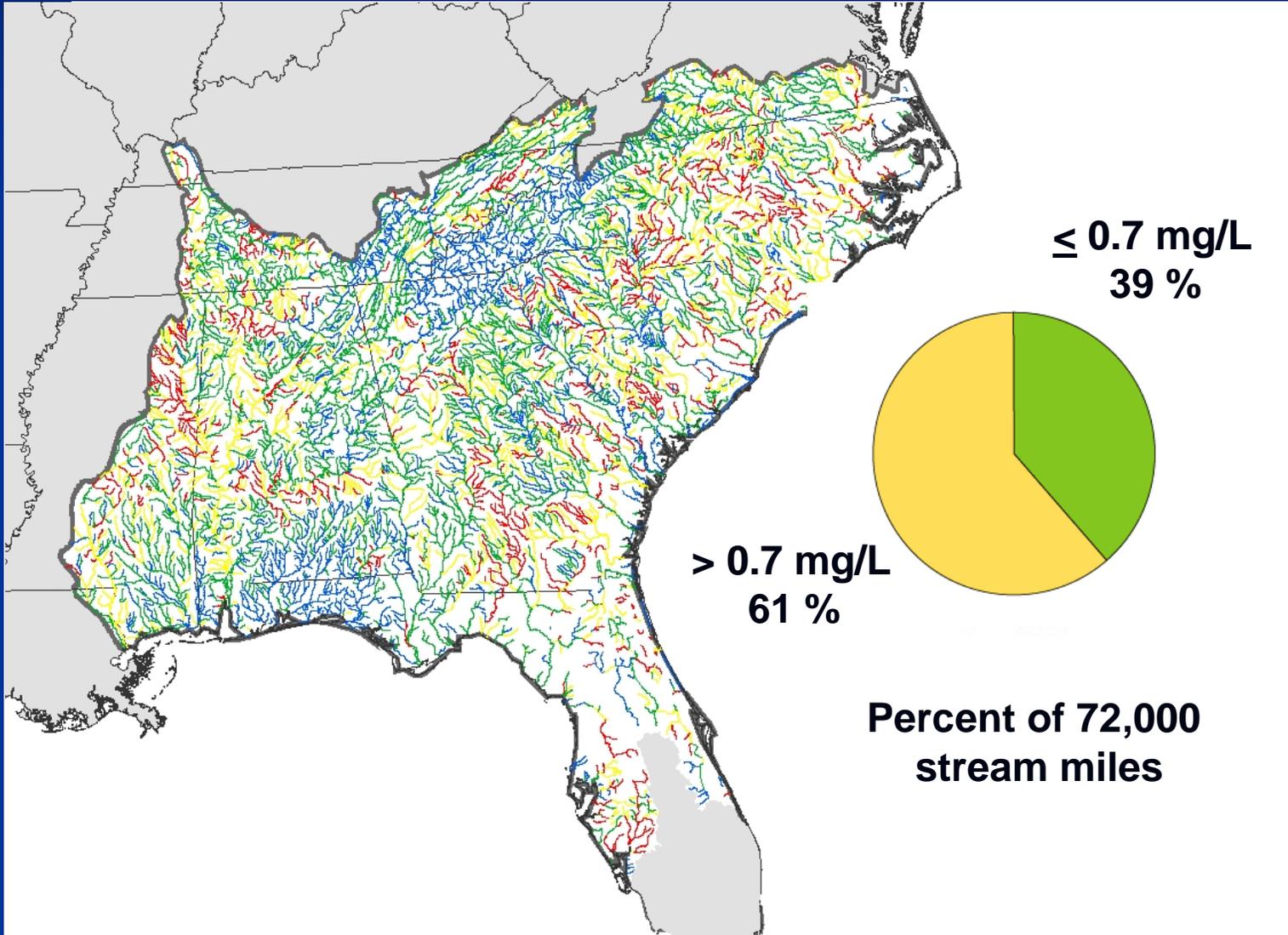


- **What concentrations of total nitrogen are in streams throughout the region?**
- **How do concentrations compare to the recommended nitrogen criteria (0.7 mg/L) in this region?**
- **What are the nitrogen loads to receiving waters and how do they affect estuarine management?**
- **What are the key sources of nutrients to streams?**



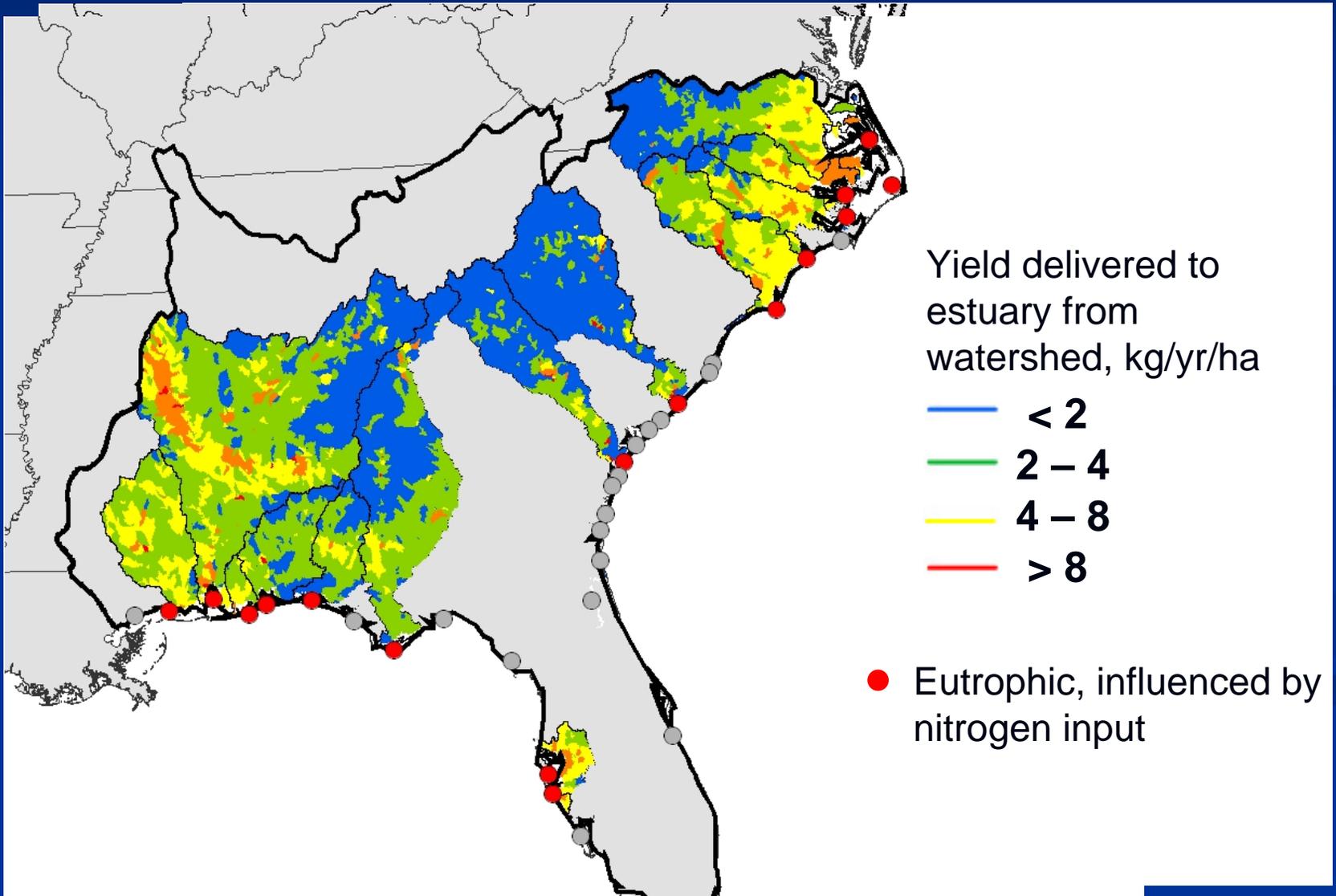


Assessment of Total Nitrogen Concentration



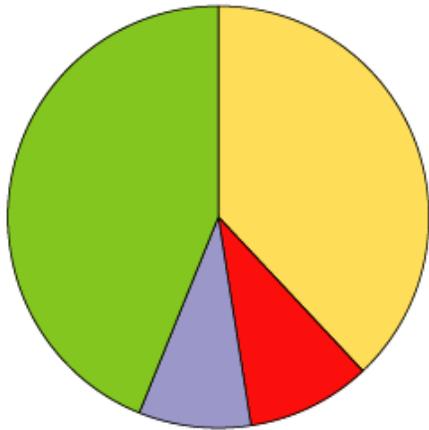


Sensitive Coastal Areas

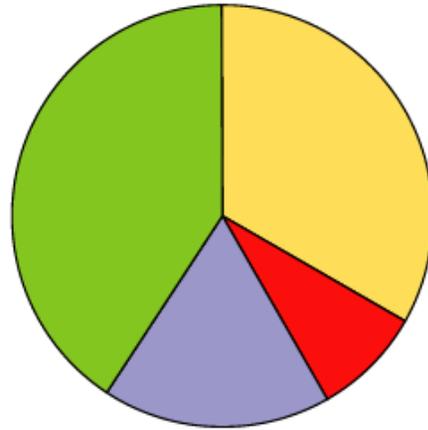


Source Shares Delivered to Sensitive Coastal Areas

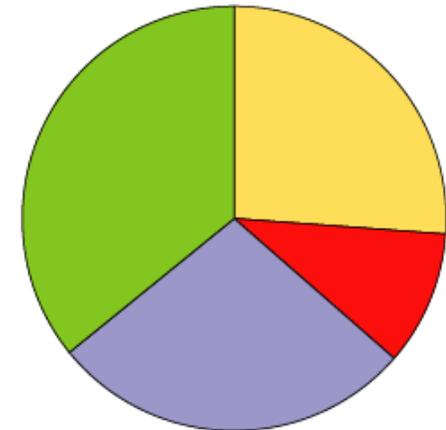
Mobile Bay



Cape Fear Estuary



Savannah River Estuary



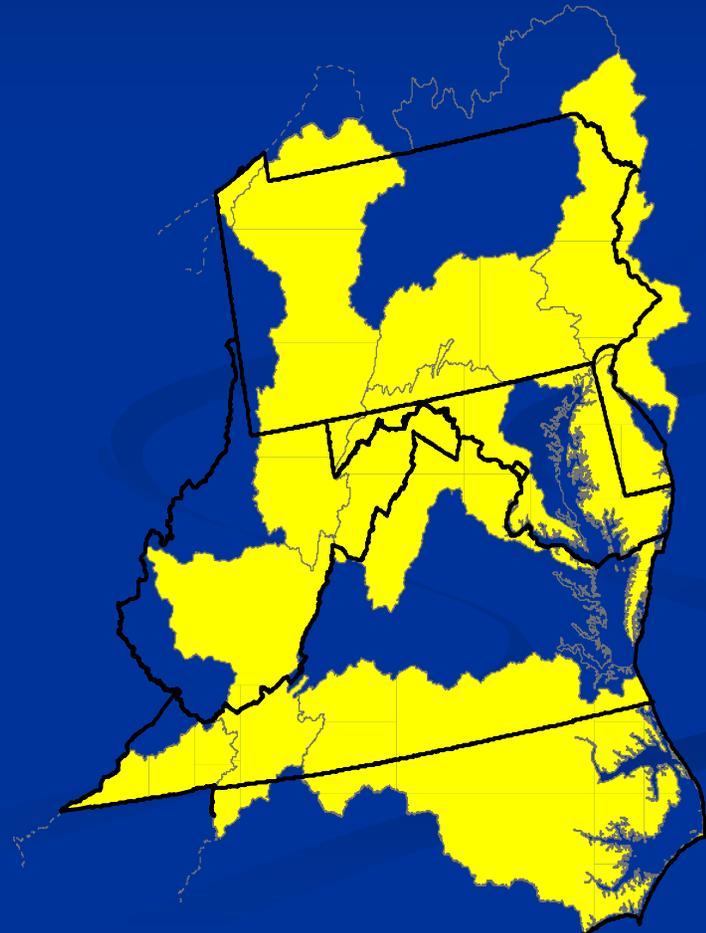
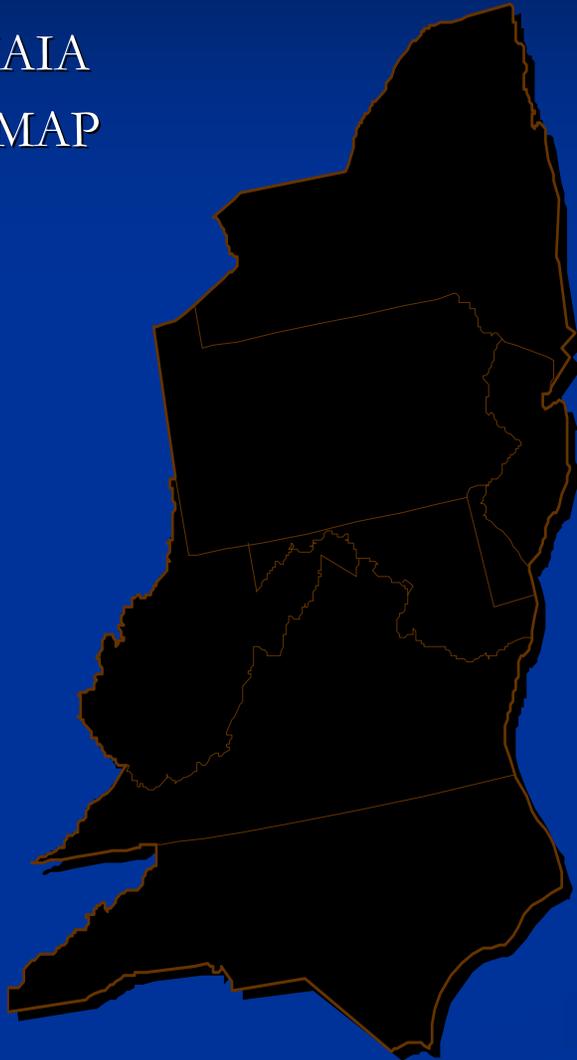
**Improved model accuracy
– reduced prediction error
(or “uncertainty”) by 25
percent**



Selected Regional Studies

- USEPA
 - MAIA
 - EMAP

- USGS
 - NAWQA study units



Surface-Water Assessments

EMAP

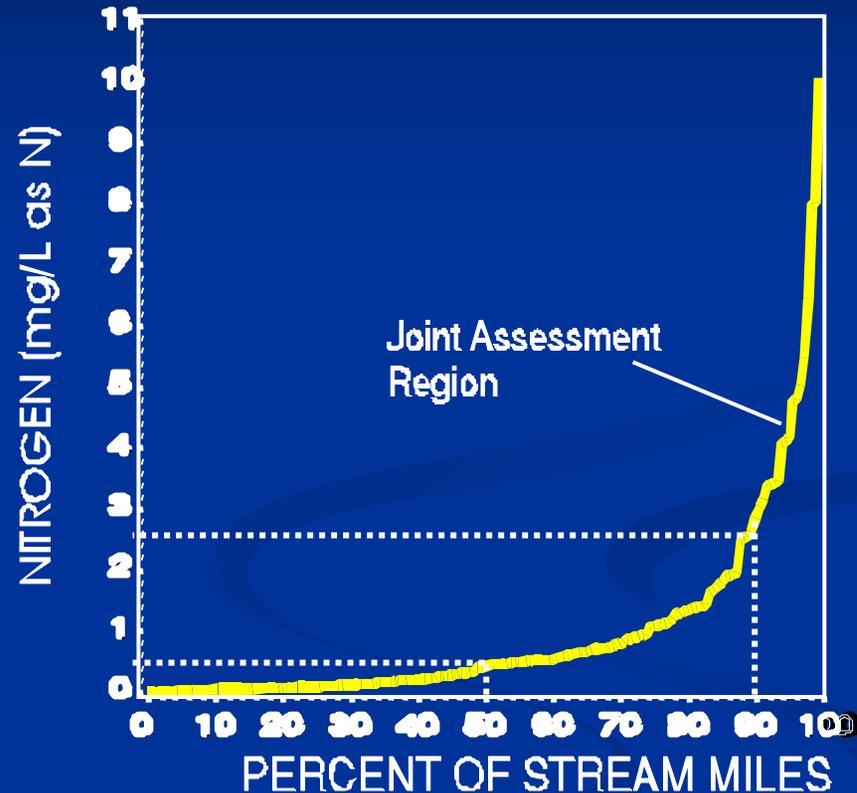
- Objectives
 - Provide a statistically-based assessment
 - Rank stressors
- Focus topics
 - Acid rain impacts
 - Aquatic communities
- Approach
 - Probability surveys

NAWQA

- Objectives
 - Assessment of important environmental settings
 - Understand natural and human factors
- Focus topics
 - Nutrients, pesticides, and persistent chemicals
- Approach
 - Targeted temporal sampling
 - Synoptic surveys across environmental gradients

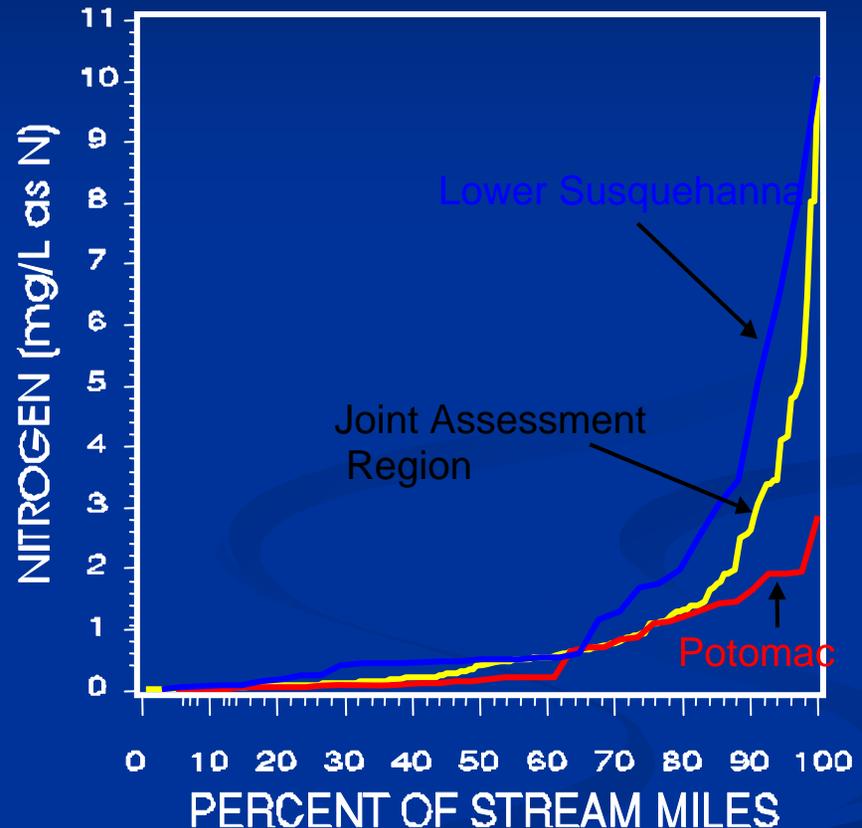
The Cumulative Distribution Function Graph

- Nitrate concentrations in the Joint Assessment Region

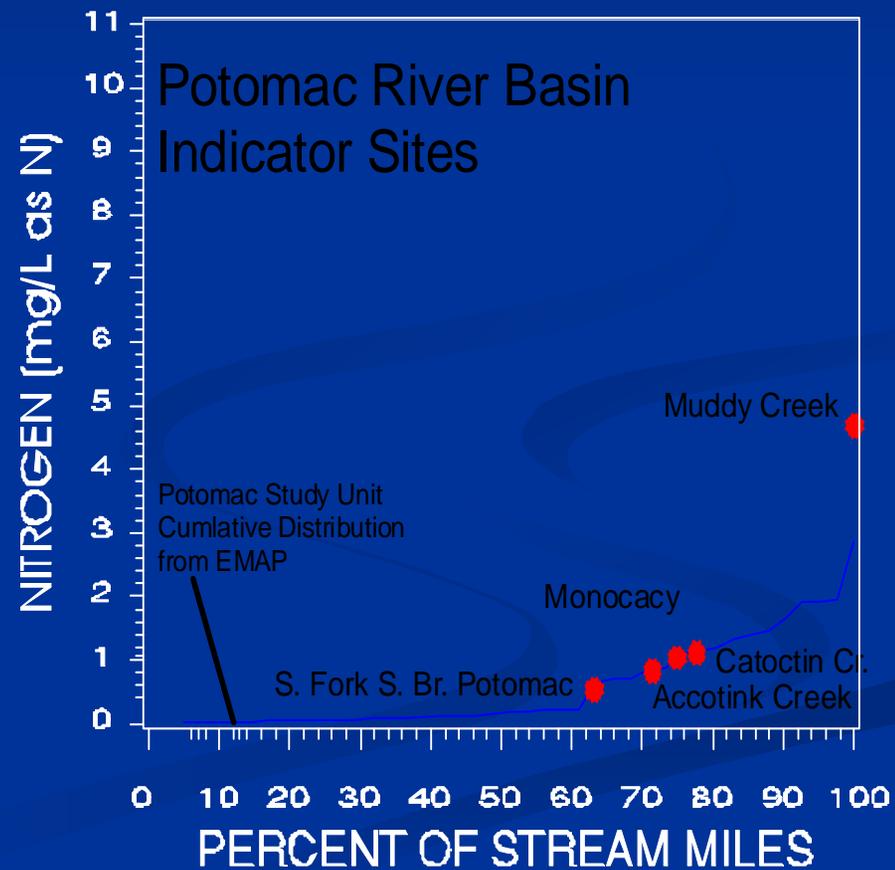
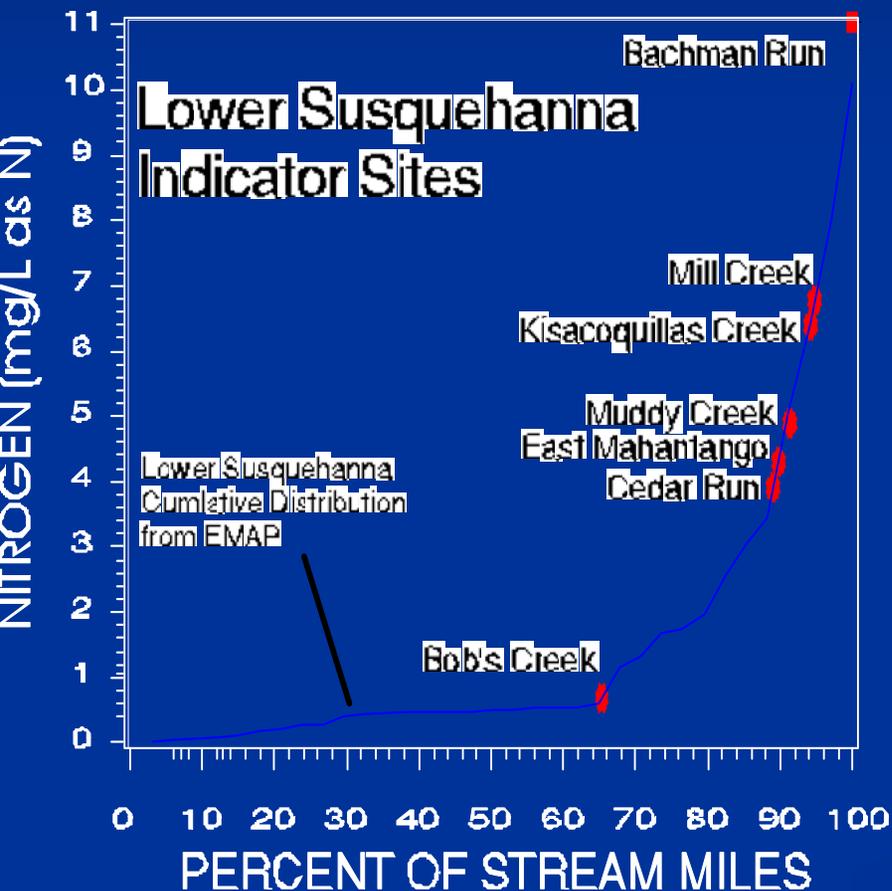


Comparing Conditions Among Watersheds

- Nitrate concentrations in the Potomac and Lower Susquehanna Study Units

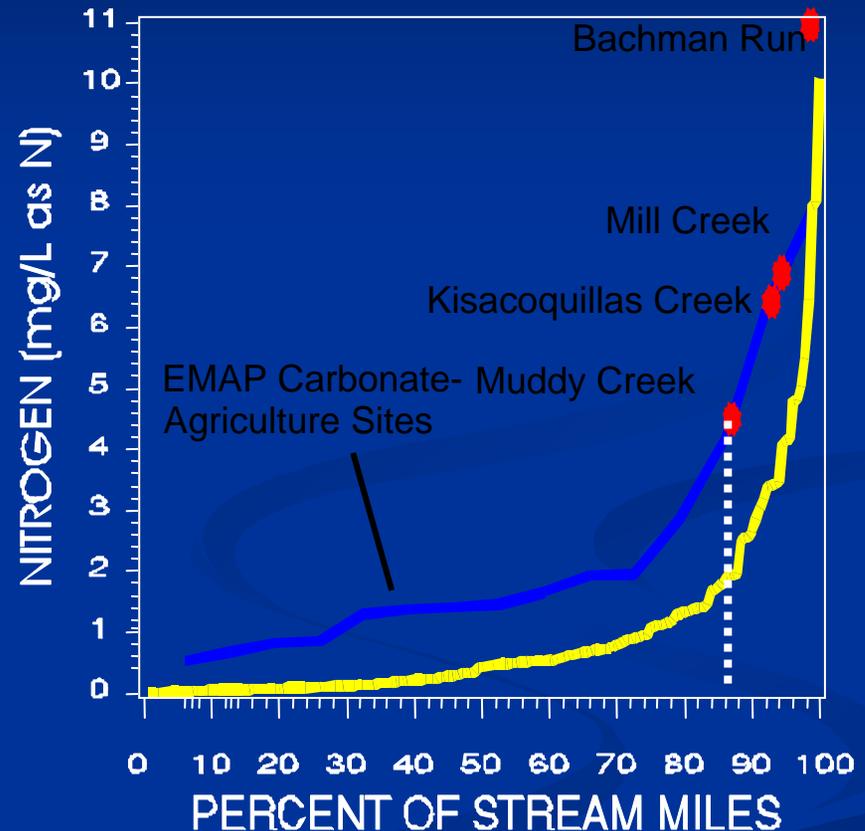


Putting Fixed Sites in Context



Putting Fixed Sites in a Regional Context

- Nitrate concentrations from agricultural watersheds underlain by carbonate rock



Multiple Tools and Data Designs

Design/Tool	Questions they can answer --
Probabilistic survey	<ul style="list-style-type: none">■ What percentage of the Nation's water resources meet the goals of the Clean Water Act?■ What percentage of the Nation's water quality getting better or worse?
Targeted monitoring	<ul style="list-style-type: none">■ What are the causative and associative human and natural factors that effect water quality?■ What are the seasonal or other temporal variations?■ What is the water quality in a watershed or at a location and is it changing over time?
Modeling and landscape analysis	<ul style="list-style-type: none">■ Can we predict water quality conditions in space and time?■ Can we extrapolate from sampled to un-sampled locations?

