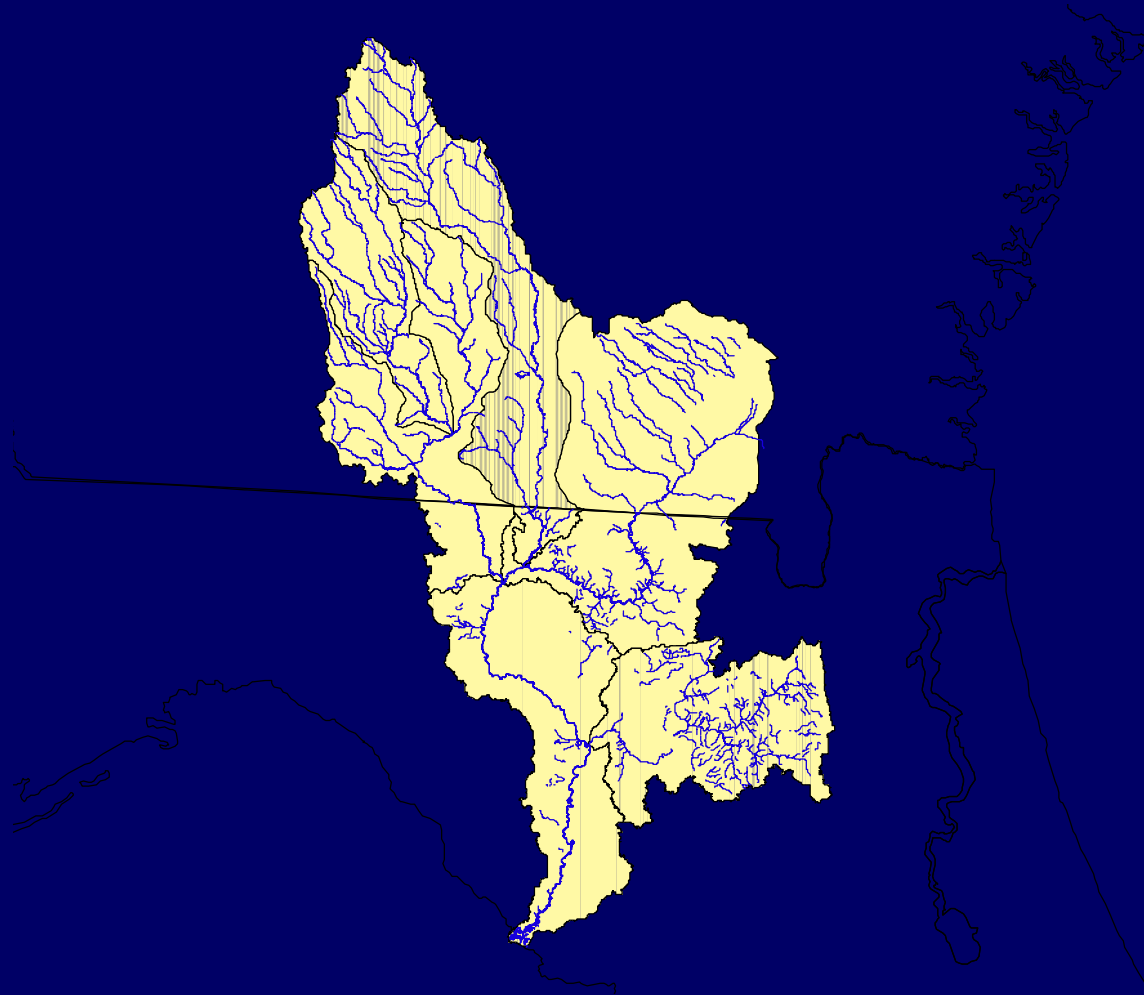


**BENTHIC MACROINVERTEBRATE AND
PERIPHYTON MONITORING IN THE SUWANNEE
RIVER BASIN IN FLORIDA 3:
SPATIAL AND TEMPORAL TRENDS**



Objectives

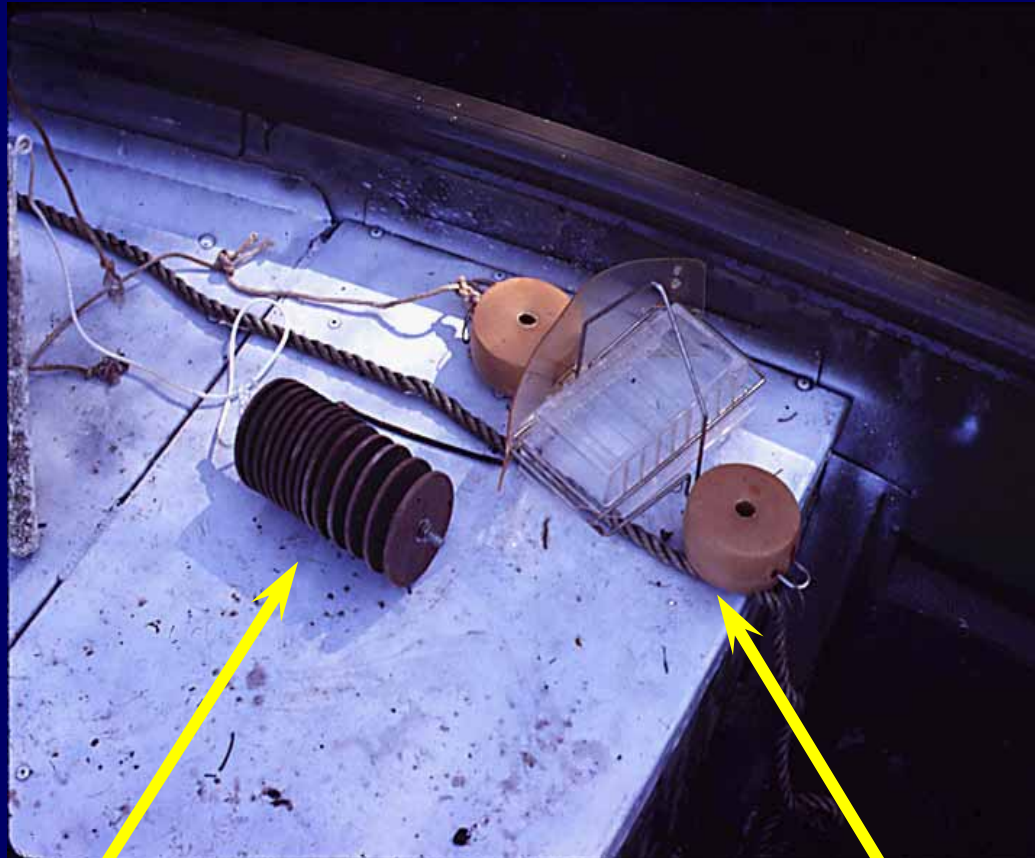
- **Spatial Trends**
Temporal Trends

Benthic Macroinvertebrates

Periphyton

Water Quality

Best Available Data 1989 - 2003



Hester-Dendy
sampler

Periphytometer

Application

- **Expand knowledge on ecological forcing factors (e.g., eutrophication)**

Provide supporting information for habitat control points for MFLs

Define temporal baselines for MFLs

Spatial Trends

- **Principal Component Analysis**
to display multi-dimensional data
in 2 dimensions

PCA Results

- **Principal Component Analysis**

PCA Results

Factor 1

- + *Ablabesmyia ramphe* (.35)
- + *Tribelos fusicorne* (.31)
- + *Slavina appendiculata* (.25)

Factor 2

- *Stenonema exiguum* (.32)
- + *Hydropsyche rossi* (.31)
- + *Corydalis cornutus* (.28)

Factor 1

Upper
Santa Fe

Lower
Santa Fe

With

Upper
Suwannee

Lower
Suwannee

Factor 2

• Seasonal Kendall-Tau Trends

Powerful

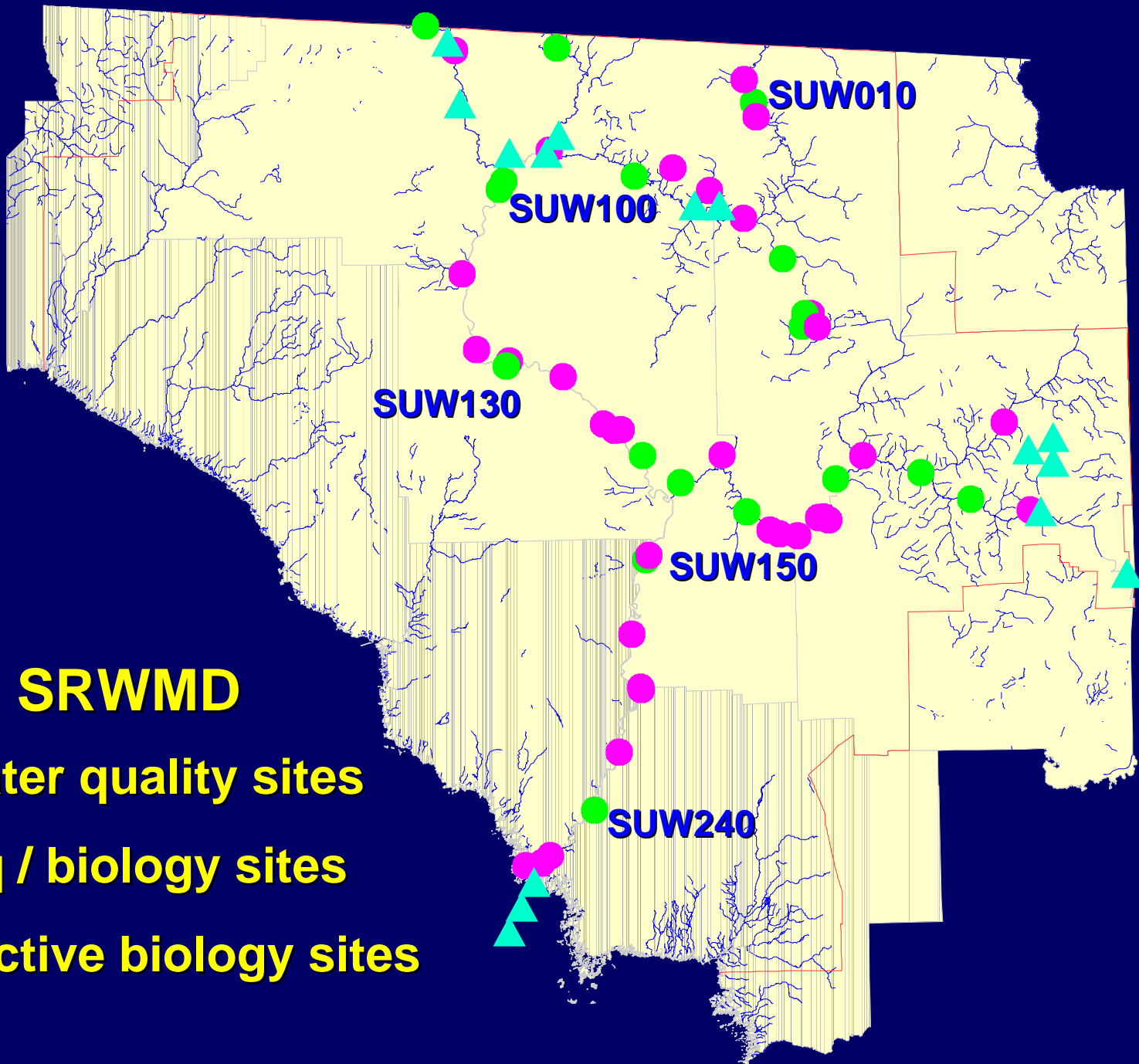
- remove seasonal effects
- adjust p values for autocorrelation

Quantitative

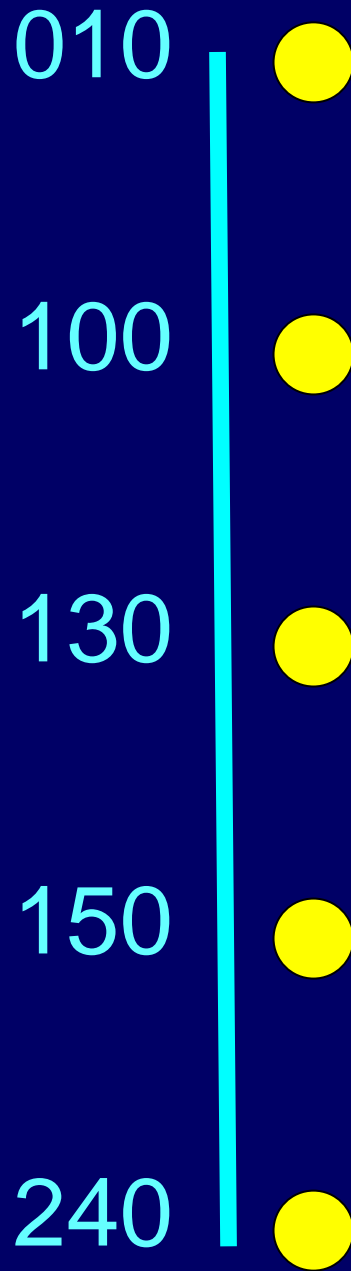
- estimate rates of change

Robust

- non-parametric
- meta-analysis

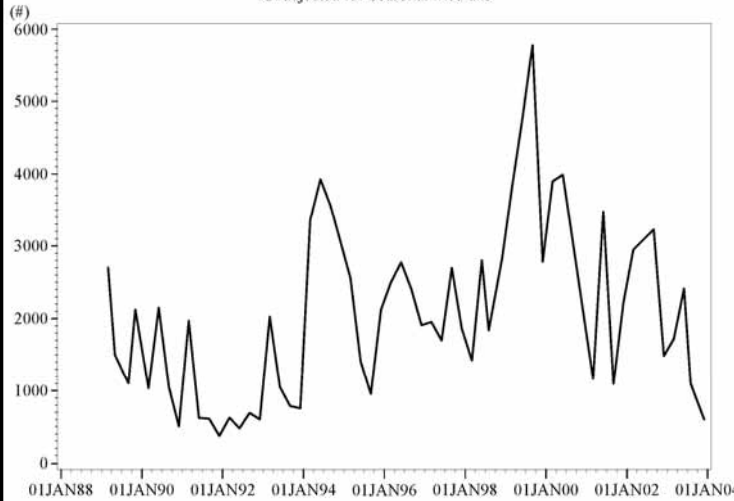


Species Richness



Abundance

'Lower Suwannee River Basin Trends Appendix - Display 545
Monthly Data Time Series
Total Abundance at SUW130
Unadjusted for Seasonal Medians



010



65 / yr

100



68 / yr

130



220 / yr

150



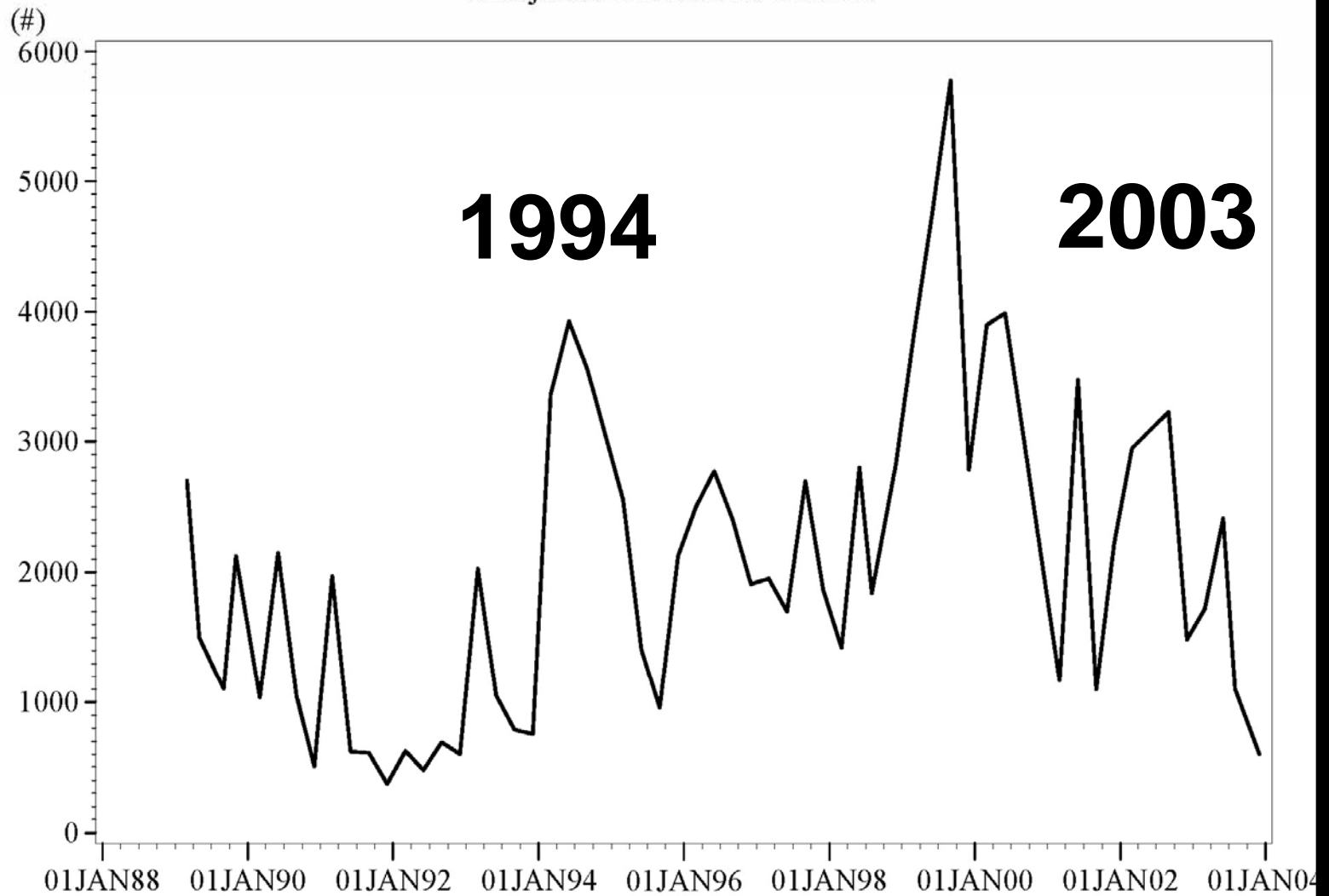
140 / yr

240



38 / yr

'Lower Suwannee River Basin Trends Appendix - Display 545
Monthly Data Time Series
Total Abundance at SUW130
Unadjusted for Seasonal Medians



Conductivity (umhos/cm)

40 - 400

010



100



19 / yr

130



26 / yr

150

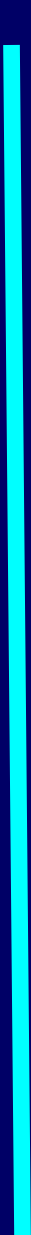


18 / yr

240



12 / yr



**Alkalinity
(mg/L)**

40 - 400

010



0.3 / yr

100



130



8 / yr

150



7 / yr

240



5 / yr

**Color
(PCU)**

0 - 500

010



100



34 / yr

130



33 / yr

150



30 / yr

240



18 / yr

TSS
(mg/L)

0 - 10

010



0.5 / yr

100



0.8 / yr

130



0.8 / yr

150



0.5 / yr

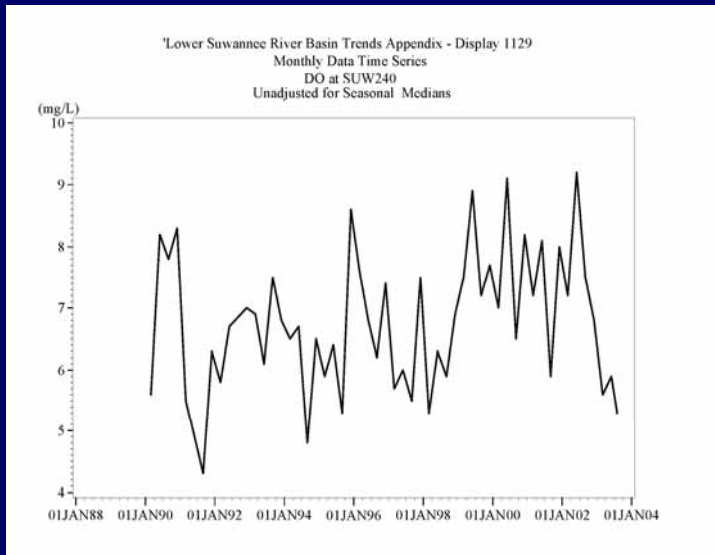
240



0.7 / yr

DO (mg/L)

4 - 10



010



100



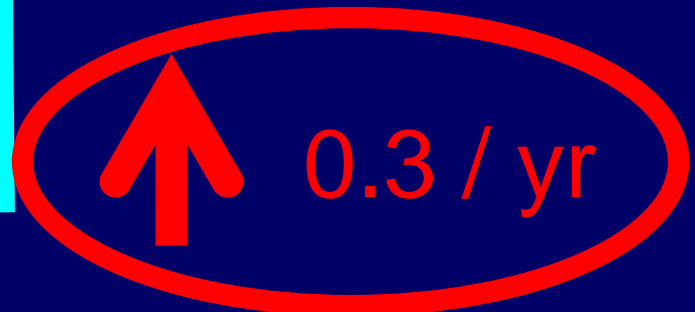
130



150



240



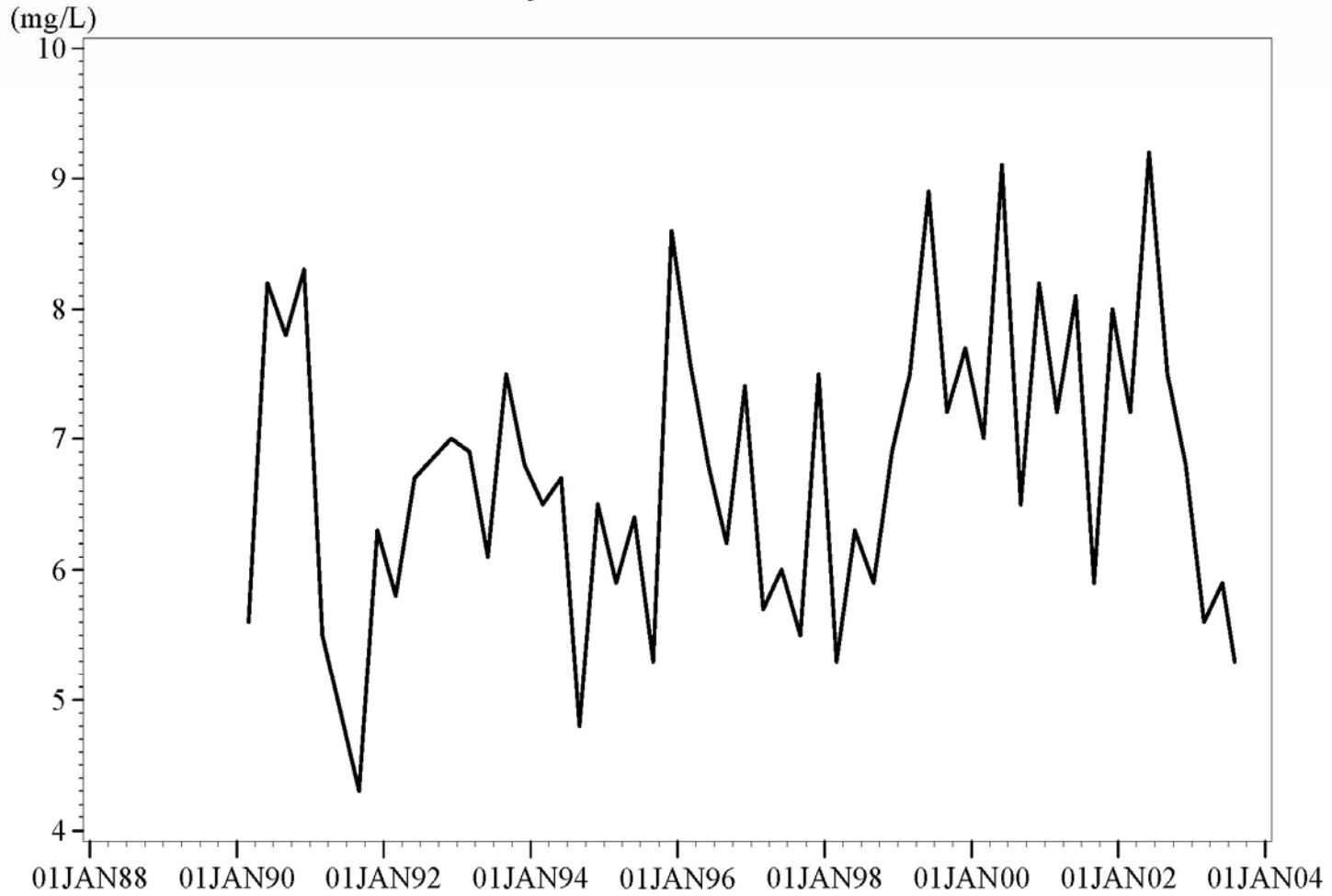
0.3 / yr

'Lower Suwannee River Basin Trends Appendix - Display 1129

Monthly Data Time Series

DO at SUW240

Unadjusted for Seasonal Medians



**NO₂ + NO₃
(mg/L)**

0 – 1.2

010



100



130



0.07 / yr

150



0.09 / yr

240



**Total P
(mg/L)**

0 – 0.8

010



100



0.02 / yr

130



0.02 / yr

150



0.02 / yr

240



Bottom Line

- **Expand knowledge on ecological forcing factors (e.g., eutrophication)**

Provide supporting information for habitat control points for MFLs

Define temporal baselines for MFLs