



Nitrogen Processes in Large Rivers Workshop, August 23&24, 2005 New Orleans, La

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Mississippi River Lagrangian July-August, 1999

*NASQAN-
National
Stream
Quality
Accounting
Network*



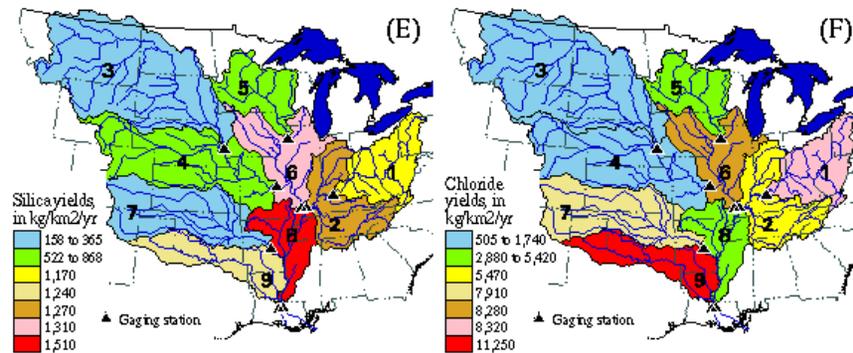
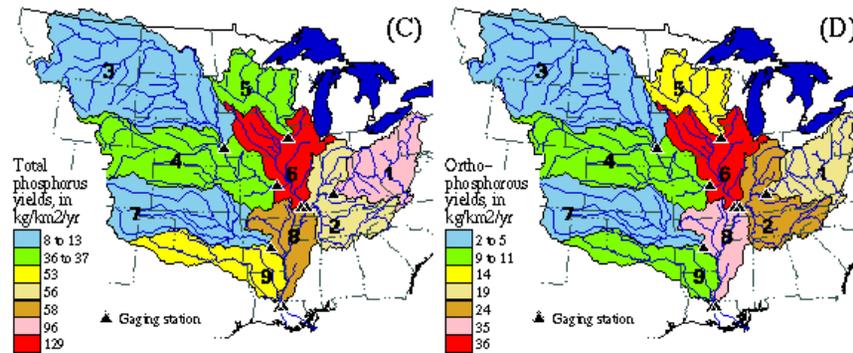
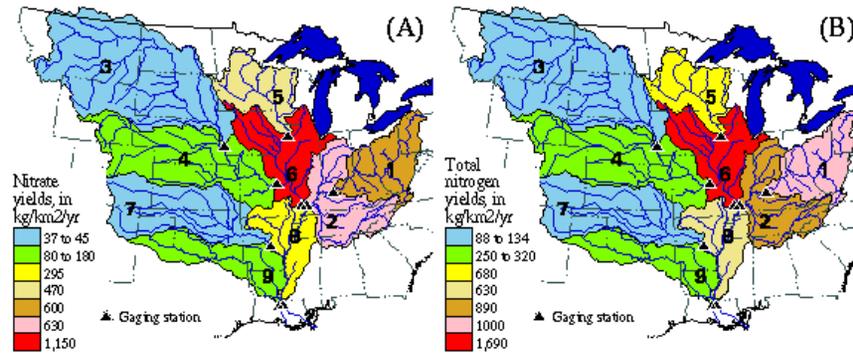
Mississippi River Lagrangian

July-August, 1999

Objective: test the hypothesis that nitrate is transported conservatively in the Mississippi River

Three lines of evidence:

- 1. Mass balance – Don Goolsby, Bill Battaglin*
- 2. Isotopic enrichment – Carol Kendal*
- 3. Dissolved gas equilibrium (N_2O , N_2 , Ar) – Pete McMahon, & J. K. Bohlke*



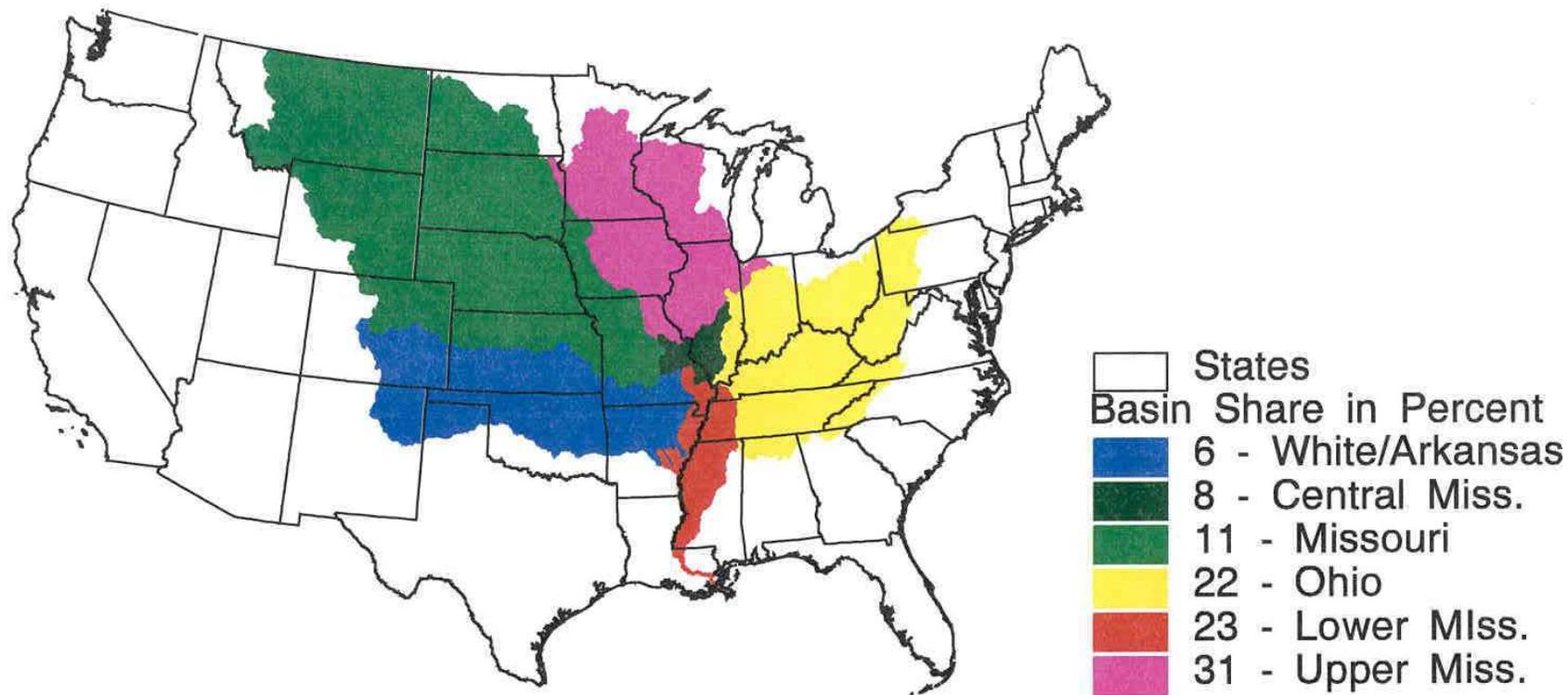


Figure 1. Percentage of the Mississippi River total nitrogen flux to the Gulf of Mexico from interior basins.

Source: Alexander, R.B., Smith, R.A., and Schwarz, G.E., U.S. Geological Survey, Reston, VA, 1996.

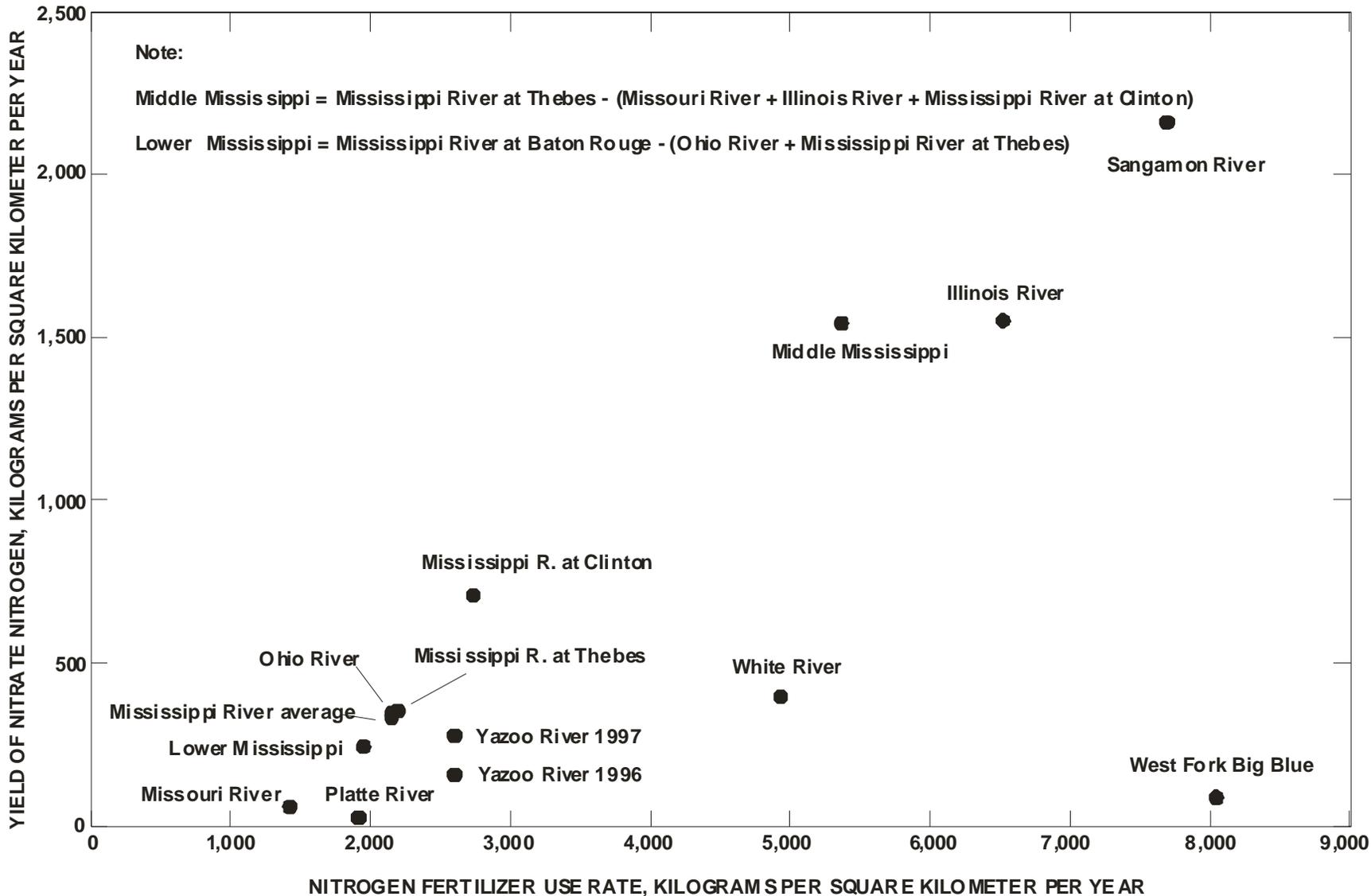
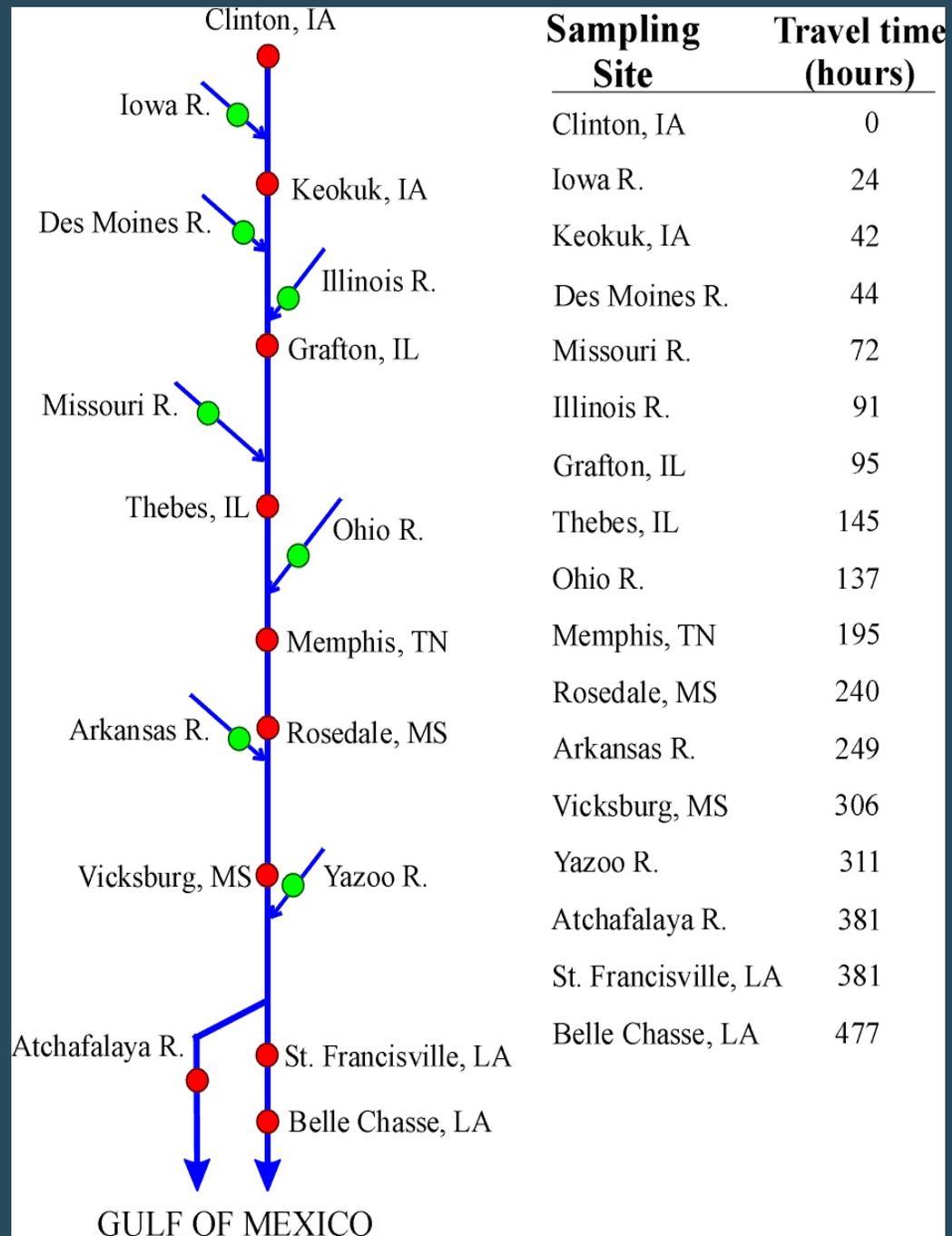
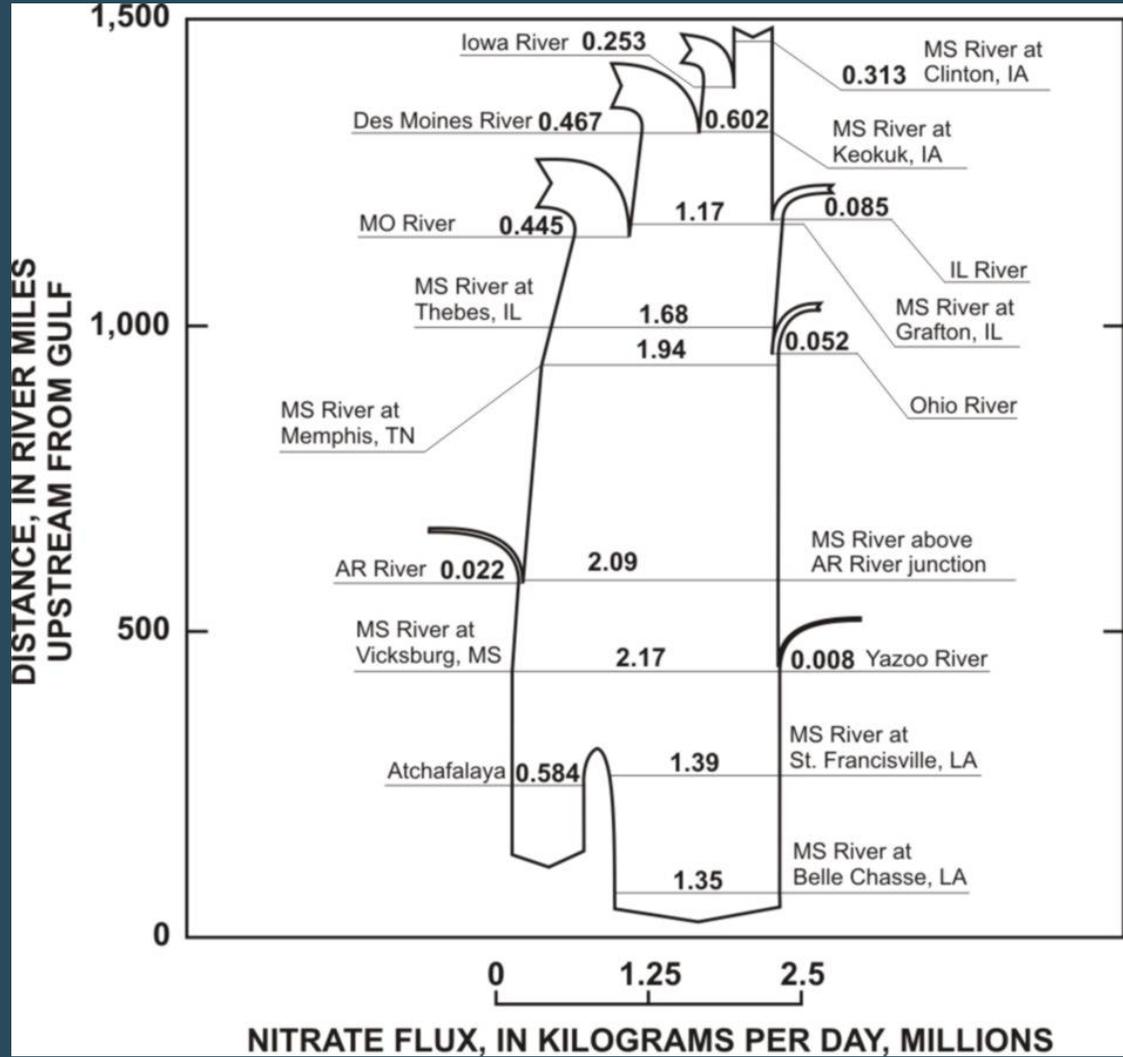


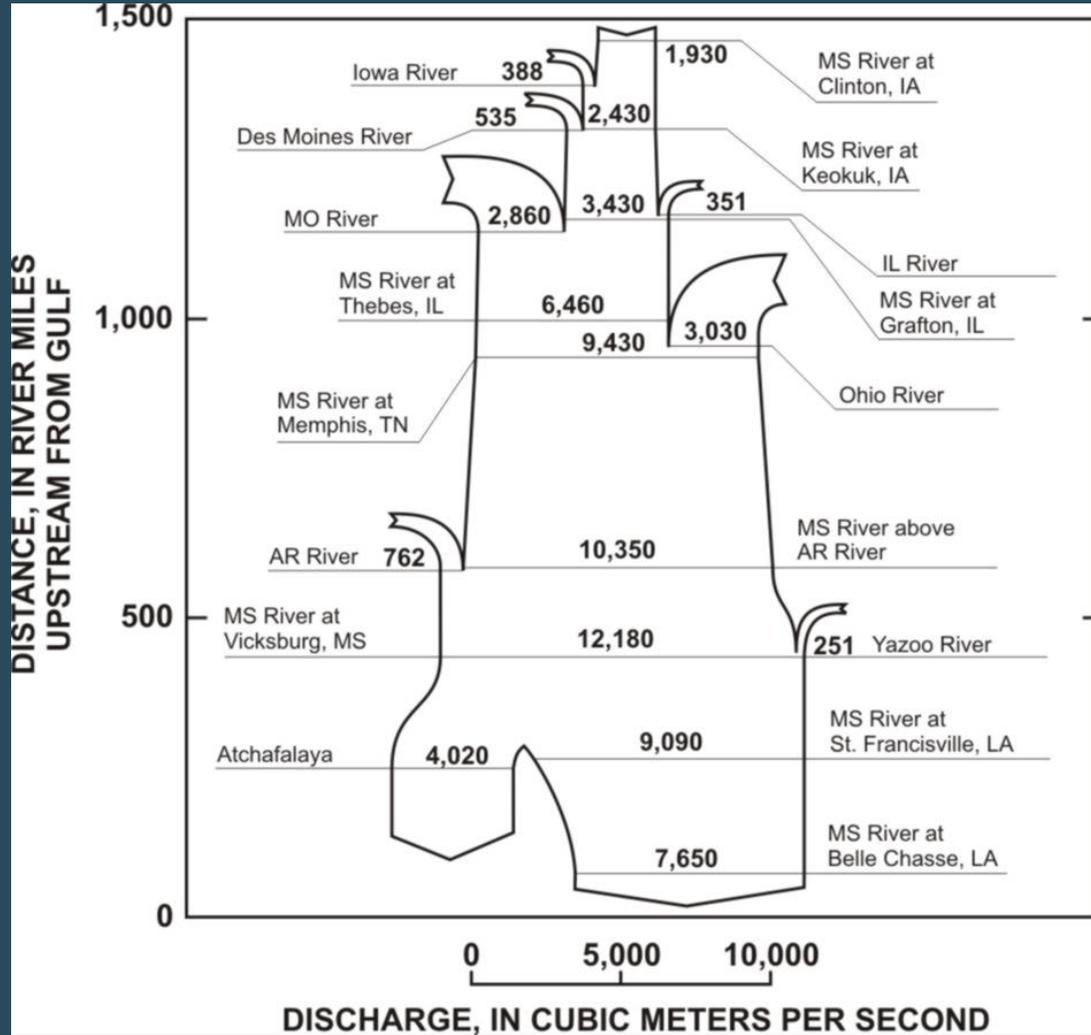
Figure 6. Comparison of nitrate yield to nitrogen fertilizer use for selected sub basins in the Mississippi River Basin, April 1991 through March 1992, and the Yazoo River Basin, January 1996 through December 1997 (Coupe and others, 1995).



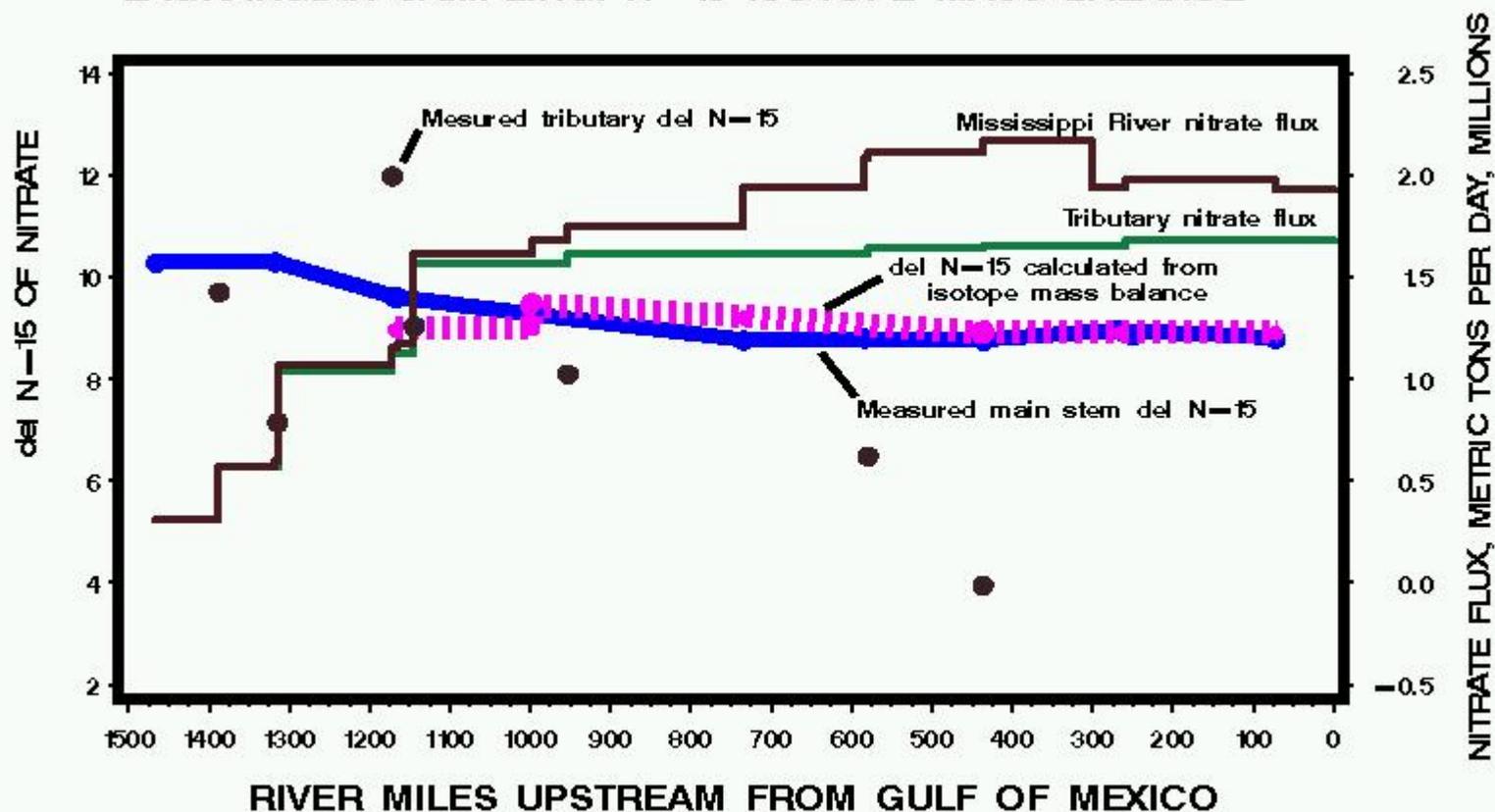
MASS BALANCE SUMMARY FOR LAGRANGIAN TRANSECT

PROPERTY	BASIN TOTAL	ACCOUNTED FOR BY TRIBS.	PERCENT
AREA, KM ²	1,239,500	1,037,190	83
STREAMFLOW, M ³ /S	11,667	10,533	86.6
CHLORIDE, KG/DAY	22,672,406	18,810,560	83
NITRATE, KG/DAY	1,933,064	1,681,956	87
TOTAL N, KG/DAY	2,607,823	2,265,359	86





LAGRANGIAN SAMPLING: N-15 ISOTOPE MASS BALANCE



**RATIO OF MEASURED TO EQUILIBRIUM TEMPERATURE
VERSUS RIVER MILES ABOVE GULF**

