The Little River Experimental Watershed Water Quality Record: The First Three Decades

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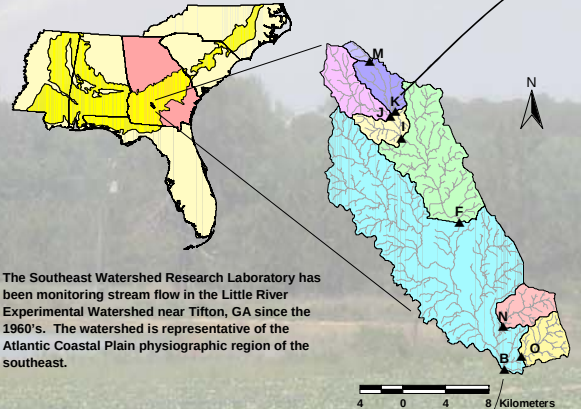
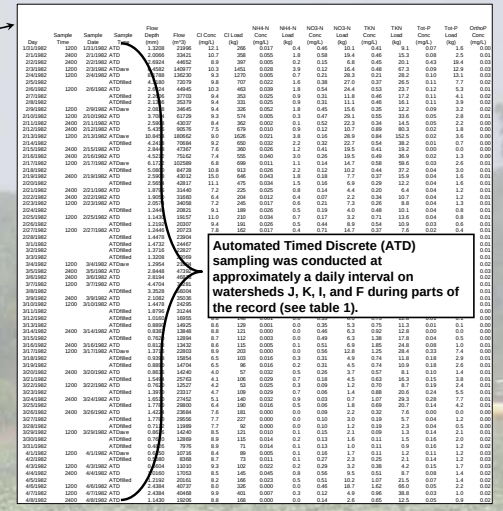
Abstract

Water resource quantity and quality issues are a concern on the Southeast Coastal Plain. A water quality sampling program was initiated in 1974 on the 334 km^2 Little River Experimental Watershed near Tifton in south central Georgia to monitor the effects of changing land use and agricultural practices over time and to support development of simulation models capable of predicting future impacts of agricultural system changes. Stream samples were taken on a weekly or more frequent basis either by manual grab, pump grab, automated timed laboratory composite, automated timed discrete, automated flow composite nonrefrigerated, or automated flow composite refrigerated methods. Samples were measured for chloride, ammonium nitrogen, nitrate nitrogen, total nitrogen, total phosphorus, and ortho phosphate. Nutrient loads were calculated by integrating concentrations with streamflow measurements. The concentration and load data are being published and made available electronically on the world wide web to the research community and general public.

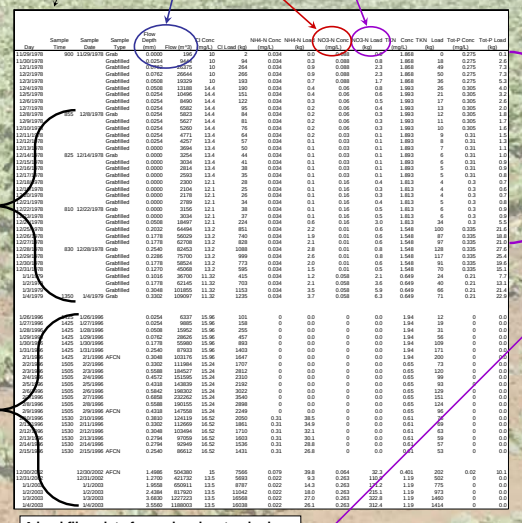


The Southeast Watershed Research Laboratory has been monitoring stream flow in the Little River Experimental Watershed near Tifton, GA since the 1960's. The watershed is representative of the Atlantic Coastal Plain physiographic region of the southeast.



Automated Timed Discrete (ATD) sampling was conducted at approximately a daily interval on watersheds J, K, I, and F during parts of the record (see table 1).

daily flow x concentration = load



Loads are "quasi-daily" loads, computed on a daily basis for convenience sake. They should be summarized at an interval ≥ sampling interval, for example, monthly.

Table 1. Dates of various sampling methods for each subwatershed in the LREW.

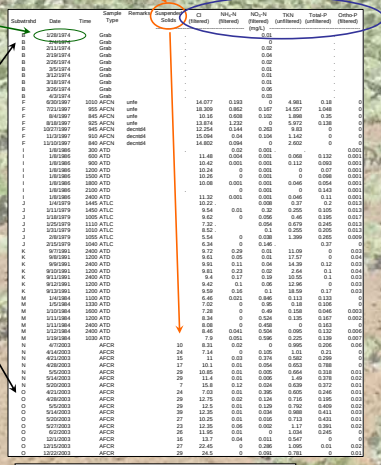
Subwatershed	Area, km^2	Grab	Automated, timed, lab composite	Automated, timed, discrete	Automated, flow composite, non-refrigerated	Automated, flow composite, refrigerated
M	2.62	1/8/1982 – 4/9/1982 12/1986 1/7/2002 – 4/29/2002	-	4/13/1982 – 4/2/1986	-	5/6/2002 – present
K	16.65	1/1/1979 – 12/30/1981 1/24 – 8/15/1974 4/2/1993 – 1/12/1995	8/21/1974 – 8/13/1978 1/1/1982 – 3/26/1993	1/20/1995 – 12/30/2002	1/6/2003 – present	
J	22.12	1/24/1974 – 8/18/1978 1/12/1990 – 12/30/1994	12/28/1978 – 3/30/1982	4/1/1982 – 1/2/1990	1/20/1995 – 12/30/2002	1/6/2003 – present
I	49.91	1/24/1974 – 4/2/1982 12/12/1986 – 1/12/1995 1/14/2002 – 3/31/2003	-	4/6/1982 – 3/30/1986	1/20/1995 – 12/29/2003	1/5/2004 – present
F	114.84	2/1/1974 – 3/26/1982 12/5/1986 – 1/12/1995	-	4/2/1982 – 4/2/1986	1/20/1995 – 12/29/2003	1/5/2004 – present
N	15.67	1/28/1974 – 12/14/1978 1/7/2002 – 4/29/2002	12/22/1978 – 12/25/1981	-	-	5/6/2002 – present
O	15.93	1/28/1974 – 12/22/1978 2/11/1993 – 1/12/1995	12/23/1978 – 12/30/1981	-	1/20/1995 – 12/30/2002	1/6/2003- present
B	334.24	1/28/1974 – 1/12/1995	-	-	1/20/1995 – 12/30/2002	1/6/2003- present

Sample concentration record for six analytes: Cl, NO3-N, NH4-N, TKN, Total P, Ortho P.

Limited Suspended Solids data are available.

Sampling initiated in 1974

8 Subwatersheds

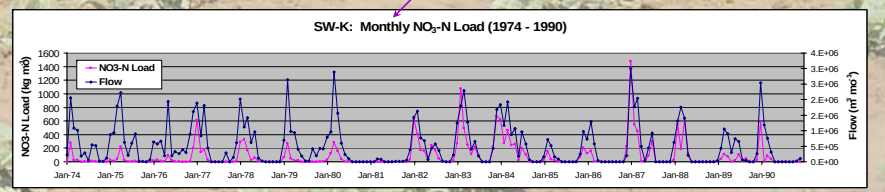


A portion of the raw concentration data file.

Manual grab sampling typically done on a weekly basis

Automated flow-proportional sampling began in 1996 in subwatershed B

A load file exists for each subwatershed.



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