

Project Overview

Hypothesis: Conservation Practices that have been installed throughout the Coastal Plain have had a significant impact upon Regional Hydrology

Objective 1: Quantify historical changes in land-use in the Little River Watershed

Objective 2: Compare observed changes in land-use to observed hydrologic flow

Methods

Land-use

- Unsupervised classification of six LandSat images from 1975-2003
- Classified as riparian forest, upland forest, open water, urban, general agriculture, fallow, and pasture

Hydrology

- Examined hydrologic and climatic data from the Little River Watershed, 1968-2004

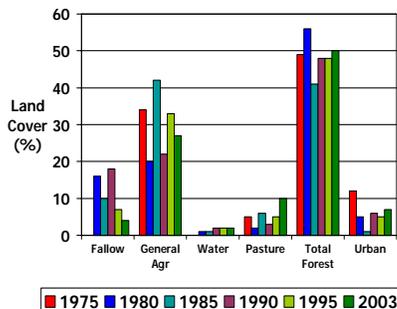
Results

Land-use classifications derived from the LandSat images collected from 1975 to 2003 for LRB

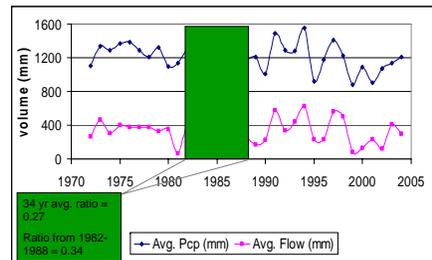
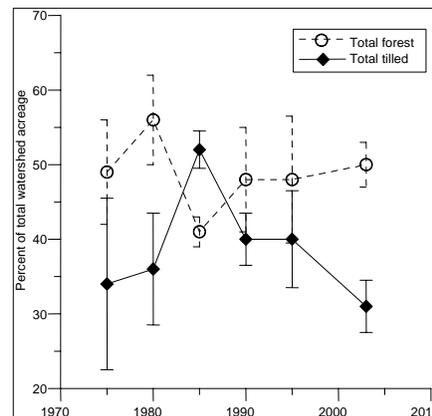
Classification	Percentage of Total Watershed Acreage					
	June 1975	July 1980	July 1985	June 1990	Aug. 1995	July 2003
Fallow	NC ^(a)	16	10	18	7	4
General agriculture	34	20	42	22	33	27
Total tilled ^(b)	34	36	52	40	40	31
Water	0	1	1	2	2	2
Pasture	5	2	6	3	5	10
Riparian forest	23	29	22	24	28	28
Upland forest	26	27	19	24	20	22
Total forest ^(c)	49	56	41	48	48	50
Urban	12	5	1	6	5	7

^(a) NC = land-use not included in the classification.
^(b) Total tilled area includes both fallow and general agriculture.
^(c) Total forest area includes both upland and riparian forest.

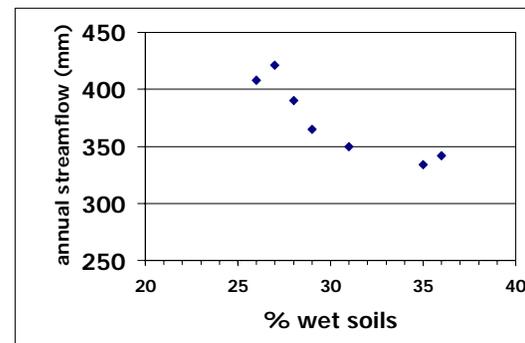
Average classification errors from 0 to 15%



- No significant long term change in the total forest area
 - 16% decrease between 1980 and 1985
- No significant change in total tilled acreage
 - 16% increase between 1980 and 1985
- Most observed changes were less than the classification error (@ 10%)



- Little change in the flow rate as a function of precipitation over the 33 year observation period (insignificant decline)
- Observed changes dominated by seasonal and annual precipitation patterns
- Indication of an increase in flow due to a decrease in forested area around 1985



Indication that streamflow is influenced by near-stream soils and riparian conditions

Conclusions

- No Long-term change in forested acreage
- No long-term change in hydrologic patterns, dominated by annual and seasonal precipitation patterns
- Near-stream riparian conditions have the greatest influence upon streamflow

Contacts

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