

# USGS Web and GIS-Based Water Resources Planning and Management Tools in Alabama

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# USGS Web & GIS-Based Water Resources in Alabama

- StreamStats
- PRMS
- SPARROW
- WaterWatch

# StreamStats

<http://water.usgs.gov/osw/streamstats/>

- Users can select USGS gaging stations on a map and obtain previously published information for the stations
- Users can select any location along a stream and obtain
  - Drainage basin boundary
  - Basin characteristics
  - Estimated streamflow statistics

# StreamStats

http://water.usgs.gov/osw/streamstats/

**USGS**  
science for a changing world

**Welcome to StreamStats**

Best viewed in Internet Explorer 10 or higher with pop-up blocker disabled

**State Applications**

Choose a State  OR Choose a River Basin

[StreamStats Application Status](#)

Efforts are underway to make StreamStats operational for many states, with a long-term goal of national coverage. Work needed to implement StreamStats is generally done by the USGS in cooperation with various state and local agencies. The map below indicates states where StreamStats has been implemented, and where work on implementation is currently underway. Green states have fully implemented StreamStats applications, orange states have been completed and are in testing internally, and blue states are undergoing implementation. Users may access the implemented state applications by selecting the state of interest on the map below, or by selecting the name of the state from the list above.

- Fully implemented (Clickable)
- Delineation and basin characteristics implemented (Clickable)
- Implemented and testing internally
- Undergoing implementation

AK HI PR-VI

**ALABAMA**  
DEPARTMENT OF TRANSPORTATION

**OWR**  
The Office of Water Resources  
Alabama

**ALABAMA**  
WATER RESOURCES

**AOSC**  
THE ALABAMA OFFICE OF THE STATE CLIMATE OFFICER  
UAHuntsville

**ALABAMA POWER**  
A SOUTHERN COMPANY

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# StreamStats

<http://water.usgs.gov/osw/streamstats/>

The screenshot displays the StreamStats web application interface. At the top, a browser window shows the URL [http://streamstatsags.cr.usgs.gov/v3\\_beta/viewer.htm?stabbr=AL](http://streamstatsags.cr.usgs.gov/v3_beta/viewer.htm?stabbr=AL). The application title bar reads "StreamStats Version 3.0 : AL".

The main interface includes a toolbar with navigation and tool icons, a "Zoom To:" dropdown, and a "Map Layers" panel on the left. The "Map Layers" panel contains the following options:

- Streamgages
- Regional Studies
- Availability
- State Applications
- Study Area Bndys
- Base Layers**
  - Imagery
  - Street Map
  - World Topo
  - USA Topo
  - Canadian Topo
  - THM Topo

Below the map layers is a scale bar (0 to 300 miles) and coordinates: Latitude: 48.62089, Longitude: -108.20110, AL. A small inset map shows the current location within the United States.

The main map area displays a topographic map of the United States with several states highlighted in different colors: California (purple), Nevada (orange), Arizona (purple), Texas (orange), and Florida (purple). Major cities like San Jose, Santa Ana, San Diego, Los Angeles, Phoenix, Dallas, Houston, Chicago, Detroit, Buffalo, New York, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, and Texas are labeled. The map also shows the Gulf of Mexico and the Atlantic Ocean.

At the bottom left, the USGS logo is displayed with the tagline "science for a changing world".



- Users can select USGS gaging stations on a map and obtain previously published information for the stations

The screenshot displays the StreamStats web application interface. The browser address bar shows the URL: [http://streamstatsags.cr.usgs.gov/v3\\_beta/viewer.htm?stabbr=AL](http://streamstatsags.cr.usgs.gov/v3_beta/viewer.htm?stabbr=AL). The application title is "StreamStats Version 3.0 : Alabama".

The interface includes a toolbar with navigation and tool icons, a "Zoom To:" dropdown, and a "Select on a tool on the toolbar..." instruction. The "AL Map Layers" panel on the left shows various layers, with "Streamgages" and "Area of Limited Functionality" checked. The "Base Layers" panel shows "Imagery" selected.

The main map area displays a topographic map of a region in Alabama. A blue arrow points to a specific gaging station on a stream. A pop-up window titled "StreamStats Identify Results" is open, displaying the following information:

**Streamgage Information**  
Station Name: CATOMA CREEK NEAR MONTGOMERY AL  
Site Number: [02421000](#) (click here)  
Latitude: 32.3073  
Longitude: -86.29948  
Site Status: Active  
NWIS URL: [\(click here\)](#)  
Station Type: Continuous Streamgage  
Coordinate Source: NHD24K

**Alabama**  
ST\_ABBR: AL  
ST\_NAME: Alabama  
COUNTRY: US  
ST\_FIPS: 01  
STATEID: 1  
ws\_status: 5  
dev\_available: 1  
prod\_available: 1  
available10: 1  
test\_status: 6  
prod\_cmt: Null  
test\_cmt: Null  
dev\_cmt: Null  
st\_area(shape): 189520246041.15576  
st\_length(shape): 2362911.120993

**Stream Grid**  
Pixel Value: 1

The bottom of the page contains footer information, including "Accessibility", "FOIA", "Privacy", "Policies and Notices", "U.S. Department of the Interior | U.S. Geological Survey", and the URL: [http://streamstatsags.cr.usgs.gov/v3\\_beta/viewer.htm](http://streamstatsags.cr.usgs.gov/v3_beta/viewer.htm). The USA.gov logo is also present in the bottom right corner.

# StreamStats

<http://water.usgs.gov/osw/streamstats/>



## StreamStats Data-Collection Station Report

USGS Station Number 02421000  
Station Name CATOMA CREEK NEAR MONTGOMERY AL

[Click here to link to available data on NWIS-Web for this site.](#)

### Descriptive Information

Station Type	Streamgage, continuous record
Location	
Gage	
Regulation and Diversions	
Regulated?	False
Period of Record	1953-2010
Remarks	
Latitude (degrees NAD83)	32.30736
Longitude (degrees NAD83)	-86.29942
Hydrologic unit code	03150201
County	-
CDN2009	No



## Physical Characteristics

Characteristic Name	Value	Units	Citation Number
<b><i>Descriptive Information</i></b>			
Datum_of_Latitude_Longitude	NAD83	dimensionless	<a href="#">30</a>
District_Code	01	dimensionless	<a href="#">30</a>
Begin_date_of_record	7/1/1952	days	<a href="#">41</a>
End_date_of_record	9/30/2001	days	<a href="#">41</a>
Number_of_days_of_record	16893	days	<a href="#">41</a>
Number_of_days_GT_0	16692	days	<a href="#">41</a>
<b><i>Precipitation Statistics</i></b>			
24_Hour_2_Year_Precipitation	4.5000	inches	<a href="#">31</a>
24_Hour_100_Year_Precipitation	9.5000	inches	<a href="#">31</a>
Mean_Annual_Precipitation	52.000	inches	<a href="#">31</a>
<b><i>Temperature Statistics</i></b>			
Mean_Min_January_Temperature	40.000	degrees F	<a href="#">31</a>
<b><i>Topographical Characteristics</i></b>			
Azimuth	305.000	decimal degrees	<a href="#">31</a>
Mean_Basin_Elevation	300.000	feet	<a href="#">31</a>
<b><i>Land Cover Characteristics</i></b>			
Percent_Forest	30.000	percent	<a href="#">31</a>
Percent_Storage	7.4000	percent	<a href="#">31</a>
<b><i>Soil Properties</i></b>			
Soil_Infiltration	1.9000	inches	<a href="#">31</a>
<b><i>Stream Channel Properties</i></b>			
Main_Channel_Length	25.500	miles	<a href="#">31</a>
Stream_Slope_10_and_85_Method	8.4000	feet per mi	<a href="#">31</a>
<b><i>Basin Dimensional Characteristics</i></b>			
Contributing_Drainage_Area	290	square miles	<a href="#">30</a>
Drainage_Area	290.000	square miles	<a href="#">31</a>



## Streamflow Statistics

Statistic Name	Value	Units	Citation Number	Preferred?
<b>Peak-Flow Statistics</b>				
Mean_Annual_Flood	6620.00	cubic feet per second	<a href="#">31</a>	Y
2_Year_Peak_Flood	9820	cubic feet per second	<a href="#">220</a>	Y
5_Year_Peak_Flood	18200	cubic feet per second	<a href="#">220</a>	Y
10_Year_Peak_Flood	25700	cubic feet per second	<a href="#">220</a>	Y
25_Year_Peak_Flood	37700	cubic feet per second	<a href="#">220</a>	Y
50_Year_Peak_Flood	48800	cubic feet per second	<a href="#">220</a>	Y
100_Year_Peak_Flood	61800	cubic feet per second	<a href="#">220</a>	Y
200_Year_Peak_Flood	77200	cubic feet per second	<a href="#">220</a>	Y
500_Year_Peak_Flood	102000	cubic feet per second	<a href="#">220</a>	Y
Weighted_1_5_Year_Peak_Flood	6970	cubic feet per second	<a href="#">220</a>	Y
Weighted_5_Year_Peak_Flood	18000	cubic feet per second	<a href="#">220</a>	Y
Weighted_10_Year_Peak_Flood	25200	cubic feet per second	<a href="#">220</a>	Y
Weighted_25_Year_Peak_Flood	36200	cubic feet per second	<a href="#">220</a>	Y
Weighted_50_Year_Peak_Flood	46000	cubic feet per second	<a href="#">220</a>	Y
Weighted_100_Year_Peak_Flood	57300	cubic feet per second	<a href="#">220</a>	Y
Weighted_200_Year_Peak_Flood	70300	cubic feet per second	<a href="#">220</a>	Y
Weighted_500_Year_Peak_Flood	91100	cubic feet per second	<a href="#">220</a>	Y
Log_Mean_of_Annual_Peaks	4.0654	Log base 10	<a href="#">31</a>	Y
Log_STD_of_Annual_Peaks	0.2870	Log base 10	<a href="#">31</a>	Y
Log_Skew_of_Annual_Peaks	0.3740	Log base 10	<a href="#">31</a>	Y
WRC_Mean	4.01	Log base 10	<a href="#">220</a>	Y
WRC_STD	0.306	Log base 10	<a href="#">220</a>	Y
WRC_Skew	0.315	Log base 10	<a href="#">220</a>	Y
Systematic_peak_years	51	years	<a href="#">220</a>	Y
Peak_years_with_historic_adjustment	55	years	<a href="#">220</a>	Y
1_5_Year_Peak_Flood	7000	cubic feet per second	<a href="#">220</a>	Y
Weighted_2_Year_Peak_Flood	9770	cubic feet per second	<a href="#">220</a>	Y

**Flood-Volume Statistics**

1_Day_2_Year_Maximum	9934.50	cubic feet per second	<a href="#">31</a>	Y
1_Day_20_Year_Maximum	27094.3	cubic feet per second	<a href="#">31</a>	Y
1_Day_5_Year_Maximum	16319.6	cubic feet per second	<a href="#">31</a>	Y
1_Day_10_Year_Maximum	21454.9	cubic feet per second	<a href="#">31</a>	Y
1_Day_25_Year_Maximum	29037.2	cubic feet per second	<a href="#">31</a>	Y
1_Day_50_Year_Maximum	35520.8	cubic feet per second	<a href="#">31</a>	Y
3_Day_2_Year_Maximum	7075.10	cubic feet per second	<a href="#">31</a>	Y
3_Day_5_Year_Maximum	10929.6	cubic feet per second	<a href="#">31</a>	Y
3_Day_10_Year_Maximum	13972.0	cubic feet per second	<a href="#">31</a>	Y
3_Day_20_Year_Maximum	17279.5	cubic feet per second	<a href="#">31</a>	Y
3_Day_25_Year_Maximum	18413.4	cubic feet per second	<a href="#">31</a>	Y
3_Day_50_Year_Maximum	22182.0	cubic feet per second	<a href="#">31</a>	Y
3_Day_100_Year_Maximum	26367.0	cubic feet per second	<a href="#">31</a>	Y
7_Day_2_Year_Maximum	4282.60	cubic feet per second	<a href="#">31</a>	Y
7_Day_5_Year_Maximum	6478.70	cubic feet per second	<a href="#">31</a>	Y
7_Day_10_Year_Maximum	8202.10	cubic feet per second	<a href="#">31</a>	Y
7_Day_20_Year_Maximum	10069.6	cubic feet per second	<a href="#">31</a>	Y
7_Day_25_Year_Maximum	10708.8	cubic feet per second	<a href="#">31</a>	Y
7_Day_50_Year_Maximum	12830.1	cubic feet per second	<a href="#">31</a>	Y
7_Day_100_Year_Maximum	15181.8	cubic feet per second	<a href="#">31</a>	Y
15_Day_2_Year_Maximum	2576.80	cubic feet per second	<a href="#">31</a>	Y
15_Day_10_Year_Maximum	4640.20	cubic feet per second	<a href="#">31</a>	Y
15_Day_20_Year_Maximum	5495.30	cubic feet per second	<a href="#">31</a>	Y
15_Day_25_Year_Maximum	5774.00	cubic feet per second	<a href="#">31</a>	Y
15_Day_50_Year_Maximum	6656.00	cubic feet per second	<a href="#">31</a>	Y
15_Day_100_Year_Maximum	7568.70	cubic feet per second	<a href="#">31</a>	Y
30_Day_2_Year_Maximum	1776.00	cubic feet per second	<a href="#">31</a>	Y
30_Day_10_Year_Maximum	3113.80	cubic feet per second	<a href="#">31</a>	Y
30_Day_25_Year_Maximum	3732.80	cubic feet per second	<a href="#">31</a>	Y
30_Day_50_Year_Maximum	4169.00	cubic feet per second	<a href="#">31</a>	Y

### Low-Flow Statistics

1_Day_2_Year_Low_Flow	0.5500	cubic feet per second	<a href="#">31</a>	Y
1_Day_10_Year_Low_Flow	0.0600	cubic feet per second	<a href="#">31</a>	Y
1_Day_20_Year_Low_Flow	0.0300	cubic feet per second	<a href="#">31</a>	Y
3_Day_2_Year_Low_Flow	0.5900	cubic feet per second	<a href="#">31</a>	Y
3_Day_10_Year_Low_Flow	0.0800	cubic feet per second	<a href="#">31</a>	Y
3_Day_20_Year_Low_Flow	0.0500	cubic feet per second	<a href="#">31</a>	Y
7_Day_2_Year_Low_Flow	0.5100	cubic feet per second	<a href="#">31</a>	Y
7_Day_5_Year_Low_Flow	0.1200	cubic feet per second	<a href="#">31</a>	Y
7_Day_10_Year_Low_Flow	0.0500	cubic feet per second	<a href="#">31</a>	Y
7_Day_20_Year_Low_Flow	0.0300	cubic feet per second	<a href="#">31</a>	Y
14_Day_2_Year_Low_Flow	0.7900	cubic feet per second	<a href="#">31</a>	Y
14_Day_10_Year_Low_Flow	0.0800	cubic feet per second	<a href="#">31</a>	Y
14_Day_20_Year_Low_Flow	0.0400	cubic feet per second	<a href="#">31</a>	Y
30_Day_2_Year_Low_Flow	1.5400	cubic feet per second	<a href="#">31</a>	Y
30_Day_10_Year_Low_Flow	0.1400	cubic feet per second	<a href="#">31</a>	Y
30_Day_20_Year_Low_Flow	0.0600	cubic feet per second	<a href="#">31</a>	Y
90_Day_2_Year_Low_Flow	11.950	cubic feet per second	<a href="#">31</a>	Y
90_Day_10_Year_Low_Flow	1.4500	cubic feet per second	<a href="#">31</a>	Y
90_Day_20_Year_Low_Flow	0.7500	cubic feet per second	<a href="#">31</a>	Y

### Flow-Duration Statistics

1_Percent_Duration	5141.4	cubic feet per second	<a href="#">41</a>	Y	48
5_Percent_Duration	1830	cubic feet per second	<a href="#">41</a>	Y	48
10_Percent_Duration	898	cubic feet per second	<a href="#">41</a>	Y	48
20_Percent_Duration	270	cubic feet per second	<a href="#">41</a>	Y	48
25_Percent_Duration	180	cubic feet per second	<a href="#">41</a>	Y	48
30_Percent_Duration	131	cubic feet per second	<a href="#">41</a>	Y	48
40_Percent_Duration	75	cubic feet per second	<a href="#">41</a>	Y	48
50_Percent_Duration	40	cubic feet per second	<a href="#">41</a>	Y	48
60_Percent_Duration	20	cubic feet per second	<a href="#">41</a>	Y	48
70_Percent_Duration	11	cubic feet per second	<a href="#">41</a>	Y	48
75_Percent_Duration	7.4	cubic feet per second	<a href="#">41</a>	Y	48
80_Percent_Duration	5	cubic feet per second	<a href="#">41</a>	Y	48
90_Percent_Duration	1.7	cubic feet per second	<a href="#">41</a>	Y	48
95_Percent_Duration	0.6	cubic feet per second	<a href="#">41</a>	Y	48
99_Percent_Duration	0	cubic feet per second	<a href="#">41</a>	Y	48

**Annual Flow Statistics**

Mean_Annual_Flow	355.200	cubic feet per second	<a href="#">31</a>	Y
Stand_Dev_of_Mean_Annual_Flow	143.600	cubic feet per second	<a href="#">31</a>	Y

**Monthly Flow Statistics**

January_Mean_Flow	565.300	cubic feet per second	<a href="#">31</a>	Y
January_STD	421.600	cubic feet per second	<a href="#">31</a>	Y
February_Mean_Flow	1041.00	cubic feet per second	<a href="#">31</a>	Y
February_STD	994.300	cubic feet per second	<a href="#">31</a>	Y
March_Mean_Flow	828.800	cubic feet per second	<a href="#">31</a>	Y
March_STD	519.900	cubic feet per second	<a href="#">31</a>	Y
April_Mean_Flow	725.300	cubic feet per second	<a href="#">31</a>	Y
April_STD	767.500	cubic feet per second	<a href="#">31</a>	Y
May_Mean_Flow	217.000	cubic feet per second	<a href="#">31</a>	Y
May_STD	334.300	cubic feet per second	<a href="#">31</a>	Y
June_Mean_Flow	59.660	cubic feet per second	<a href="#">31</a>	Y
June_STD	81.470	cubic feet per second	<a href="#">31</a>	Y
July_Mean_Flow	58.910	cubic feet per second	<a href="#">31</a>	Y
July_STD	64.830	cubic feet per second	<a href="#">31</a>	Y
August_Mean_Flow	45.810	cubic feet per second	<a href="#">31</a>	Y
August_STD	48.460	cubic feet per second	<a href="#">31</a>	Y
September_Mean_Flow	160.200	cubic feet per second	<a href="#">31</a>	Y
September_STD	228.900	cubic feet per second	<a href="#">31</a>	Y
October_Mean_Flow	80.170	cubic feet per second	<a href="#">31</a>	Y
October_STD	116.600	cubic feet per second	<a href="#">31</a>	Y
November_Mean_Flow	97.390	cubic feet per second	<a href="#">31</a>	Y
November_STD	178.100	cubic feet per second	<a href="#">31</a>	Y
December_Mean_Flow	435.000	cubic feet per second	<a href="#">31</a>	Y
December_STD	542.800	cubic feet per second	<a href="#">31</a>	Y



**General Flow Statistics**

Minimum_daily_flow	0	cubic feet per second	<a href="#">41</a>	Y	48
Maximum_daily_flow	39500	cubic feet per second	<a href="#">41</a>	Y	48
Std_Dev_of_daily_flows	1189.754	cubic feet per second	<a href="#">41</a>	Y	48
Average_daily_streamflow	363.197	cubic feet per second	<a href="#">41</a>	Y	48

**Base Flow Statistics**

Number_of_years_to_compute_BFI	46	years	<a href="#">42</a>	Y	48
Average_BFI_value	0.097	dimensionless	<a href="#">42</a>	Y	48
Std_dev_of_annual_BFI_values	0.023	dimensionless	<a href="#">42</a>	Y	48

- Users can select any location along a stream and obtain
  - Drainage basin boundary
  - Basin characteristics
  - Estimated streamflow statistics

streamstatsags.cr.usgs.gov/v3\_beta/viewer.htm?stabbr=AL

### StreamStats Version 3.0 : Alabama

Select on a tool on the toolbar. If the icon remains depressed, click on the map to perform the desired action.

#### AL Map Layers

- Streamgages
- Area of Limited Functionality
- Alabama
- Peak-Flow Regions
- Urban Regions
- Stream Grid
- Study Area Bndys

#### Base Layers

- Imagery
- Street Map
- World Topo
- USA Topo
- Canadian Topo

Scale: 1 : 18,056

### StreamStats

#### Delineation Results

Requesting delineation web service. Please wait.

### Loading

USGS The National Map, National Boundaries Dataset, 3D Eleva...

U.S. Geological Survey  
URL: [http://streamstatsags.cr.usgs.gov/v3\\_beta/viewer.htm](http://streamstatsags.cr.usgs.gov/v3_beta/viewer.htm)  
Page Contact Information: [StreamStats Help](#)

[Streamstats Status](#) [News](#) [Introduction](#) [Application Information](#)

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# StreamStats Version 3.0 : Alabama

Zoom To: ▼

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map to perform the desired

**Layers**

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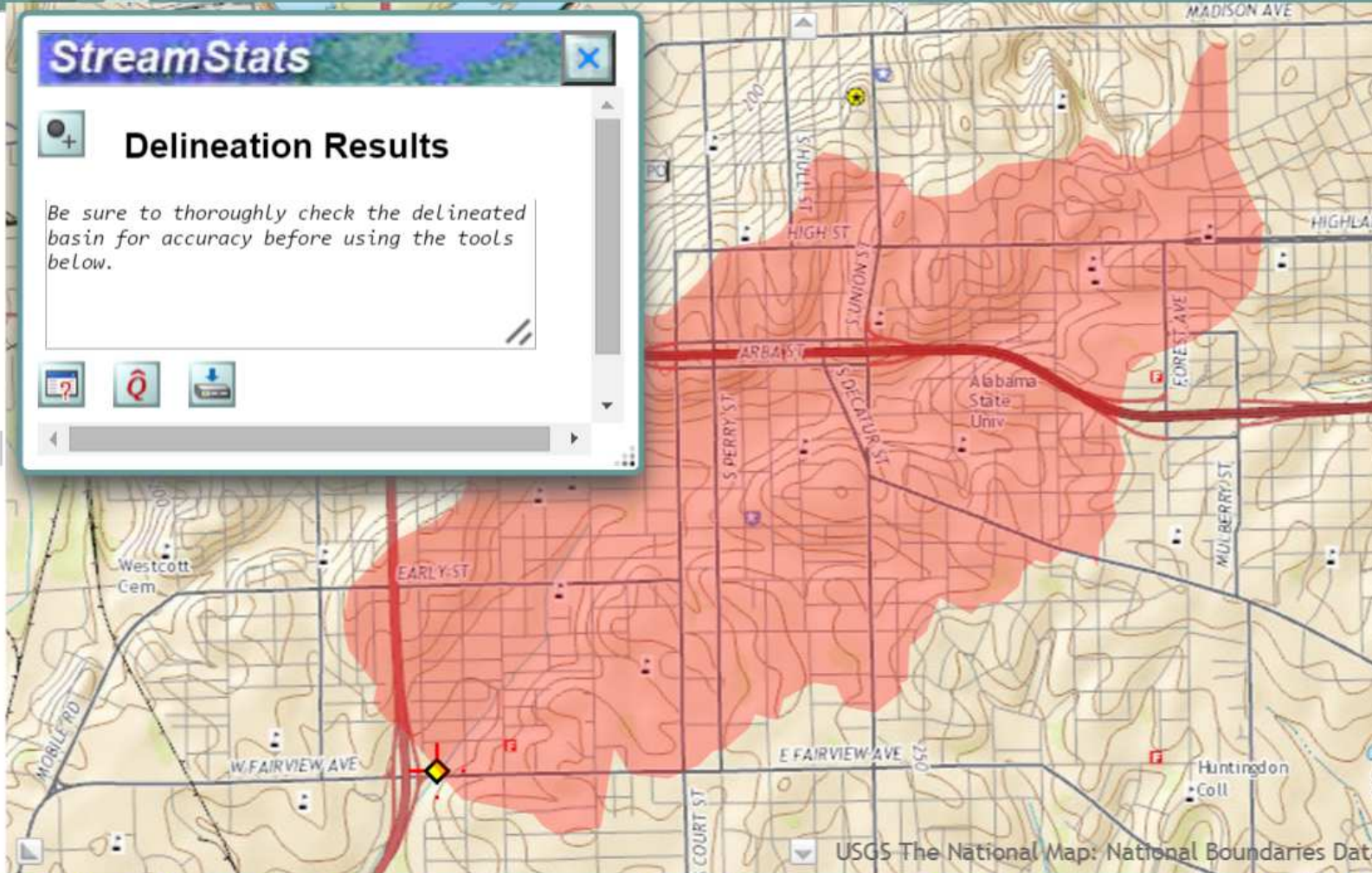
0.6mi  
1 : 36,112

SS

**StreamStats**

**Delineation Results**

*Be sure to thoroughly check the delineated basin for accuracy before using the tools below.*



# Compute Basin Characteristics

StreamStats Basin Characteristics Report - Google Chrome

streamstatsags.cr.usgs.gov/v3\_beta/BCreport.htm?rcode=AL&workspaceID=AL20160112132818515000&includeparameters=URBAN;CONTEA;LC06DEV;LC



StreamStats Version 3.0

Print

## Basin Characteristics Ungaged Site Report

Date: Tues Jan 12, 2016 2:37:46 PM GMT-6

Study Area: Alabama

NAD 1983 Latitude: 32.3518 ( 32 21 06)

NAD 1983 Longitude: -86.3195 (-86 19 11)

Label	Value	Units	Definition
URBAN	89.4	percent	Percentage of basin with urban development
CONTEA	2.702	square miles	Area that contributes flow to a point on a stream
LC06DEV	89.4	percent	Percentage of land-use from NLCD 2006 classes 21-24
LC11IMP	41.4	percent	Percentage of impervious area determined from NLCD 2011 impervious dataset
LC11DEV	98.8	percent	Percentage of land-use from NLCD 2011 classes 21-24

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U.S. Department of the Interior | U.S. Geological Survey

URL: [http://streamstatsags.cr.usgs.gov/v3\\_beta/BCreport.htm](http://streamstatsags.cr.usgs.gov/v3_beta/BCreport.htm)

Page Contact Information: [StreamStats Help](#)

Page Last Modified: 11/13/2015 11:55:34 (Web1)

[Streamstats Status](#) [News](#)



# Compute Flow Characteristics

StreamStats Flow Statistics Report - Google Chrome

streamstatsags.cr.usgs.gov/v3\_beta/FTreport.htm?rcode=AL&workspaceID=AL20160112132818515000&includeflowtypes=PeakFlows,UrbanFlows,SmallBas



StreamStats Version 3.0

Print

## Flow Statistics Ungaged Site Report

Date: Tues Jan 12, 2016 2:39:05 PM GMT-6  
 Study Area: Alabama  
 NAD 1983 Latitude: 32.3518 ( 32 21 06)  
 NAD 1983 Longitude: -86.3195 (-86 19 10)  
 Drainage Area: 2.702 mi2

### Peak- Basin Characteristics

100% Peak Region 3 2007 5204 (2.7 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Contributing Drainage Area (square miles)	2.7	0.45	607

### Urban Peak- Basin Characteristics

100% Undefined Region (2.702 mi2)

*The selected watershed is entirely in an area for which flow equations were not defined.*

### Small Basin Peak- Basin Characteristics

100% Peak Statewide Small Stream 2004 5135 (2.7 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Contributing Drainage Area (square miles)	2.7	0.24	15



### Peak- Statistics

90-Percent Prediction Interval



# Compute Flow Characteristics

StreamStats Flow Statistics Report - Google Chrome

streamstatsags.cr.usgs.gov/v3\_beta/FTreport.htm?rcode=AL&workspaceID=AL20160112132818515000&includeflowtypes=PeakFlows,UrbanFlows,SmallBas

Contributing Drainage Area (square miles) 2.7 0.24 15

## Peak- Statistics

Statistic	Value	Unit	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
					Min	Max
PK1 5	445	ft3/s	54	2		
PK2	572	ft3/s	48	2		
PK5	1010	ft3/s	36	6		
PK10	1440	ft3/s	30	12		
PK25	2160	ft3/s	26	26		
PK50	2780	ft3/s	24	38		
PK100	3450	ft3/s	23	50		
PK200	4140	ft3/s	24	59		
PK500	5070	ft3/s	25	63		

<http://pubs.usgs.gov/sir/2007/5204/>

Hedgecock\_ T.S.\_ 2007\_ Magnitude and Frequency of Floods in Alabama\_ 2003: U. S. Geological Survey Scientific Investigations Report 2007-5204\_ 28 p.

## Small Basin Peak- Statistics

Statistic	Value	Unit	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
					Min	Max
PK2	395	ft3/s	53	2		
PK5	685	ft3/s	35	5		
PK10	929	ft3/s	30	9		
PK25	1300	ft3/s	29	13		
PK50	1610	ft3/s	31	14		
PK100	1950	ft3/s	35	14		
PK250	2350	ft3/s	40	13		



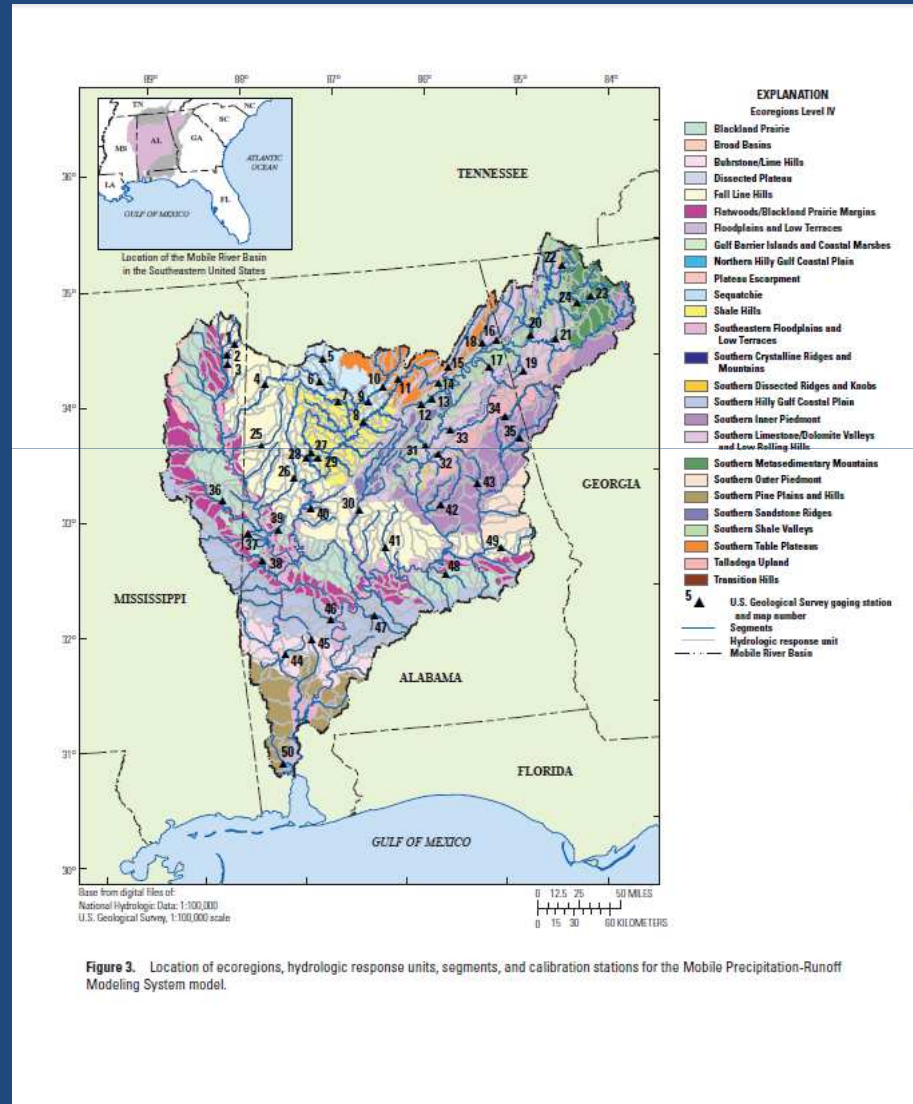
<http://pubs.usgs.gov/sir/2004/5135/>

Hedgecock\_ T.S.\_ 2004\_ Magnitude and Frequency of Floods on Small Rural Streams in Alabama: U. S. Geological Survey Scientific Investigations Report 2004-5135\_ 10 p.

# PRMS

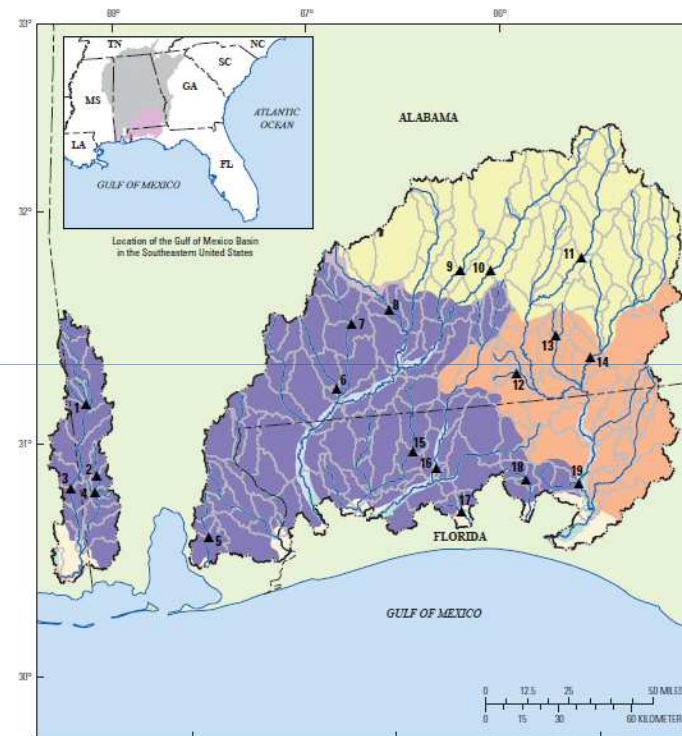
- Precipitation Runoff Modeling System
- The watershed model chosen to assess the natural amount of available water for major river basins that are within Alabama or that cross Alabama's borders.
- Four models were configured and calibrated for the following four river basins:

# Mobile



**Figure 3.** Location of ecoregions, hydrologic response units, segments, and calibration stations for the Mobile Precipitation-Runoff Modeling System model.

# Gulf of Mexico



Base from digital files of:  
National Hydrologic Data: 1:100,000  
U.S. Geological Survey, 1:100,000 scale

- EXPLANATION**
- Ecoregions Level IV**
  - Bahutonee/Lime Hills
  - Dougherty Plain
  - Floodplains and Low Terraces
  - Gulf Barrier Islands and Coastal Marshes
  - Gulf Coast Flatwoods
  - Southeastern Floodplains and Low Terraces
  - Southern Hilly Gulf Coastal Plain
  - Southern Pine Plains and Hills
  - ▲** U.S. Geological Survey gaging station and map number
  - Segments
  - - - Hydrologic response unit
  - ⋯ Gulf of Mexico Basin

**Figure 4.** Location of ecoregions, hydrologic response units, segments, and calibration stations for the Gulf of Mexico Precipitation-Runoff Modeling System model.

# Middle Tennessee

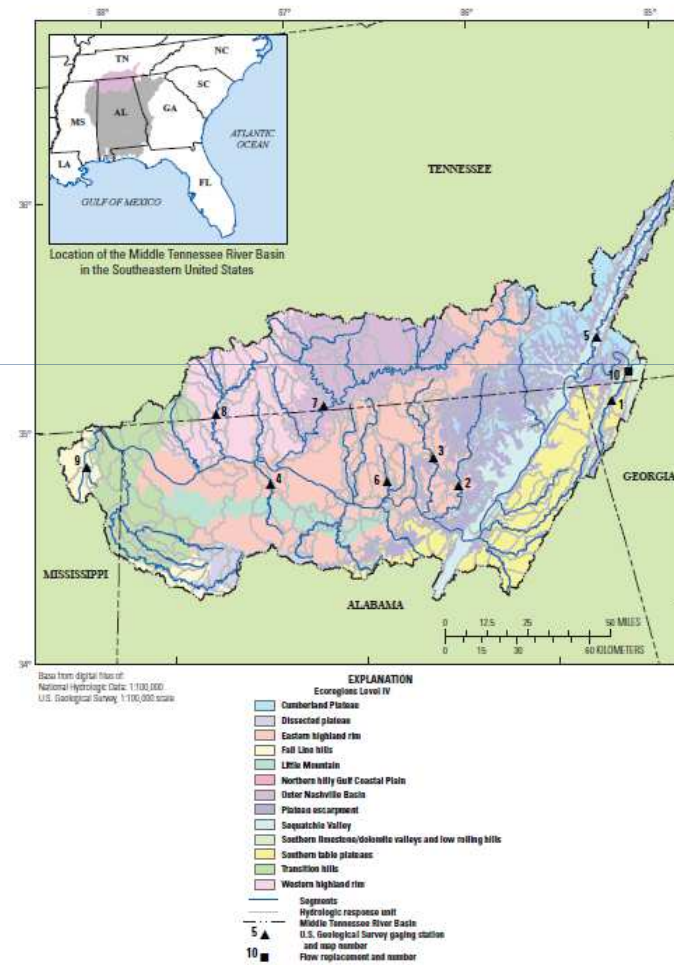


Figure 6. Location of ecoregions, hydrologic response units, segments, and calibration stations for the Middle Tennessee Precipitation-Runoff Modeling System model.



# Chattahoochee

## 8 Simulation of Natural Flows in Major River Basins in Alabama

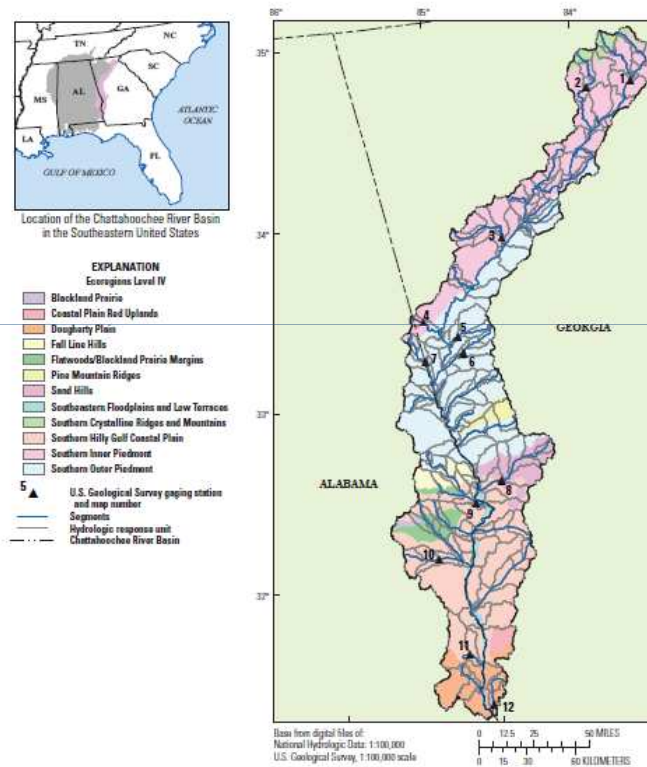


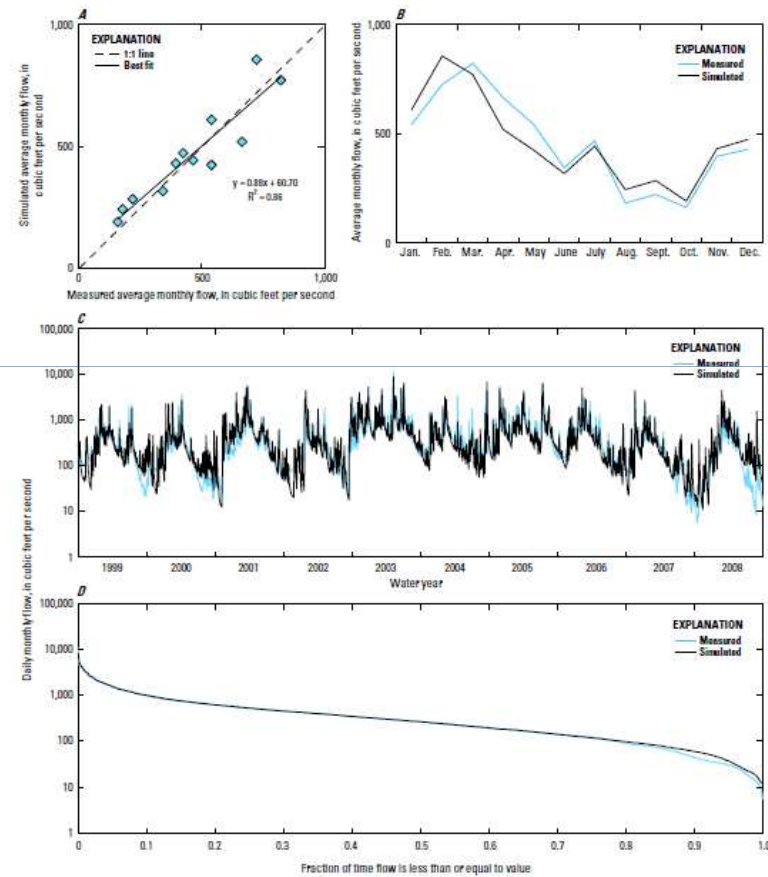
Figure 5. Location of ecoregions, hydrologic response units, segments, and calibration stations for the Chattahoochee Precipitation-Runoff Modeling System model.

# PRMS

- Models were calibrated to unregulated USGS streamflow to estimate natural flows.
- USGS used 90 calibration stations in the PRMS model.

# PRMS

Model Application 27



**Figure 9.** A, Best-fit line for simulated versus measured average monthly flow. B, Average monthly flow (1999–2008). C, Time series of daily flow (1999–2008). D, Duration curve of daily flow at the USGS station 02413000, Little Tallapoosa River at U.S. Route 27, at Carrollton, Ga. (1999–2008).

# PRMS – Model Application

- Predict streamflow (daily) at ungaged basins
- Predict natural streamflow (daily) at regulated flow locations.
- Model can be used to evaluate withdrawal scenarios and determine their effects on water availability

# http://pubs.usgs.gov/sir/2014/5021/

← → http://pubs.usgs.gov/sir/2014/5021/ 🔍 ↻ Time and Attendan... USGS Scientific I... x

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## Scientific Investigations Report 2014-5021

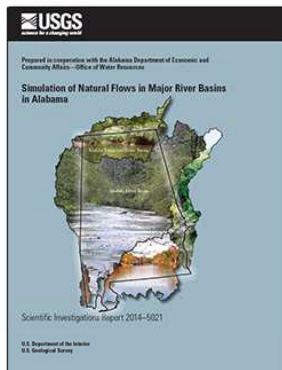
>> Pubs Warehouse > SIR 2014-5021

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Prepared in cooperation with the Alabama Department of Economic and Community Affairs—Office of Water Resources

## Simulation of Natural Flows in Major River Basins in Alabama

By Alexandria M. Hunt and Ana María García



### Abstract

The Office of Water Resources (OWR) in the Alabama Department of Economic and Community Affairs (ADECA) is charged with the assessment of the State's water resources. This study developed a watershed model for the major river basins that are within Alabama or that cross Alabama's borders, which serves as a planning tool for water-resource decisionmakers. The watershed model chosen to assess the natural amount of available water was the Precipitation-Runoff Modeling System (PRMS). Models were configured and calibrated for the following four river basins: Mobile, Gulf of Mexico, Middle Tennessee, and Chattahoochee. These models required calibrating unregulated U.S. Geological Survey (USGS) streamflow gaging stations to estimate natural flows, with emphases on low-flow calibration. The target calibration criteria required the errors be within the range of: (1)  $\pm 10$  percent for total-streamflow volume, (2)  $\pm 10$  percent for low-flow volume, (3)  $\pm 15$  percent for high-flow volume, (4)  $\pm 30$  percent for summer volume, and (5) above 0.5 for the correlation coefficient ( $R^2$ ). Seventy-one of the 90 calibration stations in the watershed models for the four major river basins within Alabama met the target calibration criteria. Variability in the model performance can be attributed to limitations in correctly representing certain hydrologic conditions that are characterized by some of the ecoregions in Alabama. Ecoregions consisting of predominantly clayey soils and (or) low topographic relief yield less successful calibration results, whereas ecoregions consisting of loamy and sandy soils and (or) high topographic relief yield more successful calibration results. Results indicate that the model does well in hilly regions with sandy soils because of rapid surface runoff and more direct interaction with subsurface flow.

First posted May 27, 2014

■ [Report PDF \(7.91 MB\)](#)

■ [Appendix 1 PDF \(32.8 MB\)](#)

Appendix 1 provides a series of graphs presenting model results.

■ [Downloads Directory](#)

The downloads directory contains a [Readme](#) file (MS Word, 69 KB), a zip file for [GIS Shape](#) data (36.9 MB), and a zip file for the natural flow [model](#) data (293 MB).

**For additional information, contact:**  
[Director](#), Alabama Water Science Center  
U.S. Geological Survey  
AUM TechnaCenter  
75 TechnaCenter Drive  
Montgomery, AL 36117  
<http://al.water.usgs.gov/>

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# SPARROW

## Decision Support System (DSS)



# SPARROW

- Spatially Referenced Regression on Watershed attributes
- SPARROW Decision Support System (DSS)
  - Map predictions of long-term average water quality conditions (loads, yields, concentrations)
  - Map source contributions by stream reach and catchment
  - Track transport to downstream receiving waters, such as reservoirs and estuaries

# SPARROW Decision Support System (DSS)

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### SPARROW Decision Support System

**Find a Model by Geographic Location:**  
Select a region or state. When a state is selected, all models containing that state are listed.

Alabama

**Find a Model by Modeled Constituent:**  
Any

**Models matching your criteria** (click a model to show details)

- National Suspended Sediment Model - 1992
- National Total Nitrogen Model - 1992
- National Total Organic Carbon Model
- National Total Phosphorus Model - 1992
- Total Nitrogen Model for the South Atlantic-Gulf and Tennessee Region - 2002
- Total Phosphorus Model for the South Atlantic-Gulf and Tennessee Region - 2002

**Documentation and Further Reading**

- What is SPARROW?
- What is SPARROW Decision Support?
- SPARROW Applications & Documentation
- SPARROW DSS FAQs

**Tutorial Videos**

Select a video...  
Watch now >>

**Found a bug or have a comment?**  
Please send bugs, suggestions and questions to the SPARROW Decision Support System Administrator.

**Selected Model**

*No model selected*  
Use the filter and selection list to the left to select a model.

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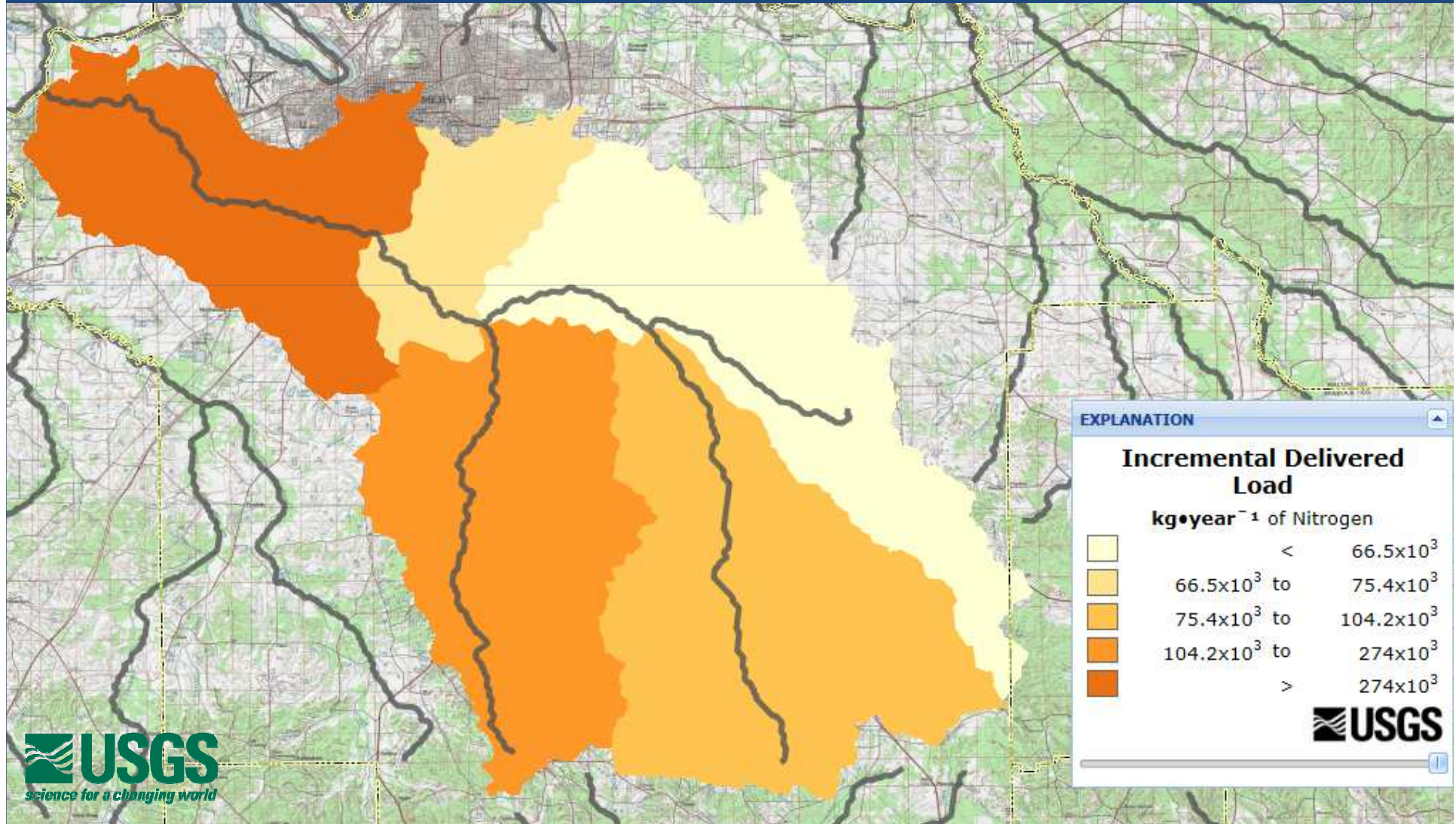
U.S. Department of the Interior | U.S. Geological Survey  
http://water.usgs.gov/nawqa/sparrow/dss/  
Contact Information: SPARROW DSS Administrator

Page Last modified: 08/07/2015 14:54:07 (Version: 2.0.0 (08/07/2015 14:54:07) - Release)

FIRSTGOV  
TAKE PRIDE IN AMERICA

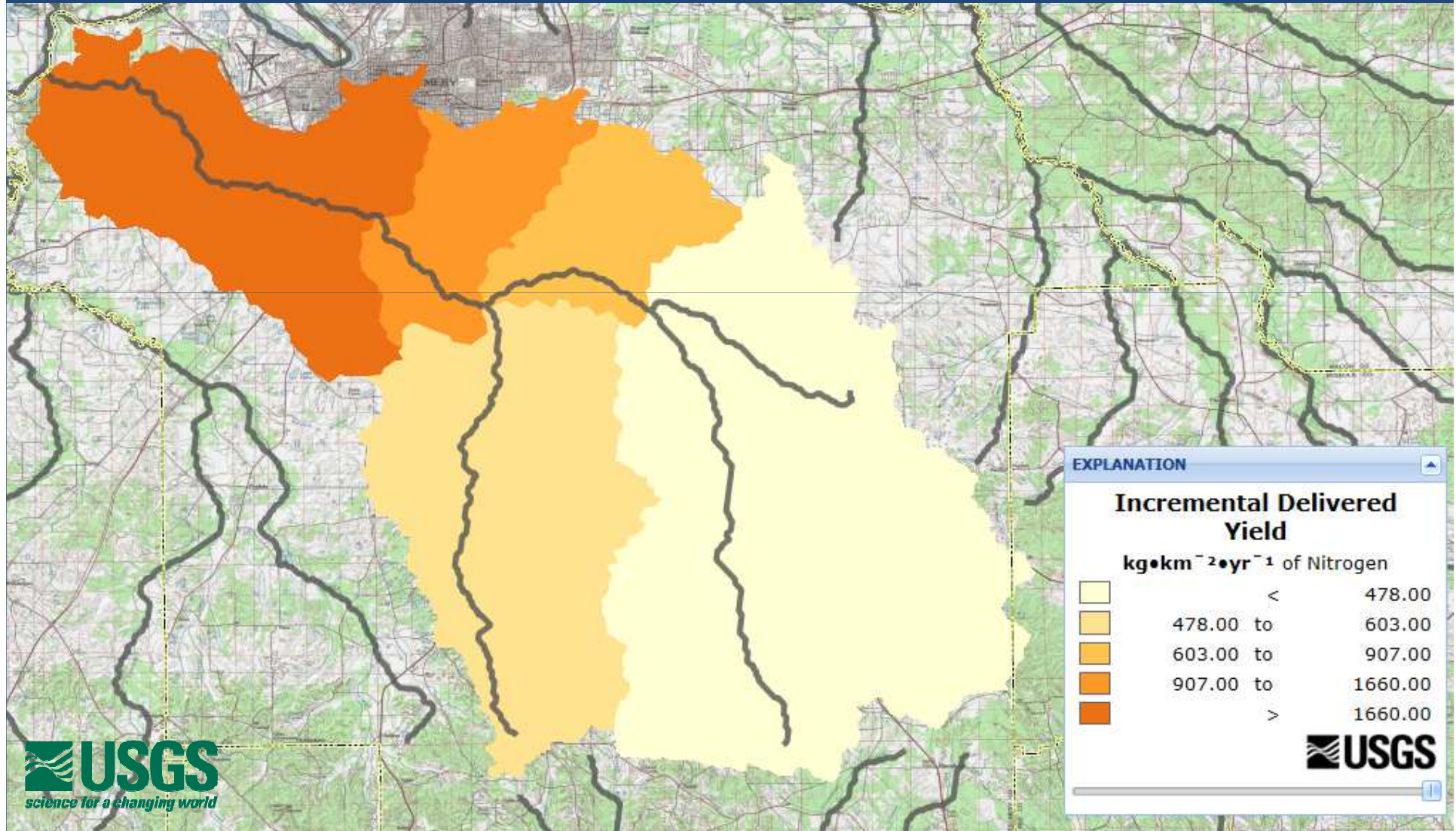


# Map predictions of long-term average water quality conditions (loads, yields, concentrations)



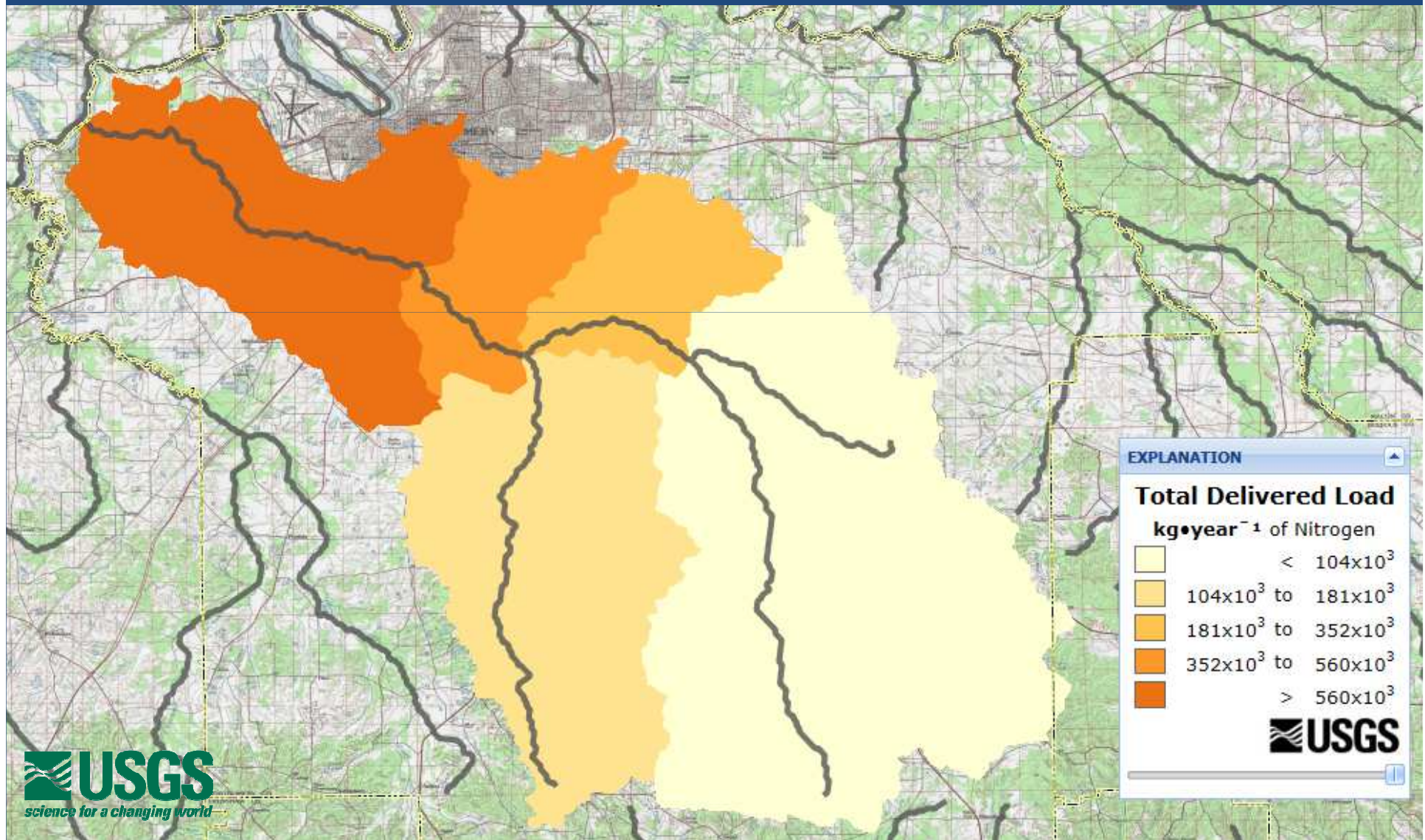


# Map predictions of long-term average water quality conditions (loads, yields, concentrations)



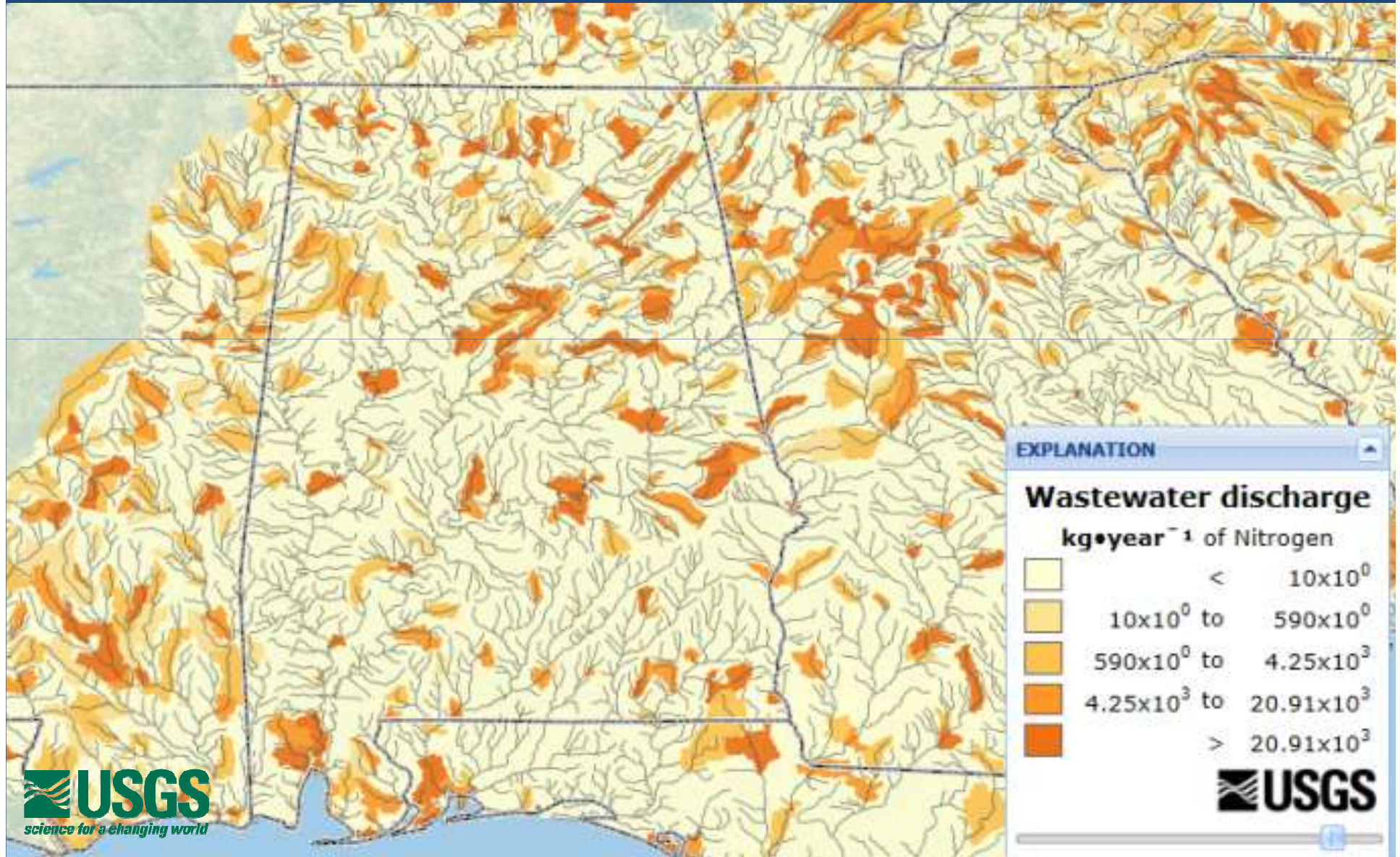


# Map predictions of long-term average water quality conditions (loads, yields, concentrations)



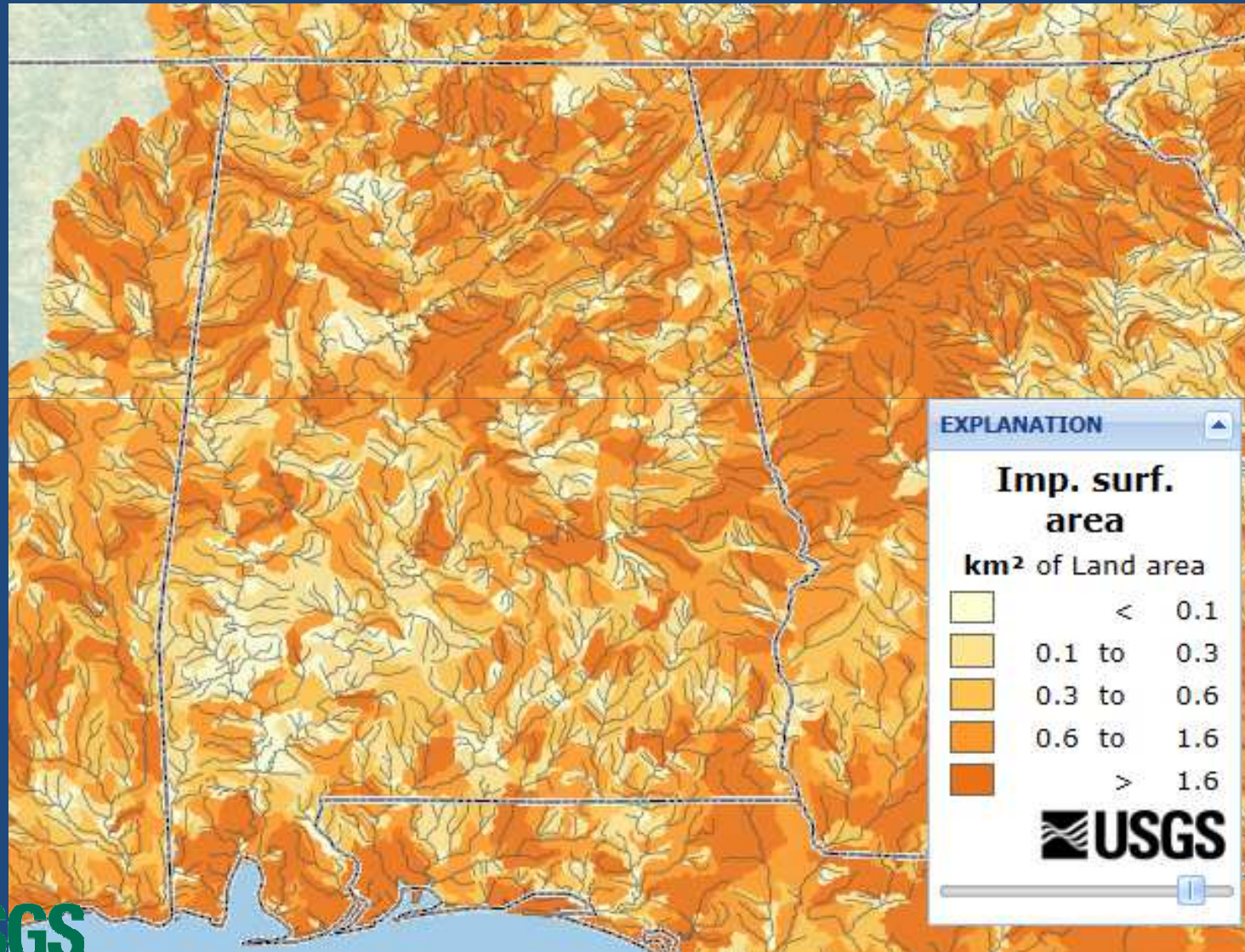


# Map source contributions by stream reach and catchment



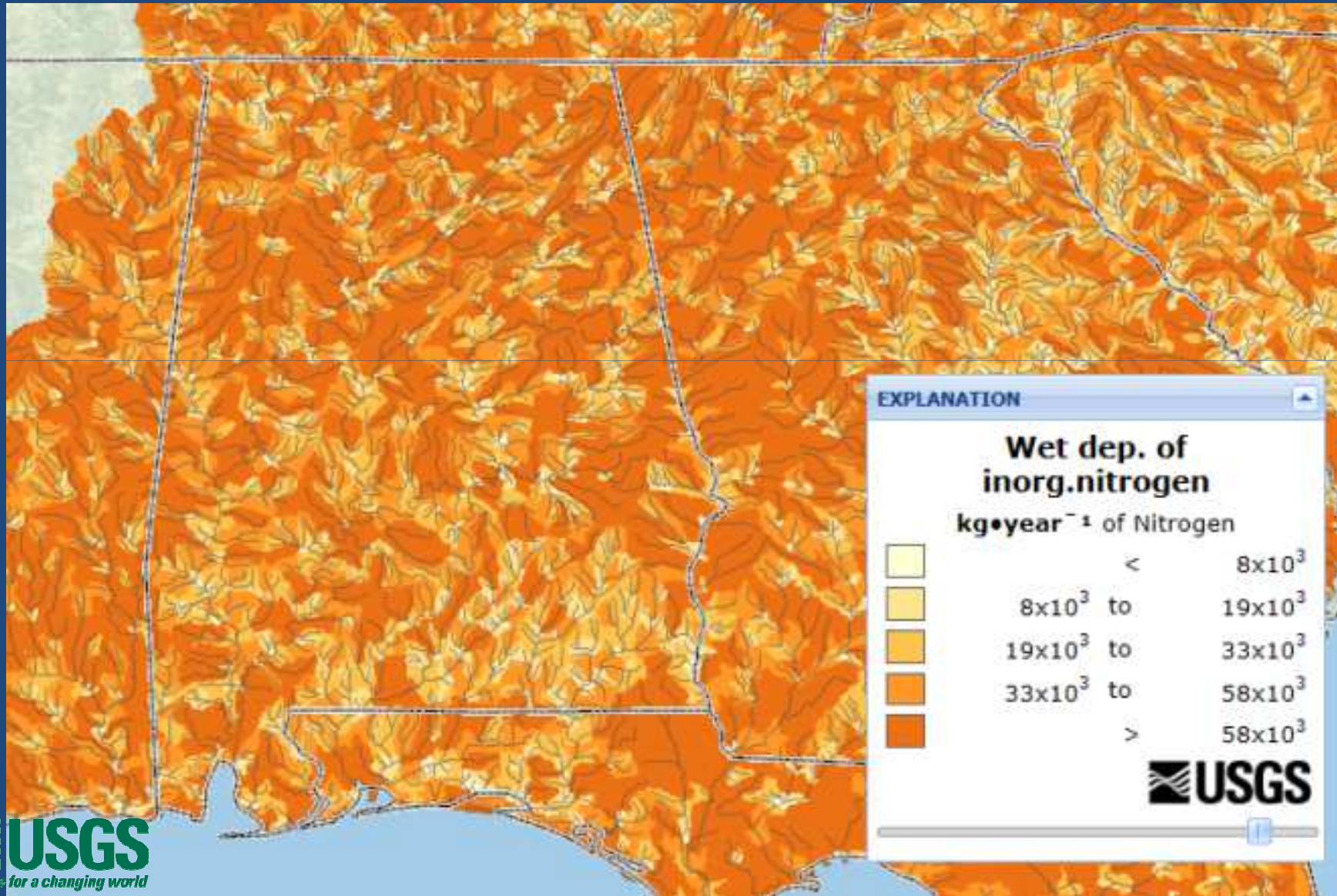


# Map source contributions by stream reach and catchment



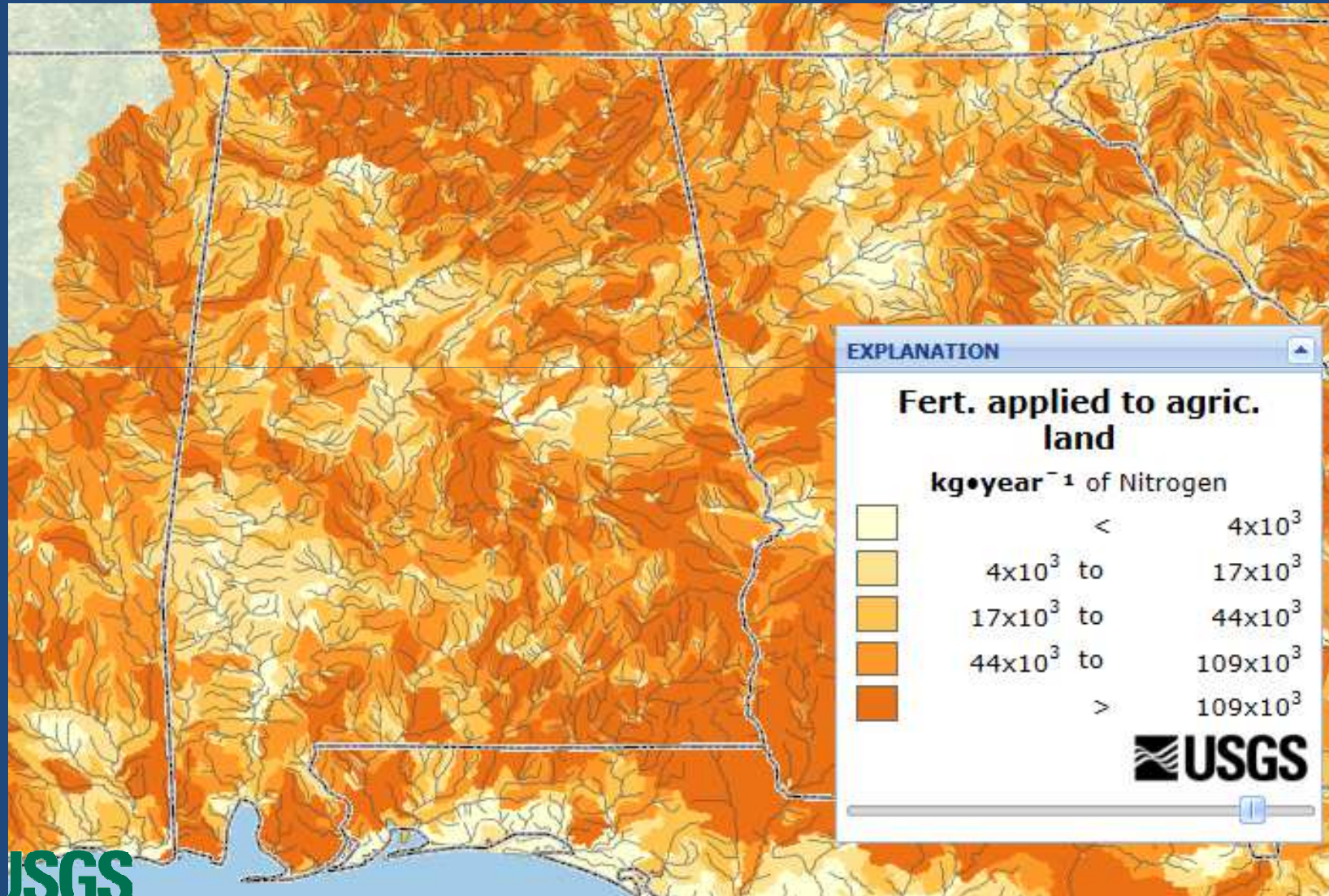


# Map source contributions by stream reach and catchment



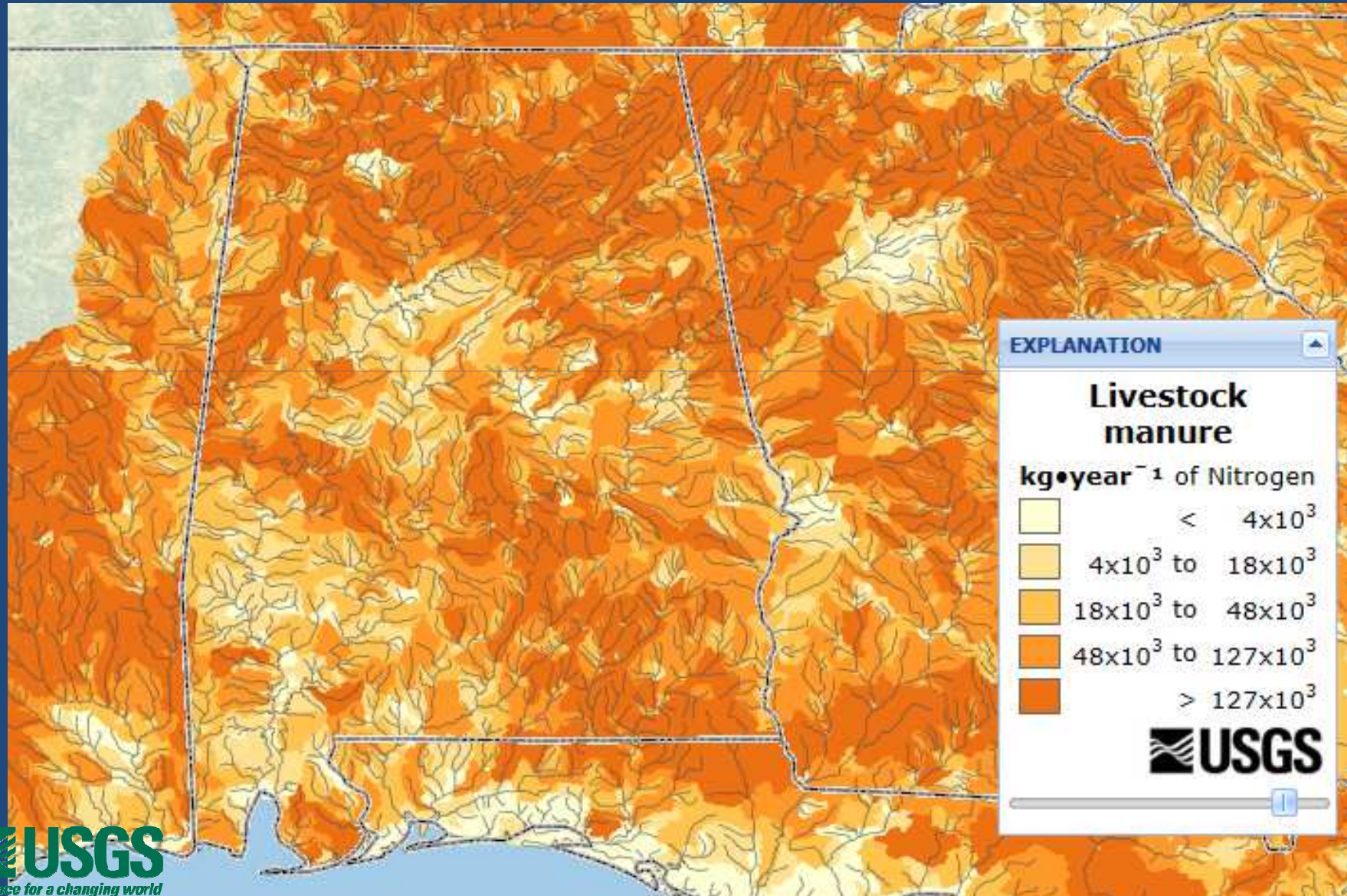


# Map source contributions by stream reach and catchment



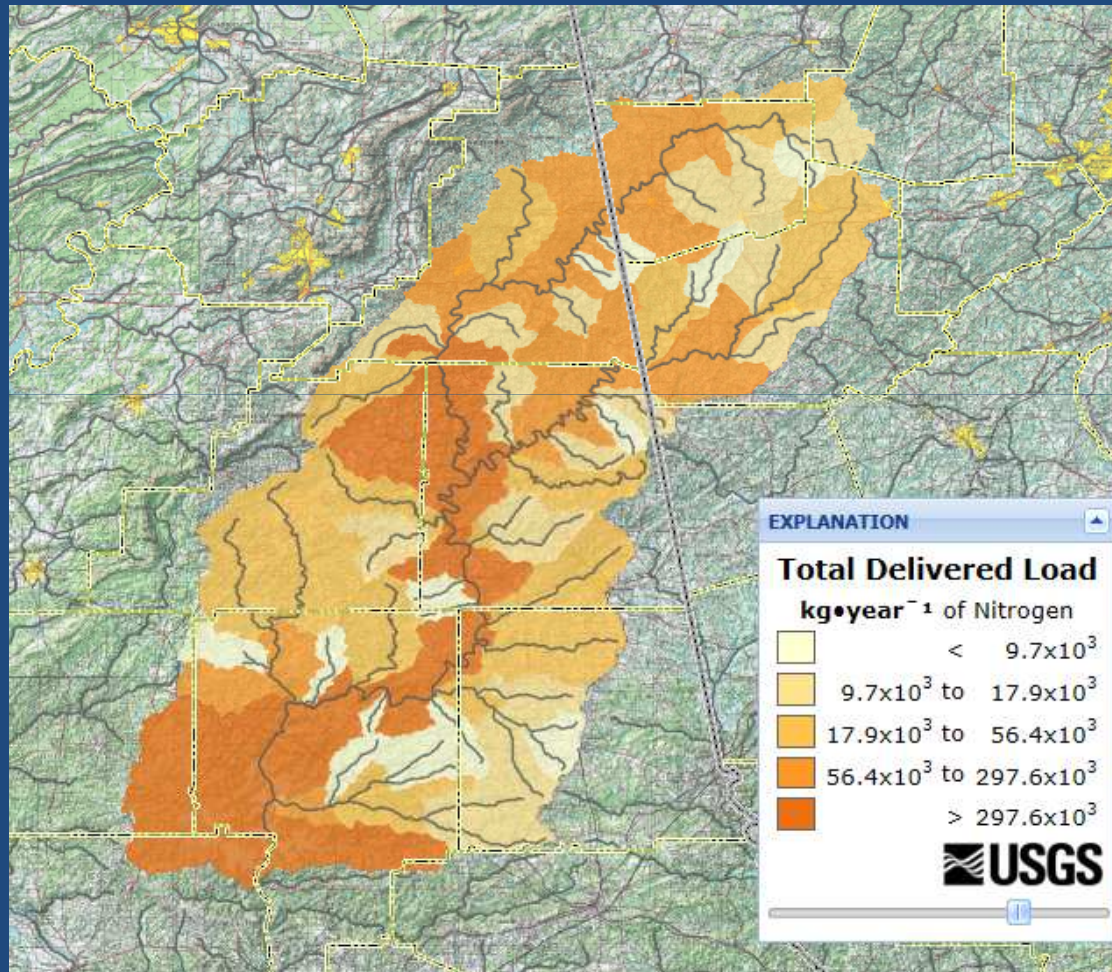


# Map source contributions by stream reach and catchment



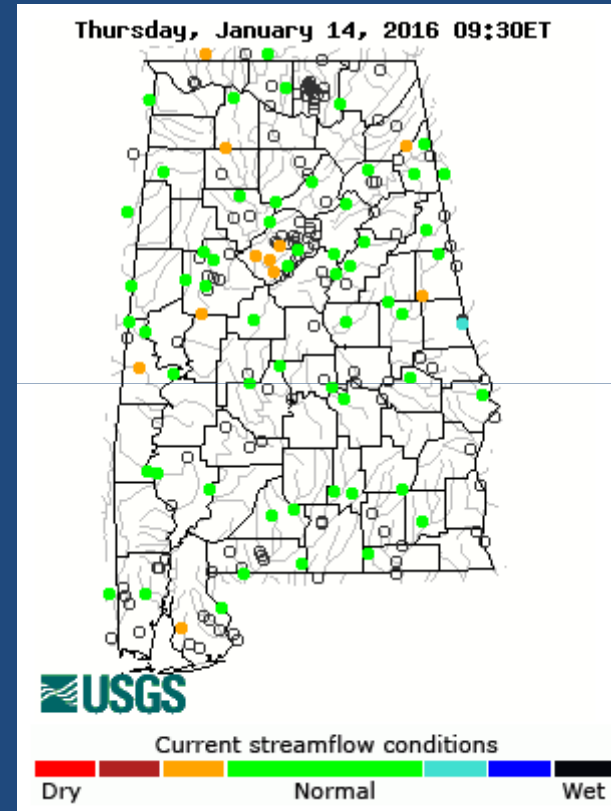


Track transport to downstream receiving waters, such as reservoirs and estuaries



# Last ... but not LEAST WATERWATCH

- 189 Streamflow
- 1 Lakes Reservoir
- 32 Precipitation
- 7 Groundwater
- 21 Water Quality



Explanation - Percentile classes							
	●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		



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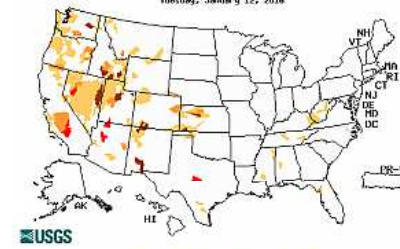
### Current Streamflow

Wednesday, January 13, 2016 17:00ET



### Drought

Tuesday, January 12, 2016



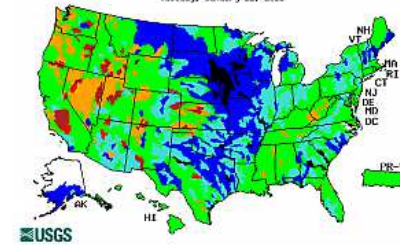
### Flood

Wednesday, January 13, 2016 17:00ET



### Past Flow/Runoff

Tuesday, January 12, 2016







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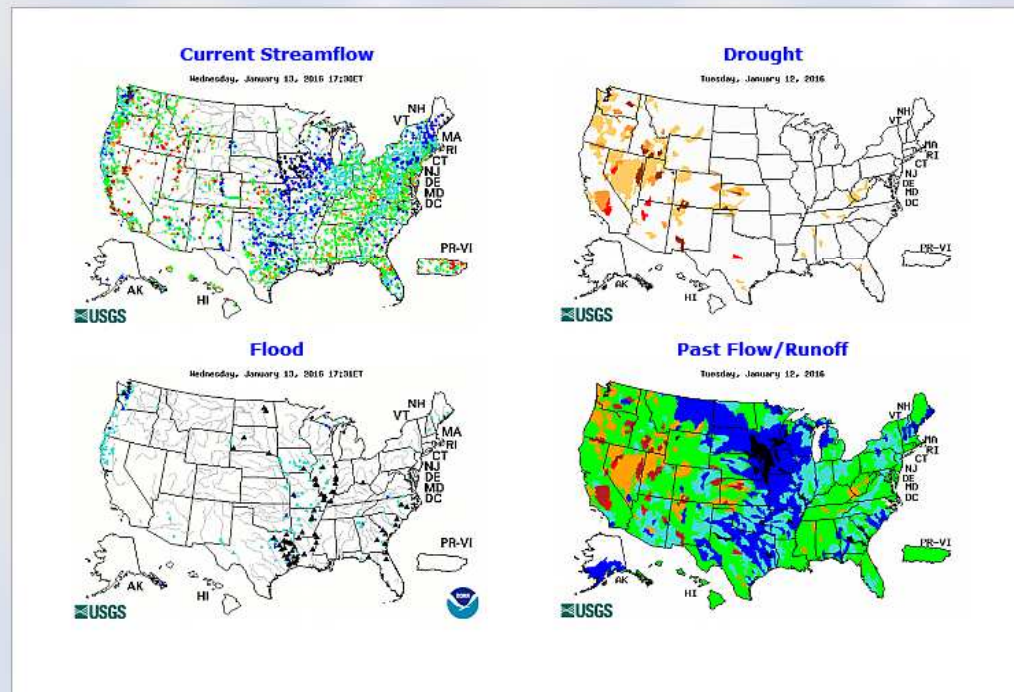
Flood Maps by Month

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### Streamflow Map Animation (United States)

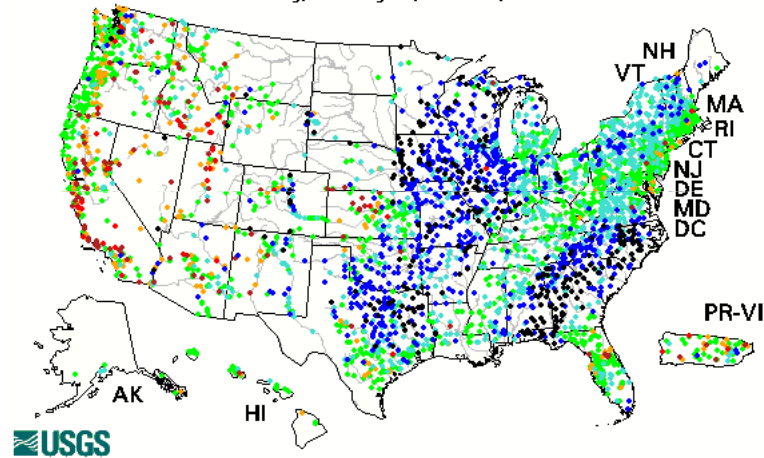
(Warning: Building an animation longer than 365 days is not advised as it may cause the system to timeout)

Choose options to build a map animation Go

Begin: 2016 January 1 End: 2016 January 1 Interval(days): 1

Map type: Real-time Delay(secs): 0.5 Loops: Continuous Width:  px

Friday, January 01, 2016 19:30ET



Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

The data used to produce this map are **provisional** and have not been reviewed or edited. They may be subject to significant change.



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State Duration Hydrograph (runoff)

Cumulative Streamflow Hydrograph

Cumulative Runoff Hydrograph

Streamgage Statistics

Rating Curve

Streamflow Map Builder

Streamflow Map

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Drought Table

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Site Visit

Flood-Tracking Chart

AHPS River Forecast

Raster Hydrograph

## Current Streamflow

Wednesday, January 13, 2016 17:00ET



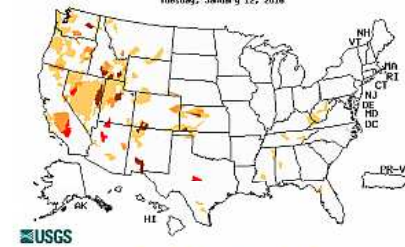
## Flood

Wednesday, January 13, 2016 17:00ET



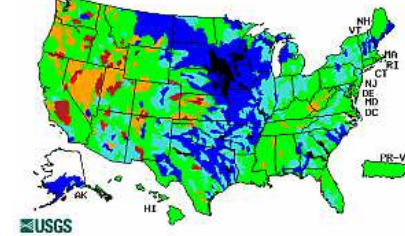
## Drought

Tuesday, January 12, 2016



## Past Flow/Runoff

Tuesday, January 12, 2016





# water watch

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## Customized Rating Curve Builder

Site number:	02421000	Go
Image size:	width (300-2000px): 650 , height (300 - 2000px): 500	
Field measurement:	<input type="radio"/> No <input checked="" type="radio"/> Yes	
	10 Most recent measurements , or _____ water-years	
	Label: <input type="checkbox"/> Date, <input type="checkbox"/> Time, <input type="checkbox"/> Discharge <input type="checkbox"/> Gage height	
	Label is rotated by (0-90.): 30	
Gage height (Y-axis):	Axis type: <input type="radio"/> Log10 <input checked="" type="radio"/> Linear;	
	Axis range: Minimum: _____ , Maximum: _____	
Discharge (X-axis):	Axis type: <input type="radio"/> Log10 <input checked="" type="radio"/> Linear	
	Axis range: Minimum: _____ , Maximum: _____	

02421000 CATOMA CREEK NEAR MONTGOMERY AL



Last updated: 2016-01-13

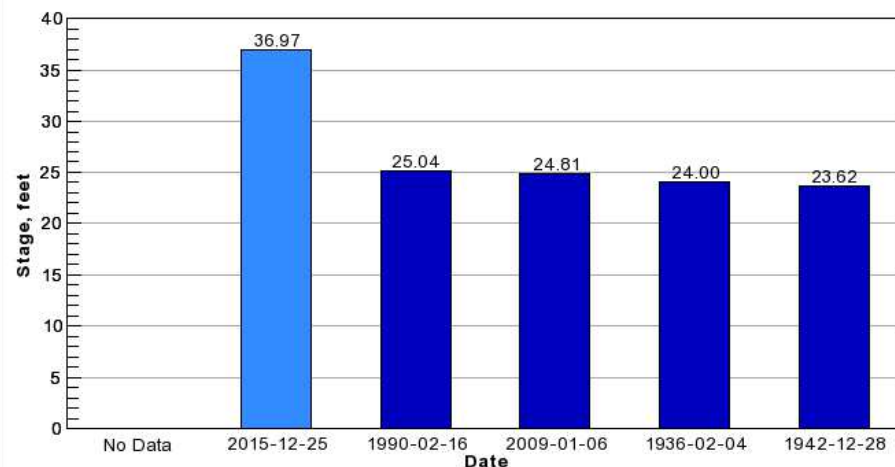
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## Flood Tracking Chart Builder

Site Number: 02450000 Value type: Gage Height Size: Normal (700x500) GO

02450000 MULBERRY FORK NEAR GARDEN CITY, AL.



- Current Stage Unavailable -- No Data
- Recent Maximum Stage (previous 365 days) 36.97 feet on 2015-12-25 (provisional)
- Highest Recorded Peak Stages at Current Datum

USGS WaterWatch

### Additional Information

- USGS real-time streamflow data
- USGS peak streamflow



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### Table of **computed runoff** by water-year for Alabama ([Download version](#))

Alabama or Water-Resources Regions

Region	Year	Runoff (mm)	Runoff (in)	Rank	Percentile
AL	1901	654.61	25.77	26	77.59
AL	1902	595.34	23.44	45	61.21
AL	1903	665.04	26.18	23	80.17
AL	1904	234.53	9.23	115	0.86
AL	1905	414.57	16.32	89	23.28
AL	1906	552.45	21.75	56	51.72
AL	1907	557.45	21.95	53	54.31
AL	1908	577.65	22.74	50	56.90
AL	1909	655.24	25.80	25	78.45
AL	1910	358.60	14.12	101	12.93
AL	1911	337.18	13.27	104	10.34
AL	1912	752.81	29.64	10	91.38
AL	1913	596.21	23.47	43	62.93
AL	1914	278.98	10.98	112	3.45
AL	1915	472.31	18.59	76	34.48
AL	1916	650.12	25.60	28	75.86
AL	1917	635.99	25.04	33	71.55
AL	1918	391.15	15.40	94	18.97
AL	1919	706.00	27.80	18	84.48
AL	1920	892.67	35.14	1	99.14
AL	1921	550.47	21.67	57	50.86
AL	1922	689.76	27.16	19	83.62
AL	1923	619.80	24.40	36	68.97
AL	1924	529.37	20.84	61	47.41
AL	1925	363.58	14.31	100	13.79





AL	1990	797.10	31.50	0	94.00
AL	1991	654.59	25.77	27	76.72
AL	1992	446.34	17.57	84	27.59
AL	1993	622.72	24.52	35	69.83
AL	1994	587.15	23.12	46	60.34
AL	1995	504.02	19.84	69	40.52
AL	1996	724.83	28.54	13	88.79
AL	1997	644.76	25.38	31	73.28
AL	1998	716.65	28.21	16	86.21
AL	1999	455.76	17.94	82	29.31
AL	2000	259.31	10.21	113	2.59
AL	2001	505.47	19.90	67	42.24
AL	2002	397.26	15.64	93	19.83
AL	2003	810.38	31.90	4	96.55
AL	2004	462.83	18.22	80	31.03
AL	2005	718.97	28.31	15	87.07
AL	2006	352.73	13.89	102	12.07
AL	2007	255.16	10.05	114	1.72
AL	2008	293.46	11.55	110	5.17
AL	2009	586.23	23.08	47	59.48
AL	2010	759.46	29.90	9	92.24
AL	2011	368.95	14.53	98	15.52
AL	2012	346.37	13.64	103	11.21
AL	2013	617.90	24.33	38	67.24
AL	2014	554.88	21.85	55	52.59
AL	2015	421.95	16.61	88	24.14





**USGS WaterAlert**

**Subscription Form**

The U.S. Geological Survey WaterAlert service sends e-mail or text (SMS) messages when [certain parameters](#), as measured by a USGS real-time data-collection station, exceed user-definable thresholds. The development and maintenance of the WaterAlert system is supported by the USGS and its partners, including numerous federal, state, and local agencies.

Real-time data from USGS gages are transmitted via satellite or other telemetry to USGS offices at various intervals; in most cases, 1 to 4 times per hour. Emergency transmissions, such as during floods, may be more frequent. *Notifications will be based on the data received at these site-dependent intervals.*

**Site Info:**

Number: 02421000  
Name: CATOMA CREEK NEAR MONTGOMERY AL  
Agency: USGS  
Transaction ID: VhFD3

**Send Notification To:** [about this...](#)

- My mobile phone
- My email address

**Notification Frequency:** [about this...](#)

- Hourly
- Daily

**Streamflow Parameter(s):** [about this...](#) Recent value:

Discharge, DD1 (ft<sup>3</sup>/s)  71 [\[peak chart\]](#)

**Threshold Condition:** [about this...](#)

- Greater than (>)
- Less than (<)
- Outside a range (< or >)
- Inside a range (> and <)

Real-time value is greater than:  ft<sup>3</sup>/s

I have read and acknowledge the [Provisional Data Statement](#) and [Disclaimer](#).



# Questions?

Athena Clark, P.E.

Deputy Director, Hydrologic Data Programs  
USGS

Lower Mississippi Gulf Water Science Center

[athclark@usgs.gov](mailto:athclark@usgs.gov)

(334) 395-4141