



Streamflow conditions across North Carolina

*Assessment of hydrologic
conditions observed through mid April 2013...*



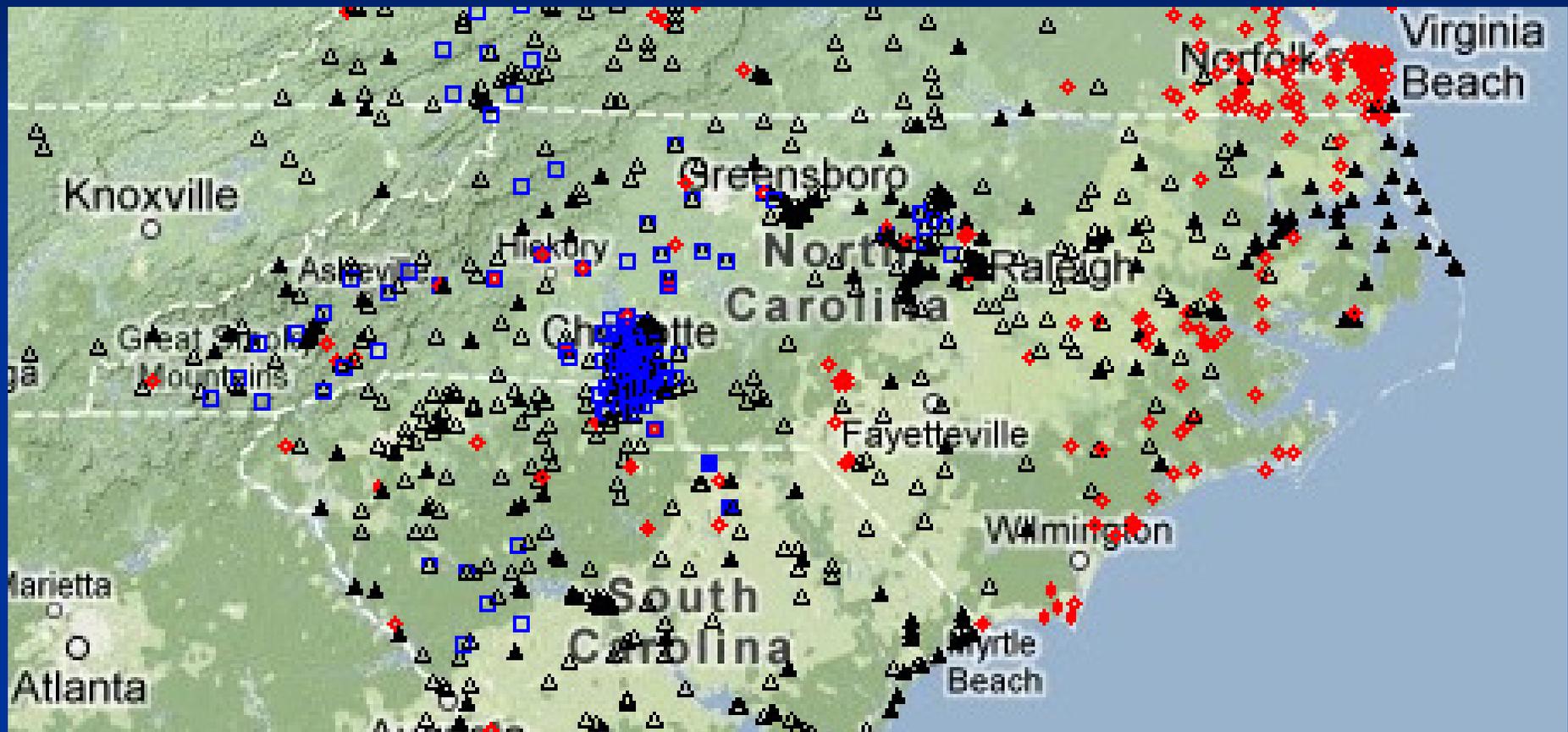
U.S. Department of the Interior
U.S. Geological Survey

USGS North Carolina Water Science Center
<http://nc.water.usgs.gov>

Online drought pages for USGS North Carolina WSC
<http://nc.water.usgs.gov/drought/>

*Presented to:
North Carolina Drought Management Advisory Council
Gov. James G. Martin Building, NC State Fairgrounds, Raleigh, NC
April 18, 2013*

USGS WY 2012 annual data report map for NC



2012WY data available at URL:

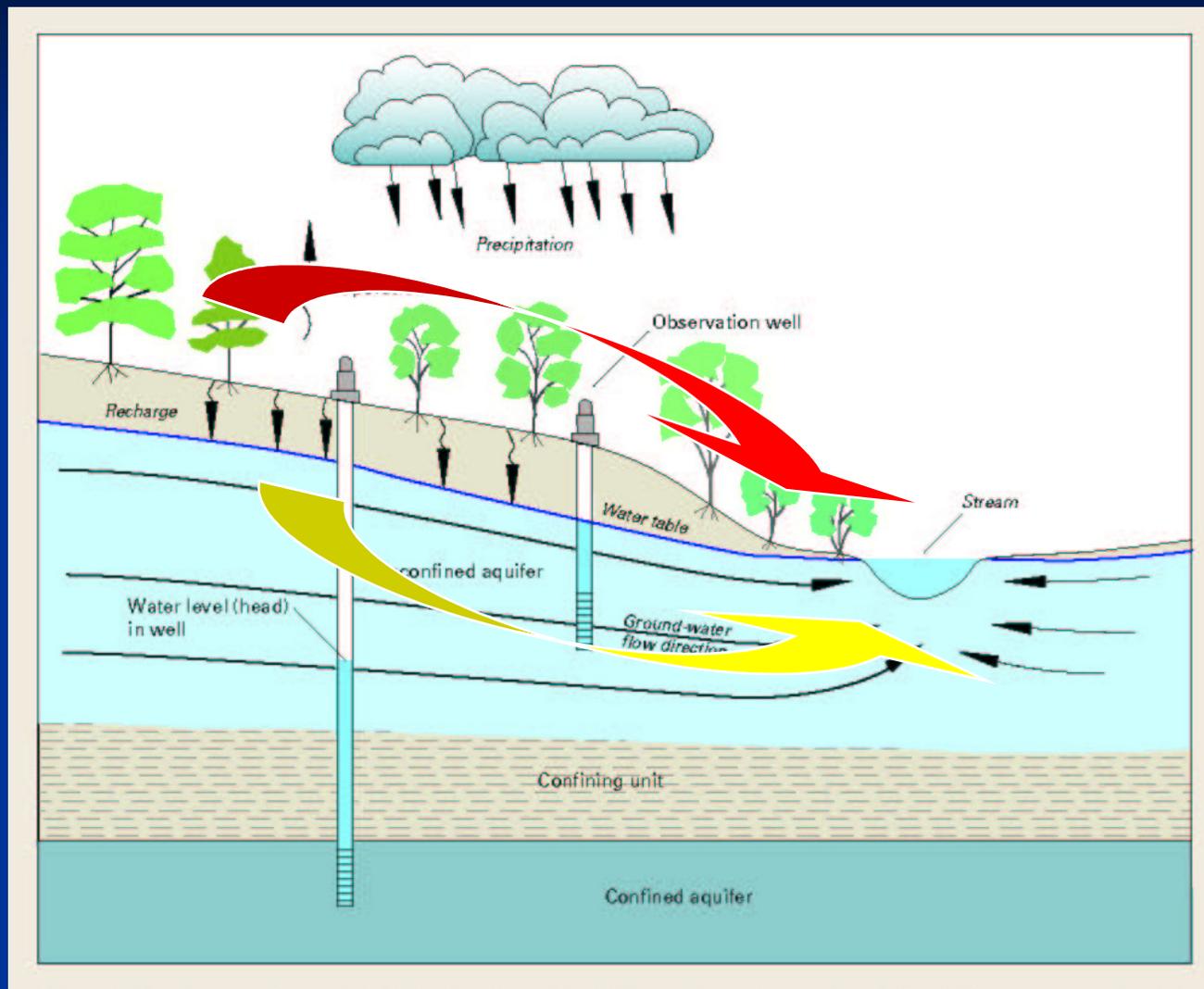
<http://nc.water.usgs.gov/reports/WDR/>



Visualizing the components in streamflow

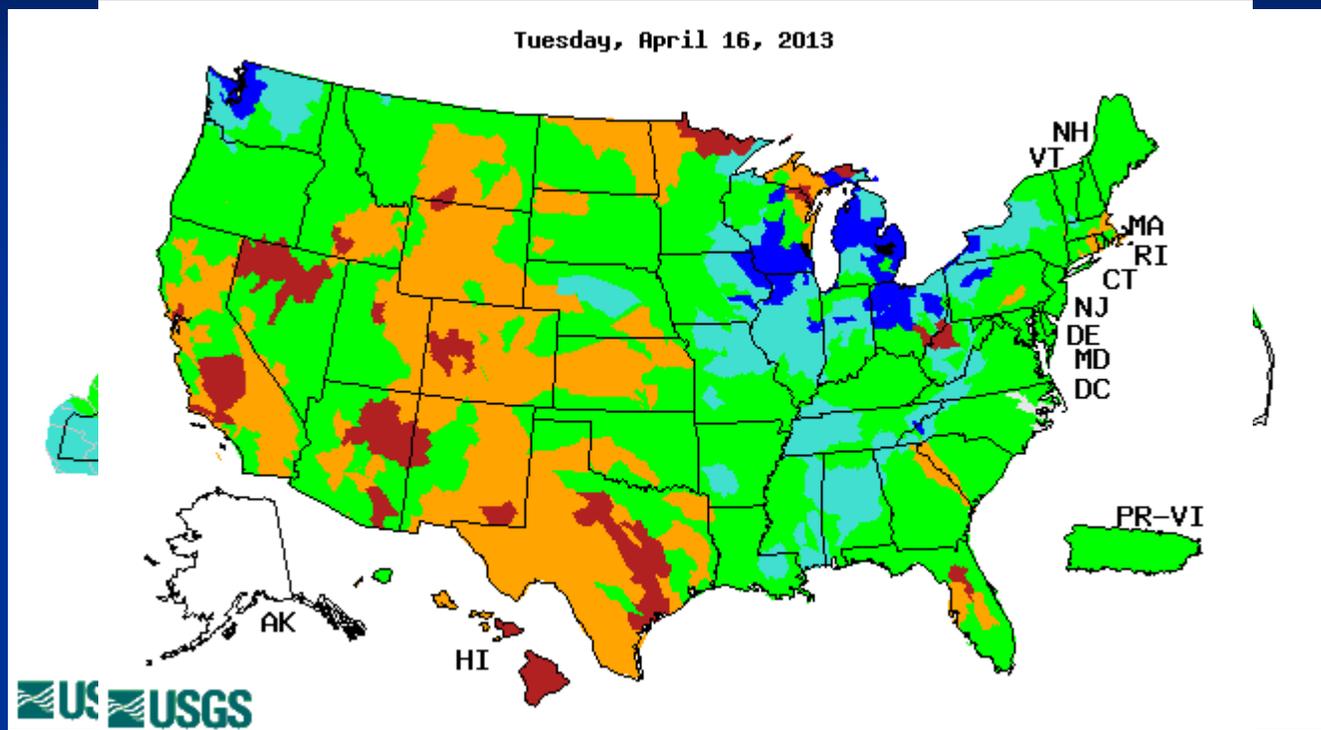
Overland runoff

Base flow
(ground-water discharge to streams)



From:
Ground-water-level Monitoring and the Importance of Long-Term Water-Level Data
USGS Circular 1217 by Taylor and Alley, 2002 (Figure A-2, page 4)

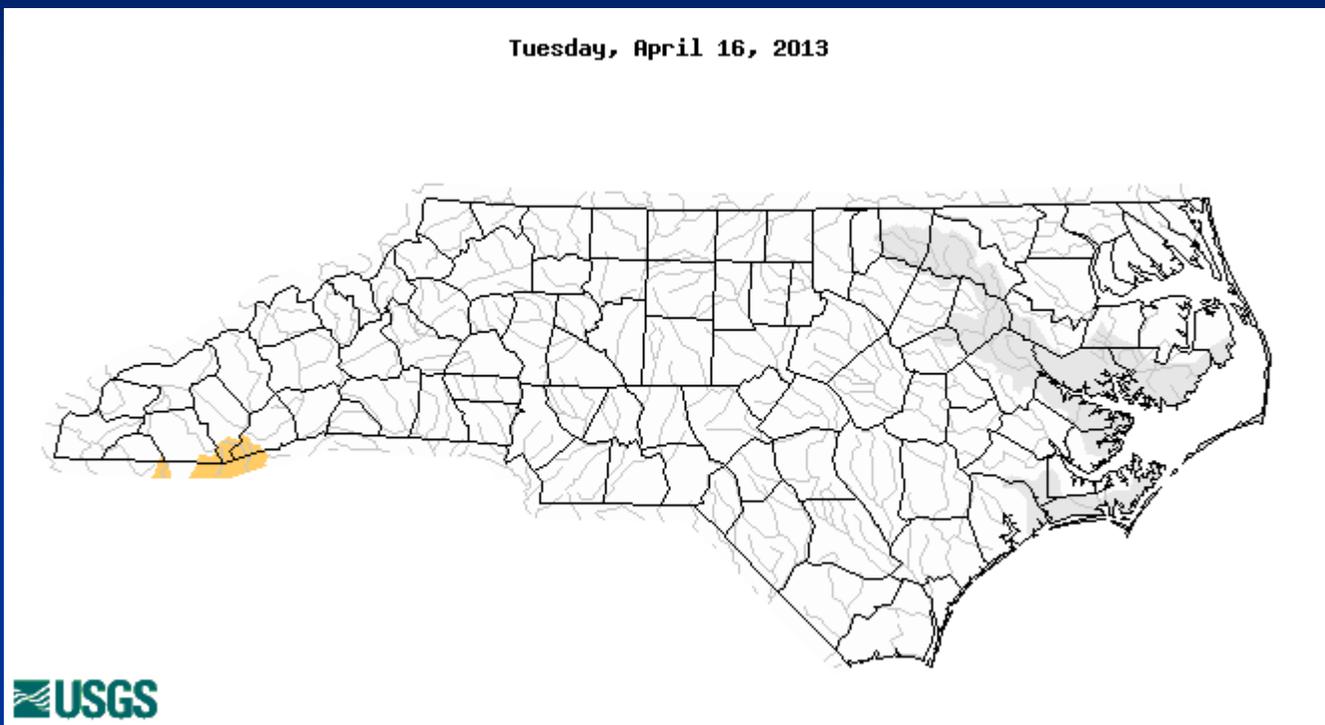
Overall 7-day average flows *as of April 16*



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

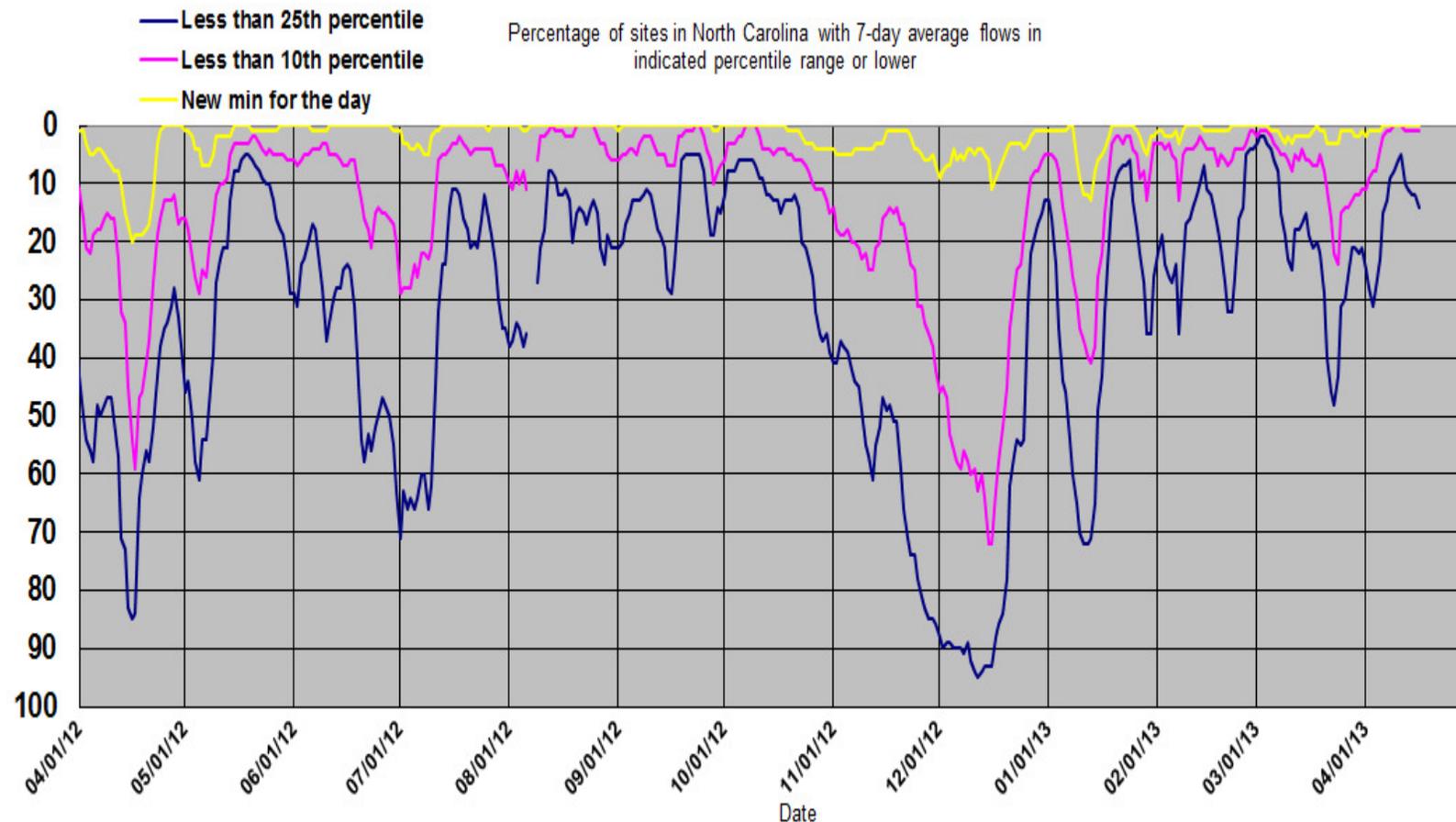
Below-normal 7-day average flows *as of April 16*

Tuesday, April 16, 2013

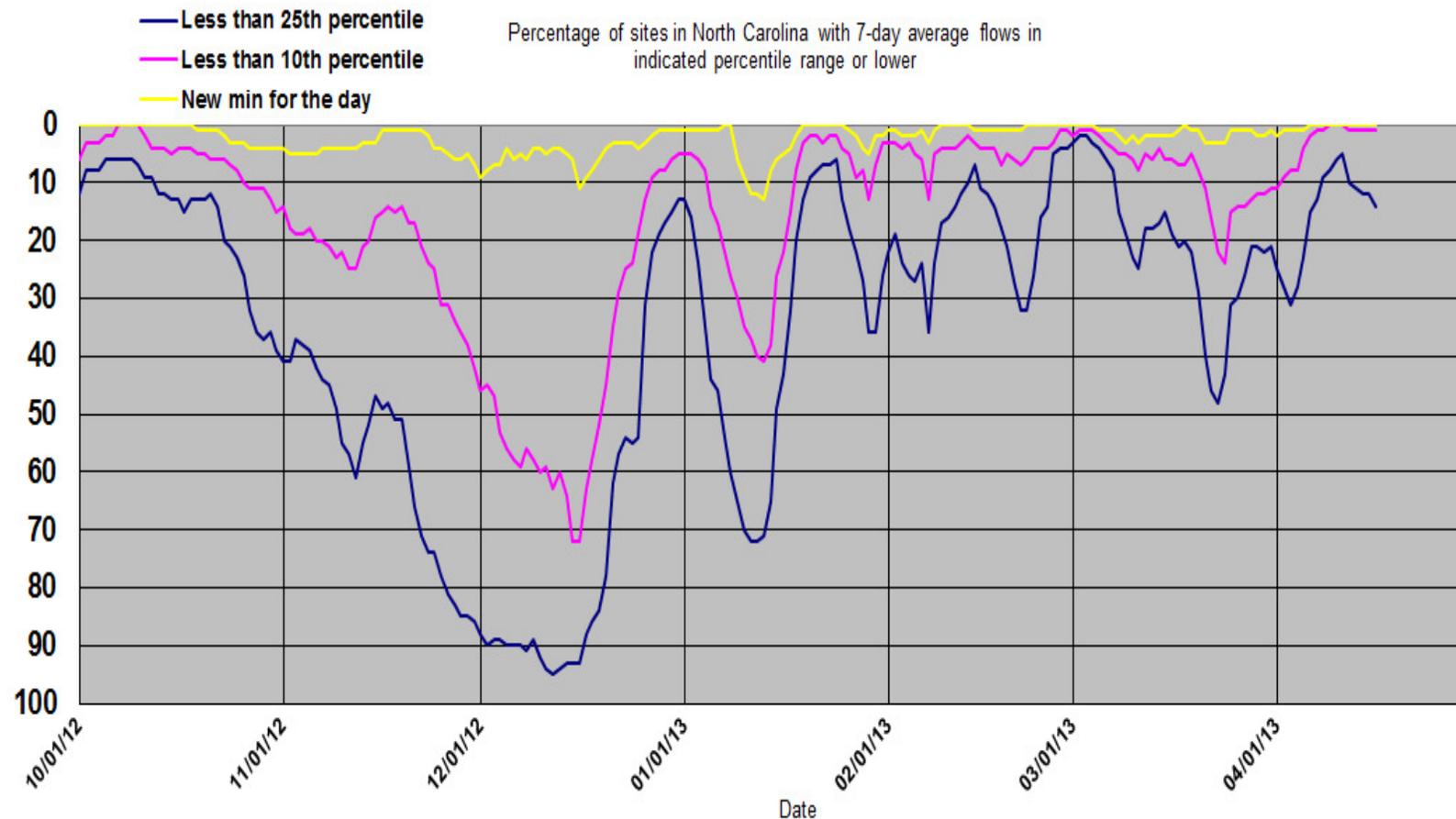


Explanation - Percentile classes				
Low	≤ 5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

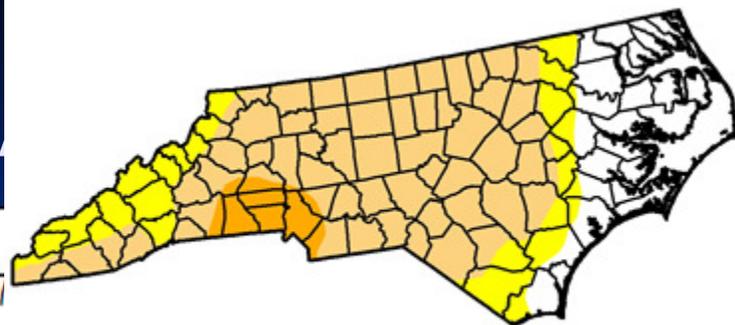
Percentage of sites with 7-day average flows below normal (< 25th percentile)



Percentage of sites with 7-day average flows below normal (< 25th percentile)

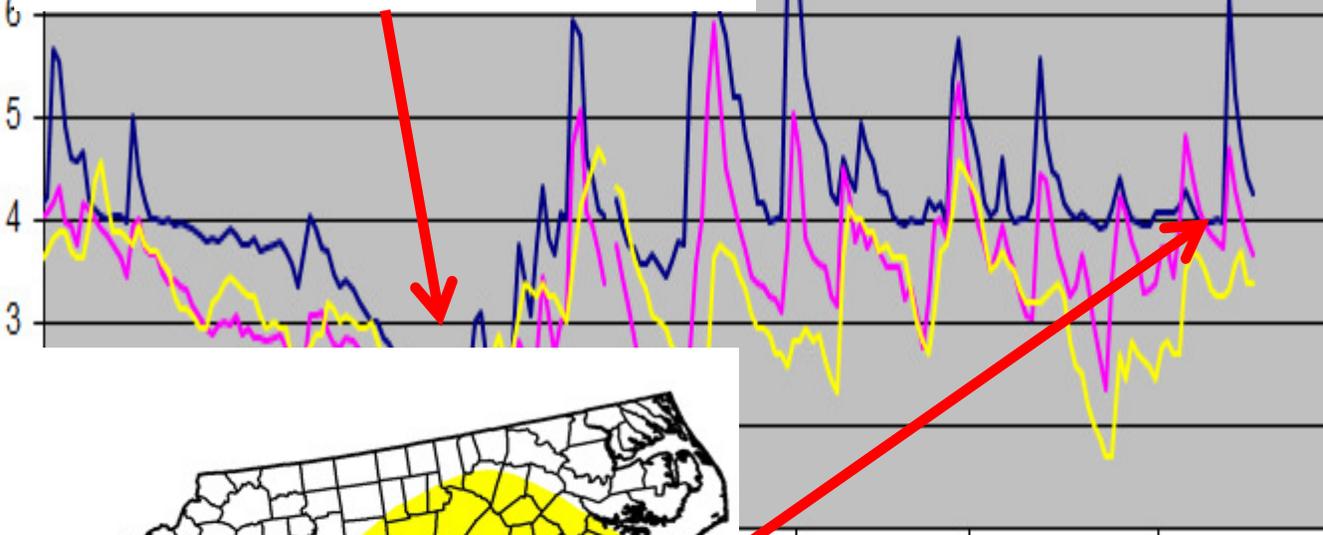


index (by Province)

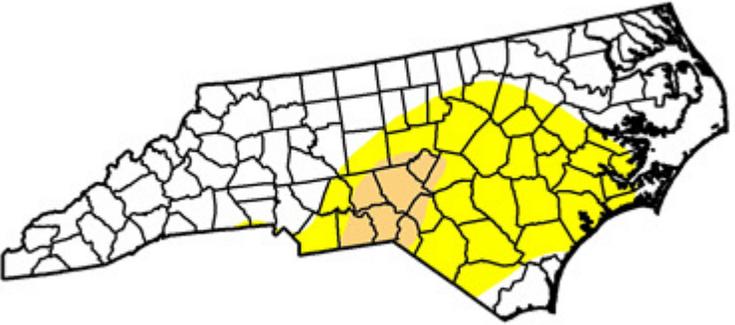


USDM December 18, 2012

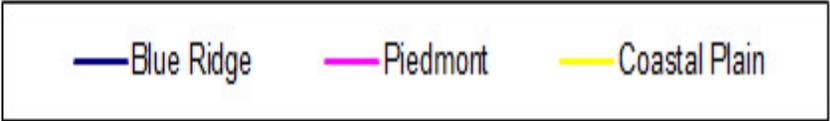
Average streamflow index



- New max
- 90th percentile
- 75th percentile
- 50th percentile
- 25th percentile
- 10th percentile
- New min



USDM April 9, 2013



Sta. 02106500, BLACK RIVER NEAR TOMAHAWK, NC (Sampson County), DA = 676 sqmi

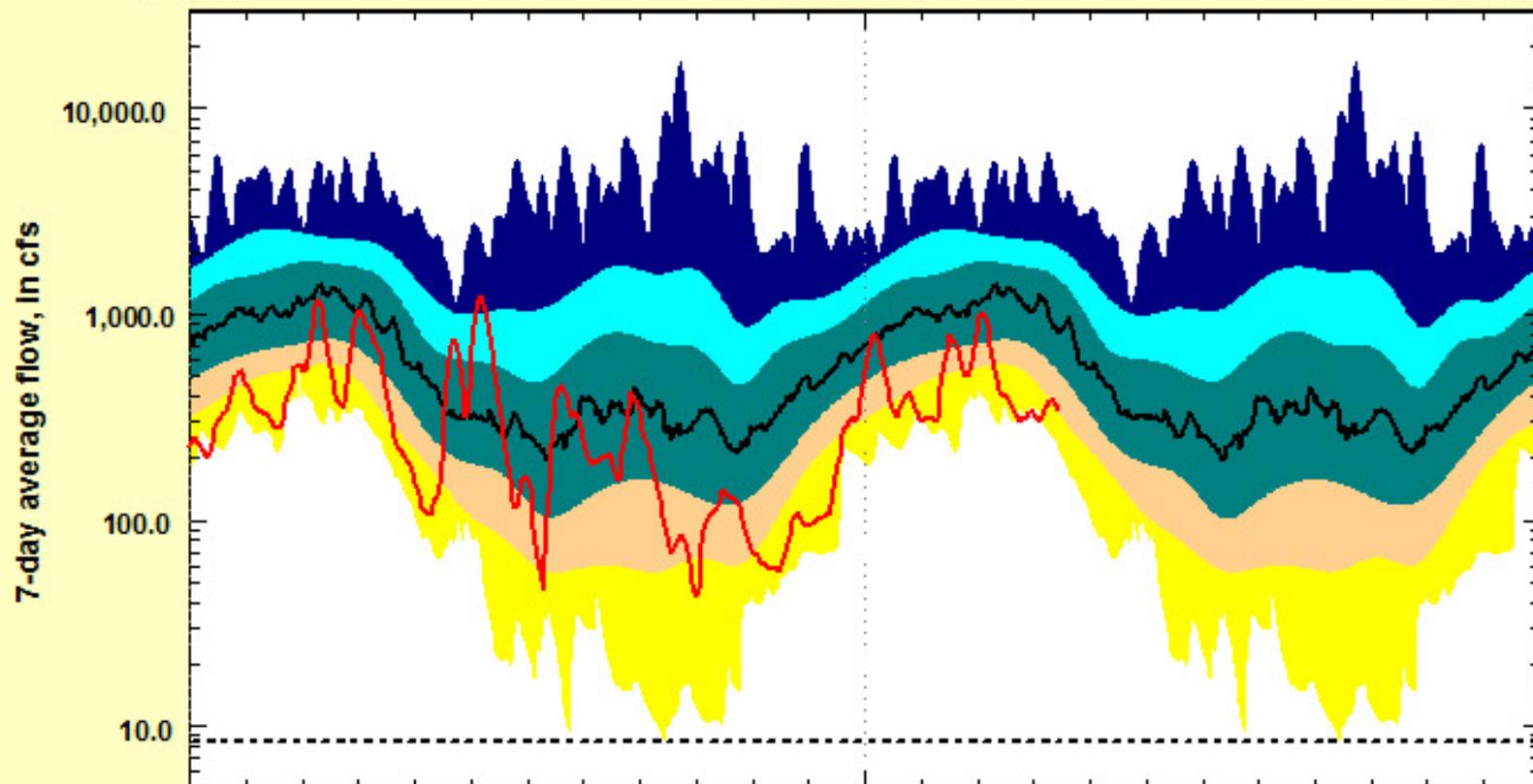
Period of record (POR): 0/0/ through 0/0/

Approx. 62 total years record available to date (Site info from <http://waterdata.usgs.gov/nwis/inventory>)

1/1/2012

12/31/2012

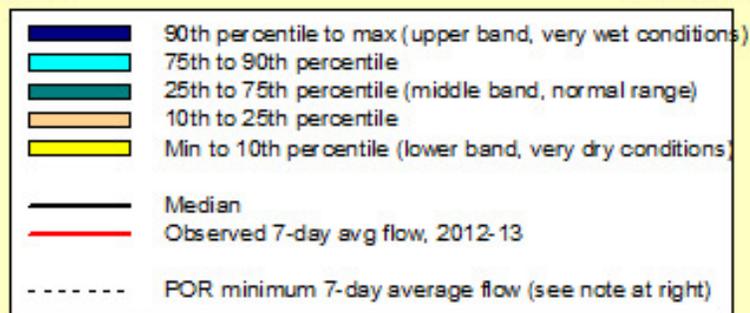
12/31/2013



1/1/2012

12/31/2012

12/31/2013



POR minimum 7-day average flow:
8.44 cfs, ending on 09/14/2007

Observed data through 04/15/2013
Statistics based on 10/01/1951 through 09/30/2011

Note: Data and statistics since 09/30/2011
considered provisional and subject to revision.

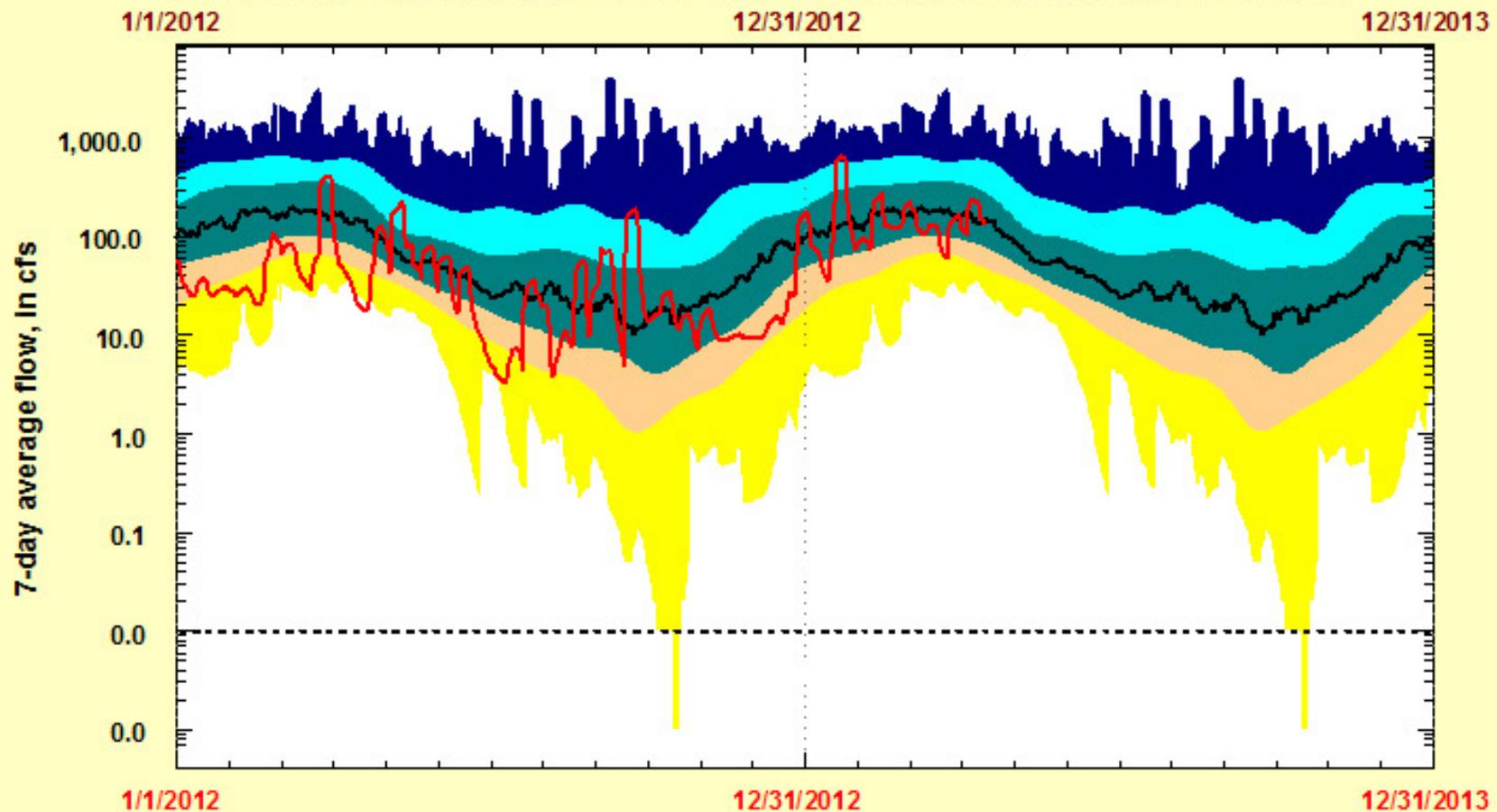
Plot created: Apr. 17, 2013 1:44:37 AM



Sta. 02085500, FLAT RIVER AT BAHAMA, NC (Durham County), DA = 149 sqmi

Period of record (POR): 0/0/ through 0/0/

Approx. 88 total years record available to date (Site info from <http://waterdata.usgs.gov/nwis/inventory>)



POR minimum 7-day average flow:
0.01 cfs, ending on 10/20/2007

Observed data through 04/15/2013

Statistics based on 08/01/1925 through 09/30/2011

Note: Data and statistics since 09/30/2011
considered provisional and subject to revision.

Plot created: Apr. 17, 2013 0:50:01 AM



Sta. 02118000, SOUTH YADKIN RIVER NEAR MOCKSVILLE, NC (Rowan County), DA = 306 sqmi

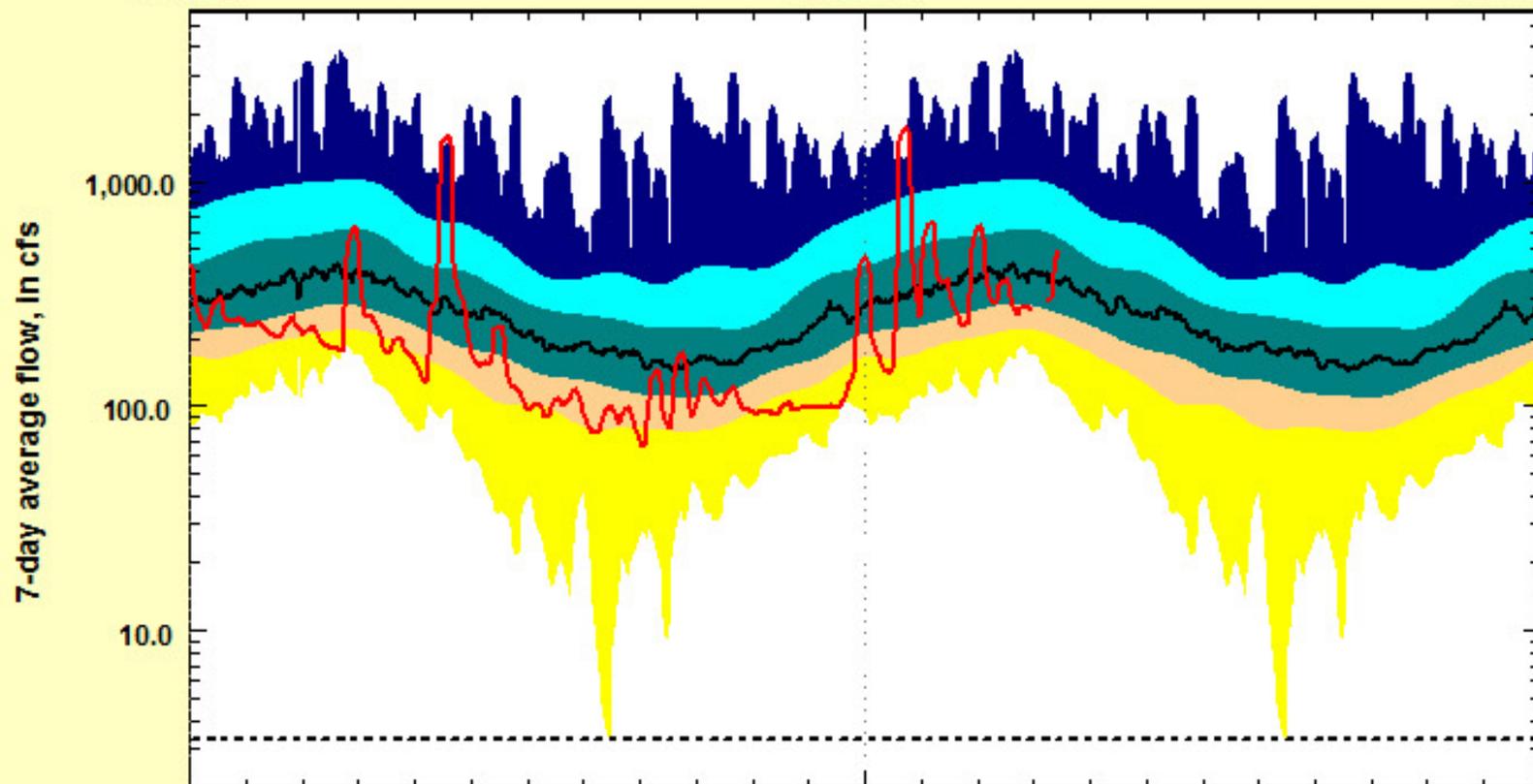
Period of record (POR): 0/0/ through 0/0/

Approx. 75 total years record available to date (Site info from <http://waterdata.usgs.gov/nwis/inventory>)

1/1/2012

12/31/2012

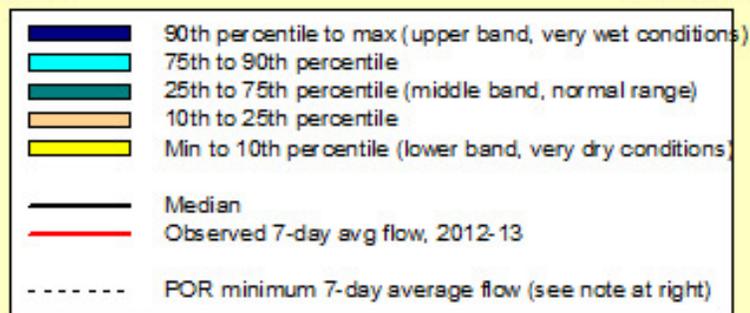
12/31/2013



1/1/2012

12/31/2012

12/31/2013



POR minimum 7-day average flow:
3.31 cfs, ending on 08/15/2002

Observed data through 04/15/2013
Statistics based on 10/01/1938 through 09/30/2011

Note: Data and statistics since 09/30/2011
considered provisional and subject to revision.

Plot created: Apr. 17, 2013 2:20:44 AM



Sta. 03451500, FRENCH BROAD RIVER AT ASHEVILLE, NC (Buncombe County), DA = 945 sqmi

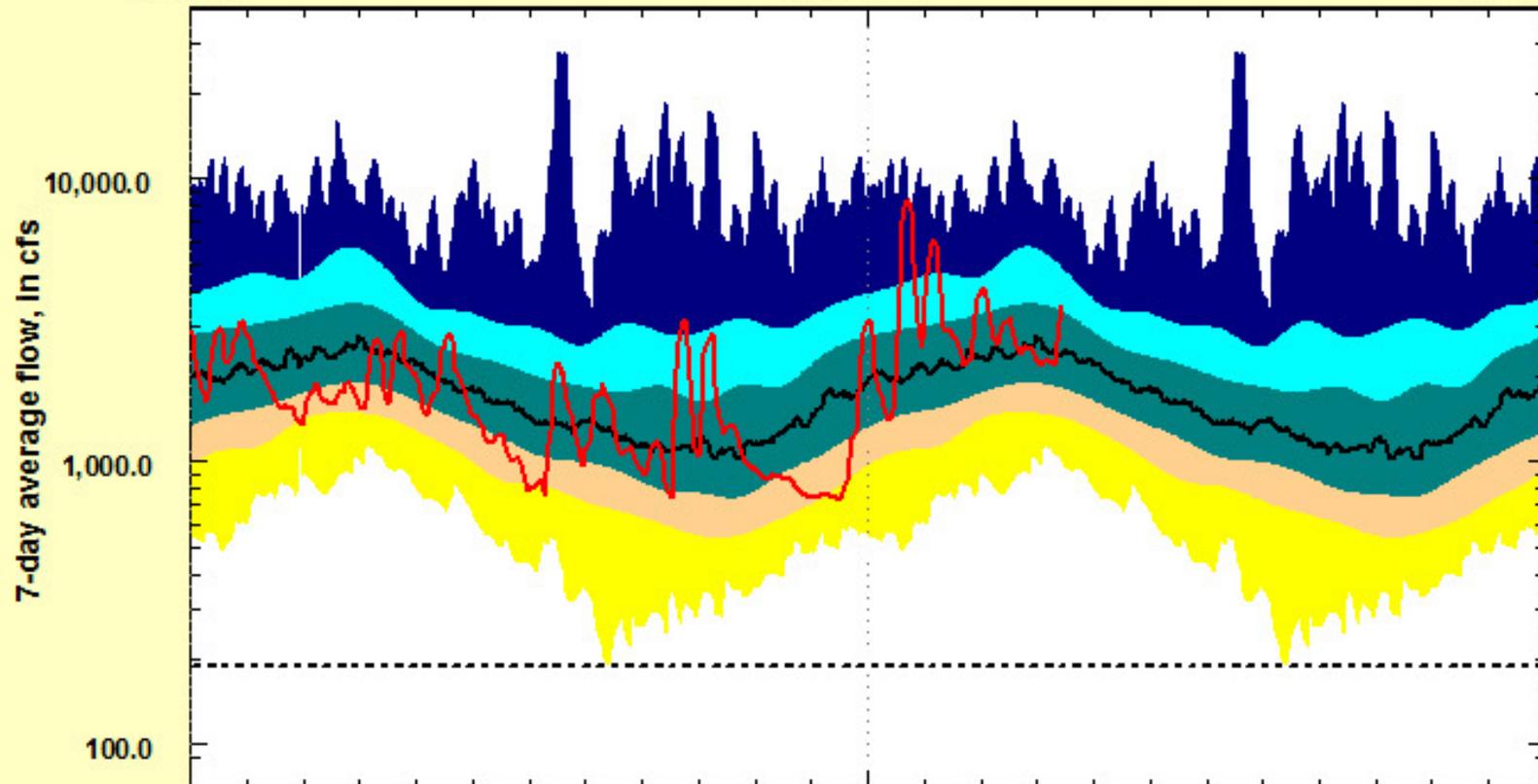
Period of record (POR): 0/0/ through 0/0/

Approx. 118 total years record available to date (Site info from <http://waterdata.usgs.gov/nwis/inventory>)

1/1/2012

12/31/2012

12/31/2013



1/1/2012

12/31/2012

12/31/2013



POR minimum 7-day average flow:
190.29 cfs, ending on 08/13/2008

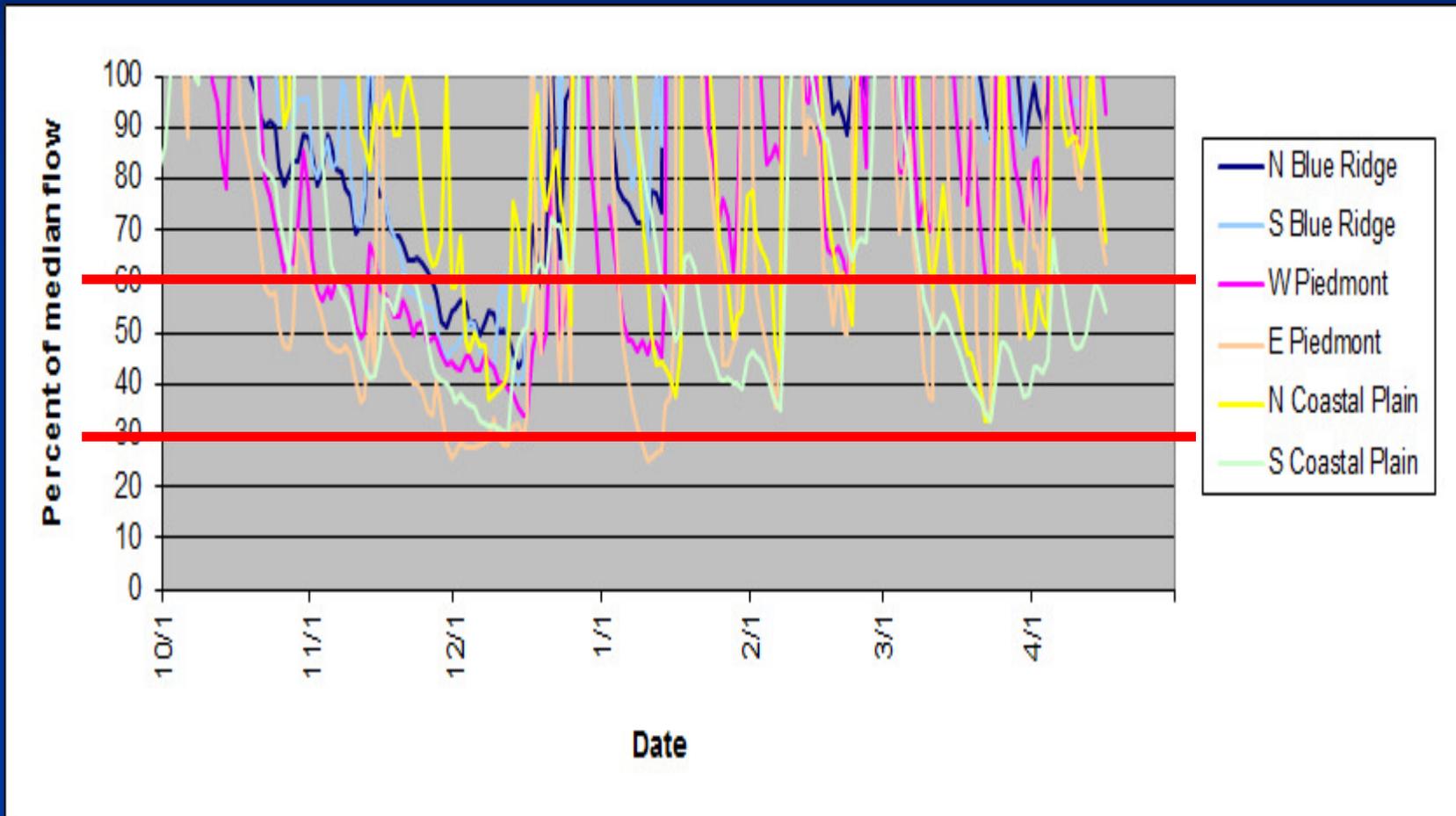
Observed data through 04/15/2013
Statistics based on 10/01/1895 through 09/30/2011

Note: Data and statistics since 09/30/2011
considered provisional and subject to revision.

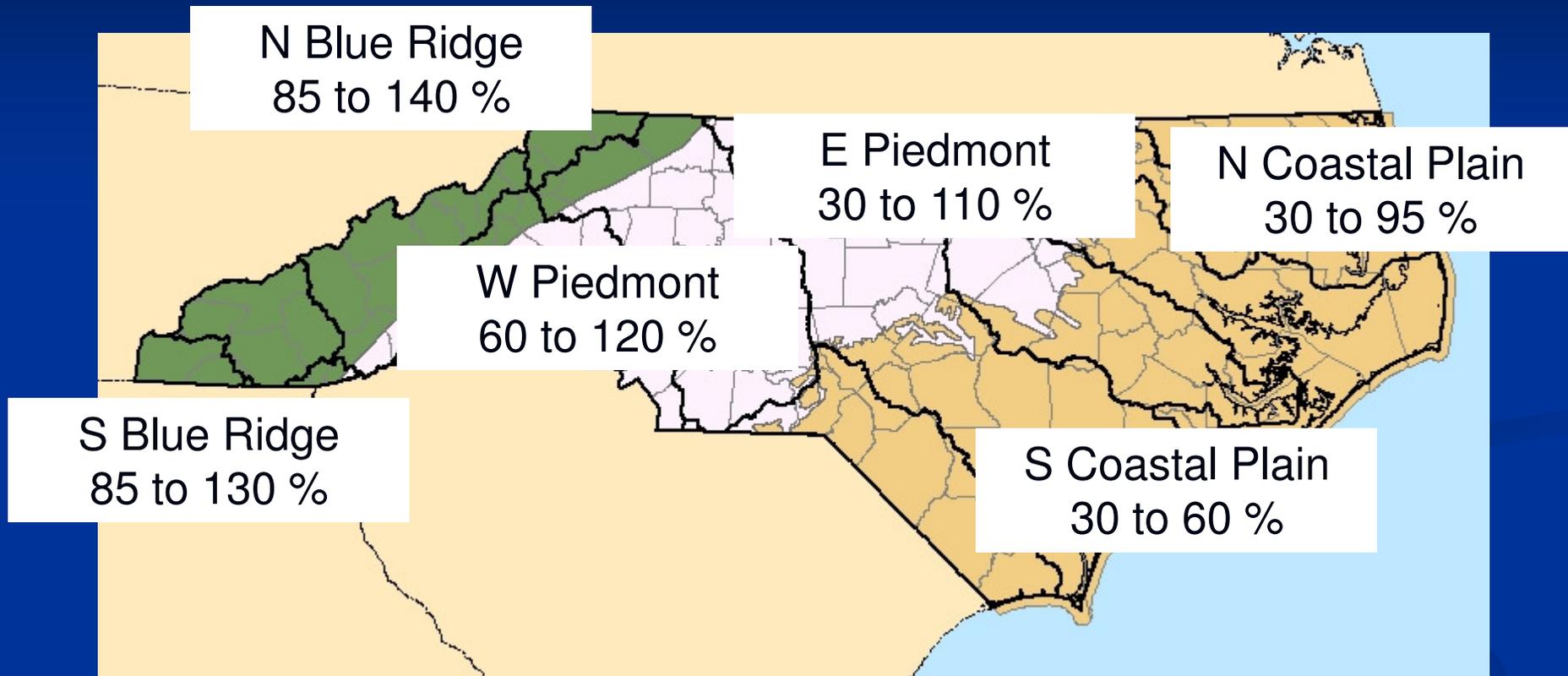
Plot created: Apr. 17, 2013 3:30:40 AM



“infamous spaghetti plot...” Percent of median (by region)

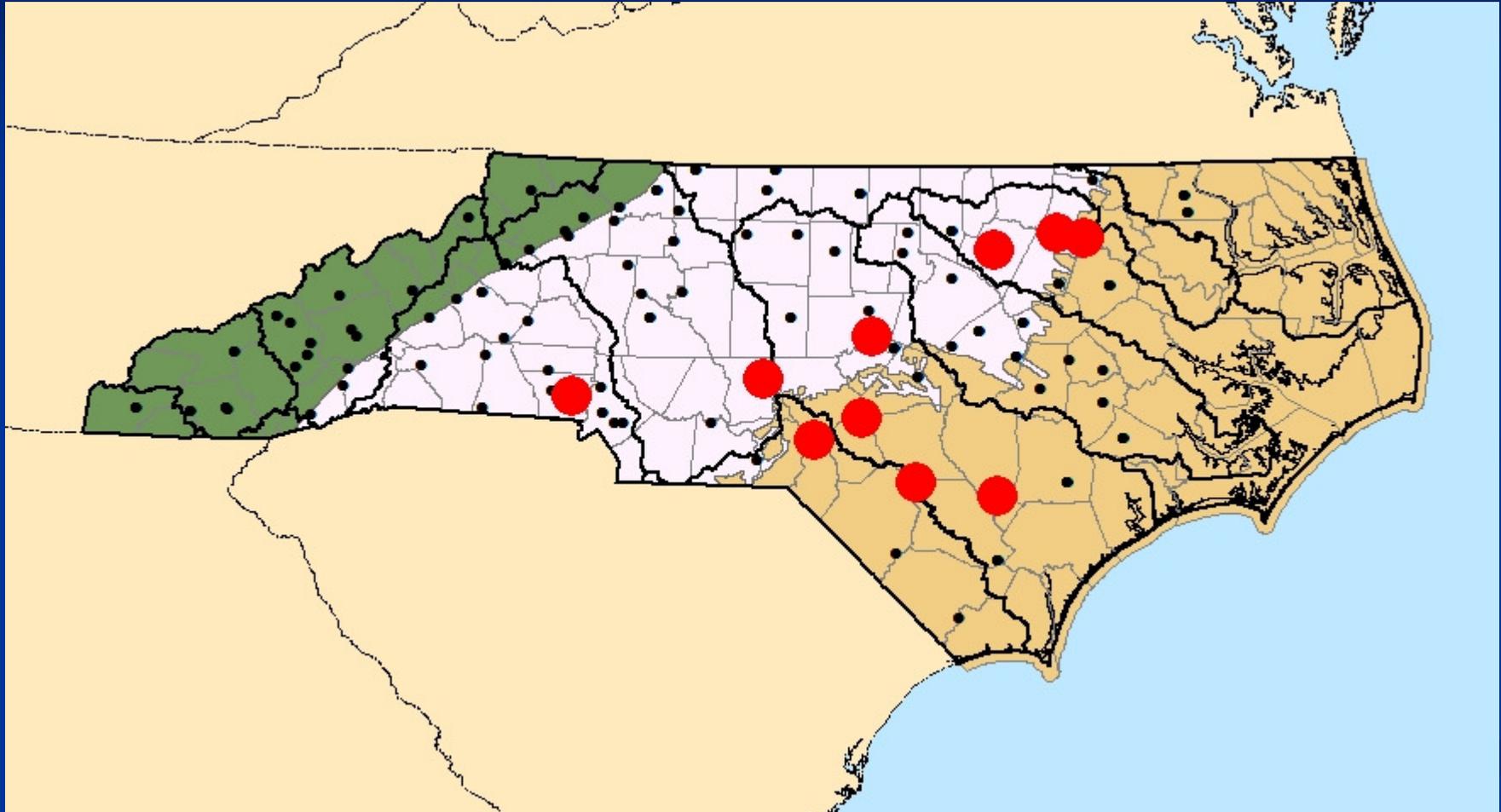


Typical ranges in **percentage of median flow** since **March 1**...(by region)



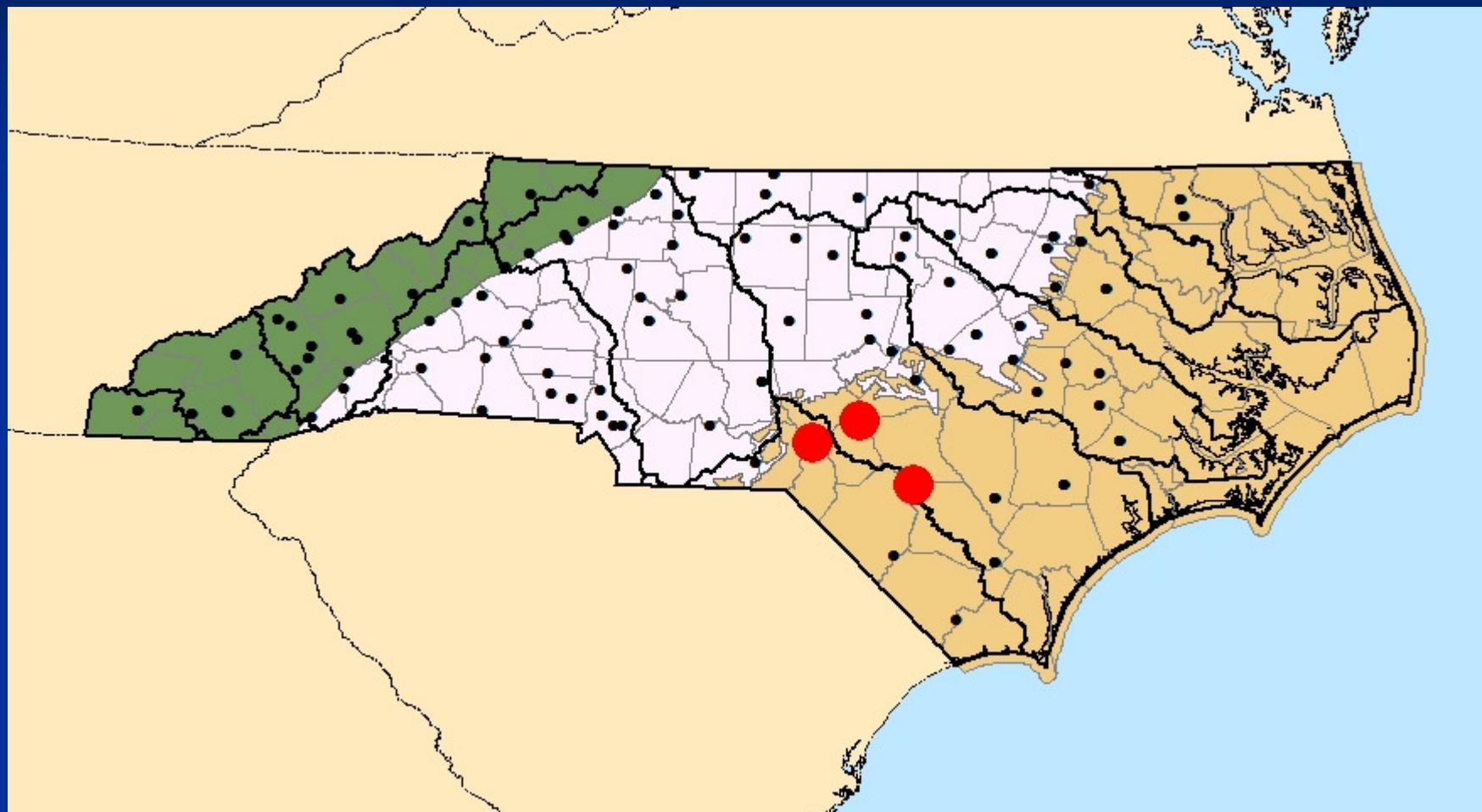
...as of April 17

*New record monthly minimum average
during 2012 water year*



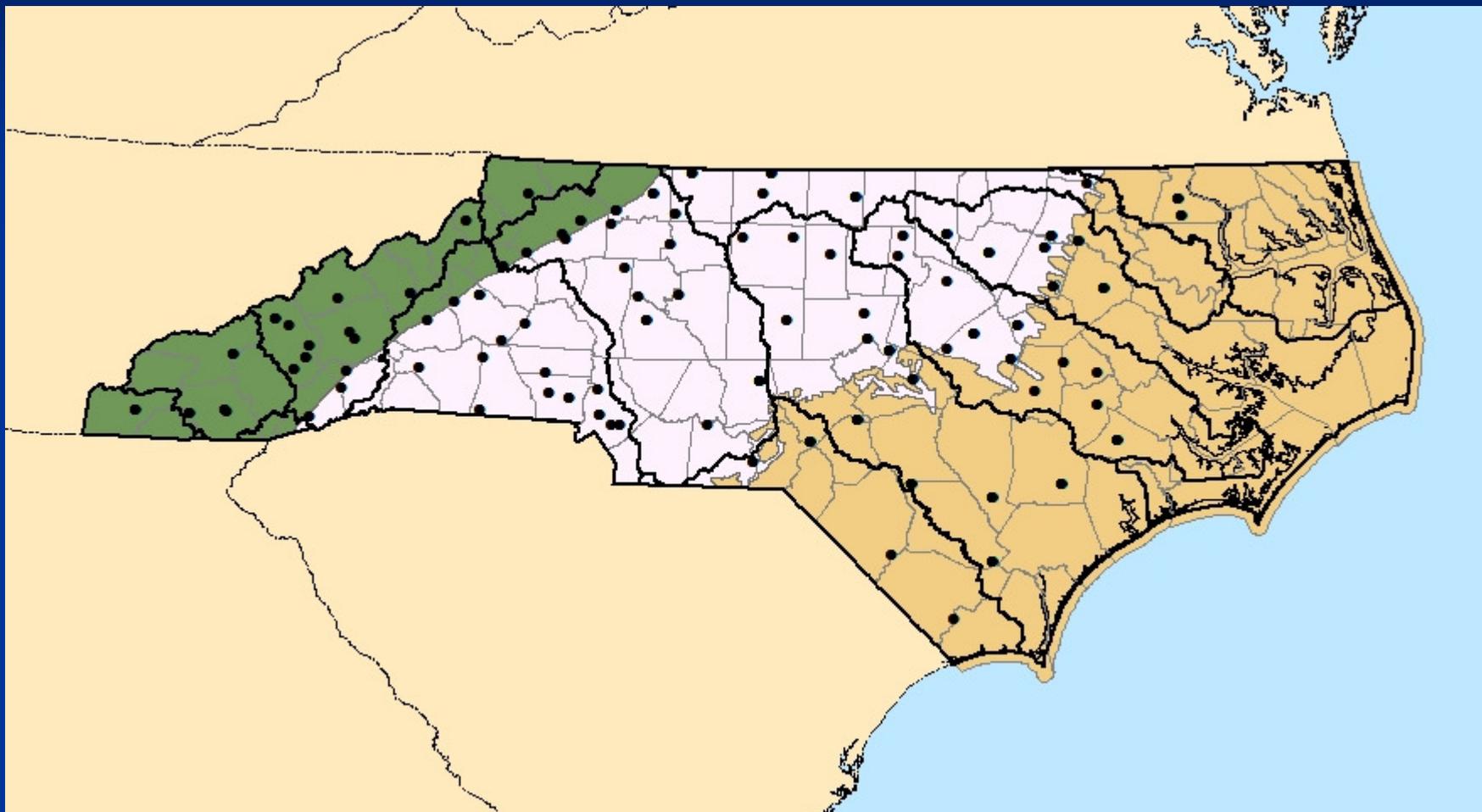
10 sites...most in eastern half of NC

New record monthly minimum average during 2013 water year

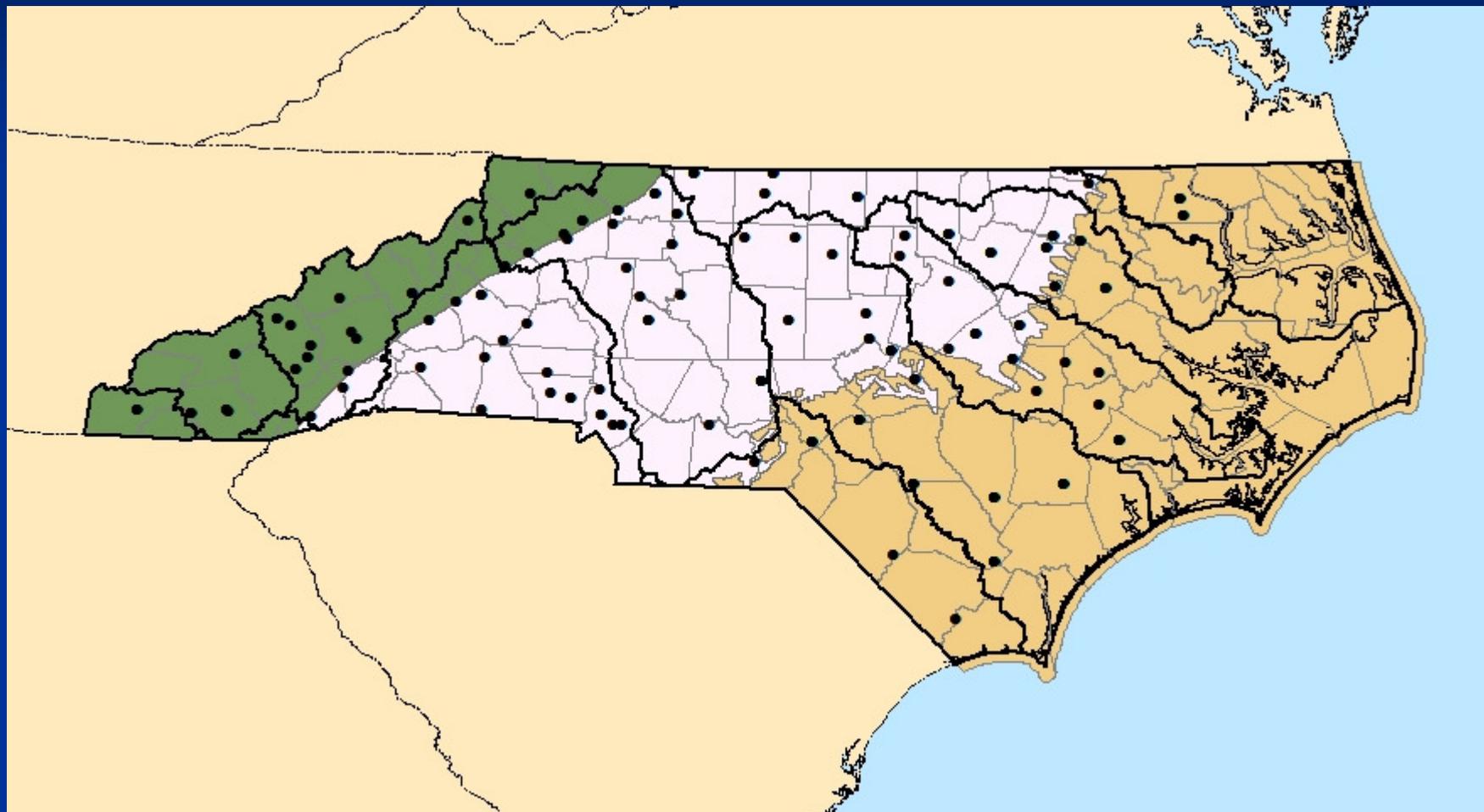


provisional data...3 sites...as of April 17

New period of record minimum daily mean discharge during 2012 water year



New period of record minimum daily mean discharge during 2013 water year



provisional...no sites...as of April 17

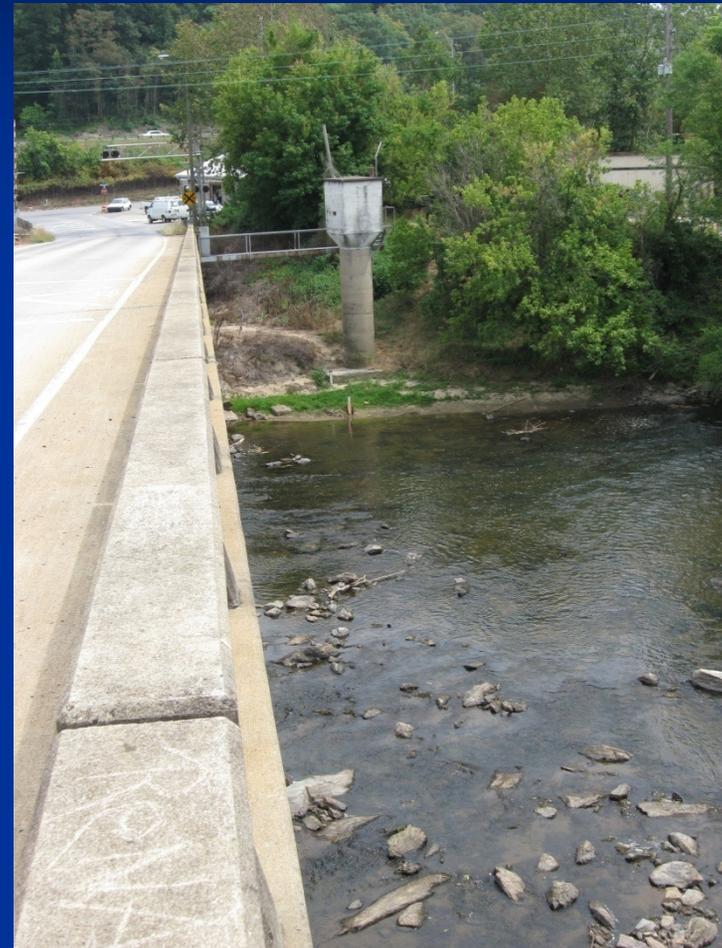
“Take home” message...

- Dry fall season led to concerns of similarly dry winter streamflows...but wetter winter conditions in western half NC due to early year precipitation activity...not as strong in the eastern half of the state... recently 30 to 60 percent of median
- Continuing “roller coaster” pattern with recent rainfall events...quick rise in response to precipitation, then quickly decline following event

In closing...

- Questions
- Concerns

*J. Curtis Weaver, Hydrologist
USGS North Carolina
Water Science Center
jcweaver@usgs.gov
(919) 571-4043*



French Broad River at Asheville
Buncombe County