Lower Mississippi River Forecast Center

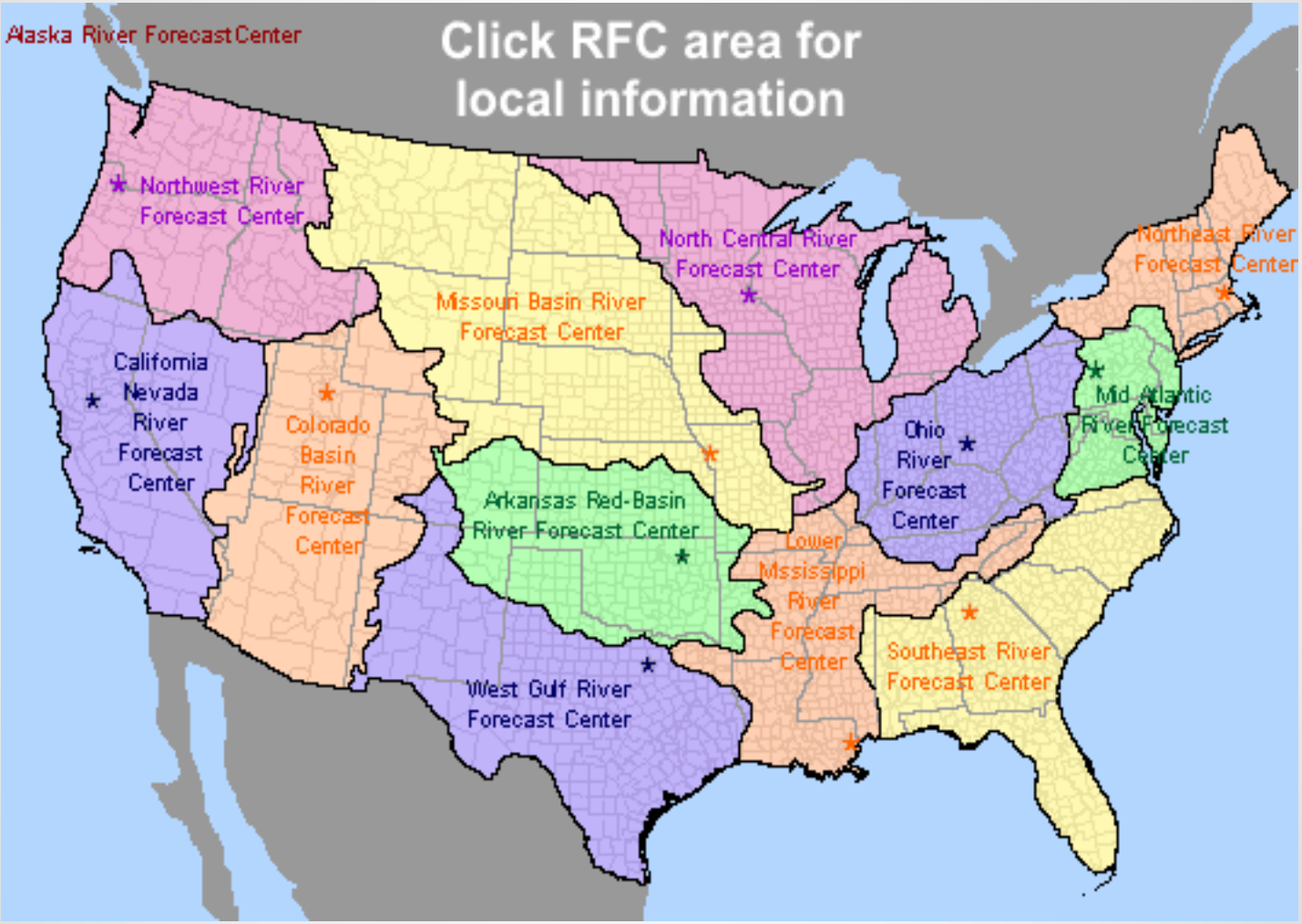
Extreme Weather of 2019

Jeff Graschel

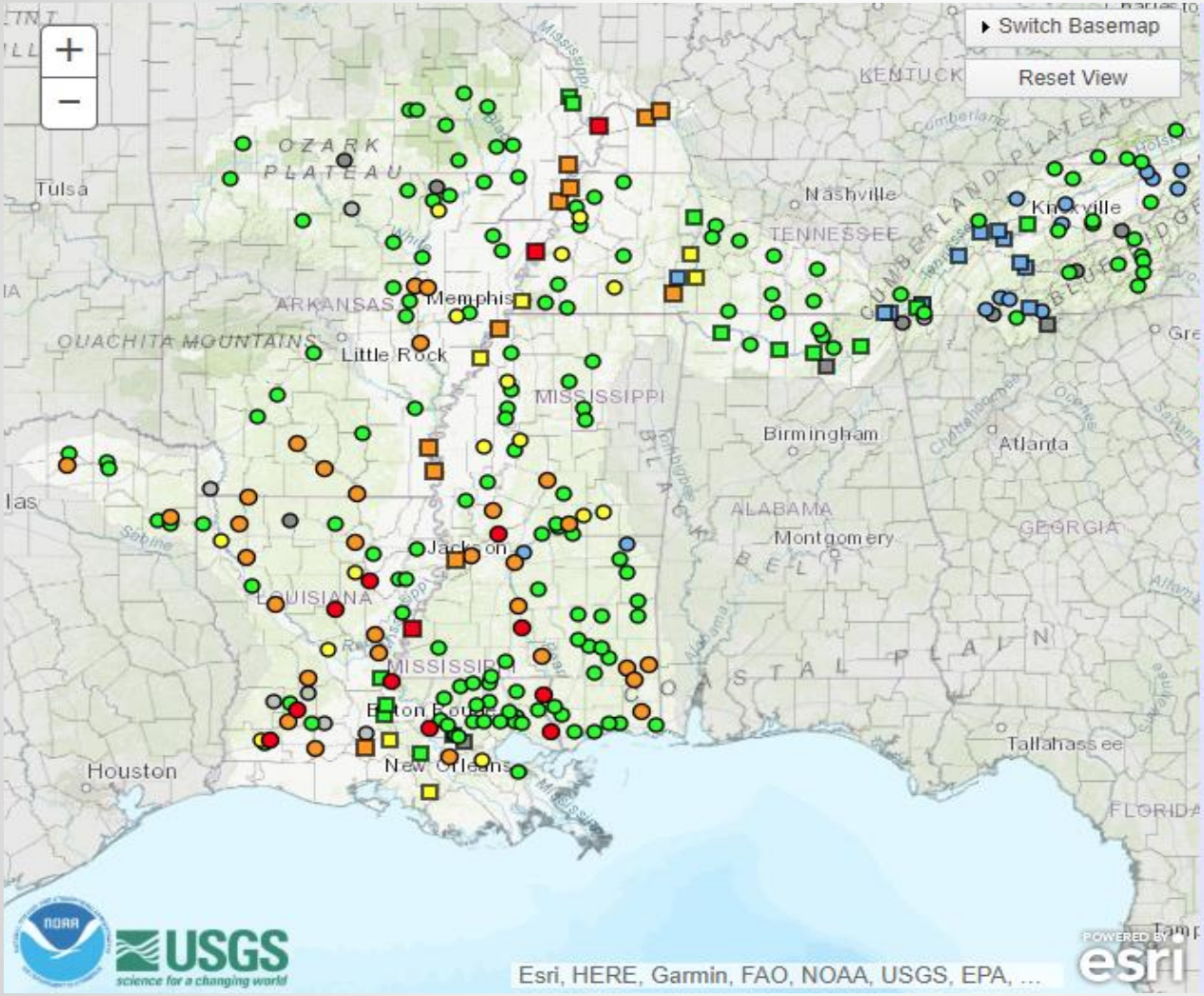
Thursday, October 10th 2019

Building a Weather-Ready Nation

River Forecast Center Locations



Lower Mississippi River Forecast Center



Click on the map or select one of the data views below:

- United States
- NWS Weather Forecast Offices
- Lower Mississippi River Forecast Center
- Water Resources Regions

○ Probability and forecasts available
□ Forecasts available

279 total gauges
Show all locations in flood (54)

- 0 Gauges: Major Flooding
- 13 Gauges: Moderate Flooding
- 41 Gauges: Minor Flooding
- 21 Gauges: Near Flood Stage
- 159 Gauges: No Flooding
- 25 Flood Category Not Defined
- 0 At or Below Low Water Threshold
- 7 Gauges: Forecasts Are Not Current
- 13 Gauges: No forecast within selected timeframe
- 0 Gauges: Out of Service

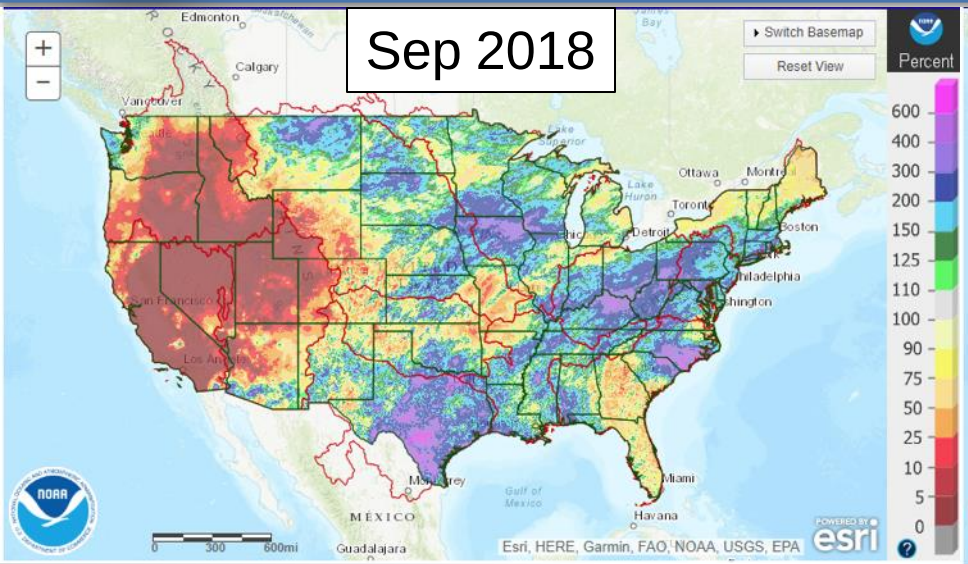
Show all locations

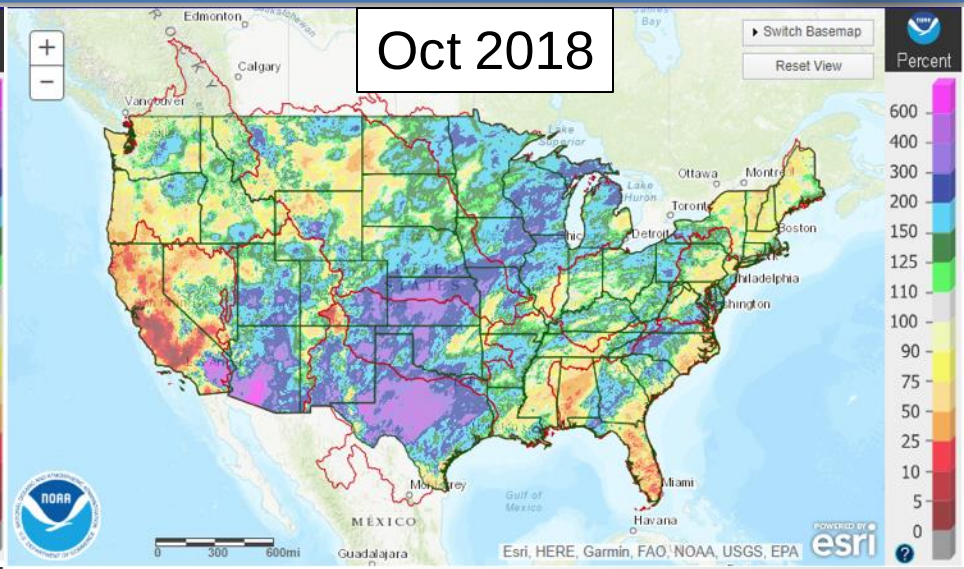
Last map update:
01/10/2019 at 06:59:03 am EST
01/10/2019 at 11:59:03 UTC

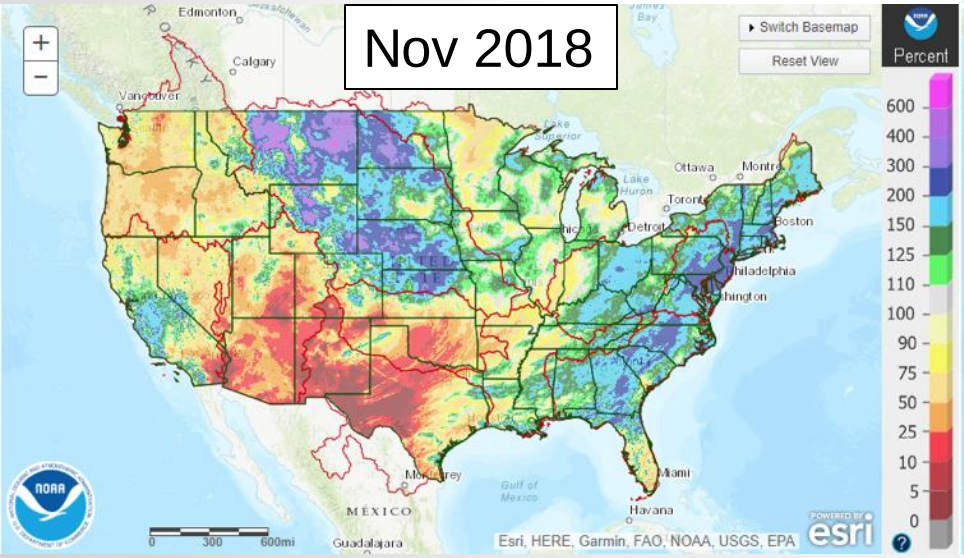
What is UTC time?
Map Help
Disclaimer

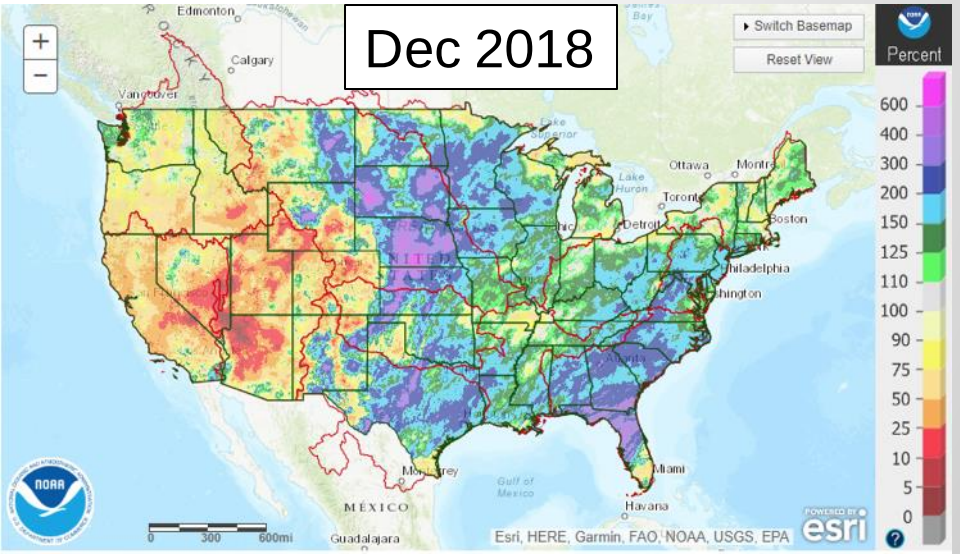
Flood of 2019
The flood that would never end

Flooding started with Rainfall 2018









Cairo, IL Stages for 2018

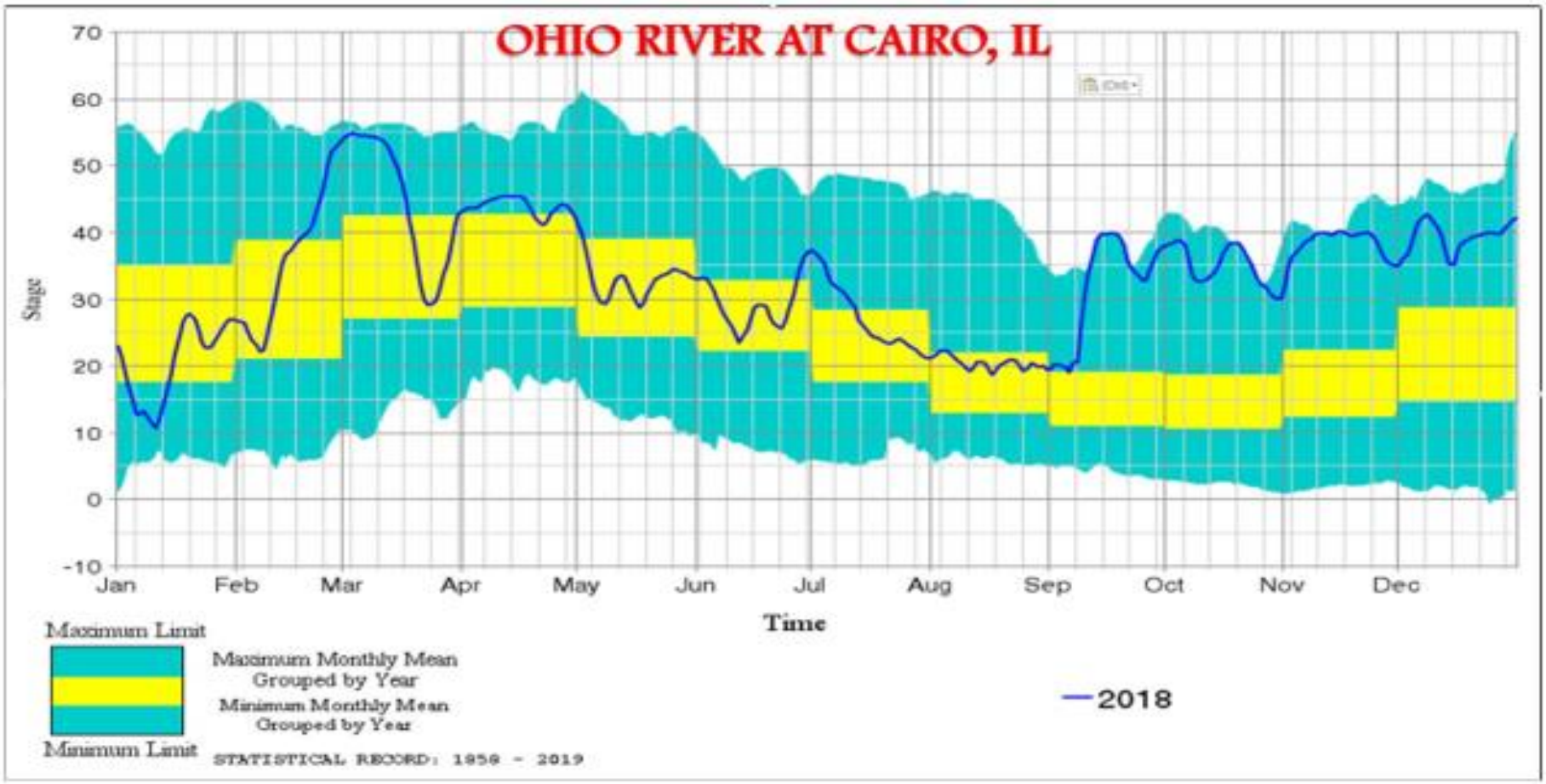
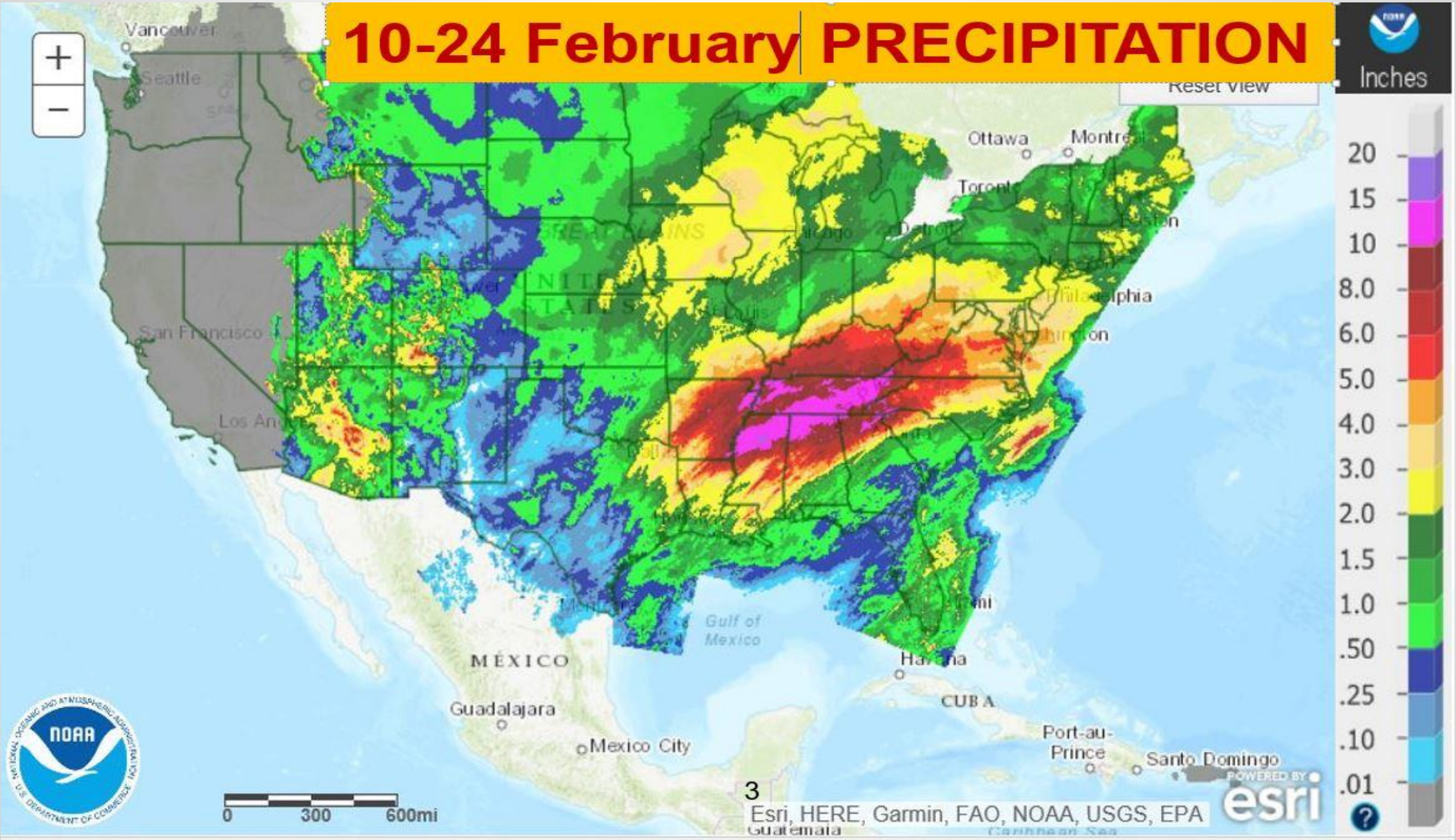
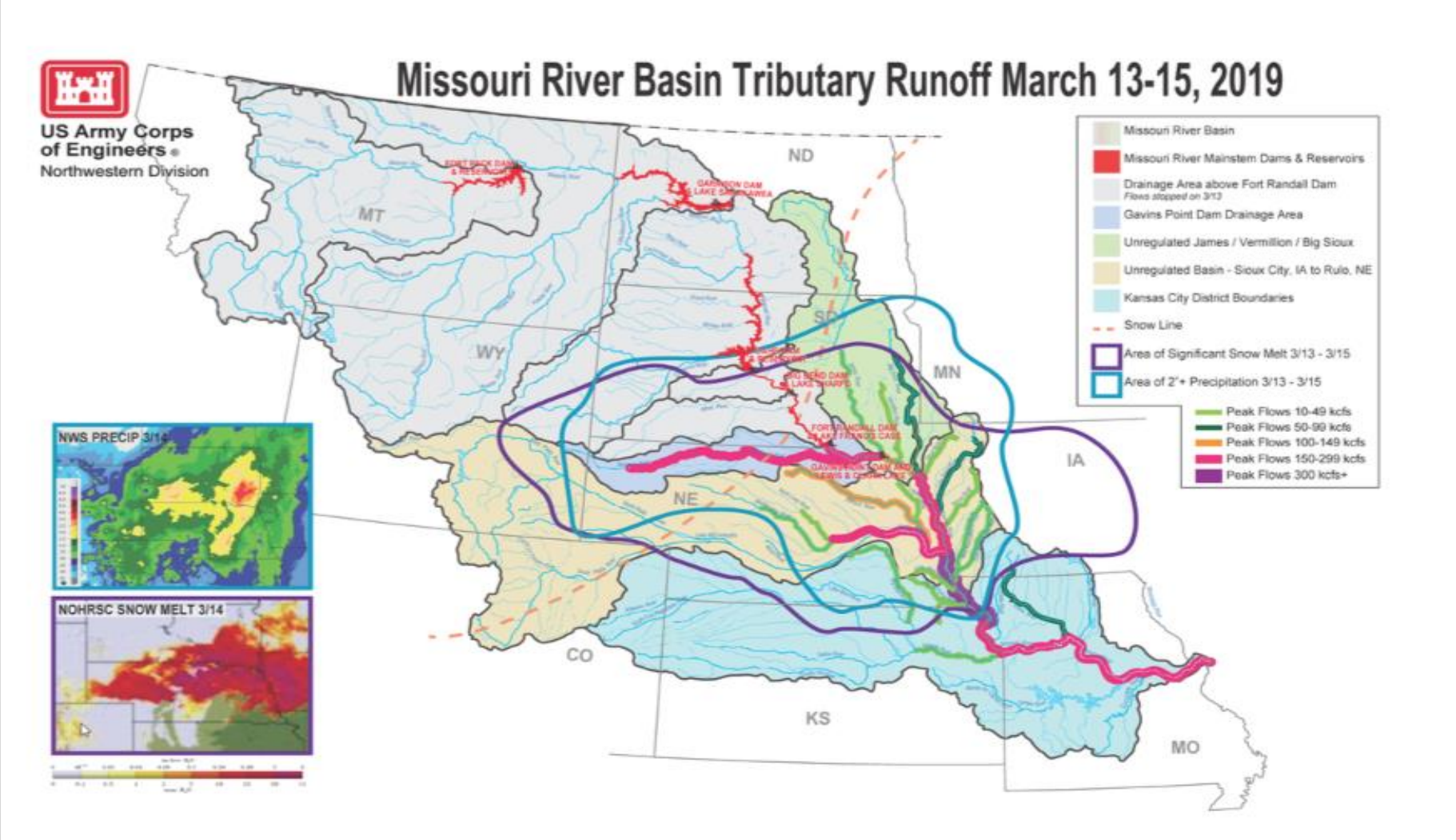


Figure 2 2018 stage on the Ohio River at Cairo, Illinois. Yellow area indicates normal range and blue area denotes above or below normal range for the calendar day.

Round One
Tennessee Valley

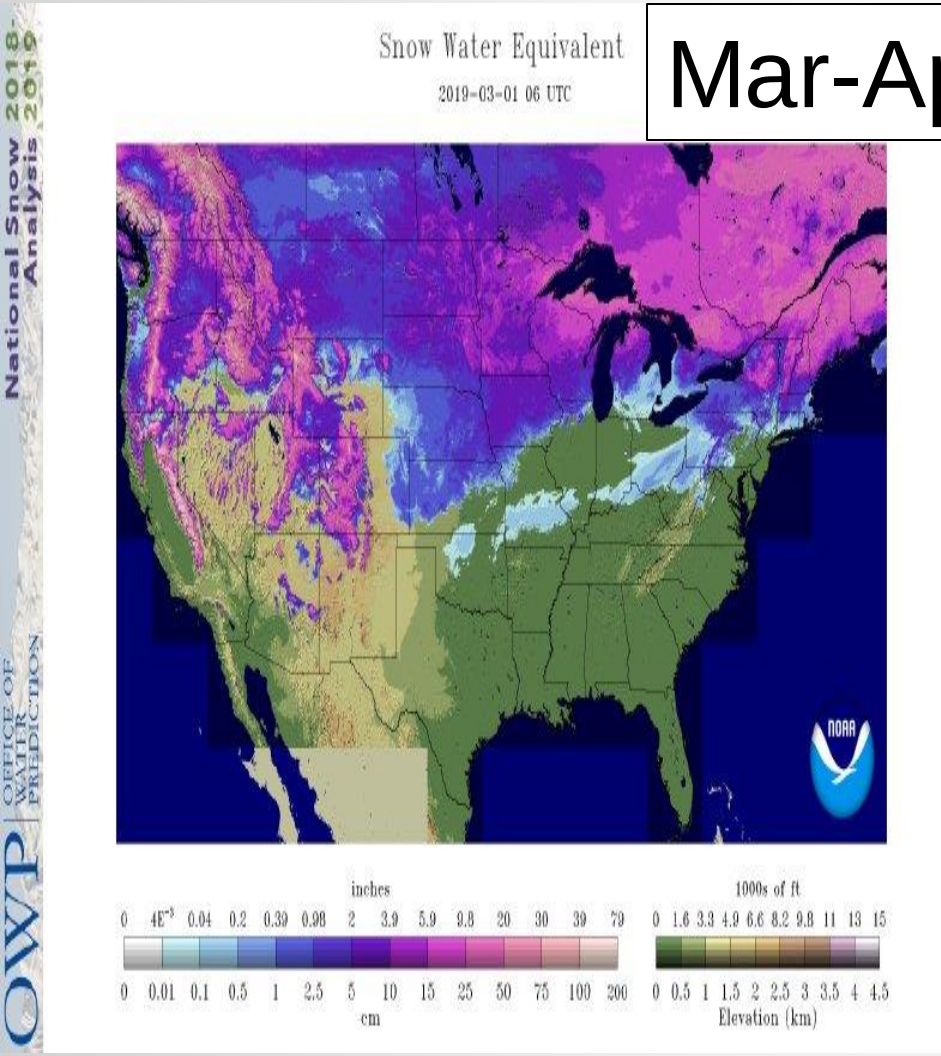


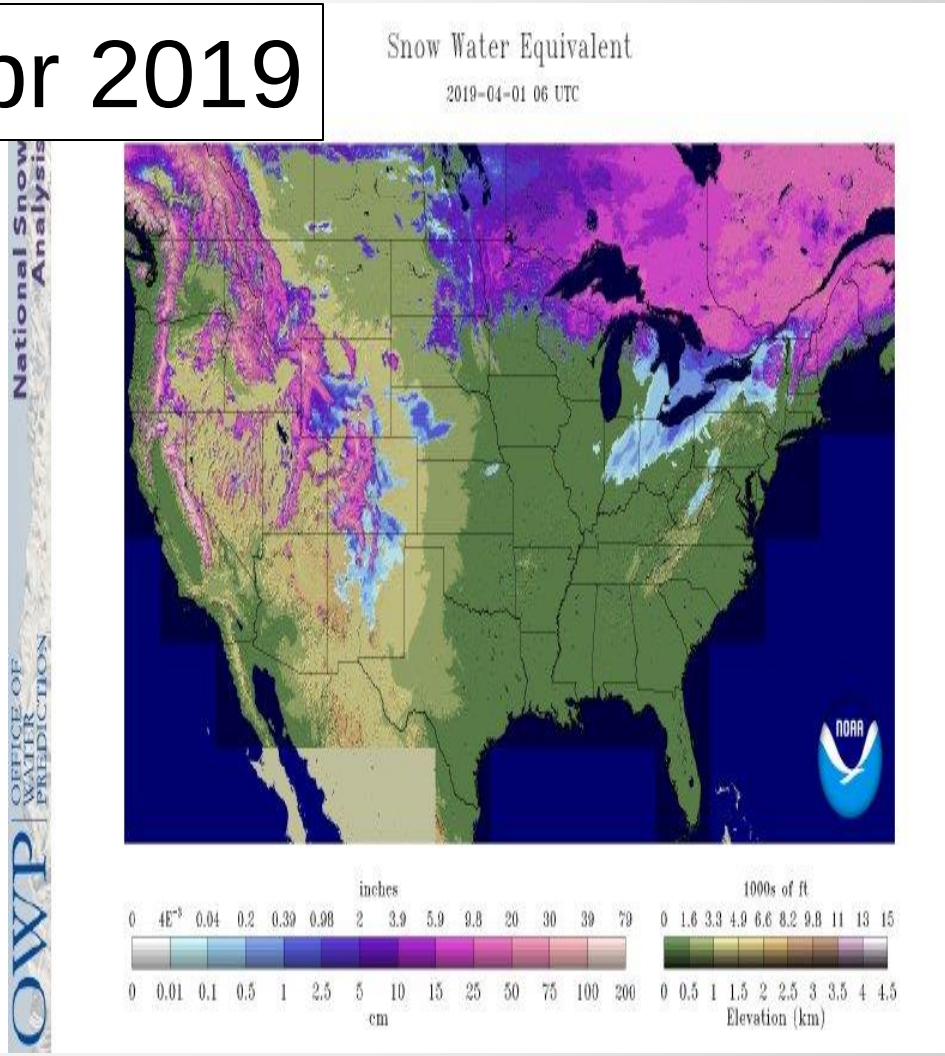
Round Two
Missouri Valley



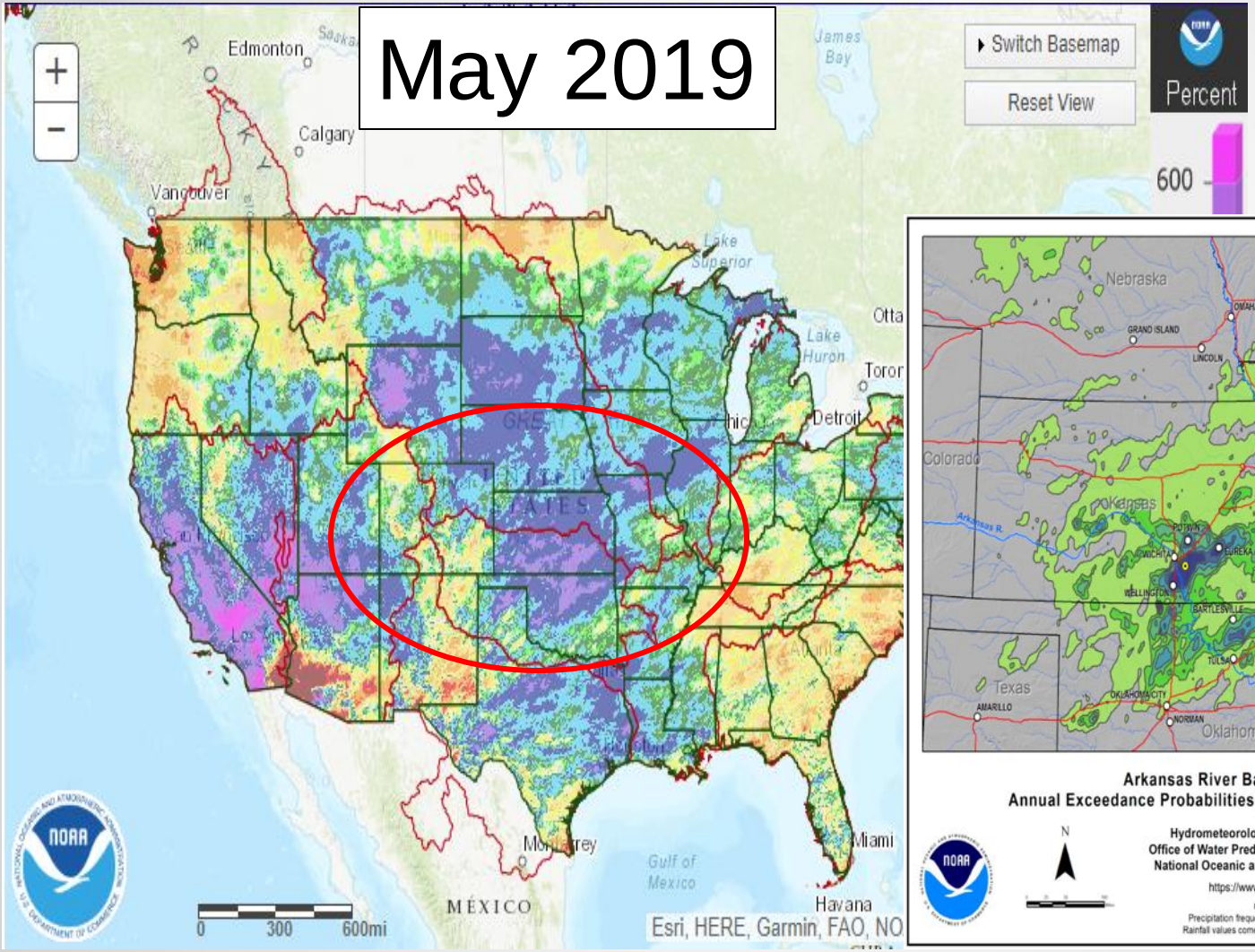
Round Three
Upper Mississippi Valley

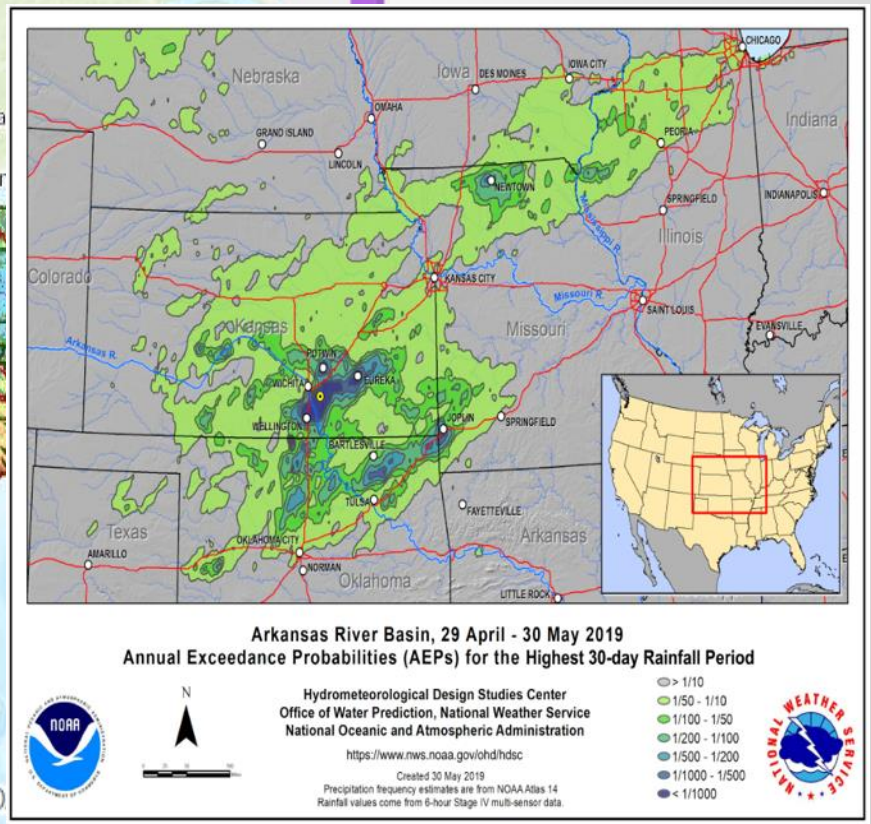
Mar-Apr 2019



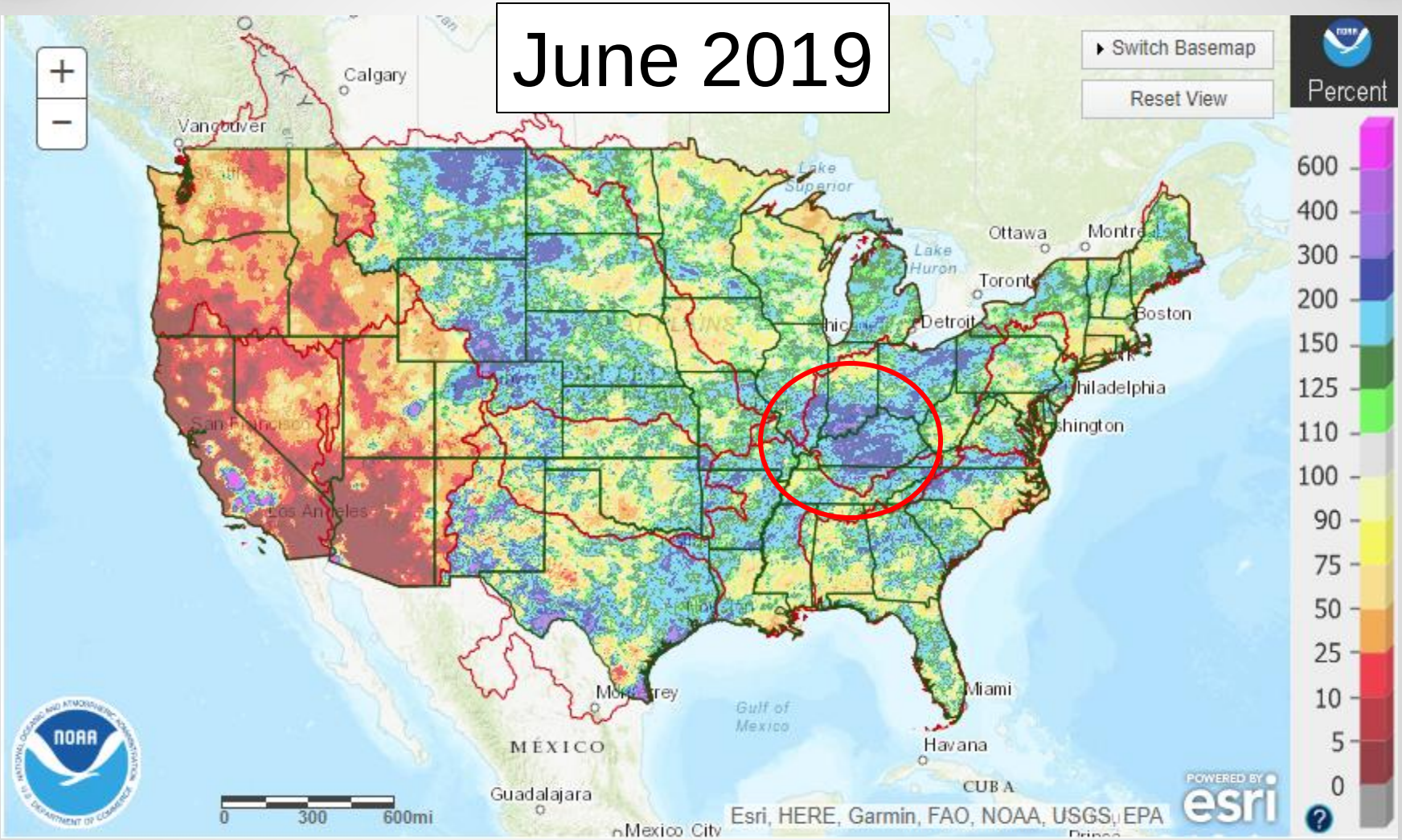


Round Four
Arkansas & Missouri Valleys

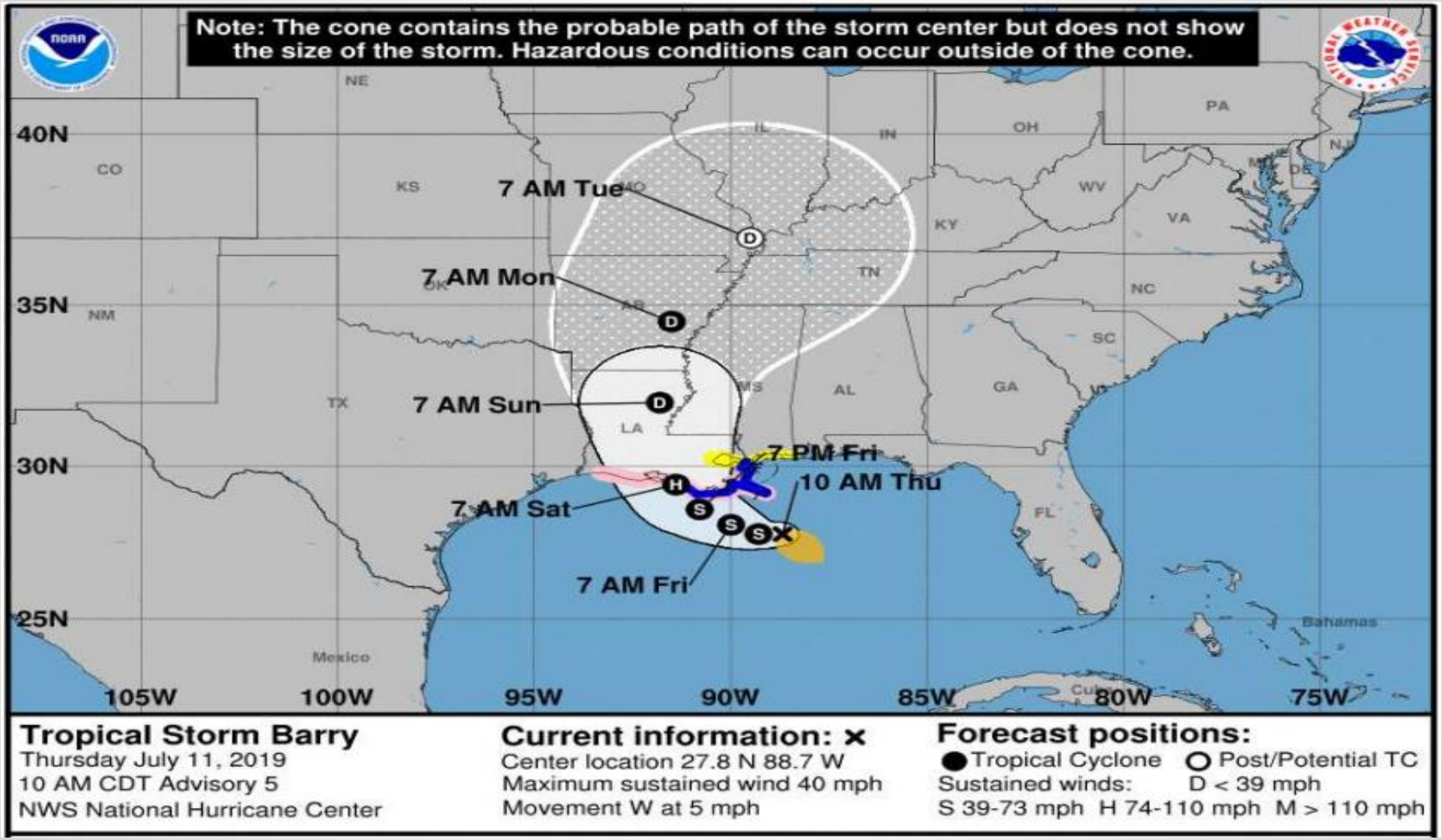




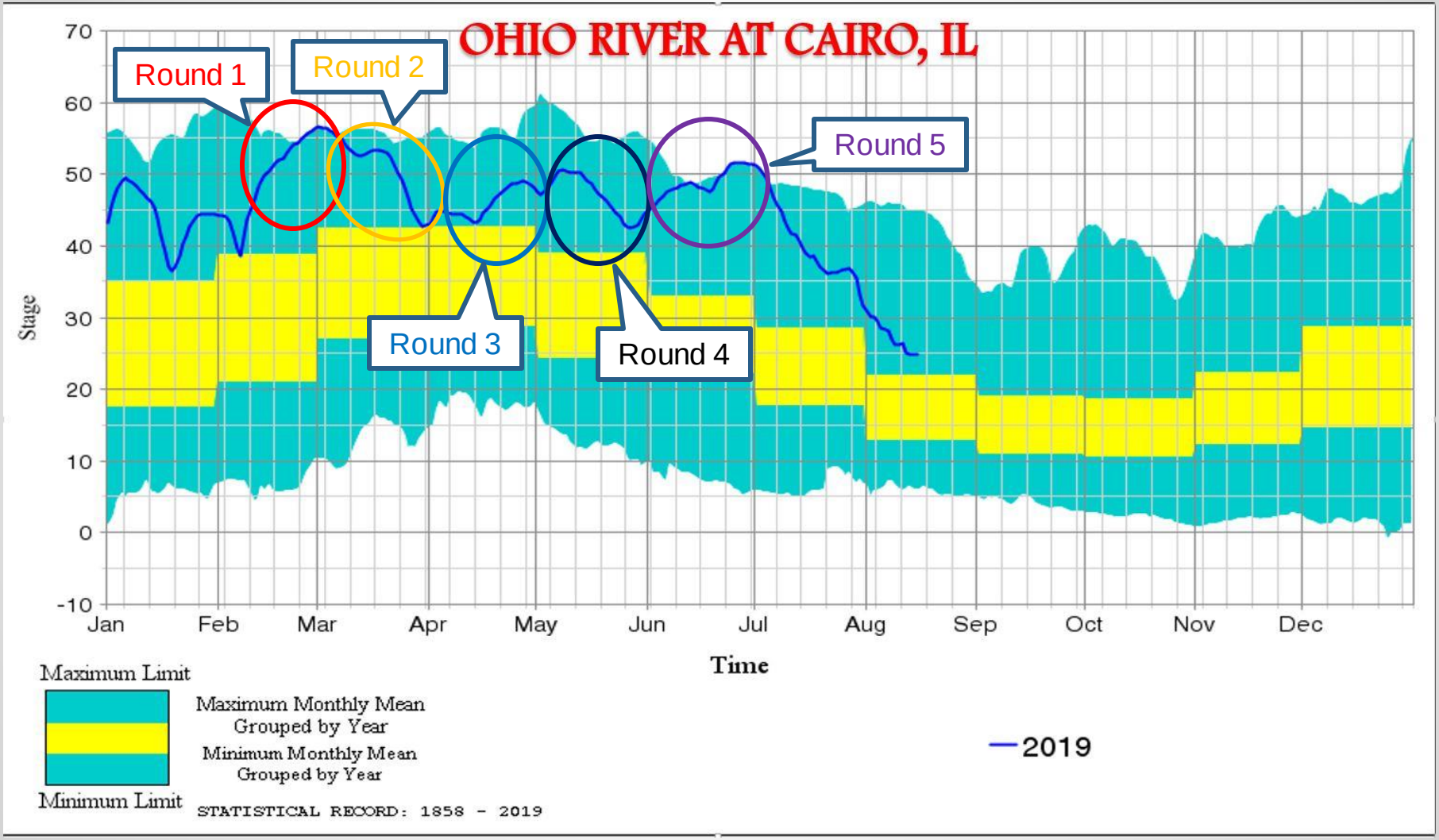
Round Five
Ohio & Tennessee Valleys



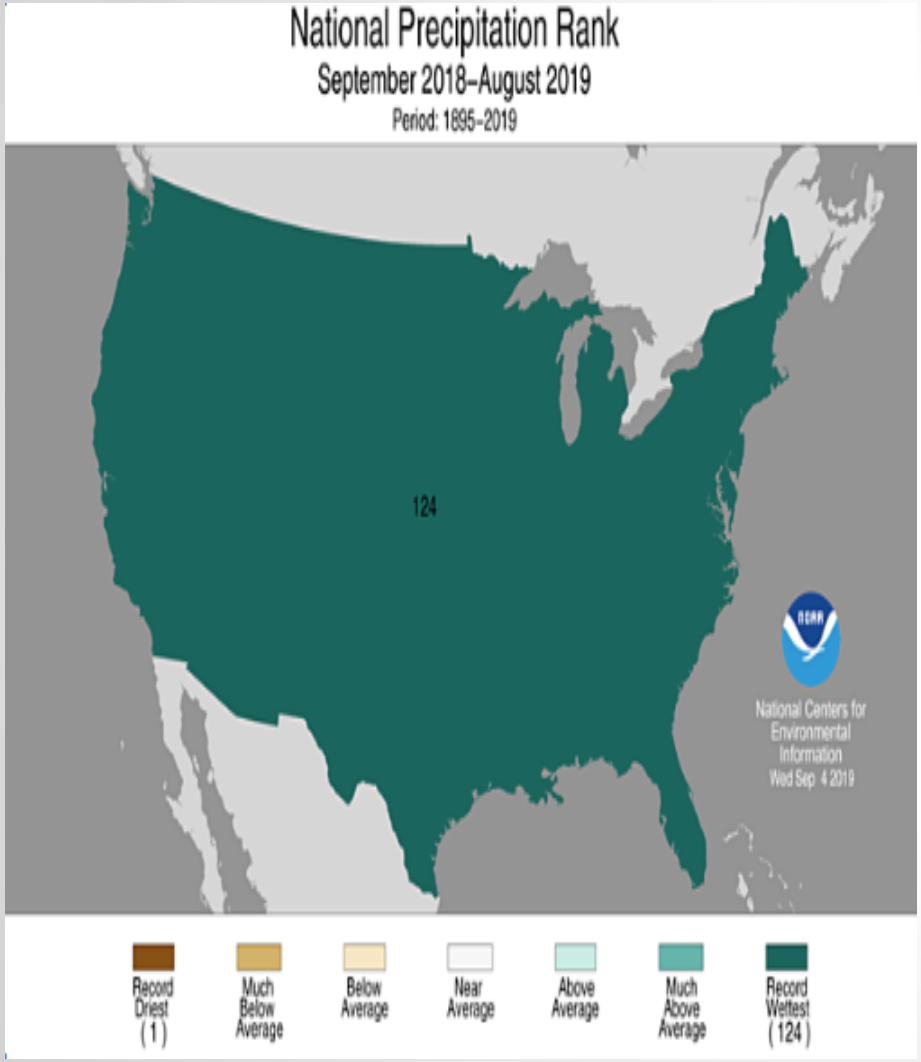
Round Six
Hurricane Barry

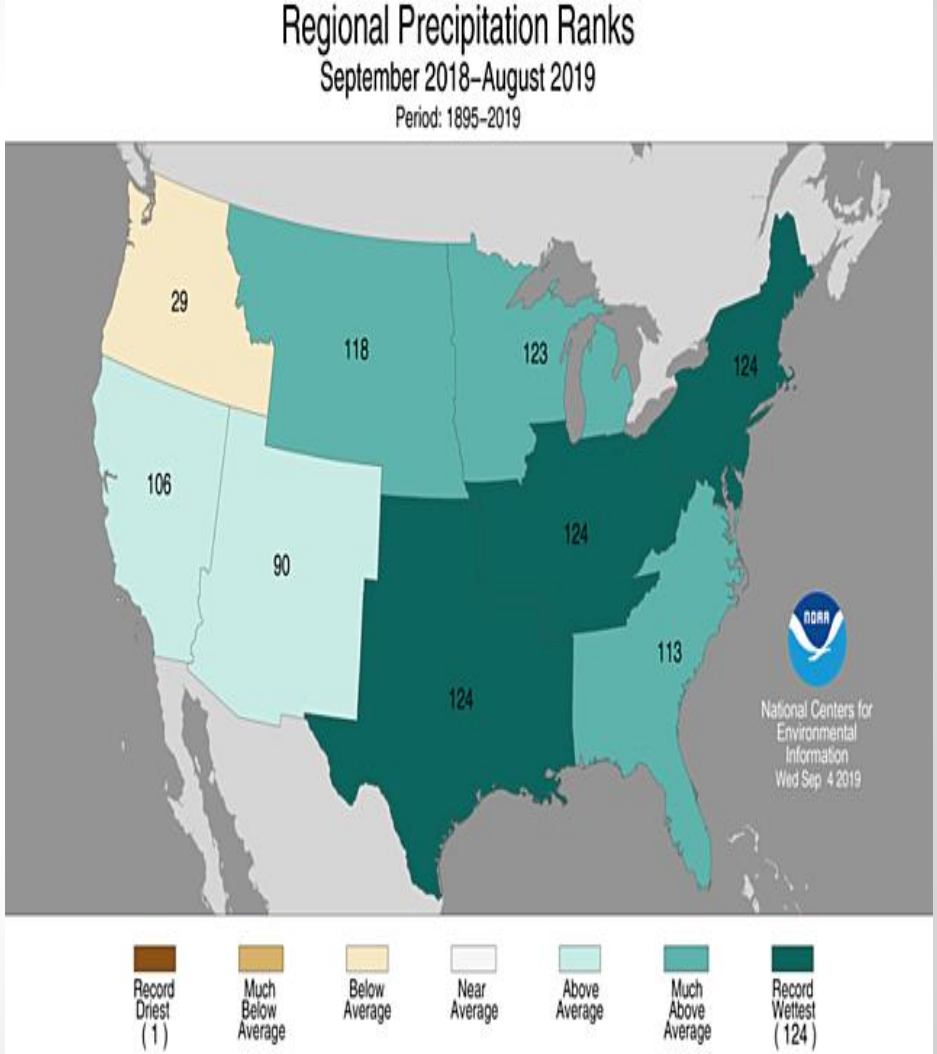


Cairo, IL Stages for 2019



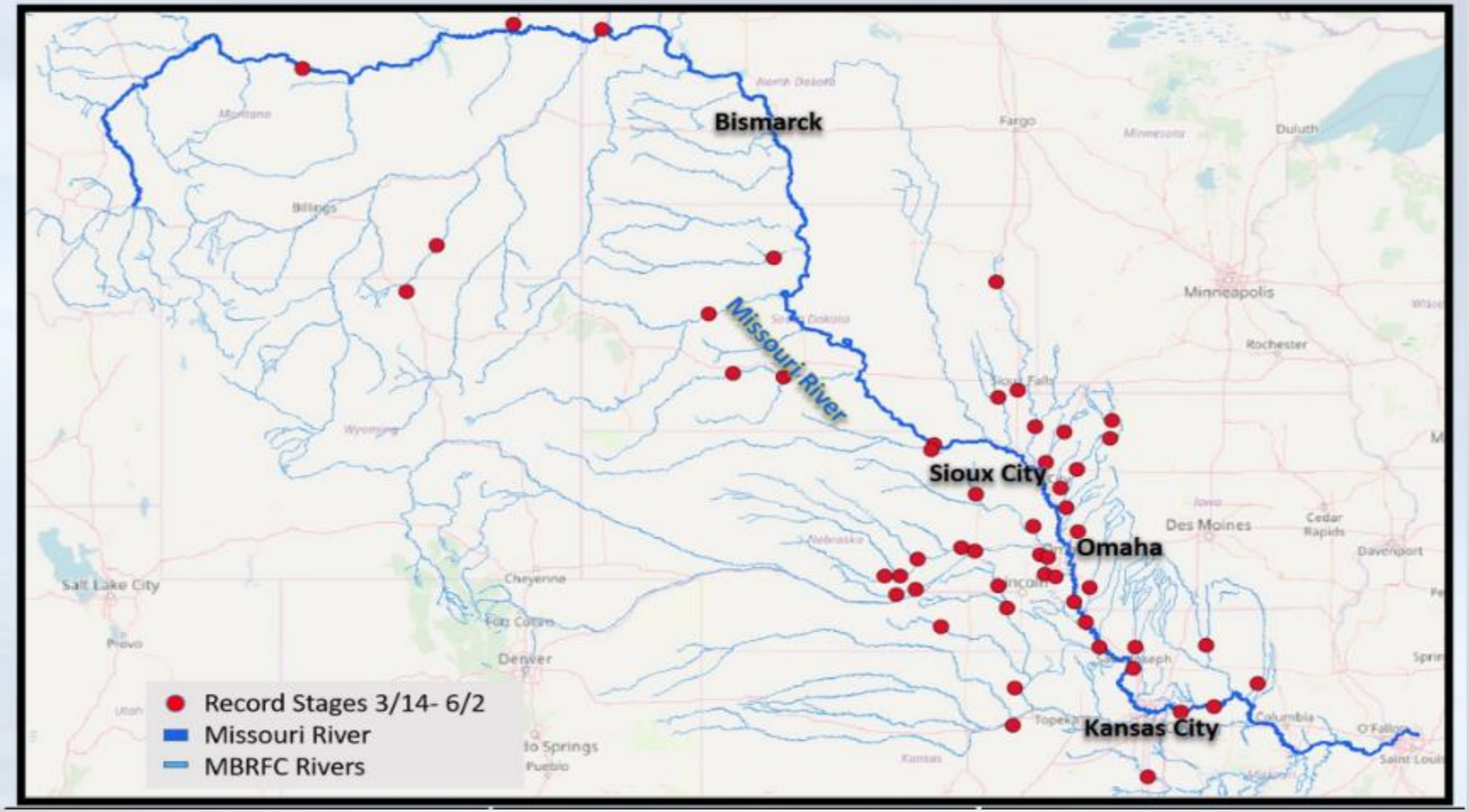
Records for 2019
Yearly Precipitation Ranking





Missouri Basin Records
66 Total for the Entire Drainage

Records Broken 2019—53 from March to June



Arkansas Basin Records

Location	Flood Stage	Crest/Date	Versus Highest Crest On Record	Rank	Record Crest/Year Prior to Event
Van Buren	22.0 ft	40.8 ft/June 1	+2.7 ft	1st	38.1 ft/1945
Ozark	357.0 ft	375.0 ft/May 30	-0.5 ft	2nd	375.5 ft/1943
Dardanelle	32.0 ft	45.9 ft/May 30	+1.8 ft	1st	44.1 ft/1943
Morrilton	30.0 ft	43.0 ft/June 4	+1.0 ft	1st	42.0 ft/1927
Toad Suck	275.0 ft	285.4 ft/June 4	+2.5 ft	1st	282.9 ft/1990
Little Rock	23.0 ft	29.7 ft/June 5	-4.9 ft	7th	34.6 ft/1833
Pine Bluff	42.0 ft	50.8 ft/June 6	-1.3 ft	2nd	52.1 ft/1943
Pendleton	31.0 ft	37.6 ft/June 6	+3.5 ft	1st	34.1 ft/1973

An historic flood event unfolded along the Arkansas River. Record or near record crests occurred, with previous high marks surpassed by more than two feet at Van Buren (Crawford County), Toad Suck (Perry County), and Pendleton (Desha County). Some long time records (1940s or before) were broken.

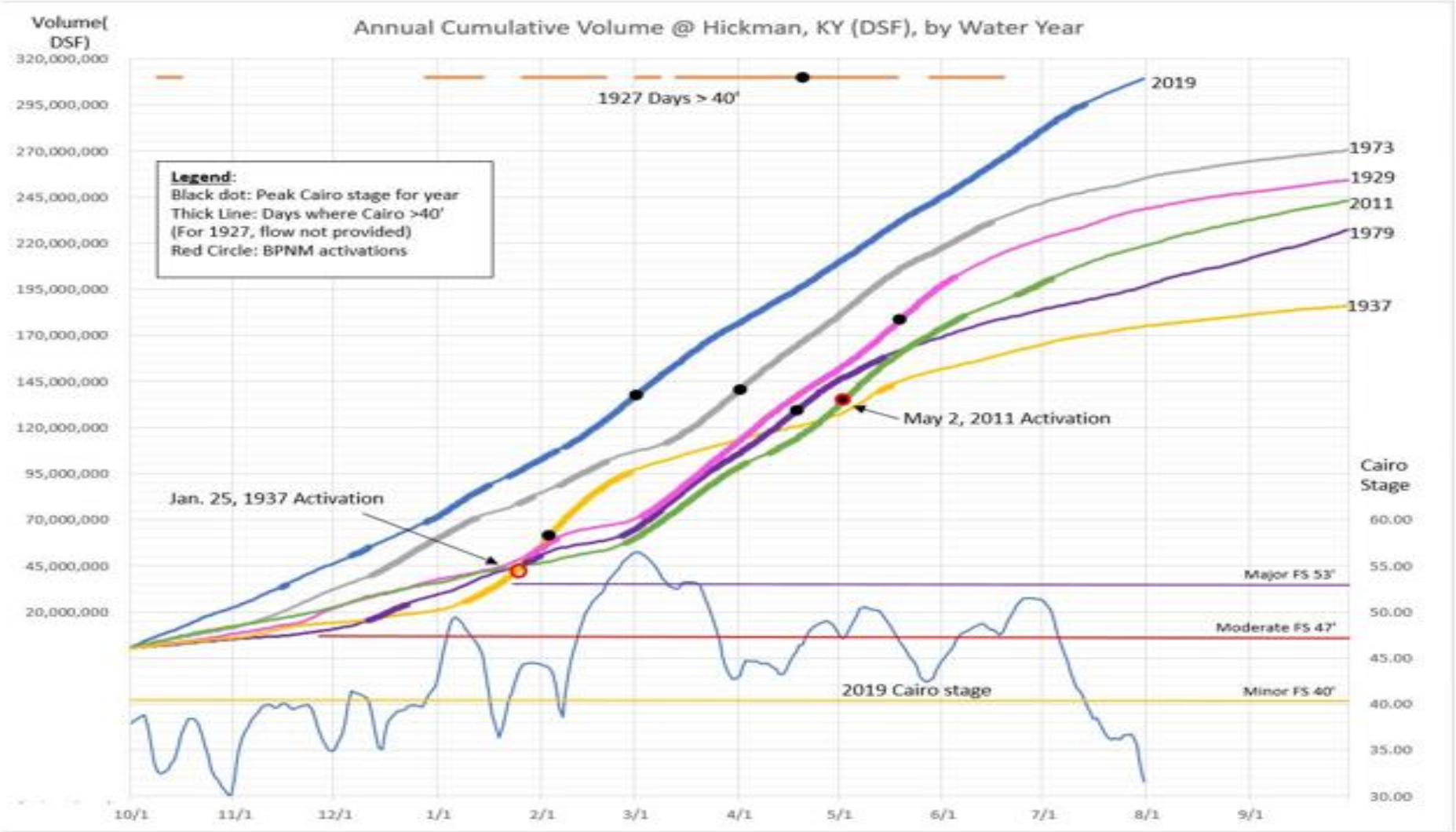
Mississippi River Consecutive Days above Flood Stage Records

Forecast Location	Record (Days/Year)	2019 (Days/Period)	2011 (Days)	1973 (Days)	1927 (Days)
Cairo, IL	156 2019	156 Feb 8th – Jul 13th	59	97	76
Memphis, TN	65 1927	39 Feb 19th – Mar 29th	35	64	65
Arkansas City, AR	197 1927	94 Apr 16th – Jul 19th	44	72	197
Greenville, MS	155 2019	155 Feb 17th – Jul 21st	46	71	115
Vicksburg, MS	185 1927	162 Feb 17th – July 28th	48	83	185
Natchez, MS	215 2019	215 Jan 4th – August 6th	53	90	77
Red River Landing, LA	227 2019	227 Dec 27th – August 10th	59	95	152
Baton Rouge, LA	211 2019	211 Jan 6th – August 4th	79	99	135

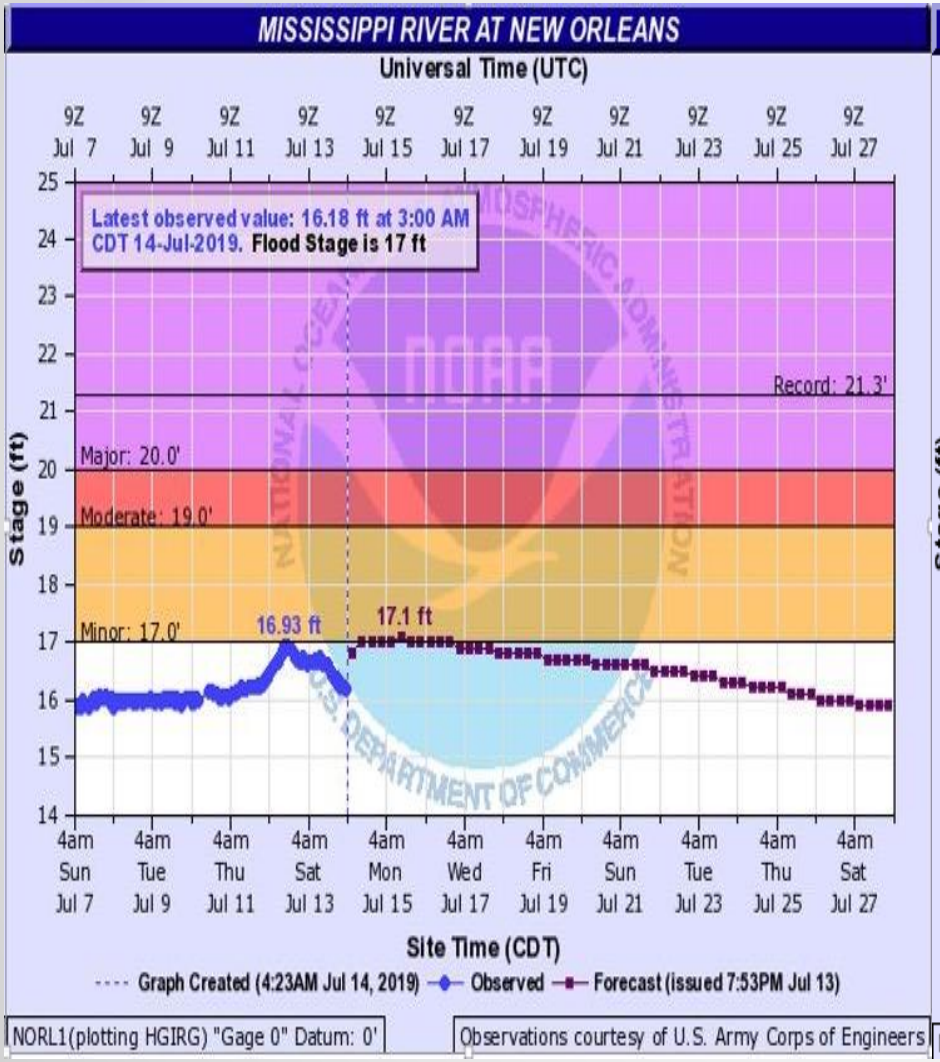
Numbers in Red are records for this year

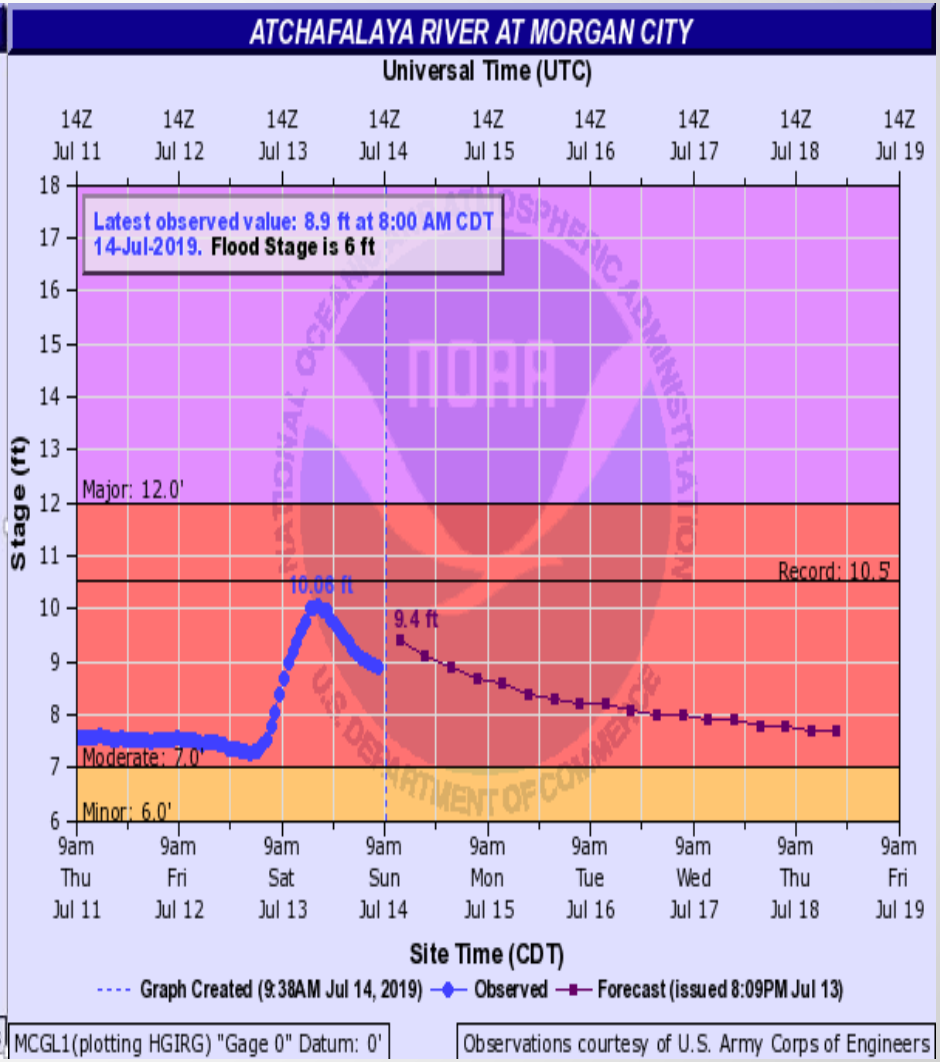
Data provided by U.S. Army Corps of Engineers

Annual Cumulative Flow Records

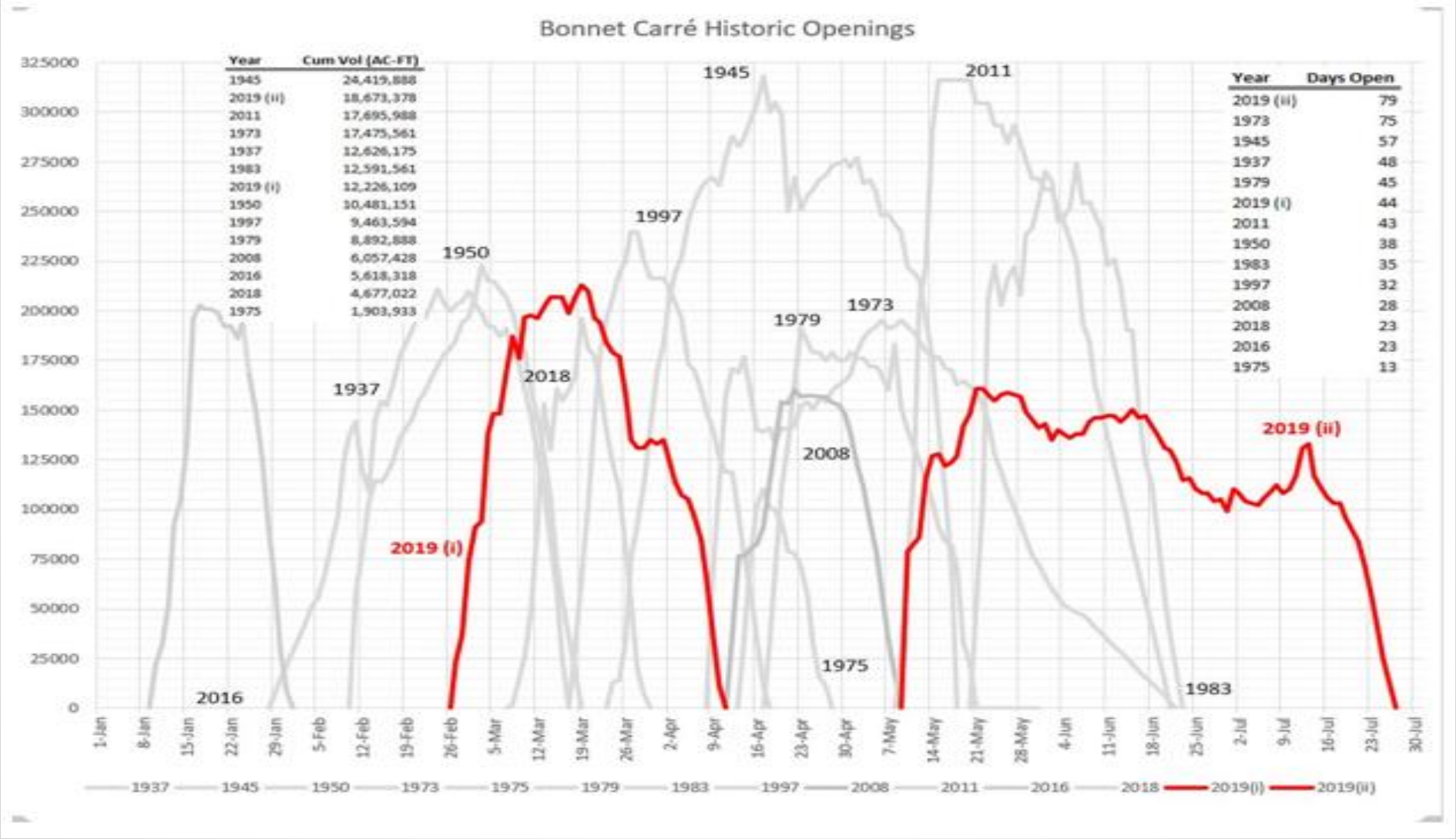


First Time to have storm surge with high water on Mississippi River

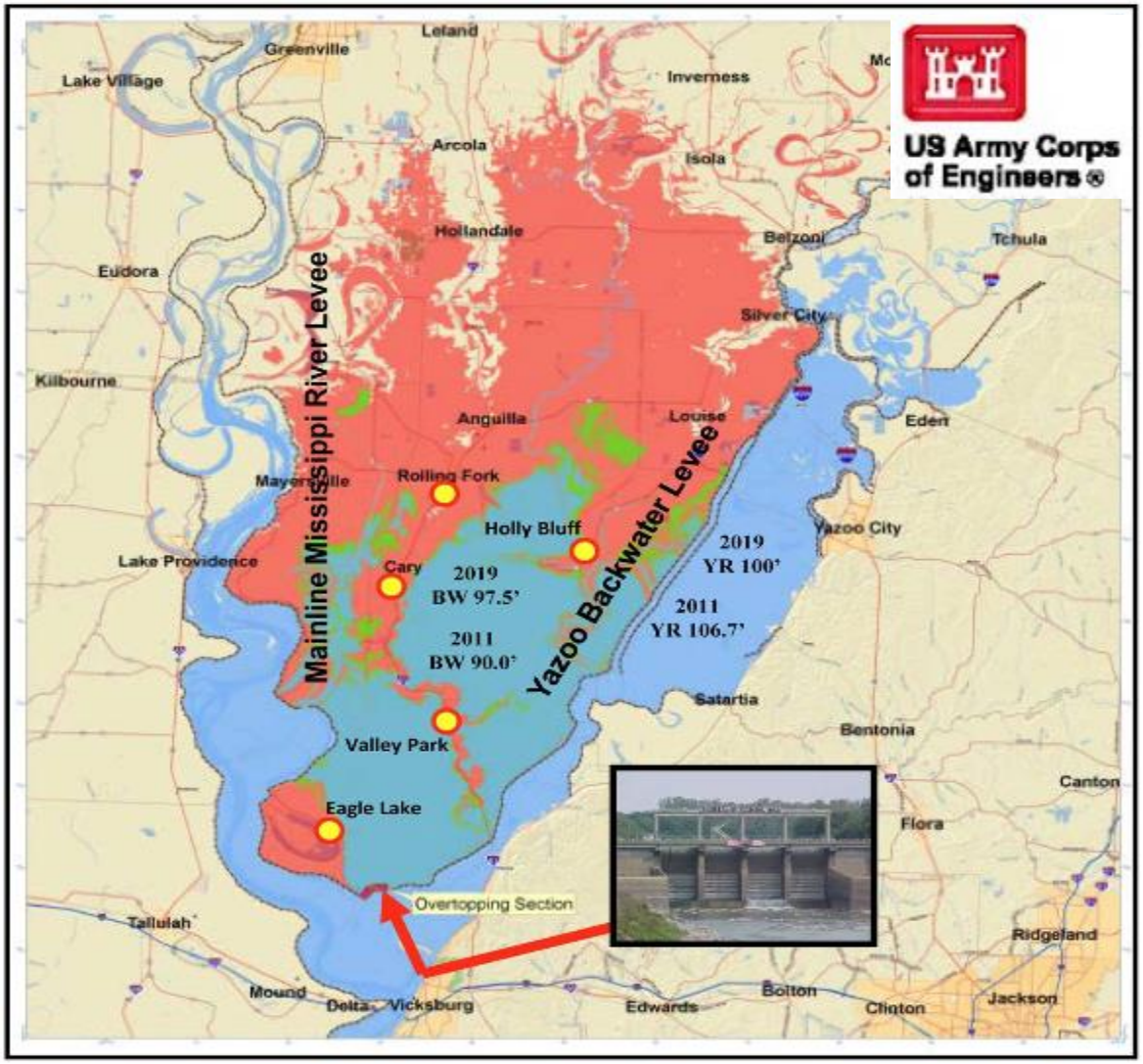


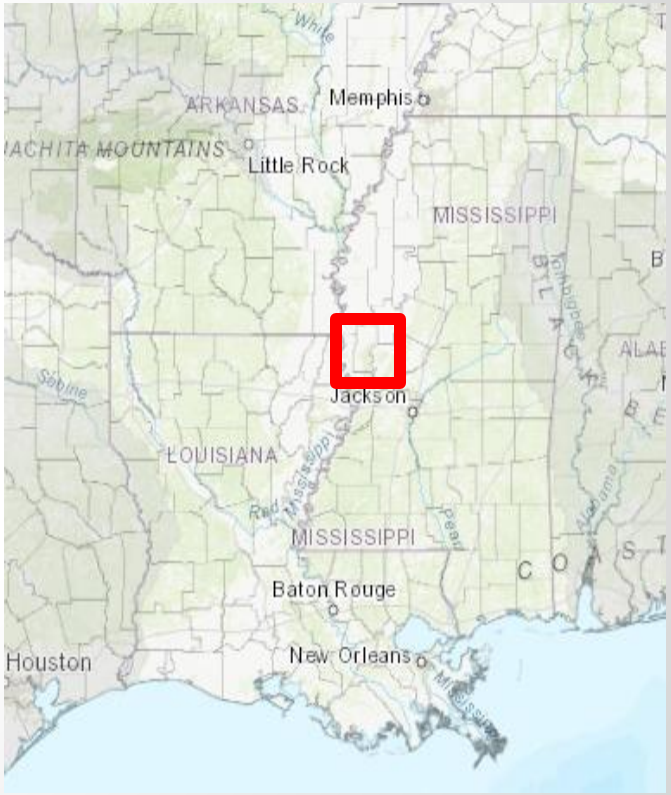


Bonnet Carré Floodway Record Opening



Record Yazoo Backwater Flooding in Mississippi





Hurricane Barry Rainfall Totals

Missouri

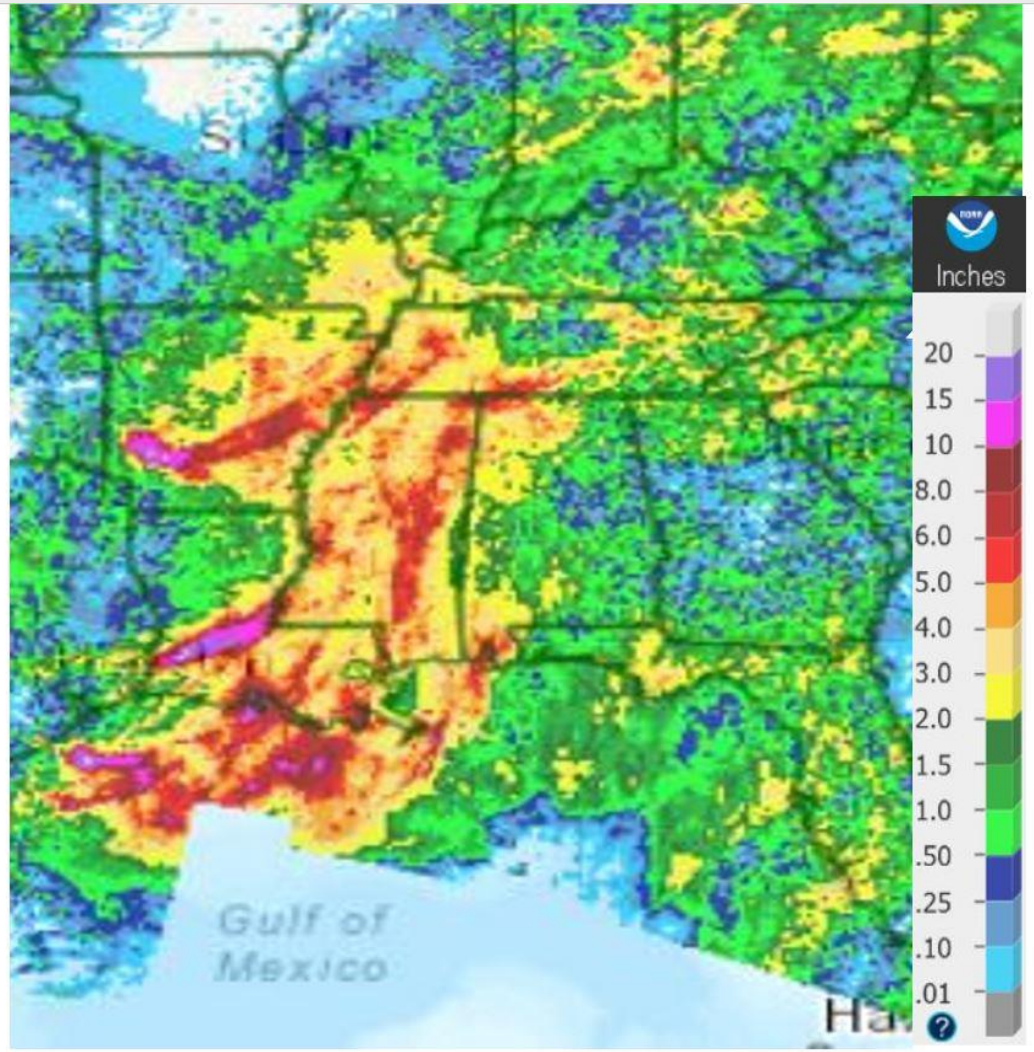
Poplar Bluff	5.35”
Cape Girardeau	4.72”
Fairdealing	3.73”
Lambert	3.67”
Doniphan	3.32”
Jackson	3.31”

Arkansas

Dierks	16.59”
Murfreesboro	14.58”
Langley	12.73”
Delight	12.41”
Antoine	11.69”
Pine Bluff	7.06”
Arkadelphia	6.53”
Little Rock	3.02”

Louisiana

Ragley	23.58”
Oberlin	18.16”
Marksville	16.08”
Gillis	14.96”
Moss Bluff	13.72”
Buhler	13.40”
Denham Springs	11.56”
Kinder	9.70”
Simmesport	8.43”
Baton Rouge	7.39”



Kentucky

Scottsville	3.80”
Covington	3.27”
Paducah	3.26”

Illinois

Robinson	1.75”
Lawrenceville	1.25”

Indiana

Spencer	3.49”
Huntington	3.14”

Ohio

Cheviot	4.75”
Van Wert	3.72”

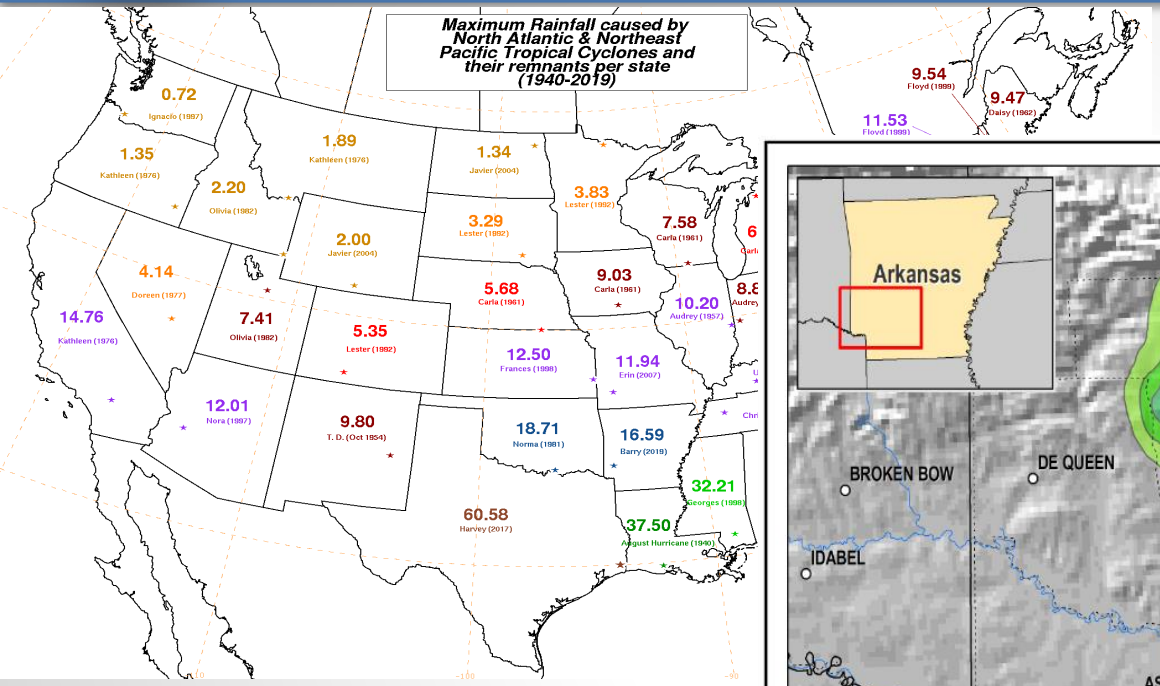
Tennessee

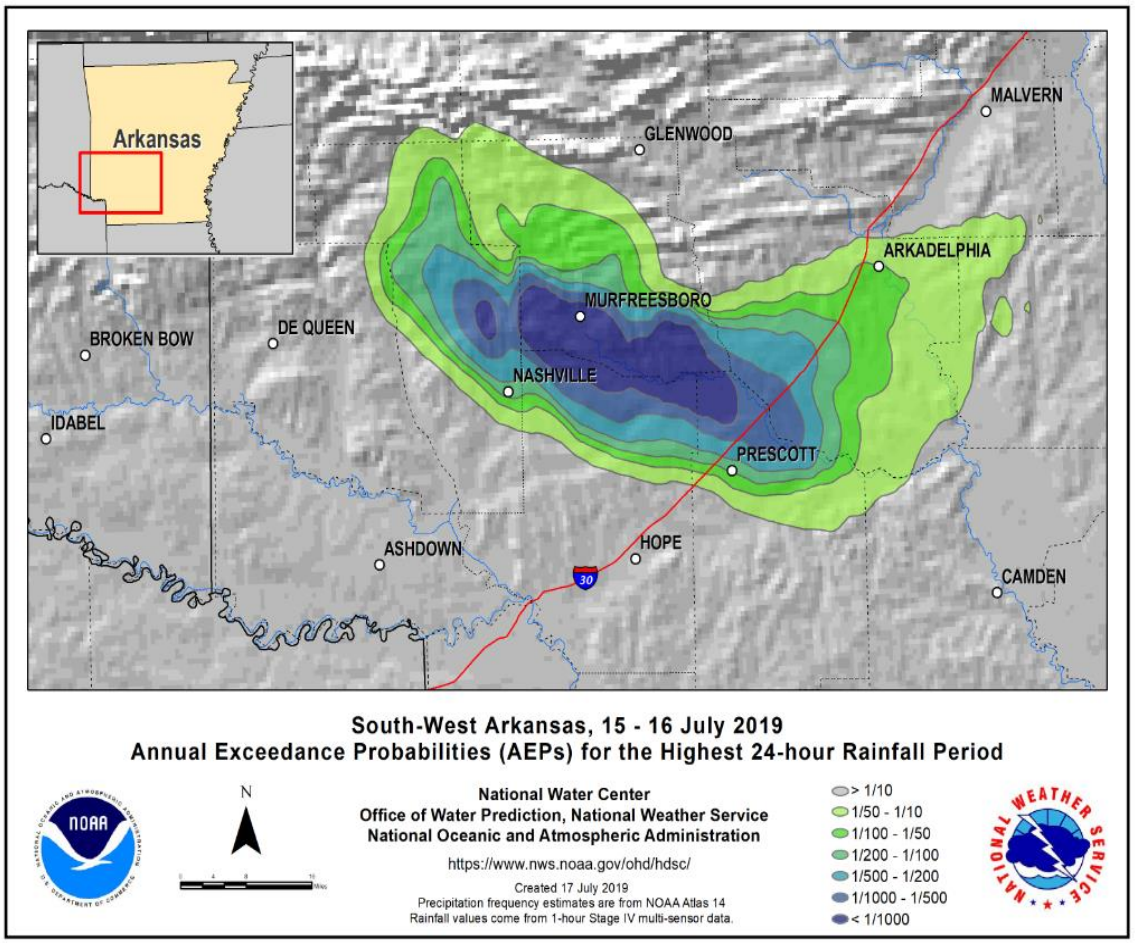
Cookeville	6.09”
Memphis	5.23”
Jackson	5.08”
Waynesboro	4.84”
Bell Buckle	4.57”
Clarksville	4.48”
Cornersville	4.42”

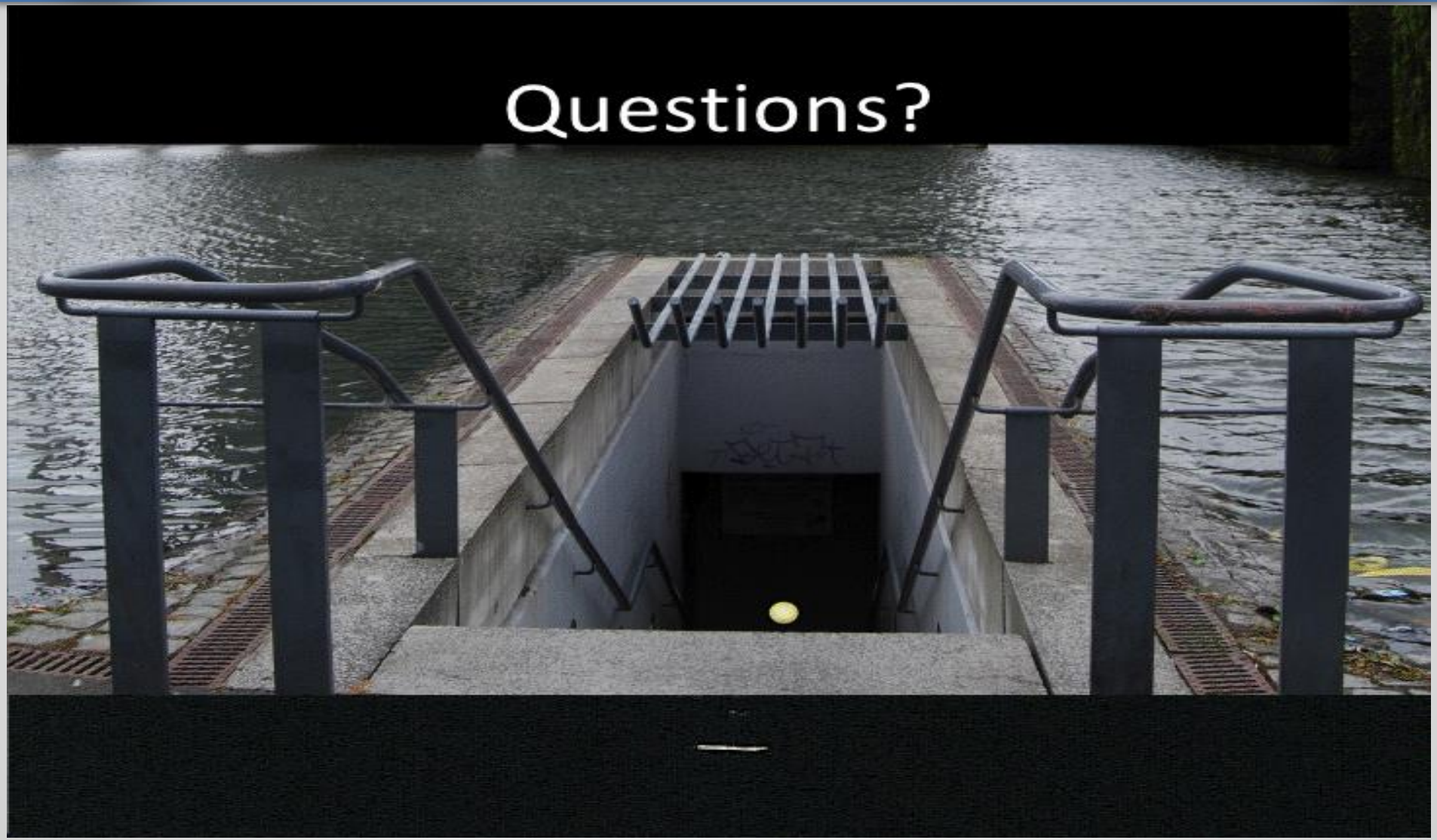
Mississippi

Pass Christian	13.30”
Ocean Springs	9.97”
Louin	8.68”
Philadelphia	8.36”
Vicksburg	8.02”
Natchez	7.09”
Greenwood	5.49”

Maximum Rainfall from Tropical Systems






Questions?

Contact Information

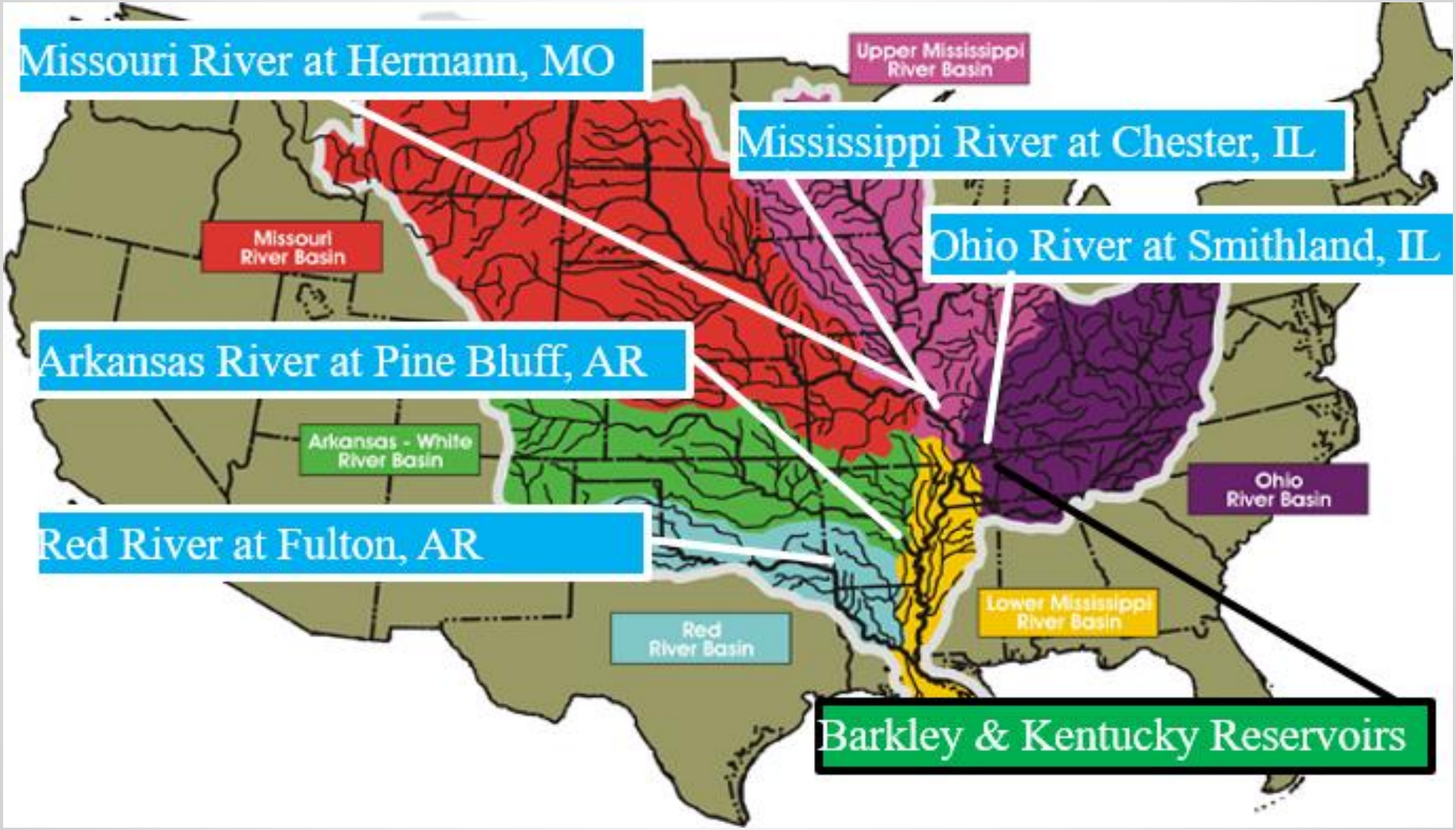
Lower Mississipp River Forecast Center

Jeffrey.Graschel@noaa.gov

Thank You

weather.gov/lmrfc

Mississippi River Inputs

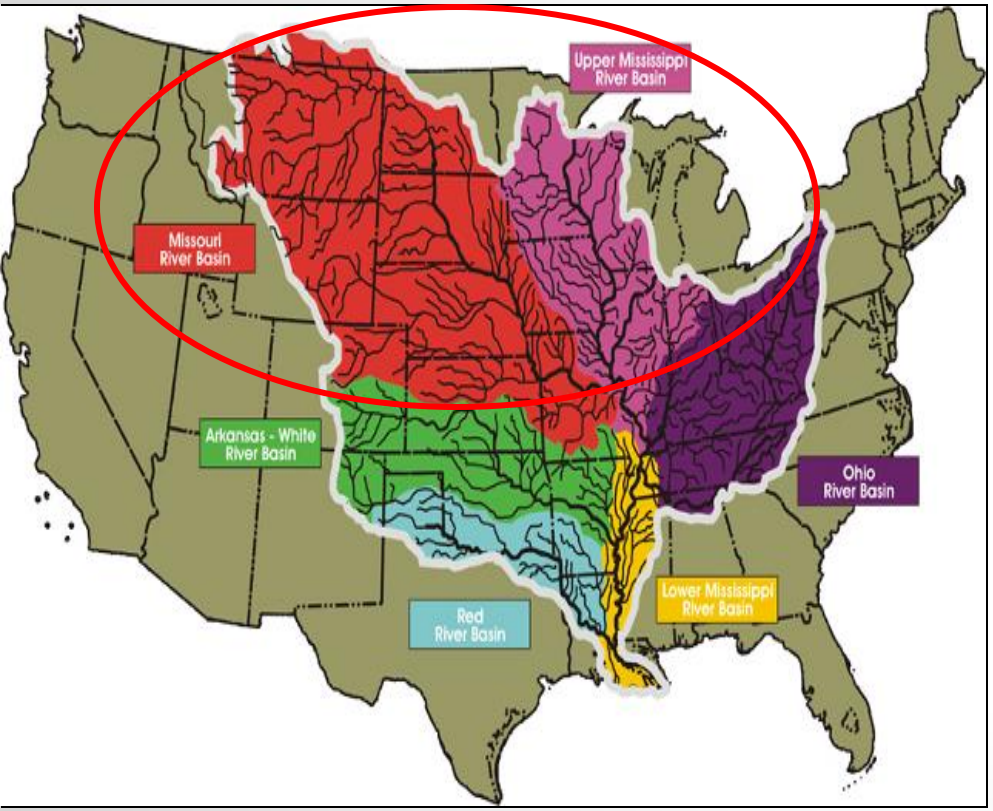


Mississippi River Forecast Timeline

Coordination and Collaboration with USACE, TVA/LRD and Upstream RFCs

Background for MS River forecasting

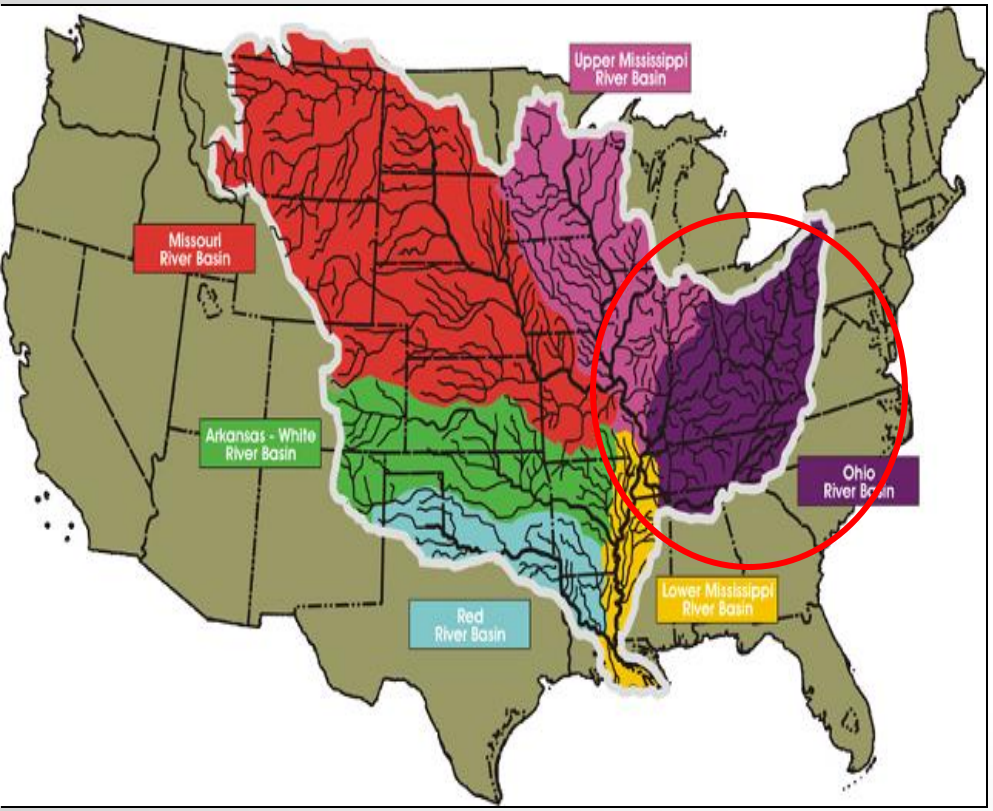
Missouri and Upper Mississippi Basins



- Rainfall and Temperature Forecasts (snowmelt) play key roles
- Typically less precipitation in this basin so provides less total flow to Cairo, IL Exception (1993) and current conditions
- Upper MS snowmelt generally between mid Mar – mid Apr
- Missouri snowmelt generally mid Apr – mid May

Background for MS River forecasting

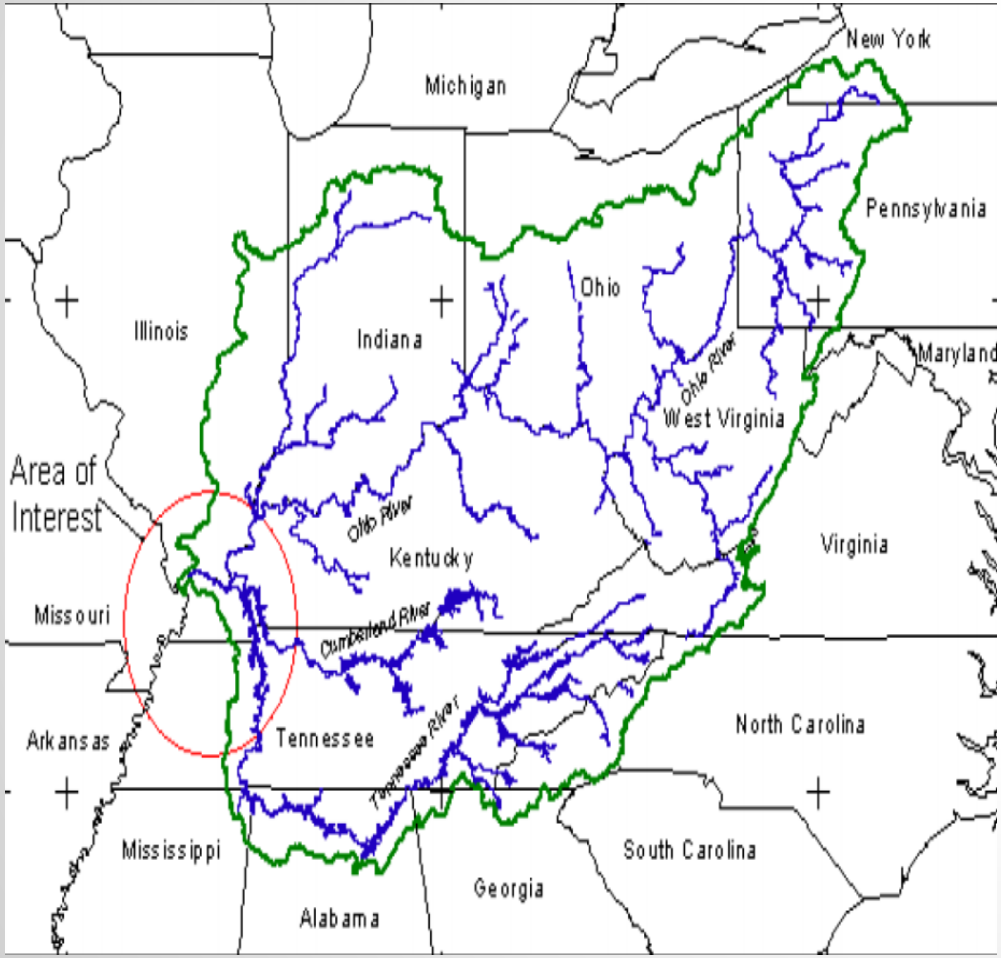
Ohio and Tennessee Basins



- Rainfall Forecasts play key role
- Typically more precipitation in this basin so provides more total flow to Cairo, IL
- TVA forecasts the TN River
- USACE Flood Control Operations when Cairo, IL is above 40’ or 35’ and forecast to >= 40’

USACE Flood Control Operations

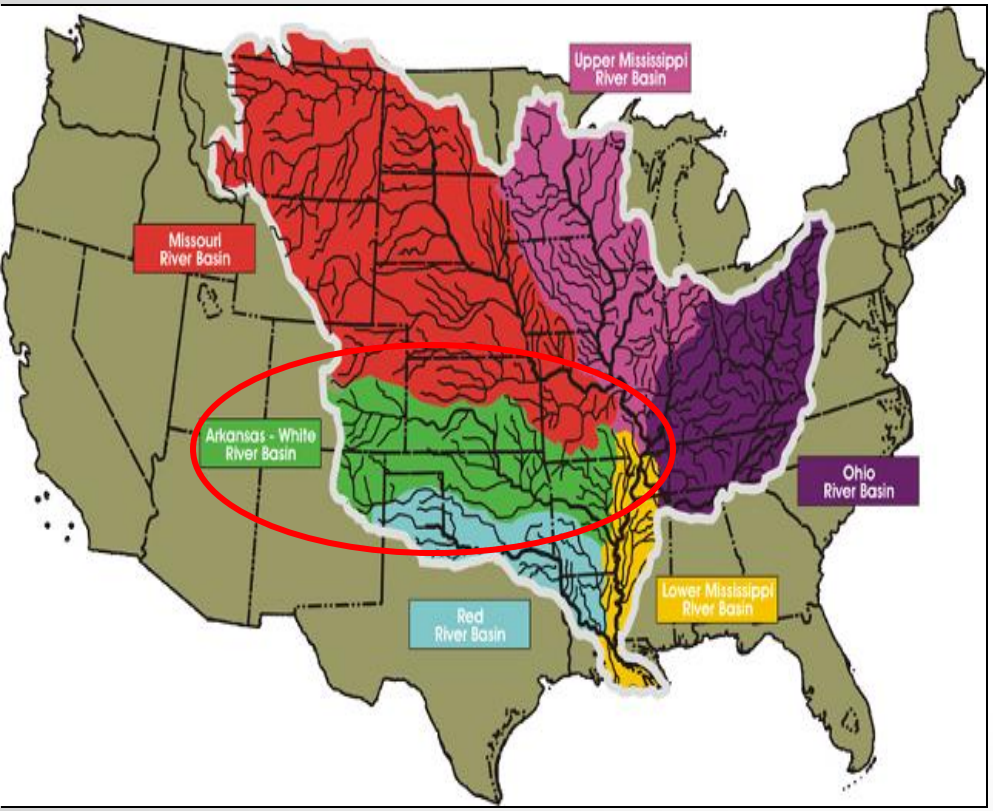
Barkley and Kentucky Dams



- USACE manages both lakes to minimize flood impacts at Cairo, IL and upstream of lakes
- If storage allows, discharges can be managed to reduce crest at Cairo, IL by several feet
- Also, discharges can be managed to help the White River Backwater Levee when Arkansas City, AR exceeds 48’

Background for MS River forecasting

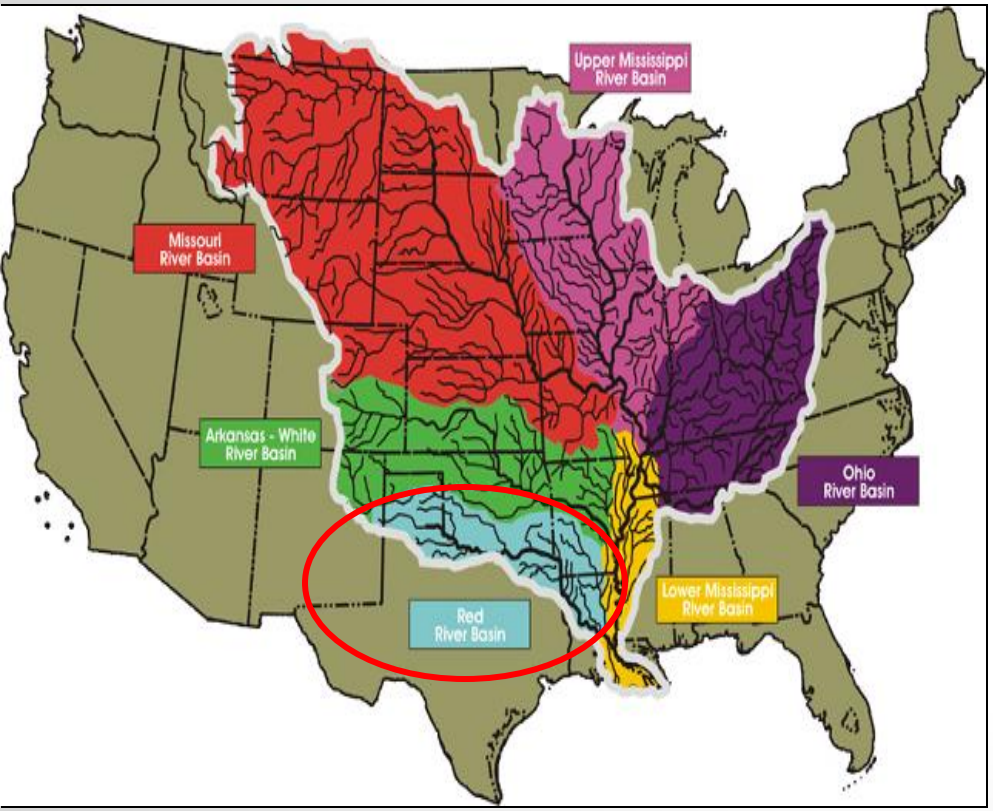
Arkansas and White Basins



- Since much of the flow is in the MS River by the time it reaches the Arkansas River outlet, this basin plays a smaller role in total flow for the Mississippi River
- Can add 2-3 feet to crests from Arkansas City, AR southward
- When forecasting MS River crests, usually have to estimate AR River flows 2 to 3 weeks out

Background for MS River forecasting

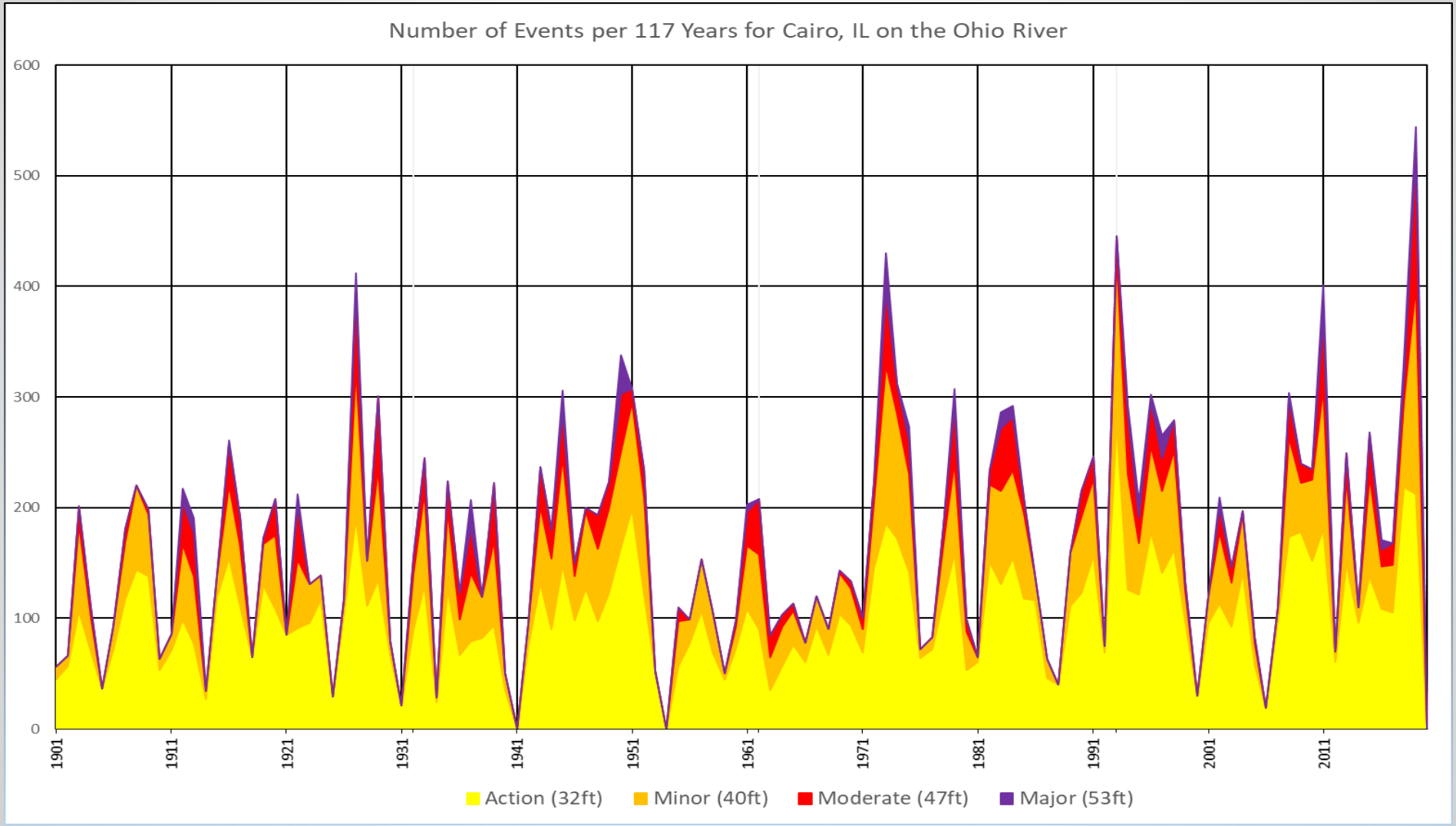
Red and Ouachita Basins



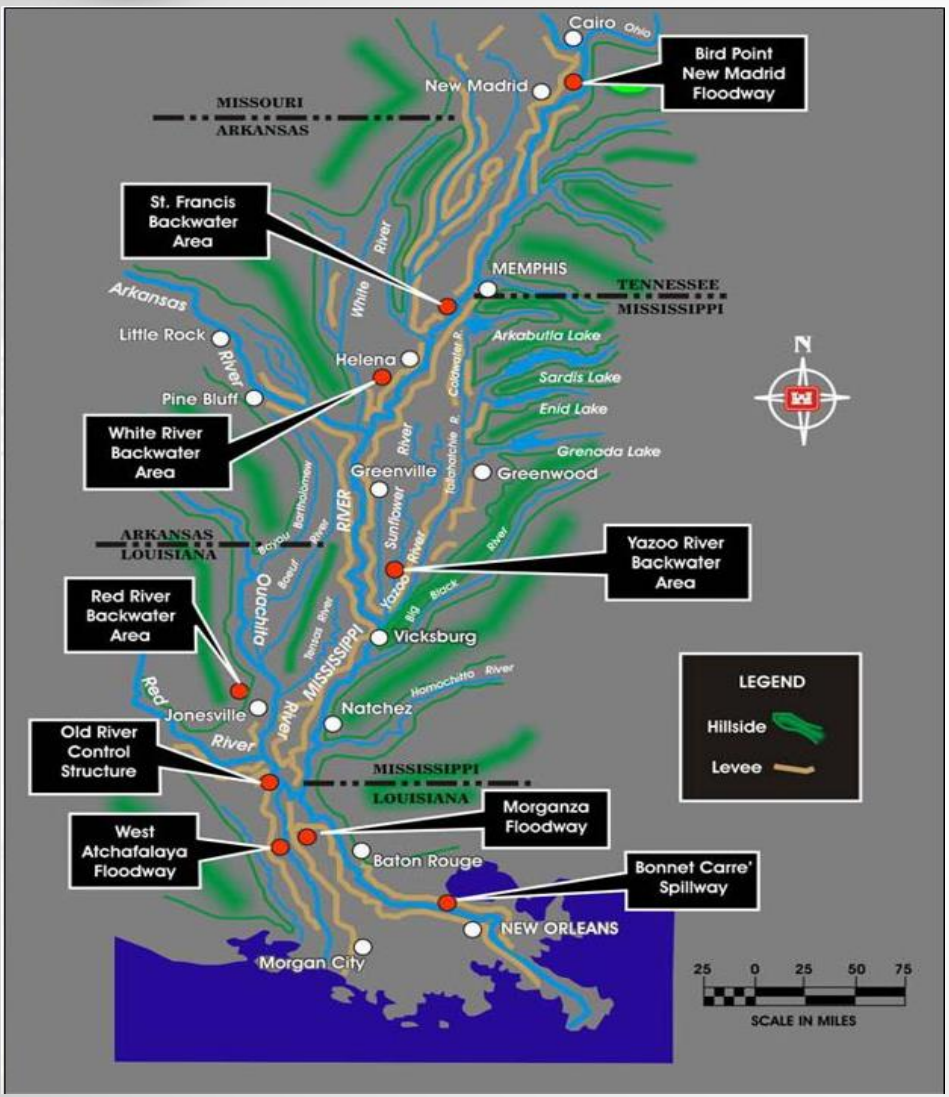
- Like the Arkansas White Basins, this basin plays a smaller role in forecasting the lower MS River
- Can add a couple of feet to crests from Red River Landing to New Orleans & Atchafalaya River
- When forecasting MS River crests, usually have to estimate flows 2 to 4 weeks out

Travel Times from New Orleans

Category Climatology for Cairo, IL



Floodways and Backwater Areas on Lower Mississippi River



- Birds Point New Madrid reduces stages at Cairo, IL
- Backwater areas store flow and reduce stages on the Mississippi River
- Old River Control Structure distributes water between the Mississippi and Atchafalaya Rivers
- Bonnet Carre reduces stages for Reserve & New Orleans
- Morganza reduces stages for Baton Rouge through New Orleans