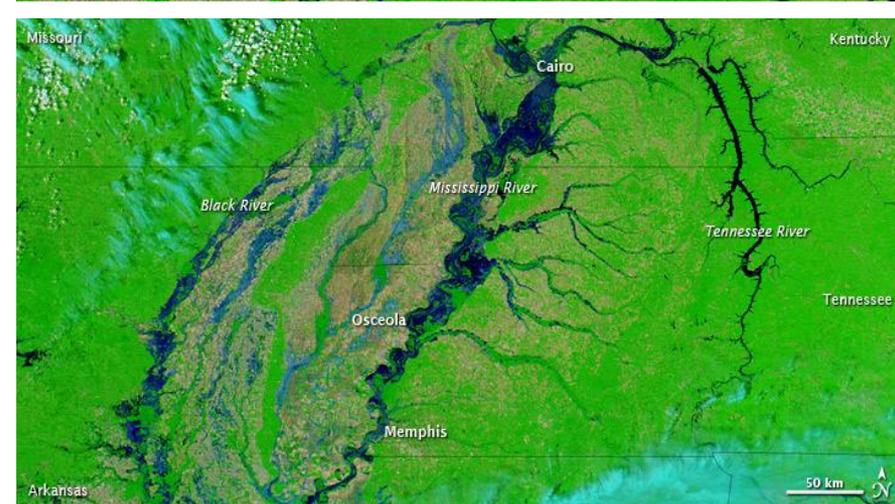


LMRFC

Lower Mississippi River Forecast Center



USACE All Hazards Exercise- Vicksburg, MS

www.srh.noaa.gov/lmrfc





Lower Mississippi River Forecast Center

Mission

The Lower Mississippi River Forecast Center (LMRFC) mission is to mitigate the loss of life and property by providing the Lower Mississippi Valley Region with timely and accurate river and flood forecasts.

Statistics

The hydrologic service area of the LMRFC covers:

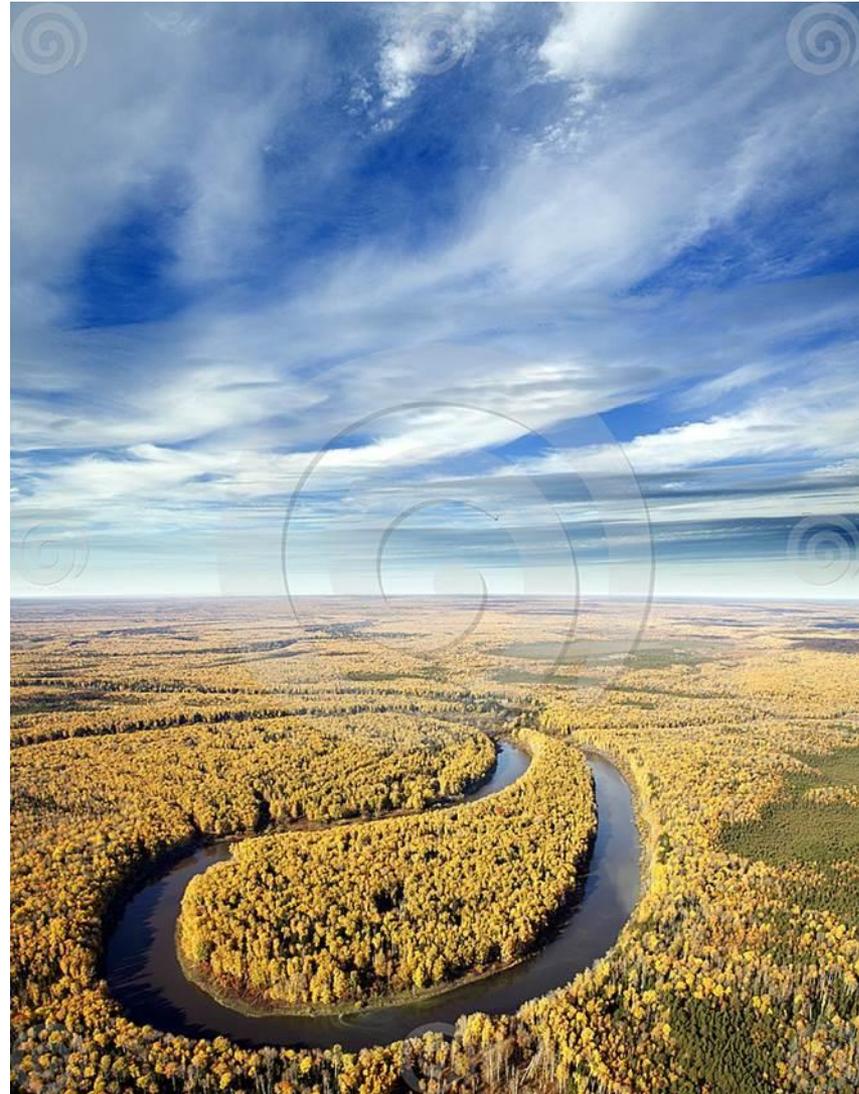
- **Approximately 220,000 square miles**
- **Portions of 12 states**

As one of 13 NWS RFCs, the office is staffed with 15 hydrologists and meteorologists. This staff issues

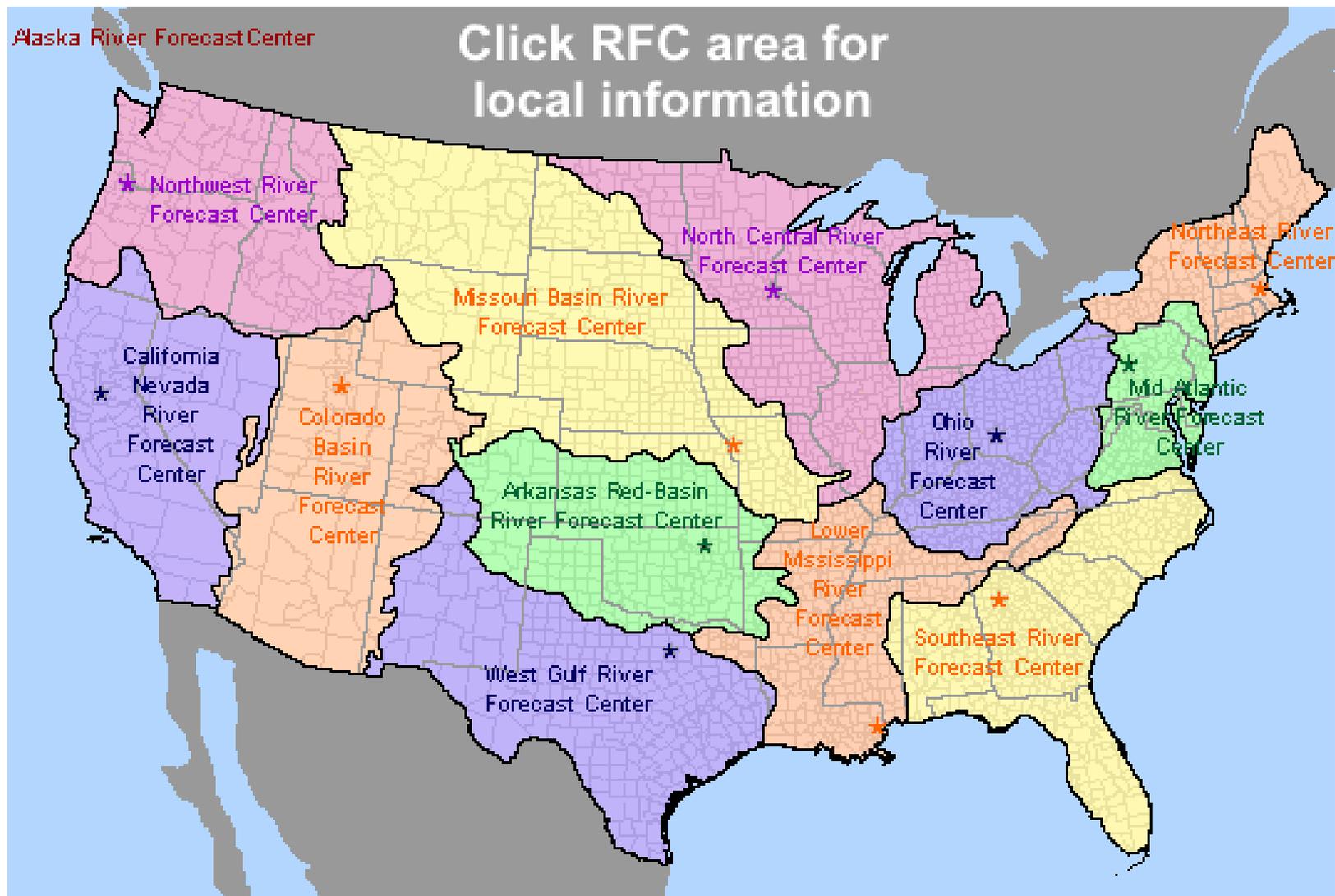
- Hydrologic forecasts for **237** locations
- **12 weekly** (28 day) forecast points
- **368 daily** Flash Flood Guidance areas

The LMRFC partners with **18 Weather Forecast Offices (WFOs)** to gather hydrologic observations from

- A river/rainfall observing network of **2900 gages**
- **28 Doppler (WSR-88D) radars**

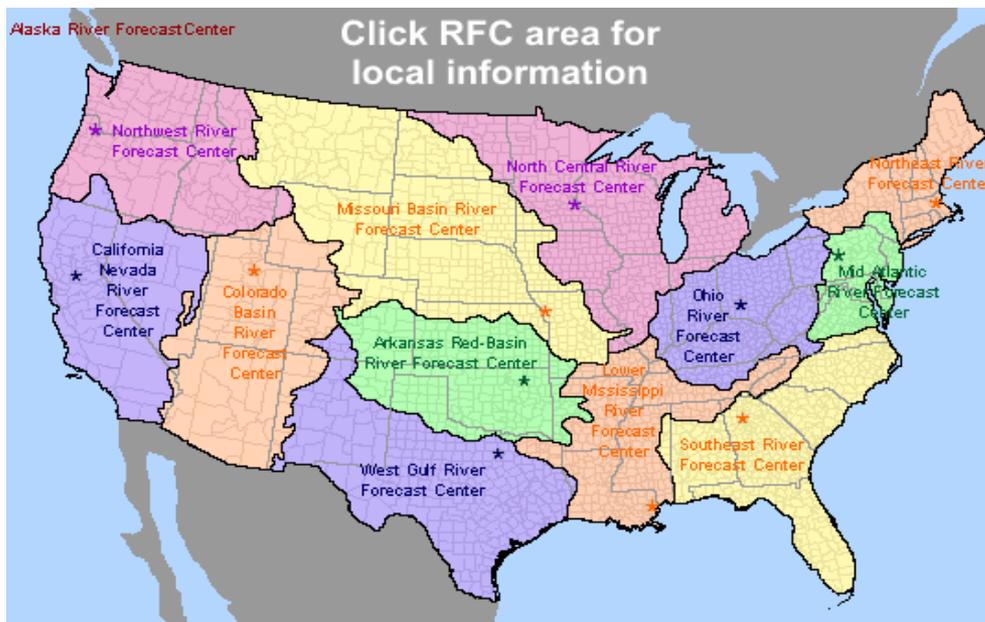


LMRFC is one of 13 NWS RFCs



NWS RFC Hydrologic Service Areas (HSAs) are set by hydrogeological boundaries and encompass many river basins each with their own unique terrain and climate characteristics

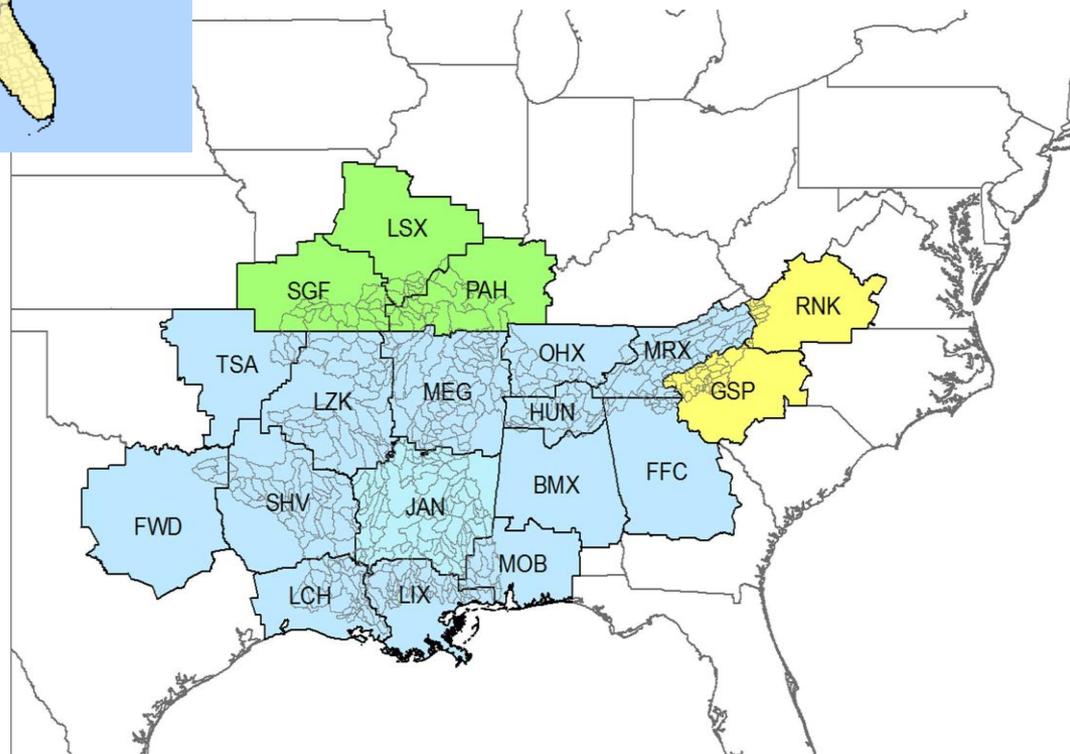
LMRFC HSA covers 220,000 square miles



Provide Hydrometeorological forecasts, guidance, and expertise to

- 14 NWS Southern Region WFOs
- 2 NWS Eastern Region WFOs (Different Time Zone)
- 3 NWS Central Region WFOs

Unique challenges to balance requirements, instructions, and requests for information for 3 Regional HQ and Regional Hydrologic Program Managers





LMRFC

Lower Mississippi River Forecast Center

Forecast Partners

LMRFC works with 5 USACE Division Offices

Northwest Division

Kansas City, Omaha, Portland, Seattle, Walla Walla

Great Lakes and Ohio Division

Buffalo, Chicago, Detroit, Huntington,
Louisville, Nashville, Pittsburg District Offices

North Atlantic Division

South Atlantic Division

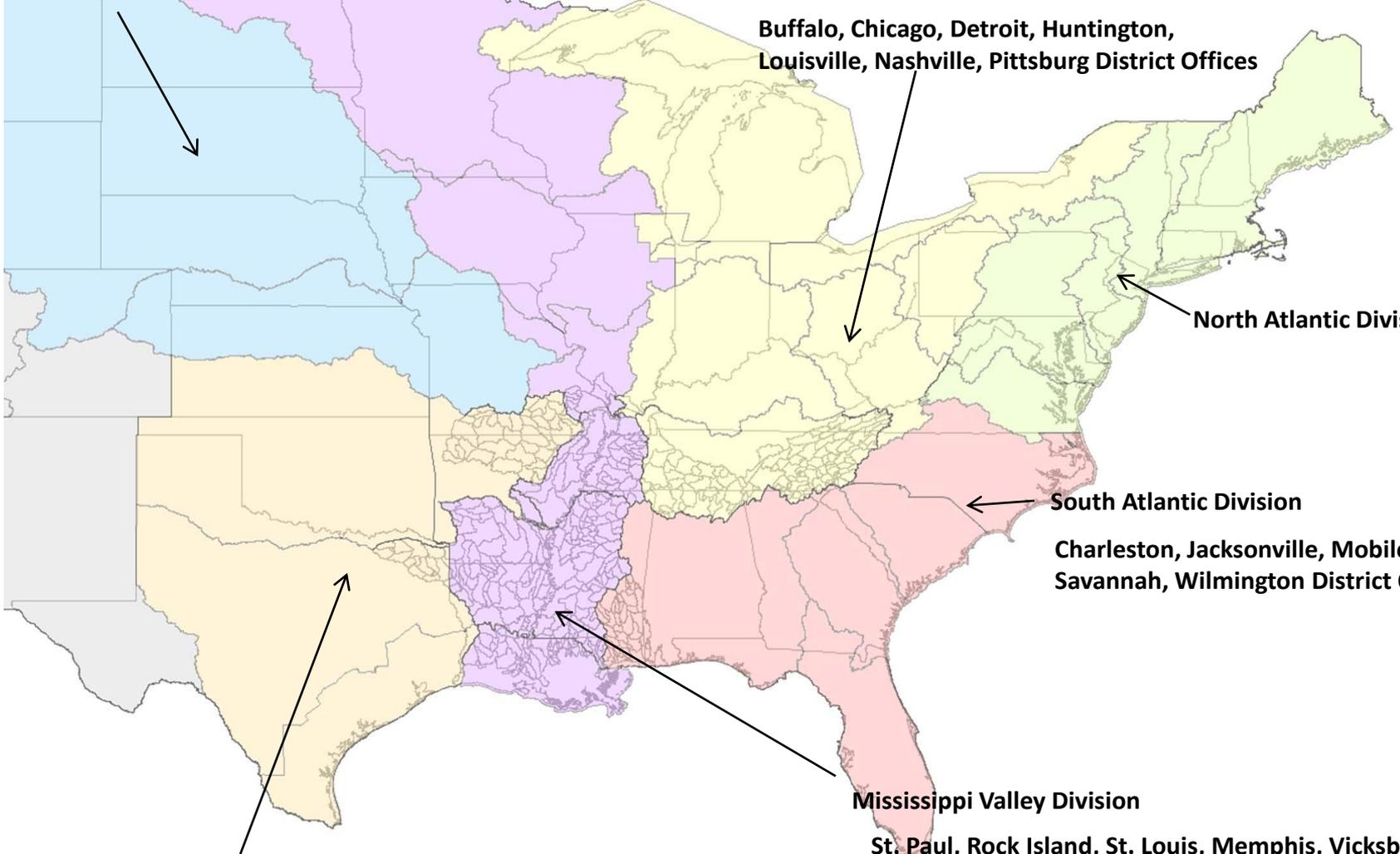
Charleston, Jacksonville, Mobile,
Savannah, Wilmington District Offices

Mississippi Valley Division

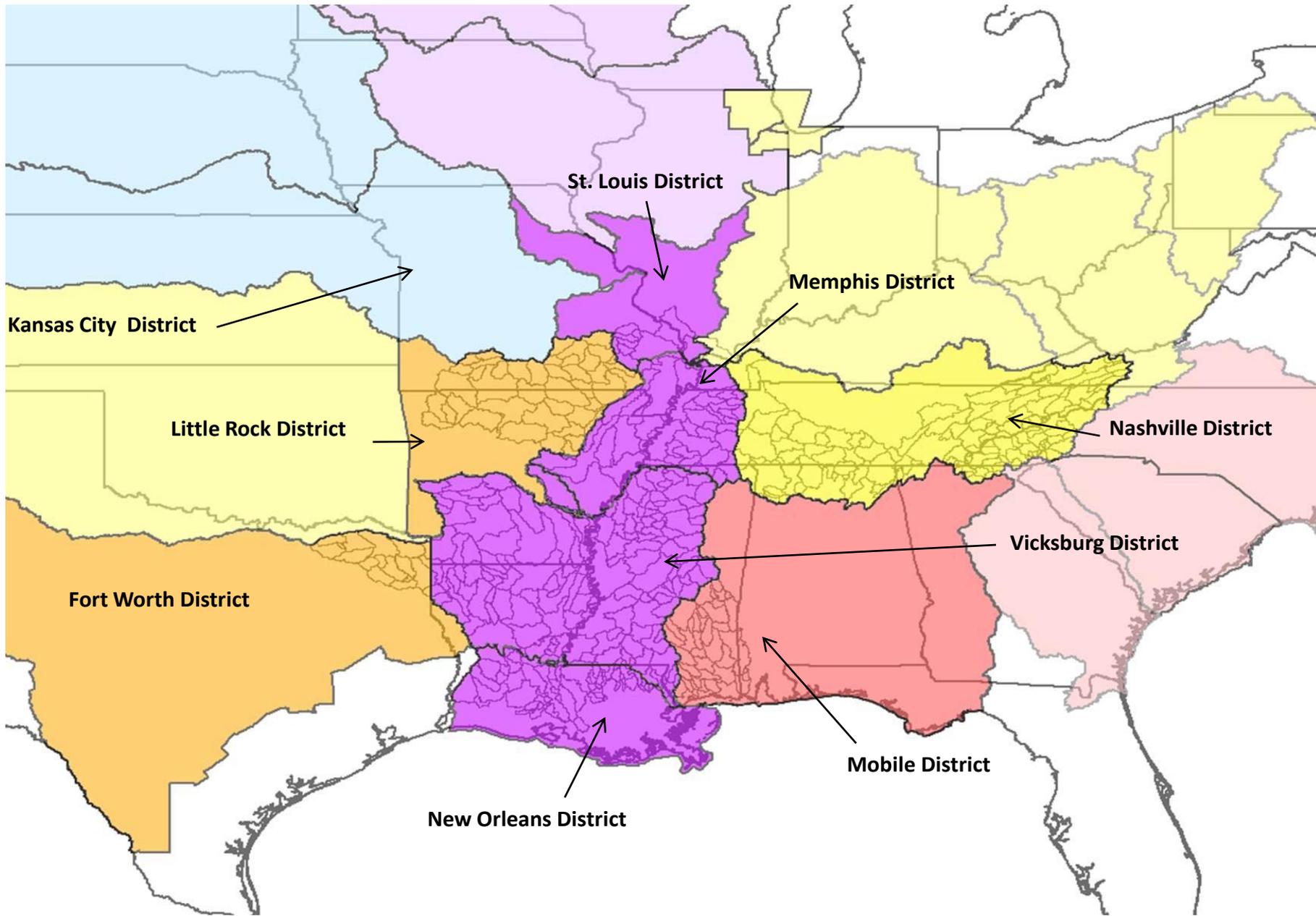
St. Paul, Rock Island, St. Louis, Memphis, Vicksburg,
New Orleans District Offices

Southwest Division

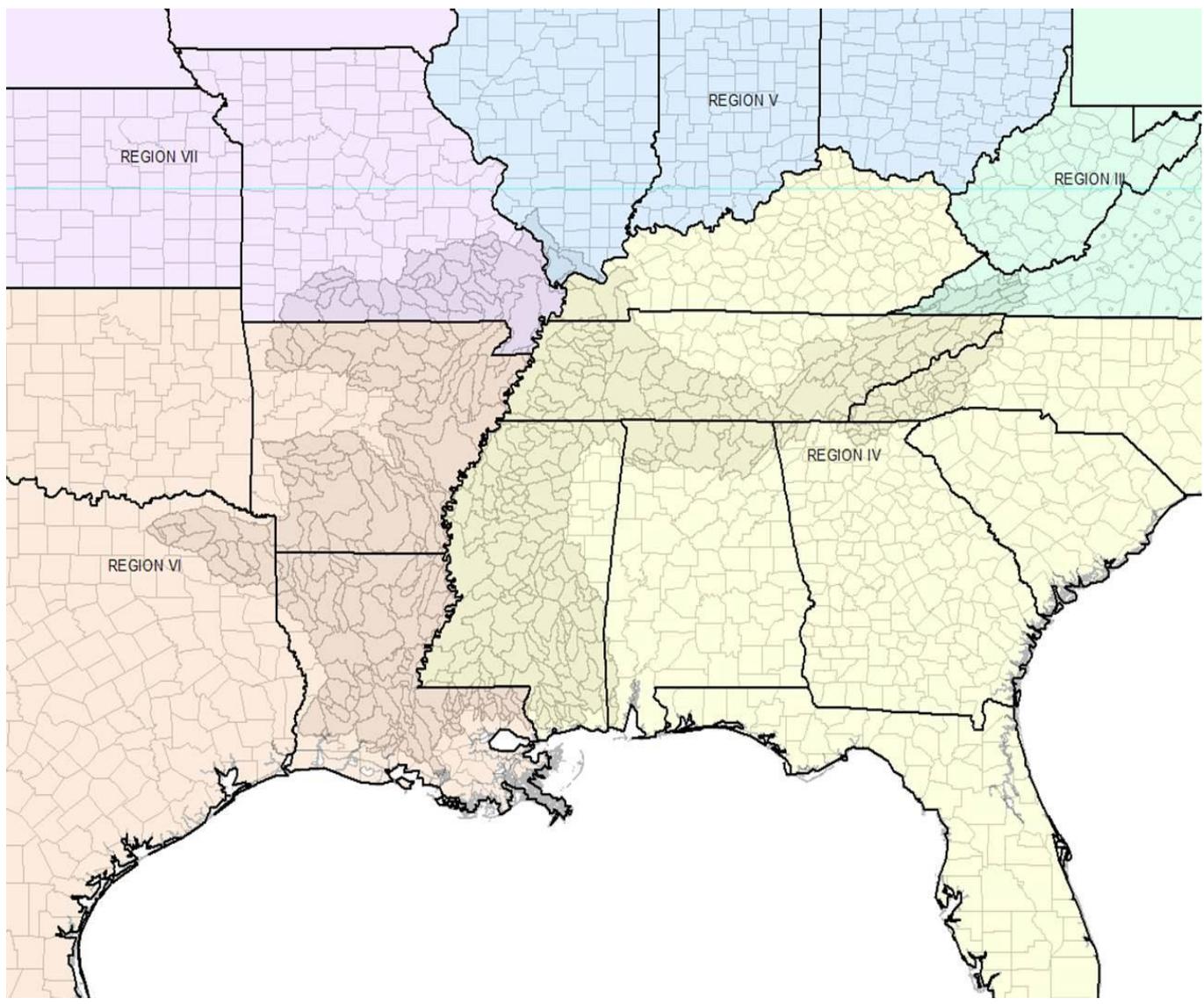
Fort Worth, Galveston, Little Rock and Tulsa District Offices



LMRFC works with 9 USACE District Offices



LMRFC's HSA covers 4 FEMA Regions



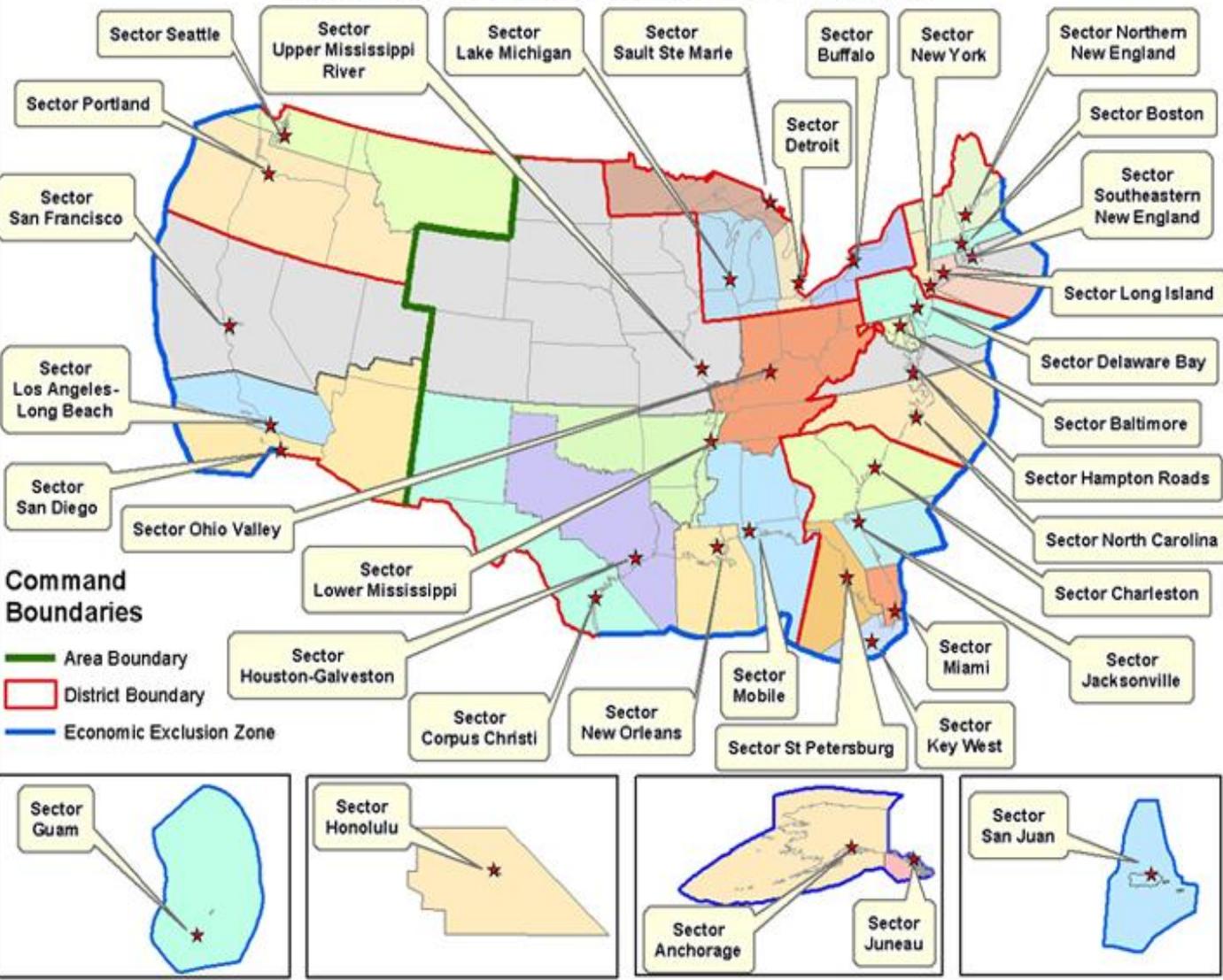
-  **Region 3**
(HQ Philadelphia, PA)
-  **Region 4**
(HQ Atlanta, GA)
-  **Region 5**
(HQ Chicago, IL)
-  **Region 6**
(HQ Denton, TX)
-  **Region 7**
(HQ Kansas City, MO)

LMRFC's HSA primarily falls within USCG District 8 (HQ New Orleans) but portions are included in USCG Districts 5 (HQ Portsmouth) and 7 (HQ Miami)



LMRFC's HSA encompasses 8 US Coast Guard Sector Commands

U. S. Coast Guard Sector Commands



District 8

Sector Houston/Galveston

Sector New Orleans

Sector Lower Mississippi (Memphis)

Sector Upper Mississippi (St. Louis)

Sector Ohio Valley (Louisville)

Sector Mobile

District 5

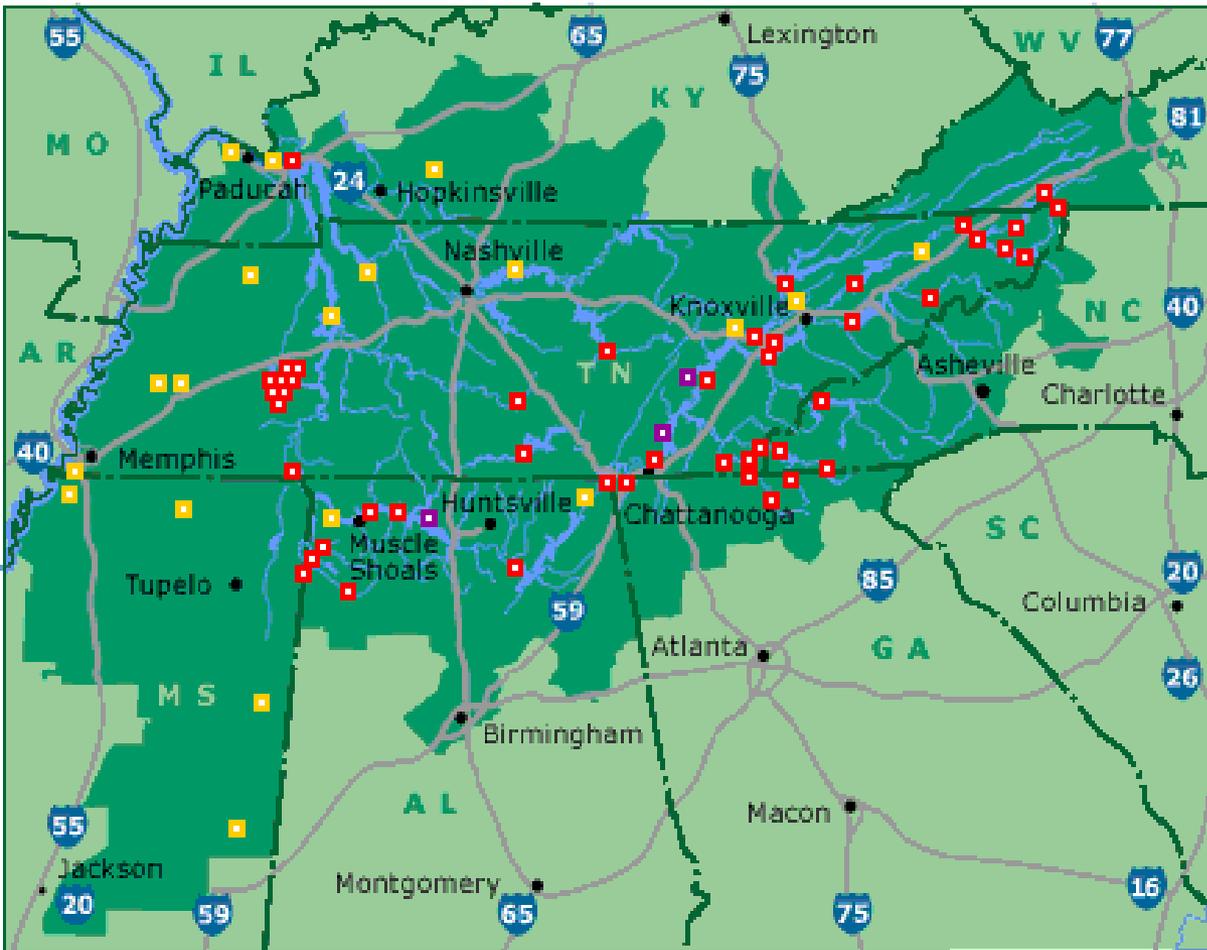
Sector North Carolina

Sector Baltimore

District 7

Sector Charleston

Tennessee Valley Authority (HQ- Knoxville, TN)



Reservoirs



- | | | |
|-------------------|--------------------|------------------|
| Apalachia | Bear Creek | Beaver Creek |
| Beech | Blue Ridge | Boone |
| Cedar | Cedar Creek | Chatuge |
| Cherokee | Chickamauga | Clear Creek |
| Dogwood | Douglas | Fontana * |
| Fort Loudoun | Fort Patrick Henry | Great Falls |
| Guntersville | Hiwassee | Kentucky * |
| Little Bear Creek | Lost Creek | Melton Hill |
| Nickajack | Nolichucky | Normandy |
| Norris * | Nottely | Ocoee 1 |
| Ocoee 2 | Ocoee 3 | Pickwick |
| Pin Oak | Pine | Raccoon Mtn. * |
| Redbud | South Holston | Sycamore |
| Tellico | Tims Ford | Upper Bear Creek |
| Watauga | Watts Bar | Wheeler |
| Wilbur | Wilson | |

Fossil Plants



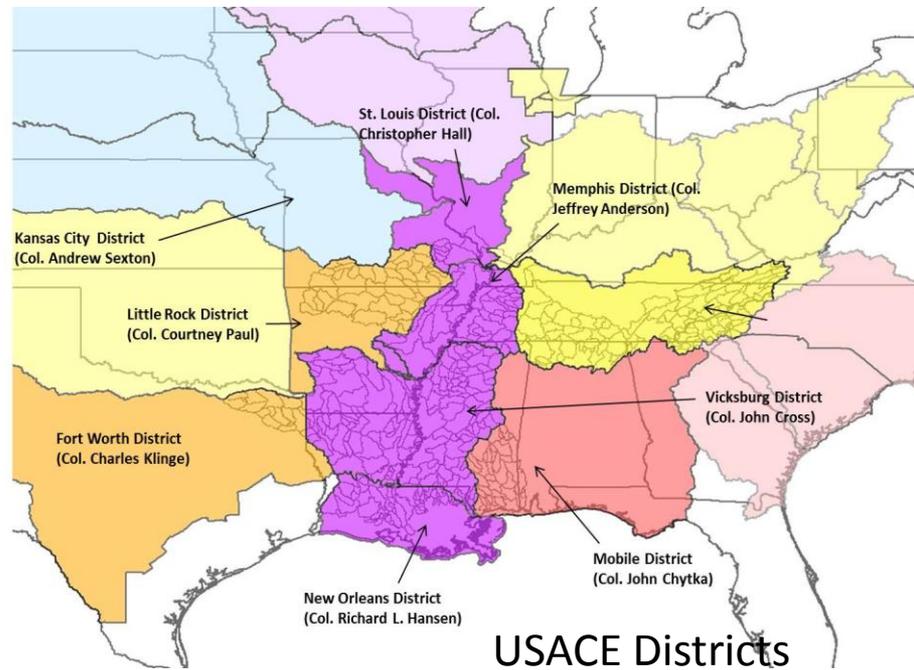
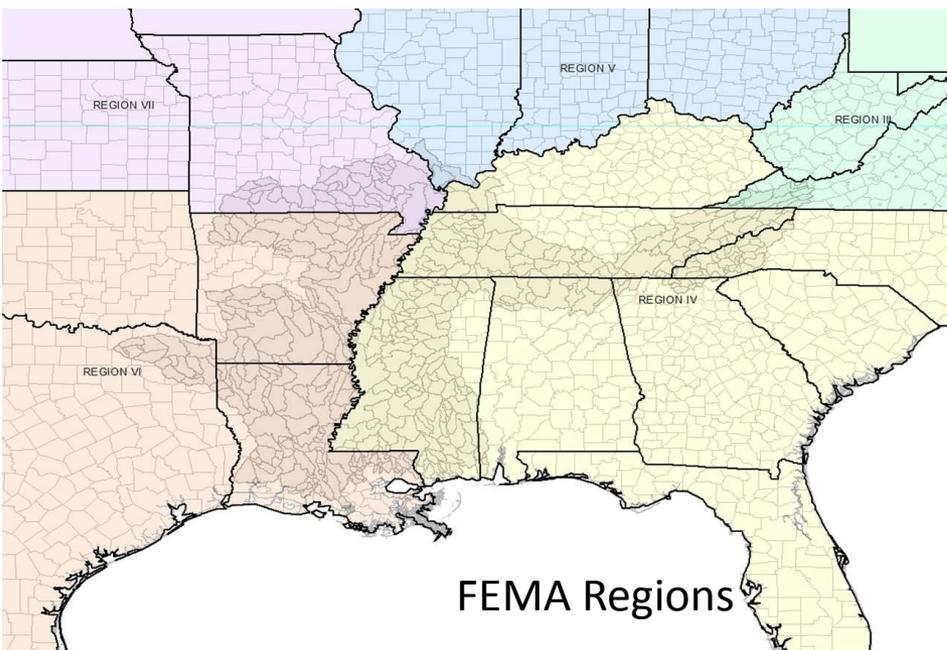
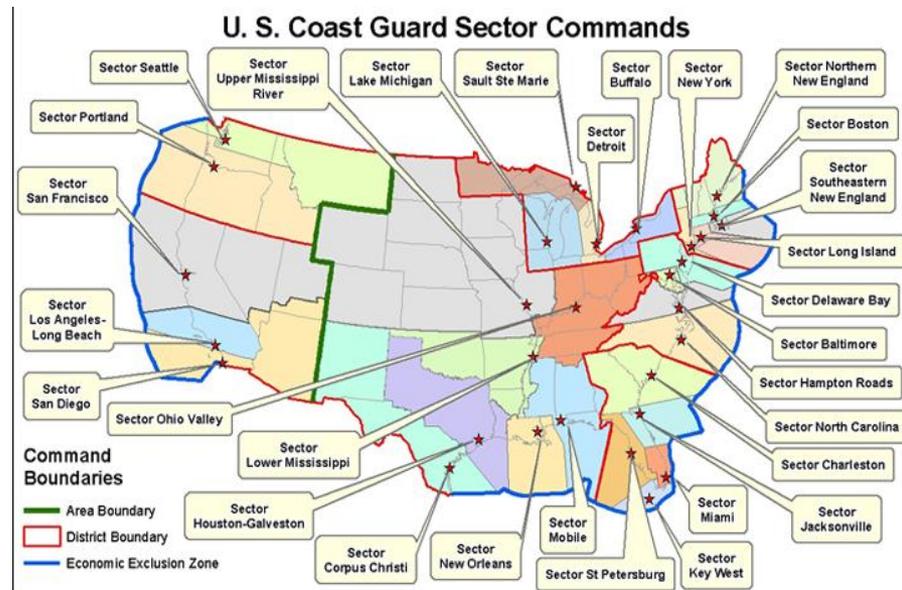
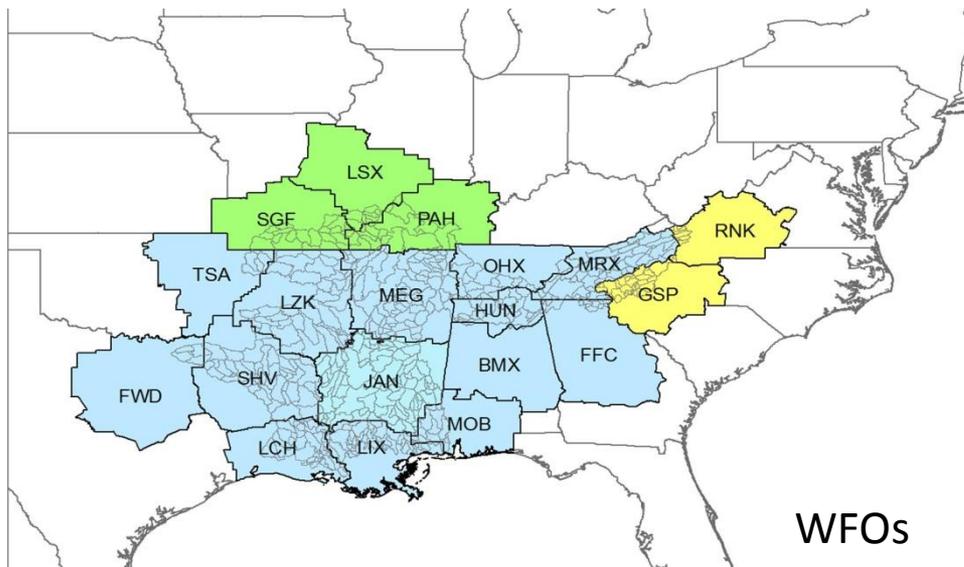
- | | | |
|--------------|----------|-------------|
| Allen | Bull Run | Brownsville |
| Caledonia | Colbert | Cumberland |
| Gallatin | Gleason | John Sevier |
| Johnsonville | Kemper | Kingston |
| Lagoon Creek | Magnolia | Marshall |
| Paradise | Shawnee | Southaven |
| Widows Creek | | |

Nuclear Plants



- | | | |
|--------------|----------|-----------|
| Browns Ferry | Sequoyah | Watts Bar |
|--------------|----------|-----------|

LMRFC HSA Partnership and Collaboration Requirements With NWS Regional HQ, WFOs, Upstream RFCs, USCG, FEMA, and TVA Are Geographically Extensive





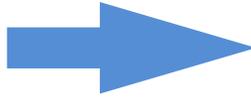
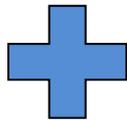
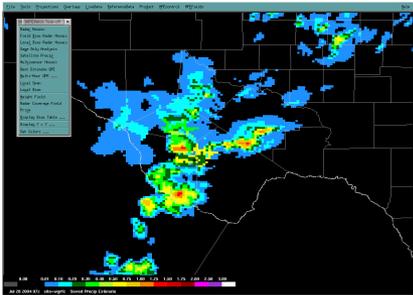
LMRFC

Lower Mississippi River Forecast Center

*Introduction to LMRFC
Forecast Operations and
Research/Development*

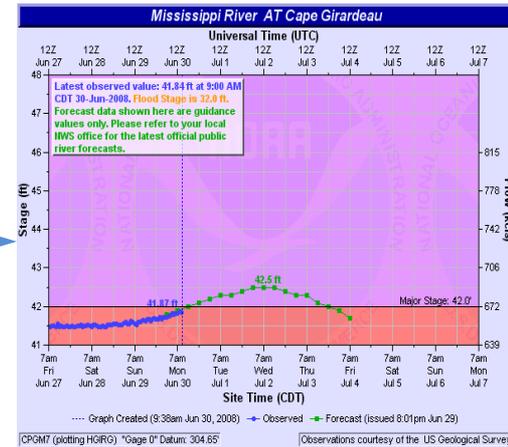
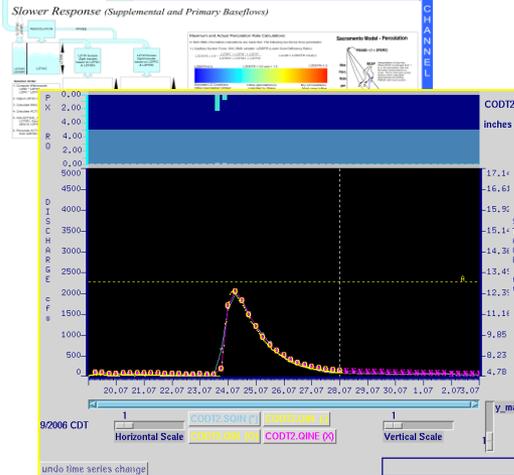
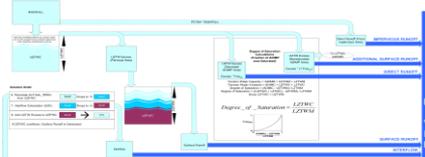
Forecast Process

- Hydrometeorology Operations – Rainfall Data & Forecasts
- Hydrologic Operations – River Data & Forecasts



SAC-SMA CATCHMENT MODEL STRUCTURE

Fast Response (Surface, Impervious and Direct Runoff, and Interflow)



Precipitation estimates and forecasts merged into continuous dataset



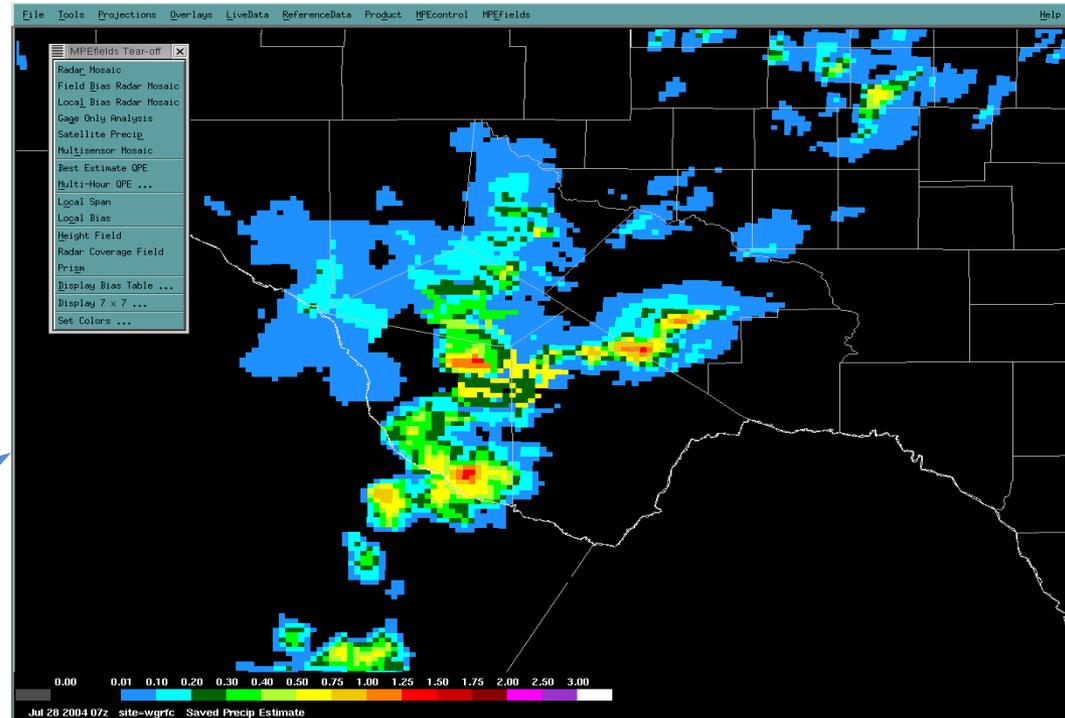
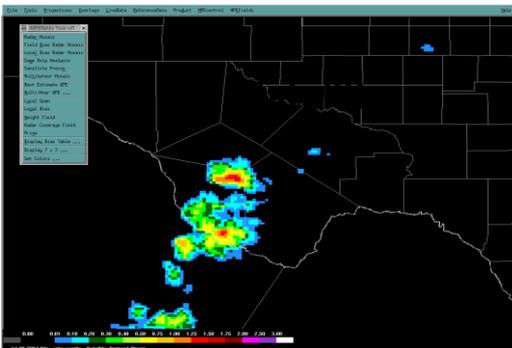
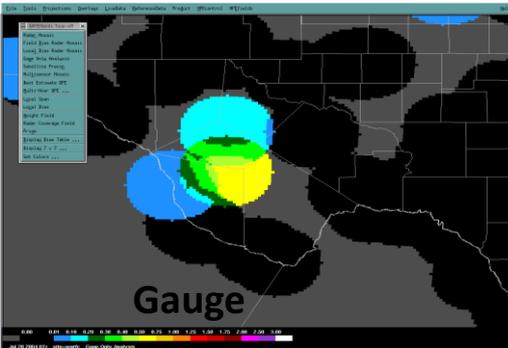
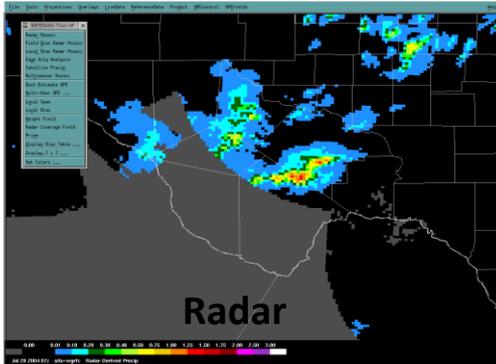
Precipitation dataset ingested into hydrologic model. Forecasters adjust model parameters in real time



River forecast issued to public via WFO text product and web pages

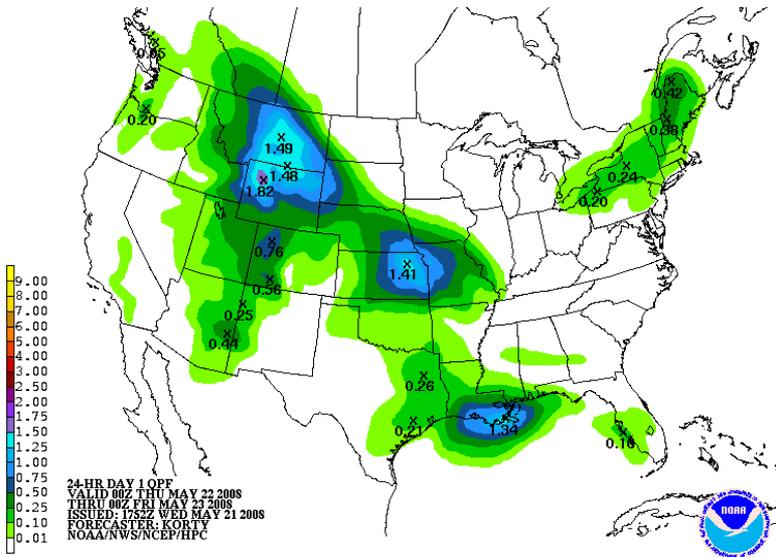
Precipitation Estimates

- 4km x 4km spatial resolution
- 1 hour temporal resolution
- Quality control of data inputs using AWIPS II and RFC developed software

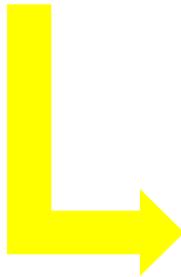


Precipitation Forecast

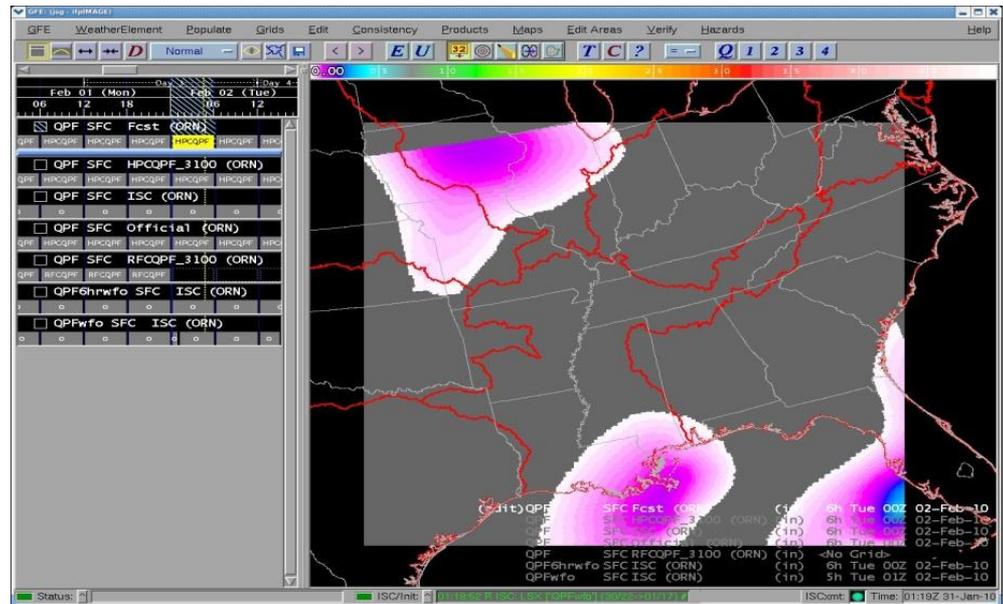
- 4 km x 4 km spatial resolution
- 6 hour temporal resolution
- 72 hours (12 periods) processed in GFE using AWIPS-II
 - LMRFC ingests 12 to 24 hours operationally in hydrologic models
 - Additional periods ingested based on confidence in forecast or What If's



Guidance forecast issued by Hydrologic Prediction Center

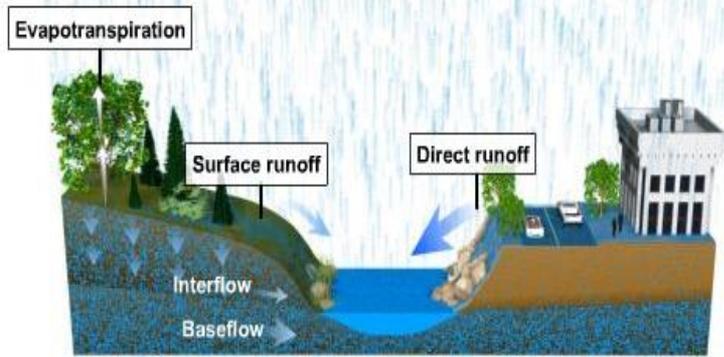


Forecaster at RFC makes adjustments based on local expertise

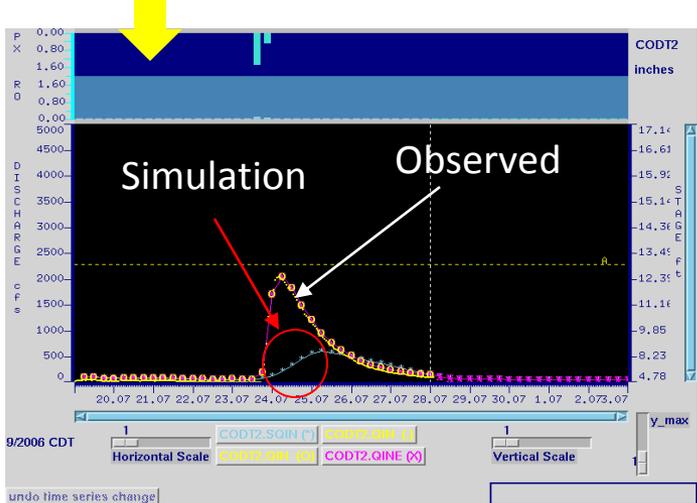


River Forecasts

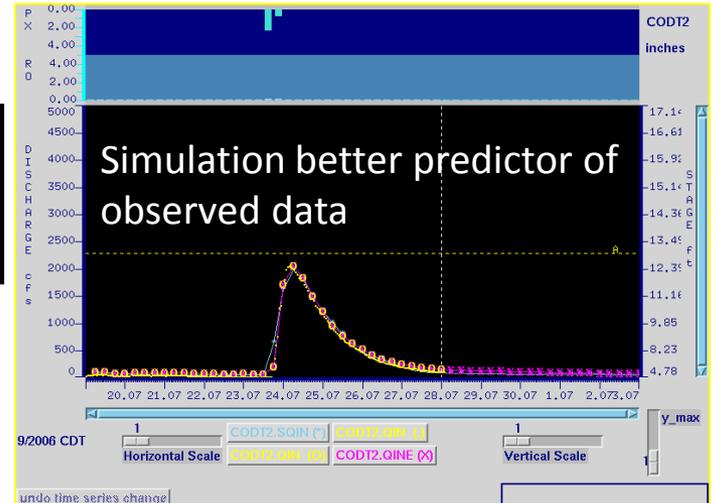
Model simulates physical processes



- Conceptual hydrologic models used to simulate physical processes on soil column (SAC-SMA)
- ***Extensive initial calibration of model parameters***
- Forecasters use Community Hydrologic Prediction System (CHPS) to adjust model parameters in real time



Forecasters adjust model parameters in real time



National Weather Service River Forecast Center
Lower Mississippi RFC

weather.gov

LMRFC Home News Organization Search for: [] NWS All NOAA Go

Top News of the Day
National Hurricane Center Releases New Storm Surge Video

Major flooding occurring or expected

Observed/Forecasted River Conditions Estimated Precipitation Forecasted Precipitation

Click here to access the "old" LMRFC legacy page

Social Media Dashboard
Local forecast by "City, St" or Zip Code
City, St Go
XML RSS Feeds
Rivers and Hydrology
Observed and Forecast River Conditions
Forecasts & Info
Quick Briefing
5-Day Flood Outlook
Flash Flood Guidance
Nat'l AHPS Page
Mississippi River
River Summary
Precip & Weather
Observed Precip
Forecast Precip
Radar
Nat'l Snow Cover
Zoomable Hourly
Observed Precip
All Precip Data
Climate & History
Nat'l Drought Info
Local Drought Info
Historical Floods
Additional Info
Related Links
Education
Technical Papers
Flood Safety
Monthly Modules
About Our RFC
Contact Us
Frequently Asked Questions
Newsletter
About
Press Releases

Experimental
(Take Survey)
Show/Hide Left Hand Menu
Turn All Layers Off
Click for product legends.
 Auto-show legends
River Information
Click location for AHPS hydrograph page
 Off
 Forecast
 Observed
 Forecast and Observed
Last Updated: June 16 2015 11:51 UTC
Mouse Hover Options:
 Hydrograph (Stage and Flow)
 Criteria Table (Stage and Flow where available)
 Off
 Plot only near or above flood
Observed Precipitation
Forecast Precipitation
Current Conditions
Flood Guidance
Long-Range Outlooks
Local RFC Products
Severe Weather
Tropical

Web site provides users the capability to scroll over a forecast location and see the hydrograph of past river conditions and the forecast



National Weather Service River Forecast Center

Lower Mississippi RFC

weather.gov



LMRFC Home News Organization Search for: [NWS](#) [All NOAA](#)

Top News of the Day

[National Hurricane Center Releases New Storm Surge Video](#)

Major flooding occurring or expected

[Observed/Forecasted River Conditions](#)

[Estimated Precipitation](#)

[Forecasted Precipitation](#)

[Click here to access the "old" LMRFC legacy page](#)

Social Media Dashboard

[Twitter](#) [Facebook](#)

Local forecast by "City, St" or Zip Code

City, St Go

[XML](#) [RSS Feeds](#)

Rivers and Hydrology

Observed and Forecast River Conditions

Forecasts & Info

Quick Briefing

5-Day Flood Outlook

Flash Flood Guidance

Nat'l AHPS Page

Mississippi River

River Summary

Precip & Weather

Observed Precip

Forecast Precip

Radar

Nat'l Snow Cover

Zoomable Hourly Observed Precip

All Precip Data

Climate & History

Nat'l Drought Info

Local Drought Info

Historical Floods

Additional Info

Related Links

Education

Technical Papers

Flood Safety

Monthly Modules

About Our RFC

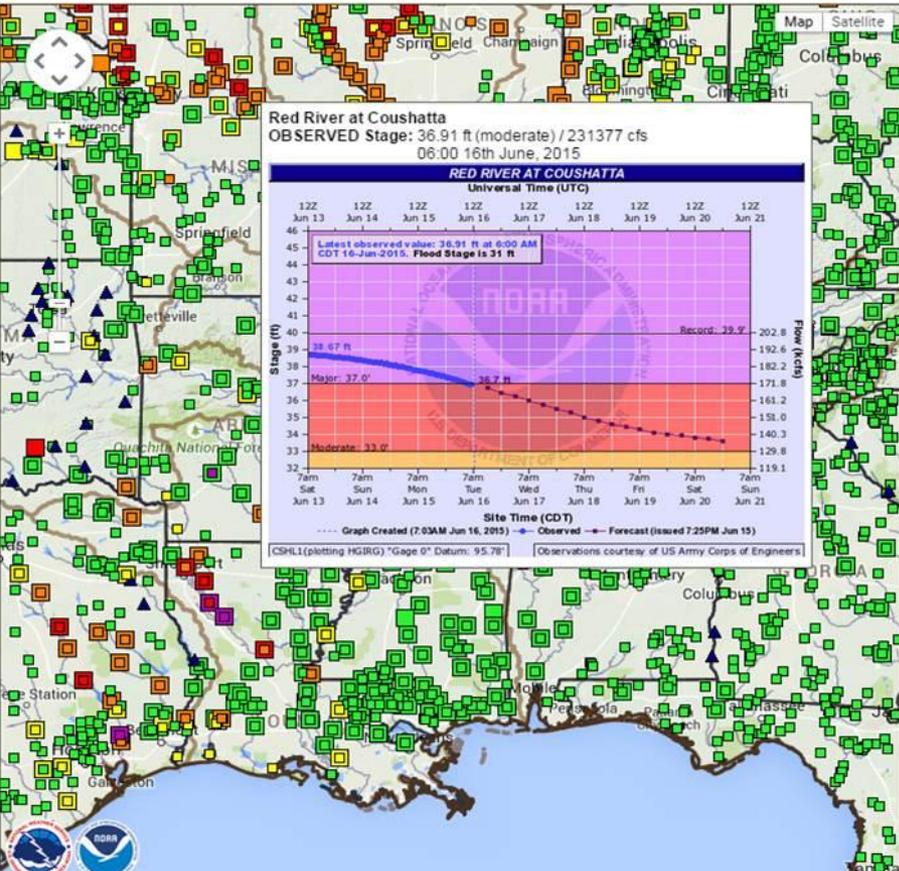
Contact Us

Frequently Asked Questions

Newsletter

About

Press Releases



Red River at Coushatta
 OBSERVED Stage: 36.91 ft (moderate) / 231377 cfs
 06:00 16th June, 2015

RED RIVER AT COUSHATTA
 Universal Time (UTC)

12Z	12Z	12Z	12Z	12Z	12Z	12Z	12Z	12Z
Jun 13	Jun 14	Jun 15	Jun 16	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21
Latest observed value: 36.91 ft at 6:00 AM CDT 16-Jun-2015. Flood Stage is 31 ft								
Record: 29.9'								
Major: 37.0'								
Moderate: 33.0'								

Site Time (CDT)

Graph Created (7:53AM Jun 16, 2015) Observed Forecast (issued 7:25PM Jun 15)

CSHRL (plotting HGRG) "Gage 0" Datum: 95.78" Observations courtesy of US Army Corps of Engineers

Experimental

(Take Survey)

Show/Hide Left Hand Menu

Turn All Layers Off

Click for product legends.

Auto-show legends

River Information

Click location for AHPS hydrograph page

Off

Forecast

Observed

Forecast and Observed

Last Updated: June 16 2015 11:51 UTC

Mouse Hover Options:

Hydrograph (Stage and Flow)

Criteria Table (Stage and Flow where available)

Off

Plot only near or above flood

Observed Precipitation

Forecast Precipitation

Current Conditions

Flood Guidance

Long-Range Outlooks

Local RFC Products

Severe Weather

Tropical

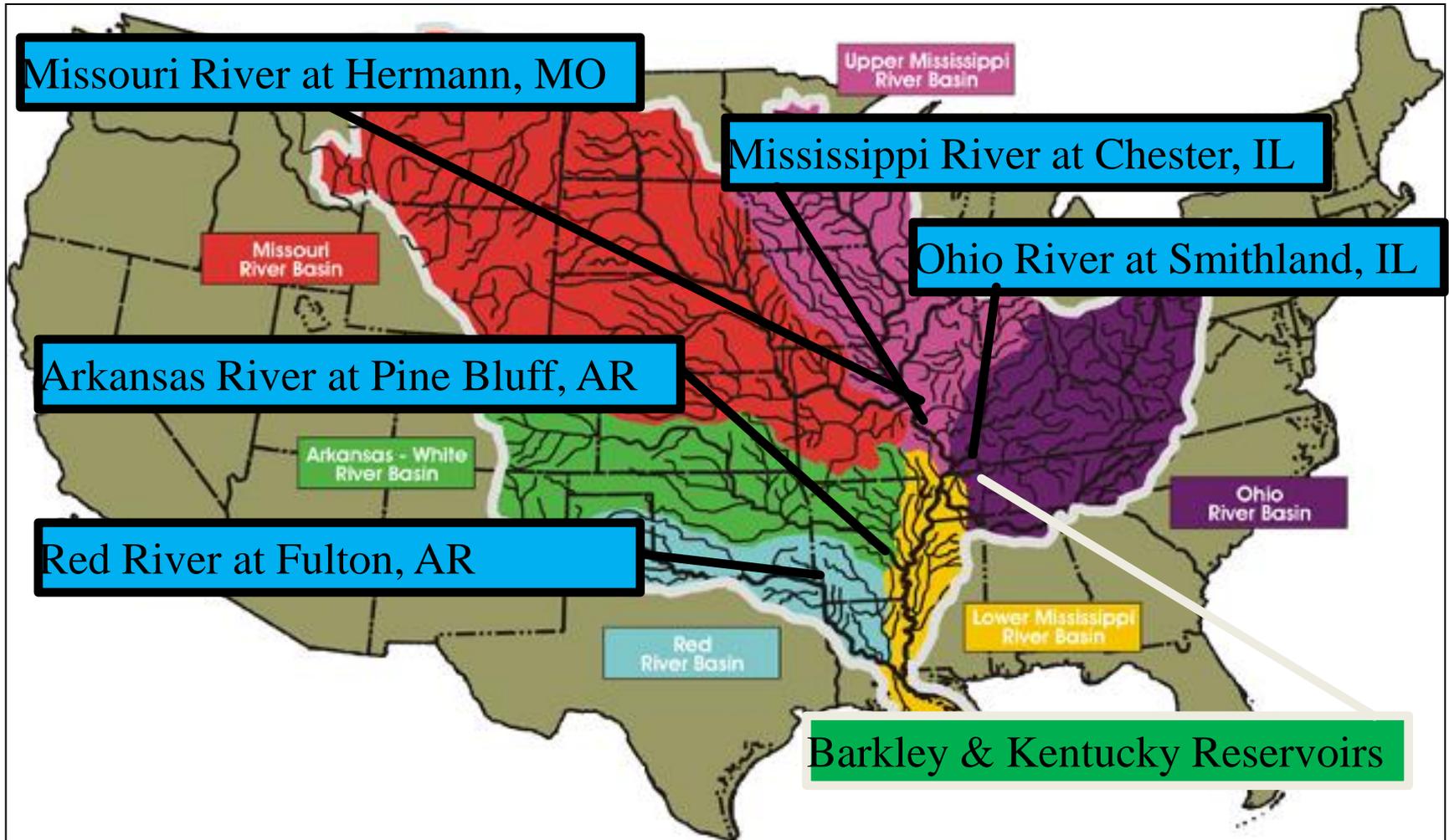


LMRFC

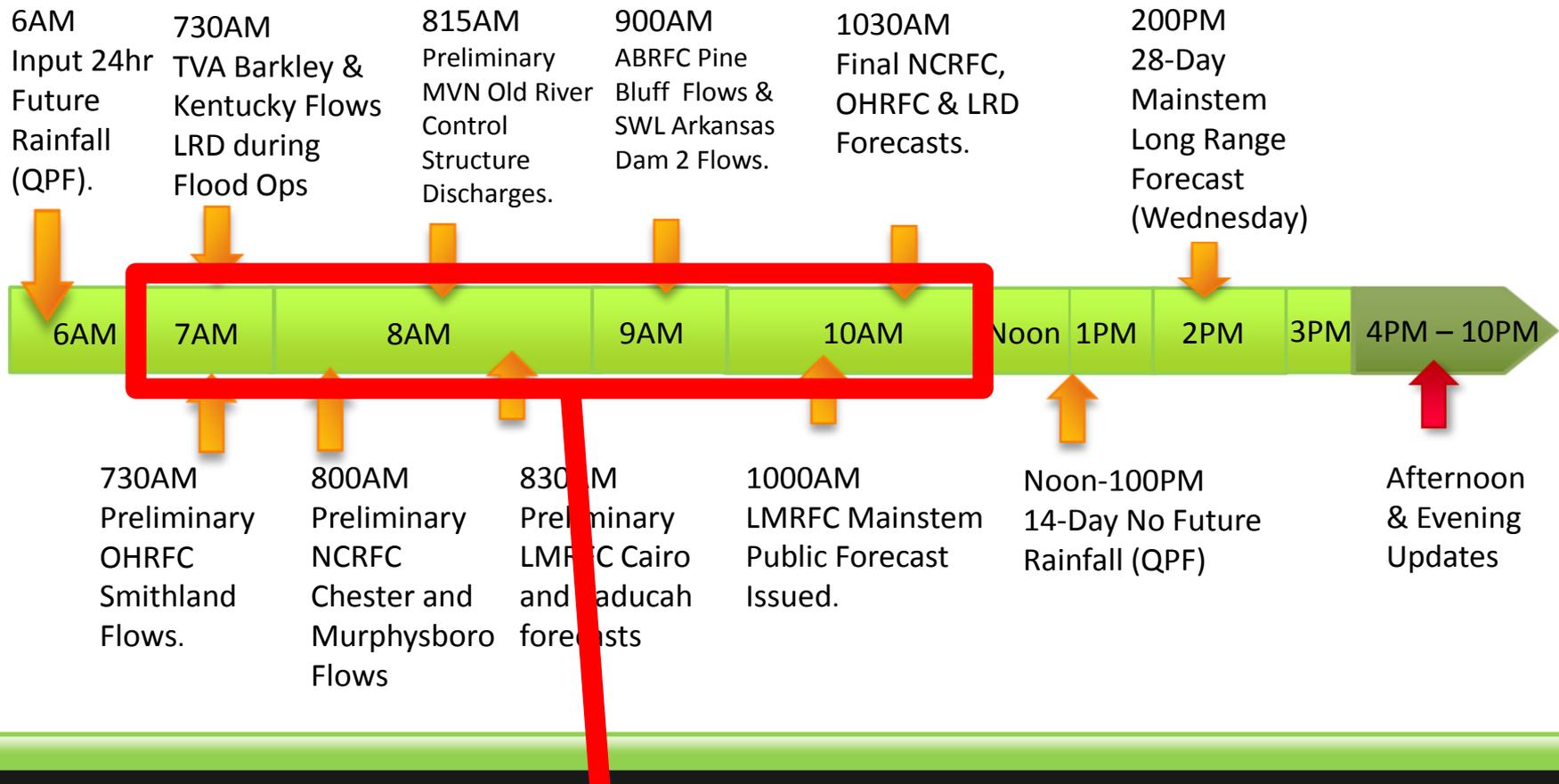
Lower Mississippi River Forecast Center

*Mississippi and Red River
Forecast Operation Timelines*

Mainstem Forecast



Mainstem Timeline

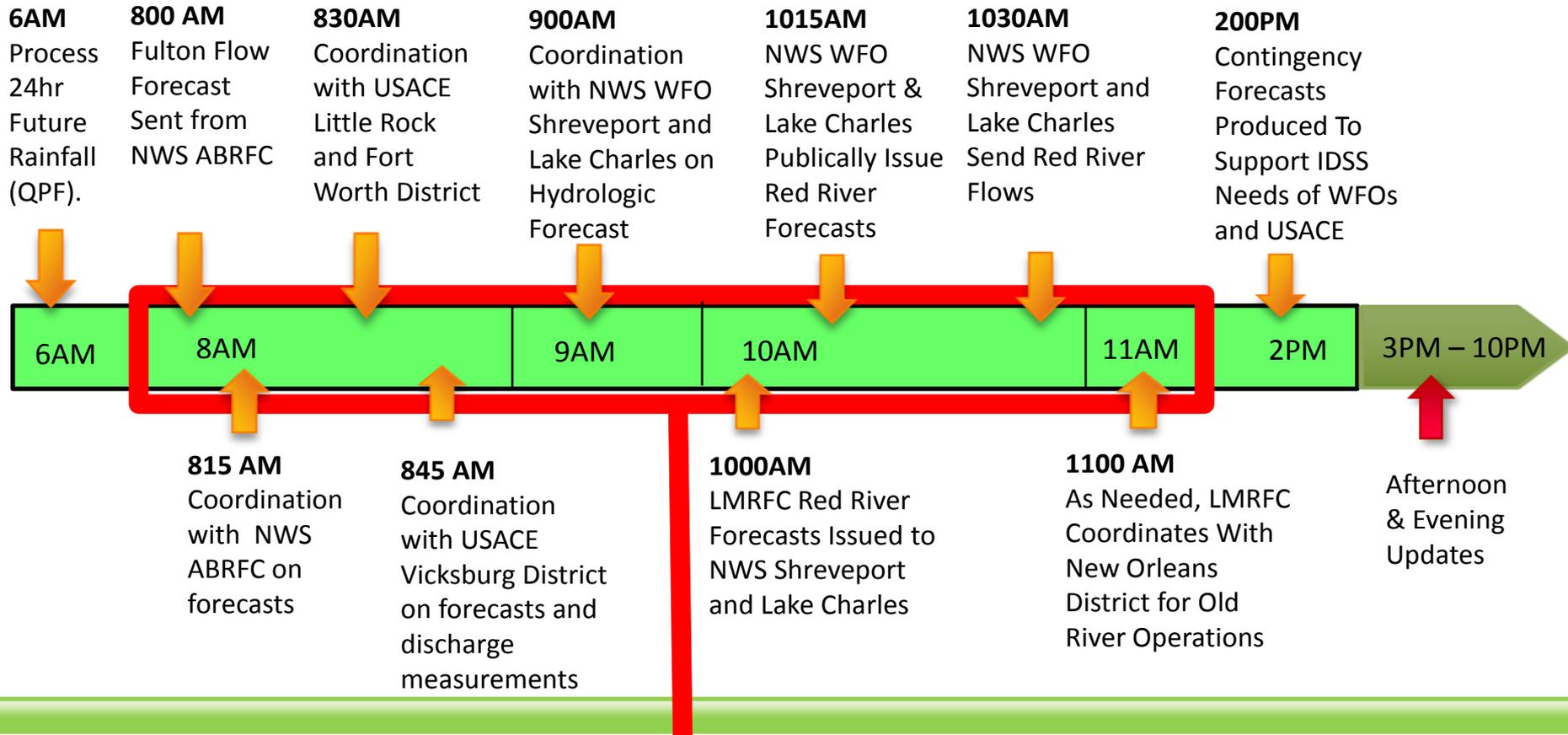


Coordination and Collaboration with USACE, TVA/LRD and Upstream RFCs.

Long Range Products for planning

- Springflood Outlook (NEWESGORN) issued every 2 weeks Winter/Spring for ER
- 14-Day Zero QPF (NEWCRFLSX)
- 28-Day Long Range Forecast with 24 hrs of QPF (NEWESPORN)
- 28-Day Long Range Forecast with 16 days of QPF generated from NAEFS grids (ORNNAEFS)

Red River Forecasting Timeline



Coordination and Collaboration with
USACE Districts Fort Worth, Little Rock, and Vicksburg
USACE Divisions of Southwest and Mississippi Valley
NWS USACE Liaison to Mississippi Valley Division
NWS WFOs
Upstream NWS RFC (ABRFC)

Contingency Forecast

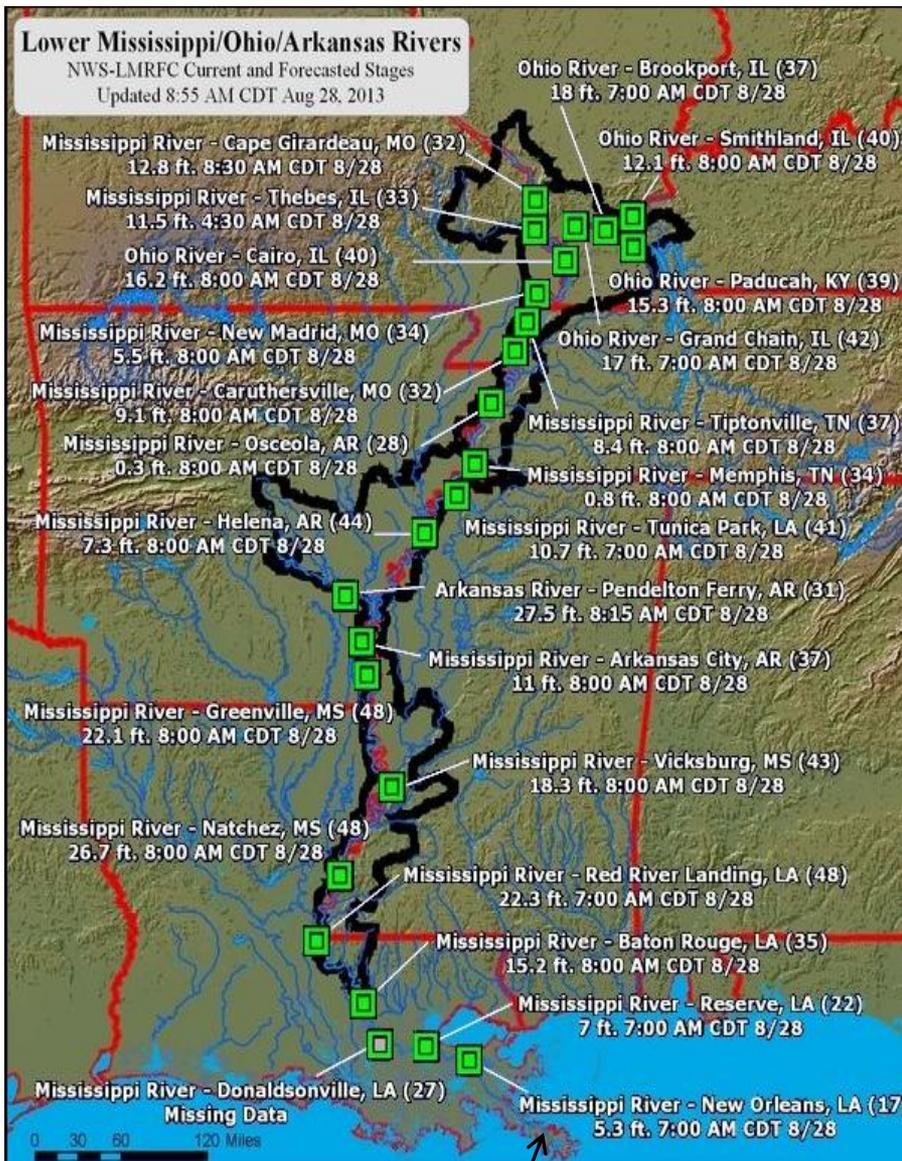
- River forecasts with WFO generated future rainfall for planning purpose
- Future Rainfall processed by WFO GFE and ingested into Hydrologic Model, forecast disseminated through NEWCRFMRX product





Lower Mississippi River Forecast Center

*Additional Tropical Hydrologic
Duties For Lower Mississippi
River Below Old River
Structure/Red River Landing*



West Pointe A La Hache

- ≈ HEC-RAS Model coupled with optional inputs including P-Surge, ADCIRC, ESTOFS, and ET Surge, and historical analogs from 2007 MSB (New Orleans Slosh Basin) MEOWs (Maximum Envelope of Water)
- ≈ West Pointe A La Hache used as the downstream boundary to initiate surge

Gustav Surge Scenarios

Hurricane Gustav Storm Surge Scenario Red River Landing, LA

