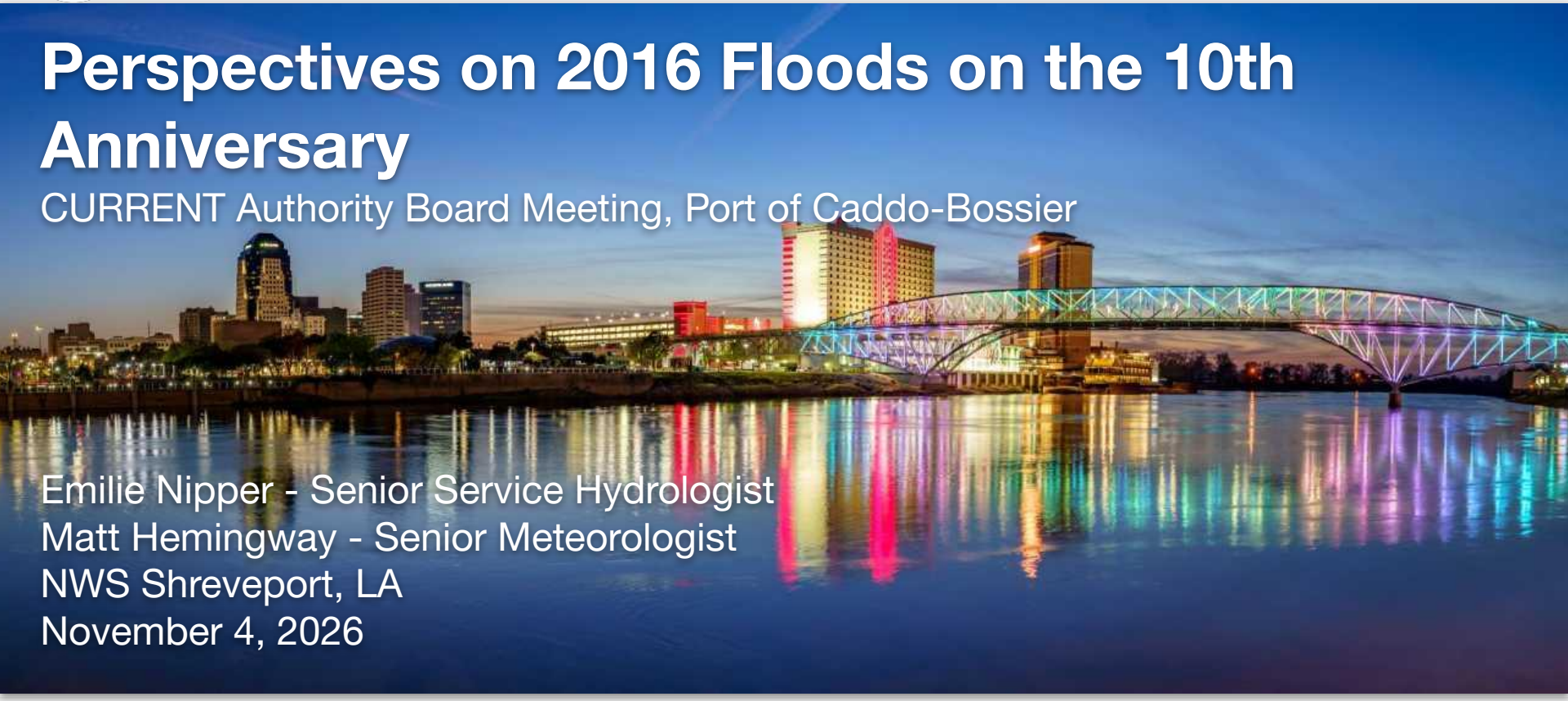
Perspectives on 2016 Floods on the 10th Anniversary

CURRENT Authority Board Meeting, Port of Caddo-Bossier



Emilie Nipper - Senior Service Hydrologist
Matt Hemingway - Senior Meteorologist
NWS Shreveport, LA
November 4, 2026

NWS Mission

“To provide weather, water, and climate data, forecasts and warnings for the protection of life and property and enhancement of the national economy.”

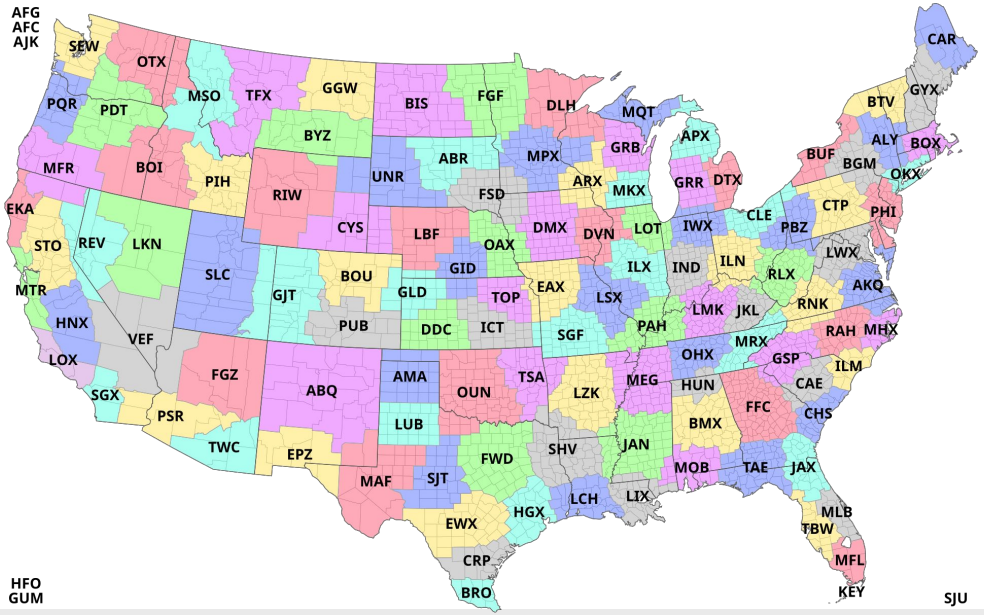
NWS accomplishes this mission in close collaboration and cooperation with State, Local, and Other Federal Agencies

Most People Only See the Tip of the Iceberg



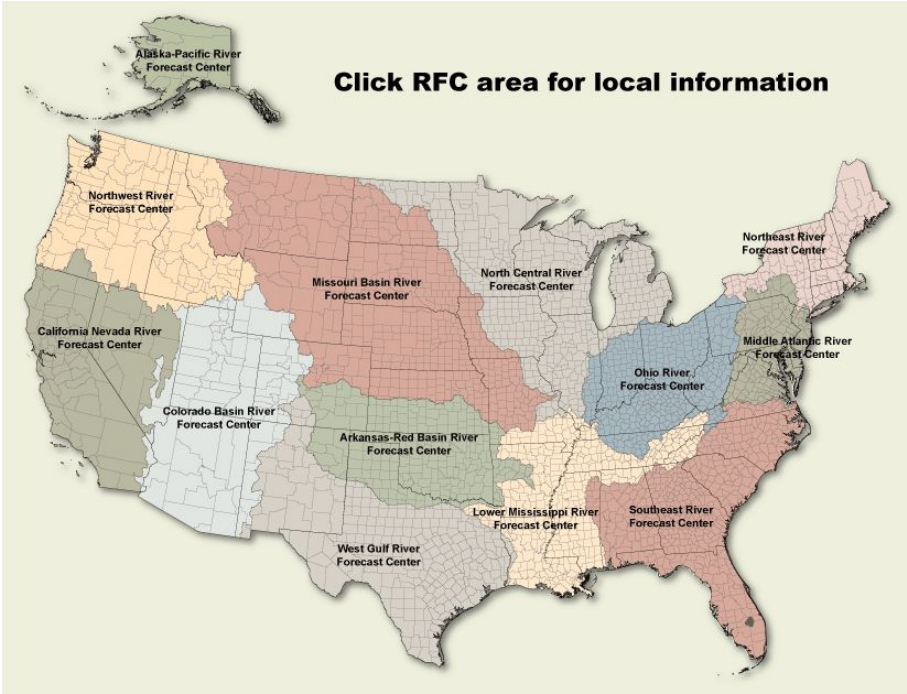
NWS Weather Forecast Offices

- 122 Offices (including Puerto Rico, Virgin Islands, Guam and American Samoa)
- Locations based on best radar coverage
- Open 24/7
  - Provide forecasts for public, aviation, fire agencies and water agencies
  - Tornado, Flash Flood and Severe Thunderstorm Warnings

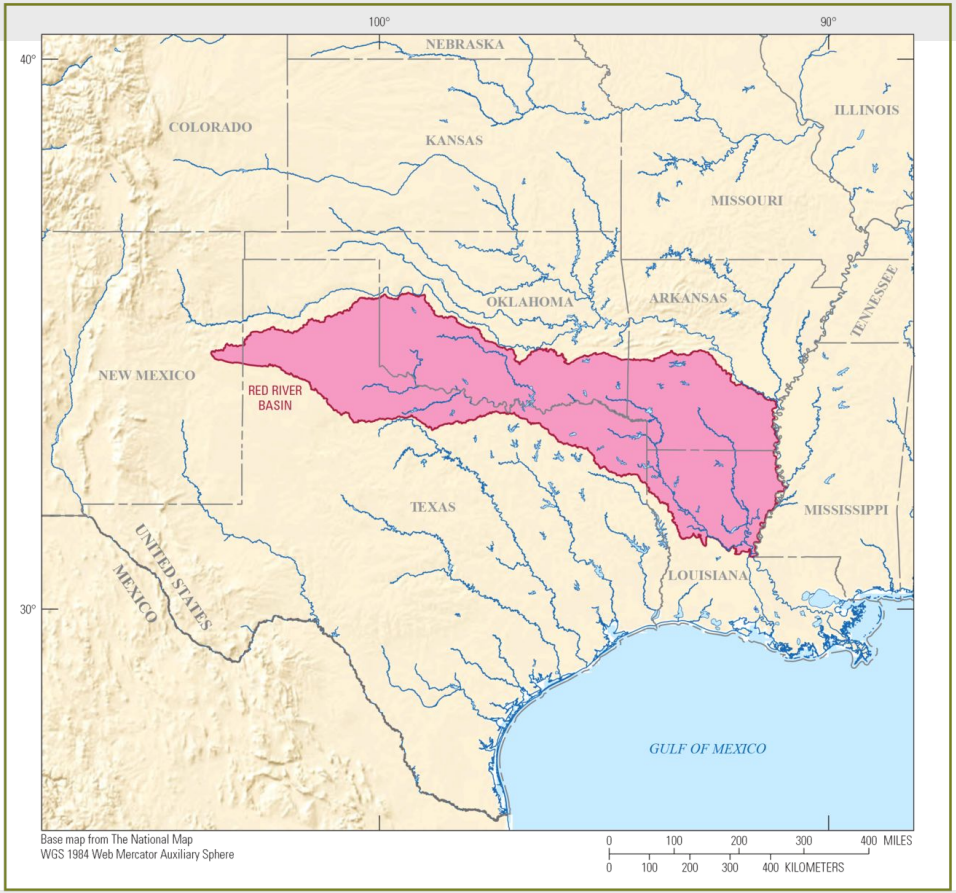


NWS River Forecast Centers

- 13 Offices (12 CONUS + 1 Alaska/Pacific)
- Hydro-geologic boundaries
  - Some modeling of headwaters in Canada/Mexico (no forecasts)
- Daily Operations
  - Data collection and quality control
  - Precipitation and Hydrologic Forecasts
  - Official Records of precipitation grids



Red River Basin Area



Ouachita River Basin Area



Ouachita-Black Navigation Project

Where do we get data from?

ULM Mesonet

Oklahoma Mesonet

Texas Water Development Board

CoCoRaHS

Roles of Primary River Forecast Partners

US Army Corps of Engineers®

- Operate Flood Control Reservoirs
- Manage Other Water Resource Projects

USGS science for a changing world

- Stream Measurements
- Gage Maintenance

- Issue Weather and Water Data, Forecasts, Watches, and Warnings
- Emergency Alert System/Wireless Emergency Alerts

Roles of Primary River Forecast Partners

US Army Corps of Engineers®

- Assist with Gage Maintenance
- Assist with Stream Measurements
- Assist with Funding Data Networks

USGS science for a changing world

- U.S. Stream Gage Network
- Water Science Studies

- Cooperative Data Network
- NOAA/NWS Satellite Transmission
- Forecasts/Data for Operations

US Army Corps of Engineer Districts

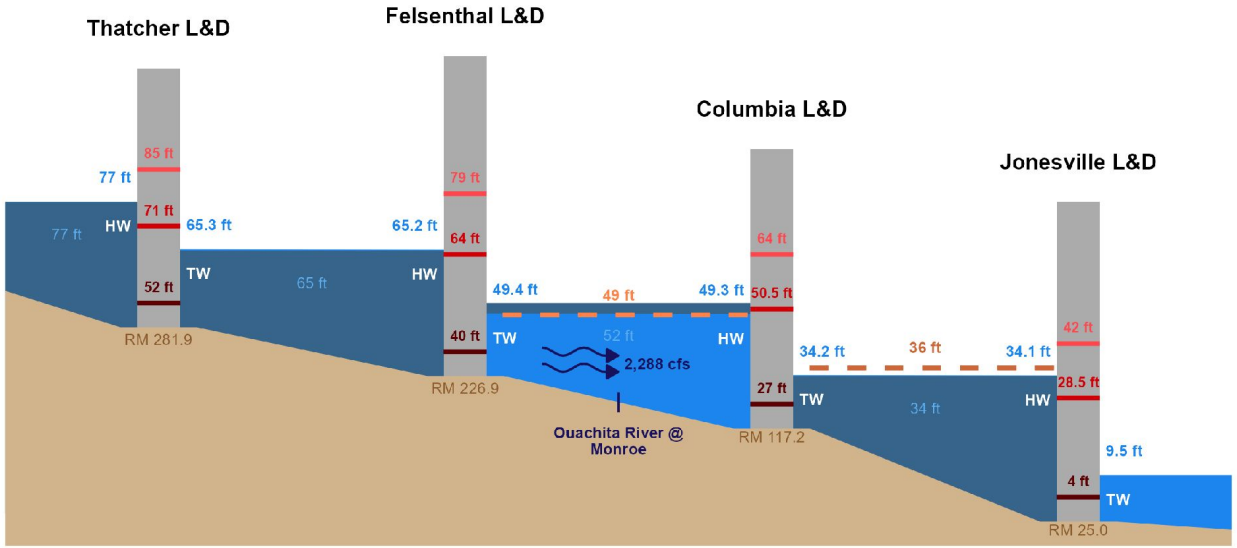


USACE Project Maps

US Army Corps of Engineers ®
Vicksburg District

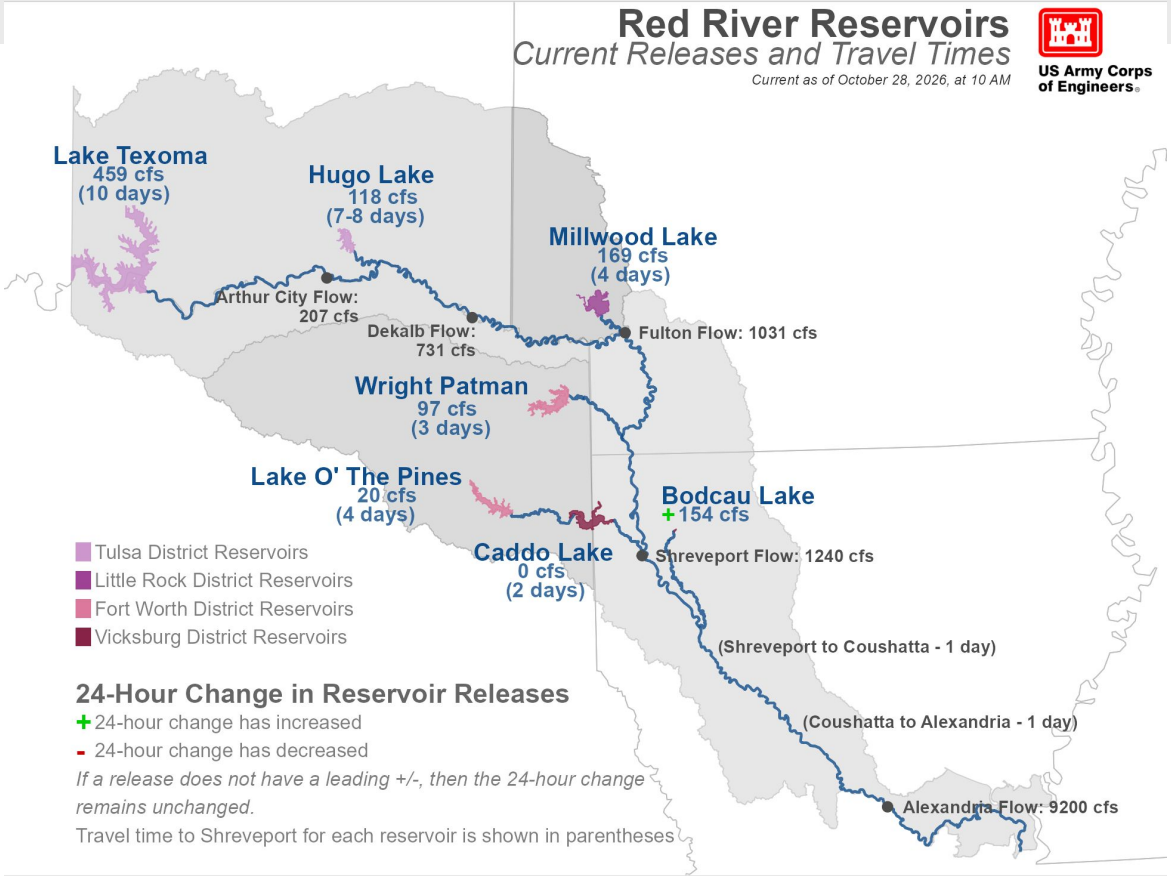
Ouachita River Navigation Project

Current as of October 28, 2026, at 10 AM

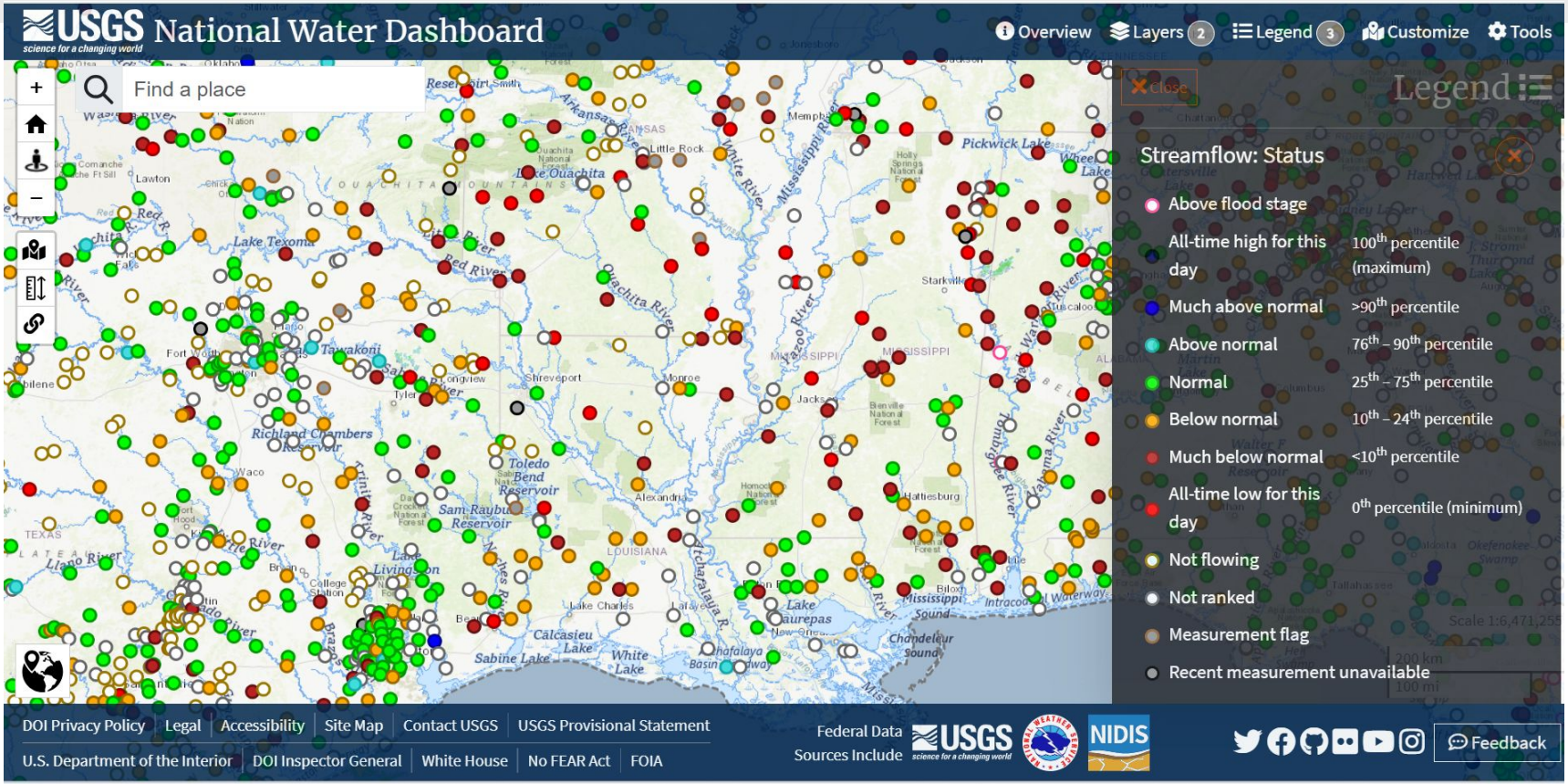


US Army Corps of Engineers ®
U.S. ARMY

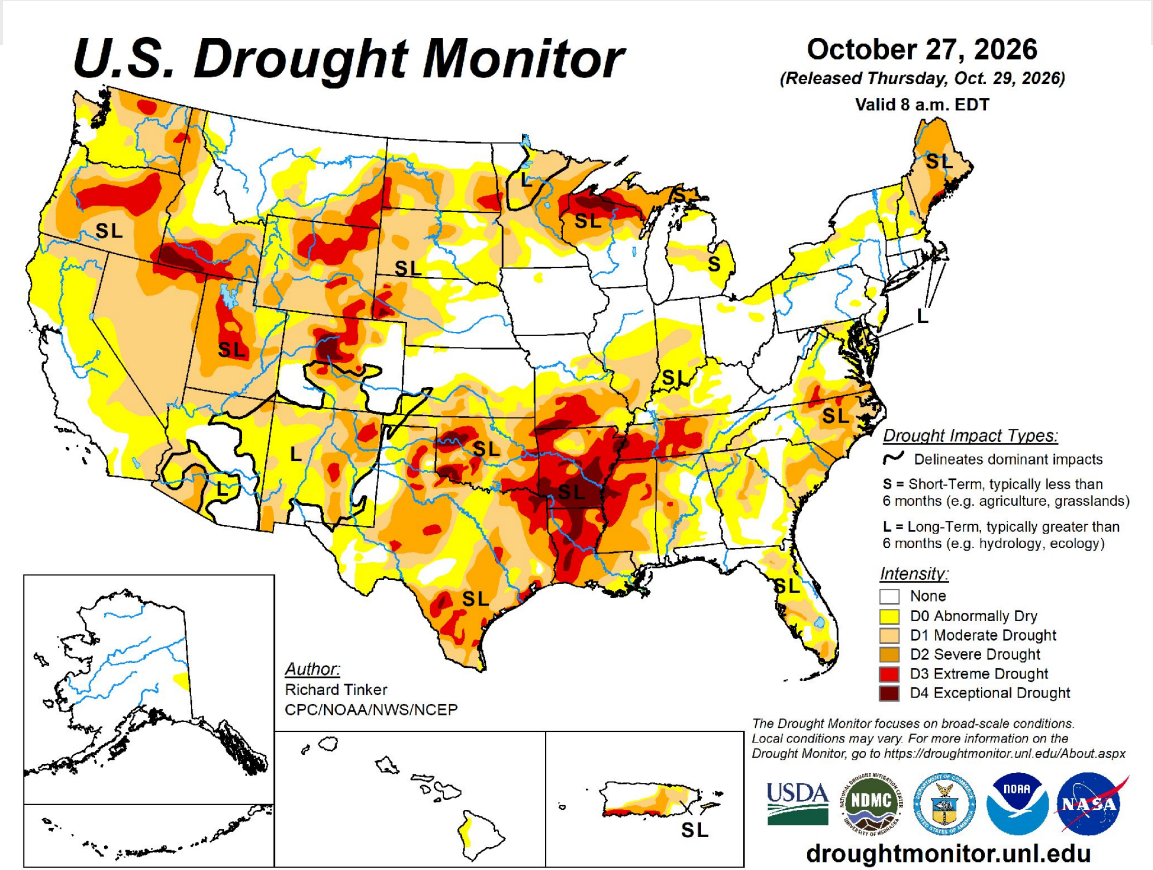
USACE Reservoir Maps



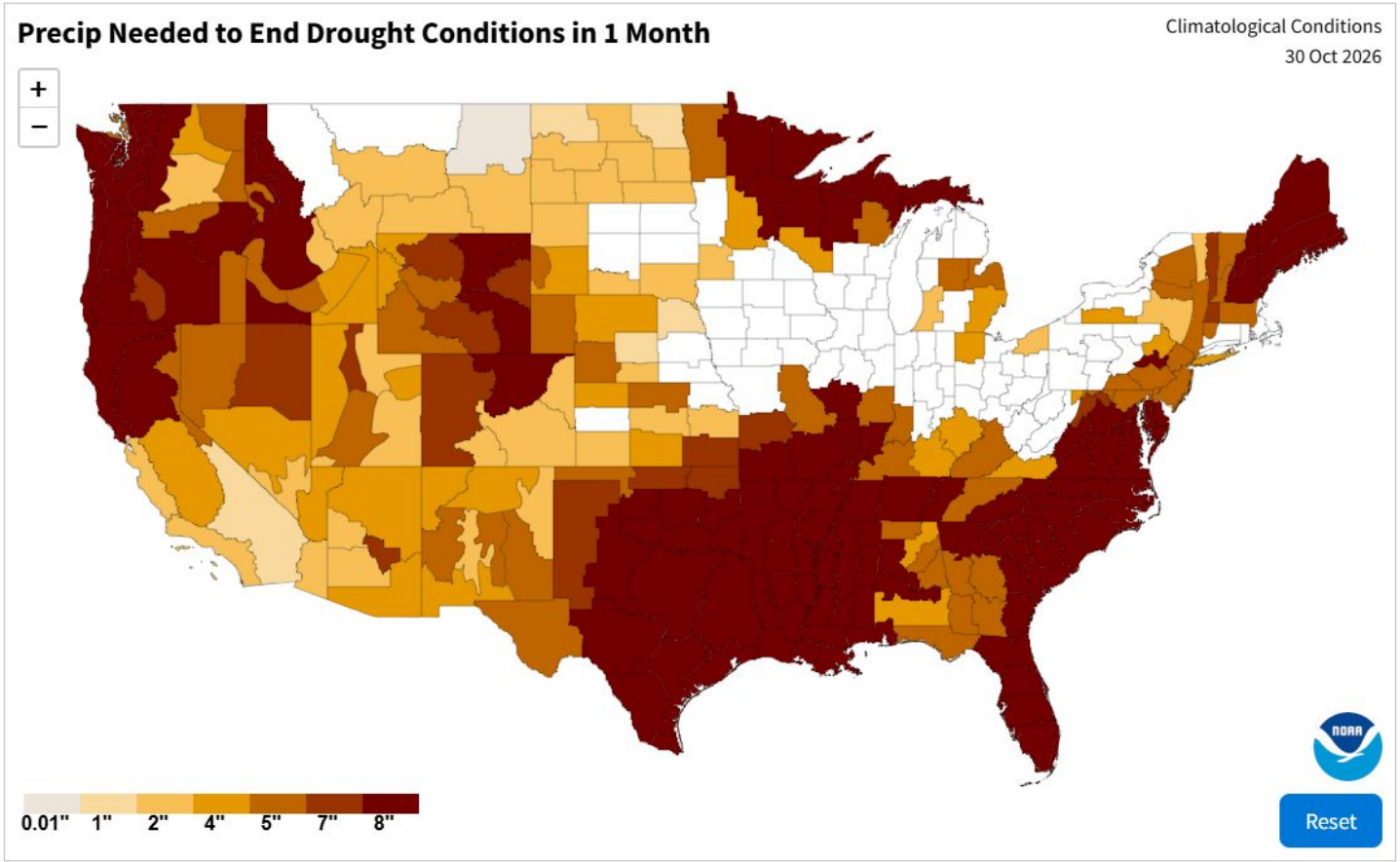
USGS Streamflow Current Conditions



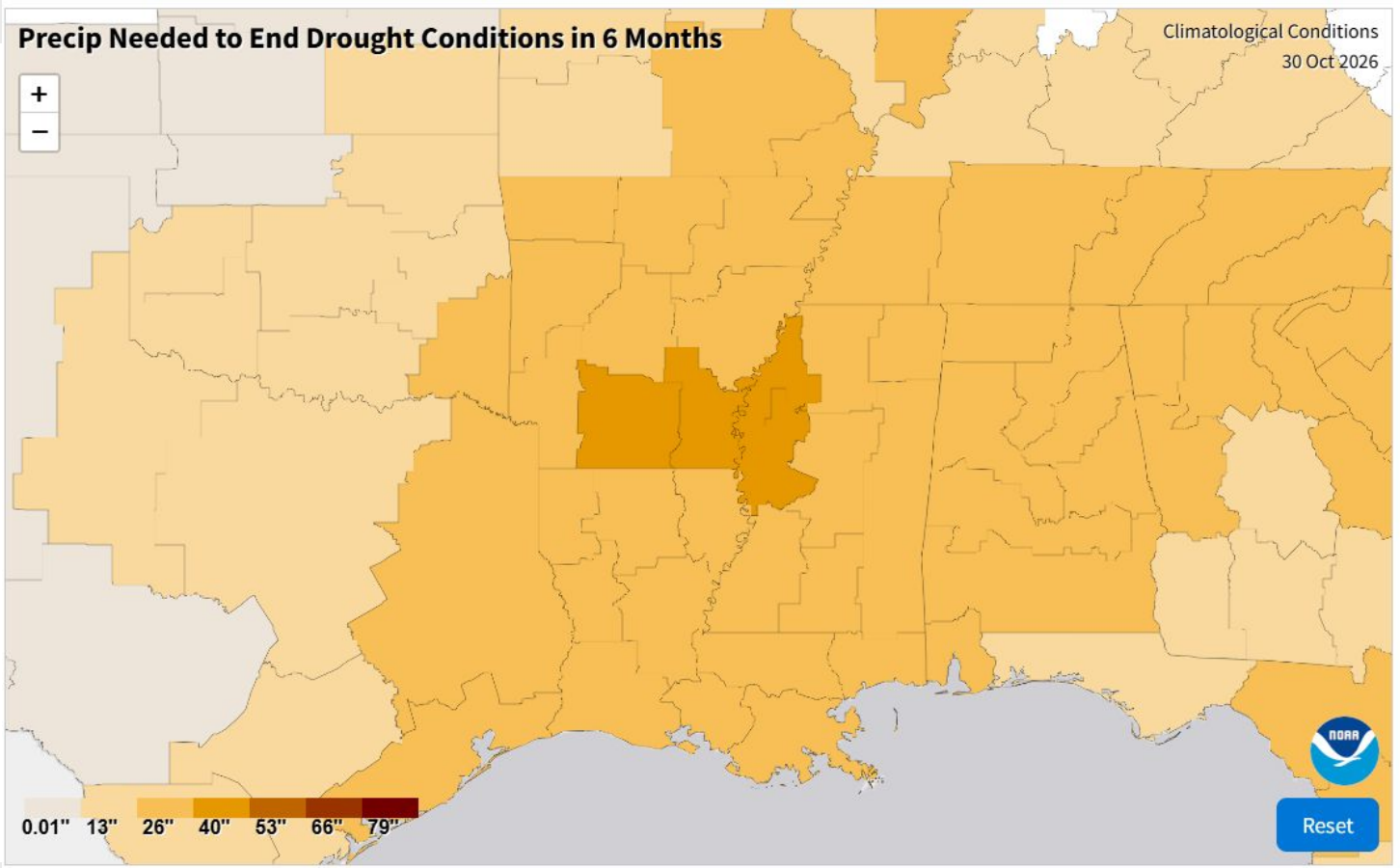
Drought Monitor Current Conditions



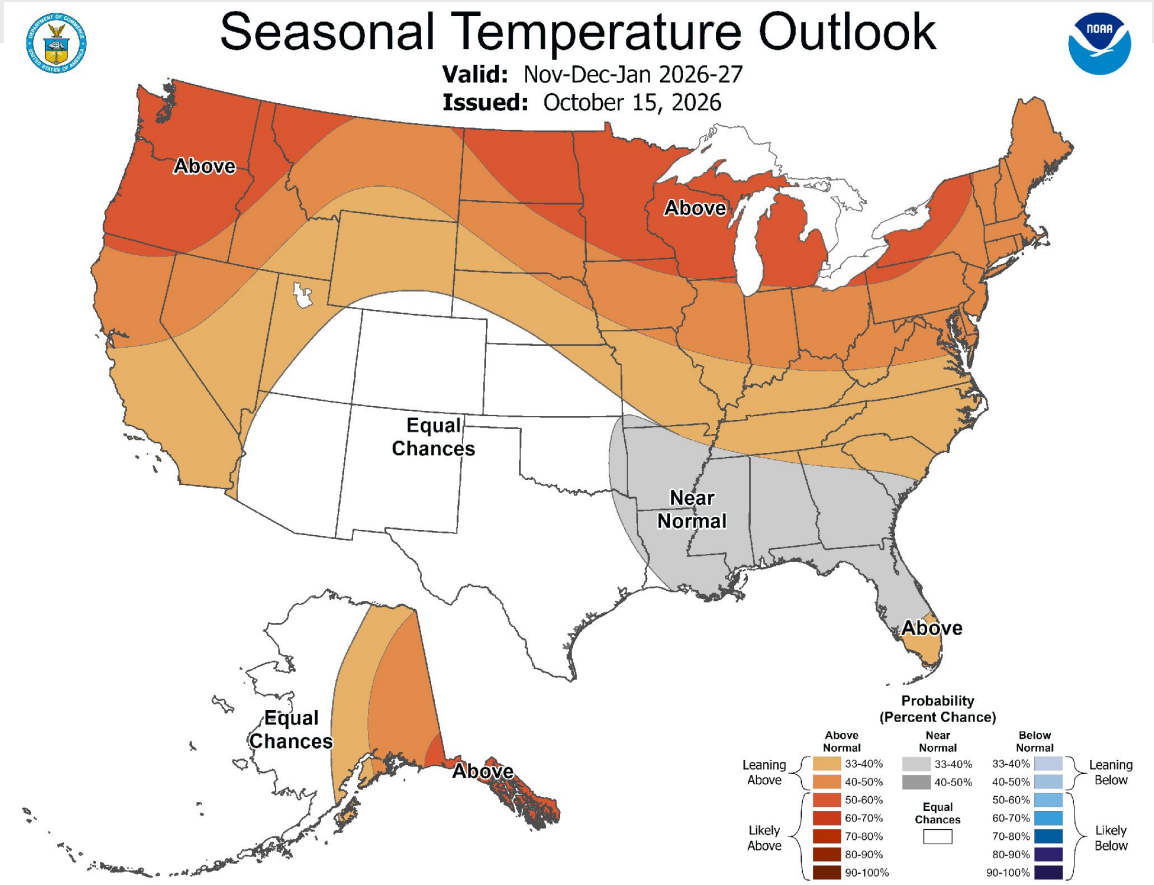
Precip Needed to End Drought (1 month)



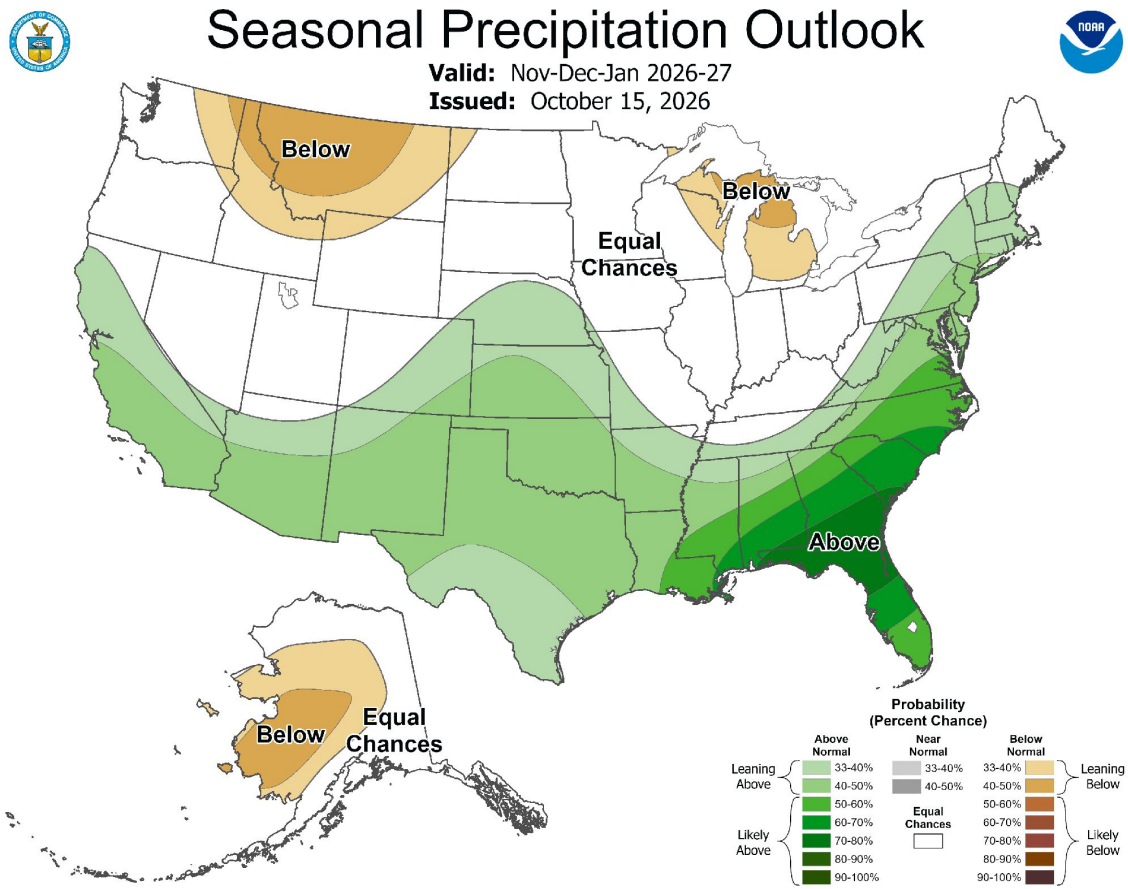
Precip Needed to End Drought (6 months)



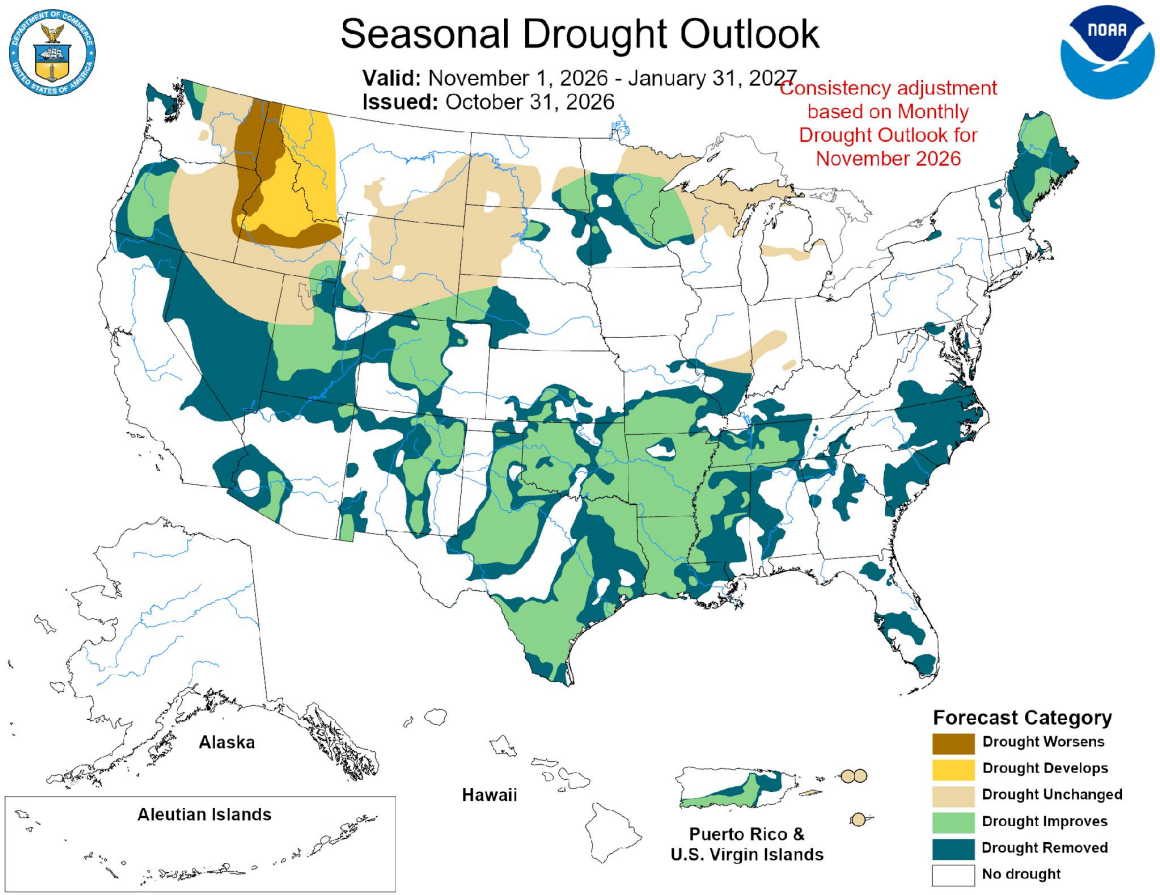
Three Month Outlook - Temps



Three Month Outlook - Precip



Three Month Outlook - Drought Outlook



Drought Outlook

- Drought conditions continue, but we are moving into a wetter time of year
- Fall is usually wetter than summer due to more storm systems (high pressure over the summer blocks rainfall)
- Is there a weather pattern change that could bring some relief to the area later this year into 2027?

El Niño is coming!

- El Niño is strengthening, with a greater than 80% chance of a strong to very strong event during January to March of 2027

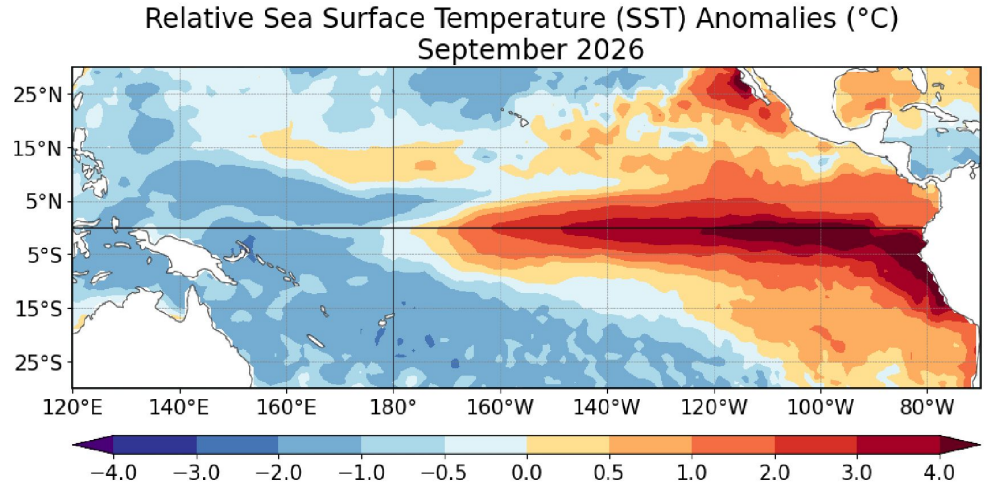


Figure 1. Average relative sea surface temperature (SST) anomalies (°C) for September 2026. Anomalies are computed with respect to the 1991-2020 base period monthly means. Data: OISSTv2.1.
https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_update/Monthly_RelSSTA_map-hr.png

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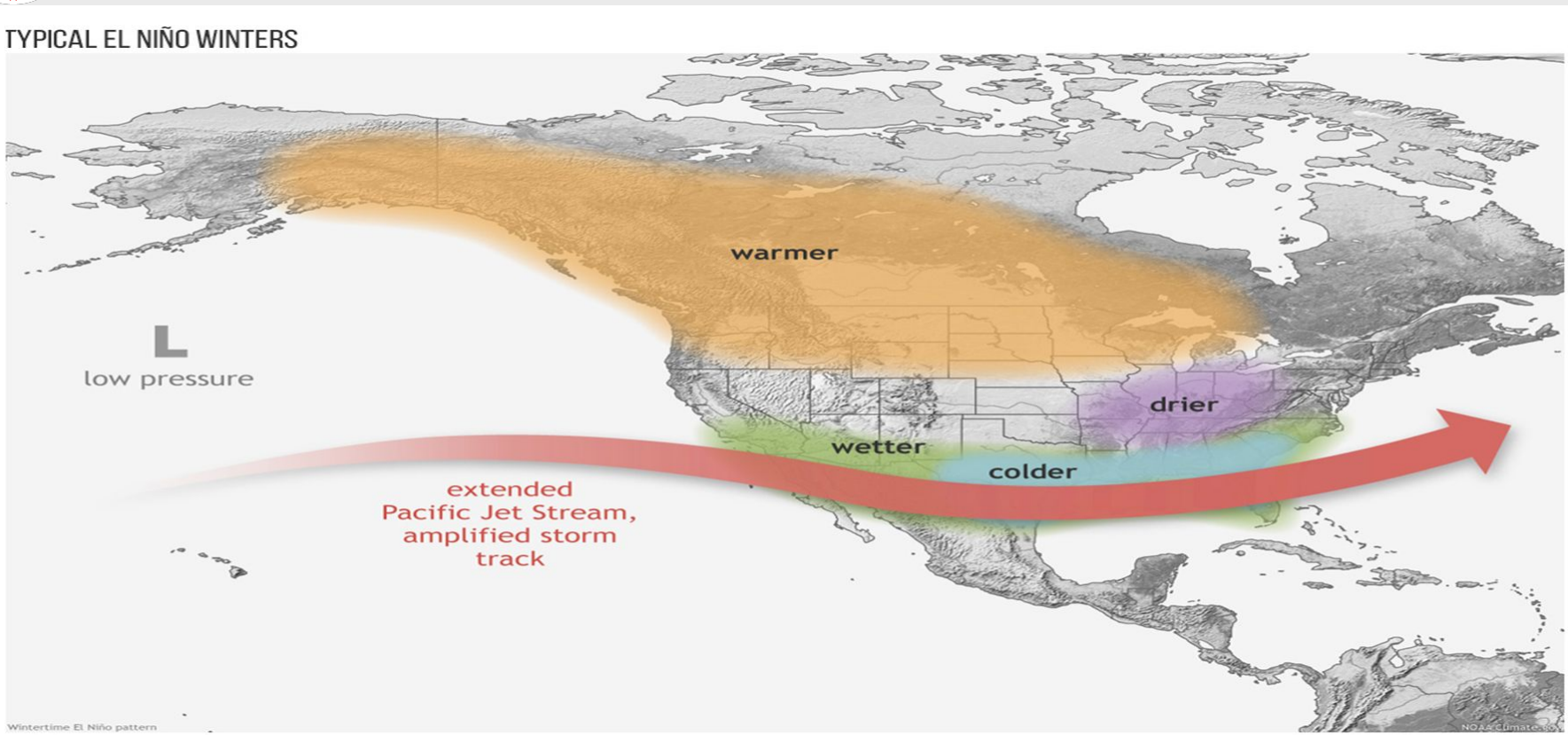
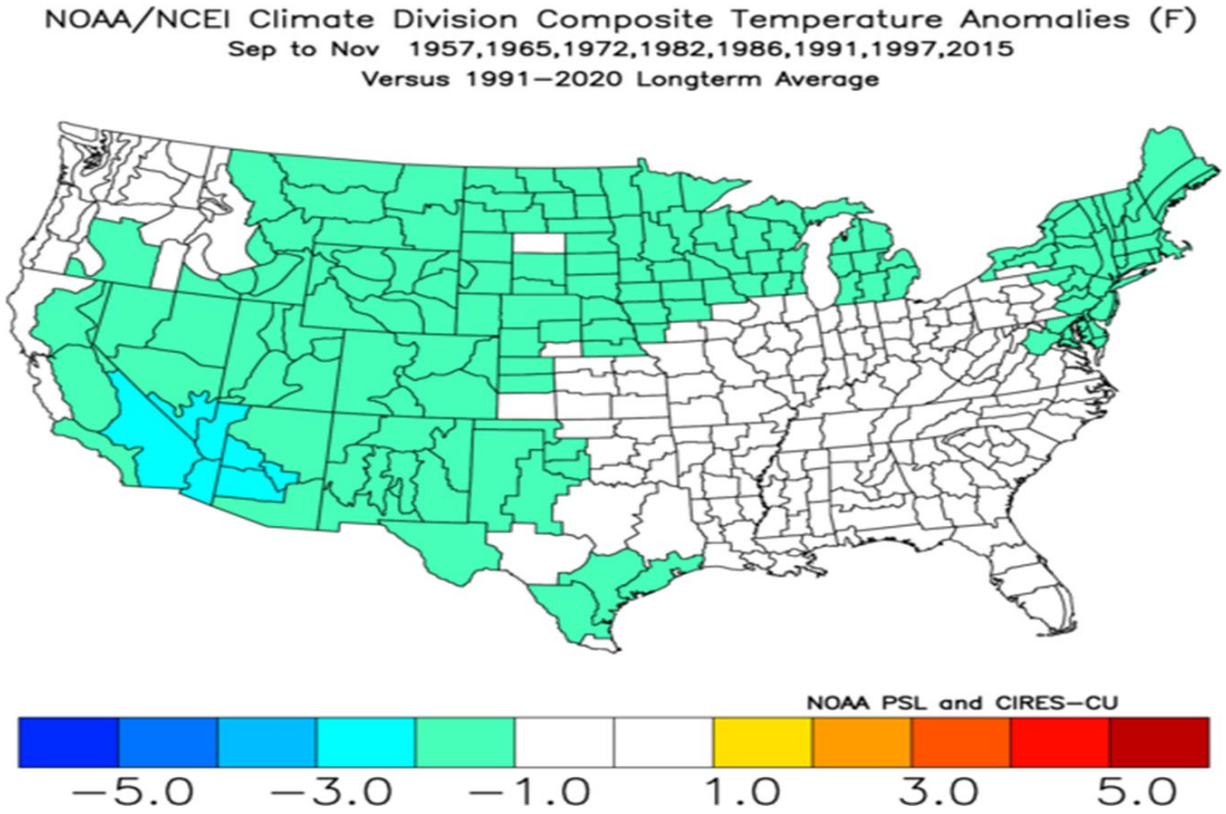


Strong El Niño's Influence on Fall Temps



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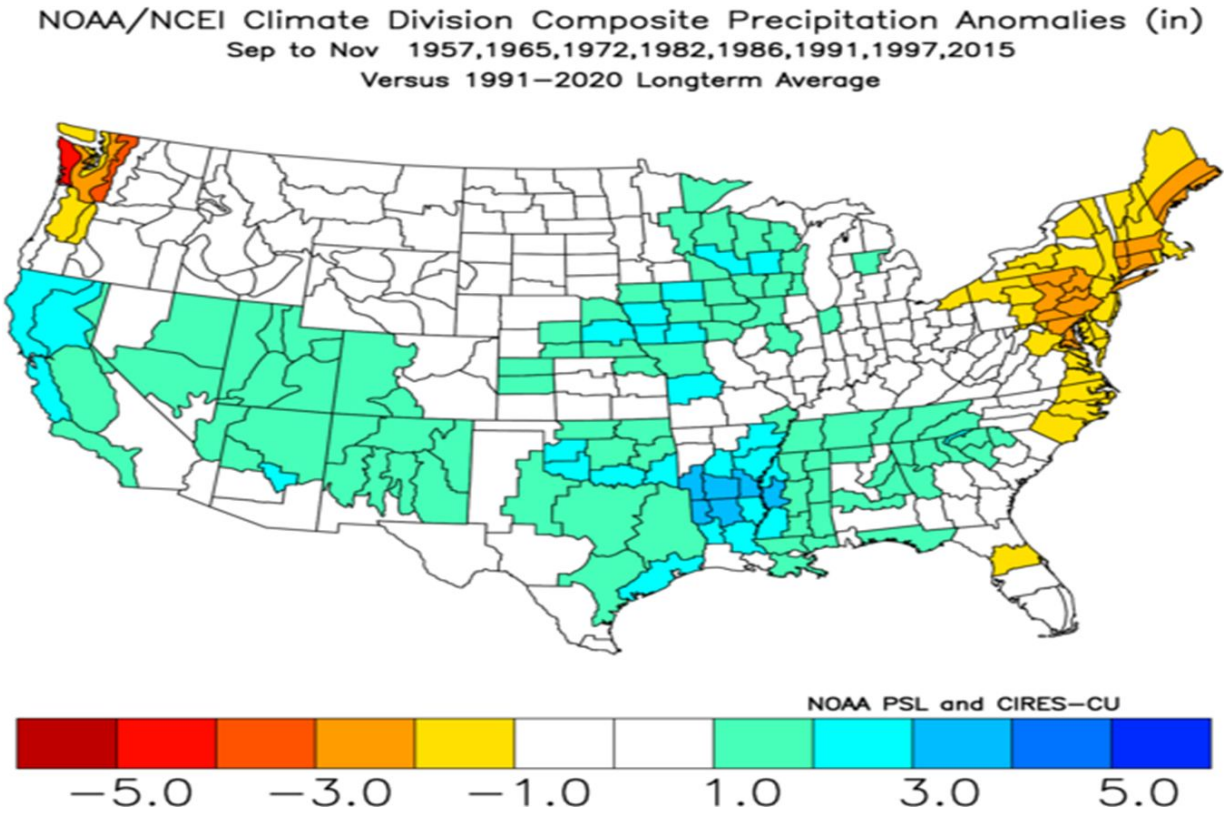
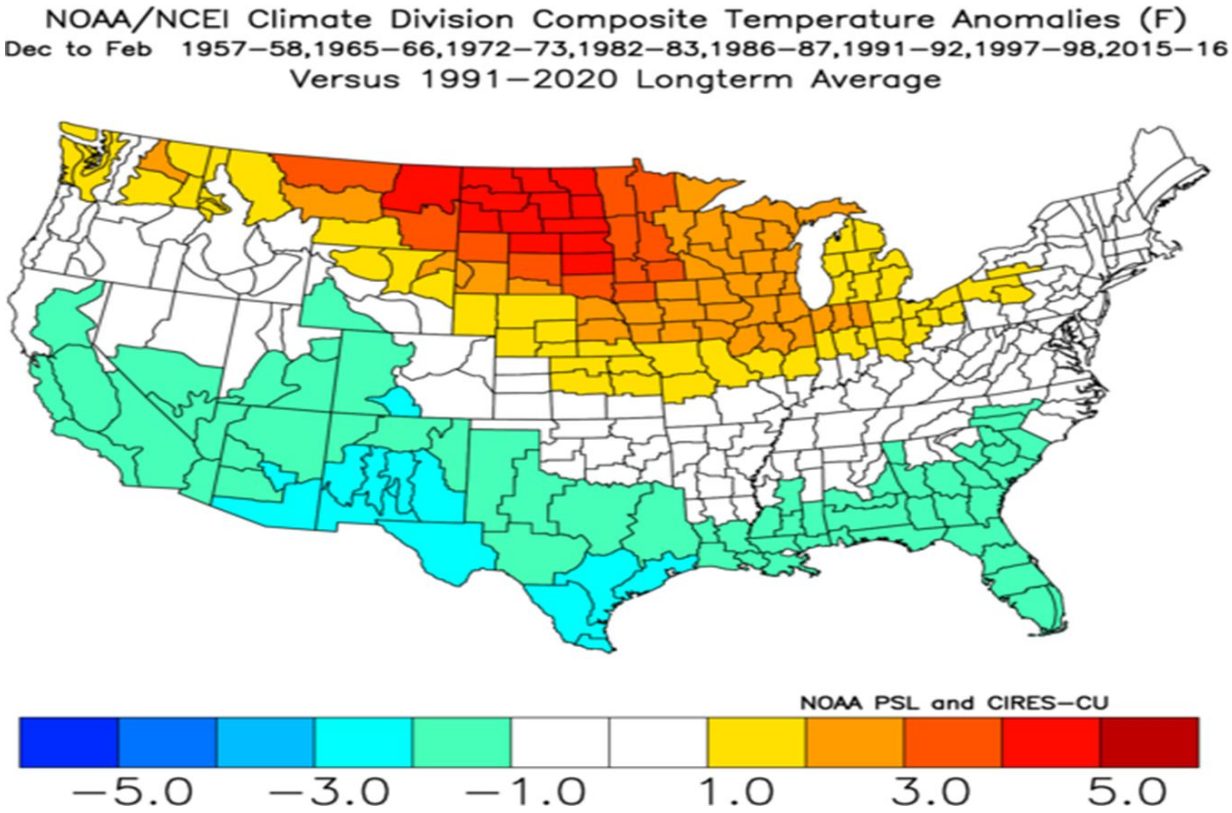
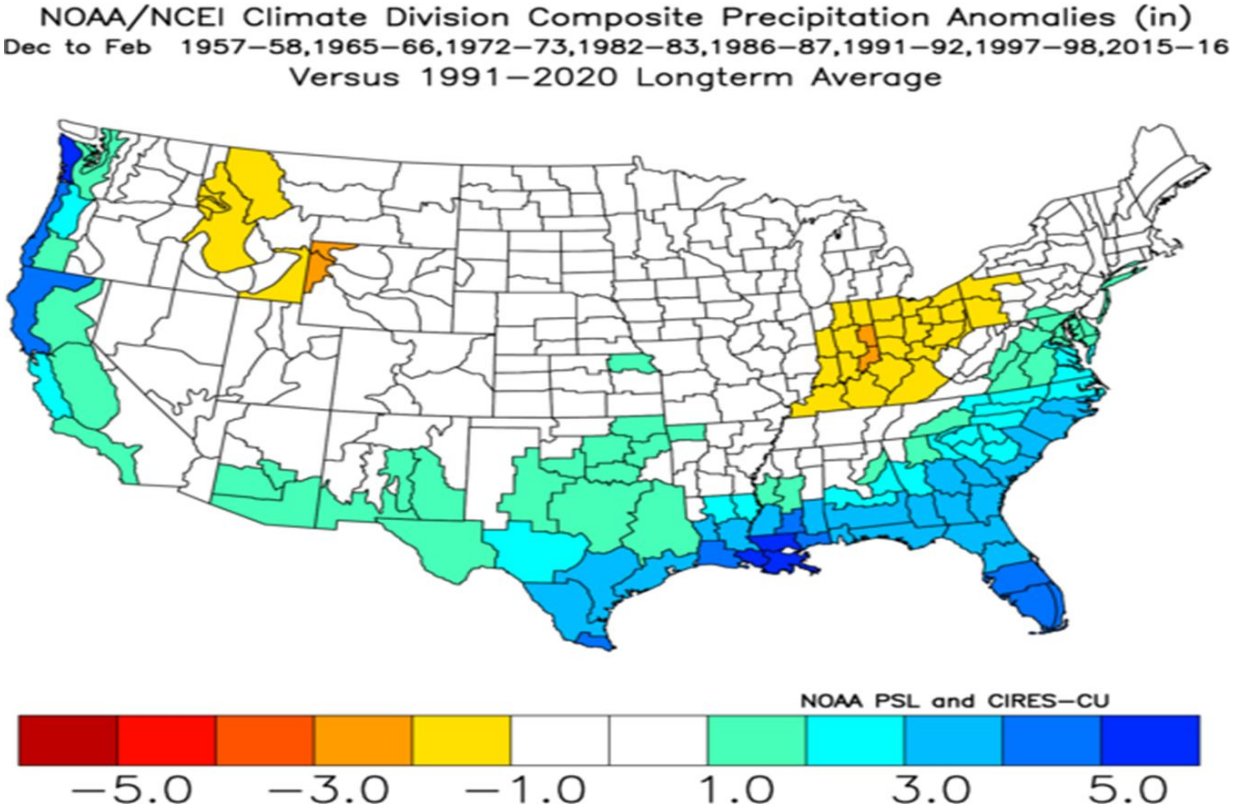


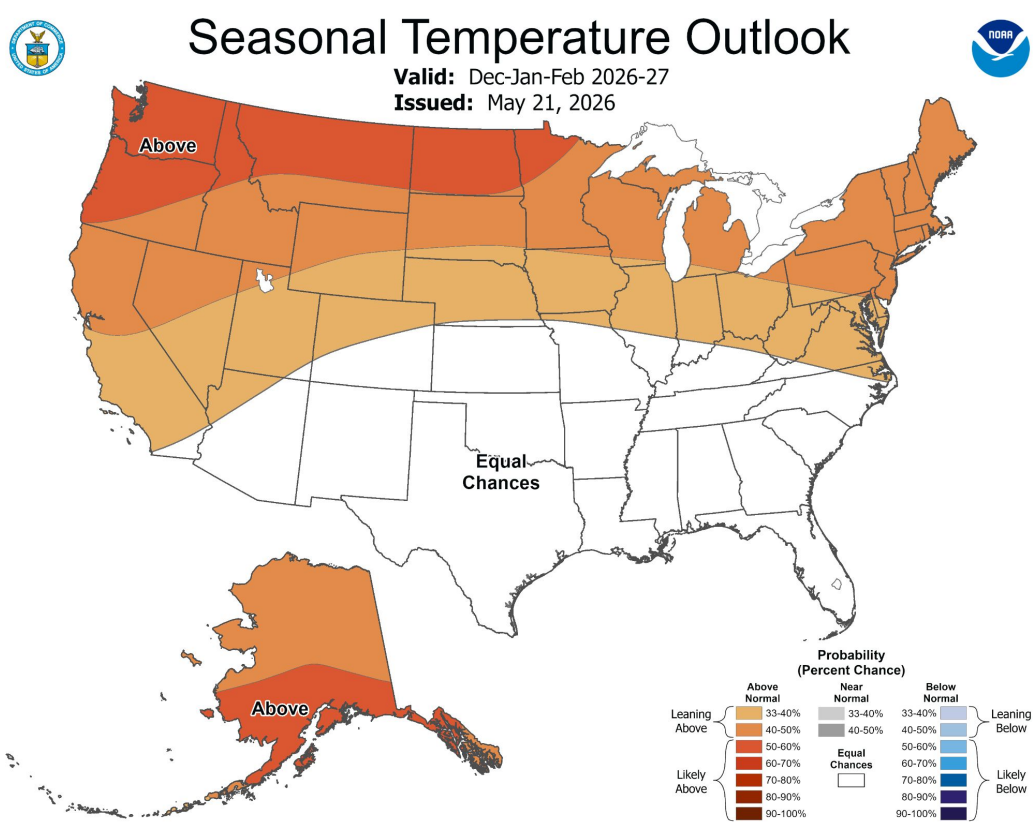
Strong El Niño's Influence on Winter Temps



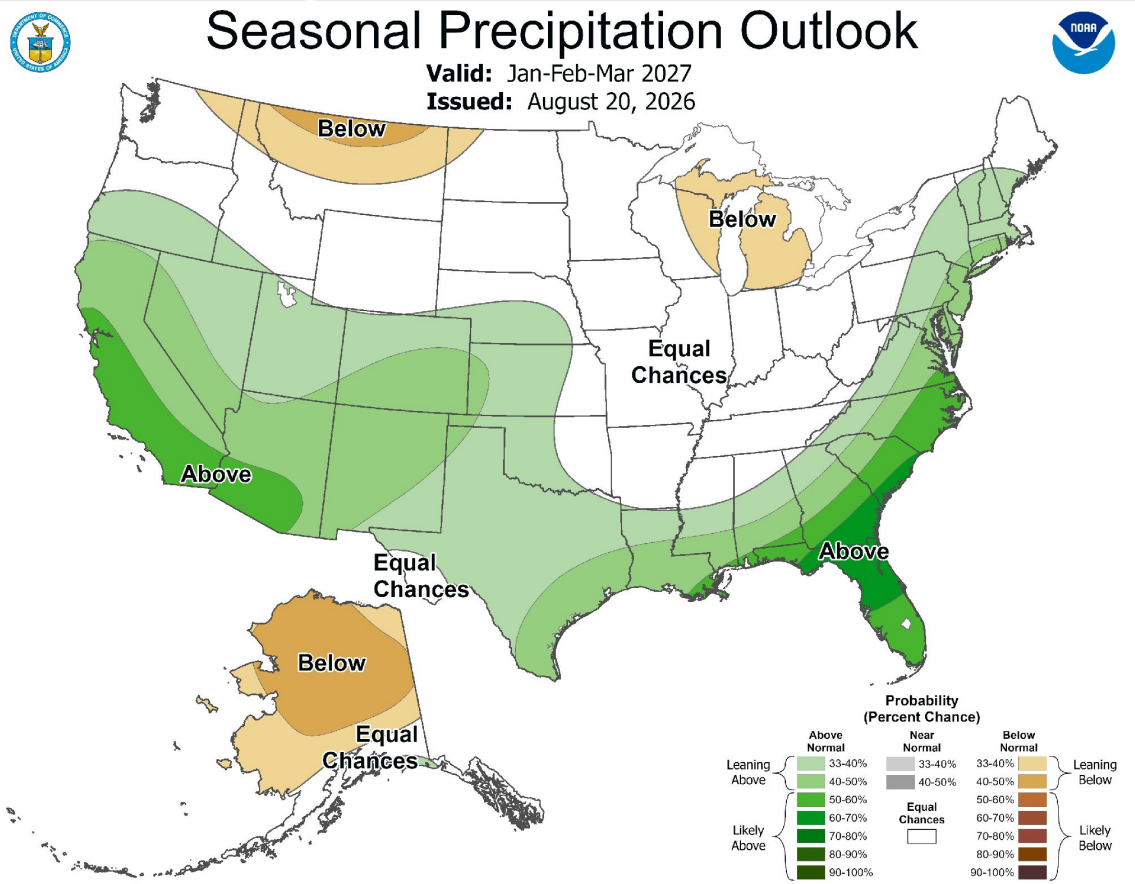
Strong El Niño's Influence on Winter Precip



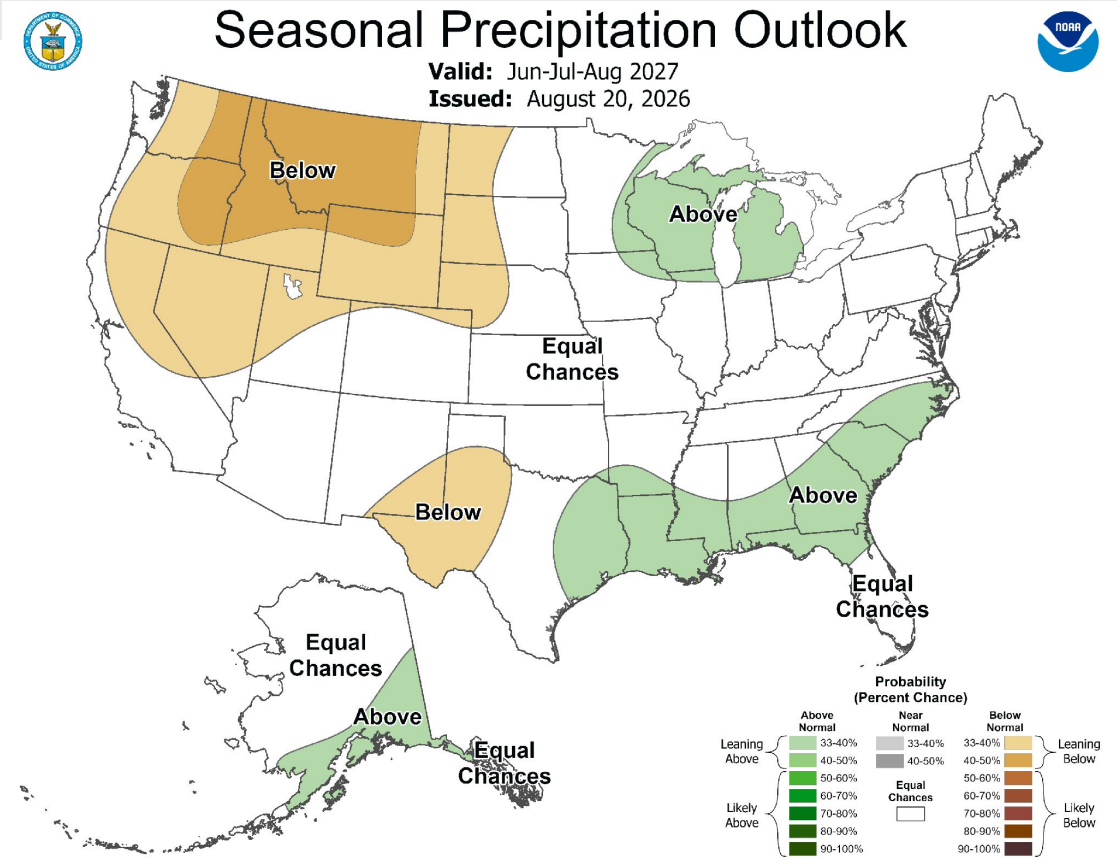
Seasonal Temperature Outlook



Seasonal Precipitation Outlook



Seasonal Precipitation Outlook



Some caveats…

- El Niños typically peak around December, and in the US, the greatest impacts occur during the winter season and early spring.

- The storm track is usually pushed south across the southern tier of states during El Niño events.

- El Niño does not mean that weather will be the same through the entire winter season.

Some caveats…

- No two El Niño's are the same. Historical correlations provide the most probable expectation of impacts, but they are not a guarantee.

- Precipitation tends to be above-normal across much of the Southeast.

- Due to the increase in cloudiness and precipitation during the winter, temperatures tend to be below normal.

2015 El Niño Event

Remember, no two El Niños are the same…

2015 State of the Climate: El Niño came, saw, and conquered

BY REBECCA LINDSEY | REVIEWED BY JESSICA BLUNDEN
PUBLISHED AUGUST 2, 2016

HIGHLIGHTS

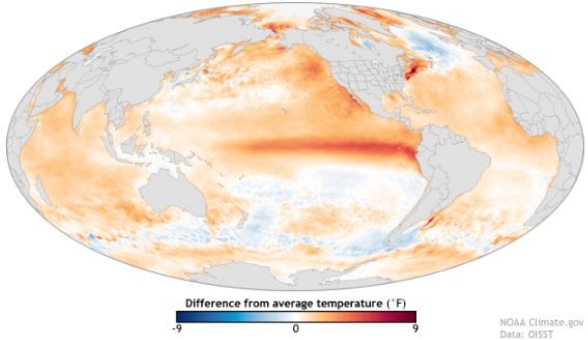
- The strength of the 2015 El Niño was on par with the record-strong events of 1982-82 and 1997-98.
- The disruptions to the global climate contributed to many of the year's most extreme events, including drought in the Caribbean and Ethiopia, record hurricane activity in the central North Pacific, and a large jump in carbon dioxide concentrations at Mauna Loa Observatory.

Related Content

A record-smashing hurricane season in the central North Pacific. Water rationing in Puerto Rico. The biggest one-year jump in atmospheric carbon dioxide concentrations on record. Severe drought in Ethiopia. The hottest global surface temperature—by one of the largest margins—on record.

Those are just a few of 2015's major climate happenings documented in the recently released *State of the Climate 2015* report from NOAA and the American Meteorological Society. While the events were scattered across the globe, they all had one thing in common: they were all connected to one of the three strongest El Niños in the historical record.

EL NIÑO LEFT WARM MARK ON 2015 OCEAN TEMPERATURES



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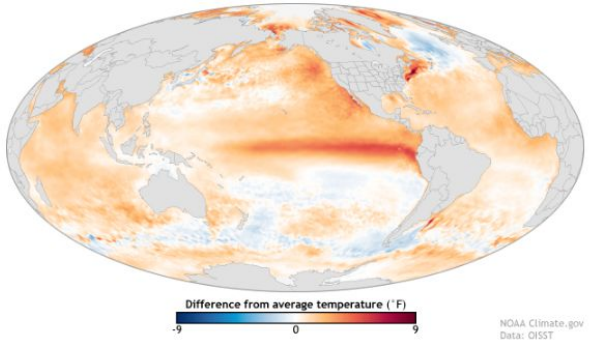

2015 El Niño Event

Remember, no two El Niños are the same…

- A record-smashing hurricane season in the central North Pacific.
- Water rationing in Puerto Rico.
- Both of these happened in the summer of 2026…

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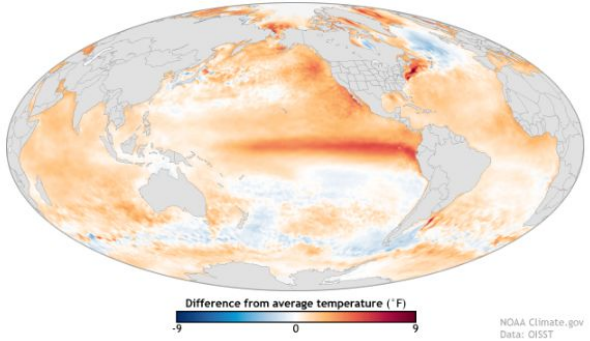
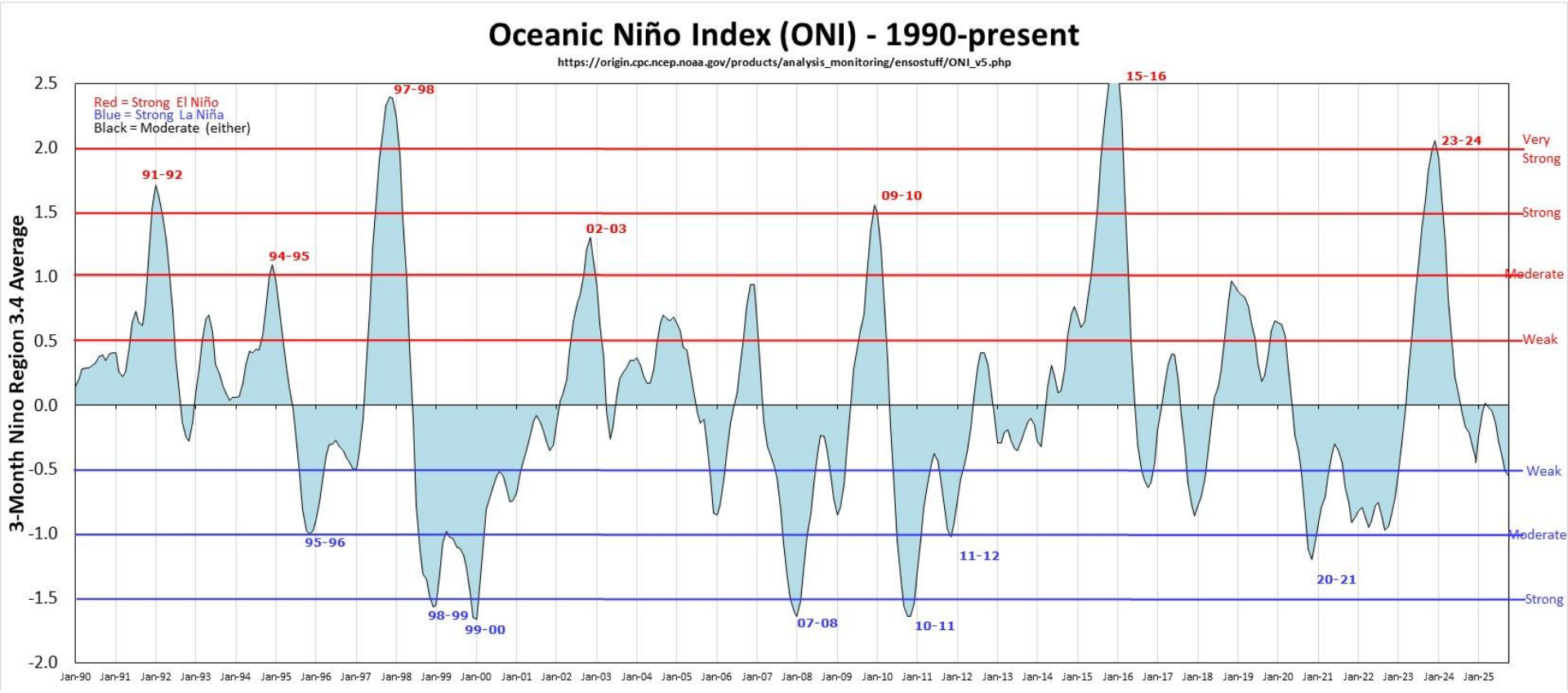


El Niño History Since 1990



2015 Red River Flooding Events

Overview Flood Events of 2015

- Two periods of flooding along the Red River
  - Late Spring – Early Summer (May 10th – July 5th)
  - Late Fall – Early Winter (November 26th – January 7th)

- Rainfall
  - Placement:
    - North Central Texas and South Central Oklahoma (May/Jun)
    - Northeast Texas and Southeast or East Oklahoma (Nov/Dec)
  - Quantity
    - Percent of Normal: 150-600%

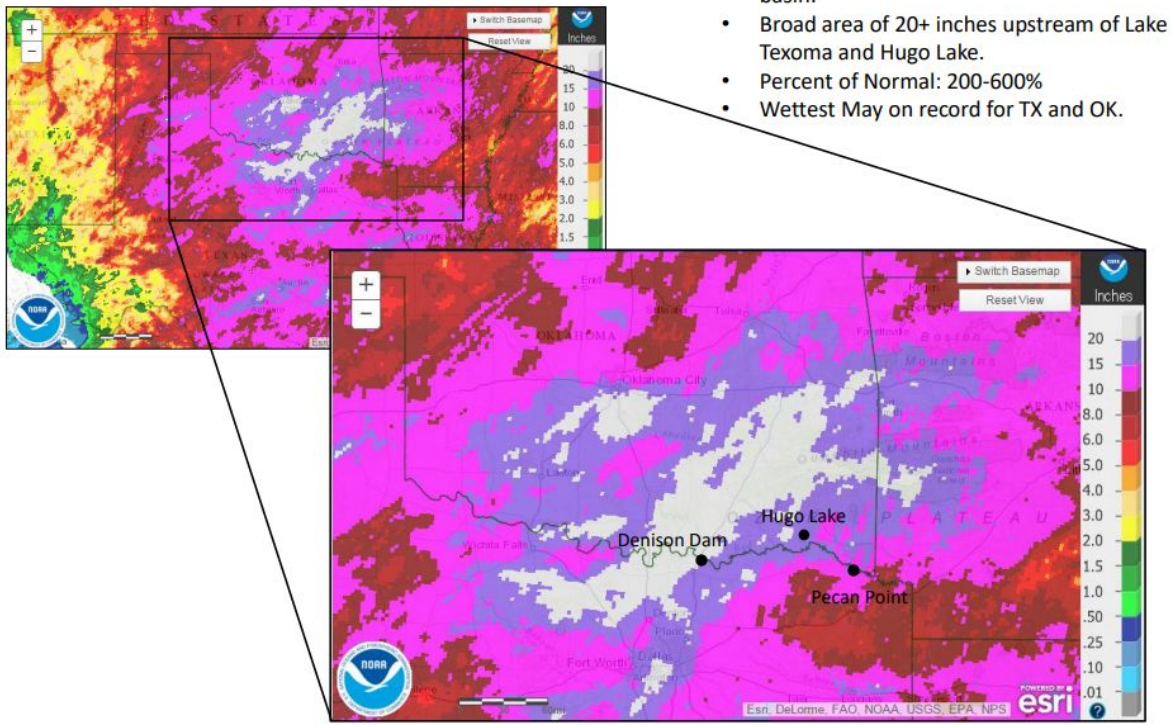
Ranked 25th for Shreveport. Worst flood in 70 years.

May 2015 Heavy Rainfall Upstream

May Rainfall Totals 2015

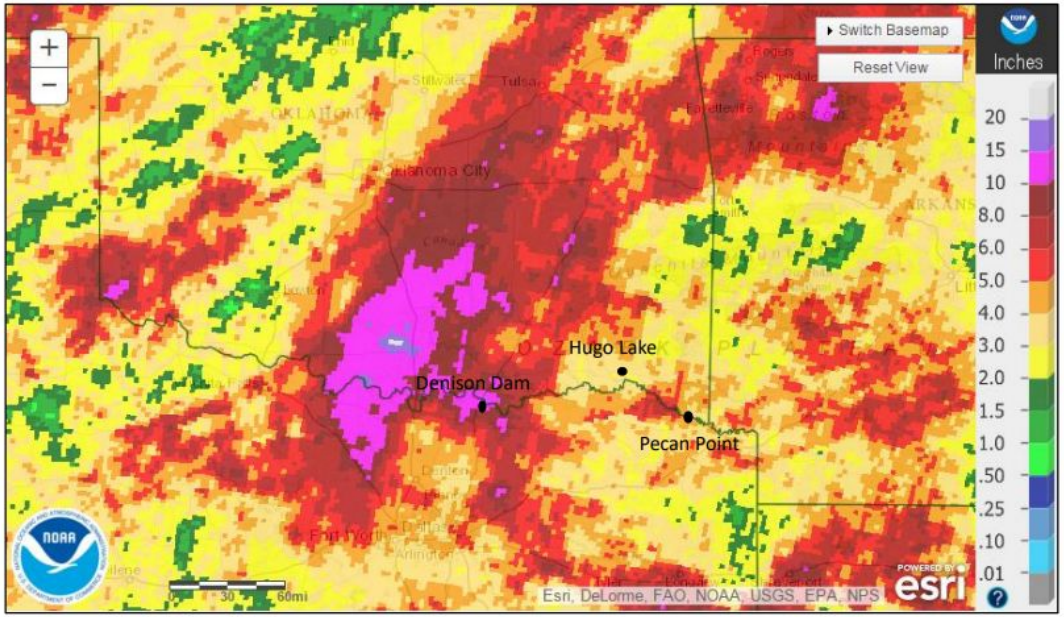
Record Rainfall:

- Widespread 10+ inches over the Red River basin.
- Broad area of 20+ inches upstream of Lake Texoma and Hugo Lake.
- Percent of Normal: 200-600%
- Wettest May on record for TX and OK.



June 2015 Heavy Rainfall Upstream

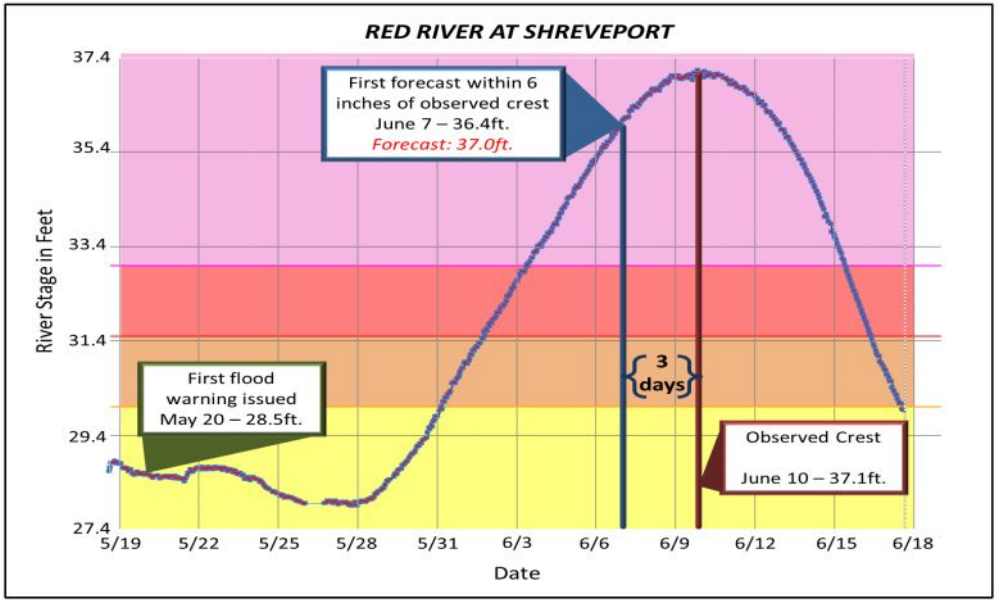
June 2015 Rainfall Totals



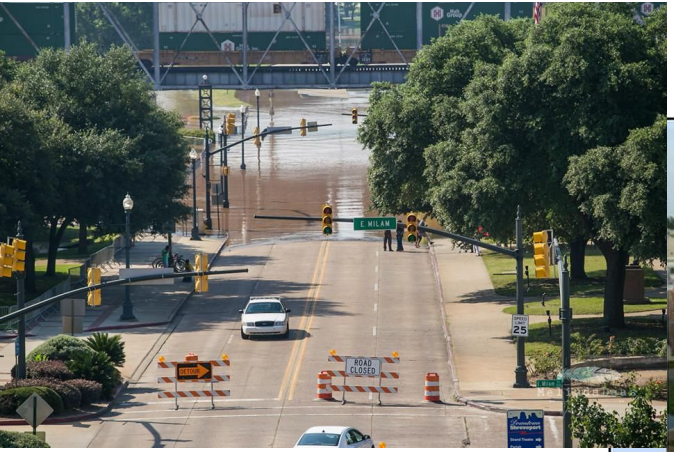
Percent of Normal: 150-600% upstream of Denison Dam

Spring 2015 Red River Flooding

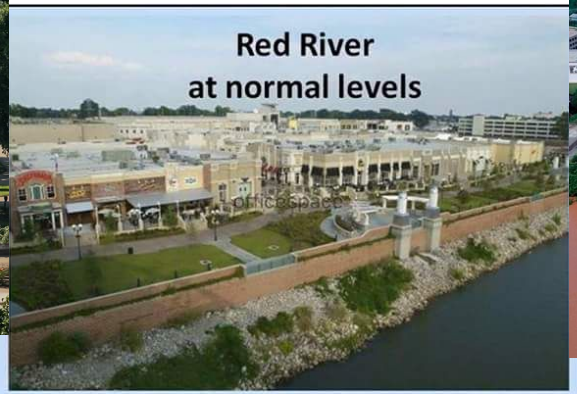
Hydrograph for Shreveport, LA – Spring/Summer Flood 2015



Spring 2015 Red River Flooding



Clyde Fant Parkway entering downtown Shreveport







Horseshoe Casino Hotel looking east into Bossier City

Spring 2015 Red River Flooding



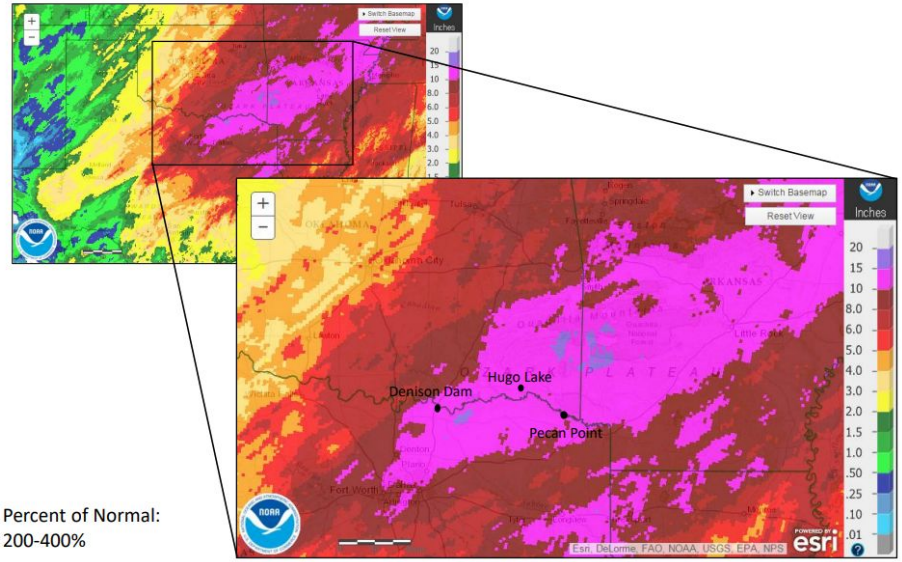
I-220 bridge looking
east into Bossier City

Shreveport-Barksdale
bridge looking east
toward BAFB



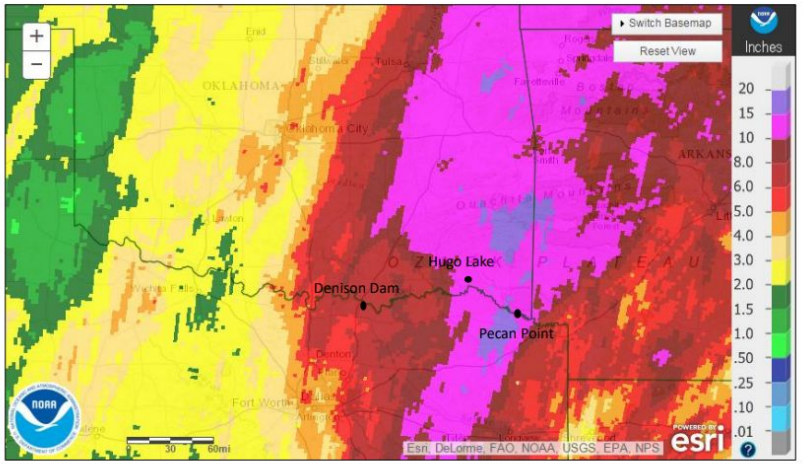
Late 2015 Heavy Rainfall

November Rainfall 2015 Totals



Percent of Normal:
200-400%

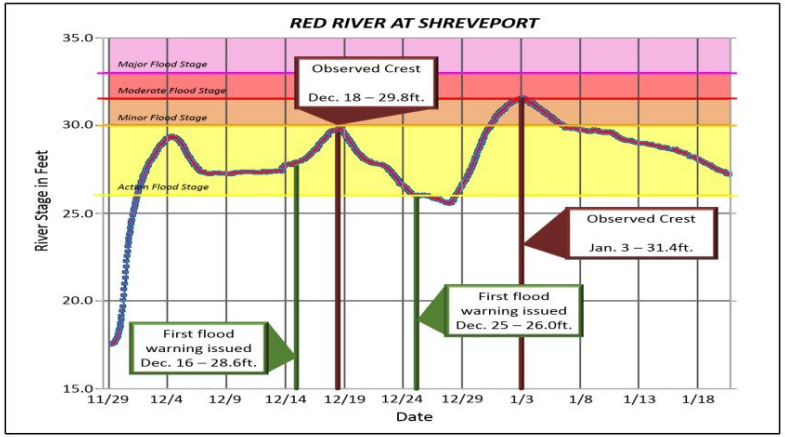
December 2015 Rainfall Totals



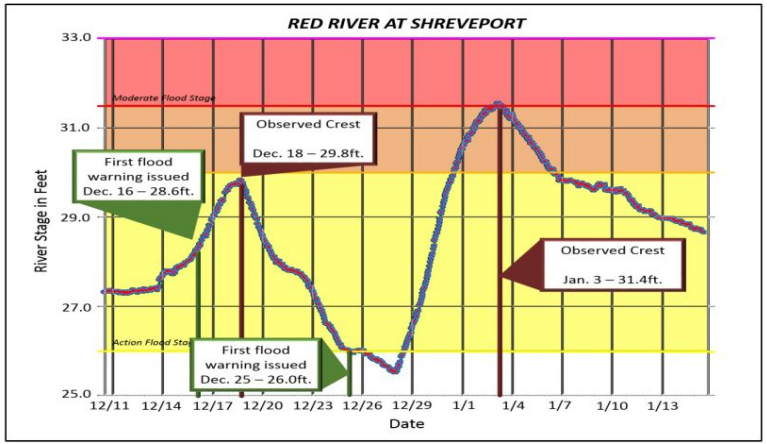
Percent of Normal: 150-600%

Late 2015/Early 2016 Red River Flooding

Hydrograph for Shreveport, LA – Fall/Winter 2015 Flood

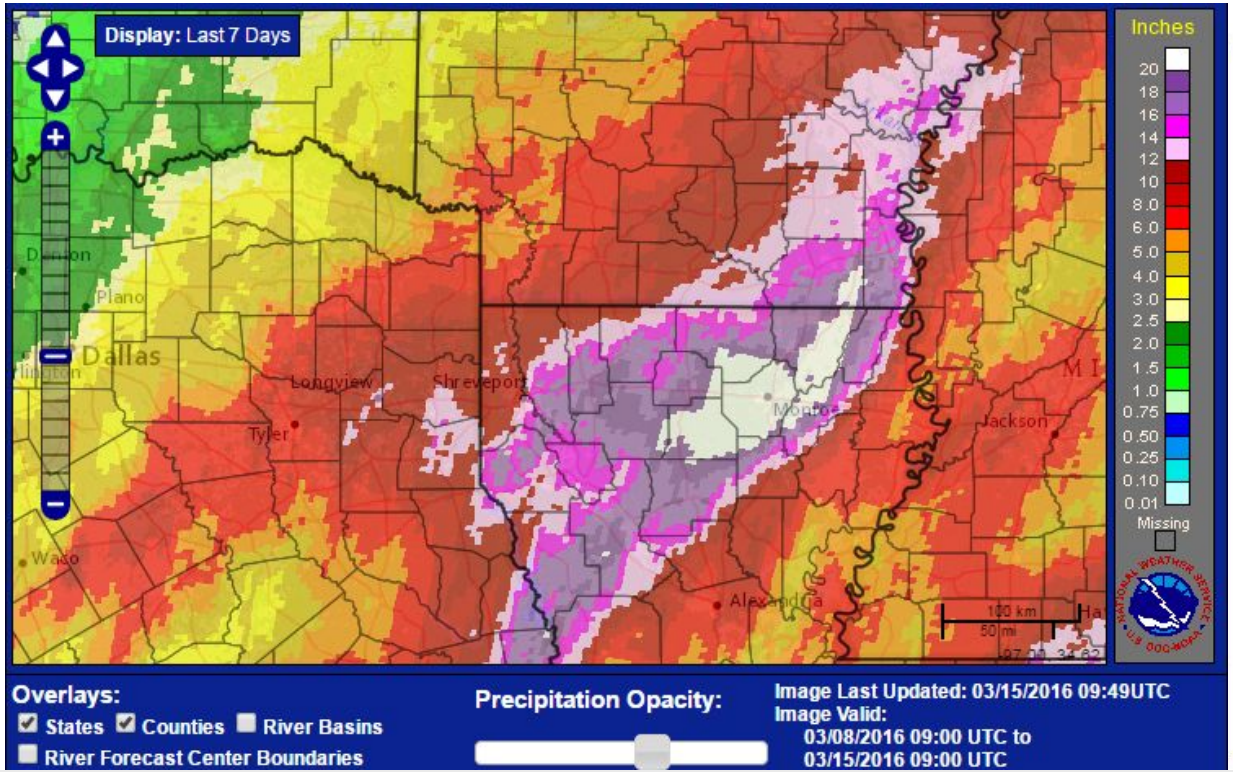


Hydrograph for Shreveport, LA – Fall/Winter 2015 Flood



March 2016 Heavy Rainfall

2016 Rainfall Total March 8-15



March 2016 Flooding Impacts

March Flood 2016

Impacts of torrential rainfall event of March 8-12, 2016

Red River

@ Shreveport – crested at 31.8 ft on 3/15/16 (FS 30 ft)
@ Coushatta – crested at 36.9 ft on 3/15/16 (FS 31 ft)
@ Grand Ecore – crested at 41.89 ft on 3/17/16 (FS 33 ft)

This heavy rain event caused another flood event on the Red River which broke the all-time number of flood events for a year, 4 in 12 months. Shreveport also broke the March highest rainfall record with 12.83 inches in 2016 breaking the old record of 11.99 inches in 1945.

Red Chute Bayou

@ Sligo – crested at 38.8 ft on 3/10/16
@ Dogwood Trail Rd – crested at 26.3 ft on 3/13/16
@ Flat River @ Shed Road – crested at 22.10 ft on 3/9/16

The Red Chute Bayou area was of much concern for the officials and residents of Bossier City. The National Guard sandbagged the top of the levee from south of Dogwood Trail Road to near Highway 80. Diversion from Red Chute Bayou caused the rise on Flat River. Mandatory evacuations of near 3500 homes in the Dogwood, Stagecoach, Dogwood South subdivisions took place.

Wallace Lake – crested at 160.2 ft on 3/11/16 (FS 151 ft)

March 2016 Flooding Impacts

Bayou Dorcheat

@ Springhill – crested at 21.2 feet 3/11/16 (FS 11 ft)
@ Lake Bistineau – crested at 150.16 feet 3/13/16 (FS 142 ft)
@ Dixie Inn – crested at 26 feet 3/11/16 (FS 14 ft)

Lake Bistineau experienced extensive high water, many homes flooded, to rooftops

March 2016 Flooding Event



Near exit 55 on I-20
in Webster Parish
(Hwy 80/Ada/Taylor)



River Oaks, Monroe



Highway 165 between
Bastrop and Sterlington

March 2016 Flooding Event



Bagley Road near
the Red River



Red Chute Bayou



Wallace Lake along I-49
south of Shreveport

How the Events Compare?

Comparing 2015, 2016 and 2018-19 events:

Year	Rain Recorded	Timeframe	Departure from Normal	Remarks
May June July 2015	10.97” 5.98” 0.59”	5/1-31/15 6/1-30/15 07/01-31/15	+6.04” +0.58” -3.06”	Rec daily rainfall 4.18” 5/18/15 upwards 20” fell in basin above Texoma & Hugo. Extreme rain in Red River basin in TX/OK
November December January 2016	10.34” 2.89” 2.87”	11/1-30/15 12/1-31/15 1/1-31/16	+5.81” -1.88” -1.33”	15” plus fell in basin near Denison and Hugo and Pecan Point. Extreme rain in Red River basin in TX/OK.
March 8-12, 2016 Rec @ Barksdale AFB* Rec @ Shreveport AP April 2016	 **18.84” *** 12.83” 13.30”	 **4 day rainfall** 3/1-31/16 4/1-30/16	 +8.69”	Wettest March on record w/ over 20” of rain falling in some locations. Historical flooding.
December 2018	11.27”	12/1-31/2018	+6.50”	2nd wettest Dec 5th wettest year on record with 66.15” of rain
January 2019	4.54”	1/1-31/2019	+0.34”	

Highest 1 month rainfall total in Shreveport was 21.8” ending April 1991 receiving 10.44” on April 12, 1991.

In Summary…

- Coordination for river forecasts are between lots of agencies, including federal, state and local entities
- Drought and lack of runoff are leading causes/precursors to low flow in the Red and Ouachita River Basins
- El Niño is expected to develop and intensify this winter
- El Niño conditions tend to bring more precipitation and cooler temperatures as the jet stream sets up over the Southern United States

Questions?

Emilie Nipper
Senior Service Hydrologist
emilie.nipper@noaa.gov

Matt Hemingway
Senior Meteorologist
matt.hemingway@noaa.gov

NWS Shreveport
www.weather.gov/shv