2019 Missouri Basin Flooding: Forecasting in Review

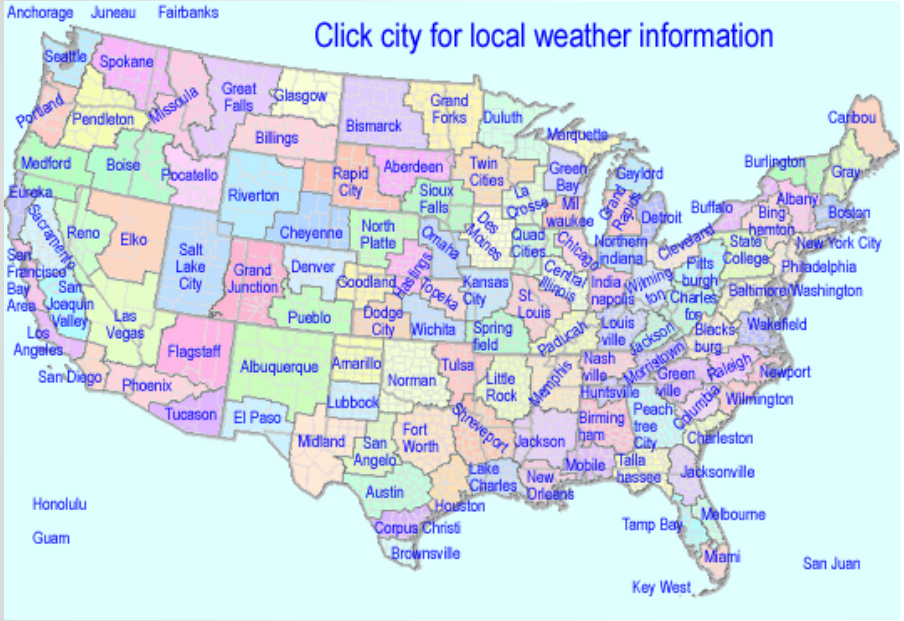
Kevin Low, P.E.
NOAA NWS Missouri Basin River Forecast Center
07 November 2019

OUTLINE

- National Weather Service hydrologic program
- 2019 flooding within the Missouri River basin
- What are the experts saying about the future w.r.t. flooding

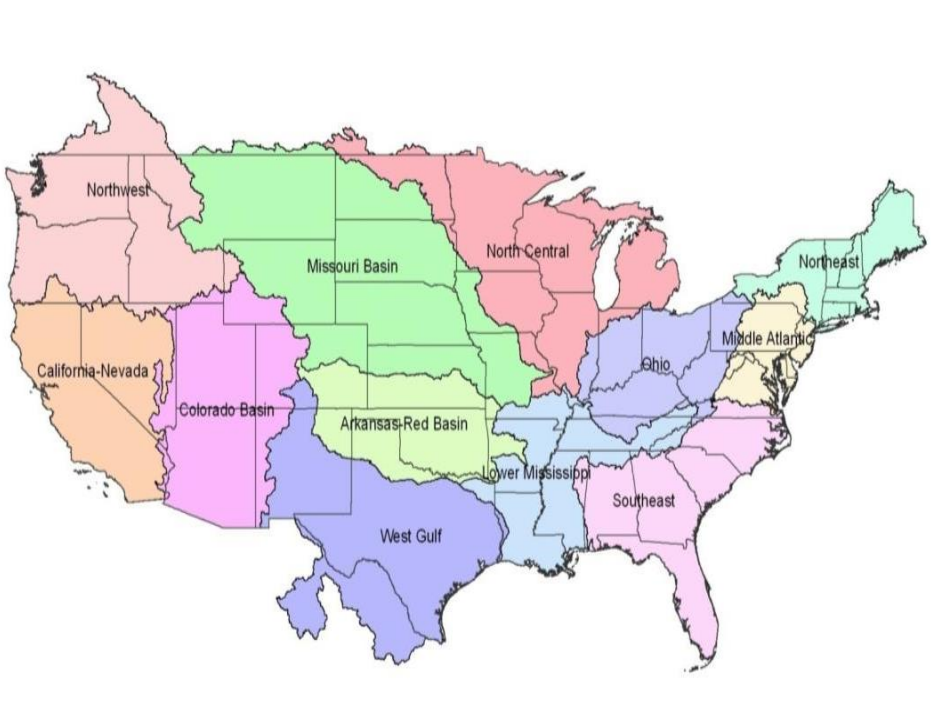
MISSOURI BASIN RIVER FORECAST CENTER
National Weather Service hydrologic program

122 Weather Forecast Offices



Based upon radar coverage

13 River Forecast Centers



Based upon watershed boundaries

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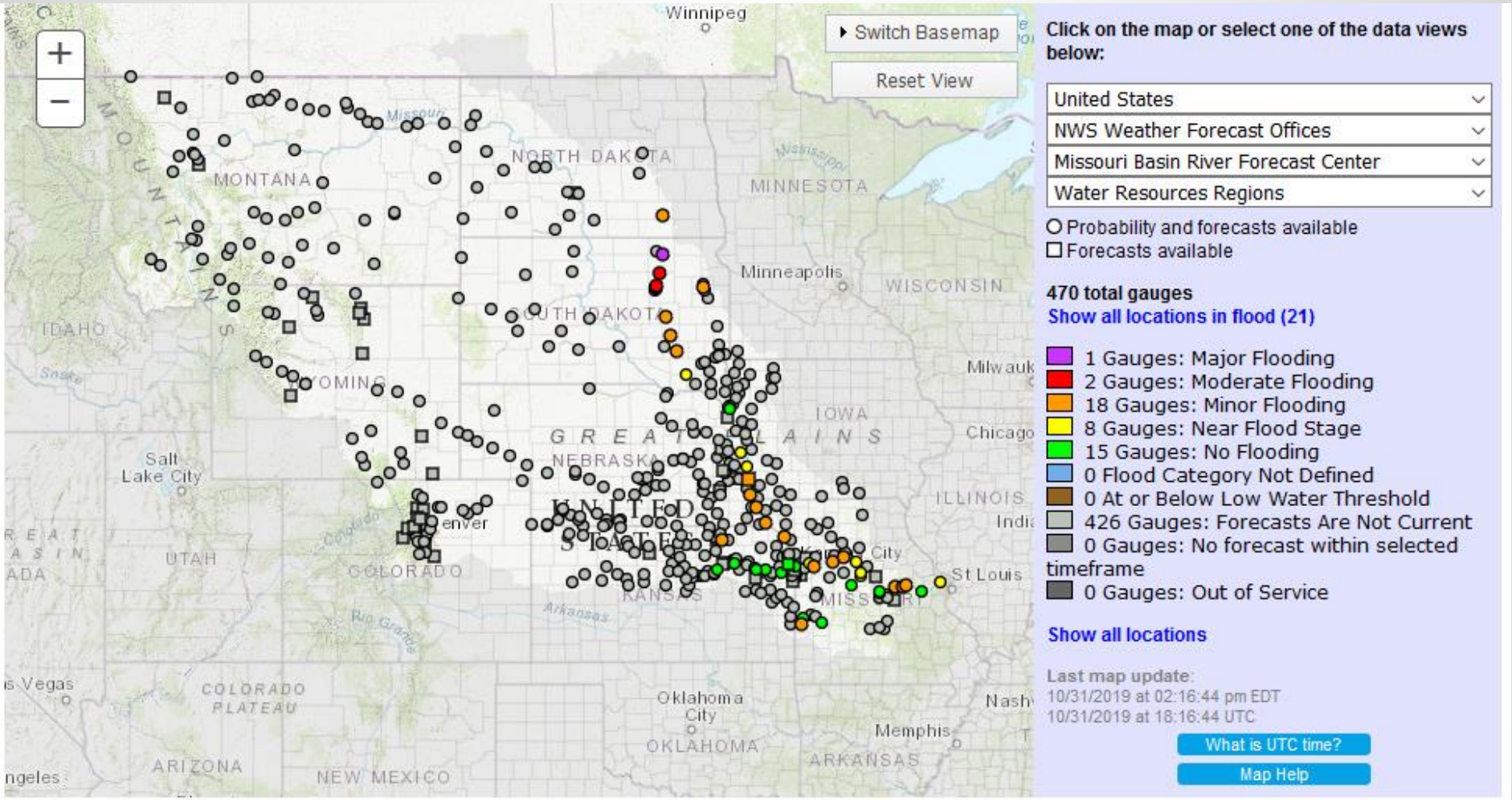

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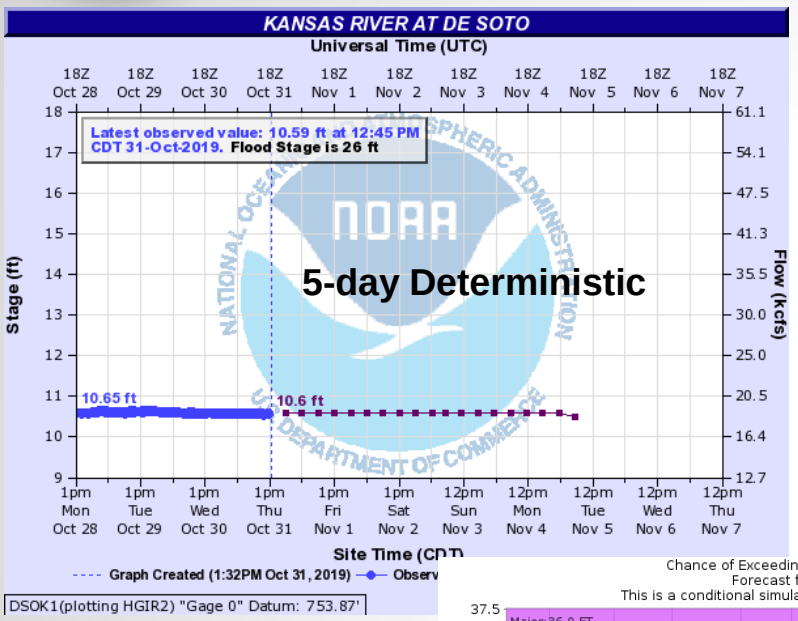
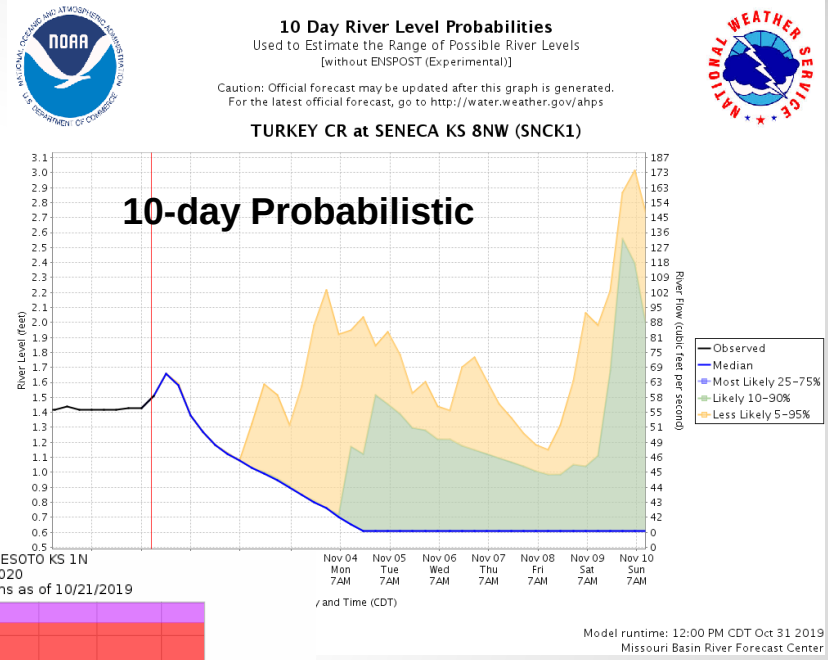
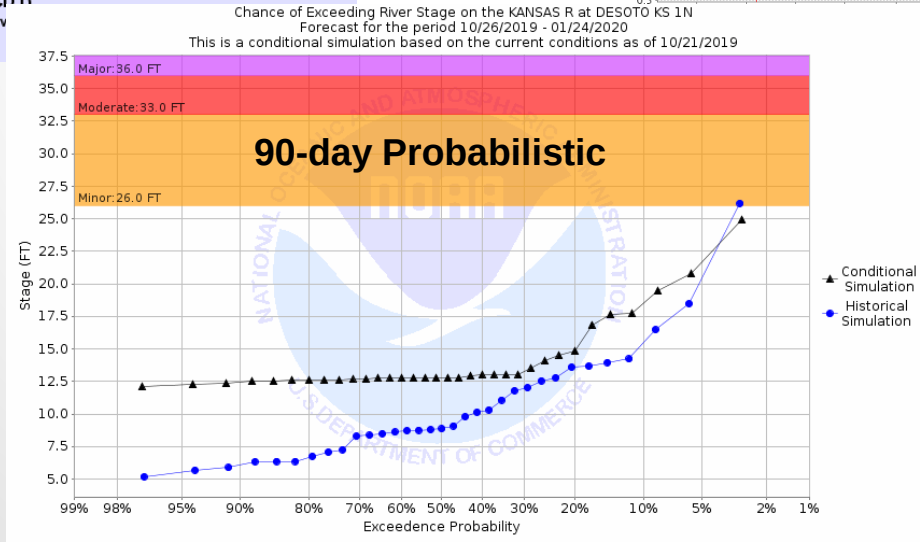
National Weather Service Hydrologic Program







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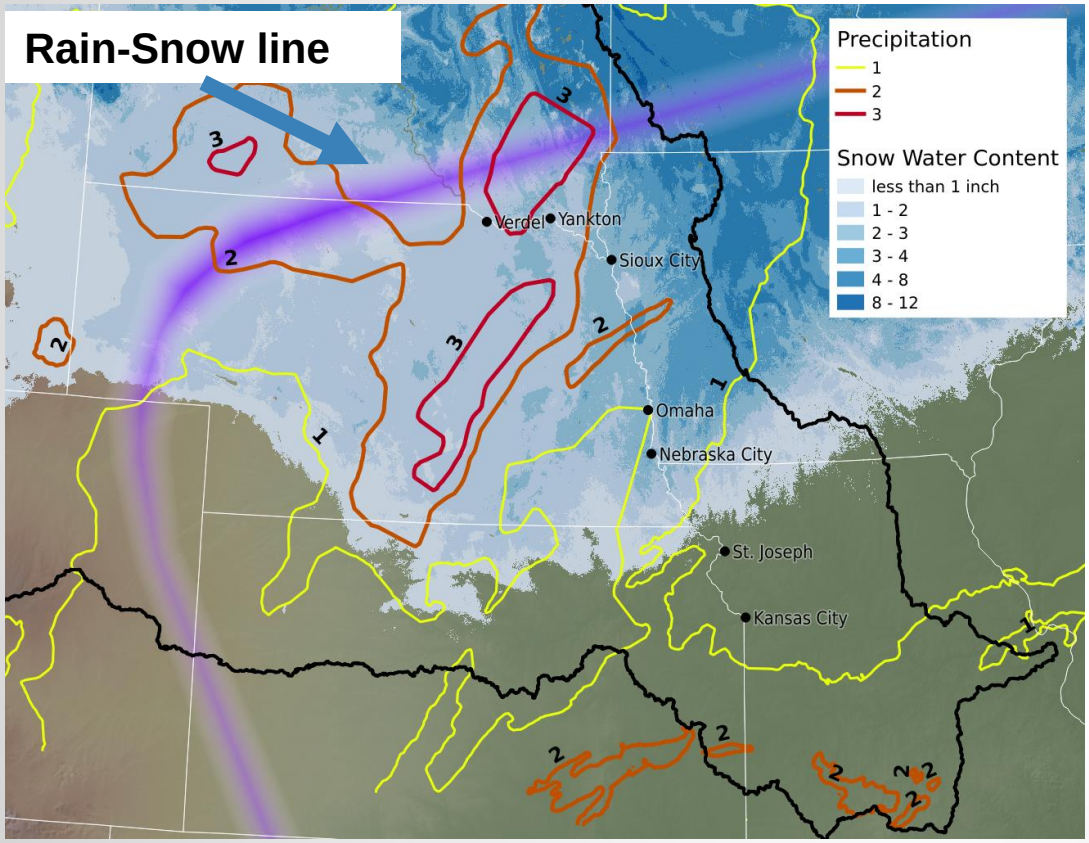
2019 Flooding Within the Missouri Basin



Courtesy Yankton Daily Press & Dakotan

Courtesy Nebraska Governor's Office

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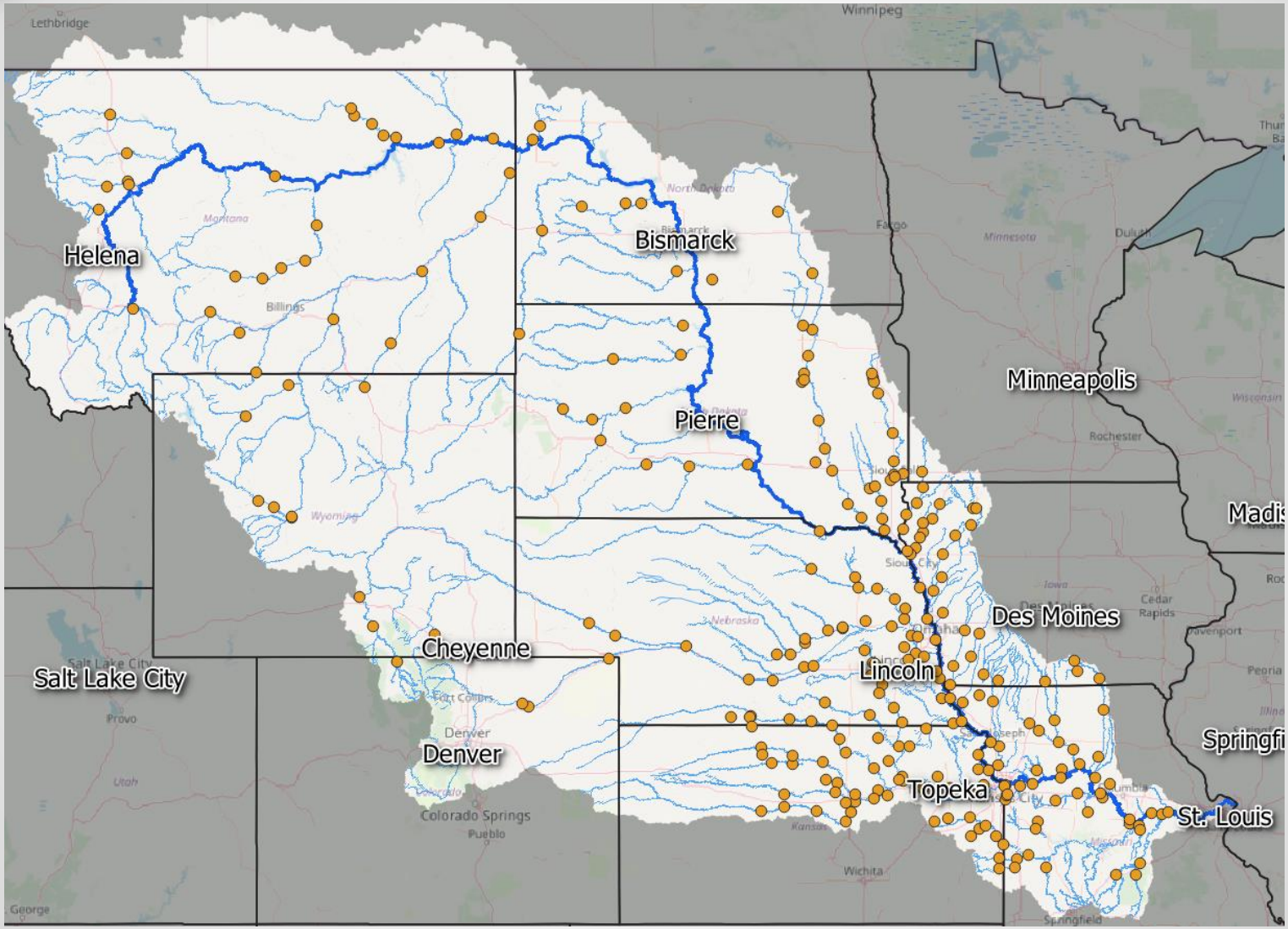

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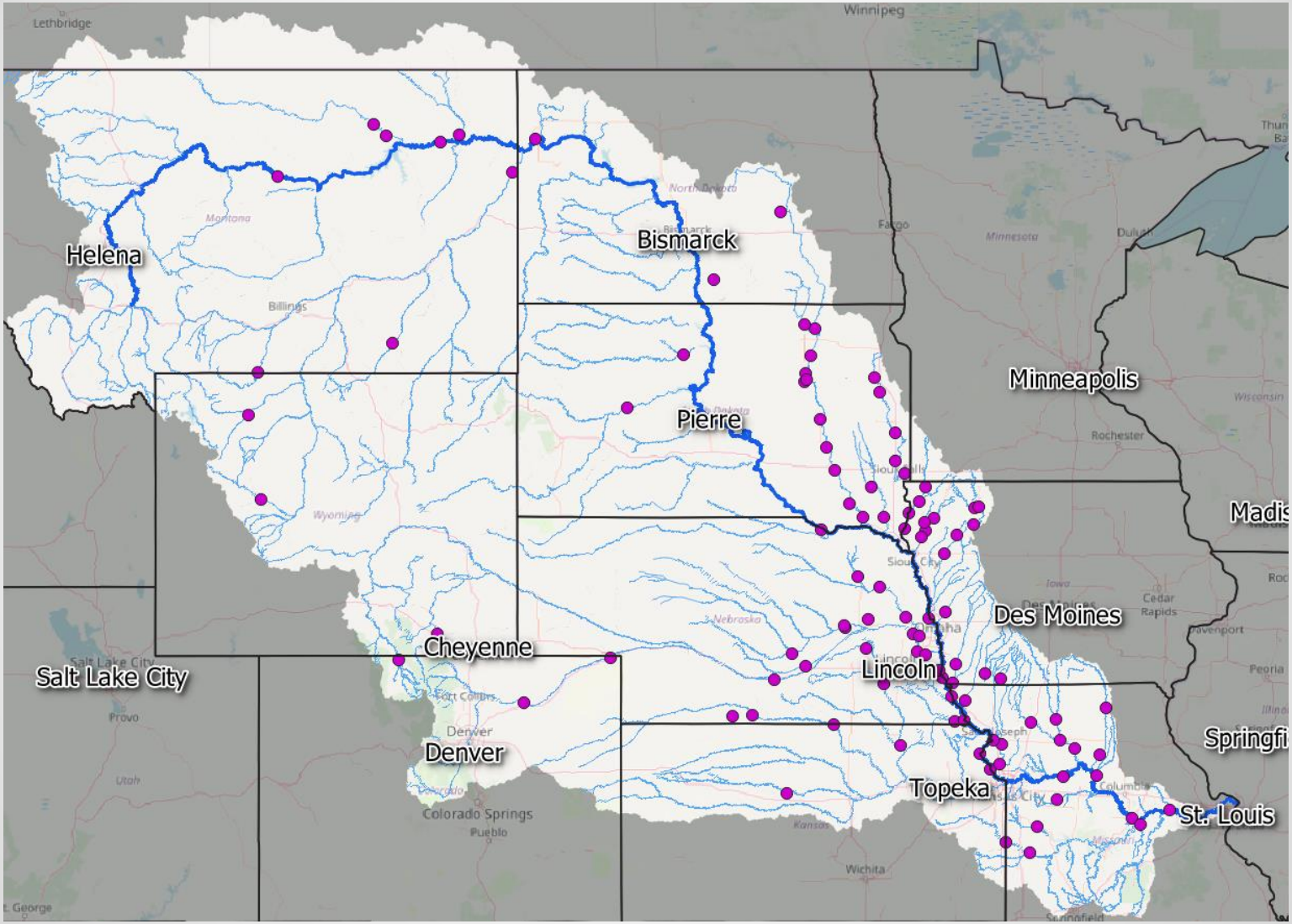

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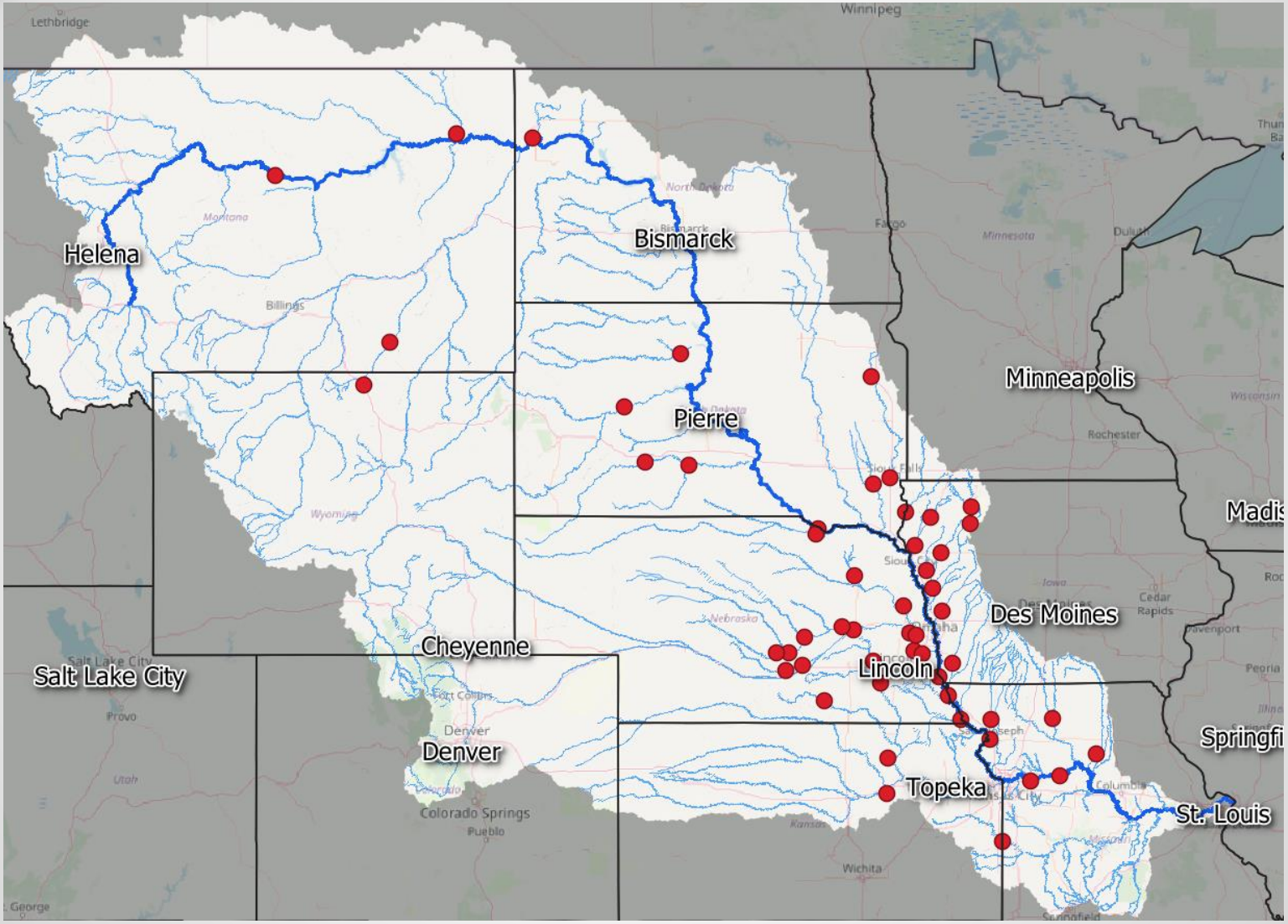

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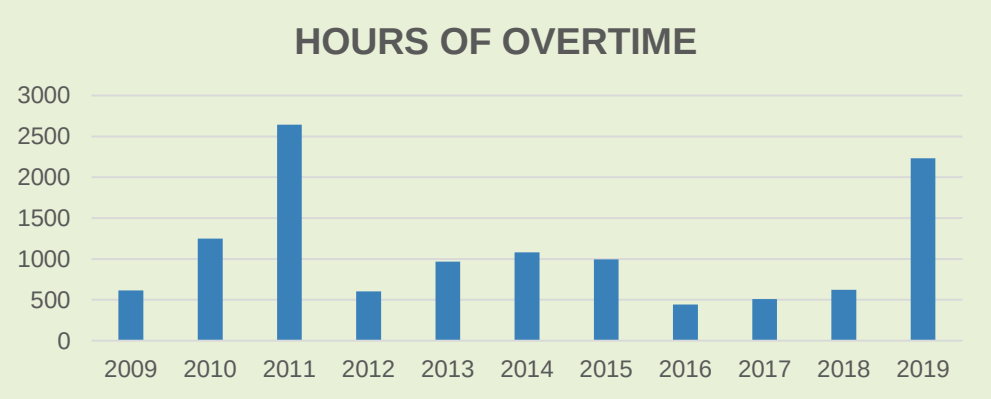
Stage Records Set by Calendar Year



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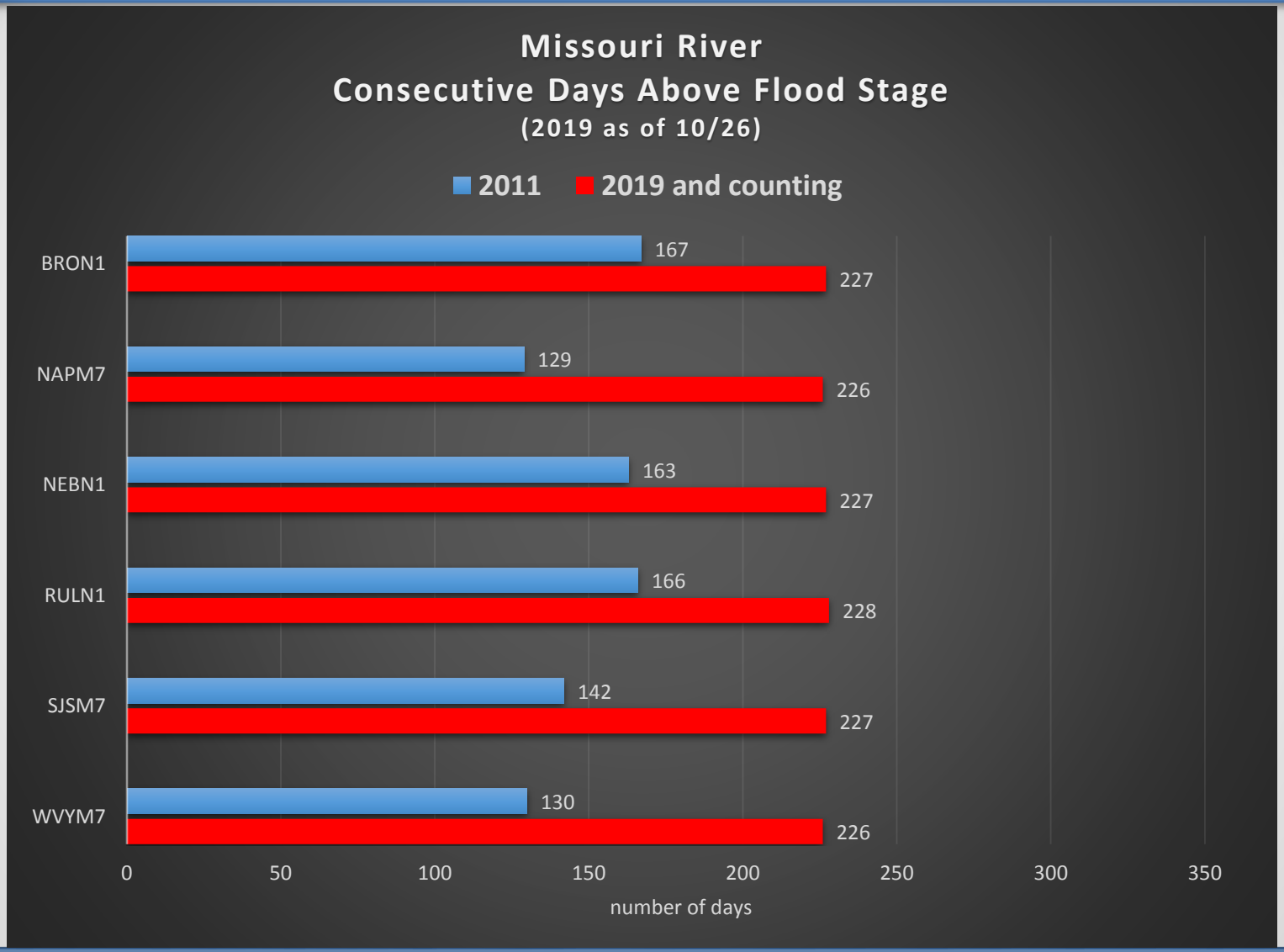

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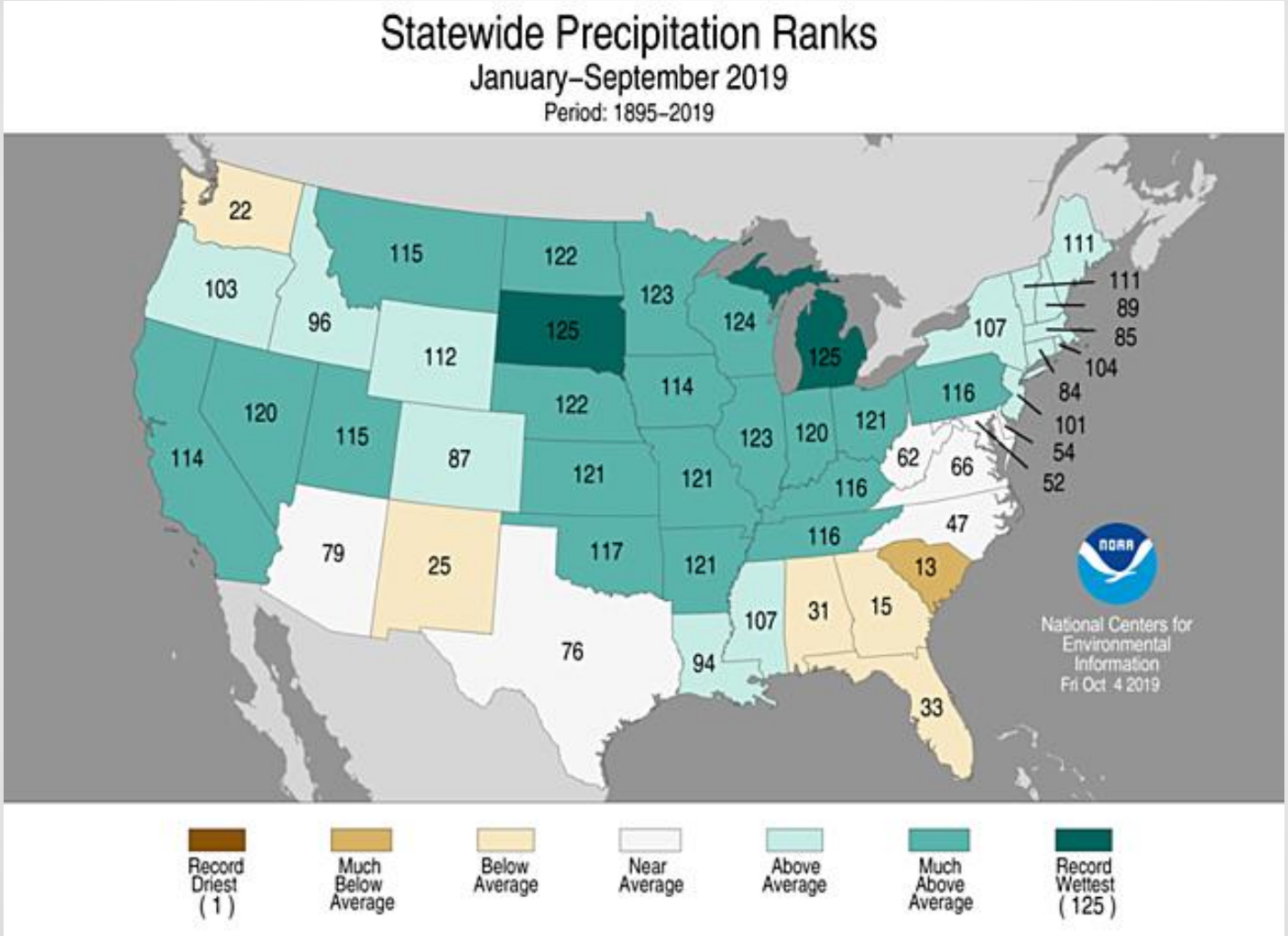

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MISSOURI BASIN RIVER FORECAST CENTER
2019 Flooding Within the Missouri Basin

PERIOD	VALUE	1901-2000 MEAN	ANOMALY	RANK (1895-2019)	WETTEST/DRIEST SINCE	RECORD
Jan–Sep 2019 9-Month	23.19" (589.03mm)	17.12" (434.85mm)	6.07" (154.18mm)	123rd Driest	Driest since: 2018	1934
				3rd Wettest	Wettest since: 1993	1915

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Apr 2018–Sep 2019 18-Month	43.29" (1,099.57mm)	34.65" (880.11mm)	8.64" (219.46mm)	124th Driest	Driest since: 2018	1937
				1st Wettest	Wettest to Date	2019

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PERIOD	VALUE	1901-2000 MEAN	ANOMALY	RANK (1895-2019)	WETTEST/DRIEST SINCE	RECORD
Oct 2015–Sep 2019 48-Month	93.57" (2,376.68mm)	80.73" (2,050.54mm)	12.84" (326.14mm)	121st Driest	Driest since: 2018	1937
				1st Wettest	Wettest to Date	2019

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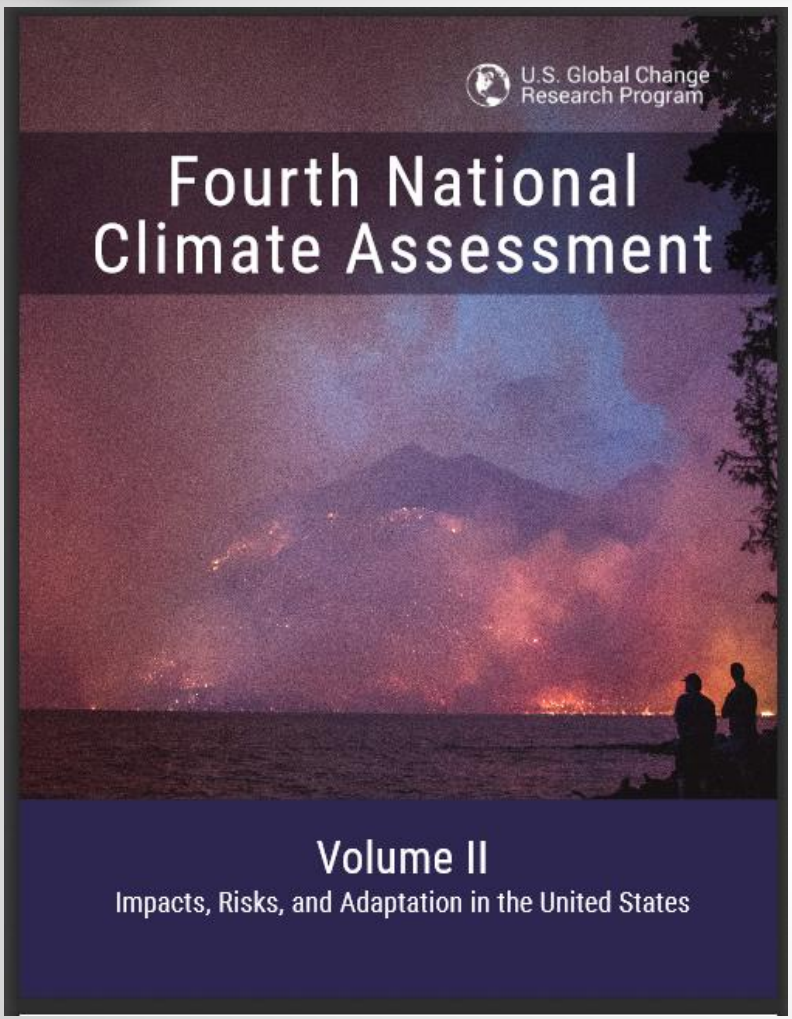
What does the future hold???



- Issued November 2018
- Updated every 4 years or so
- Authored by experts from Federal government, academia, and private sector.
- Assesses climate science and impacts

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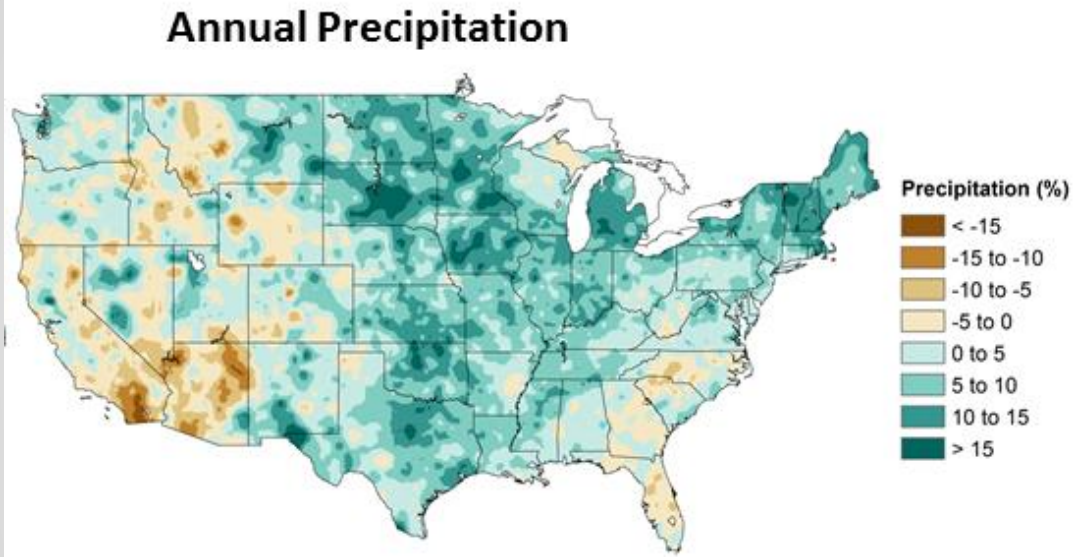
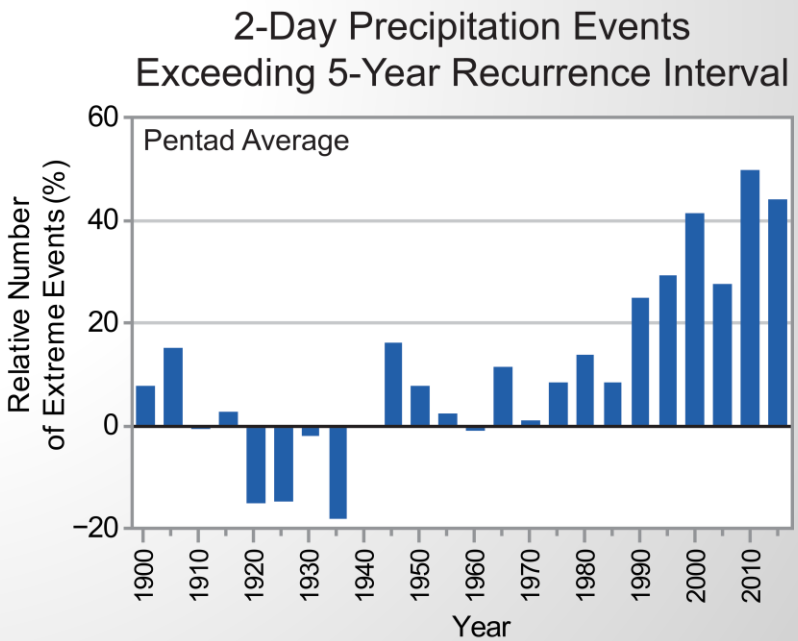
What does the future hold???

This depicts the percent change for present day (i.e. 1986-2015) as compared to first half of 20th century (1901-1960)





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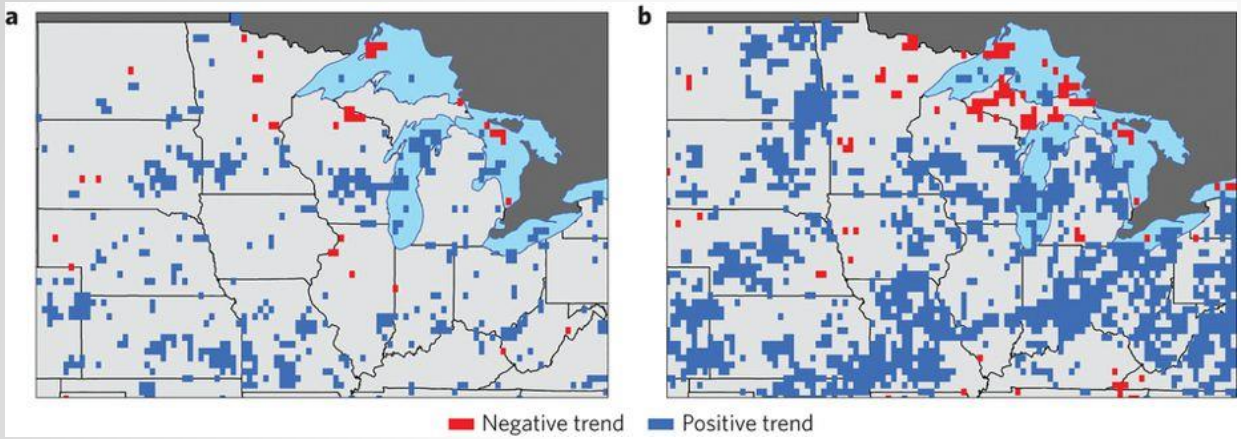
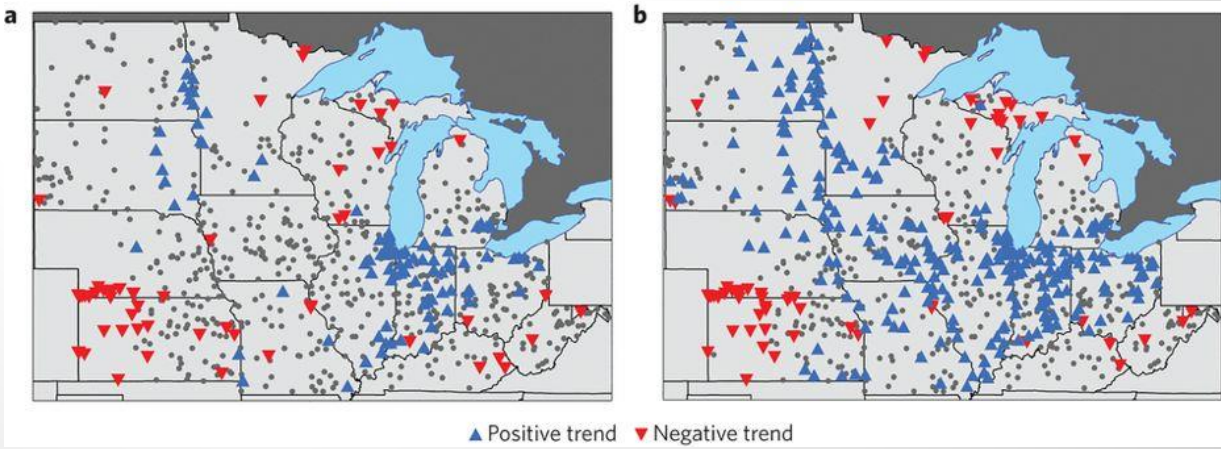
What does the future hold???

Trends in the magnitude and frequency of heavy rainfall 1962-2011



Trends in the magnitude and frequency of flood events 1962-2011



Mallakpour & Villarini, 2015; cited within NCA4

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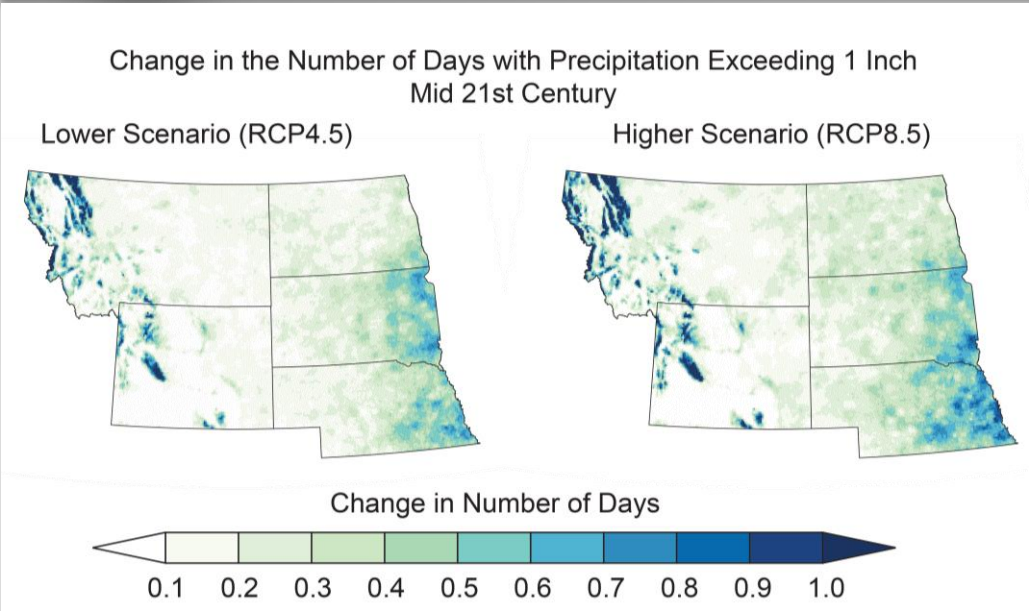

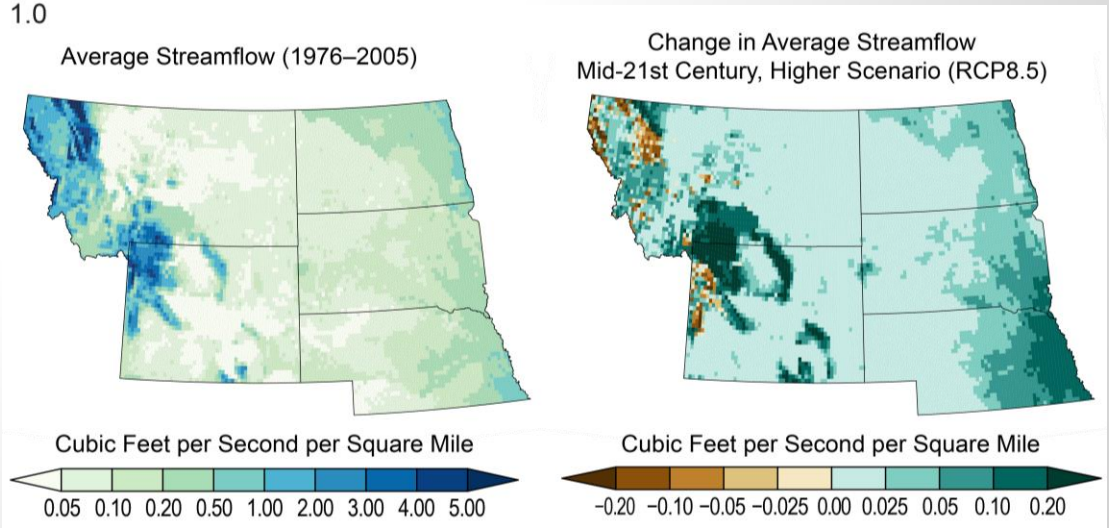

NCA4

THANKS!

Kevin Low, P.E.

Service Coordination Hyrologist

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https://www.weather.gov/mbrfc/