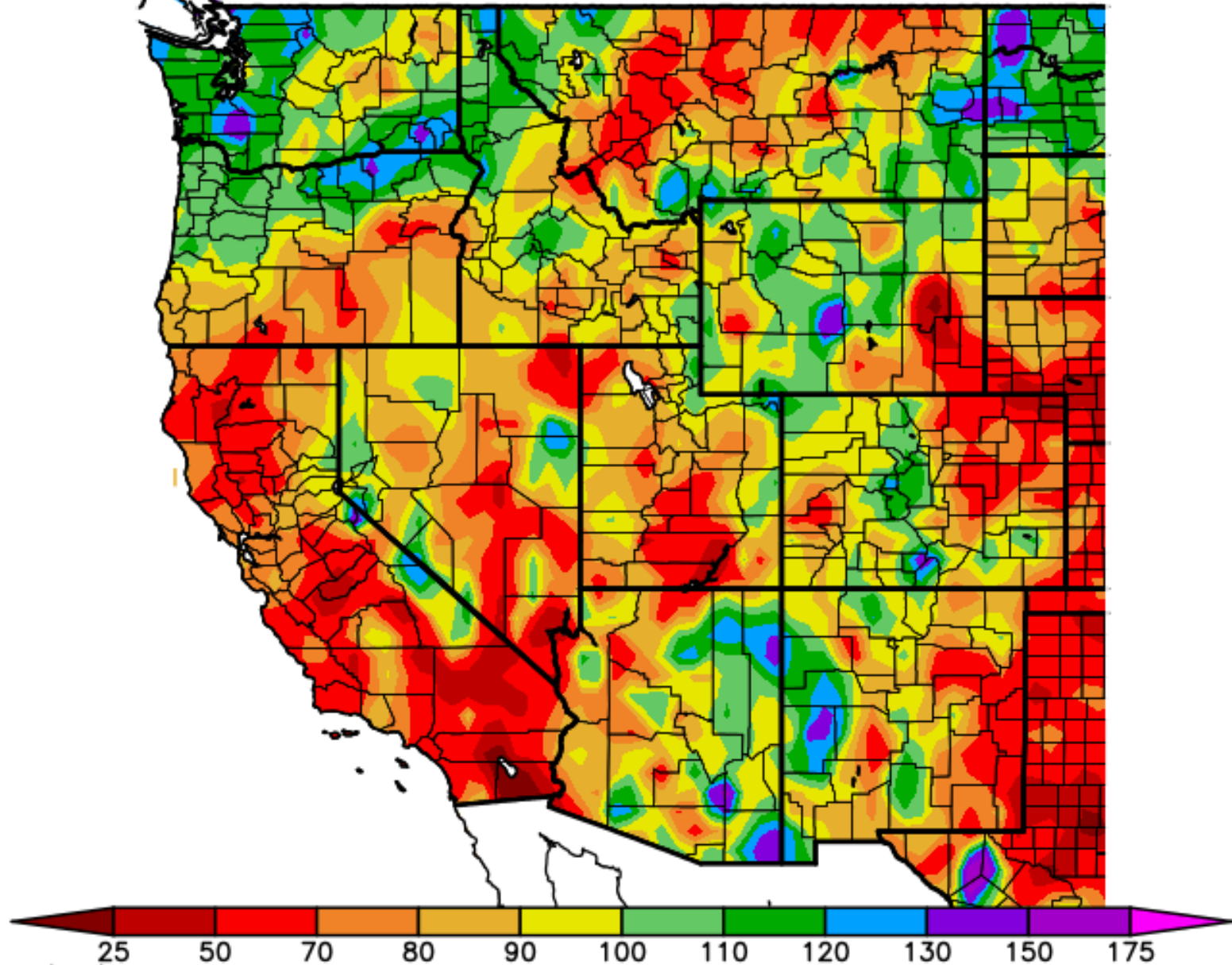




Drought, Statewide Perspective

Jeanine Jones, California Department of Water Resources

Percent of Average Precipitation (%)
10/1/2021 – 9/5/2022



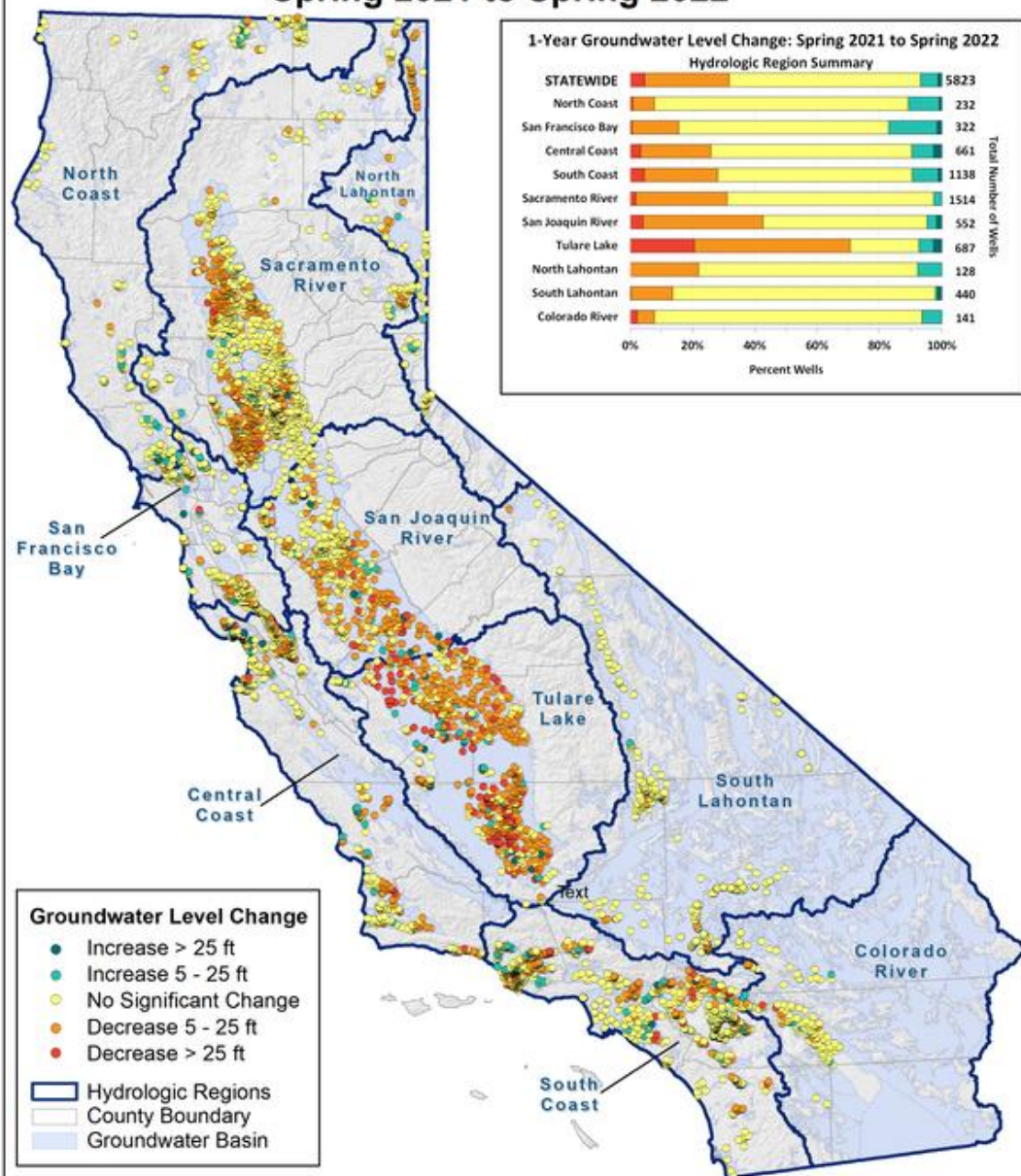
Generated 9/ 6/2022 at WRCC using provisional data.

NOAA Regional Climate Centers

Estimated End of August Statewide Reservoir Storage

Water Year 2022	15.5 MAF	68 percent of average
2021	13.8	60
2020	21.6	93
2019	29.1	125
2018	23.1	100
2017	28.2	122
2016	19.1	83
2015	12.8	55
1977	8.2	36

One-Year Groundwater Level Change Spring 2021 to Spring 2022



Groundwater level change map for one-year comparison between spring 2021 and 2022. Groundwater level change determined from water level measurements in wells. Map and chart based on available data from the DWR Enterprise Water Management Database as of 08/31/2022. Map Updated: 09/01/2022.





Water Use Background

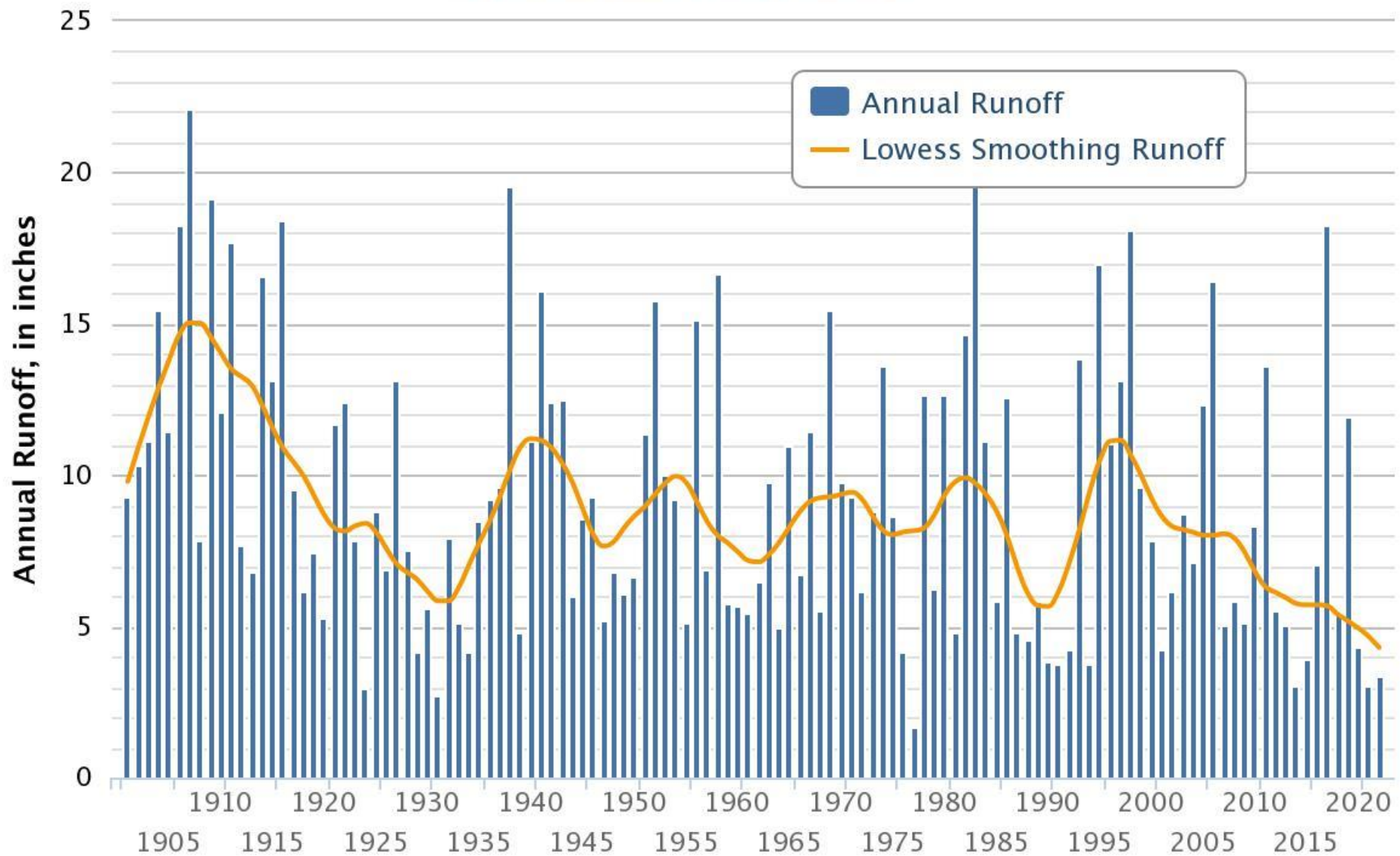
(Calif. Water Plan)

- Statewide, in an average year groundwater supplies about 40% of urban and agricultural water uses, about 60% in drought years
- Water use by sector varies greatly by water year type and hydrologic region, on average statewide:
 - Environmental: 47%
 - Agricultural: 42%
 - Urban: 11%

California's 20th & 21st Century Statewide Droughts

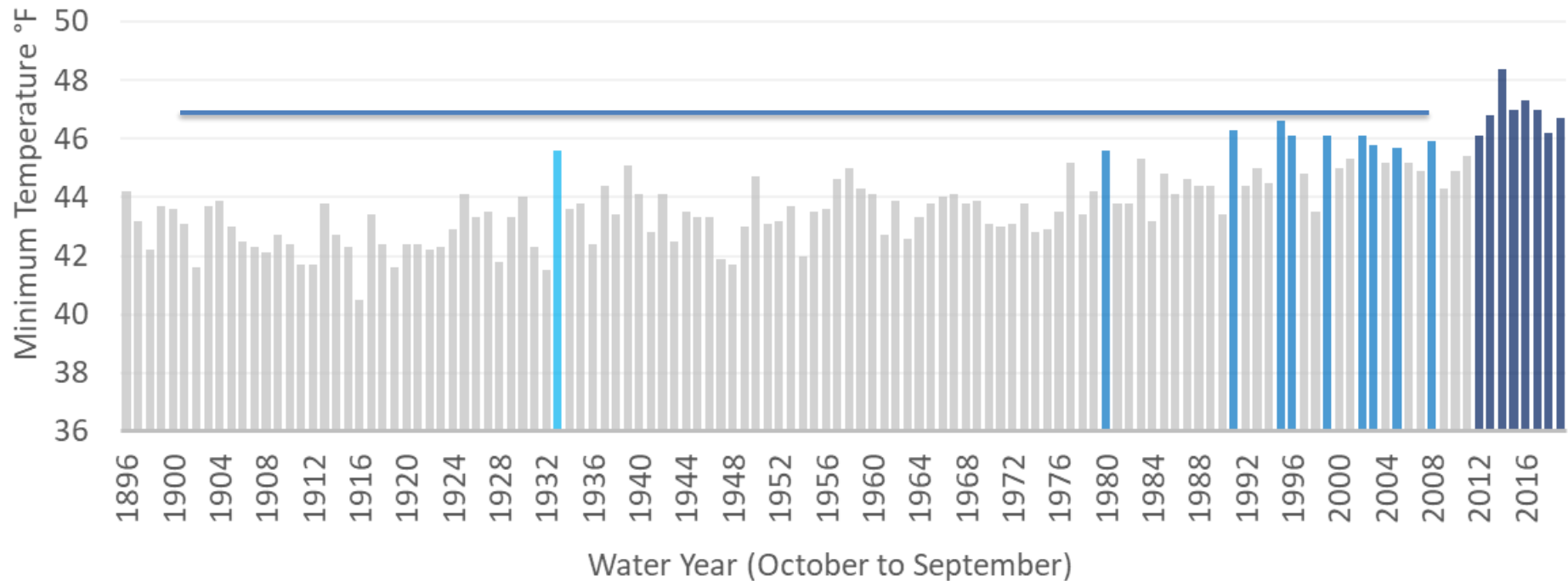
- 1918-20
- 1922-24
- 1929-34
- 1947-50
- 1959-61
- 1976-77
- 1987-92
- 2007-09
- 2012-2016
- 2020- ??

Annual California Runoff

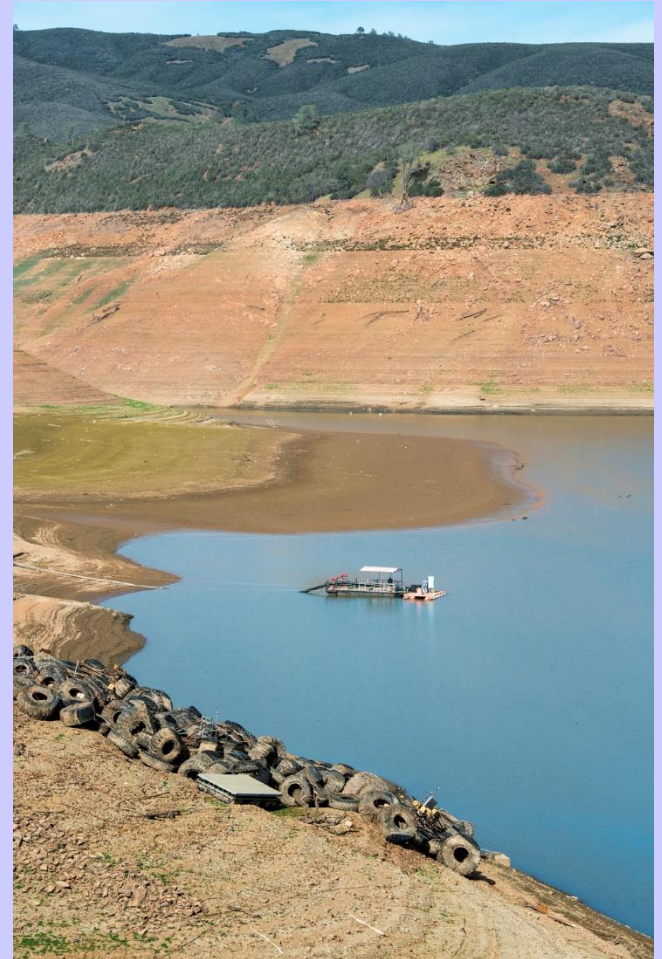


Things Are Changing in 21st Century

Statewide Water Year Minimum Temperature



21st Century & 20th Century Droughts Not the Same



2012-16

- Included then-warmest years on record, record low statewide snowpack
- State response actions not seen since 1976-77
- First-ever zero CVP ag contractor allocations
- About 500,000 acres fallowed
- First-ever state emergency response for areas of dry private residential wells
- First-ever use of InSAR to monitor statewide land subsidence

2020 - ??

- Zero allocation to most CVP ag contractors in WY 2021 and 2022, CVP M&I health & safety allocation in WY 2022, 5% SWP allocation
- 2022 large-scale urban water use restrictions in Southern California due to infrastructure limitations
- First Lower Colorado River Basin shortage pursuant to the Interim Guidelines
- Record low Lake Oroville elevation in 2021, Hyatt PP unable to generate
- 70% statewide snowpack in WY 2021, yet runoff comparable to 2014-2015
- Groundwater impacts similar to San Joaquin Valley in 2012-16 now seen in parts of Sacramento Valley



Catastrophic Wildfire Risk

- All but 2 of the state's 20 largest & 20 most damaging fires have occurred from 2000 onward
- Destruction of urban water distribution systems: 2017 Tubbs Fire, 2018 Camp Fire, 2021 Dixie Fire
- Risks/damage to large hydro plants





Report to the Legislature on the 2012-2016 Drought

As Required by Chapter 340 of 2016

March 2021

Lessons Learned From Past Droughts

- Impacts are highly site-specific, and vary depending on the ability of water users to invest in reliability
- Small water systems on fractured rock groundwater sources are most at risk of public health and safety impacts
- Larger urban water agencies can manage multiple years of drought with minimal impacts to their customers

State Response Actions for Drought Emergency

- Operations of State Water Project under emergency authorities, installation of temporary emergency salinity barrier in Delta
- SWRCB water rights curtailments
- Financial assistance programs enacted in state budget last fiscal year and current fiscal year, for drought & longer-term water resilience, includes:
 - DWR grants for small community urgent drought relief and for larger urban water agencies, free leak detection for small systems
 - SWRCB revolving fund program funding for longer-term water/wastewater resilience
 - Emergency drinking water assistance
 - New this fiscal year, additional DWR grants for small agency/large agency water conservation projects and turf rebates
 - Sustainable Groundwater Management Act grants to local groundwater agencies
 - See drought.ca.gov for details



 **SAVE OUR WATER**

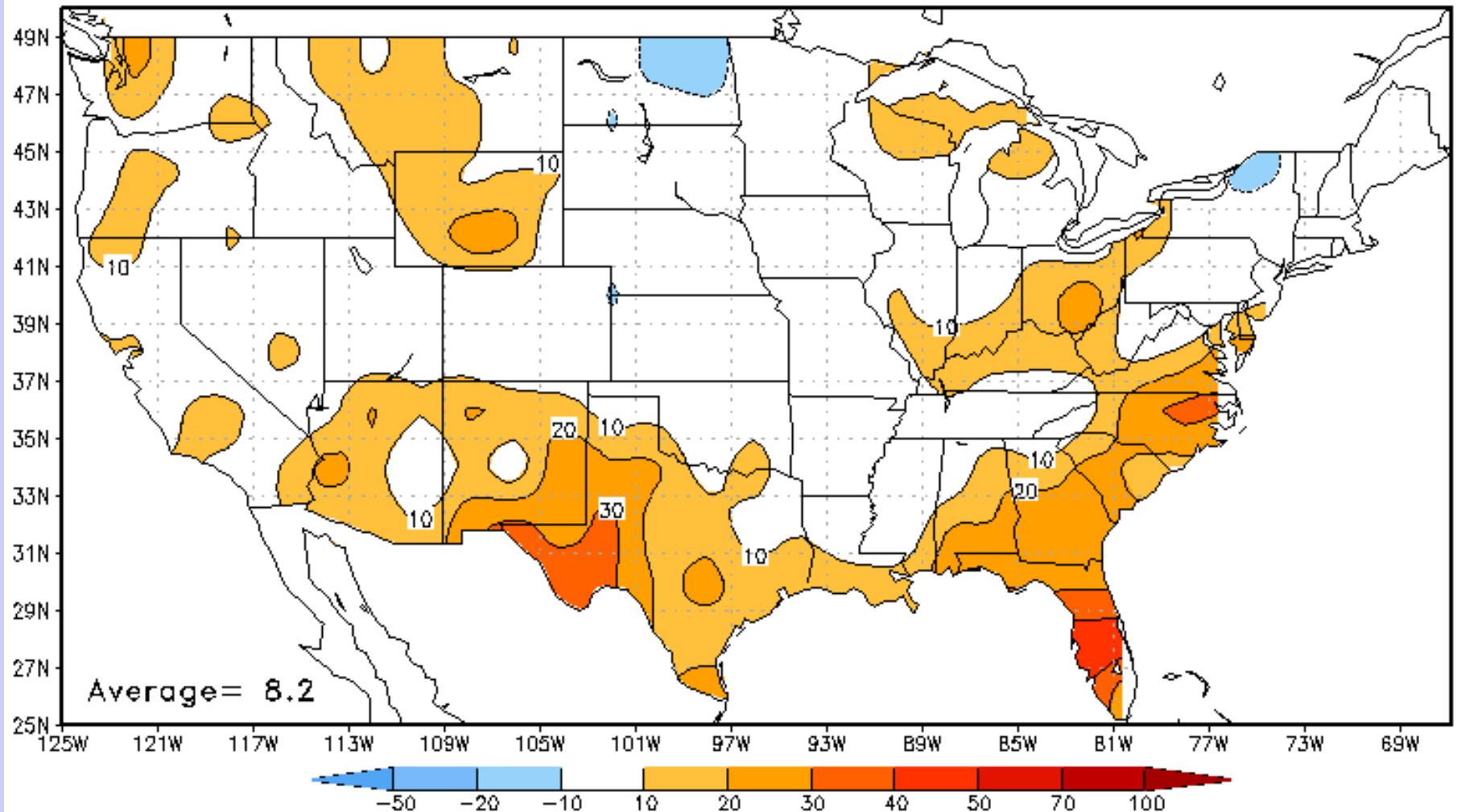


Water Year 2023 Prospects

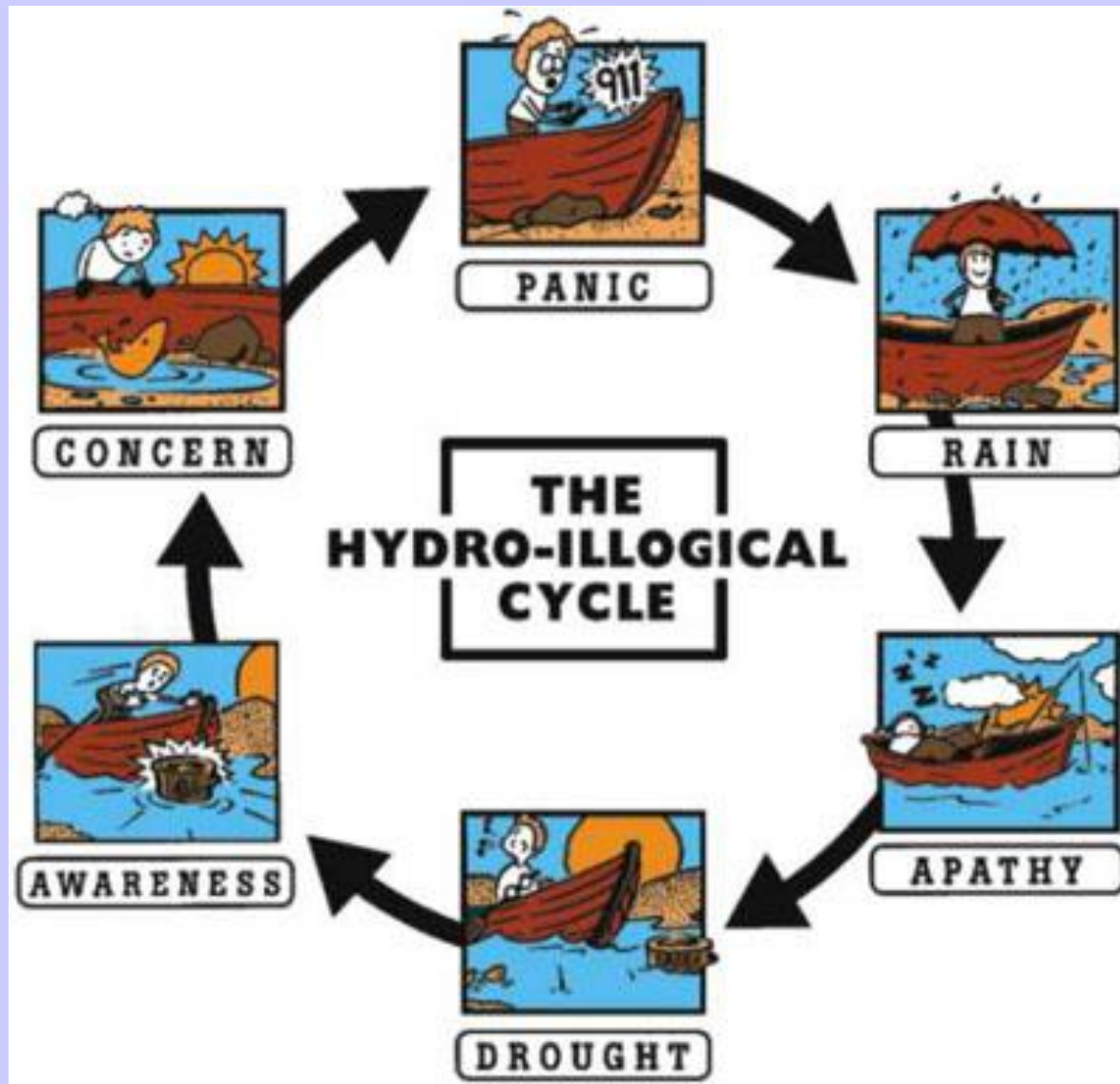
- No skill in NOAA seasonal precipitation outlooks
- Third year of cool phase of ENSO, historically cool phase is usually dry in Southern California
- Hope for the best, but prepare for a 4th dry year

Historical Skill of NOAA Seasonal Outlooks – Not Usable for Water Management

Seasonal (Lead 0.5 Months) Precipitation Heidke Skill Score
DJF Manual Forecasts From 1995 to 2022



Planning for Long-Term Resilience





AUG 2022 **CALIFORNIA'S WATER SUPPLY STRATEGY**
Adapting to a Hotter, Drier Future



