Measuring Up: Comparing Current Drought to the Past

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February 26, 2009

DWR Photo
Lake Oroville Jan 2009

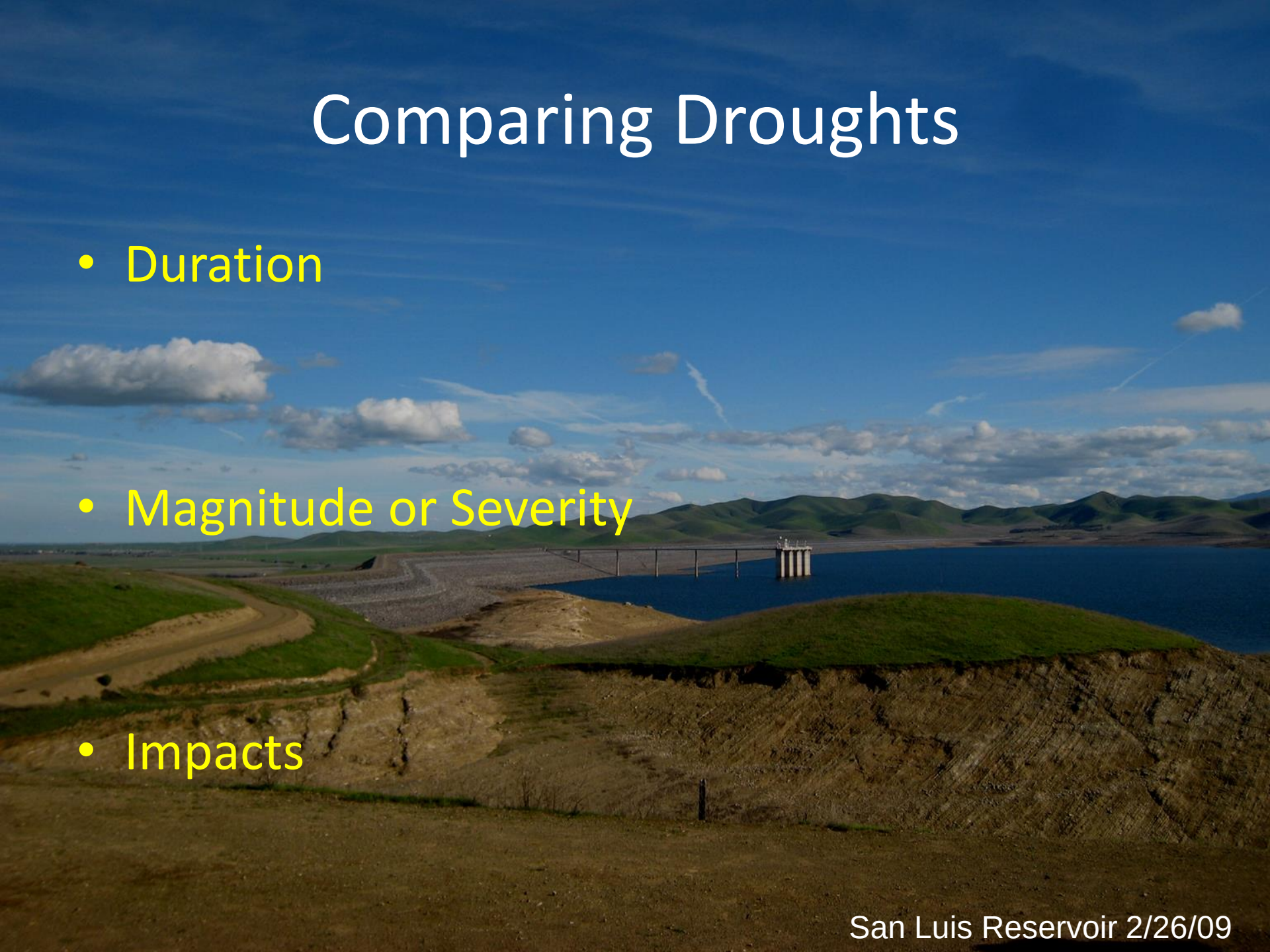
Presentation Overview

- Comparing Droughts
- Current Drought Statistics
- 20th Century Droughts
- The Paleorecord and Megadroughts
- Comparing Drought Ending Conditions

DWR Photo
San Luis Reservoir

Comparing Droughts

- Duration
- Magnitude or Severity
- Impacts



San Luis Reservoir 2/26/09

Current Drought Statistics

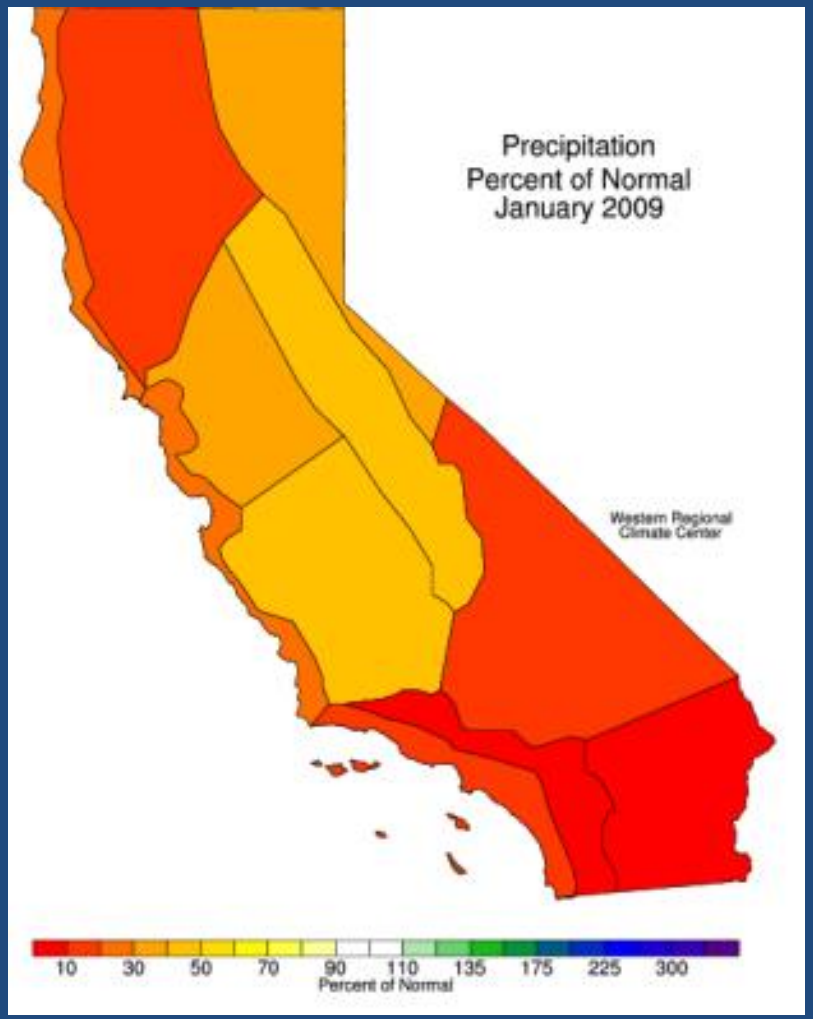
- WY 2009 on pace to be 3rd dry year in a row
- WY 2008 included driest spring on record for several Northern CA locations
- PY 2007 driest year on record for several Southern CA locations

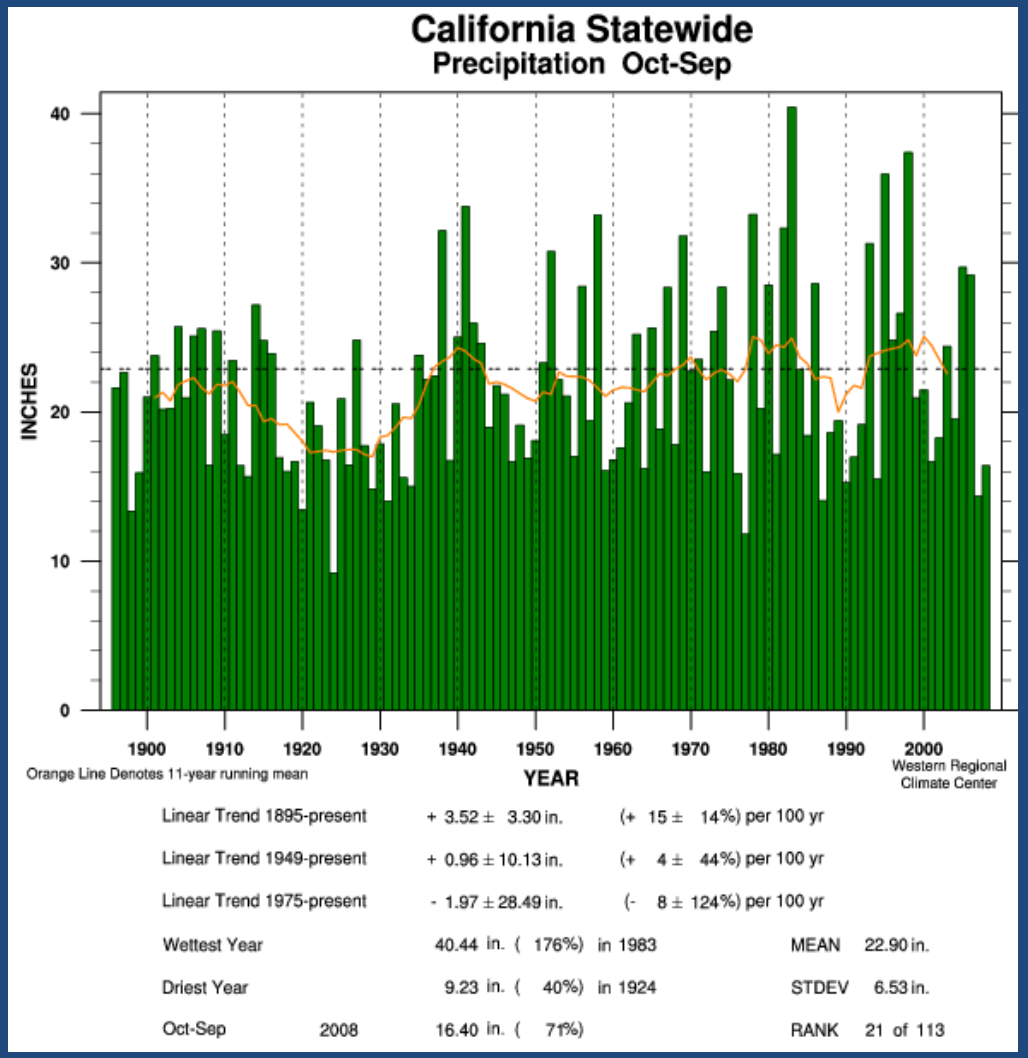
San Luis Reservoir March 2008

WY – Water Year (Oct 1 – Sep 30)

PY – Precipitation Year (July 1 – June 30)

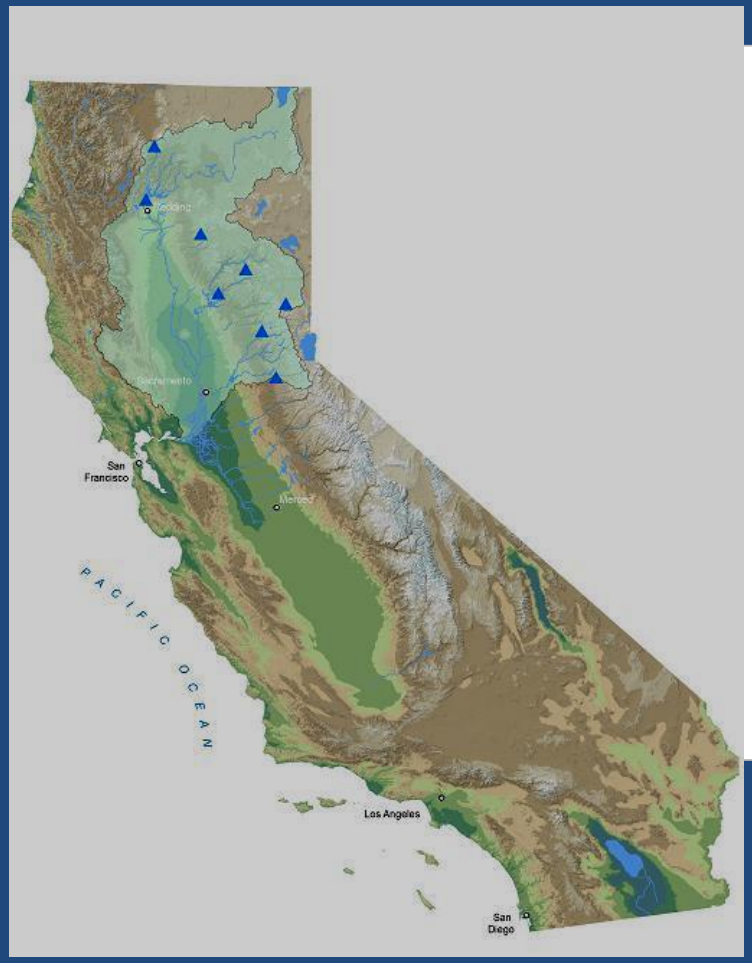
California Climate Tracker

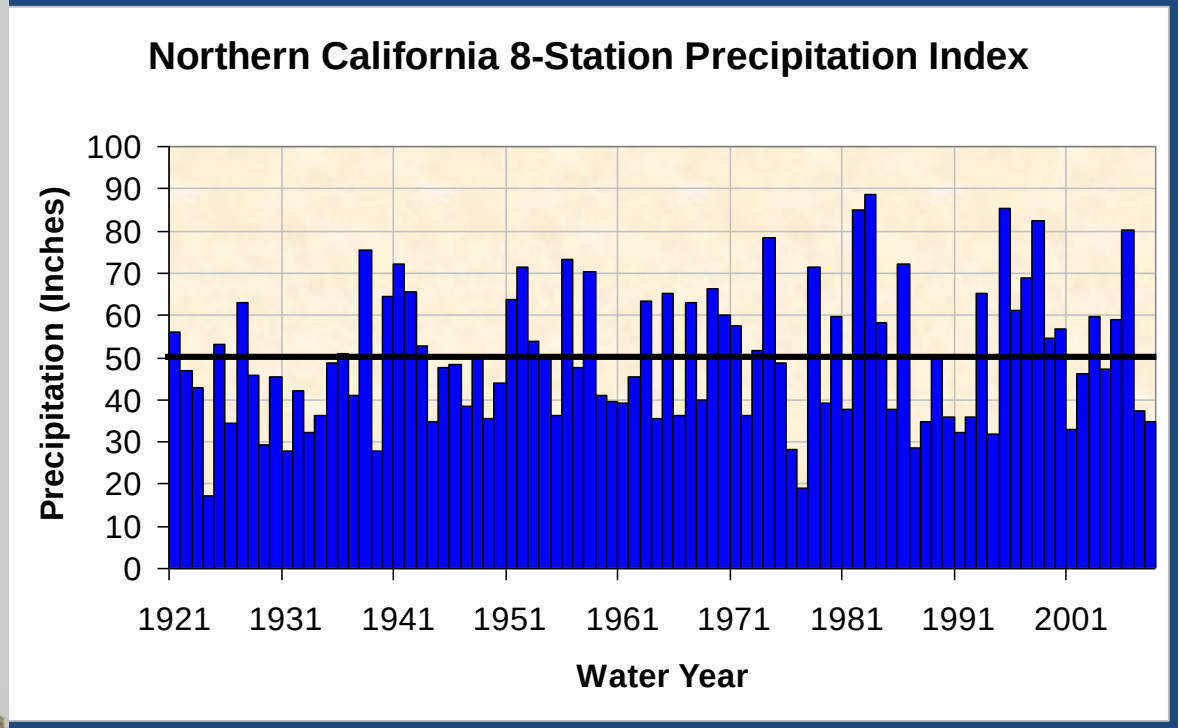




http://www.wrcc.dri.edu/monitor/cal-mon/index.html

The Northern CA 8-Station Index





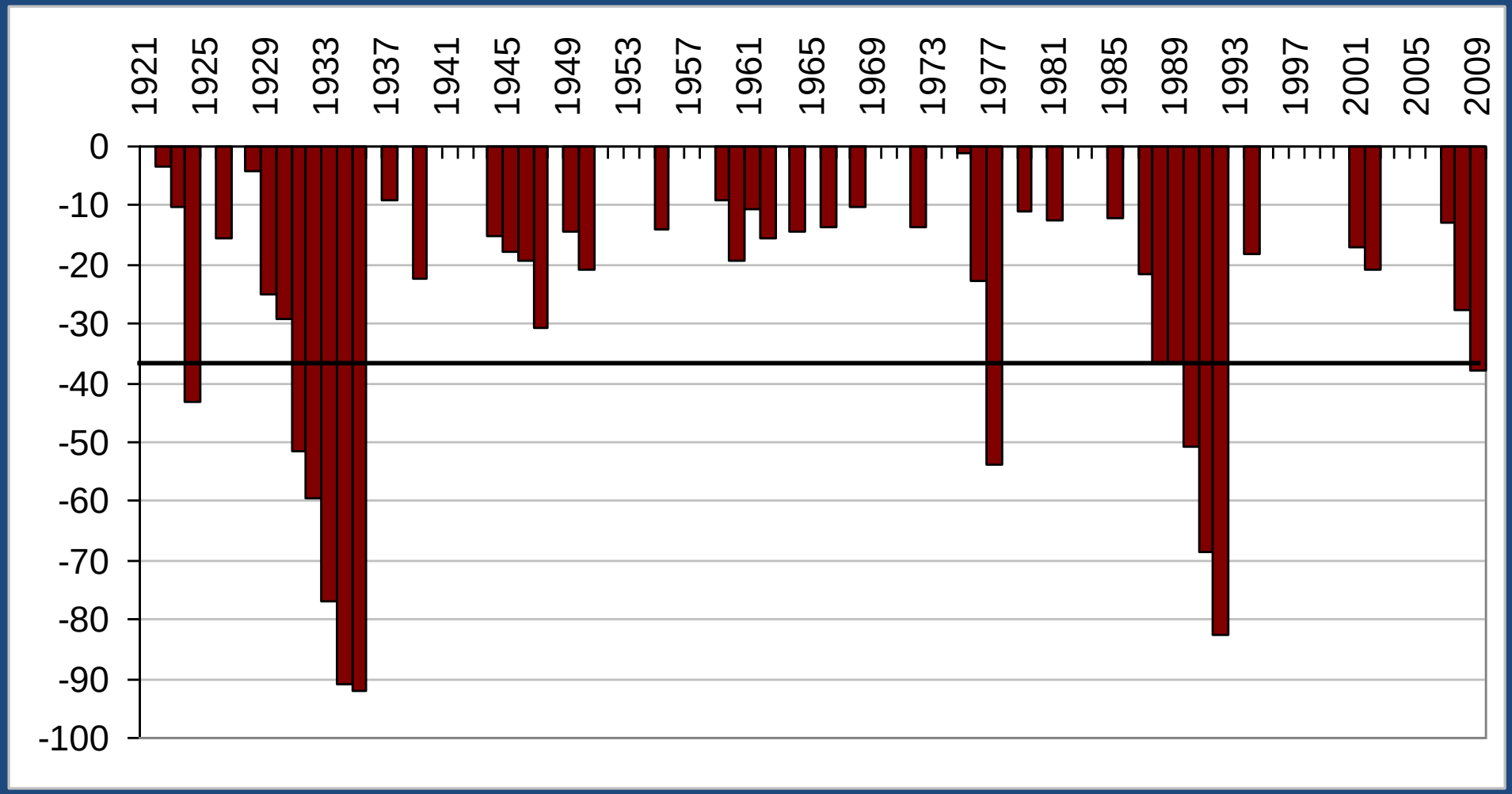
Eight Stations: Mt. Shasta City, Shasta Dam, Mineral, Quincy, Brush Creek, Sierraville, Blue Canyon, and Pacific House

20th Century Droughts

- 1924 Driest Single Year in 8-Station Record
- 1976-1977 Driest 2-year period
- 1975-1977 Driest 3-Year Period
- 2 Six-Year Droughts:
  1929-1934 and 1987-1992

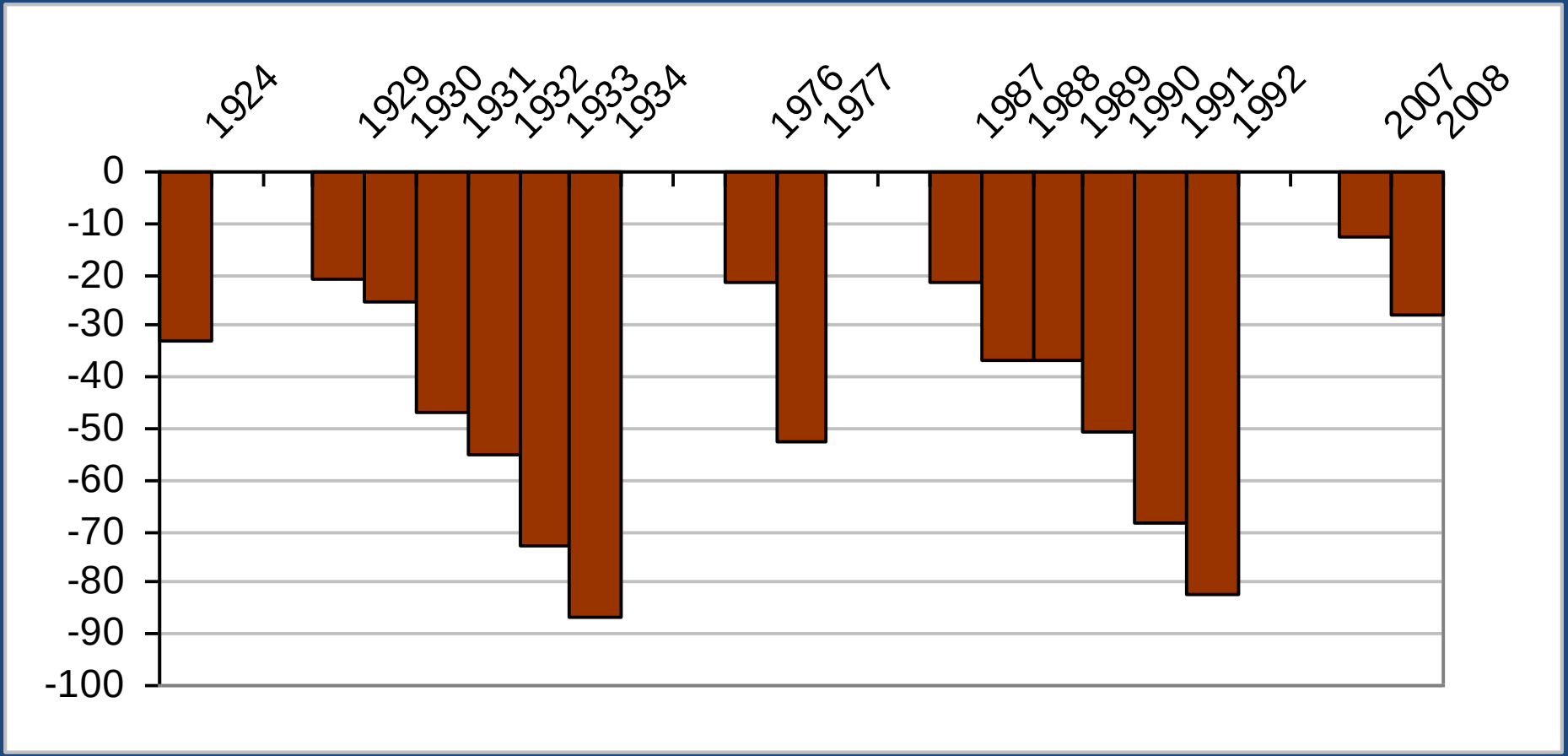
San Luis Reservoir 2/26/09

8-Station Cumulative Precipitation Deficit



Note: As of 2/26/09 the 2009 deficit is down to 4.8 inches

Comparing 20th Century Droughts



What about Paleodroughts?

Photo by
Kent Porter

100+yr. Droughts in California?

"Here I present a study of relict tree stumps rooted in present-day lakes, marshes and streams, which suggests that California's Sierra Nevada experienced extremely severe drought conditions for more than 2 centuries before AD~1112 and for more than 140 years before AD~1350."

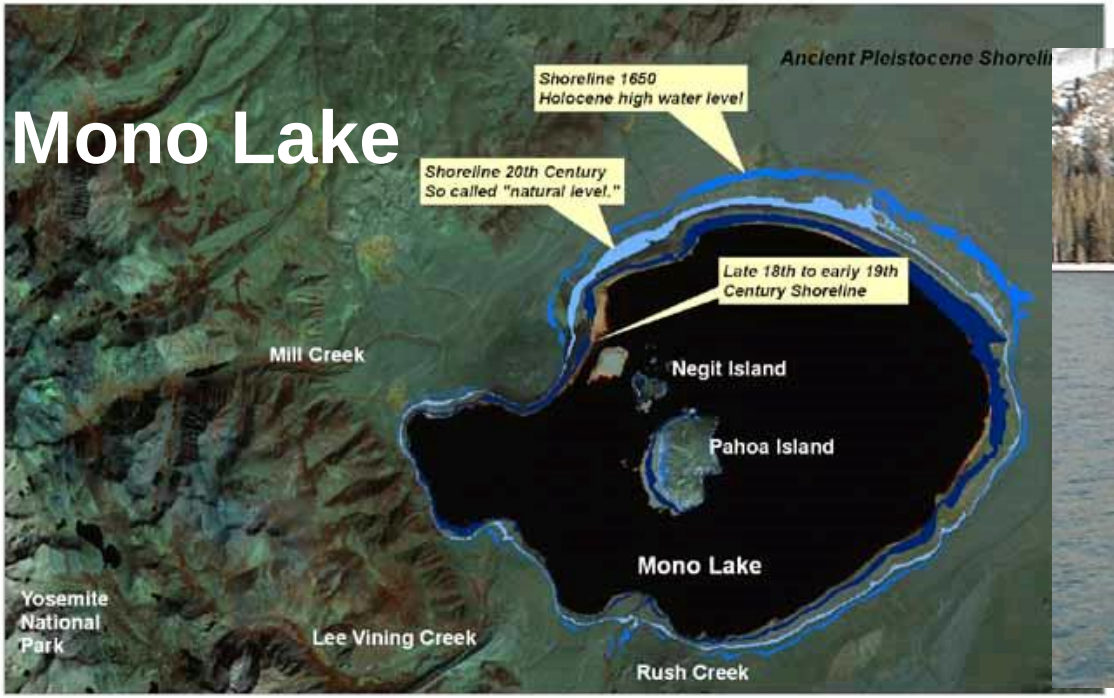
"Future natural or anthropogenically induced warming may cause a recurrence of the extreme drought conditions"

"California's mediaeval precipitation regime, if it recurred with today's burgeoning human population, would be highly disruptive environmentally and economically."

(ref. Scott Stine, *Nature*, June 1994)

Slide Acknowledgement: Jay Lund

Paleodrought Hydrology



Photos by Scott Stine
http://www.yosemite.org/naturenotes/

West Walker River

Slide Acknowledgement: Jay Lund

Impacts

- Agricultural
- Environmental/Natural Resources
- Municipal and Industrial
- Recreation

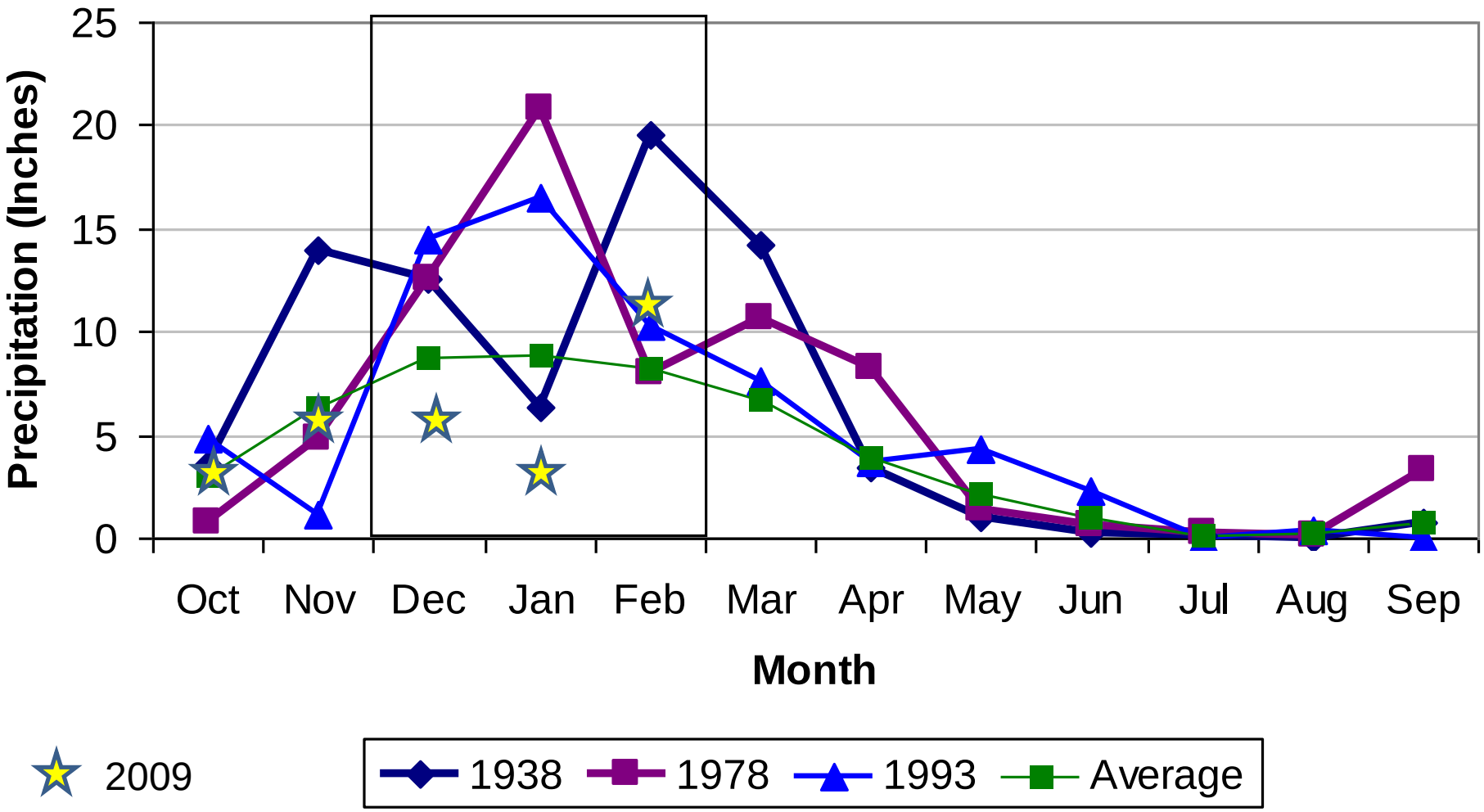
Lake Sonoma
Photo by Kent Porter

Ending a Drought

Year	8-SI Total (inches)	Current Rank	Rank at Time
1938	75.55	7	1
1978	71.56	11	5
1993	65.32	18	13

Average 8-Station Index (8-SI) total is 50 inches

Ending a 20th Century Drought –



Summary

- Current drought has some record-setting elements
- Cumulative deficit not as bad as the big 20th century droughts
- Impacts of current drought rank with big 20th century droughts

Questions?

Email: manderso@water.ca.gov

http://www.water.ca.gov/drought/

Lake Mendocino

Photo by: Kent Porter

Initial Allocations 2009

Mid-Pacific Region
Initial Water Year 2009 Supply Forecast
February 20, 2009

Probability of Exceedence Forecasts	Percent of Historical Average Sacramento Valley Index & Year Type	North of Delta Allocation				South of Delta Allocation			
		Ag	M&I	R	WR	Ag	M&I	R	WR
Dry Forecast (90%)	41% Critical	0%	50%*	75%	75%**	0%	50%*	75%	77%
Median Forecast (50%)	55% Critical	10%	60%*	100%	100%	10%	60%*	100%	100%

Ag = Agriculture M&I = Municipal and Industrial R = Refuges WR = Water Rights M&I supply is based on historical deliveries

*The allocation percentage for M&I is approximate and may be adjusted to meet public health and safety needs.
**The potential for further reductions may exist if critically dry conditions continue.

SWP Initial Allocation: 15% of requests