California Water 2014+

Felicia Marcus, Chair SWRCB

NBWA April 11, 2014

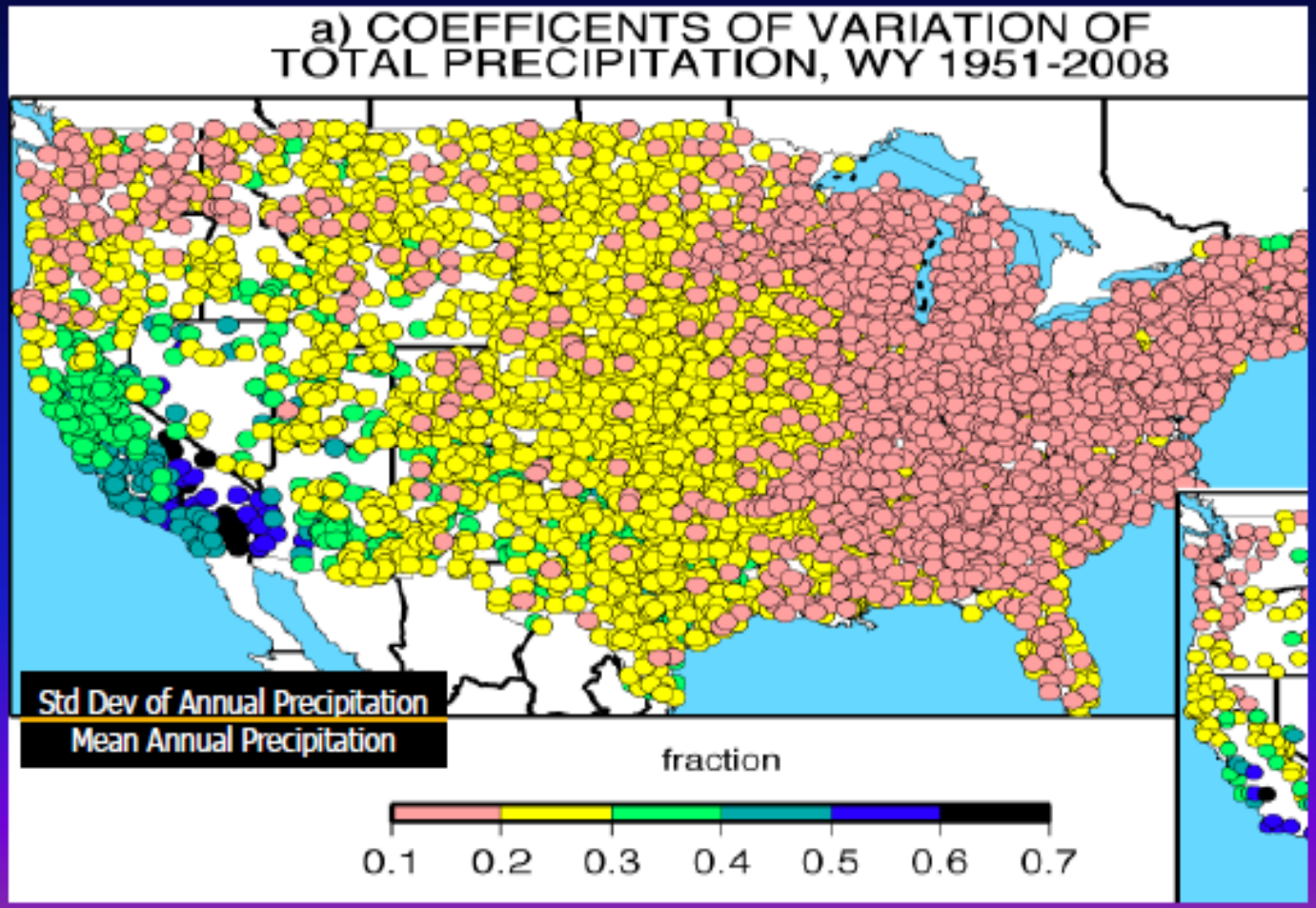
Overview

- Introduction and Conclusion
- Setting
- Evolution
- Current issues in play
- The drought—how bad is it, and what can we do about it?

Setting

- Variable hydrology
  - Year to year
  - Location to Location
  - Time of year
- Mix of sources
  - Surface Water system local or imported (extensive storage/conveyance)
  - Groundwater (intensely local)
  - Every locale different mix
- Mix of solutions
  - Better conveyance
  - Storage—above or below; big or small
  - Conservation
  - Recycling
  - Stormwater capture
  - Desal
- Variation in sources and solutions by region

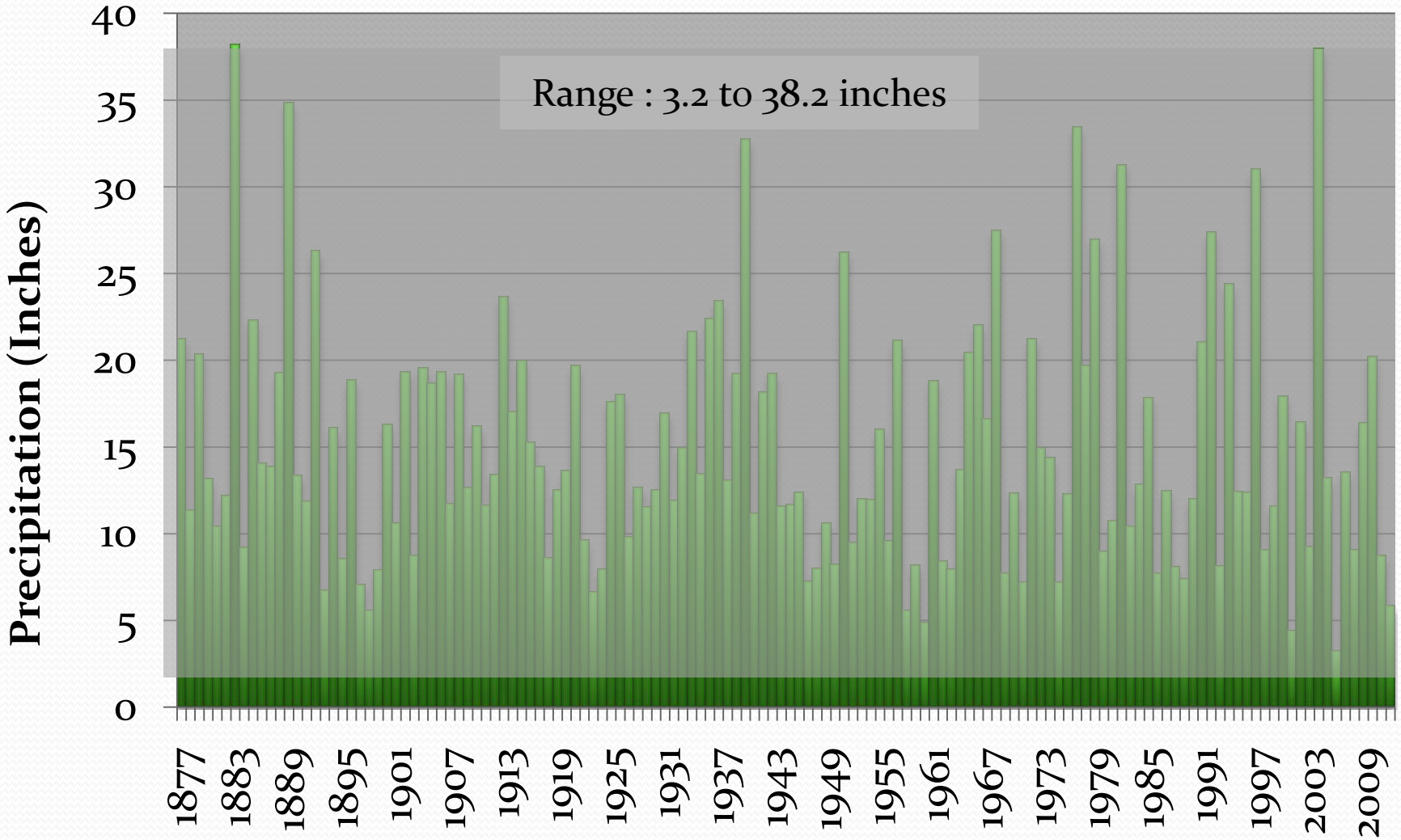
California's Precipitation is Uniquely Variable



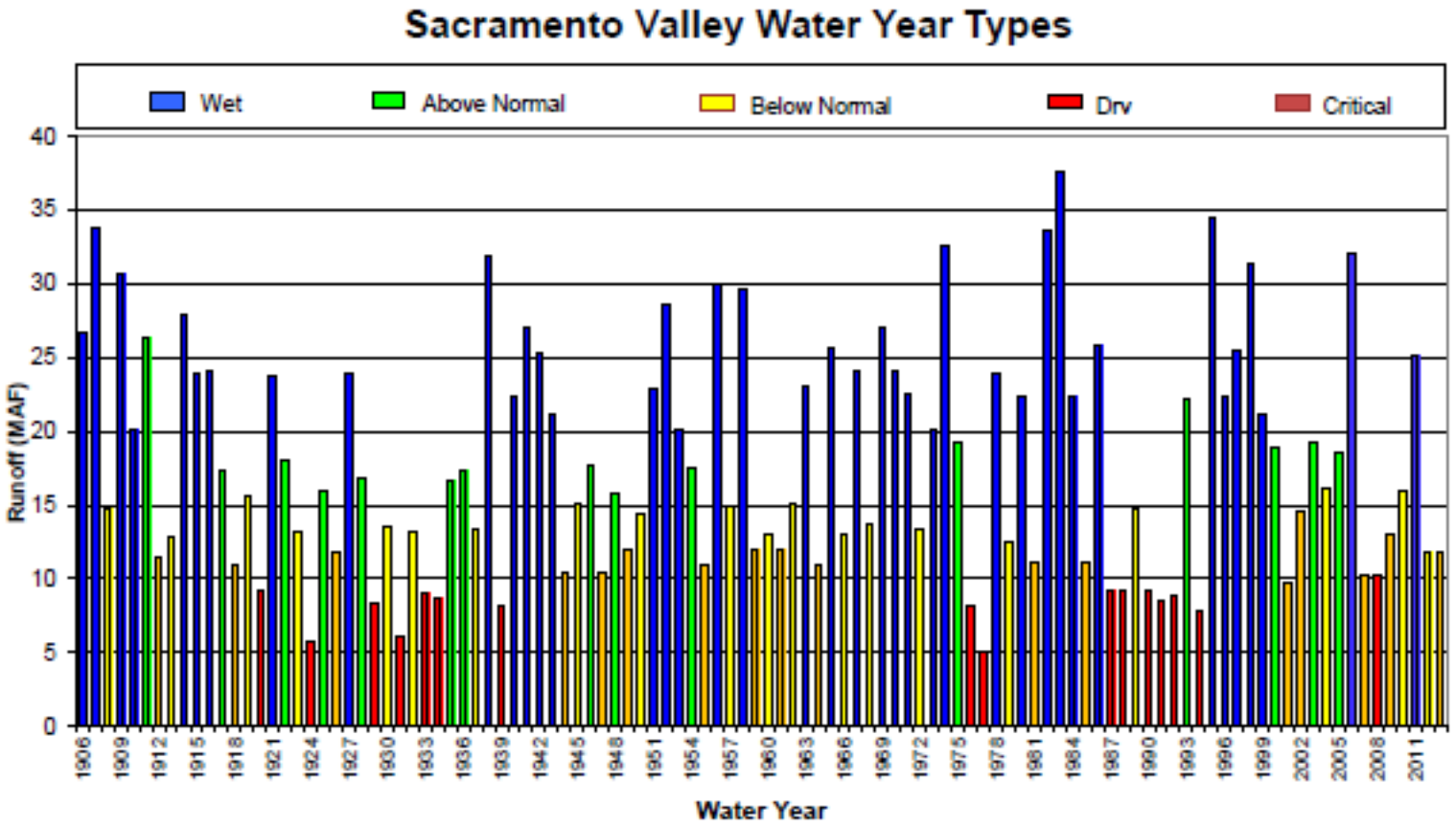
Dettinger et al, 2011

Los Angeles Civic Center Annual Rainfall

Rainfall Years 1877-2012

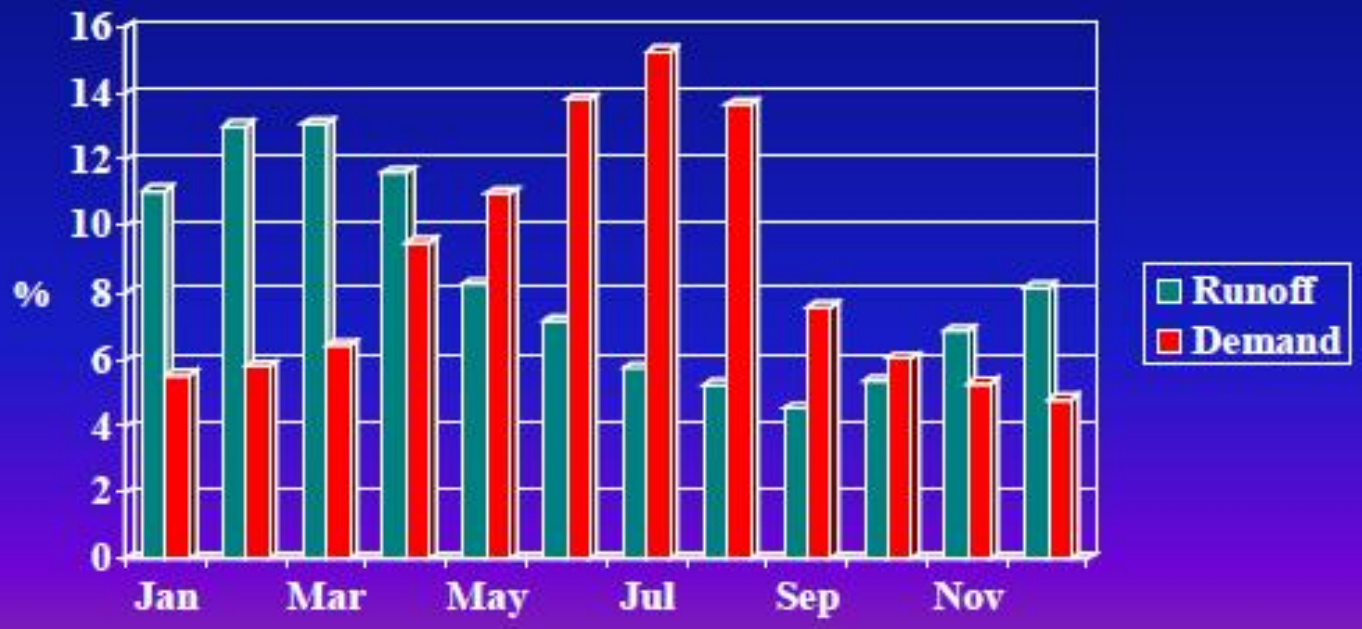


Annual Variation of Runoff

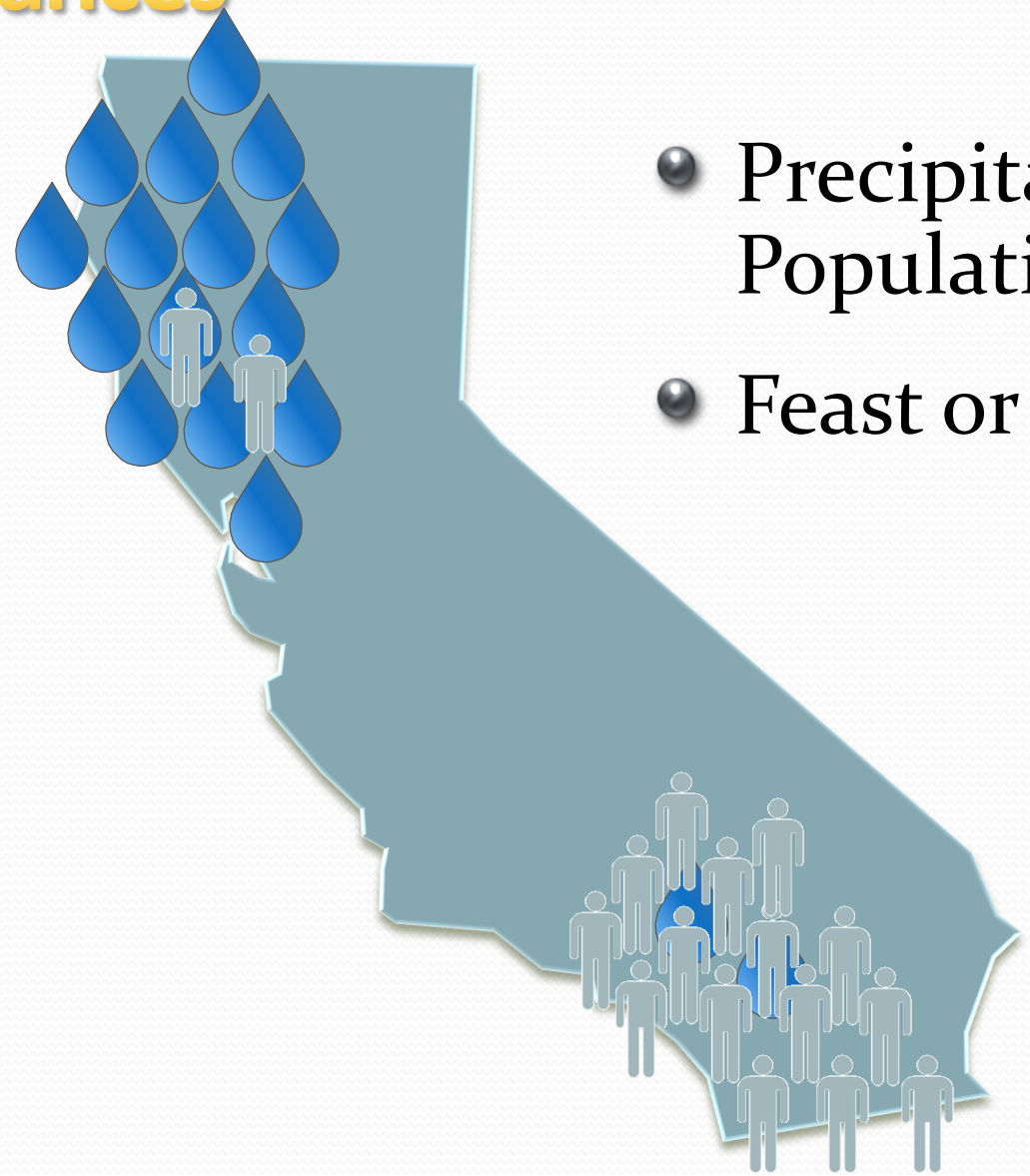


Seasonal Mismatch of Supply and Demand

- Runoff is greatest in the winter / spring.
- Demand peaks in the summer.



Managing Hydrologic and Geographic Imbalances

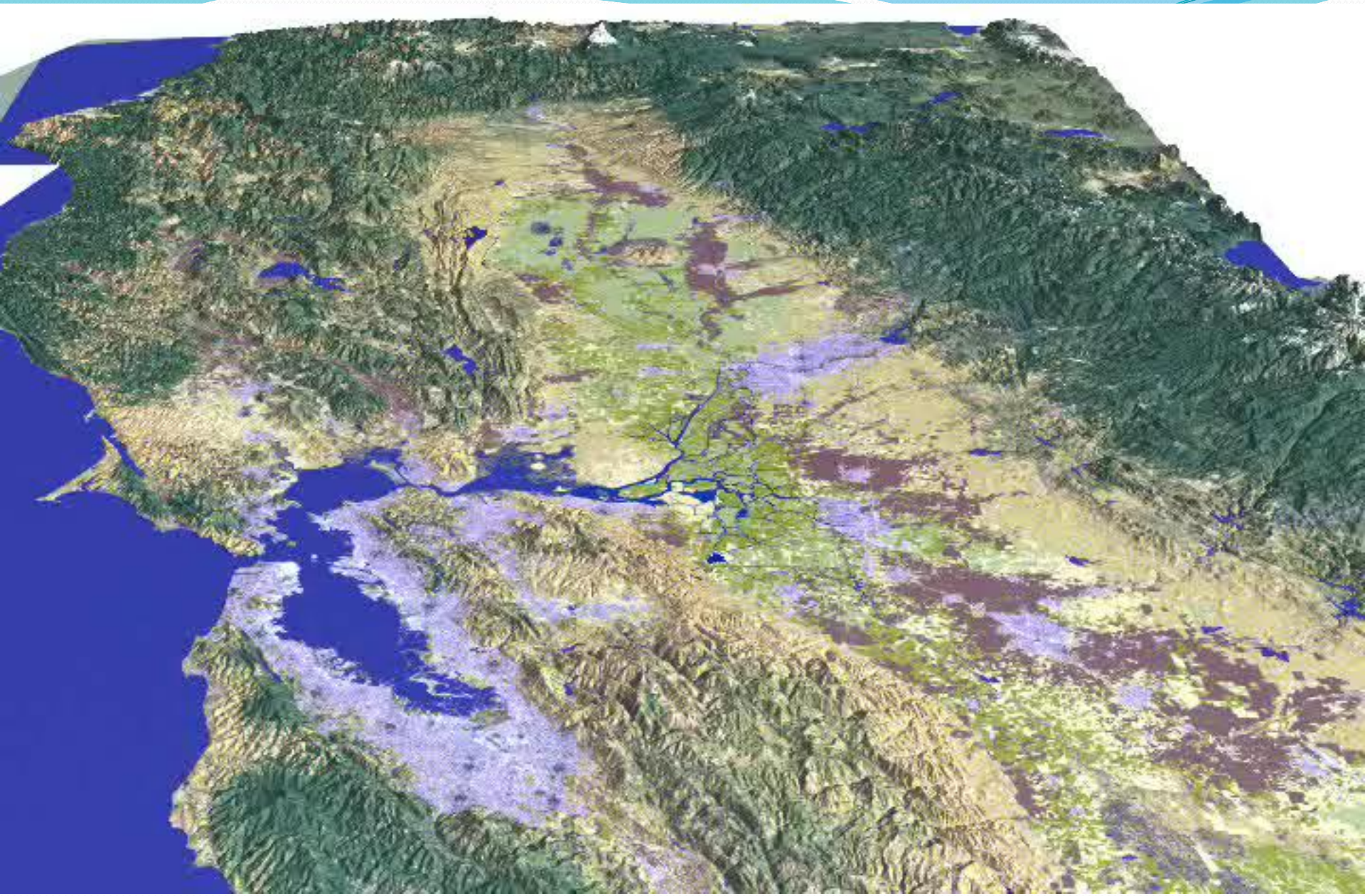


- Precipitation vs. Population
- Feast or Famine

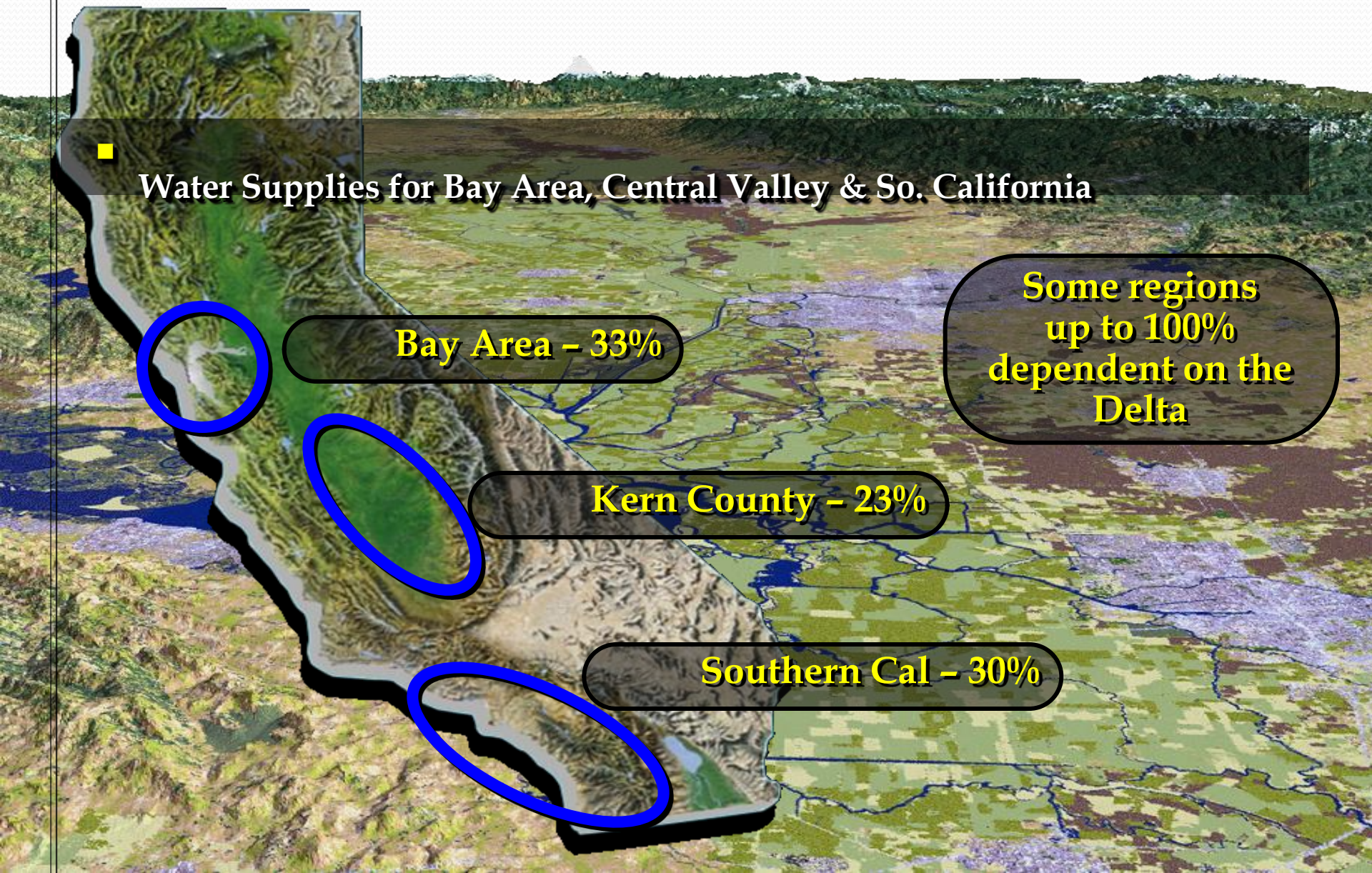
Major Water Projects

- Federal – Central Valley Project (CVP)
- State – State Water Project (SWP)
- Local – Many other projects throughout state, including Colorado River system, Hetch Hetchy, EBMUD, Owens Valley

Source: Water Environment Foundation



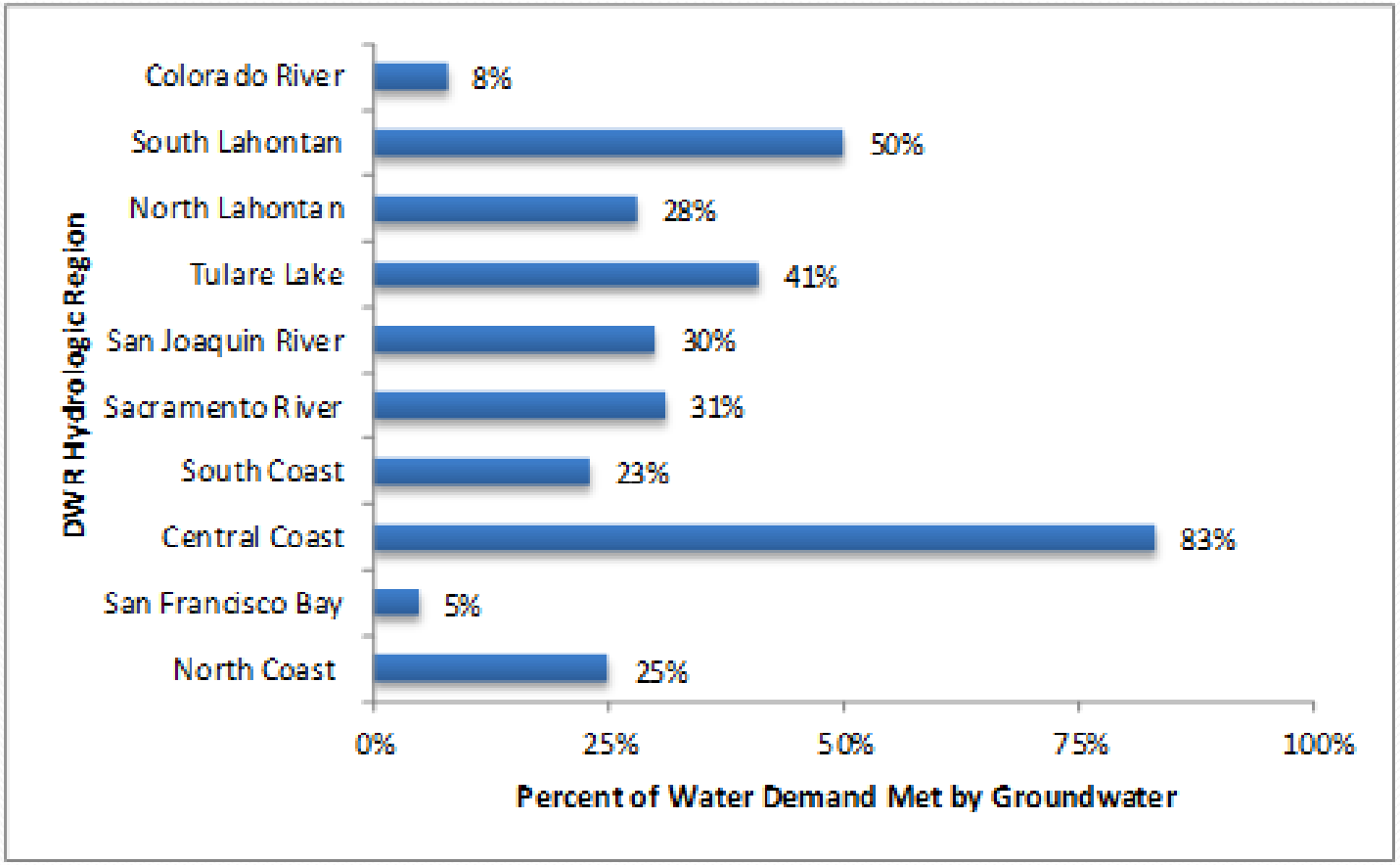
The Importance of the Bay-Delta



Quick Facts on California Groundwater→the "other" water

- Percentage of Urban and Agricultural Demands met with groundwater
  - Normal Year: 30 percent←→Dry year: 40 percent
  - Some put at 40-60%
- About 9 million Californians (1 in 3) rely **solely** on groundwater to meet their needs
- On the Central Coast, **90** percent of drinking water comes from groundwater
- **California uses more groundwater than any other state.**
- **California and Texas together use more than the other 48 states combined.**

% Water Demand Met by Groundwater



Western States' Approach to Groundwater Management

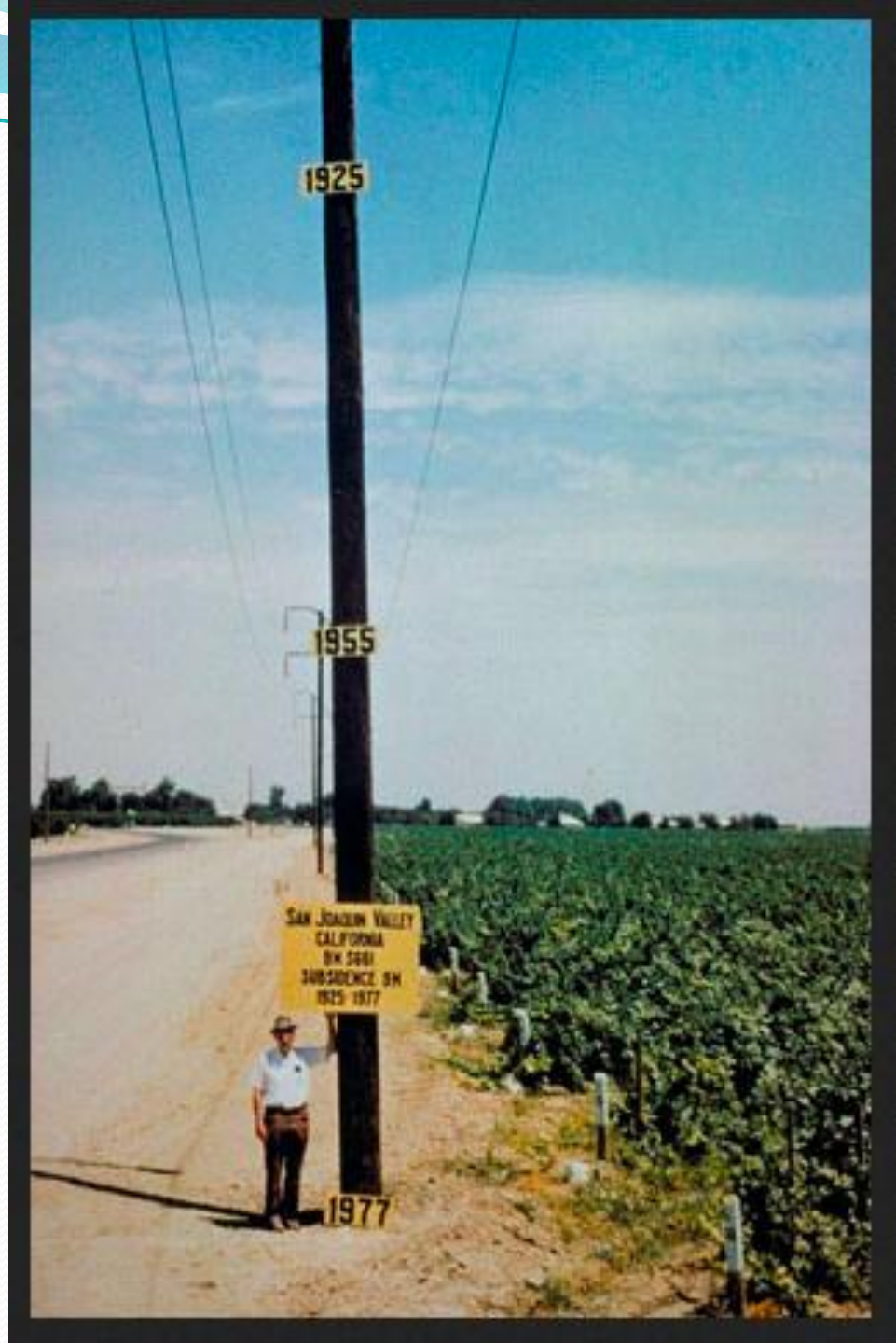
Groundwater Management Components:	California	Arizona	Texas	Colorado	New Mexico
Statewide groundwater use permitting	—	X	—	X	X
Active management areas	—	X	X	X	X
Statewide policy—well data made public	—	X	X	X	X
Statewide policy—metering, measurement, and reporting requirements	—a	X	—	X	X

a SBX7 6 provides for statewide measurement (at the basin level), but not metering of water extraction.

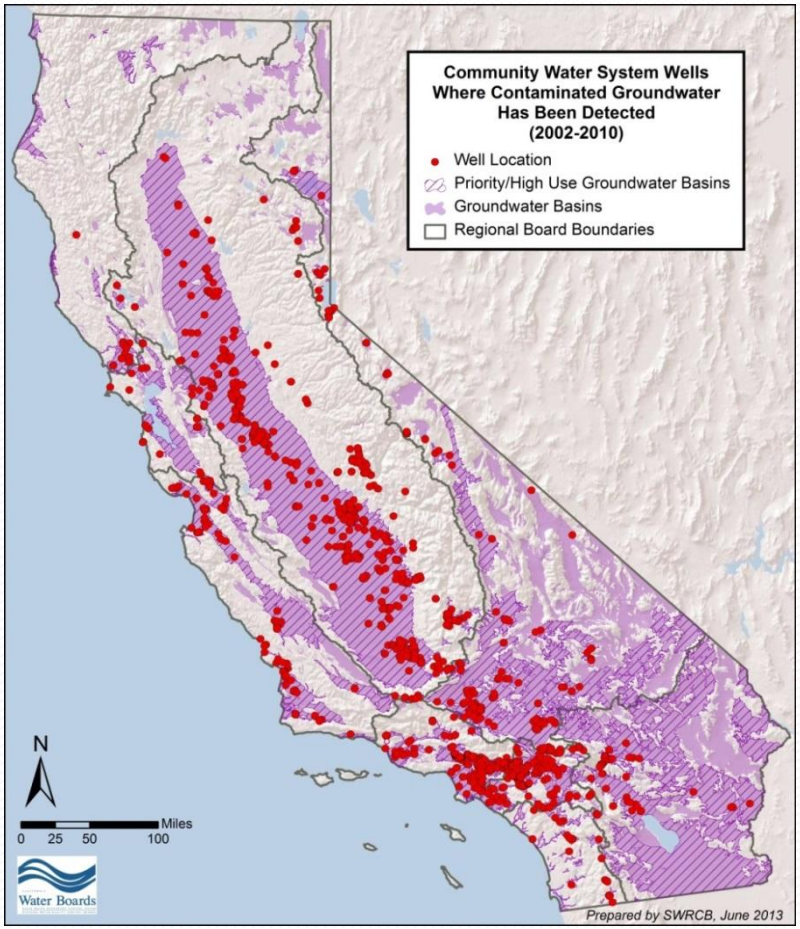
Groundwater governance note

- Regulated (or not) at local level
- Some well-managed, some not
- State Board authority clear on quality; more complex on quantity
- California one of last states to not have state regulatory scheme (more sim to Texas than any other state)
- Climate makes imperative to deal with at some level.
- Remarkably active dialogue happening

Subsidence in the San Joaquin Valley



Community Well Systems Where Contamination has been Detected



Future drivers and historic practice make it even harder, but…

- Challenges, e.g.,
  - Climate change is gamechanger
    - Delta survival/floods/water supply
    - Storage conundrum
  - Population Growth
  - Institutional constraints, silos, historic practice
  - “Egosystem” management

Current Era Emerging Evolution

- Policy and legislative level:
  - Delta Vision Task Force
  - Delta Reform Act 2009 package
  - AB32 "Global Warming Solutions Act"
  - Prop 50 Integrated Water Management Planning
  - Groundwater Concept Paper
  - California Water Action Plan
  - Water Bond
- Changed circumstances
  - Climate change awareness/acceptance/preparation
  - IRWMPs
  - Local leadership—especially in Southern California
  - Technology

Traditional dialogue

- Mark Twain: “Whiskey is for drinking; water is for fighting.”
- Single issue: all about storage; all about plumbing; all about ESA taking away “our” water; all about flow for fish; all about conservation/recycling; desal is “the answer”; all about predation
- “If we just….”
- “Is so, is not; you’re a jerk, no I’m not” level of discourse
- Actually about all of it in the face of climate change and population growth

Evolution: "All of the above," vs. "either/or"

- Infrastructure re-envisioning
- Institutional re-envisioning
- Integrated water management/multiple benefits
- Approach: Regional leadership to meet regional needs with regional resources, and with state support/backstop
- Conveyance, storage, conservation, recycling, stormwater capture/treatment/reuse, brackish and seawater desal according to unique circumstances.

Administration Water Action Plan

- Make **Conservation** a California Way of Life
- Increase **Regional Self-Reliance** and **Integrated Water Management** Across All Levels of Government
- Achieve the Co-Equal Goals for the **Delta**
- Protect and Restore Important **Ecosystems**
- Manage and Prepare for **Dry** Periods
- Expand Water **Storage** Capacity and Improve **Groundwater Management**
- Provide **Safe Water** for **All** Communities
- Increase Flood **Protection**
- Increase **Operational and Regulatory Efficiency**
- Identify Sustainable and Integrated Financing Opportunities

The Drought—*a glimpse*

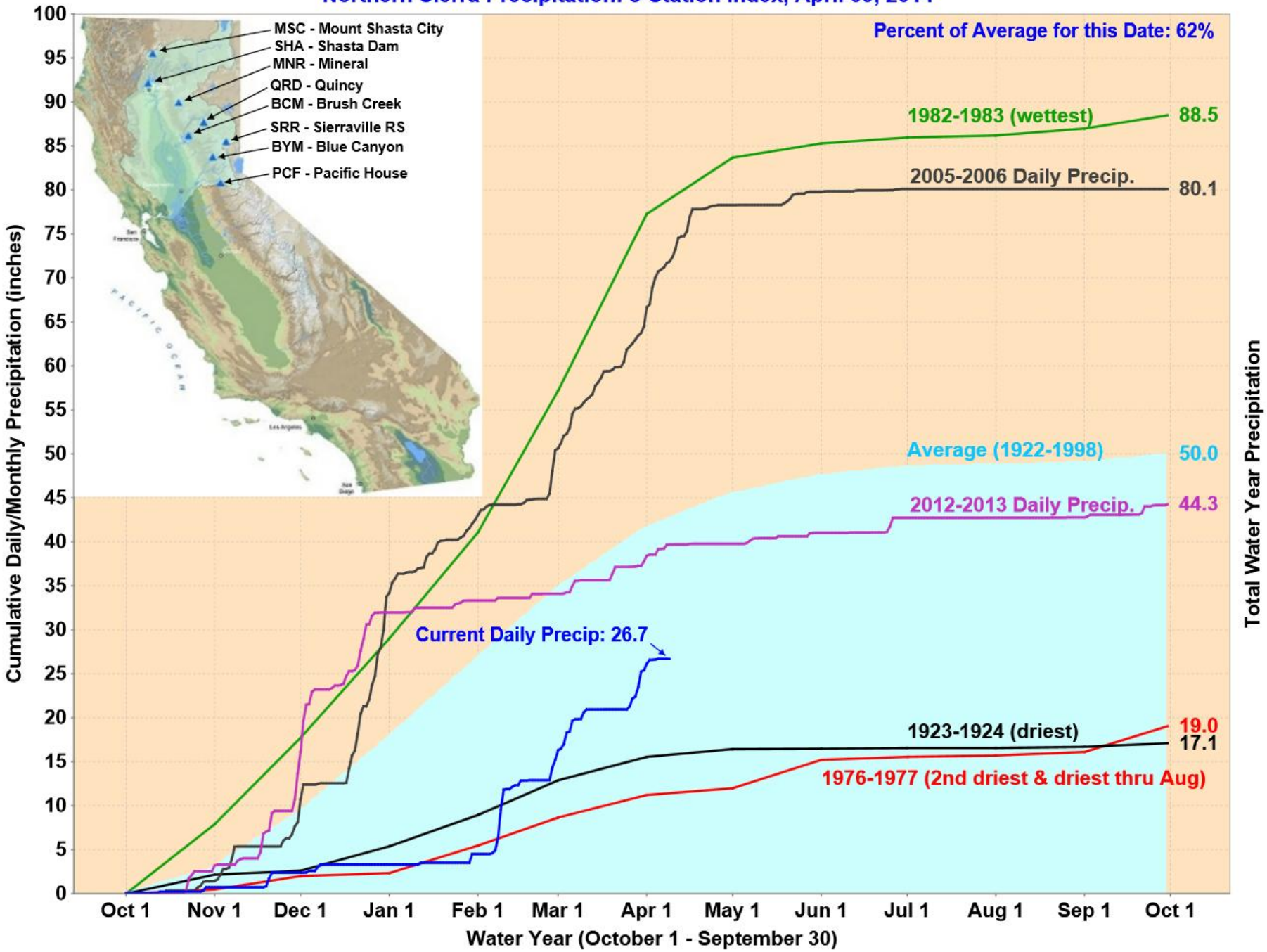
"When the well is dry, we know the worth of water."

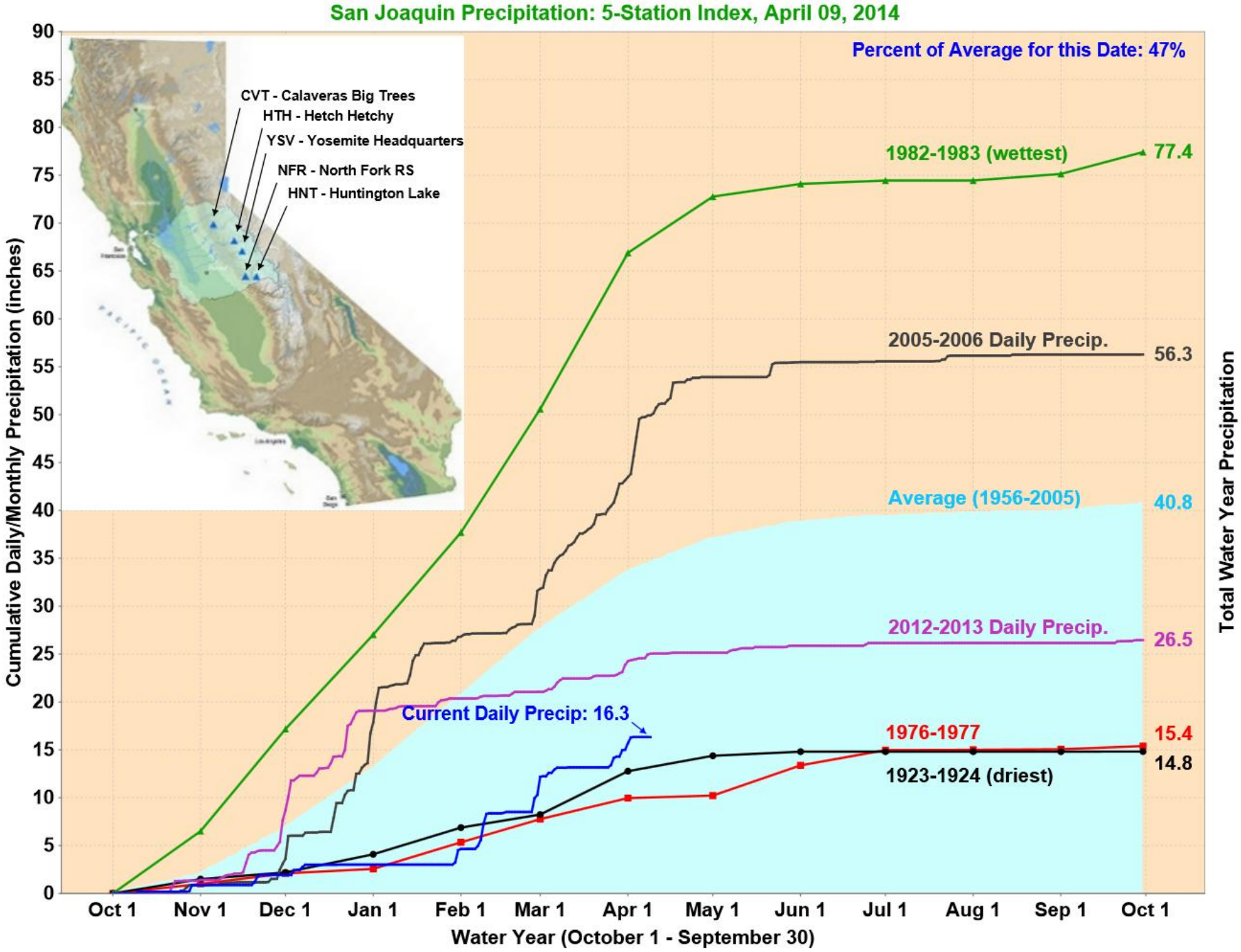
Benjamin Franklin

Poor Richard's Almanac

Current crisis: Worst drought in modern times

- 2013 “driest” year on record
- Snowpack fraction of average/ “normal”
- Reservoir draw down due to unusual 2012 precipitation pattern
- Could still rain, and it is now, as in “March miracle” of the 90s but that is not a strategy.
- Still third worst on record, with far greater impact than the 1920s
- Beyond anything we’ve dealt with
- Harbinger of things to come

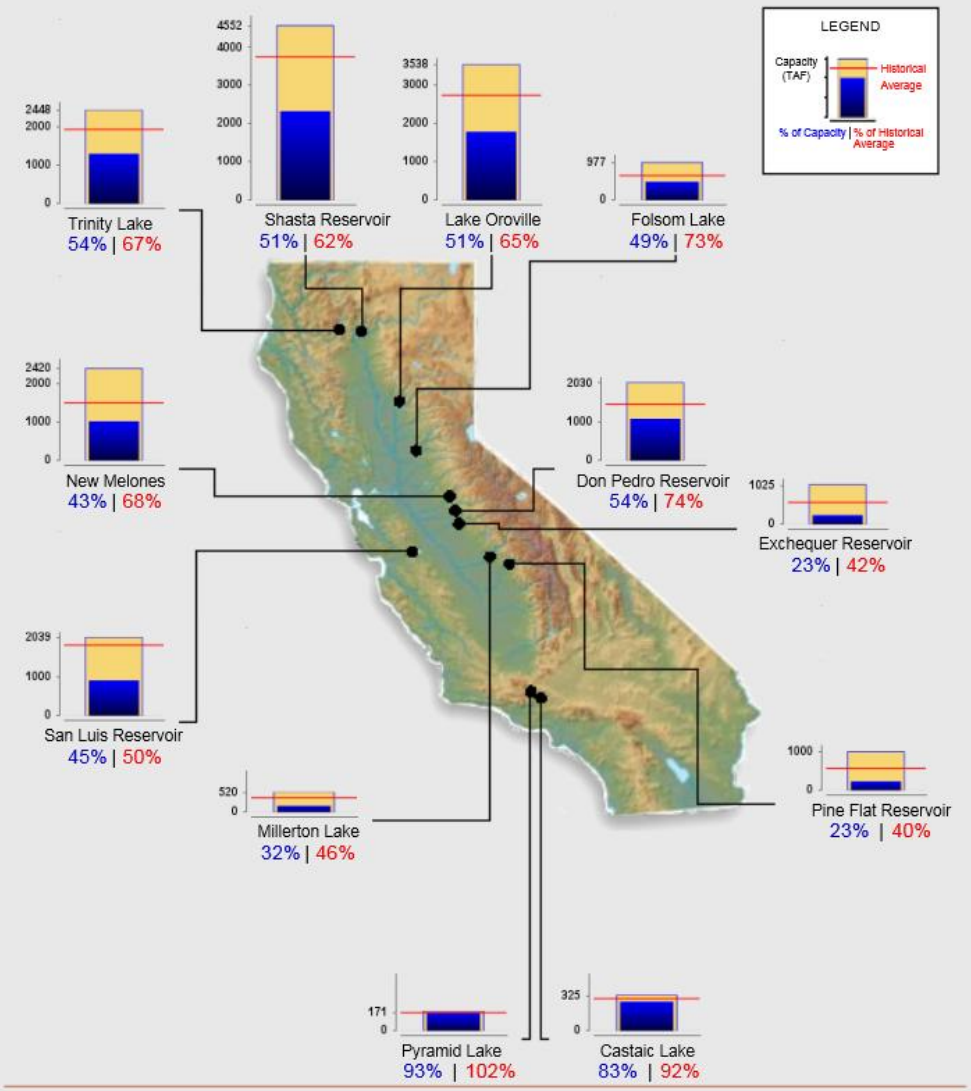

Northern Sierra Precipitation: 8-Station Index, April 09, 2014
MSC - Mount Shasta City
SHA - Shasta Dam
MNR - Mineral
QRD - Quincy
BCM - Brush Creek
SRR - Sierraville RS
BYM - Blue Canyon
PCF - Pacific House
Percent of Average for this Date: 62%
1982-1983 (wettest)
88.5
2005-2006 Daily Precip.
80.1
Average (1922-1998)
50.0
2012-2013 Daily Precip.
44.3
Current Daily Precip: 26.7
1923-1924 (driest)
19.0
17.1
1976-1977 (2nd driest & driest thru Aug)
Cumulative Daily/Monthly Precipitation (inches)
Total Water Year Precipitation
Water Year (October 1 - September 30)
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Aug 1
Sep 1
Oct 1


San Joaquin Precipitation: 5-Station Index, April 09, 2014
Percent of Average for this Date: 47%
CVT - Calaveras Big Trees
HTH - Hetch Hetchy
YSV - Yosemite Headquarters
NFR - North Fork RS
HNT - Huntington Lake
1982-1983 (wettest)
77.4
2005-2006 Daily Precip.
56.3
Average (1956-2005)
40.8
2012-2013 Daily Precip.
26.5
Current Daily Precip: 16.3
1976-1977
15.4
1923-1924 (driest)
14.8
Cumulative Daily/Monthly Precipitation (inches)
Total Water Year Precipitation
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Aug 1
Sep 1
Oct 1
Water Year (October 1 - September 30)

Reservoir Conditions

Ending At Midnight - April 8, 2014

CURRENT RESERVOIR CONDITIONS

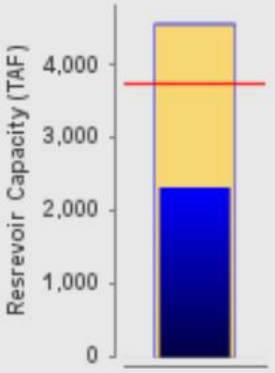


Graph Updated 04/09/2014 08:15 AM

Reservoir Conditions - Shasta Reservoir

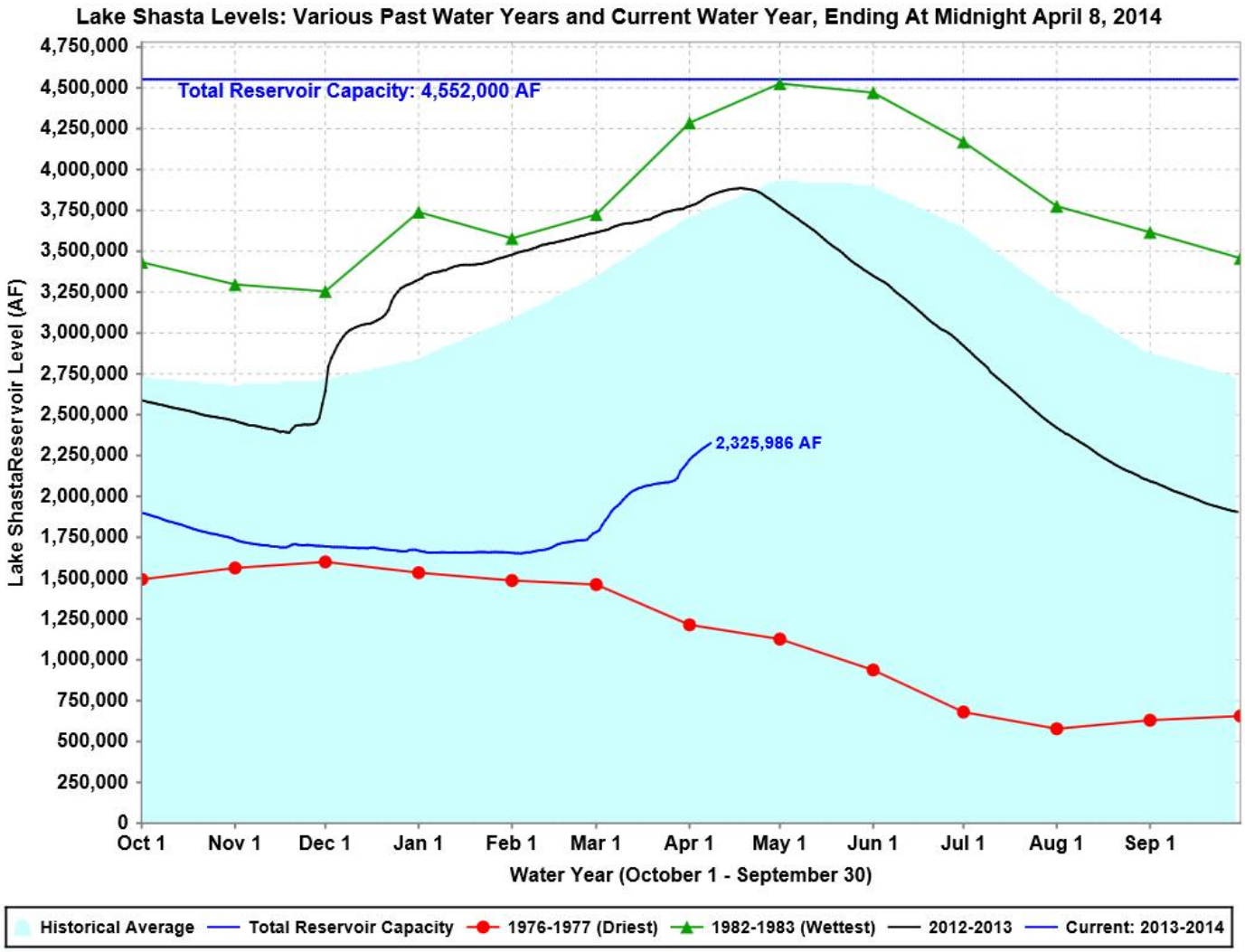
Lake Shasta Conditions

(as of Midnight - April 8, 2014)



Current Level: 2,325,986 AF

51% (Total Capacity) | 62% (Historical Avg.)

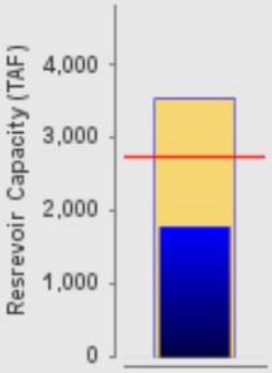


Data Updated 04/09/2014 08:15 AM

Reservoir Conditions - Lake Oroville

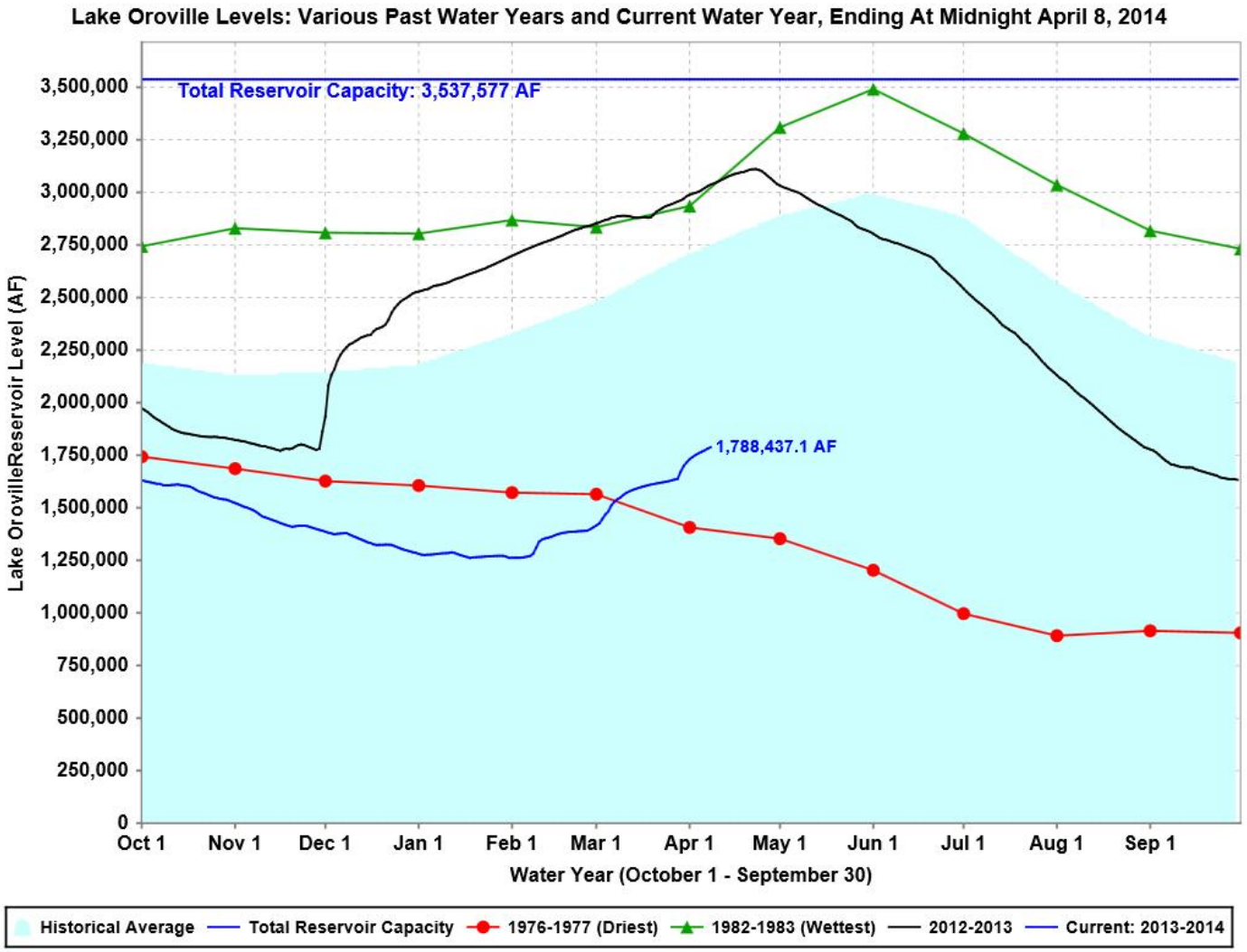
Lake Oroville Conditions

(as of Midnight - April 8, 2014)



Current Level: 1,788,437.1 AF

51% (Total Capacity) | 65% (Historical Avg.)

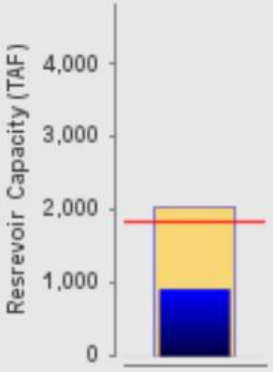


Data Updated 04/09/2014 08:15 AM

Reservoir Conditions - San Luis

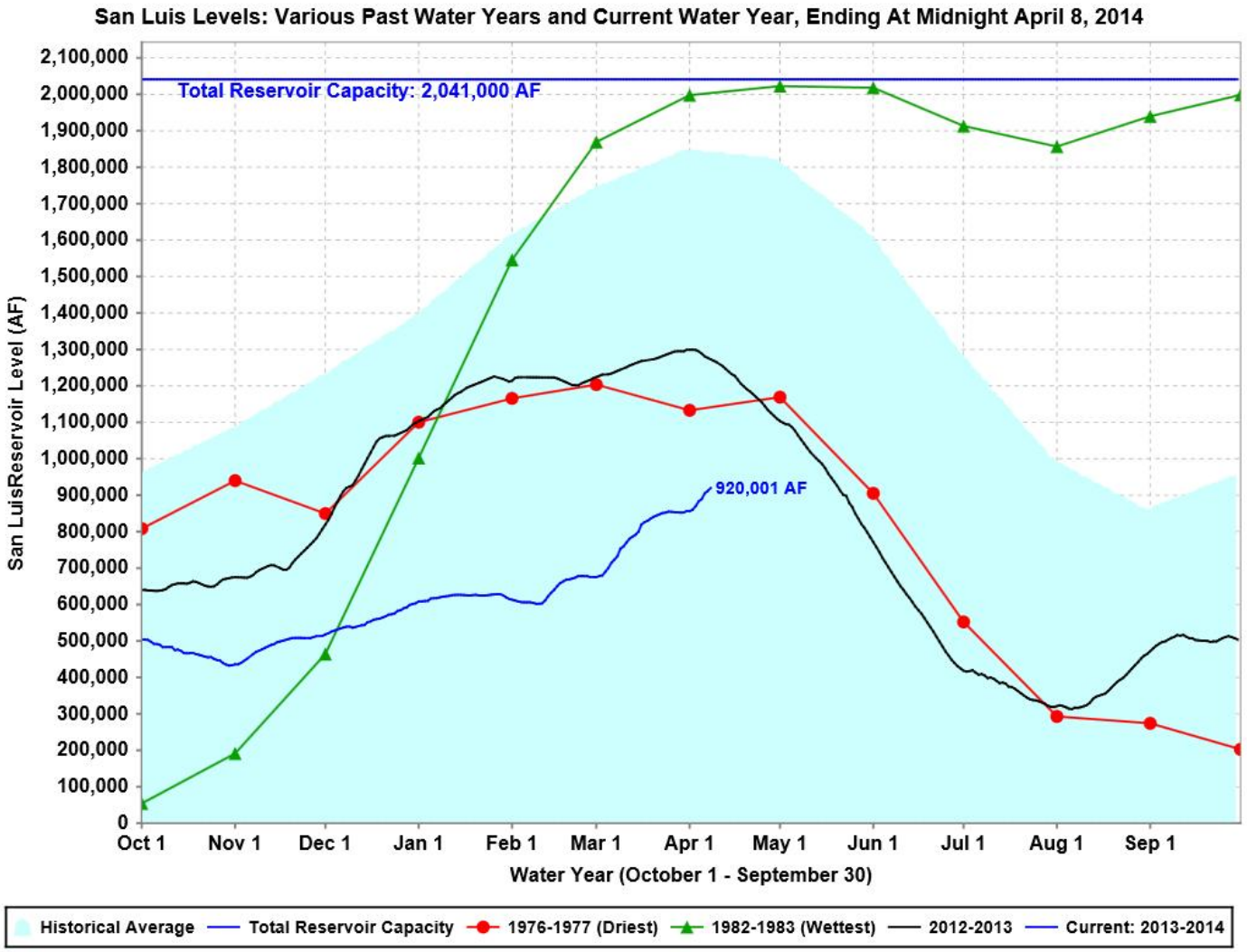
San Luis Conditions

(as of Midnight - April 8, 2014)



Current Level: 920,001 AF

45% (Total Capacity) | 50% (Historical Avg.)



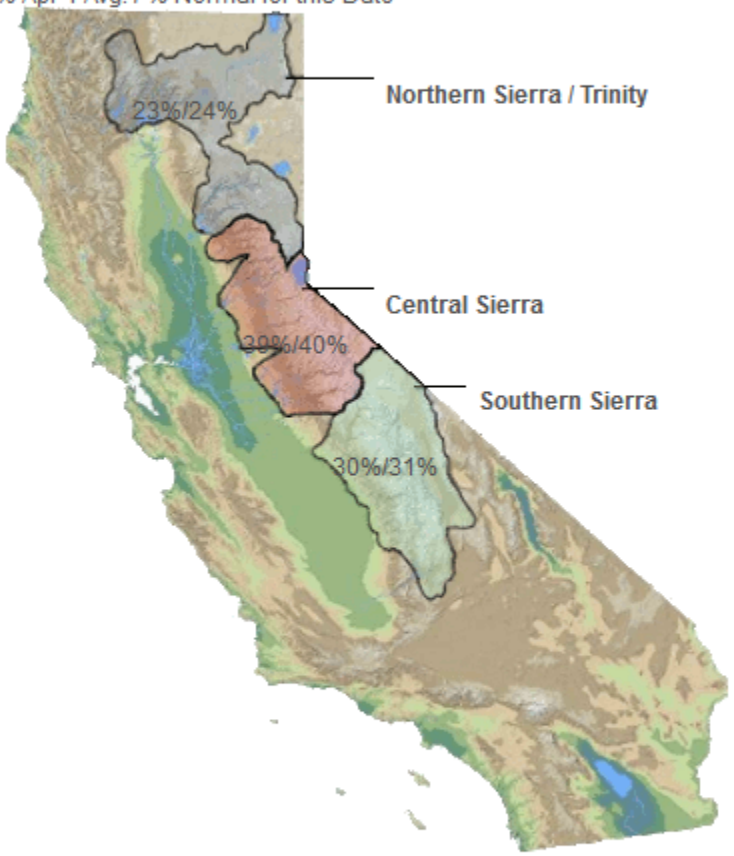
Data Updated 04/09/2014 08:15 AM

Snow Water Equivalents (inches)

Provided by the California Cooperative Snow Surveys

Data For: **09-Apr-2014**

% Apr 1 Avg. / % Normal for this Date



Change Date : 09-Apr-2014 Refresh Data

NORTH

Data For: 09-Apr-2014

Number of Stations Reporting	27
Average snow water equivalent	6.5"
Percent of April 1 Average	23%
Percent of normal for this date	24%

CENTRAL

Data For: 09-Apr-2014

Number of Stations Reporting	43
Average snow water equivalent	11.5"
Percent of April 1 Average	39%
Percent of normal for this date	40%

SOUTH

Data For: 09-Apr-2014

Number of Stations Reporting	30
Average snow water equivalent	7.8"
Percent of April 1 Average	30%
Percent of normal for this date	31%

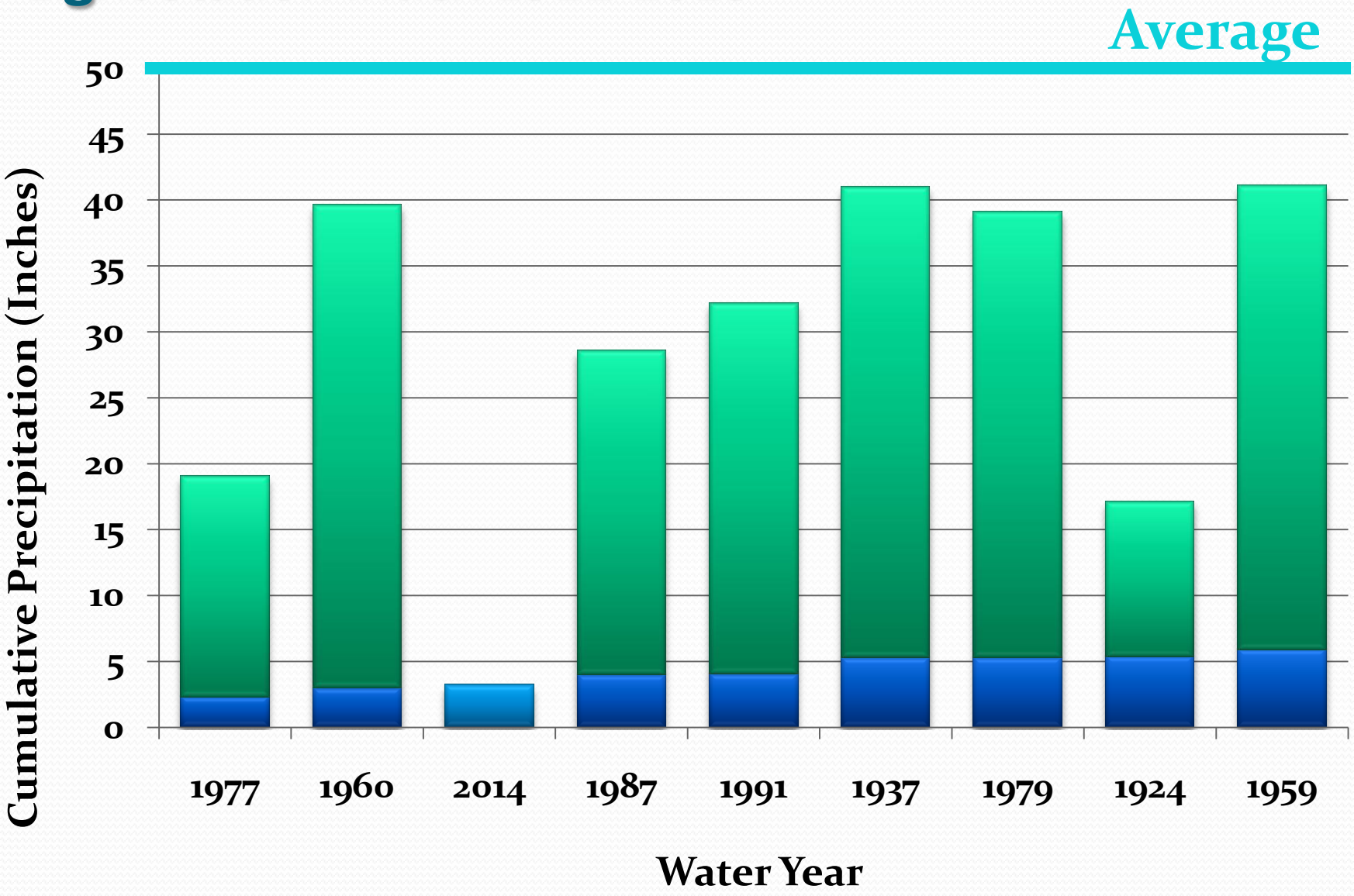
STATEWIDE SUMMARY

Data For: 09-Apr-2014

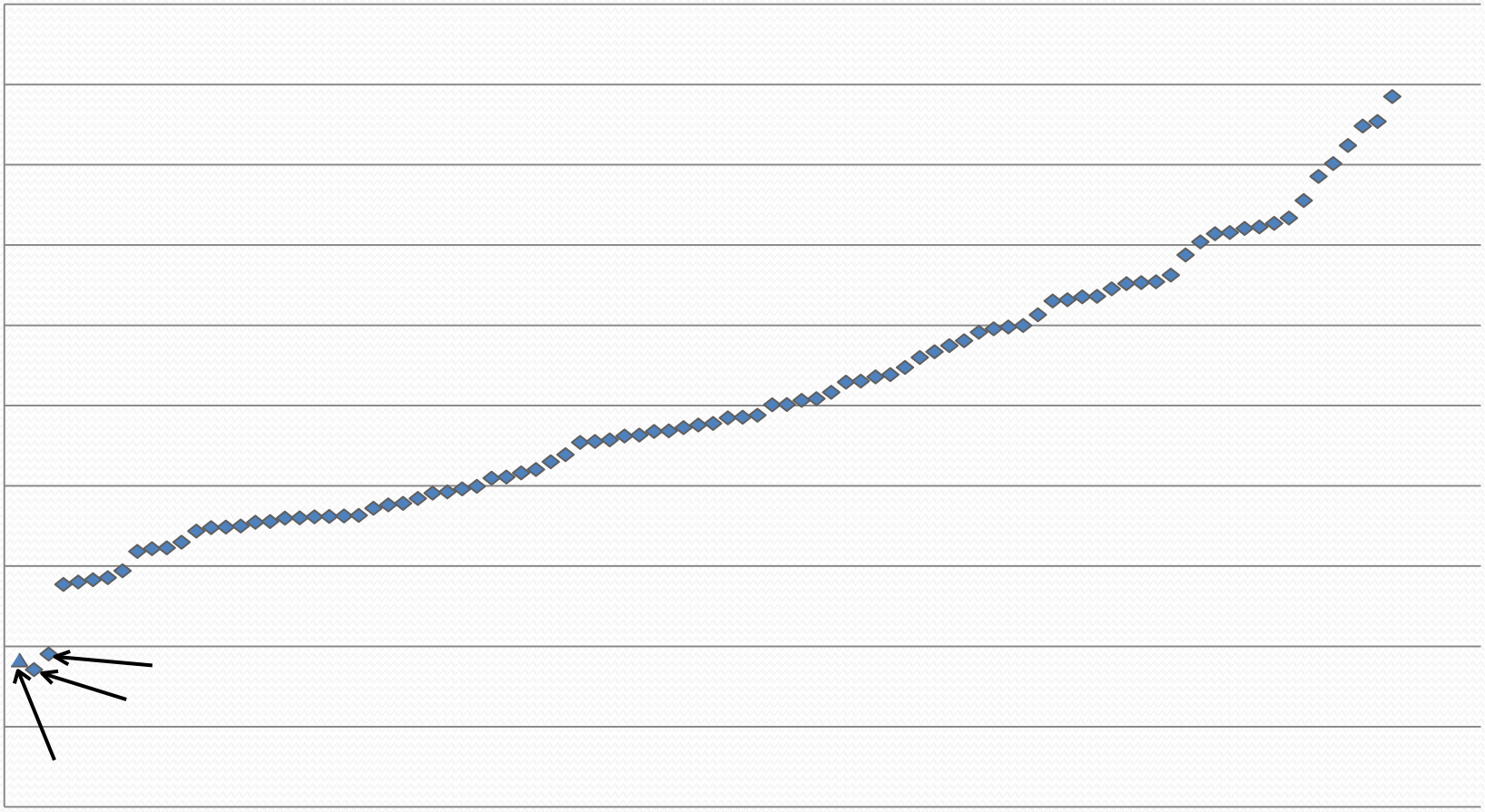
Number of Stations Reporting	100
Average snow water equivalent	9.1"
Percent of April 1 Average	32%
Percent of normal for this date	33%

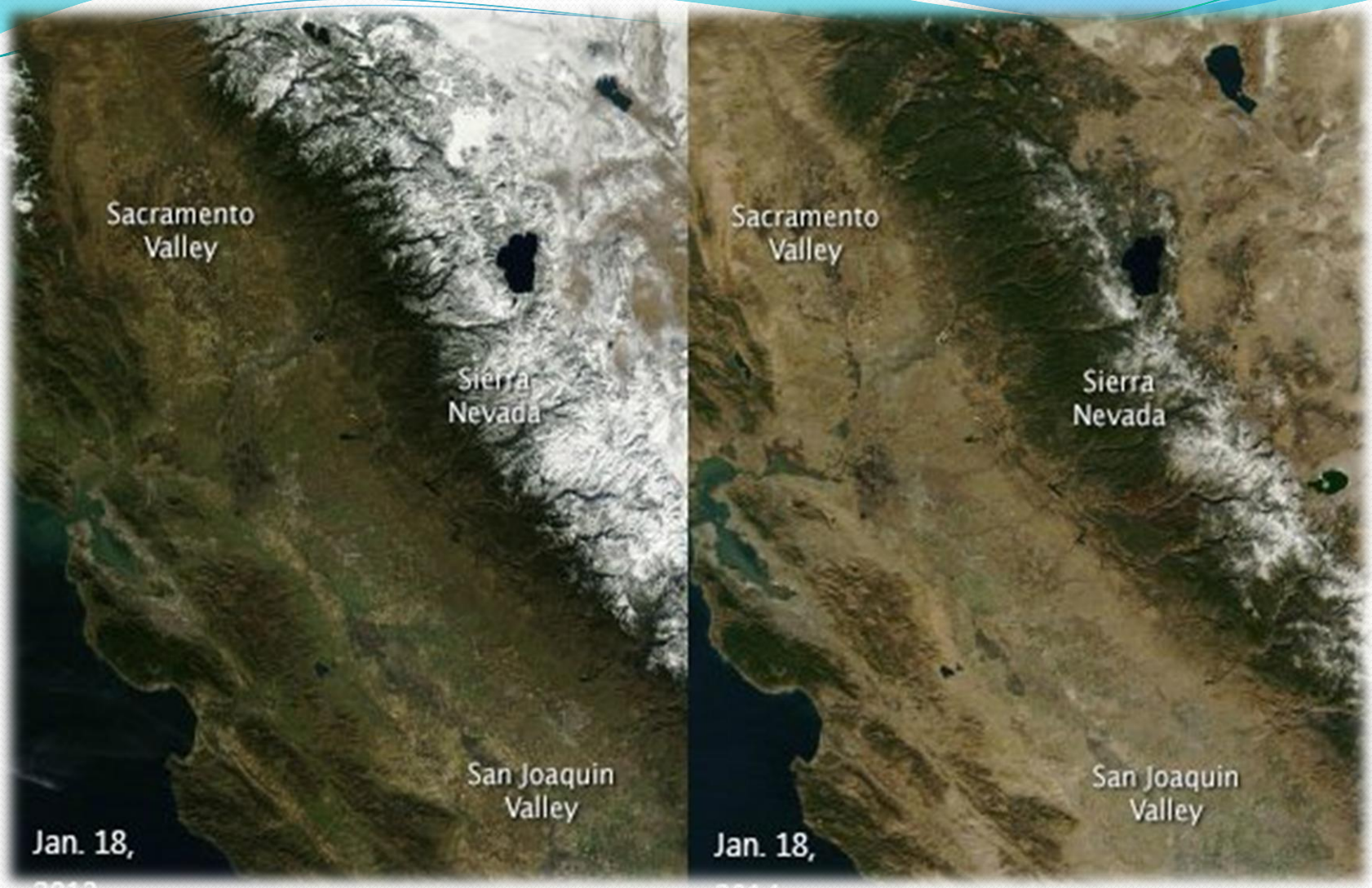
Oct-Dec Precipitation vs. WY Totals

Eight Station Index 1922-2013



N. Sierra Precipitation Totals - Thru March 4 = **18.3**”





Jan 18, 2013

Jan 18, 2014

Actions—

- Regional differences and choices
  - Different mix of sources and economies
  - Water right priorities and different groundwater regimes
  - Choices re conservation, priorities, etc.
- Drought Task Force
- Actions taken and potential:
  - Emergency declaration—Governor Brown February 17, 2014
  - Transfers
  - Temporary standards adjustment
  - Conservation; Leak detection
  - Efficiency: Recycling; Stormwater capture
  - Water rights education and enforcement
  - Disaster relief; firefighting and host of others

Actions—con't

- Emergency Legislation--$680m+
- Decisions re allocation/salinity control/public health and safety by state and federal projects
- Water rights implementation: "Curtailments"
- What is "reasonable use" in a drought?
- Disaster relief—Farm Bill/USDA

Answer: Belts, Suspenders, Flying Monkeys