California
Special District Association

March 27, 2014

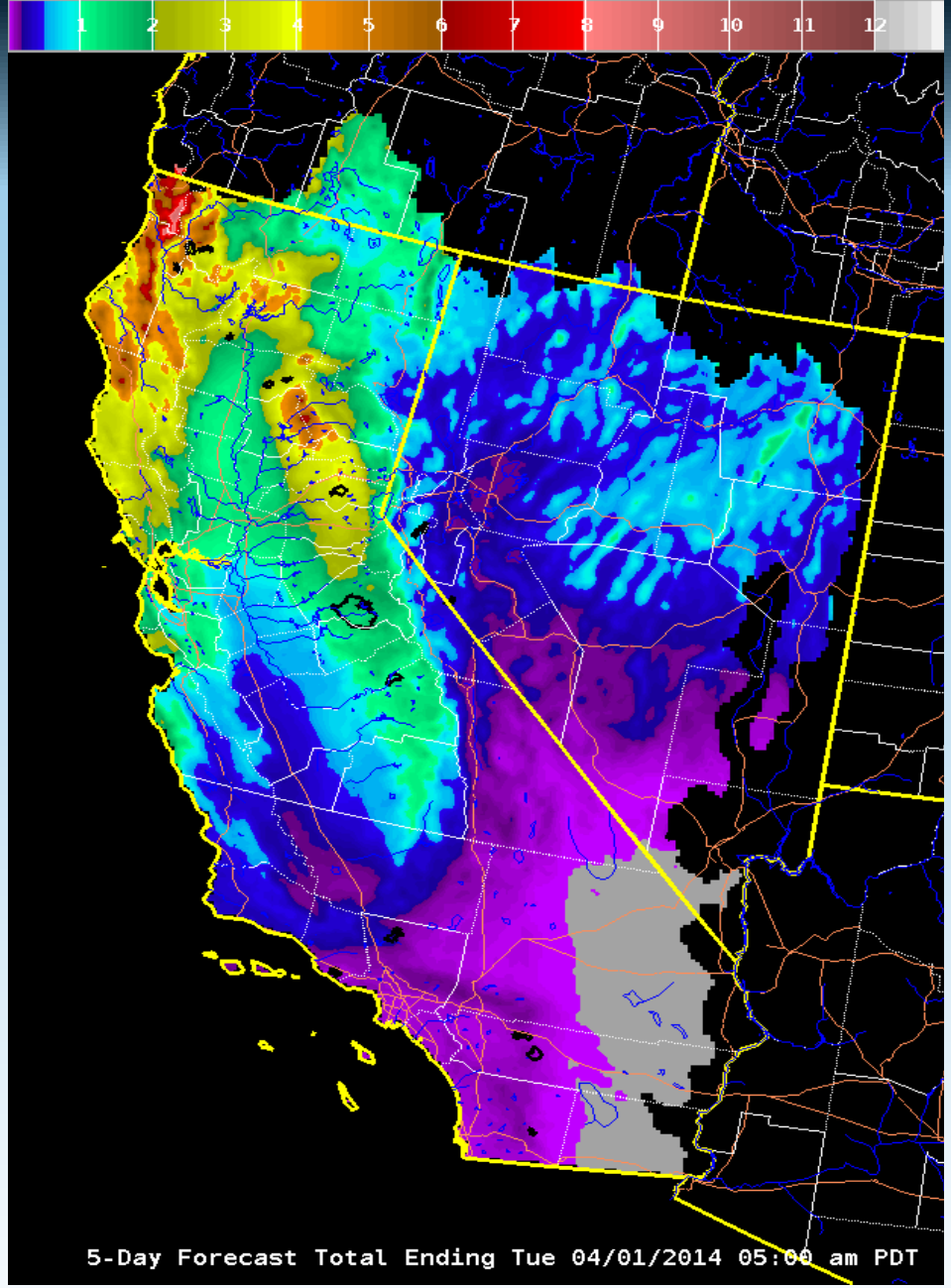
DROUGHT PREPAREDNESS & RESPONSE

Bill Croyle, Drought Manager
Department of Water Resources

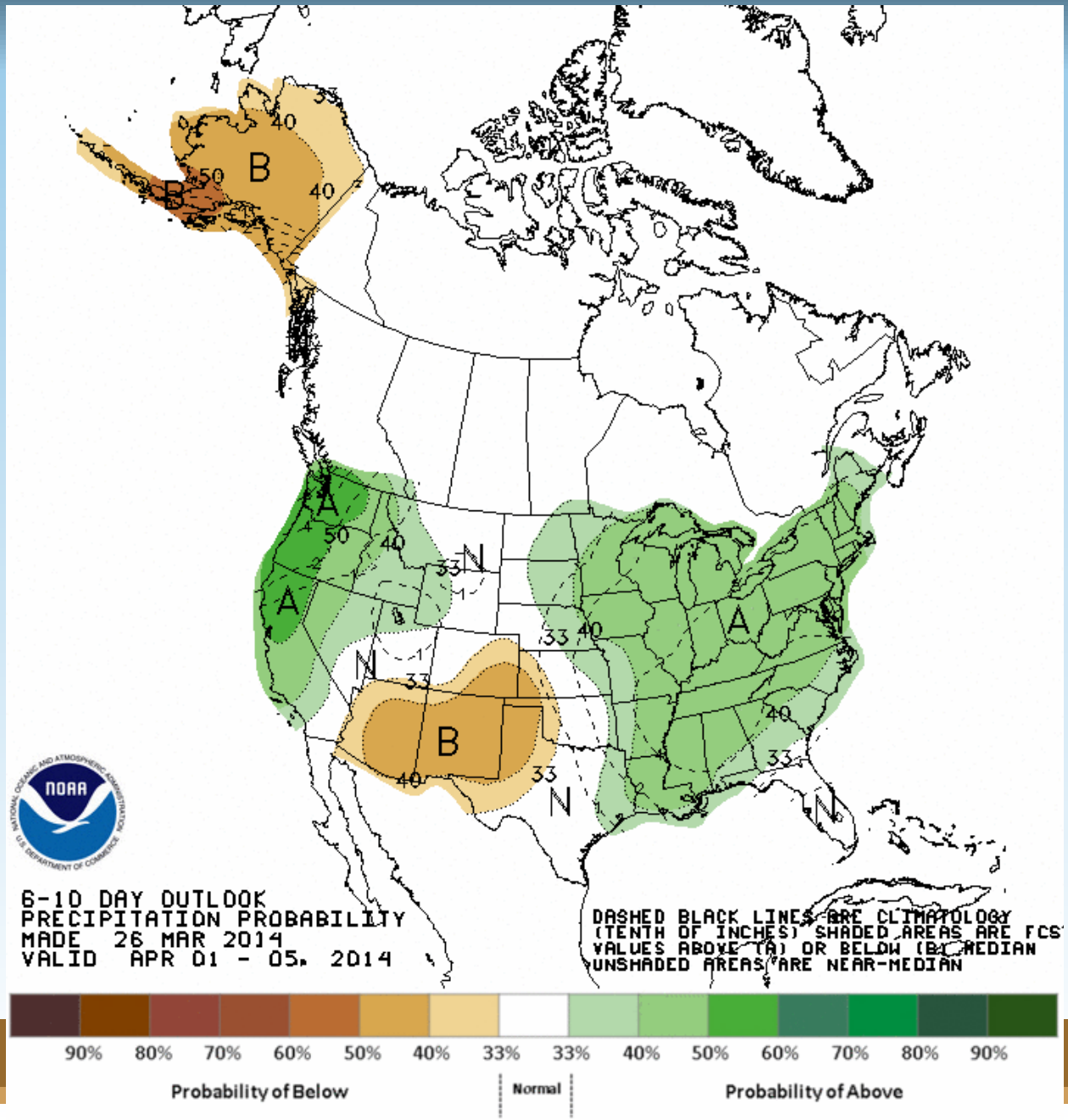
PUBLIC SAFETY ENVIRONMENTAL STEWARDSHIP ECONOMIC STABILITY

Overview

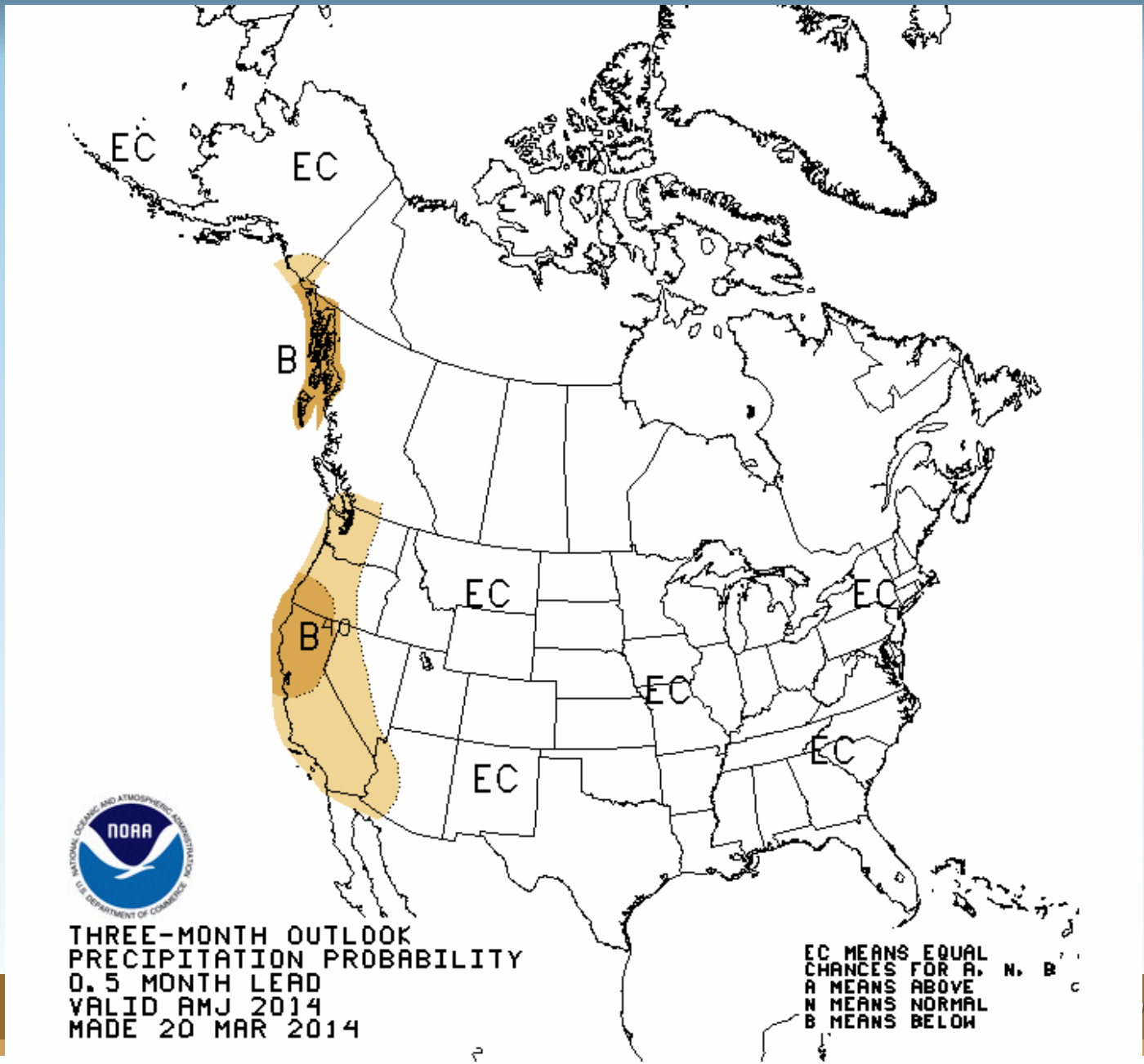
- Current Conditions
- Drought Impacts
- State Actions


1
2
3
4
5
6
7
8
9
10
11
12
5-Day Forecast Total Ending Tue 04/01/2014 05:00 am PDT

Probability of Precipitation: 10 day Outlook



Long Range Probability of Precipitation: April, May June



Snow Water Equivalents (inches)

Provided by the California Cooperative Snow Surveys

Data For: **27-Mar-2014**

% Apr 1 Avg. / % Normal for this Date

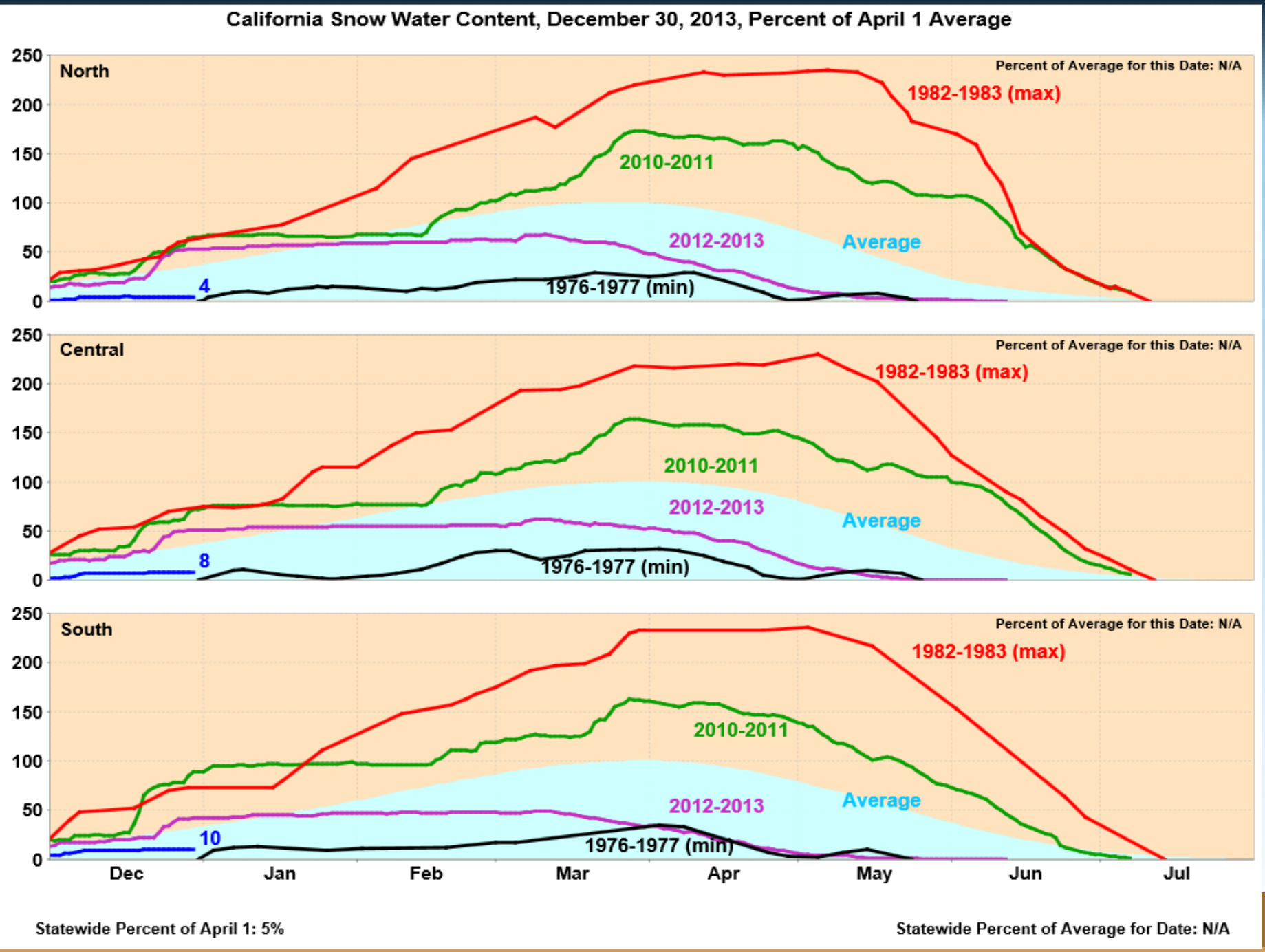
Change Date : 27-Mar-2014 Refresh Data

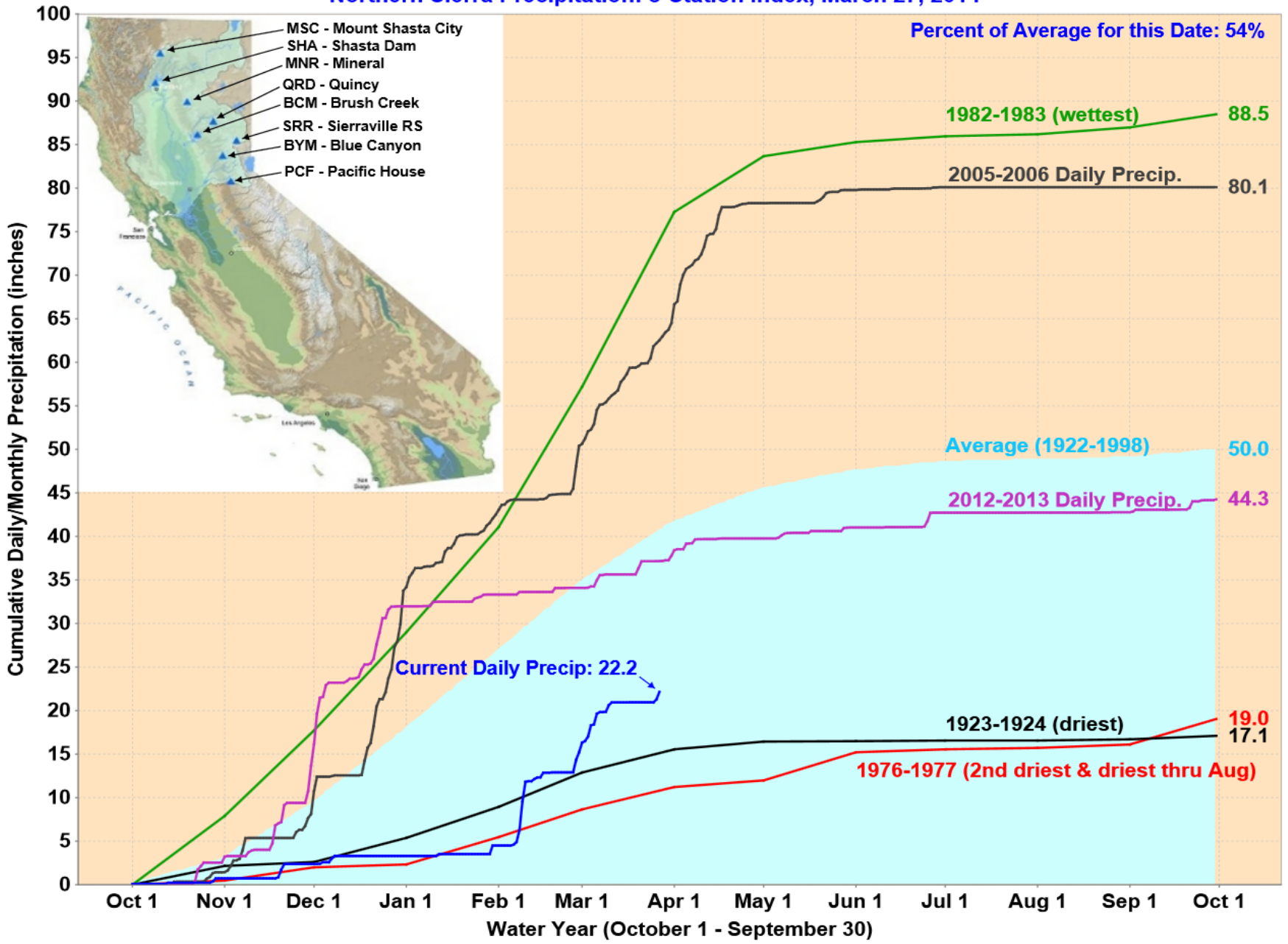
NORTH	
Data For: 27-Mar-2014	
Number of Stations Reporting	27
Average snow water equivalent	4.0"
Percent of April 1 Average	14%
Percent of normal for this date	14%

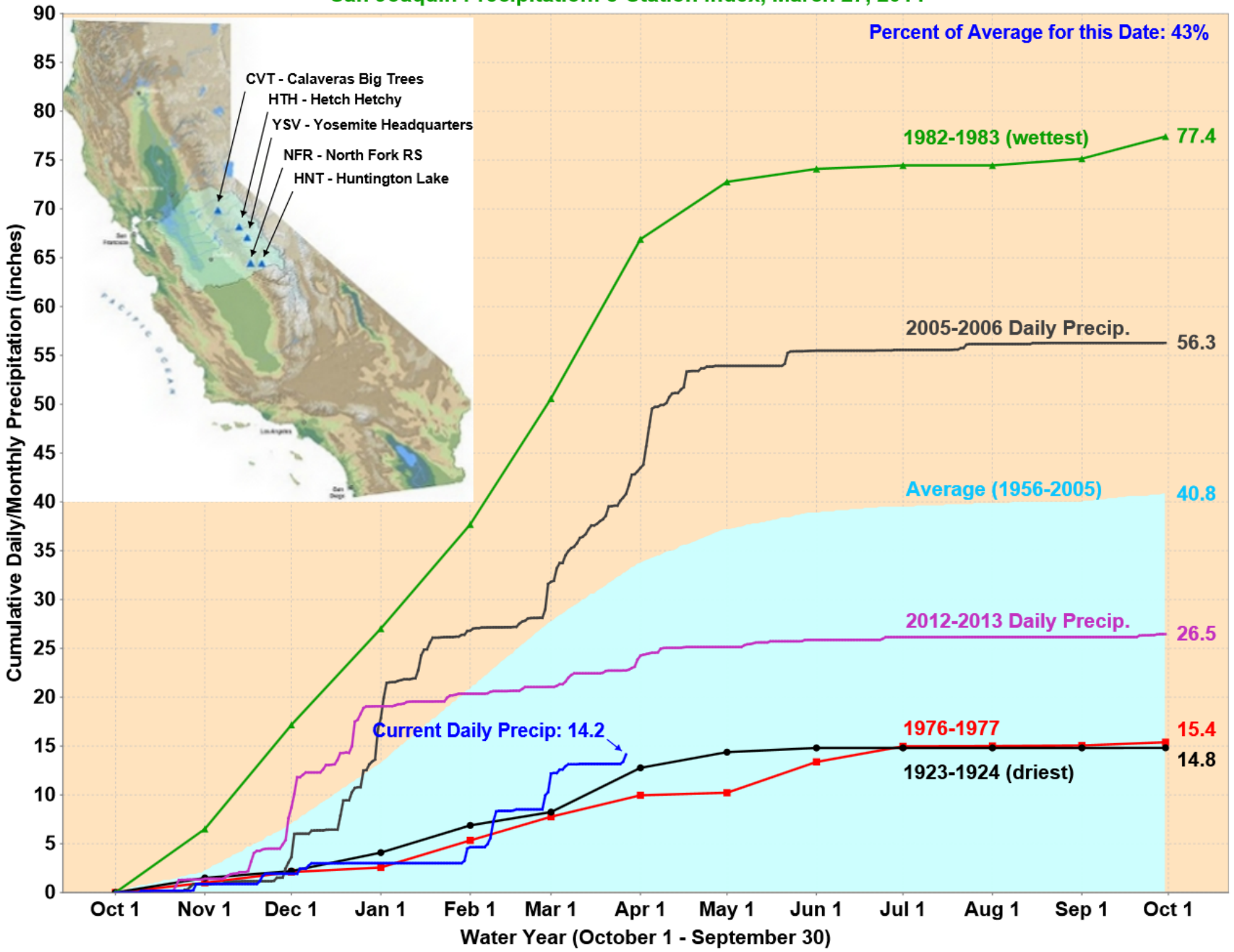
CENTRAL	
Data For: 27-Mar-2014	
Number of Stations Reporting	42
Average snow water equivalent	9.4"
Percent of April 1 Average	32%
Percent of normal for this date	32%

SOUTH	
Data For: 27-Mar-2014	
Number of Stations Reporting	30
Average snow water equivalent	6.6"
Percent of April 1 Average	26%
Percent of normal for this date	26%

STATEWIDE SUMMARY	
Data For: 27-Mar-2014	
Number of Stations Reporting	99
Average snow water equivalent	7.1"
Percent of April 1 Average	25%
Percent of normal for this date	25%


California Snow Water Content, December 30, 2013, Percent of April 1 Average
North
Percent of Average for this Date: N/A
1982-1983 (max)
2010-2011
2012-2013
Average
1976-1977 (min)
4
Central
Percent of Average for this Date: N/A
1982-1983 (max)
2010-2011
2012-2013
Average
1976-1977 (min)
8
South
Percent of Average for this Date: N/A
1982-1983 (max)
2010-2011
2012-2013
Average
1976-1977 (min)
10
250
200
150
100
50
0
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Statewide Percent of April 1: 5%
Statewide Percent of Average for Date: N/A

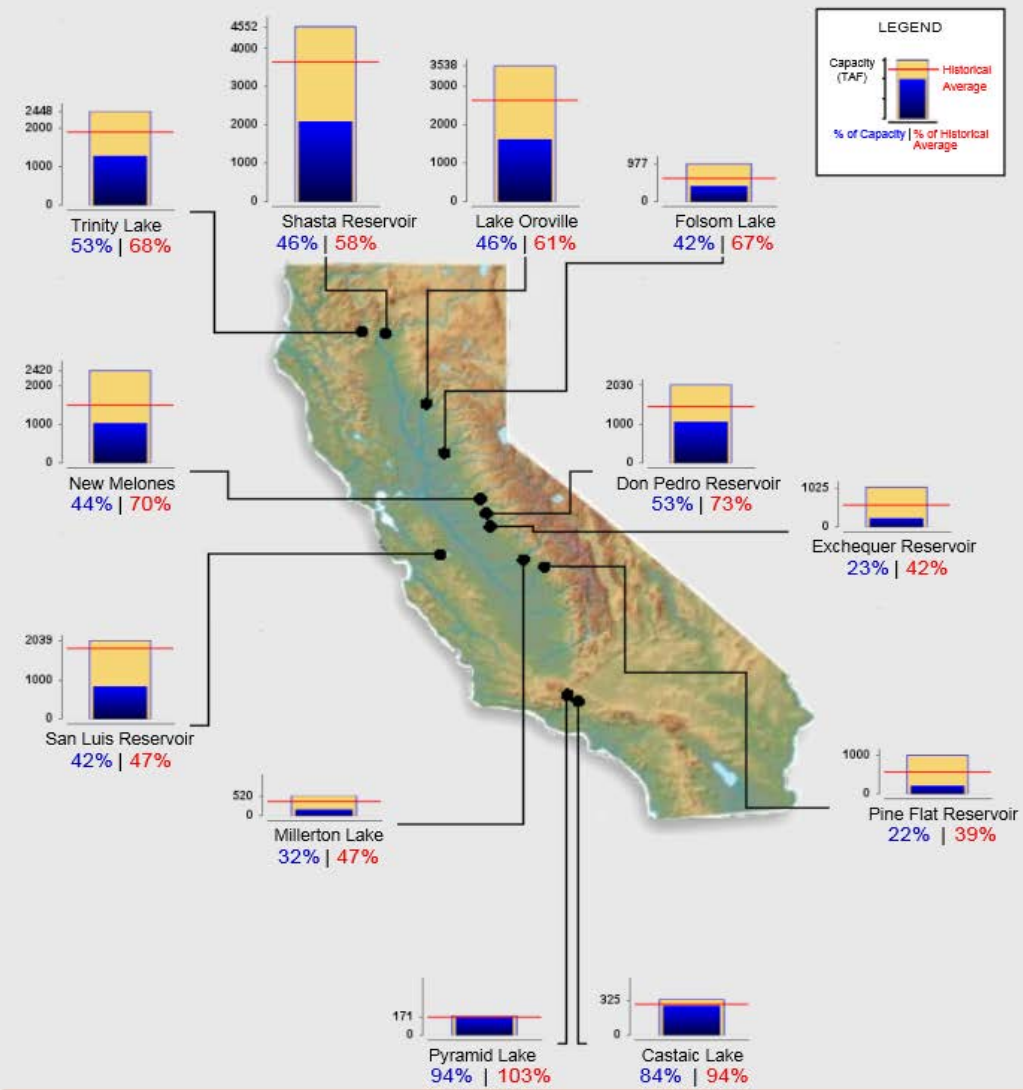

Northern Sierra Precipitation: 8-Station Index, March 27, 2014
MSC - Mount Shasta City
SHA - Shasta Dam
MNR - Mineral
QRD - Quincy
BCM - Brush Creek
SRR - Sierraville RS
BYM - Blue Canyon
PCF - Pacific House
Percent of Average for this Date: 54%
1982-1983 (wettest)
88.5
2005-2006 Daily Precip.
80.1
Average (1922-1998)
50.0
2012-2013 Daily Precip.
44.3
Current Daily Precip: 22.2
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, March 27, 2014
Percent of Average for this Date: 43%
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: 14.2
1976-1977
15.4
1923-1924 (driest)
14.8
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
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90

Reservoir Conditions

Ending At Midnight - March 26, 2014

CURRENT RESERVOIR CONDITIONS



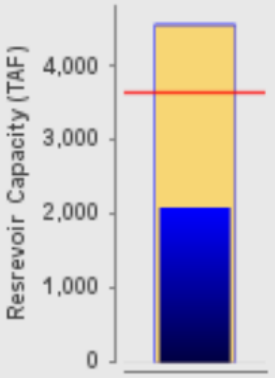
Graph Updated 03/27/2014 08:45 AM

& RESPONSE

Reservoir Conditions - Shasta Reservoir

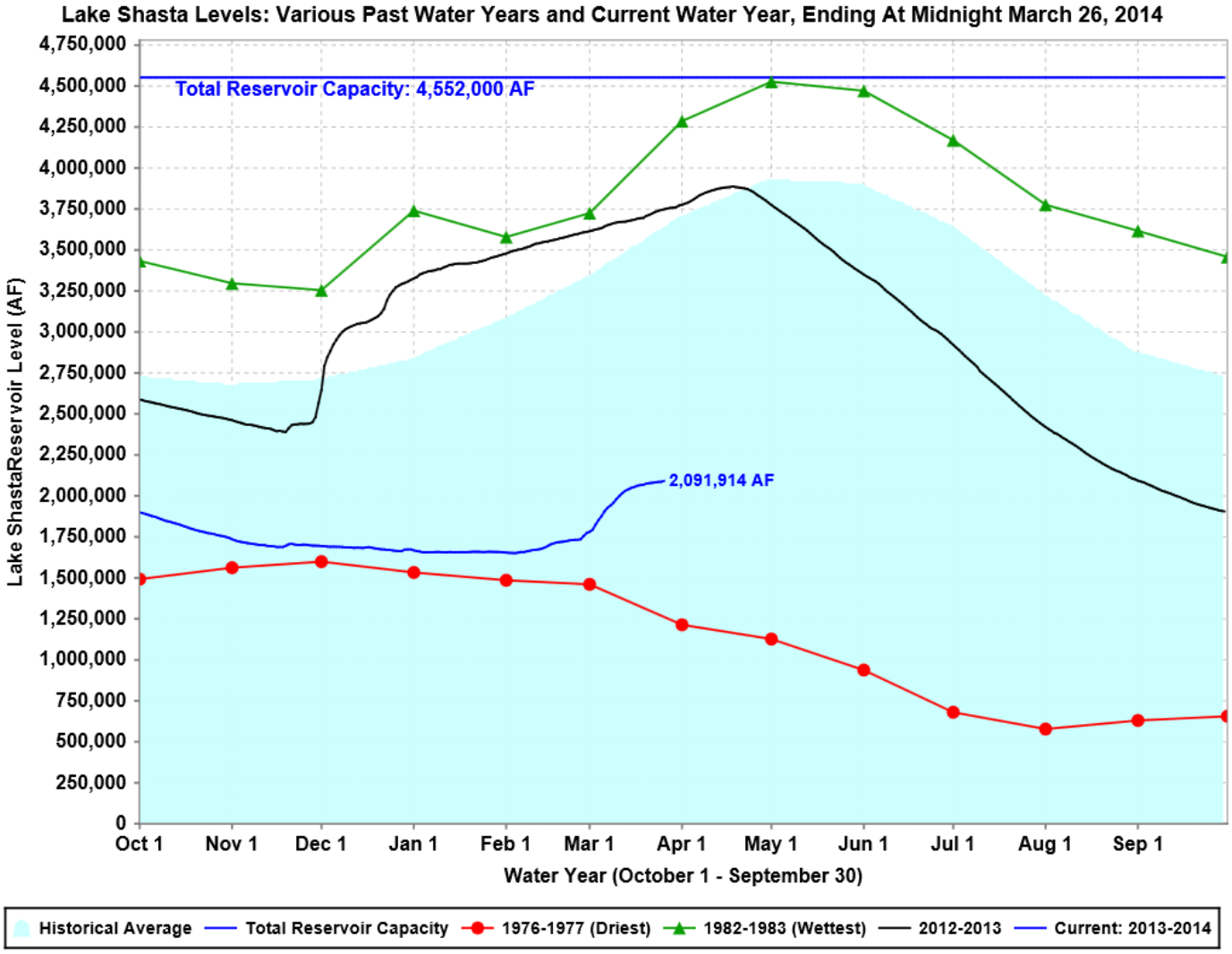
Lake Shasta Conditions

(as of Midnight - March 26, 2014)



Current Level: 2,091,914 AF

46% (Total Capacity) | 58% (Historical Avg.)

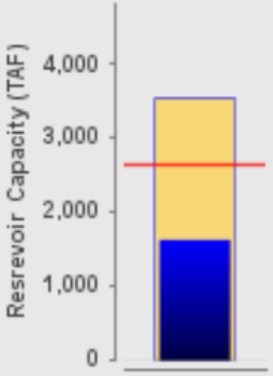


Data Updated 03/27/2014 08:45 AM

Reservoir Conditions - Lake Oroville

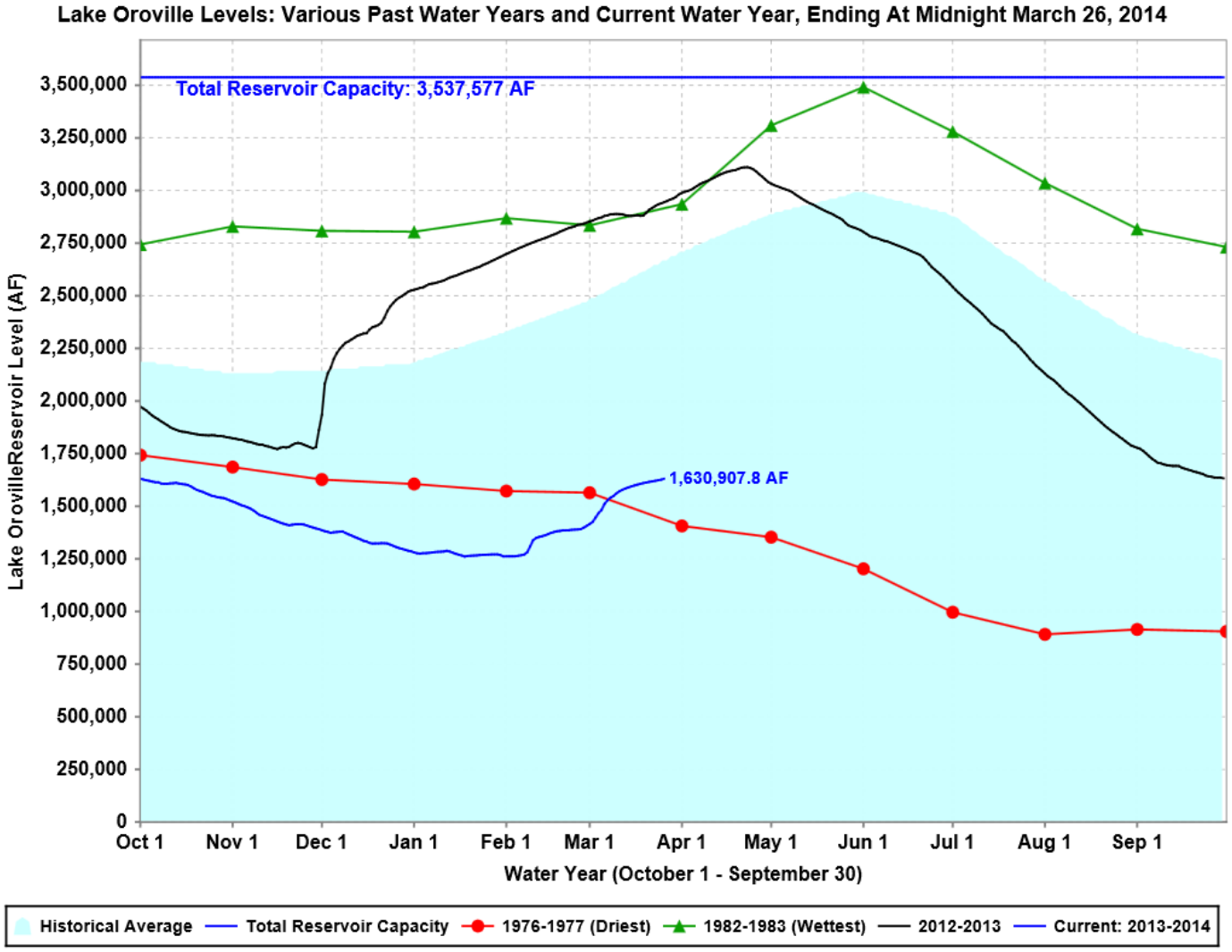
Lake Oroville Conditions

(as of Midnight - March 26, 2014)



Current Level: 1,630,907.8 AF

46% (Total Capacity) | 61% (Historical Avg.)

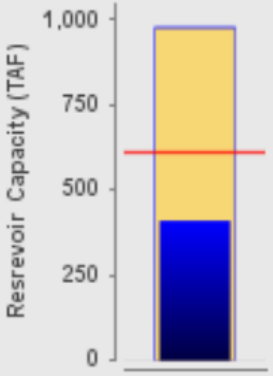


Data Updated 03/27/2014 08:45 AM

Reservoir Conditions - Folsom Lake

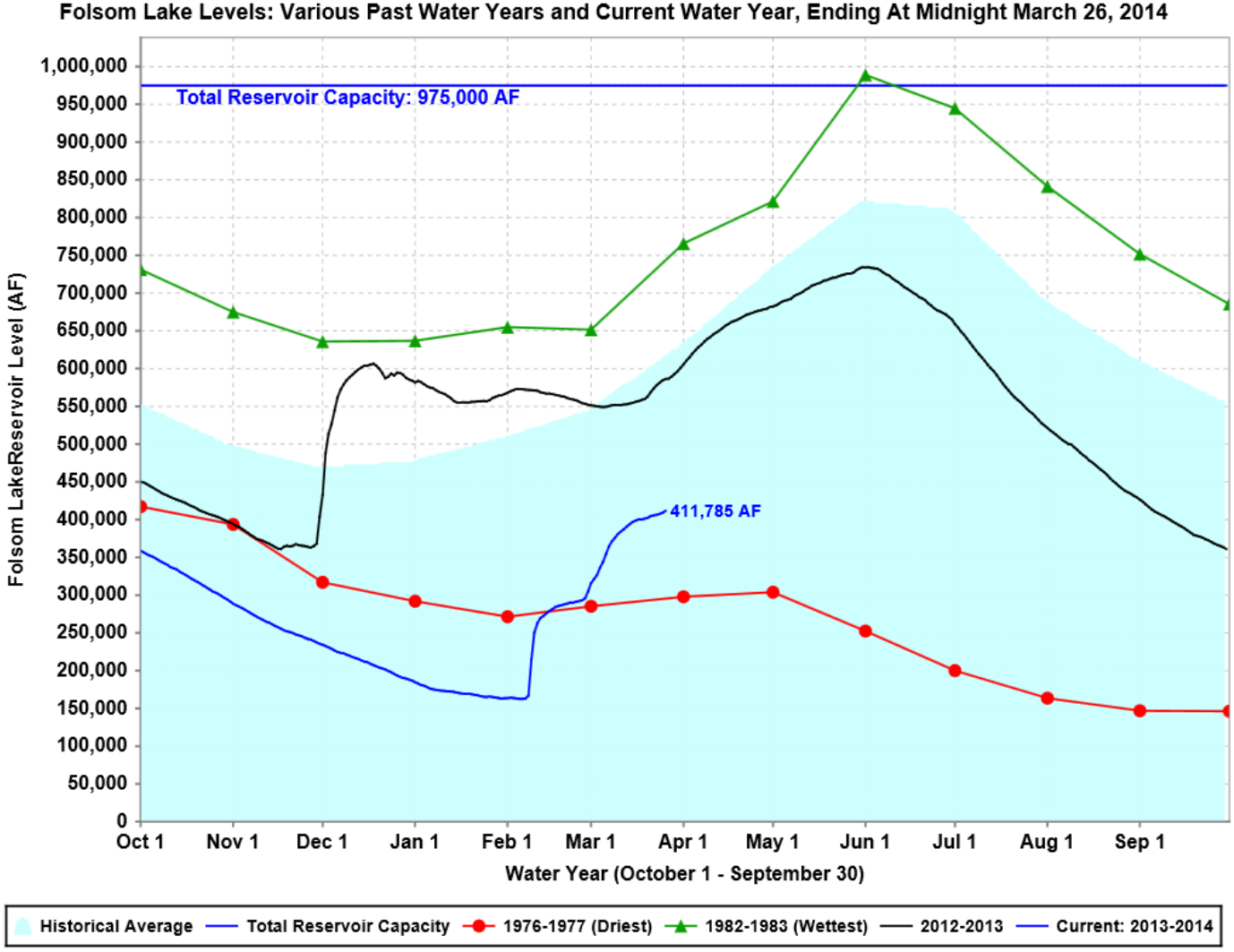
Folsom Lake Conditions

(as of Midnight - March 26, 2014)

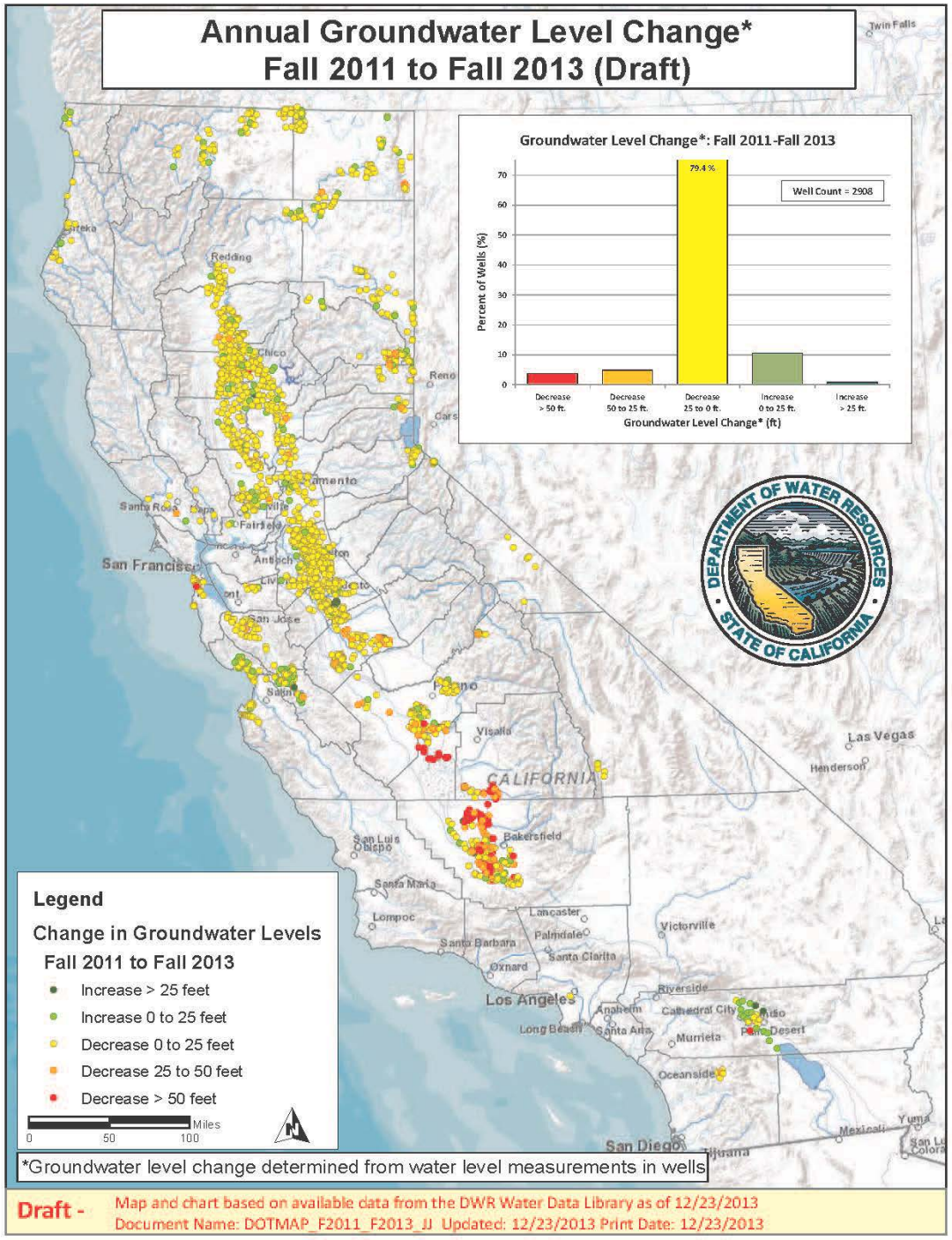


Current Level: 411,785 AF

42% (Total Capacity) | 67% (Historical Avg.)



Data Updated 03/27/2014 08:45 AM


Annual Groundwater Level Change*
Fall 2011 to Fall 2013 (Draft)
Groundwater Level Change*: Fall 2011-Fall 2013
Well Count = 2908
79.4 %
Percent of Wells (%)
Decrease > 50 ft.
Decrease 50 to 25 ft.
Decrease 25 to 0 ft.
Increase 0 to 25 ft.
Increase > 25 ft.
Groundwater Level Change* (ft)
DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA
Legend
Change in Groundwater Levels
Fall 2011 to Fall 2013
Increase > 25 feet
Increase 0 to 25 feet
Decrease 0 to 25 feet
Decrease 25 to 50 feet
Decrease > 50 feet
Miles
0 50 100
*Groundwater level change determined from water level measurements in wells
Draft -
Map and chart based on available data from the DWR Water Data Library as of 12/23/2013
Document Name: DOTMAP_F2011_F2013_JJ Updated: 12/23/2013 Print Date: 12/23/2013

& RESPONSE

California Water Projects

Droughts

- Normal part of the hydrologic cycle
- Impacts are site-specific and sector-specific
- Conditions develop slowly; itself is not an emergency
- Greatest impacts are related to unmanaged water uses: rangeland grazing, wildfire, etc
- The greatest economic impacts
  - Wildfire and forestry damages
  - Not with urban & agricultural water uses

Drought (cont.)

- Water management & institutional infrastructure provide substantial capacity for mitigating drought impacts
- Invested billions of dollars helping local agencies improve their water supply reliability/demand capacity, which should also improve agencies' resilience to drought
- Good drought preparedness minimizes impacts and facilitates drought response

California's 20th & 21st Century Statewide Droughts

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

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 – public health and safety impacts**
- **Larger urban water agencies can manage 3-4 years of drought with minimal impacts to their customers**

Wildfire Risk

- Southern California catastrophic wildfires – 2003 & 2007 (costliest in U.S. history at the time)

- 2003 Governor's proclamation for bark beetle emergency, 4 counties in San Bernardino Natl. Forest

Tools for Managing Dry Conditions

- California's water infrastructure (which facilitates water transfers & exchanges)
- Groundwater
- Water shortage planning (e.g. UWMPs)
- Response actions such as outreach & conservation

Greatest Risks in 2014, if Dry

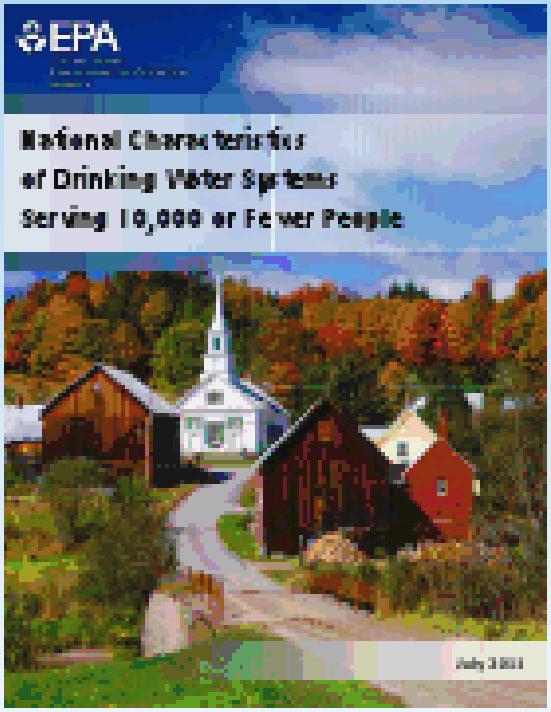
- **Health & safety and economic**
  - Catastrophic wildfires (e.g., Southern California in 2003 and 2007)
- **Health & safety**
  - Impacts to small water systems in rural areas (including wildfire damage)
- **Environmental**
  - Continued San Joaquin Valley land subsidence, spawning beds
- **Economic**
  - Minimal water allocations to some agricultural water users, particularly in the San Joaquin Valley

Statewide Drought Management Challenges

- **Delta Conditions**
- **Ability to monitor statewide groundwater conditions and impacts (subsidence)**
- **Assistance for marginal small water systems on fractured rock groundwater sources in rural areas**

Small Water Systems – Drought Management Challenges

- Isolated rural communities
- Systems on fractured rock groundwater
- Small groundwater basins w/ minimal recharge/storage capacities
- Impacted soonest and to greatest extent
- Typically operate with little margin
- Experience actual public health & safety impacts - lack of water for human consumption, sanitation, fire protection
- Lack SDWA's "technical, managerial, financial" capacity



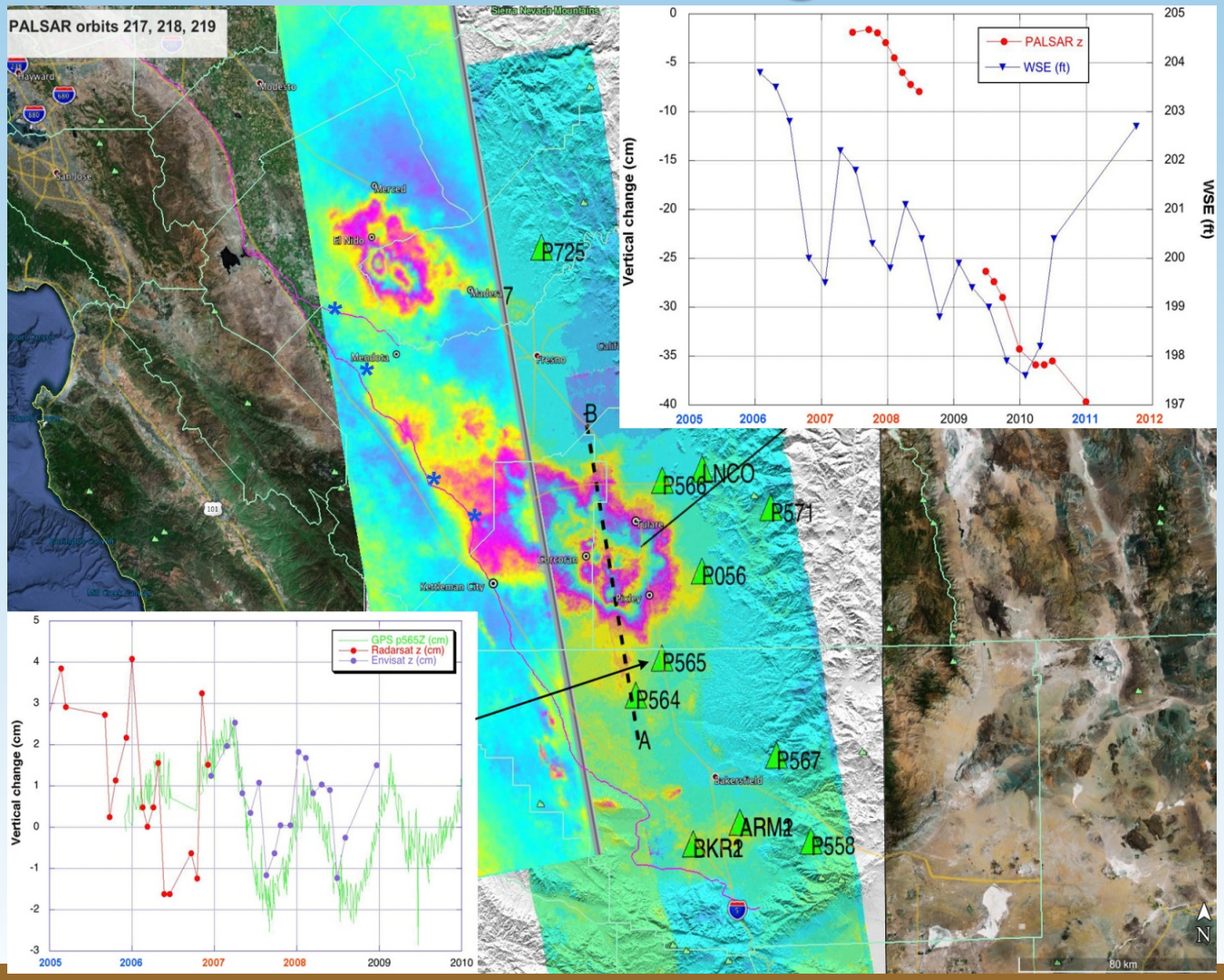
DWR Preparations
Possible Dry 2014

- Monitoring and Tracking impacts of dry conditions
- Meeting with buyers & sellers, coordinating with SWRCB/CDFA/USBR for facilitating temporary transfers
- Activated the Drought Management Operations Center – Preparedness
- Urban agency drought preparedness workshops held in October and December
- Analyzing CASGEM statewide groundwater level information
- Contracting with JPL for San Joaquin Valley subsidence monitoring to track recent land subsidence

DWR Preparations
Possible Dry 2014 (cont.)

- Agricultural drought workshops
- 4 drought training classes for small water systems held in partnership with CRWA
- Research-level seasonal climate forecast commissioned for the winter rainy season
- Assisting CWC to organize small water system workshop(s)
- Implementing California Water Action Plan
- Regional/local solutions - water efficiency, conservation
- State's investment in IRWM

Working with JPL to Continue San Joaquin Valley Subsidence Monitoring - Needs



State of California Actions

- EO B-21-13: Streamline Water Transfers - May 2013
- California Water Plan Update 2013 - draft Oct 2013
- State Drought Task Force - Dec 2013
- Governor's Drought Proclamation - Jan 2014
- Water Action Plan - Jan 2014
- SB 103 & SB 104 Drought Relief Bills - March 2014

Drought Legislation Summary

- **$549 million - Local and regional projects.**
- **$30 million - Improve water use efficiency, save energy and reduce GHG emissions.**
- **$14 million - Groundwater management and assistance to disadvantaged communities.**
- **$10 million - Irrigation and water pumping systems that reduce water & energy use.**
- **$15 million - Address emergency water shortages due to drought.**
- **$13 million - Expand water use efficiency and conservation activities and to reduce fuel loads.**
- **$25 million - Food assistance to those impacted by the drought.**
- **$21 million - Housing related assistance for individuals impacted by the drought.**

NOTE: Funding sources include voter-approved GO bonds, General Fund , and Greenhouse Gas Emissions Fund

IRWM $$

- **450 Million – Prop 84**
- **200 Million – Expedite**
- **Address Drought conditions**
  - Provide greater water supply reliability
  - Protect water quality
- **Regional IRWM – Good Standing**
- **Guidelines and Schedule**

http://www.water.ca.gov/irwm/grants/fundingarea.cfm

GHG Emissions $$

- $19 million
- Local agencies, joint power authorities, or nonprofit organizations
- Residential, commercial, or institutional water efficiency programs
- Projects that reduce greenhouse gas emissions
- Reduce water and energy use
- DWR - grant program by July

Short Term Actions

- Conservation!
- Review / Activate Water Contingency Plans
- Local / Regional Information and Assistance
- Expedite System Improvements

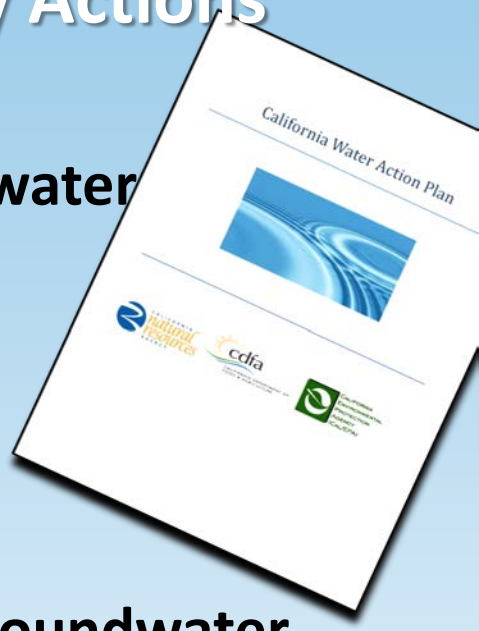
Long Term Actions

- Interties
- Expand Water Portfolios
- Integrated Water Management Actions
- Capital Outlay and Maintenance Funding

Moving From Plans to Actions

Governor's Water Action Plan

A Diverse Water Portfolio - 10 Priority Actions



1. Make conservation a California way of life
2. Increase regional self-reliance and integrated water management across all levels of government
3. Achieve the co-equal goals for the Delta
4. Protect and restore important ecosystems
5. Manage and prepare for dry periods
6. Expand water storage capacity and improve groundwater management
7. Provide safe water for all communities
8. Increase flood protection
9. Increase operational and regulatory efficiency
10. Identify sustainable and integrated financing opportunities

What You Can Do?

- Know your water portfolio
- Know your water costs
- Assess your risks
- Sustainable funding
- Engage in Regional IRWM Actions
- Ownership at the user level
- 20% by 2020 – Go Early!
- Wave your flag
- Reward Conservation and Innovation

Information and Contacts

- Drought Management Operations Center: (916) 574-2619
- Public CDEC access: **http://cdec.water.ca.gov**
- Agency access: **http://cdec4gov.water.ca.gov**
  Call (916) 574-1777 to Apply
- Webcast Weather/Hydrology Briefings – wx_webcast-request@water.ca.gov
- Web Links
  - Water Conditions: **http://water.ca.gov/waterconditions/**
  - Water Transfers: **http://water.ca.gov/watertransfers/**
  - Drought Page**:** **http://water.ca.gov/waterconditions/drought/**
  - Public Affairs: **http://water.ca.gov/publicaffairs.cfm**

Drought & Grant Resources

- http://www.water.ca.gov/waterconditions/index.cfm
- http://www.water.ca.gov/waterconditions/declaration.cfm
- http://www.water.ca.gov/waterconditions/background.cfm
- http://www.water.ca.gov/waterconditions/emergencybarriers.cfm
- http://www.water.ca.gov/waterconditions/publications.cfm
- http://www.water.ca.gov/nav/nav.cfm?loc=t&id=103

Questions