Mission of NWS
Hydrologic Services Program

- provide river and flood forecasts and warnings for the protection of lives and property
- provide basic hydrologic forecast information for the nation’s environmental and economic well being
What changed during the 2012-2017 drought?

• Putting drought into context
  • Challenges:
    • What does drought mean in California?
    • How does one describe drought?
    • Accounting for cumulative deficits in rain & runoff
  • Intense interest in refilling reservoirs
  • Ecosystem management – How low are rivers going to get?
  • Accounting for effects of burn scars on runoff
  • How was the drought going to affect runoff when heavy rains hit?
8-Station Index (2012-2014)

8-Station Index (Northern Sierra Precipitation)
Running Total Precipitation (2012-2014) Vs. Cumulative Average

150.6 inches
(Average Total for 3 Years)

32.07" Deficit

118.53 inches
(Actual Total 2012-2014 Water Year)
5-Station Index (2012-2014)

5-Station Index (Southern Sierra Precipitation)
Running Total Precipitation (2012-2014) Vs. Cumulative Average

- 120.53 inches (Average Total for 3 Years)
- 49.65" Deficit
- 70.88 inches (Actual Total 2012-2014 Water Year)

Legend:
- Blue line: 3 Year Running Total
- Red line: Cumulative Average

Map showing locations of stations:
- CVT - Calaveras Big Trees
- HTH - Hetch Hetchy
- YSV - Yosemite HQ
- NF - North Fork RS
- HNT - Huntington Lake
SACRAMENTO VALLEY - WATER RESOURCES INDEX (SACC0)
Sacramento River - Bend Bridge (BDBC1)
Feather River - Lake Oroville (ORDC1)
Yuba River - Englebright Reservoir (HLEC1)
American River - Folsom Lake (FOLC1)

Issue Time: Sep 04 2017 at 8:53 AM PDT

Historical Flows
Water Year Seasonal (Apr-Jul)

Water Year Historical Flow for SACC0

[Graph showing water year historical flow with bars indicating flow from 1910 to 2010, with distinct years and flow values marked.]
Water Year Runoff – Sacramento Basin

2017 2\textsuperscript{nd} Highest Runoff On Record

2014 4\textsuperscript{th} Lowest On Record

2016 7\textsuperscript{th} Lowest 5yrs On Record
SAN JOAQUIN VALLEY - WATER RESOURCES INDEX (VNSC0)

San Joaquin River - Millerton Reservoir (FRAC1)
Merced River - Exchequer Reservoir (EXQC1)
Tuolumne River - New Don Pedro Reservoir (NDPC1)
Stanislaus River - New Melones Reservoir (NMSC1)

Issuance Time: Sep 04 2017 at 8:53 AM PDT

Historical Flows

Water Year Seasonal (Apr-Jul)

Water Year Historical Flow for VNSC0

![Graph showing water year historical flow for VNSC0. The graph displays annual flow and 5-year average trends from 1910 to 2010.](image-url)
Water Year Runoff – San Joaquin Basin

2017 2\textsuperscript{nd} Highest Runoff On Record

2015 2nd Lowest On Record

2016 2nd Lowest 5yrs On Record

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Issuance Time: Sep 05 2017 at 9:12 AM PDT

2017 Multi-Year Accumulated Volume Plot

(Sacramento Basin) 09/05/2017
Most Probable: 84900 kaf I 93% of Average

Created: 09/05/2017 at 09:08 AM PDT
KLAMATH RIVER - KLAMATH (KLMC1) *EXCLUDING RESERVOIR RELEASES*
Latitude: 41.51° N  Longitude: 123.98° W  Elevation: 6 Feet
Location: Del Norte County in California  River Group: North Coast
1 Day Chances of Exceeding River Levels

This is a conditional simulation based on the current conditions as of 9/6/2017.

Exceedance Probability
- 10 - 25%
- 25 - 50%
- 50 - 75%
- 75 - 90%
- >= 90%

River Flow (CFS)
- 9396.0
- 8472.0
- 7548.0
- 6624.0
- 5700.0
- 4776.0
- 3852.0
- 2928.0
- 2004.0
- 1080.0
- 156.0

7/1 24:00 7/11 7/21 7/31 8/10 8/20 8/30
Summary of Flood to Drought Issues

Describing drought and putting it into context
Help water managers in decision support for refilling reservoirs
Help ecosystem managers in dealing with low flows
Remaining Challenges

Describing drought and putting it into context
Lacking tools to describe burn scar effects on runoff
Low flows present challenges due to measurement & modeling
Questions?
California Nevada
River Forecast Center

Alan Haynes
Hydrologist in Charge

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