Observations and Expectations of a Warming World: Water Year 2019 Outlook

Dr. Michael Anderson, State Climatologist
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Talk Overview

• Antecedent and Current Conditions

• Short-Term Forecasts

• Intel and Expectations for 2019
California’s topography affects our weather and climate.

Seasonal precipitation and hydrologic outcomes vary significantly across CA.
Climate Division 2 Water Year Data

![Graph showing annual precipitation and average temperature for Climate Division 2 with data from 1896-2000, 21st Century, Period of Record Avg, and 21st Century Average.](image-url)
Variability at multiple scales

Northern Sierra Precipitation: 8-Station Index

- Mount Shasta City
- Shasta Dam
- Mineral
- Quincy
- Brush Creek
- Sierraville Rd
- Blue Canyon
- Pacific House

Cumulative Daily/Monthly Precipitation (inches)

29% 23% 47%
18% 51% 26% 5%

Water Year (October 1 - September 30)

Average (1966-2019)
1923-1924 (dries)
2016-2017 (wet)
2017-2018
Northern Sierra Precipitation: 8-Station Index, December 04, 2018

Percent of Average for this Date: 78%

- 2016-2017 Daily Precip (wettest): 94.7
- 1982-1983 (2nd wettest): 88.5
- 1997-1998: 82.4

Average (1966-2015): 51.8

- 2017-2018 Daily Precip: 41.0
- 2014-2015 Daily Precip: 37.2

The size, number, and strength of atmospheric river events (ARs) result from the alignment of key physical processes operating on different space and time scales that will change with climate change.
National Multi-Model Ensemble Forecast of Winter (DJF) Precipitation Anomaly
The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.

From NWS CPC ENSO Diagnostic Discussion 12/3/18
Summary

• Slow start to the water year – first significant precipitation around Thanksgiving (aside from Hurricane Rosa remnants at very beginning of water year)

• Eastern Tropical Pacific SSTs warmer than average

• Jet stream more zonal (East-West) and accelerated

• Pattern suggests faster moving storms regularly impacting CA with precipitation totals dependent upon AR characteristics – pay attention to weather forecasts

• Dynamic seasonal forecast models ensemble indicates above average winter (DJF) – models have little verifiable skill right now

• CPC 3-month outlook suggests El Niño-ish pattern with improved chances of wet outcome in CA
Questions?

Michael.L.Anderson@water.ca.gov