CCSS Climate Program Update
Talk Overview

- Program Focus Areas
- Next Steps for the Climate Program
- Intel and Expectations for 2019
Coming Year

- Finding funding for observing and forecasting projects with partners
- More engagement with AQPI
- Working with FloodMAR
- Documentation of Strategic Monitoring Initiative, Forecasting for Integrated Water Management, and Research Priorities
- Continuing Work with Existing Partner Programs
- Supporting Programs within HFO
**Integrated Water Resources Management**

**Public Safety – Forecast/Warning**
- Extremes Response and Coordination

**Observations**
- In Situ
  - HMT/AQPI
  - HYDAS
  - Post Fire Monitoring Program
  - USGS Stream Gages
  - ASO
  - AR Airborne Recon
  - MODIS (satellite)
- Airborne

**Decision Support Tool Kit**
- RFC Forecast Points
- HEC-HMS/HED 71/PRMS
- B120
- INFORM
- FCO/FIRO
- AQPI DSS

**Forecasts**
- QPF
  - Week 1/
  - Week 2
- NWS CNRFC
- NWS CPC
- NASA JPL
- NOAA ESRL
- IRI
- CW3E
- 30-Day
- 90-Day
- Water Year Outlook

**Atmospheric Rivers – number, size, character, spacing, and timing**
Variability at multiple scales

Northern Sierra Precipitation: 8-Station Index

Variability over time:
- October: 29%
- November: 23%
- December: 47%

Cumulative Daily/Monthly Precipitation (inches)

Total Water Year Precipitation

- Average (1966-2017): 51.8
- 1923-1924: 17.1
- 2016-2017: 41.0
- 2017-2018: 94.7
Variability at multiple scales

San Joaquin Precipitation: 5-Station Index

- Calaveras Big Trees
- Hetch Hetchy
- Yosemite H0
- North Fork RS
- Huntington Lake

16% 19% 65%

17% 52% 28%
The size, number, and strength of atmospheric river events (ARs) result from the alignment and interaction of key physical processes operating on different space and time scales that will change with climate change.
ENSO-neutral is favored through August-October 2018, with El Niño favored thereafter. Chances for El Niño are 65-70% during Northern Hemisphere winter 2018-19.
The majority of models predict El Niño to develop during September-November 2018.
Recent Atmospheric
And Sea Surface
Temperature Evolution

Middle Atmosphere Pressure

Upper Atmosphere Winds

Average SST Anomalies
7 OCT 2018 – 3 NOV 2018

Graphics from CPC ENSO Diagnostic Discussion
National Multi-Model Ensemble Dec-Feb Forecast Precipitation Anomaly
Single Model (GFDL) January 2019 Extreme Wet Member

6 of 7 models forecast wet for January 2019 IMME also wet forecast

Reminder: Documented Skill limited for such long-lead forecasts
Expectations for WY2019

• Weak to Moderate El Niño conditions will be in place in the eastern tropical Pacific for the winter season

• Warmer than average temperatures expected for winter

• El Niño by itself is not a good predictor of seasonal precipitation outcomes for CA

• Dynamic models for seasonal forecasting suggest wetter than average conditions for CA for winter (Dec/Jan/Feb) season

• Some models suggest at potential for extreme conditions in January 2019
Questions?

Michael.L.Anderson@water.ca.gov