

CCSS Climate Program Update

Dr. Michael Anderson, State Climatologist

CCSS Annual Meeting

November 14, 2018

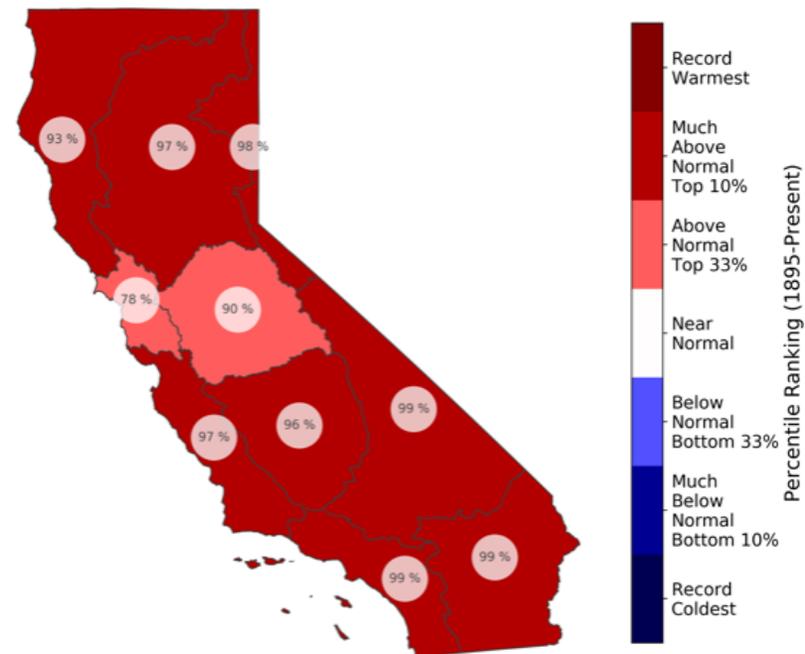
Talk Overview

- 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*

California by Hydrological Regions
Minimum Temperature Percentile Ranking for Oct 2017 - Sep 2018



Integrated Water Resources Management

Public Safety – Forecast/Warning
Extremes Response and Coordination

Storm Water Management
Groundwater Management

Supply Reliability
Resource Stewardship

Observations

In Situ

Radar

HMT/AQPI

HYDAS

Post Fire Monitoring Program

USGS Stream Gages

ASO

AR Airborne Recon

MODIS (satellite)

Airborne

Satellite

Decision Support Tool Kit

RFC Forecast Points

HEC-HMS/HED 71/PRMS

B120

INFORM

FCO/FIRO

AQPI DSS

Forecasts

QPF

Week 1/
Week2

NWS CNRFC

NWS CPC

NASA JPL

NOAA ESRL

IRI

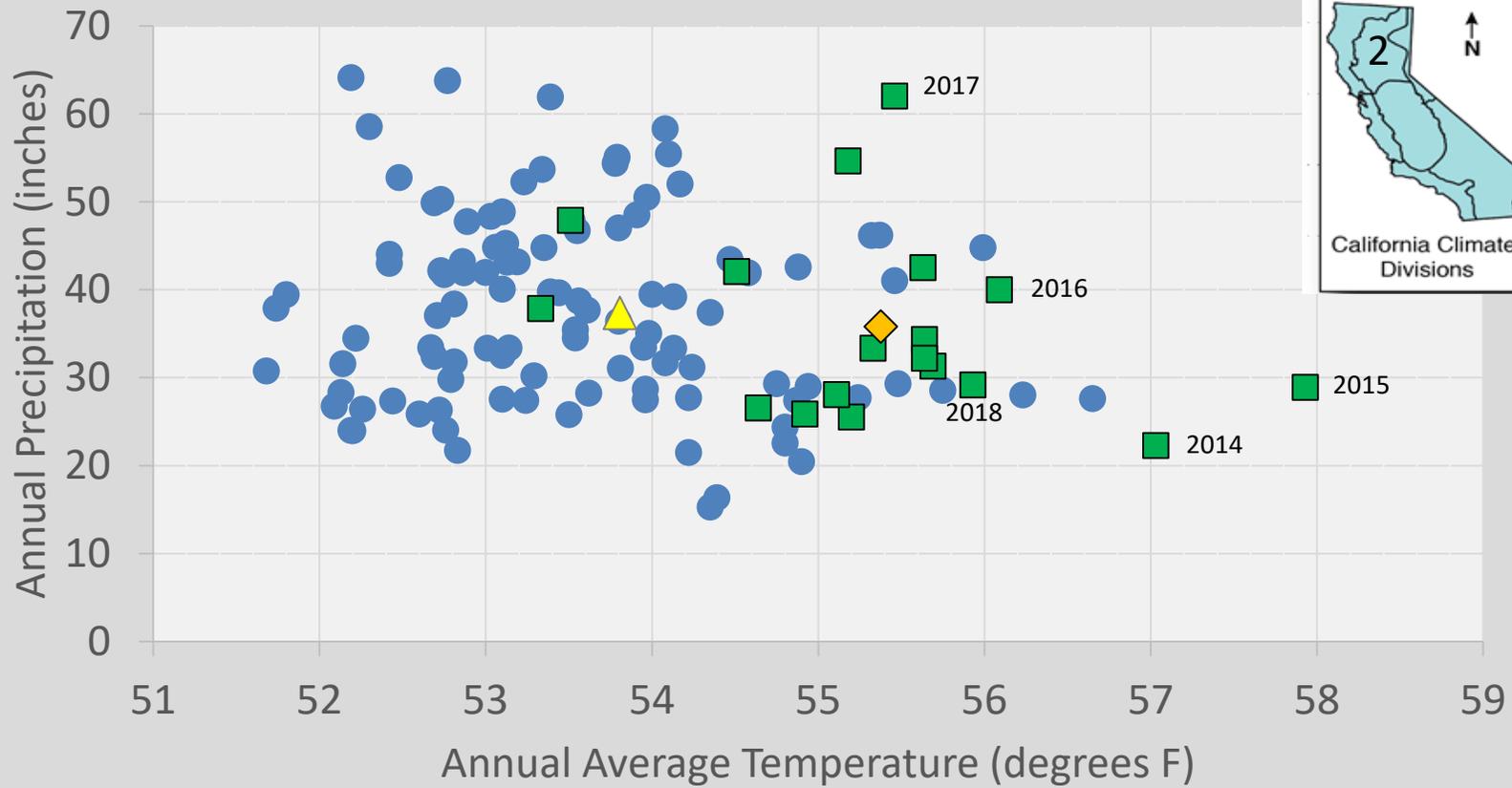
CW3E

30-Day

90-Day

Water Year Outlook

Atmospheric Rivers – number, size, character, spacing, and timing



- 1896-2000
- 21st Century
- ▲ Period of Record Avg
- ◆ 21st Century Average

2017

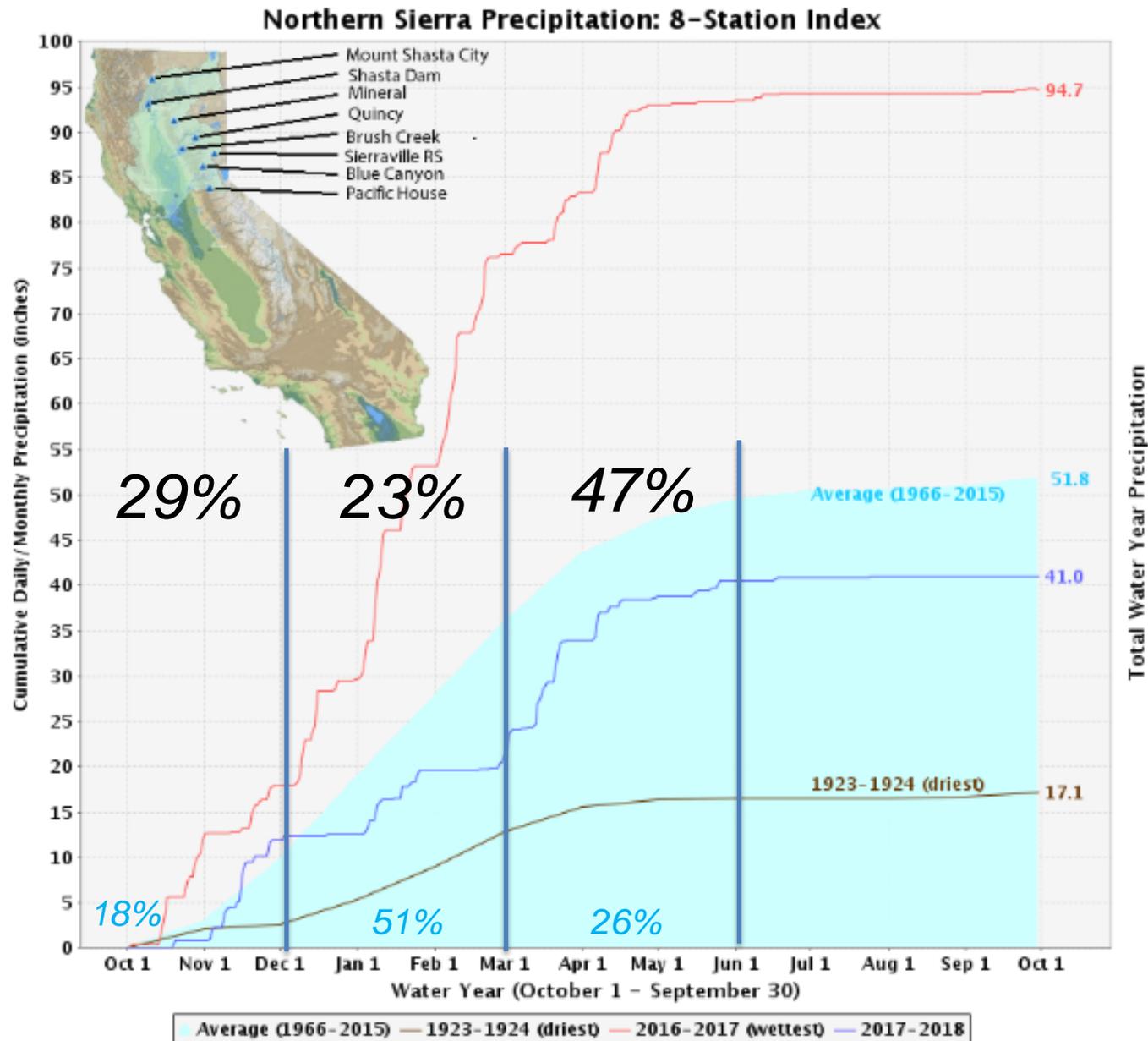
2016

2015

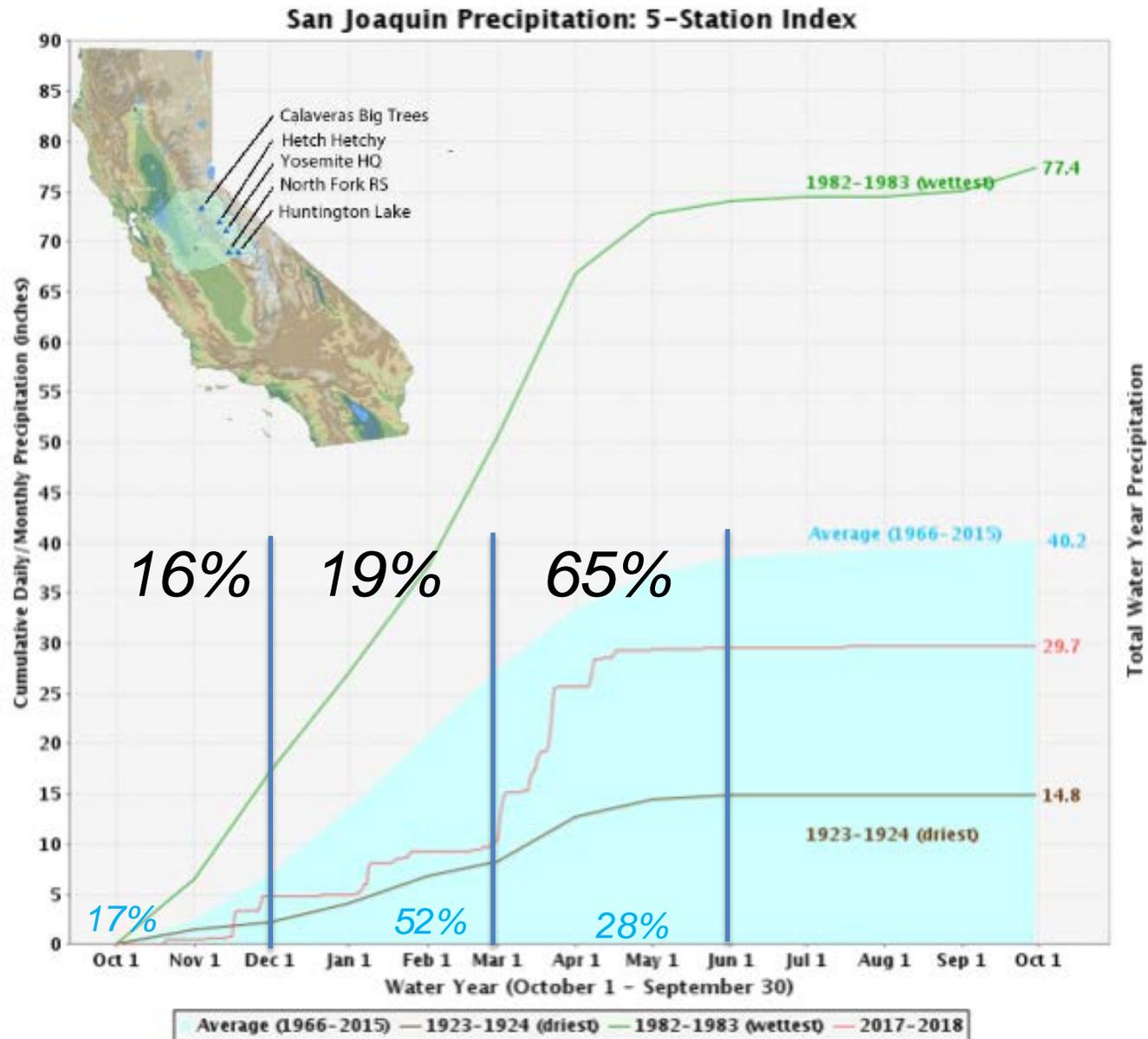
2014

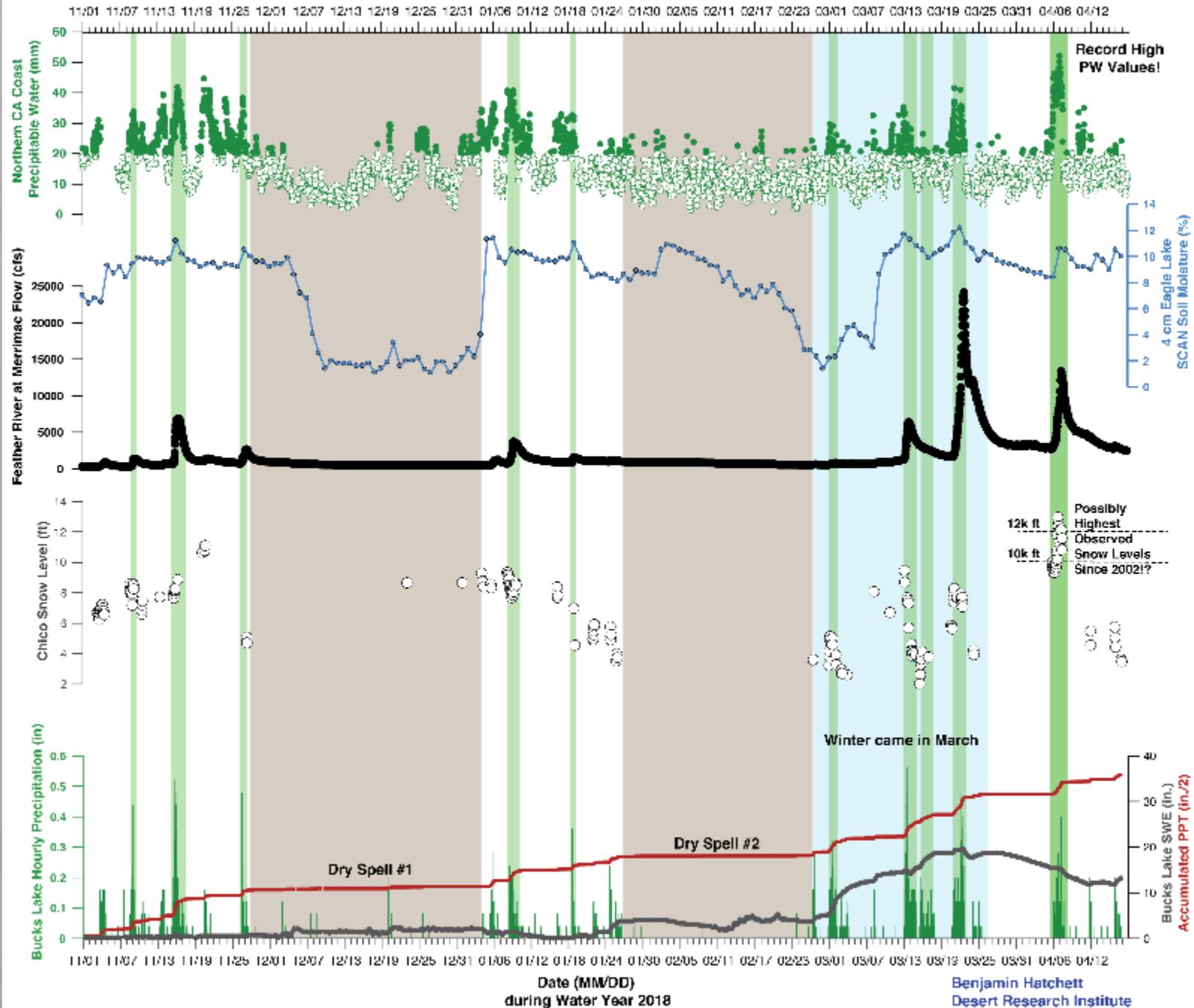
2018

Variability at multiple scales



Variability at multiple scales

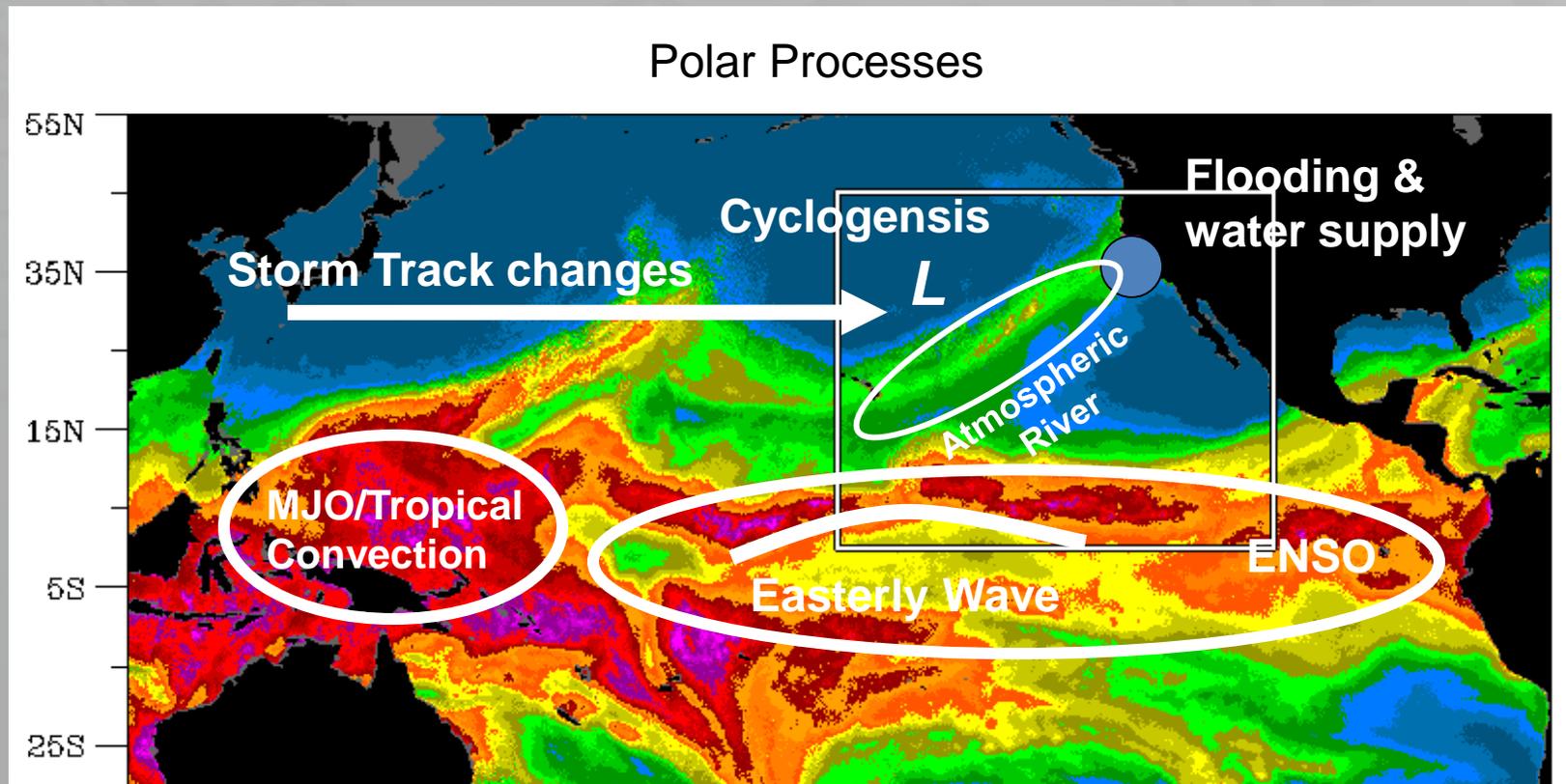




Date (MM/DD)
during Water Year 2018

Benjamin Hatchett
Desert Research Institute
Western Regional Climate Center

Key Phenomena Affecting California Water Supply/Flooding:

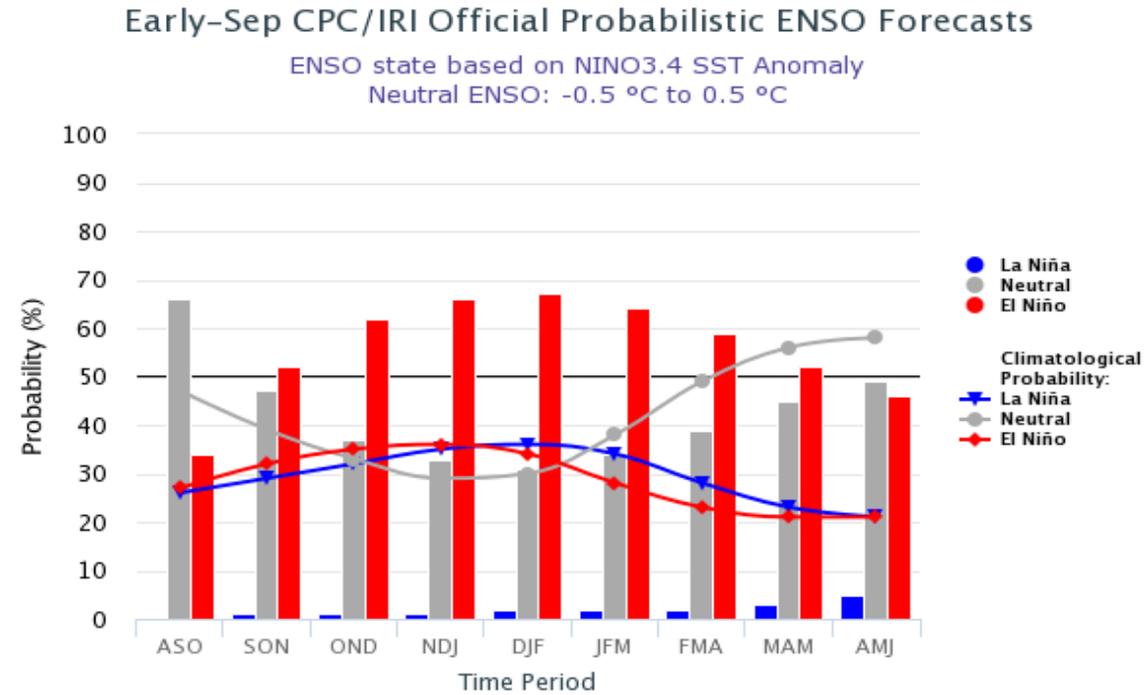


The size, number, and strength of atmospheric river events (ARs) result from the alignment and interaction of key physical processes operating on different space and time scales that will change with climate change

CPC/IRI Probabilistic ENSO Outlook

Updated: 13 September 2018

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.



From CPC ENSO Diagnostic Discussion

IRI/CPC Pacific Niño 3.4 SST Model Outlook

The majority of models predict El Niño to develop during September-November 2018.

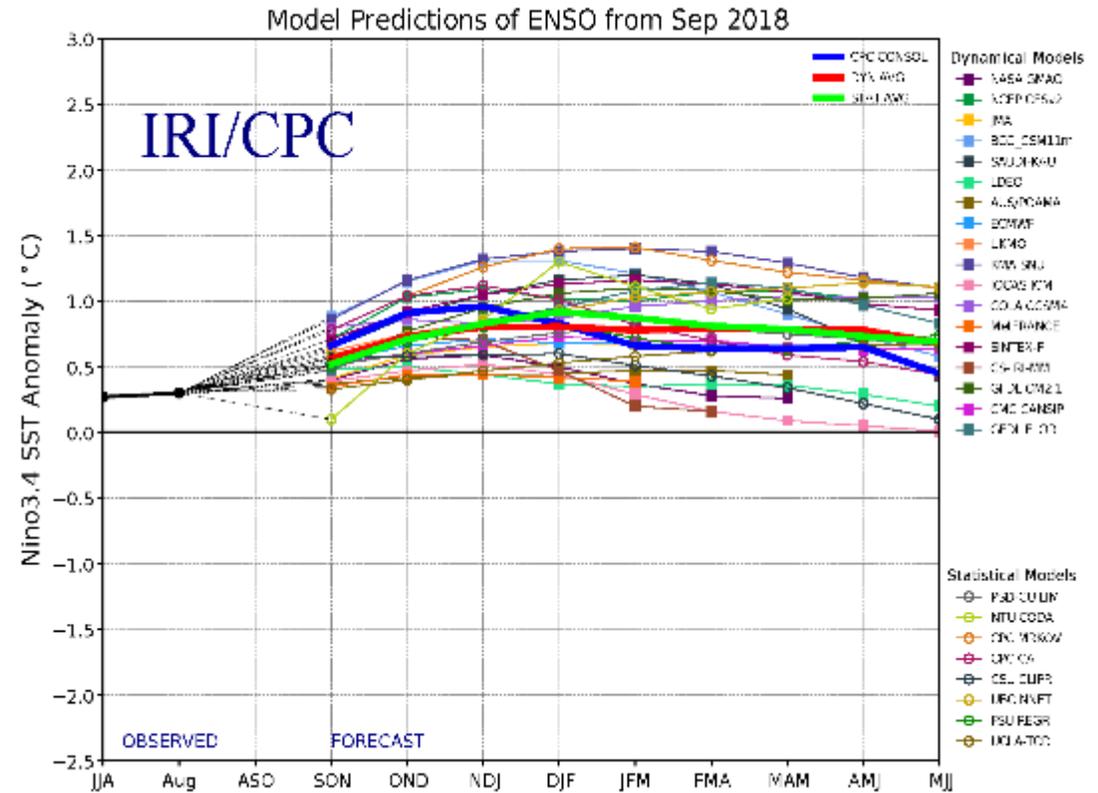
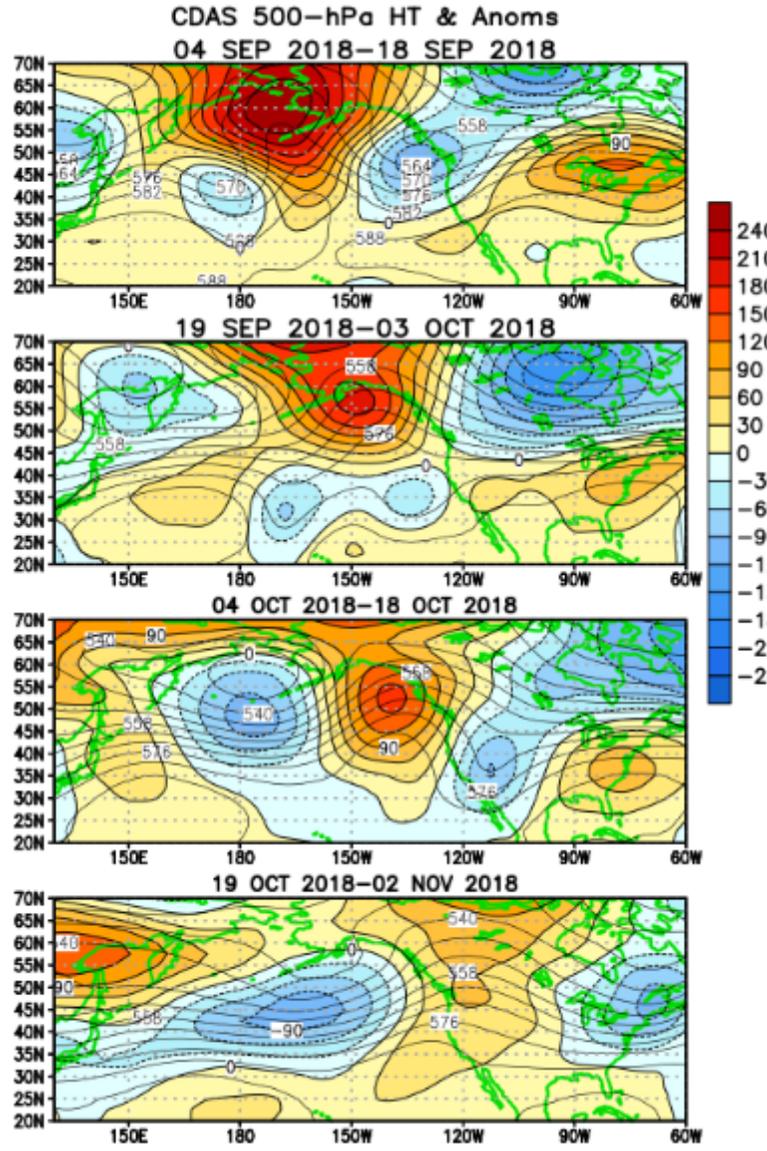
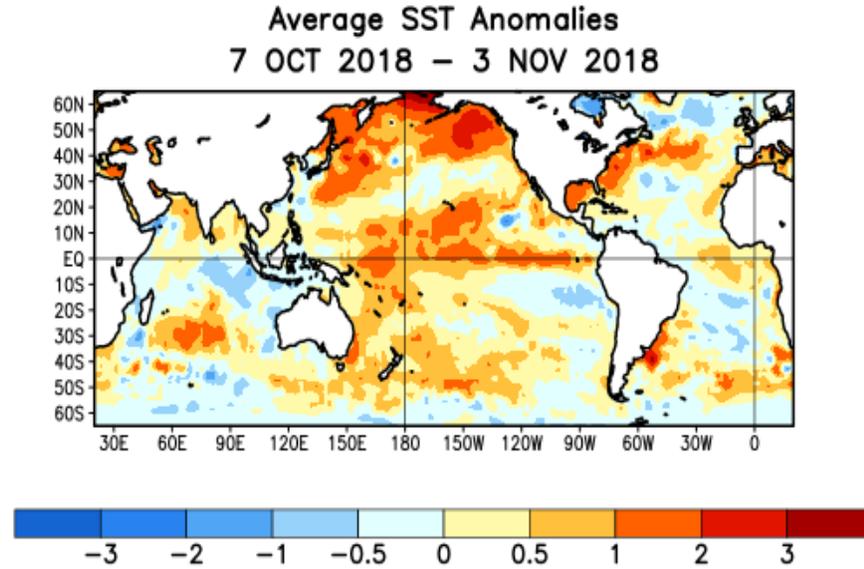


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 19 September 2018).

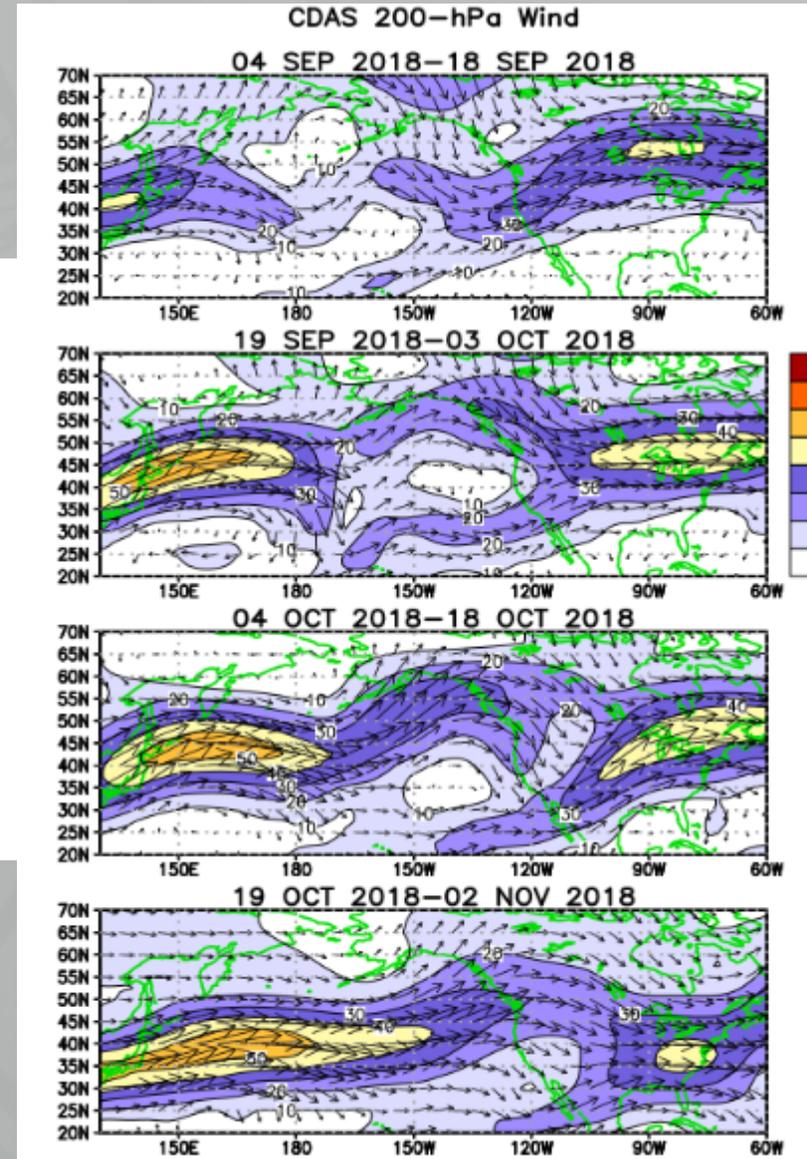
Middle Atmosphere Pressure



Recent Atmospheric And Sea Surface Temperature Evolution

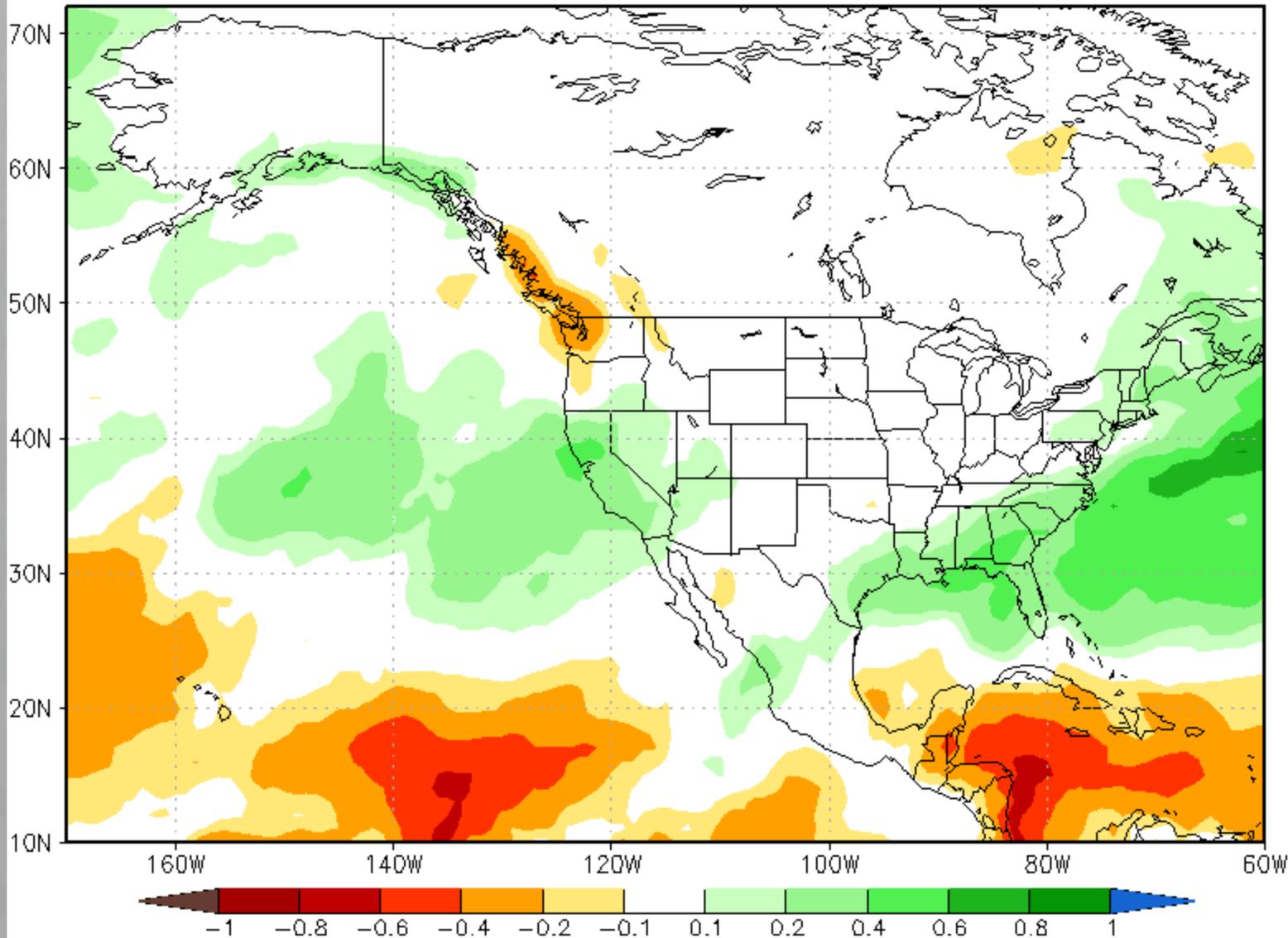


Upper Atmosphere Winds

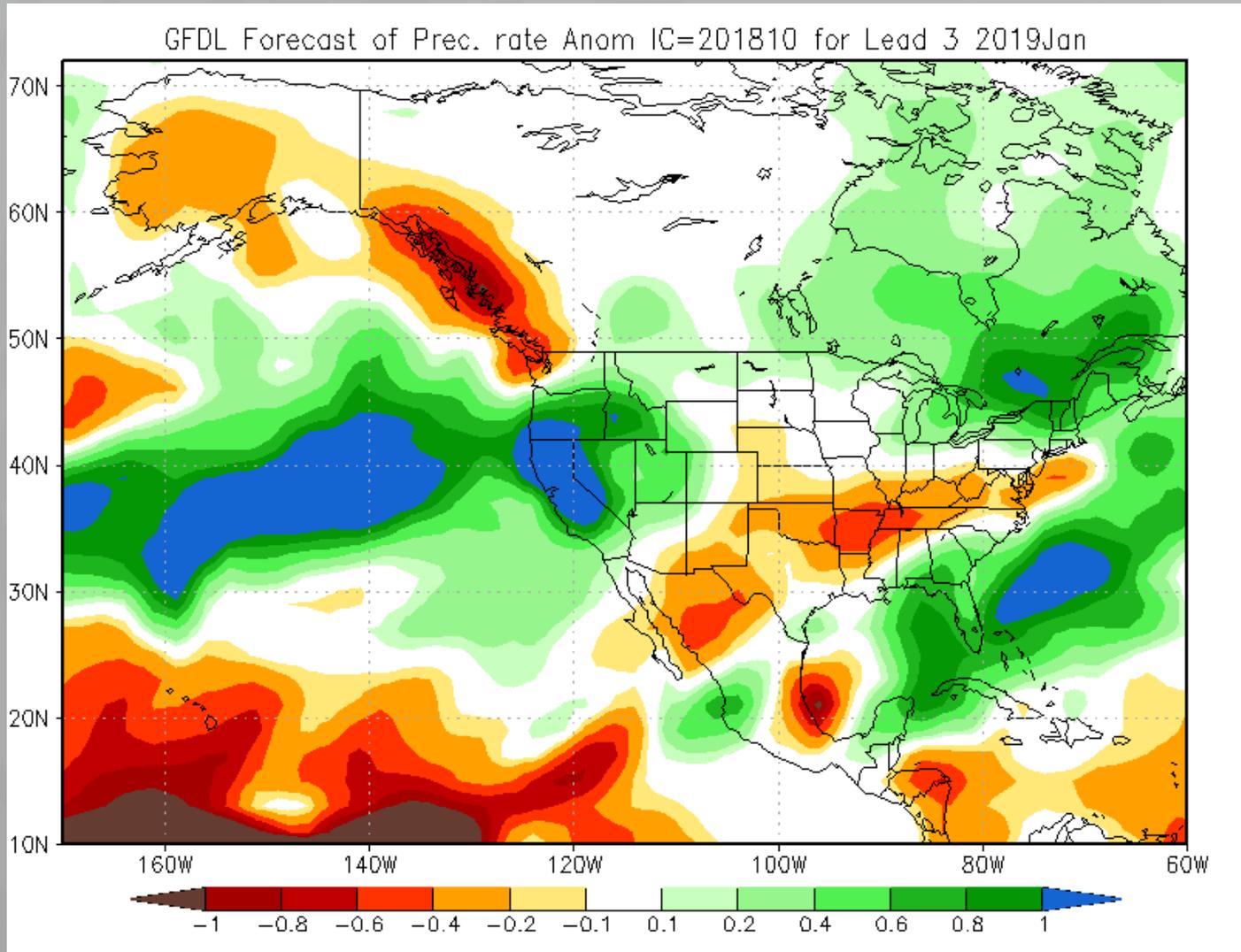


Graphics from CPC ENSO Diagnostic Discussion

NMME Forecast of Prec. rate Anom IC=201810 for Lead 2 2018DJF



*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?

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