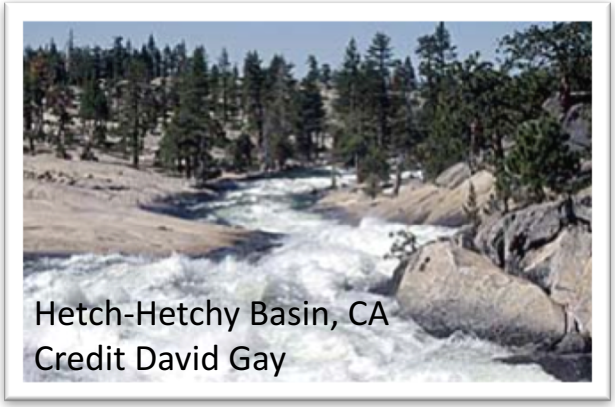
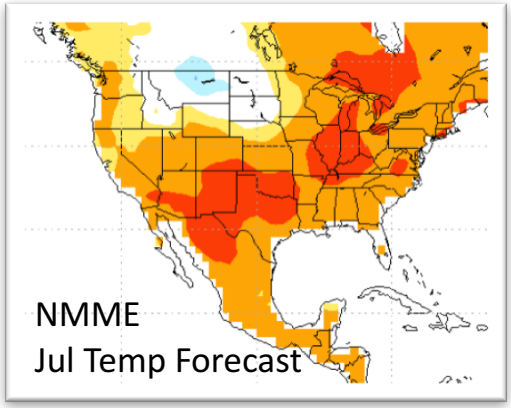
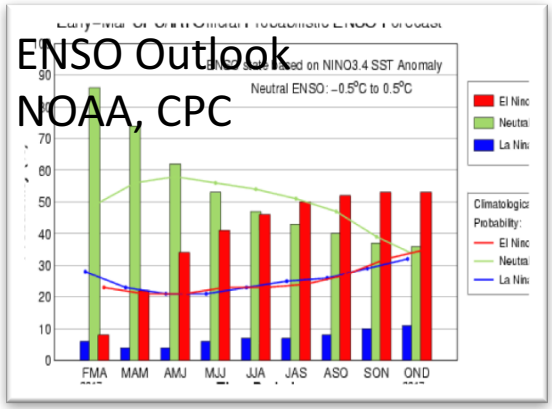




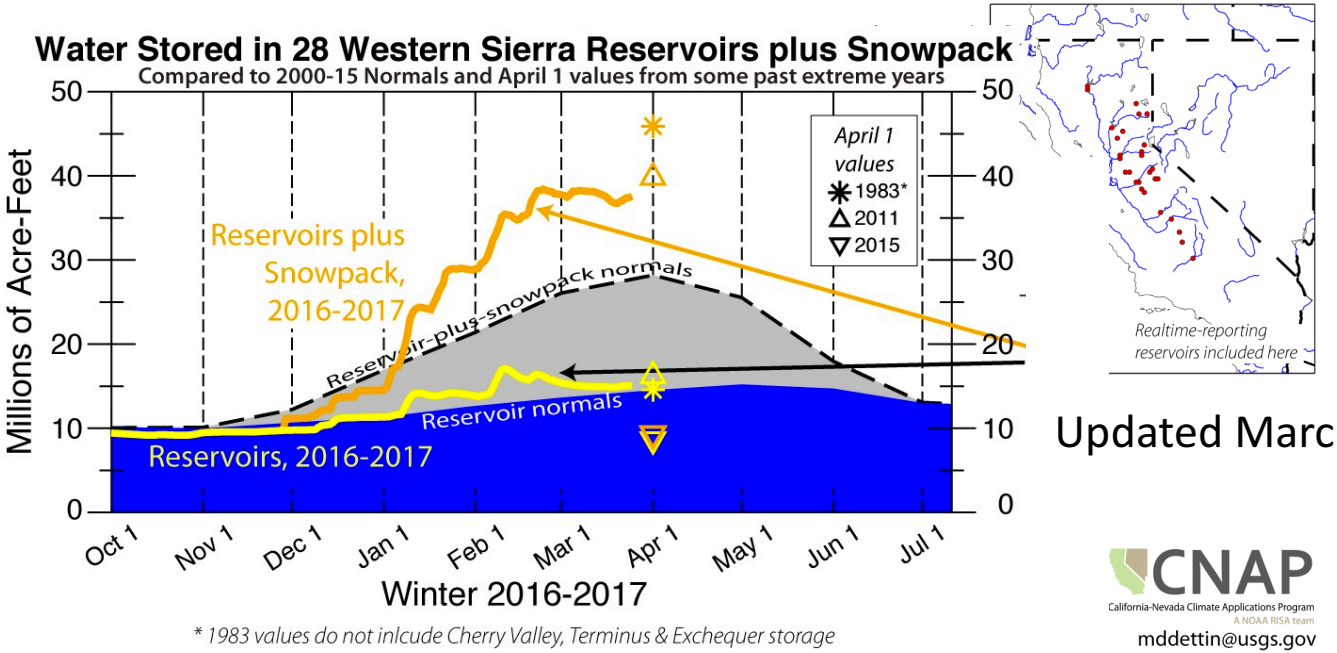


Climate and Drought Outlook

Julie Kalansky
Scripps Institution of Oceanography, UCSD

NIDIS Webinar
March 27, 2017

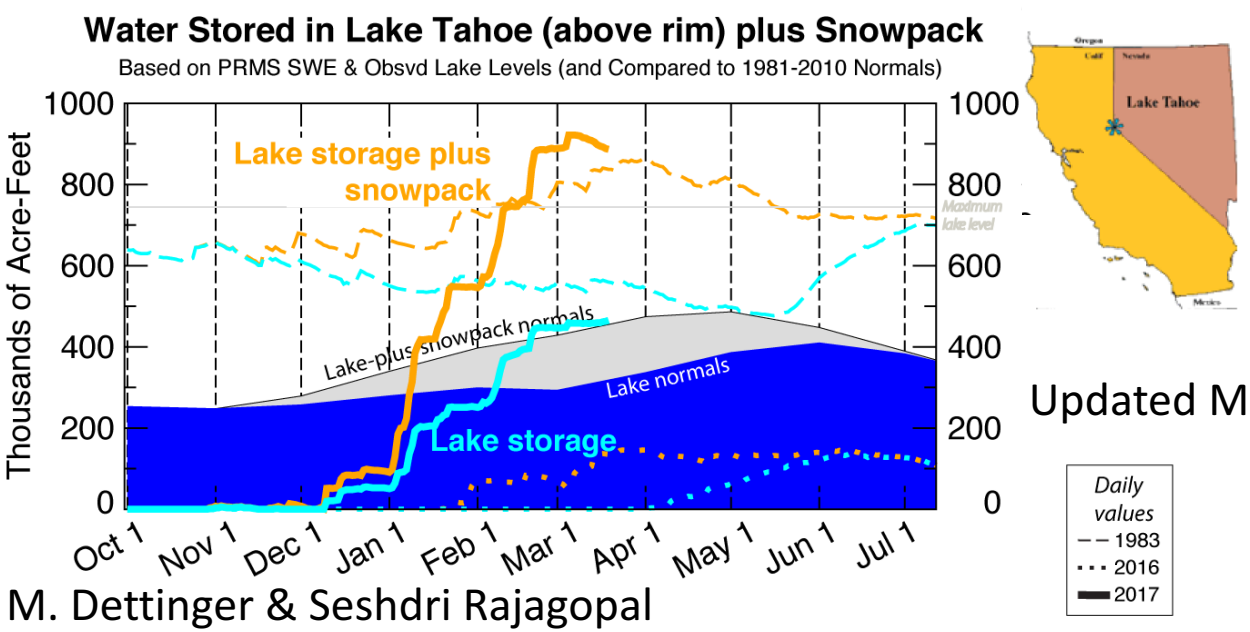
CNAP
California-Nevada Climate Applications Program
A NOAA RISA team



Updated March 26th, 2017

CNAP
California-Nevada Climate Applications Program
A NOAA RISA team
mddettin@usgs.gov

M. Dettinger https://scripps.ucsd.edu/programs/cnap/water-storage-tracking-in-california/



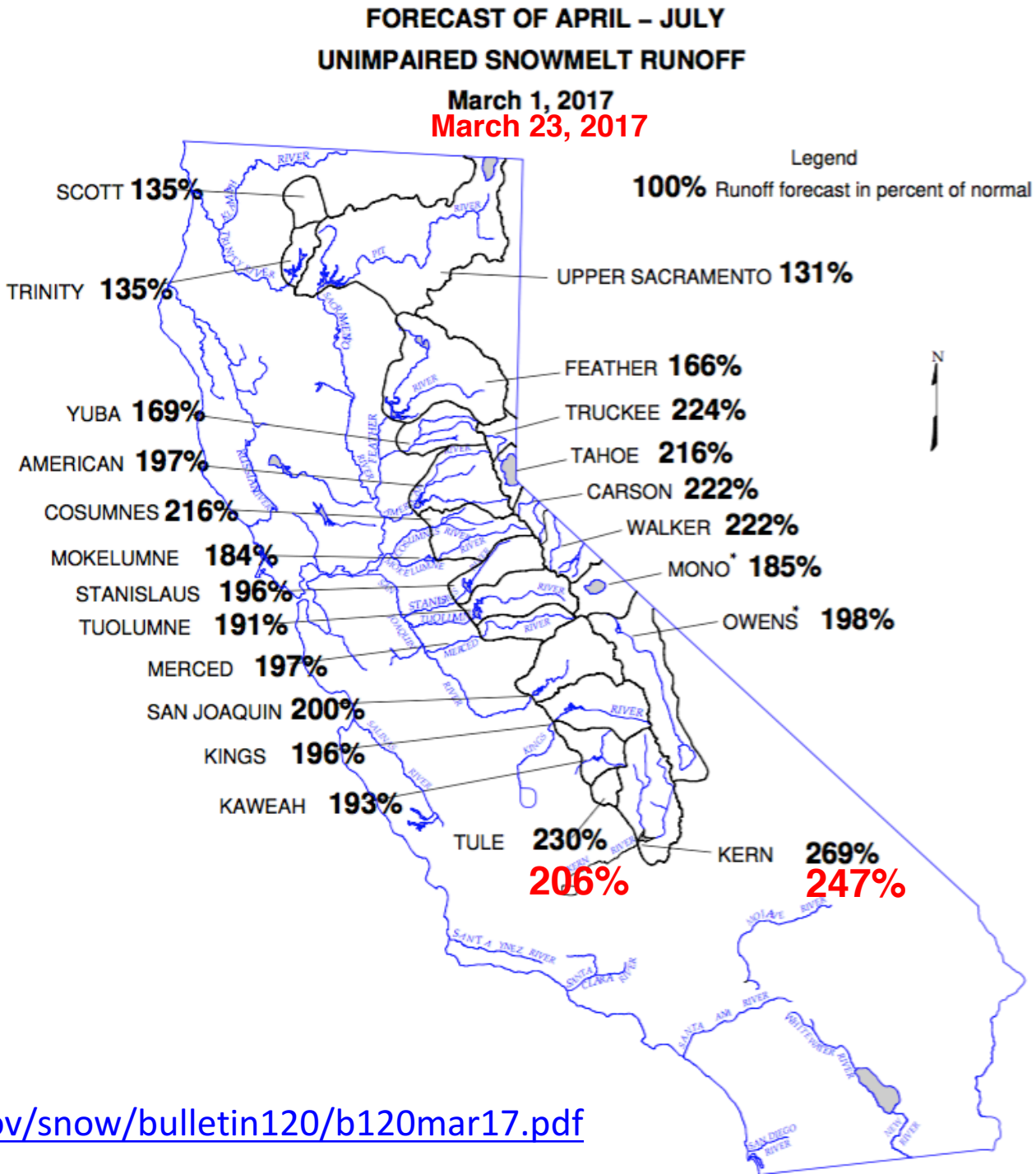
Updated March 19th, 2017

M. Dettinger & Seshdri Rajagopal

Snowmelt Run-Off in CA

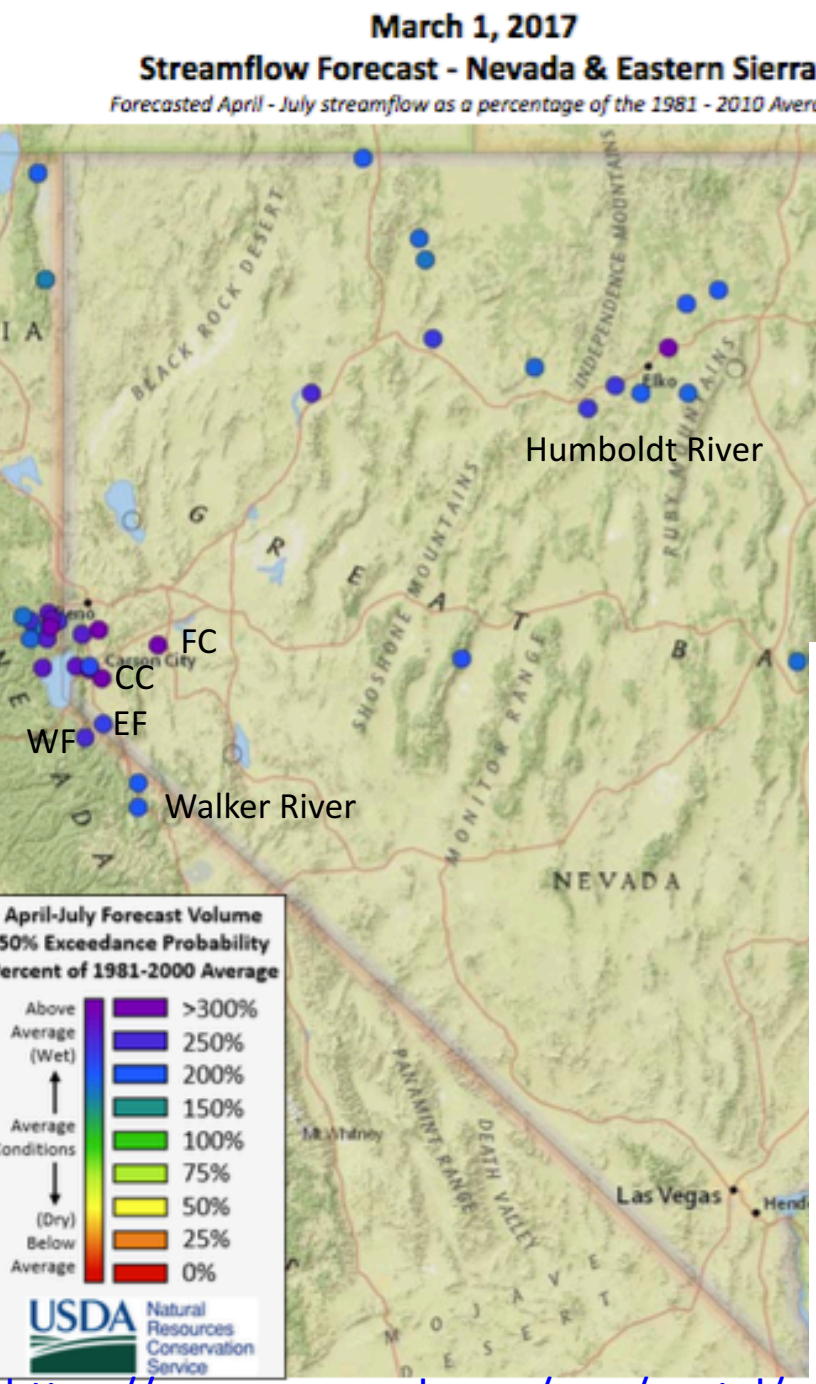
CA DWR

- Eastern Sierra have potential for higher (% of normal snow melt run-off
- Southern basins forecasts decreased the most between March 1st and March 23rd



CA DWR: http://cdec.water.ca.gov/snow/bulletin120/b120mar17.pdf

Eastern Sierra and Nevada Stream-Flow Forecasts

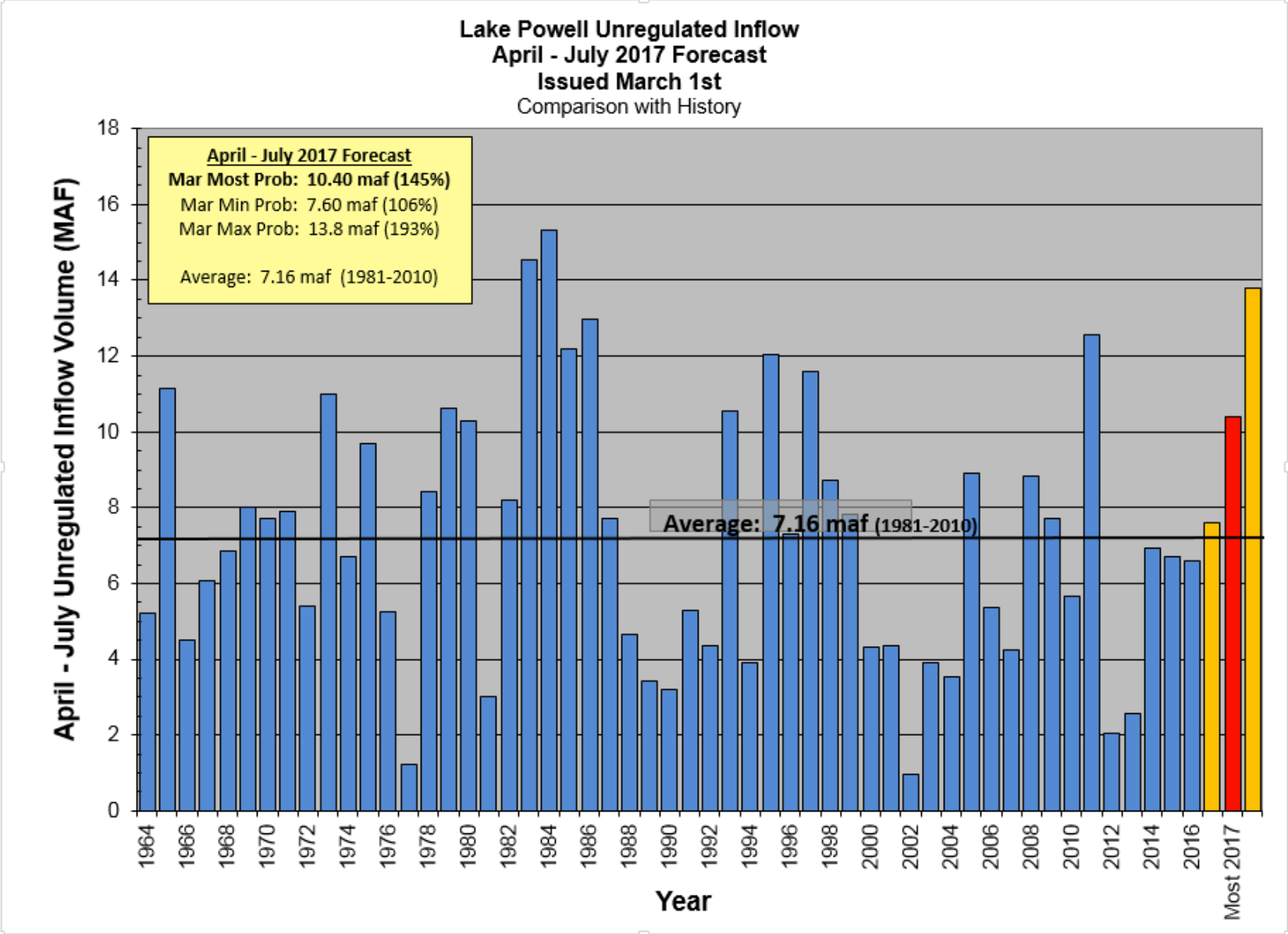


- There is a 50% chance that the Carson River could set new records of stream-flow (snow melt run-off)
- All Rivers are projected to have higher than 2011 run-off at 50% exceedance

Forecast Point	Forecast Period	March 1, 2017 Forecast Exceedances - KAF <---drier future----------wetter future--->				
		90%	70%	50%	30%	10%
Truckee R at Farad (Adj)	Mar-Jul	619	697	750	803	881
EF Carson R nr Gardnerville	Mar-Jul	356	412	450	488	544
WF Carson R at Woodfords	Mar-Jul	118	134	145	156	172
Carson R nr Carson City	Mar-Jul	410	519	600	687	826
Carson R nr Fort Churchill	Mar-Jul	393	509	600	701	869
E Walker R nr Bridgeport	Mar-Aug	107	133	150	167	193
W Walker R nr Coleville	Mar-Jul	285	320	345	380	405
Humboldt R nr Elko	Mar-Jul	410	465	500	535	590
Humboldt R nr Comus (Winnemucca)	Mar-Jul	523	604	660	716	797
Humboldt R nr Imlay	Mar-Jul	418	526	600	674	782

https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/

Lake Powell Inflow Forecasts – 145% of normal

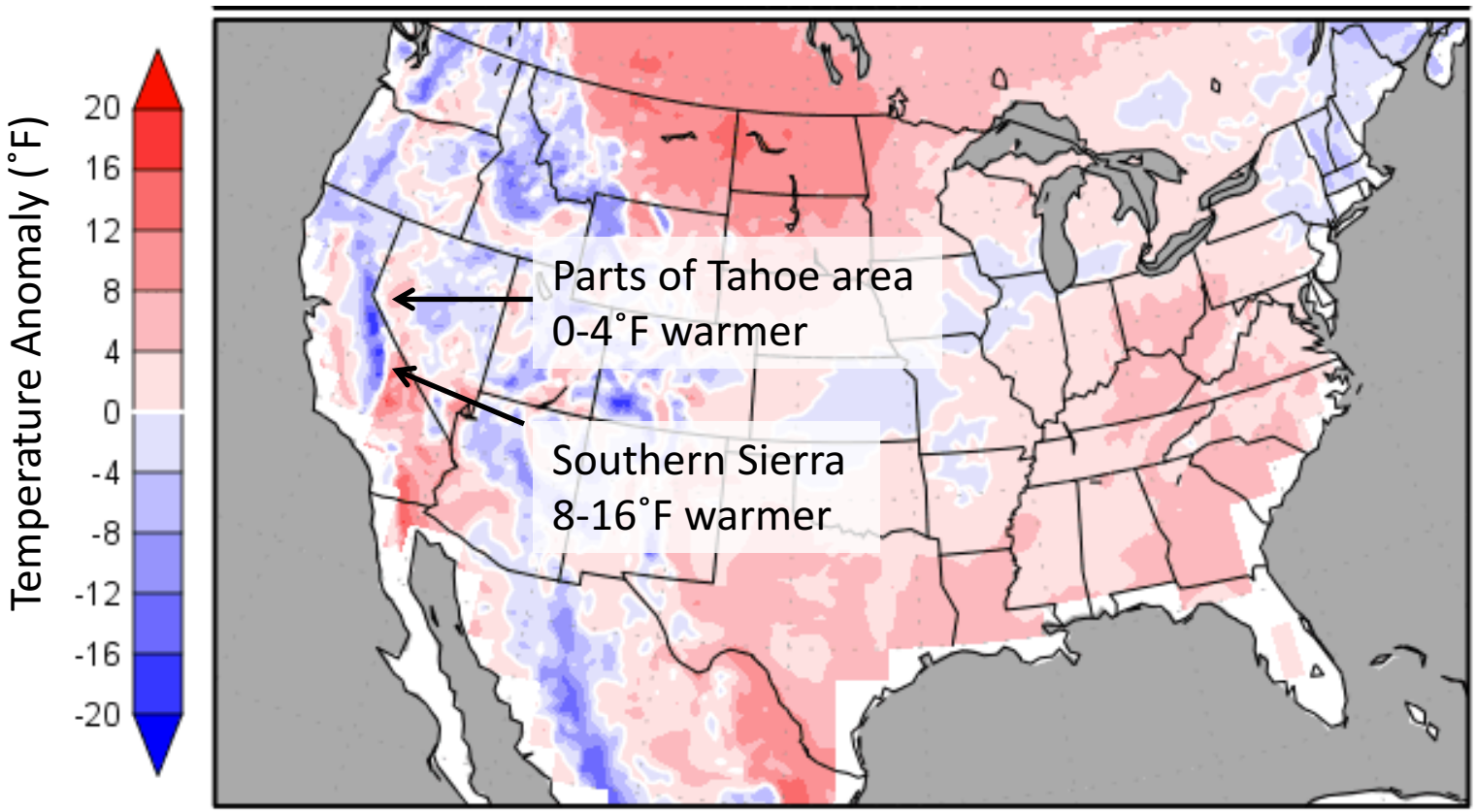


USBR, https://www.usbr.gov/uc/water/crsp/studies/images/PowellForecast.png

Temperature 7-day Forecast

Southern Sierra and Tahoe Area Warmer than Normal

March 27 – April 4, 2017-

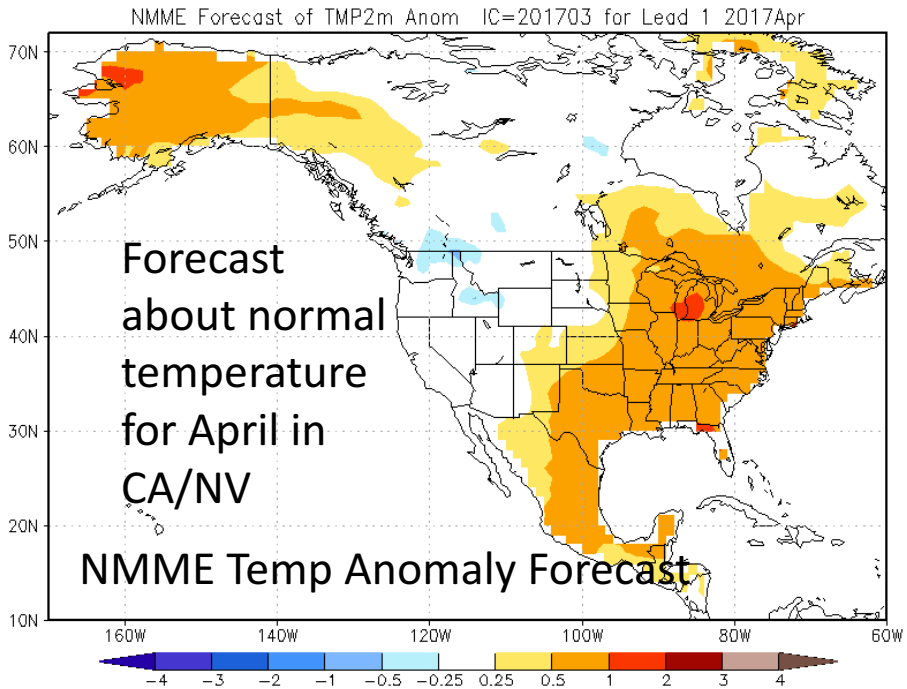


Temperature forecasts from the National Centers for Environmental Prediction.
Normal Temperature derived from CRU monthly climatology for 1901-2000
Forecast Initialization Time: 00Z27MAR2017

COLA, George Mason University

http://wxmaps.org/pix/temp1.html

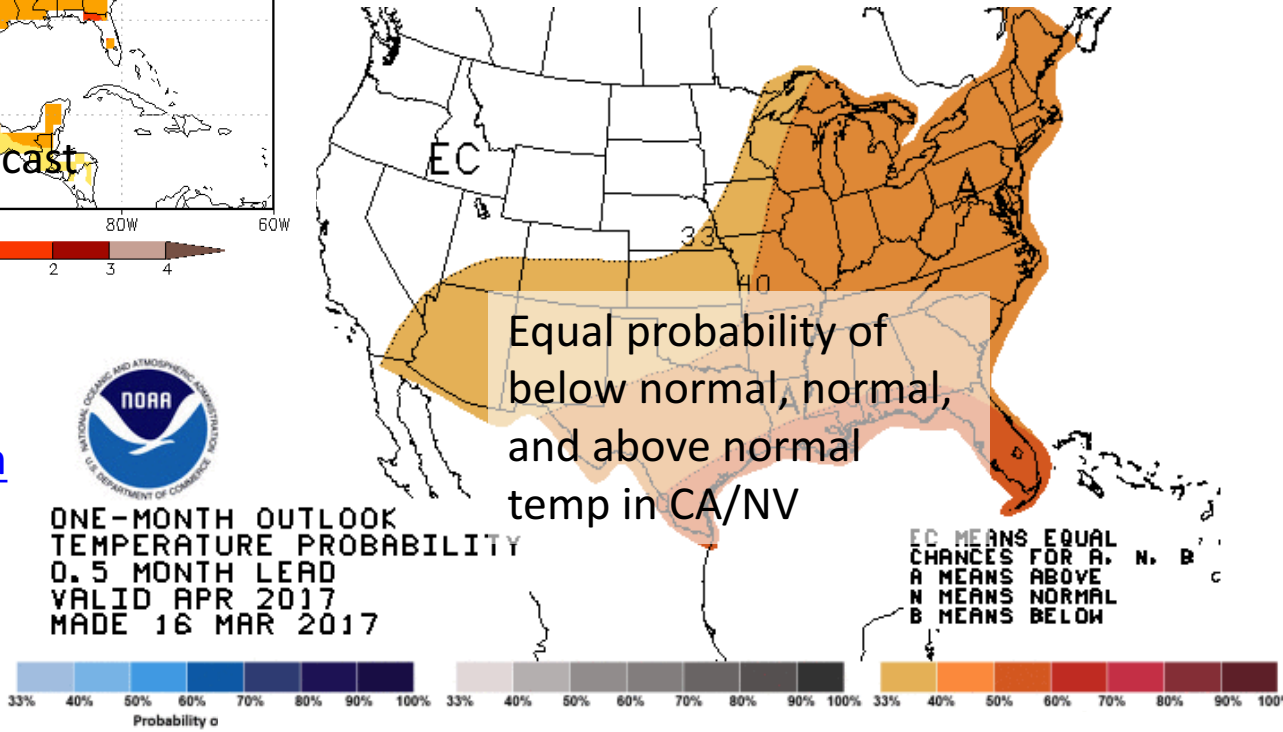
April Temp Forecasts – About Normal



Forecast about normal temperature for April in CA/NV

NMME Temp Anomaly Forecast

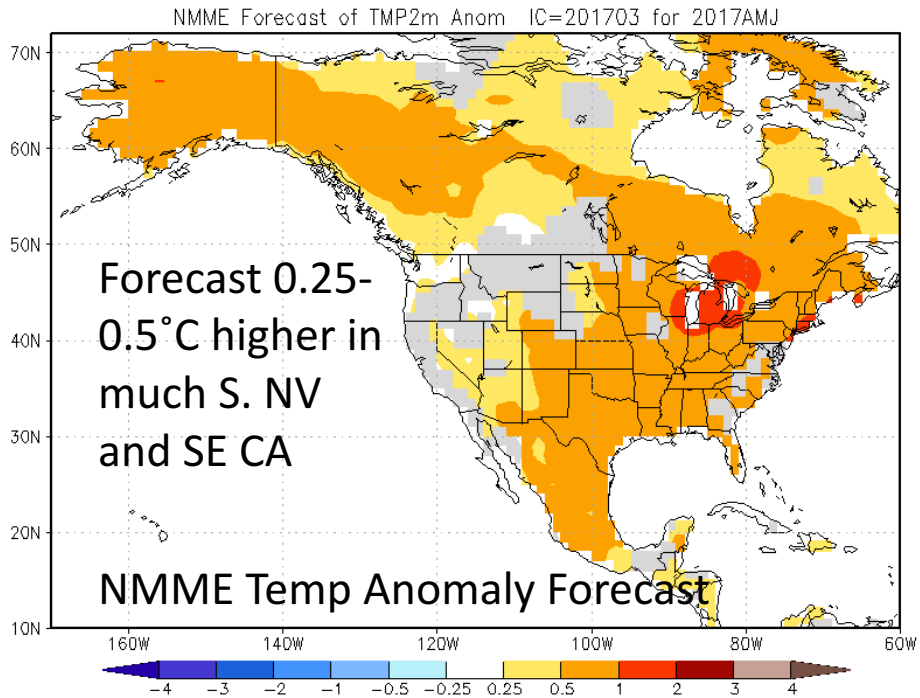
www.cpc.ncep.noaa.gov/products/NMME/seasanom.shtml



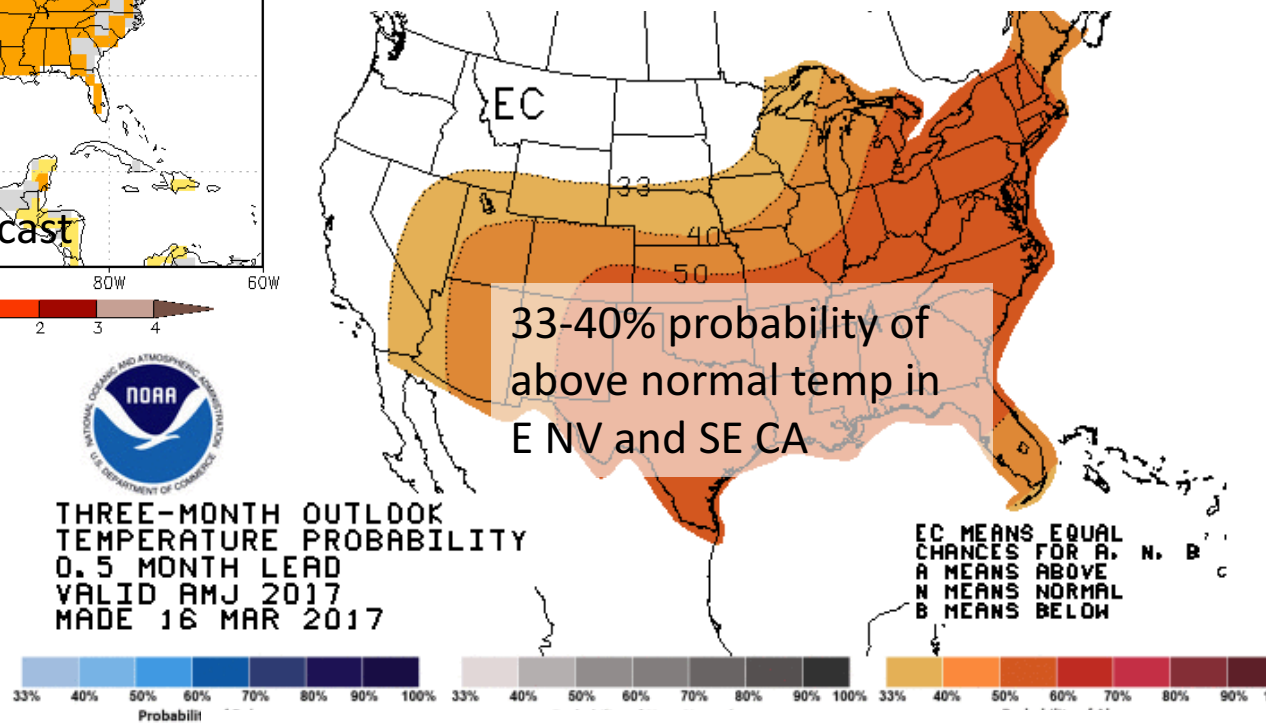
Equal probability of below normal, normal, and above normal temp in CA/NV

http://www.cpc.ncep.noaa.gov/products/forecasts/

Spring (AMJ) Temp Forecasts – Above Normal

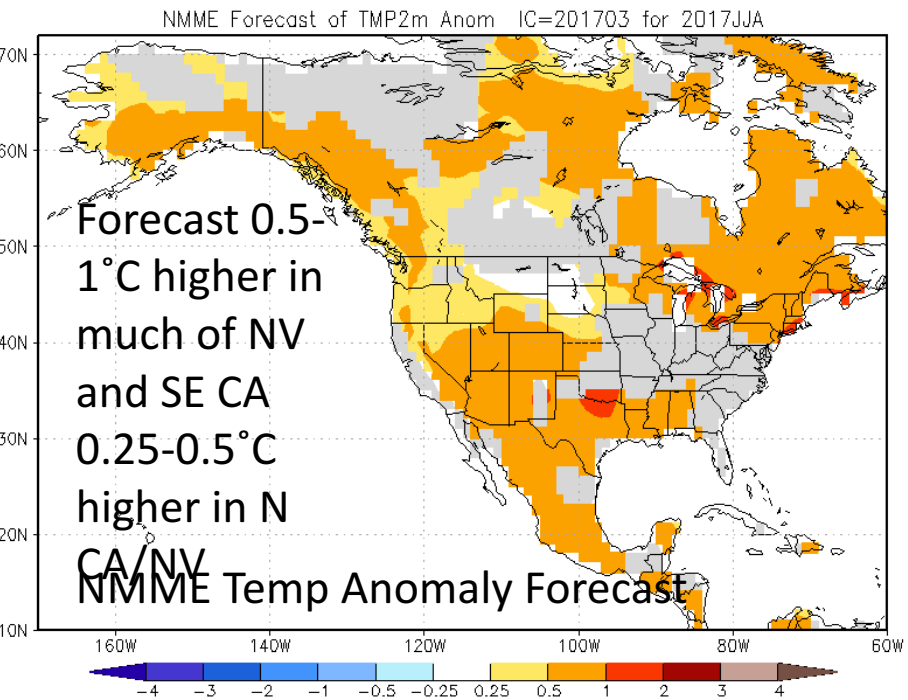


www.cpc.ncep.noaa.gov/products/NMME/seasanom.shtml



http://www.cpc.ncep.noaa.gov/products/forecasts/

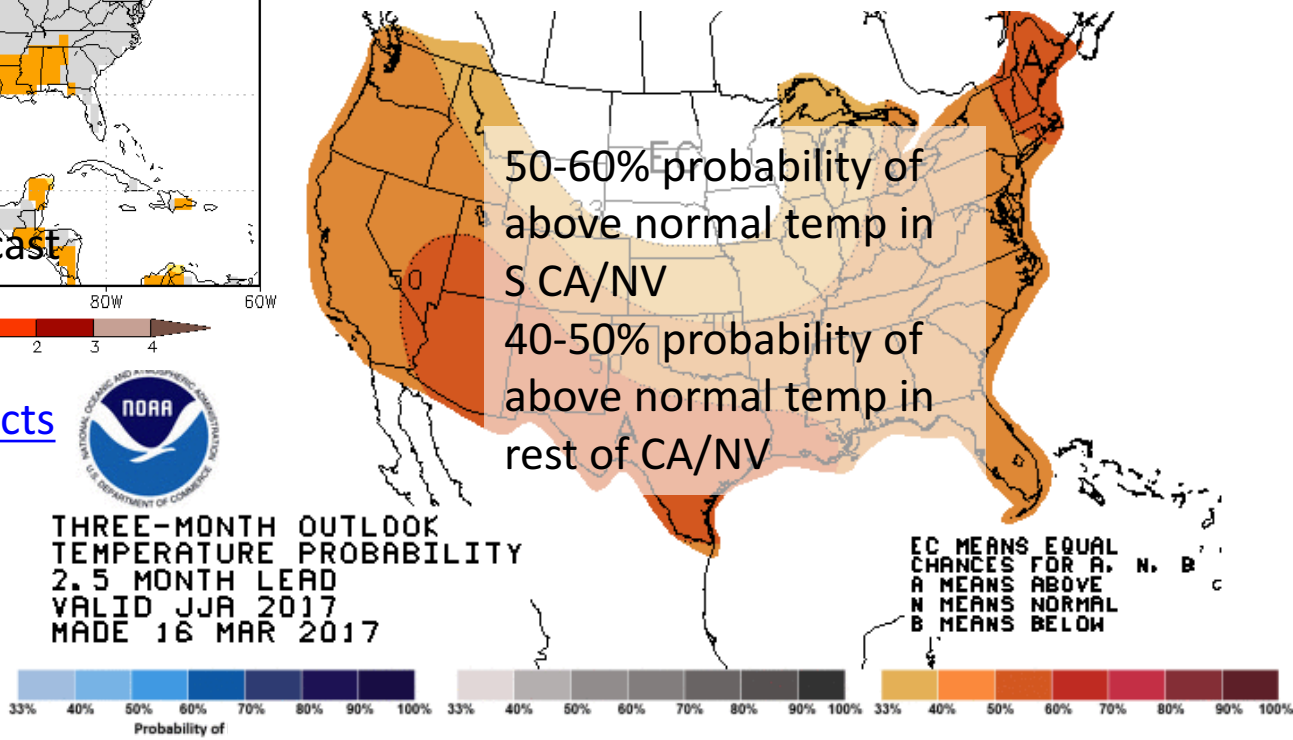
Summer (JJA) Temp Forecasts – Above Normal



Forecast 0.5-1˚C higher in much of NV and SE CA
0.25-0.5˚C higher in N CA/NV

NMME Temp Anomaly Forecast

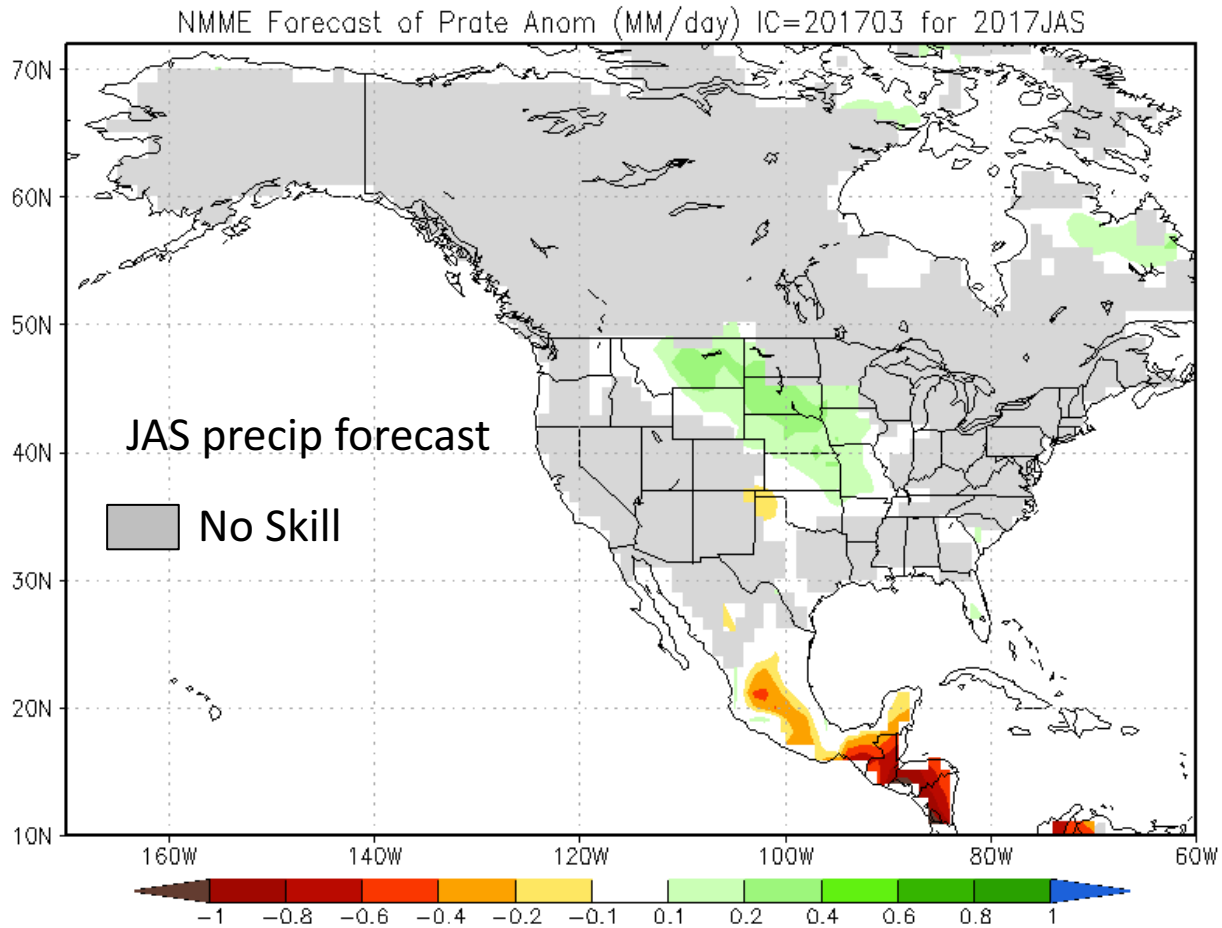
www.cpc.ncep.noaa.gov/products/NMME/seasanom.shtml



50-60% probability of above normal temp in S CA/NV
40-50% probability of above normal temp in rest of CA/NV

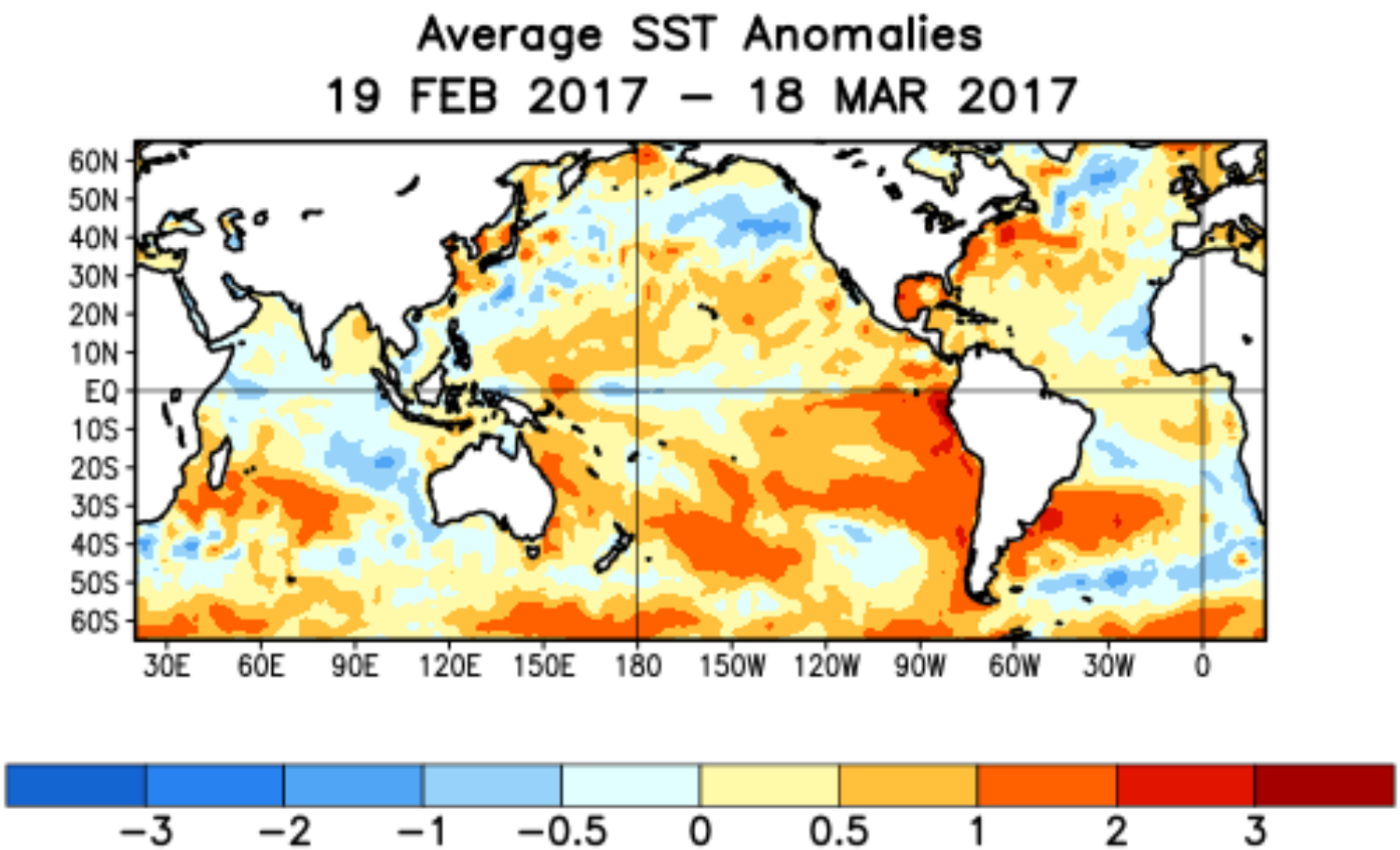
http://www.cpc.ncep.noaa.gov/products/forecasts/

July, Aug, Sept Precip Forecasts – No Skill



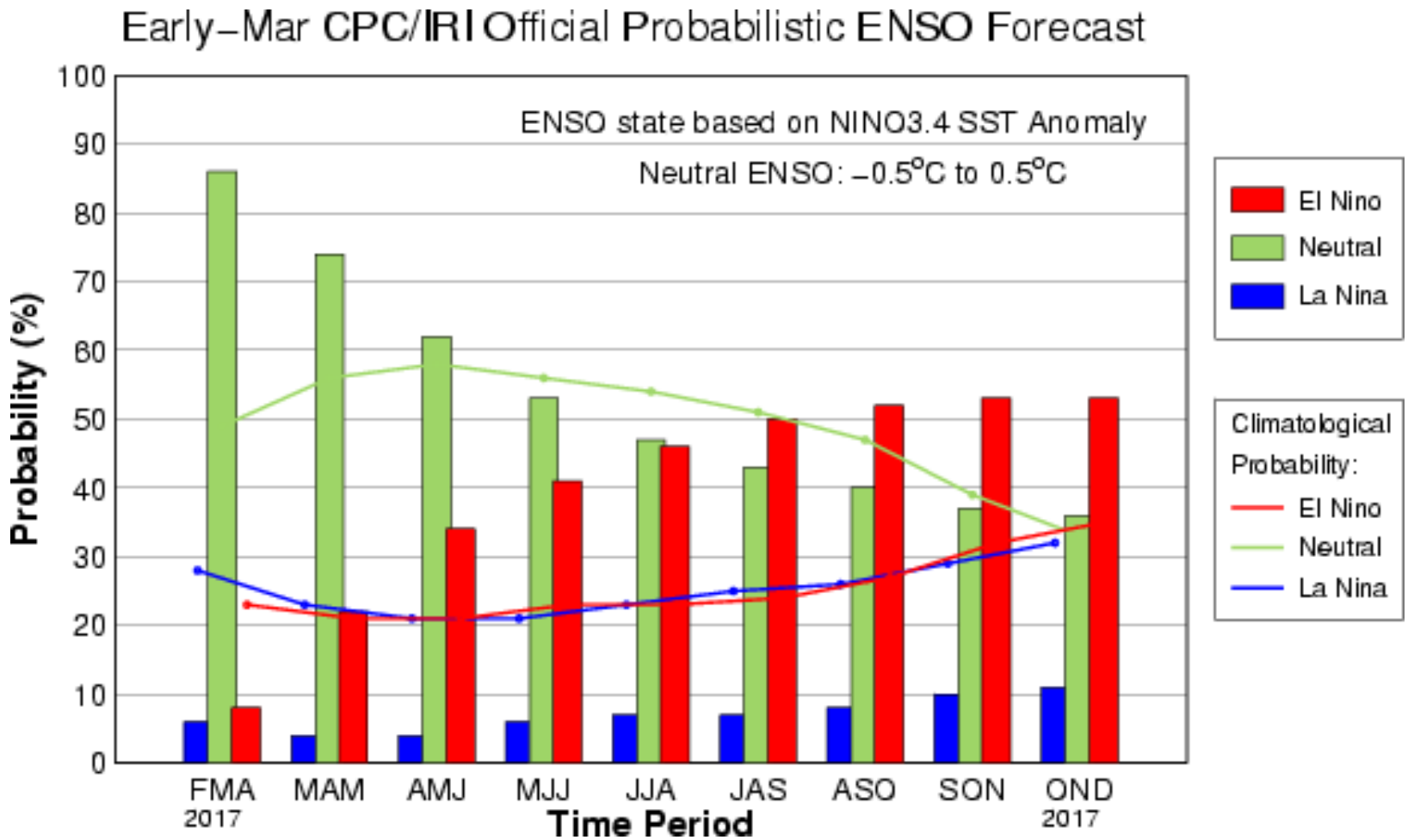
http://www.cpc.ncep.noaa.gov/products/NMME/seasanom.shtml

Current SST Conditions
ENSO neutral



http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml#forecast

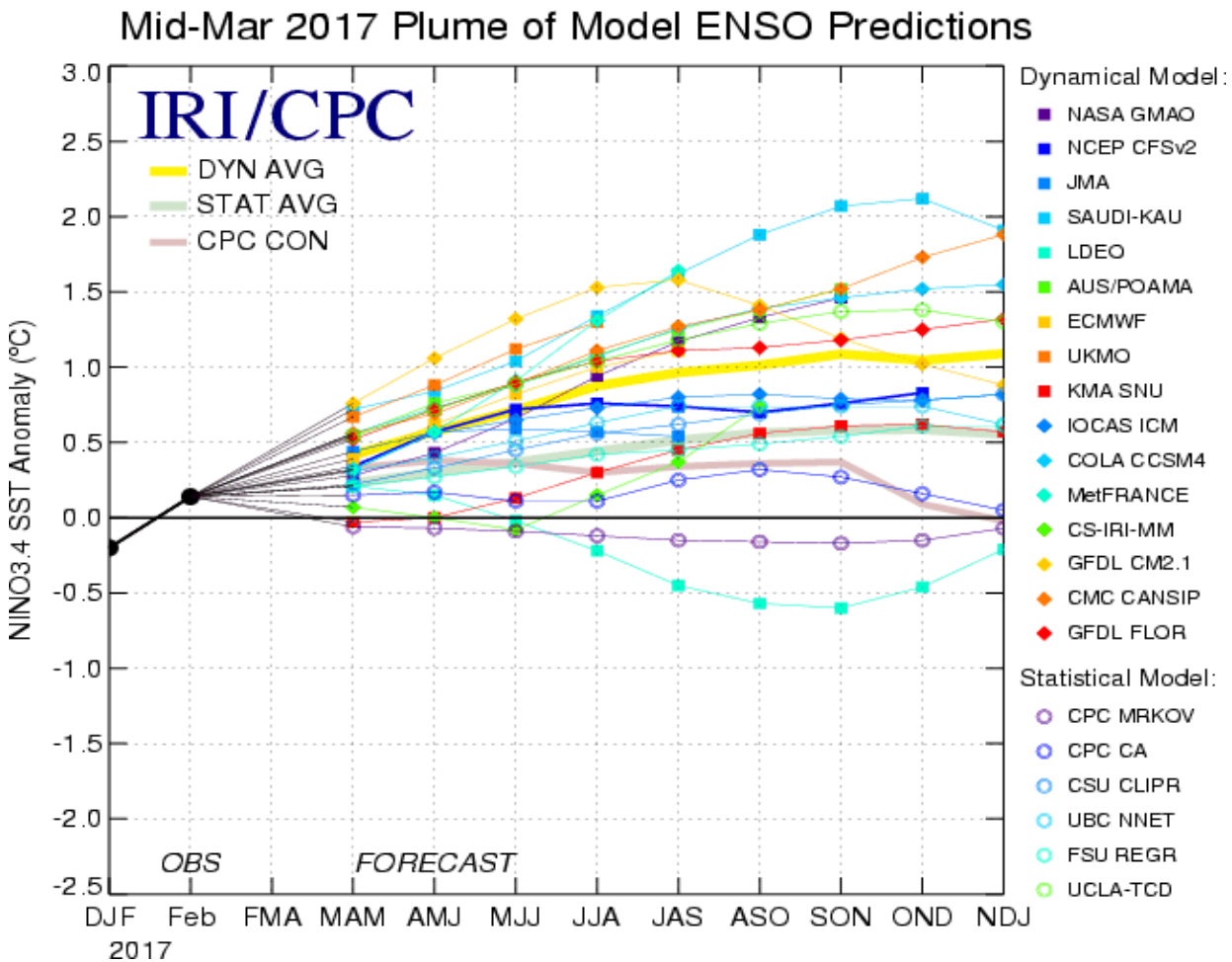
Forecast - El Niño conditions next fall



Update prepared by:
Climate Prediction Center / NCEP
20 March 2017

http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml#forecast

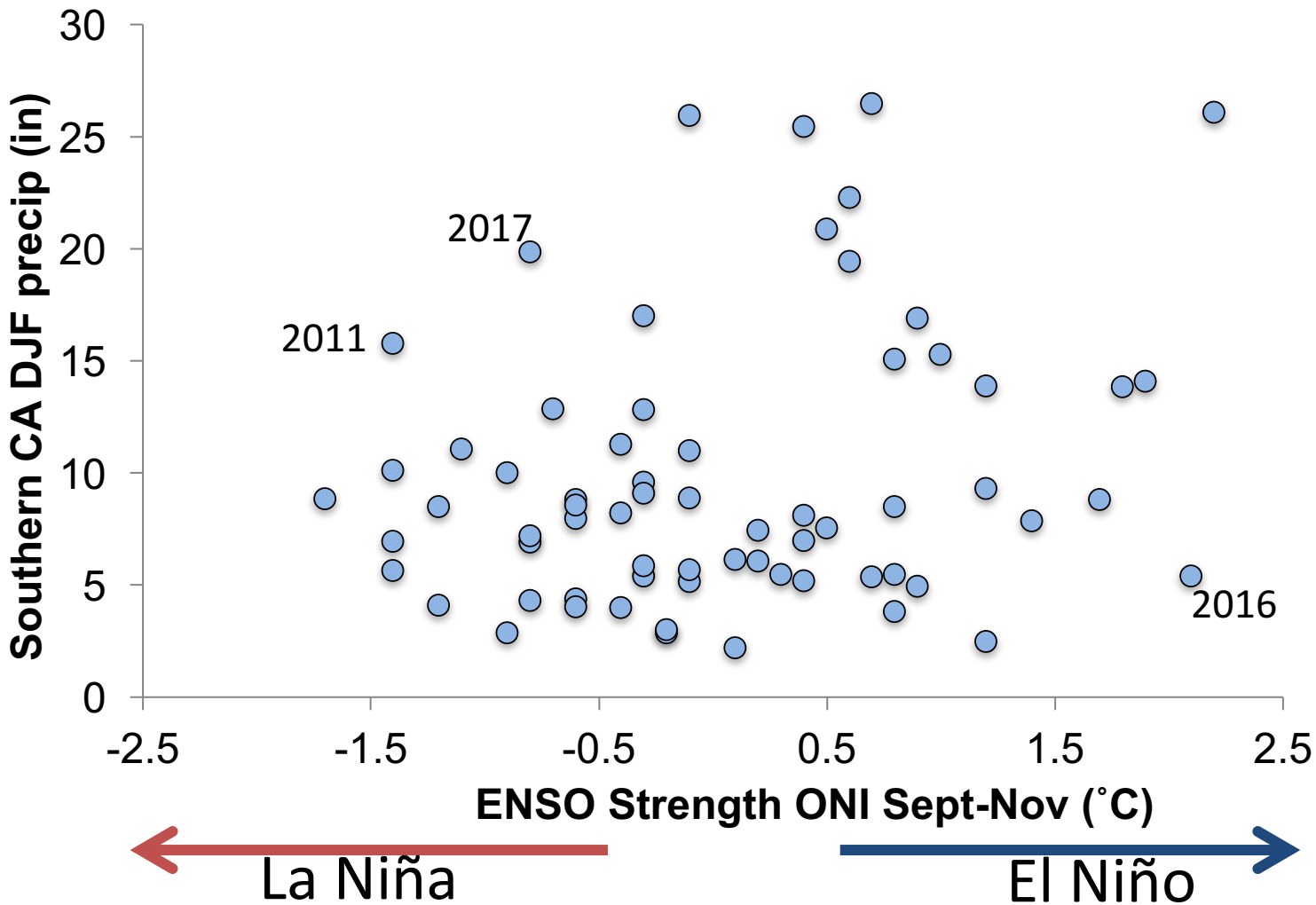
Current Forecast - Weak El Niño



http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml#forecast

Figure provided by the International Research Institute (IRI) for Climate and Society (updated 15 March 2017).

ENSO – Changing Relationship?



ENSO Influences Sea level Extremes

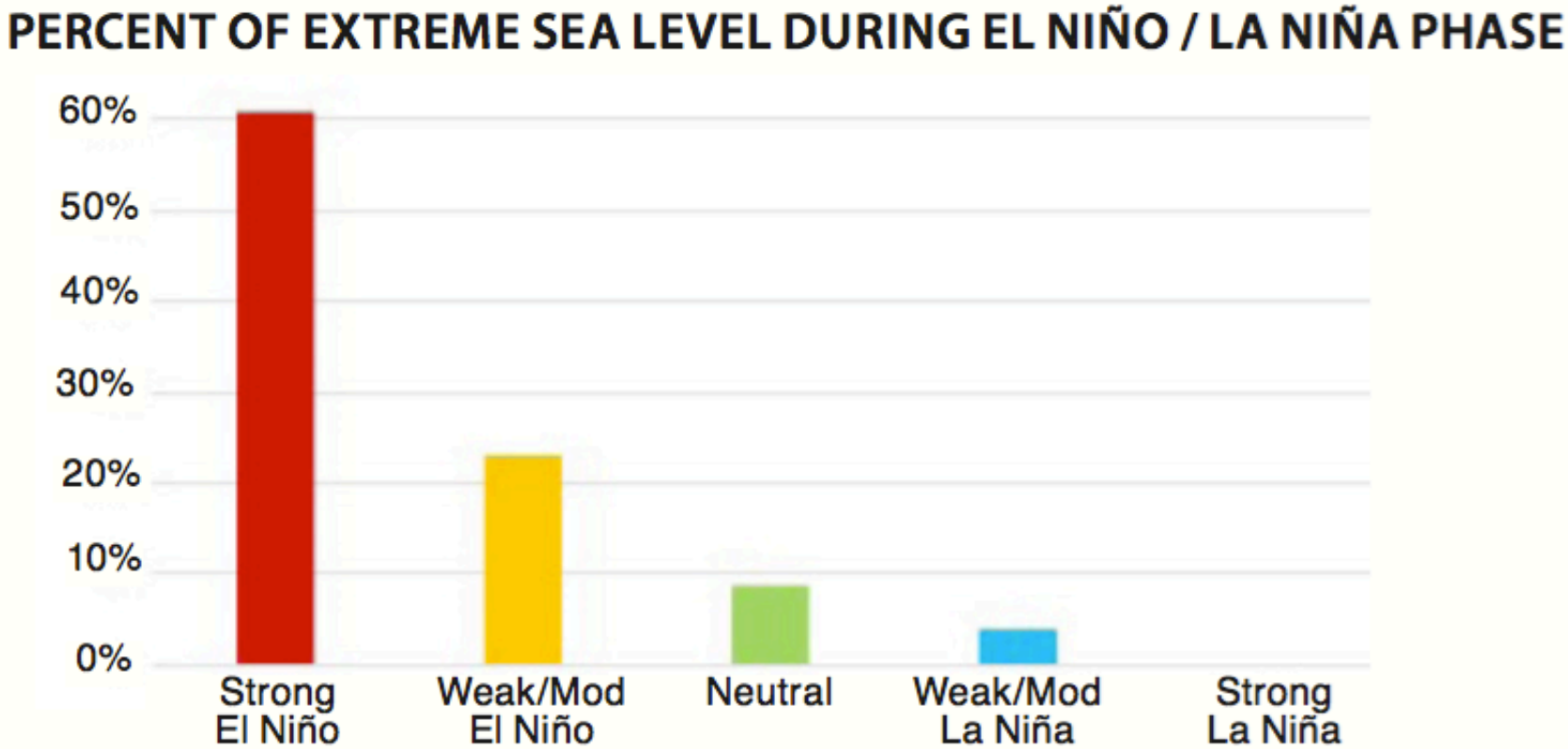


Figure 2: Fraction (%) of highest hourly California sea levels (exceeding the 99.99% percentile highest water) that have occurred during strong, weak El Niño years, neutral years and weak, strong La Niña years. Values are aggregate of 9 coastal tide gauges Crescent City to San Diego

D. Cayan & L. DeHaan

Summary

- Lots of snowmelt run-off, record breaking in parts of NV likely
- Next week forecasted to be warm in Southern Sierra Mountains
- Extended Range Forecasts
  - Do NOT indicate warm temperatures in April
  - DO indicate warmer than normal spring (AMJ) in eastern NV and southeastern CA
  - DO indicate warmer than normal summer (JJA) temperatures in much of the region
- ENSO forecast indicate increase probability of El Niño conditions by next fall