

El Niño Weather Patterns Winter 2015-2016 Climate Forecast

TMT End-of-Year Review Meeting, Ambridge Event Center, Portland, Oregon



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Hydrologist-Meteorologist

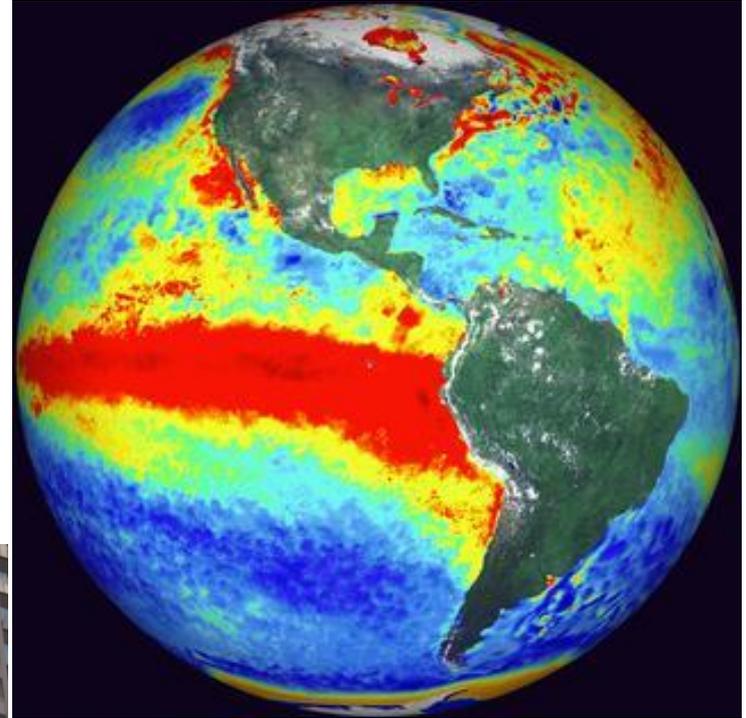
Columbia River Inter-Tribal Fish Commission
Portland, Oregon

December 2nd, 2015

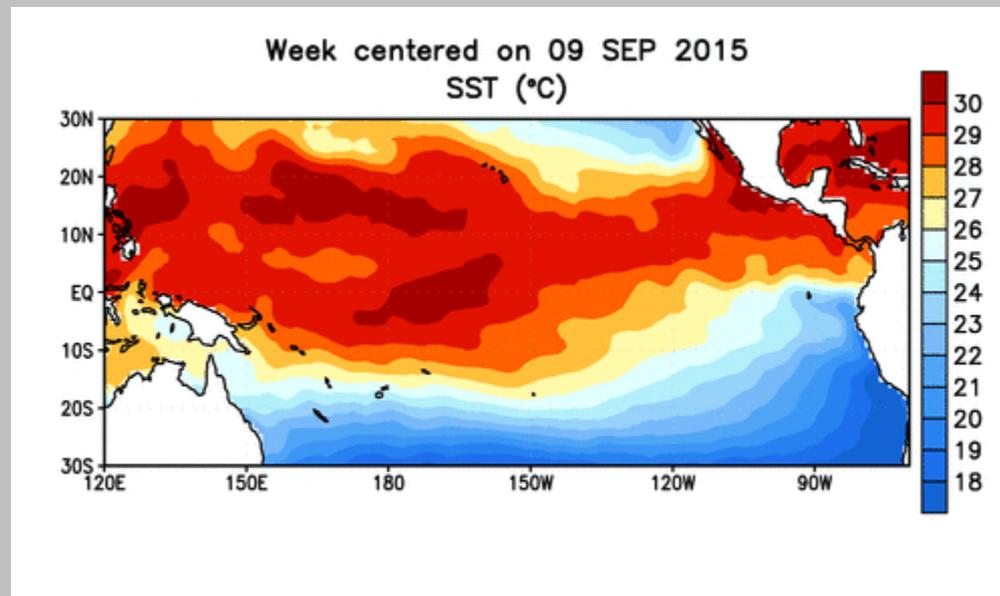
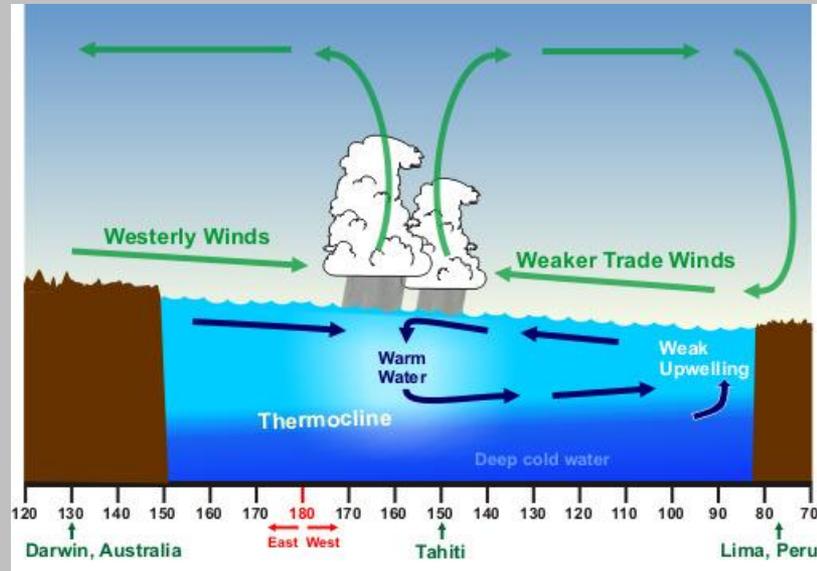
Columbia River Inter-Tribal Fish Commission - CRITFC




THE GODZILLA EL NIÑO!

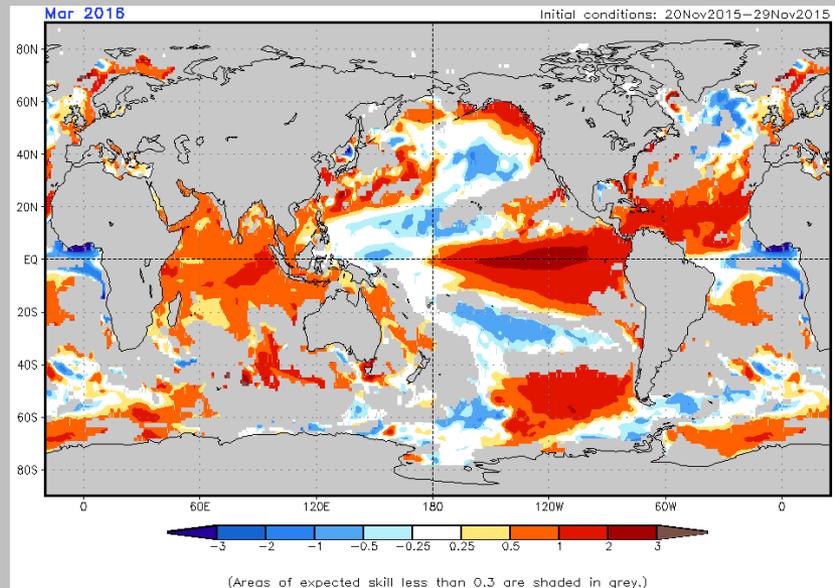
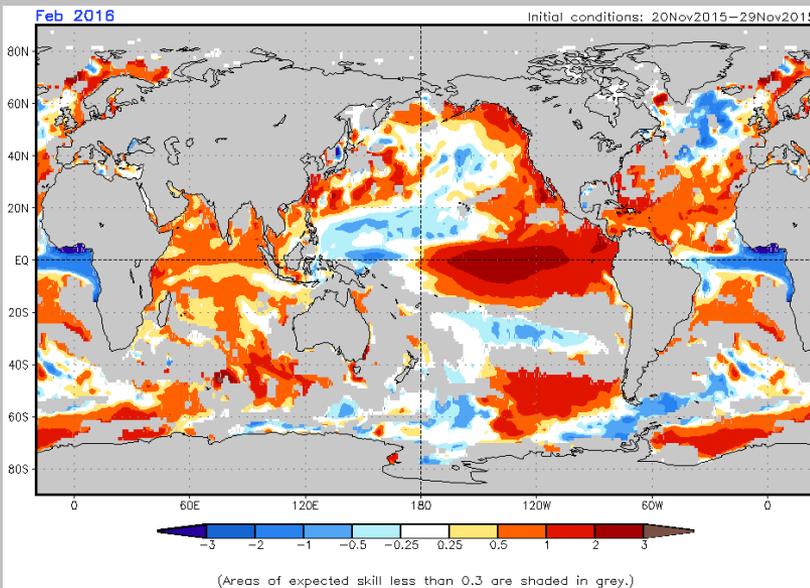
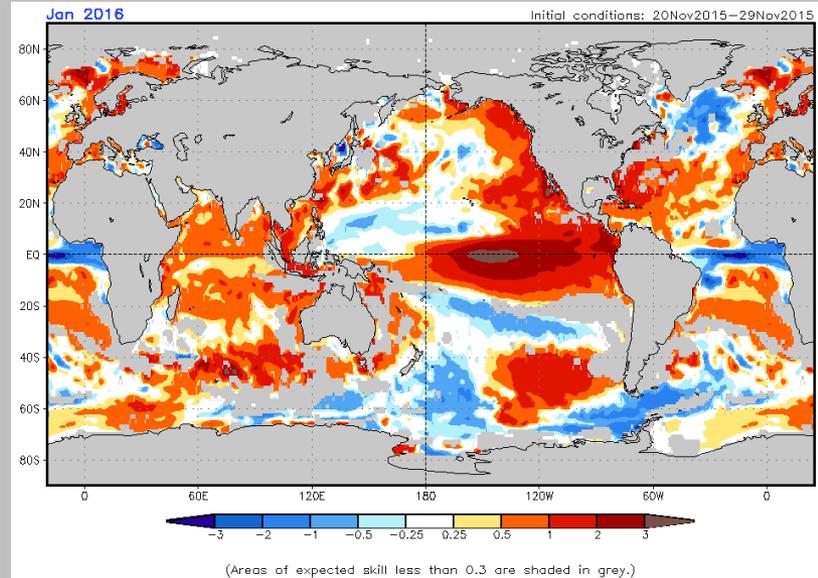
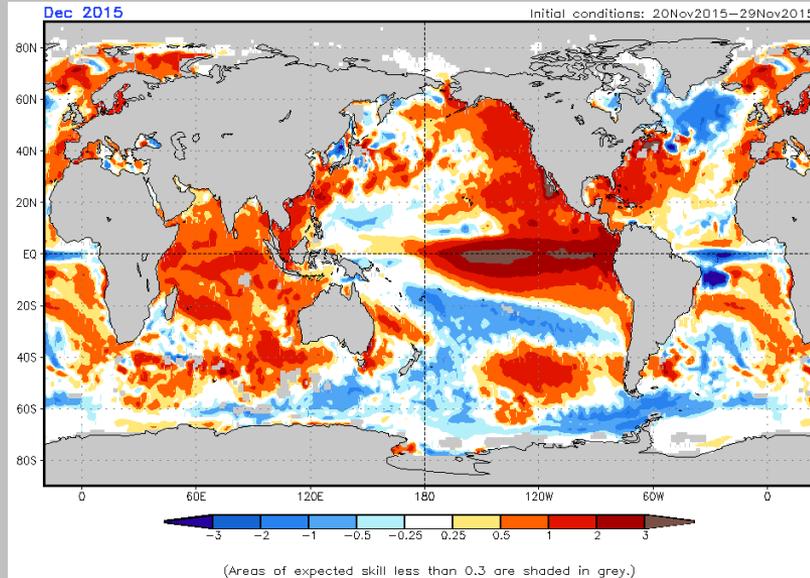


SCIENCE OF "EL NIÑO" WEATHER PATTERNS

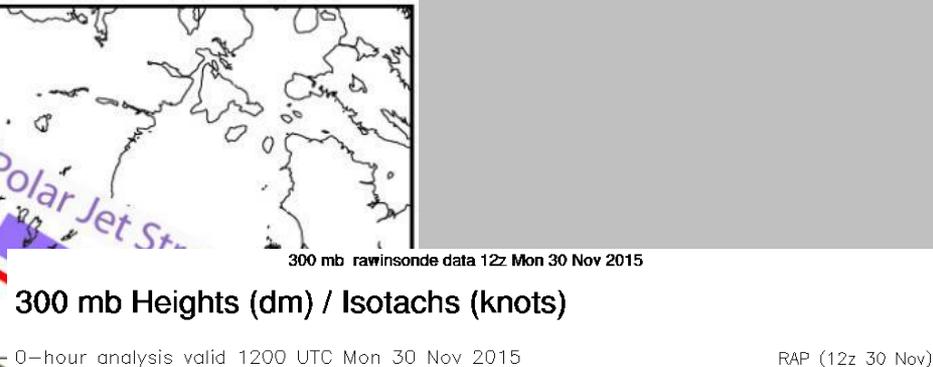
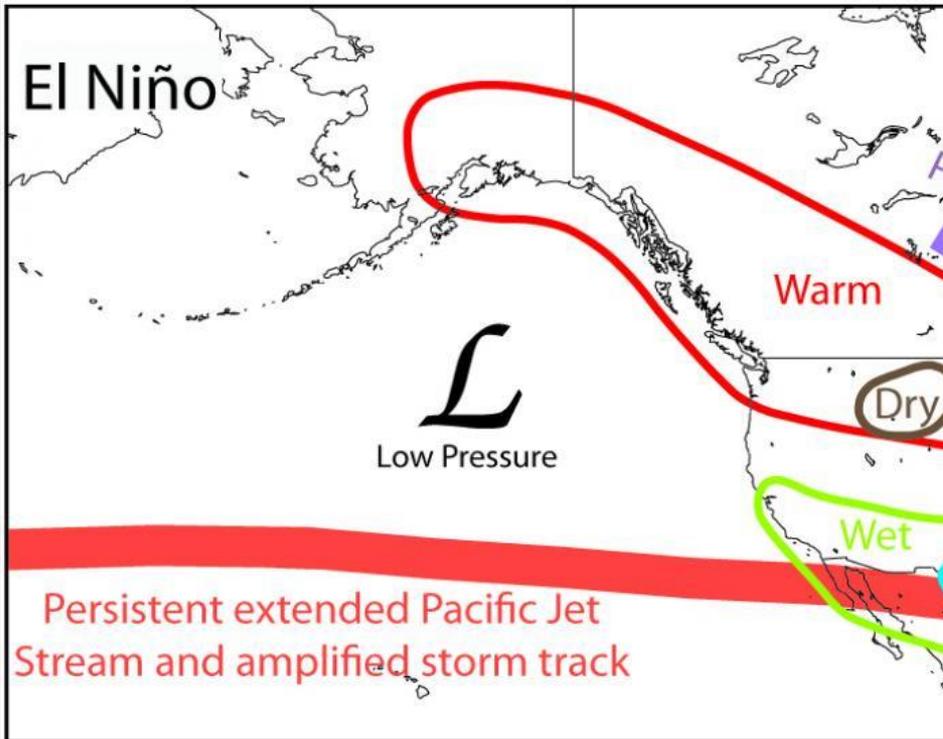


...BUT WHAT ARE THE FORECASTED SST PATTERNS?

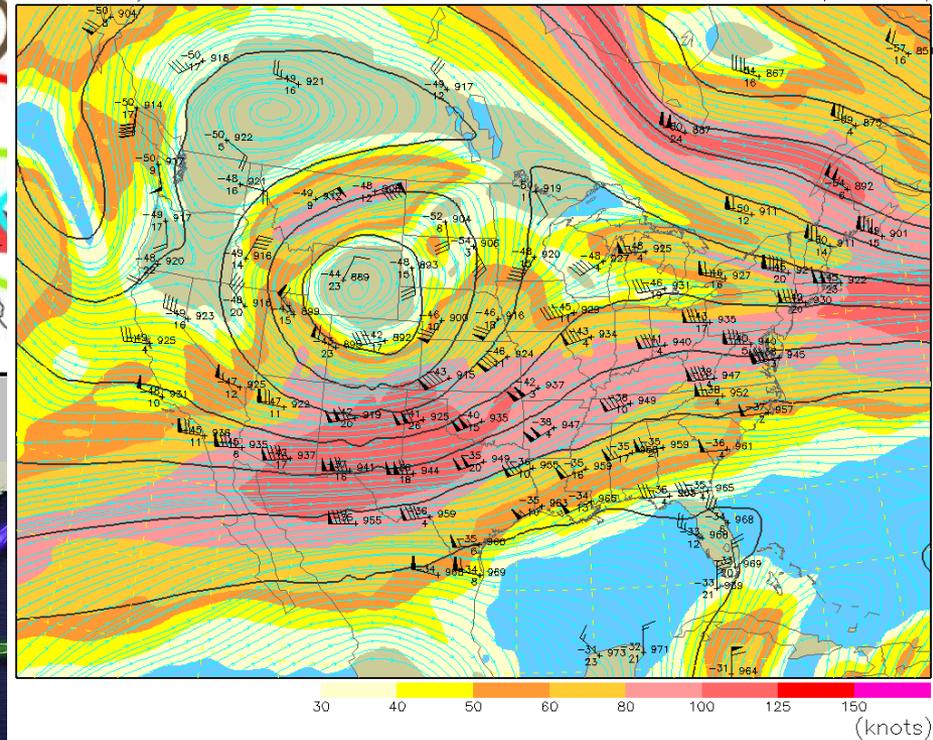
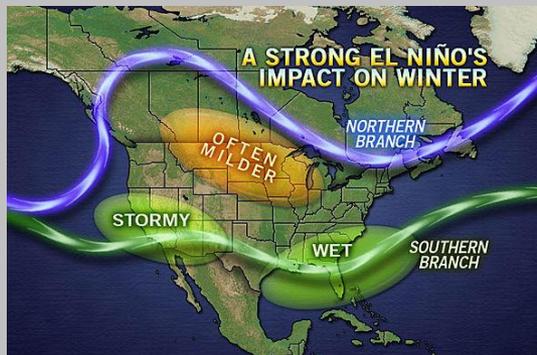
NOAA SEA SURFACE TEMPERATURES - BIG "EL NIÑO"



SCIENCE OF "EL NIÑO" WEATHER PATTERNS

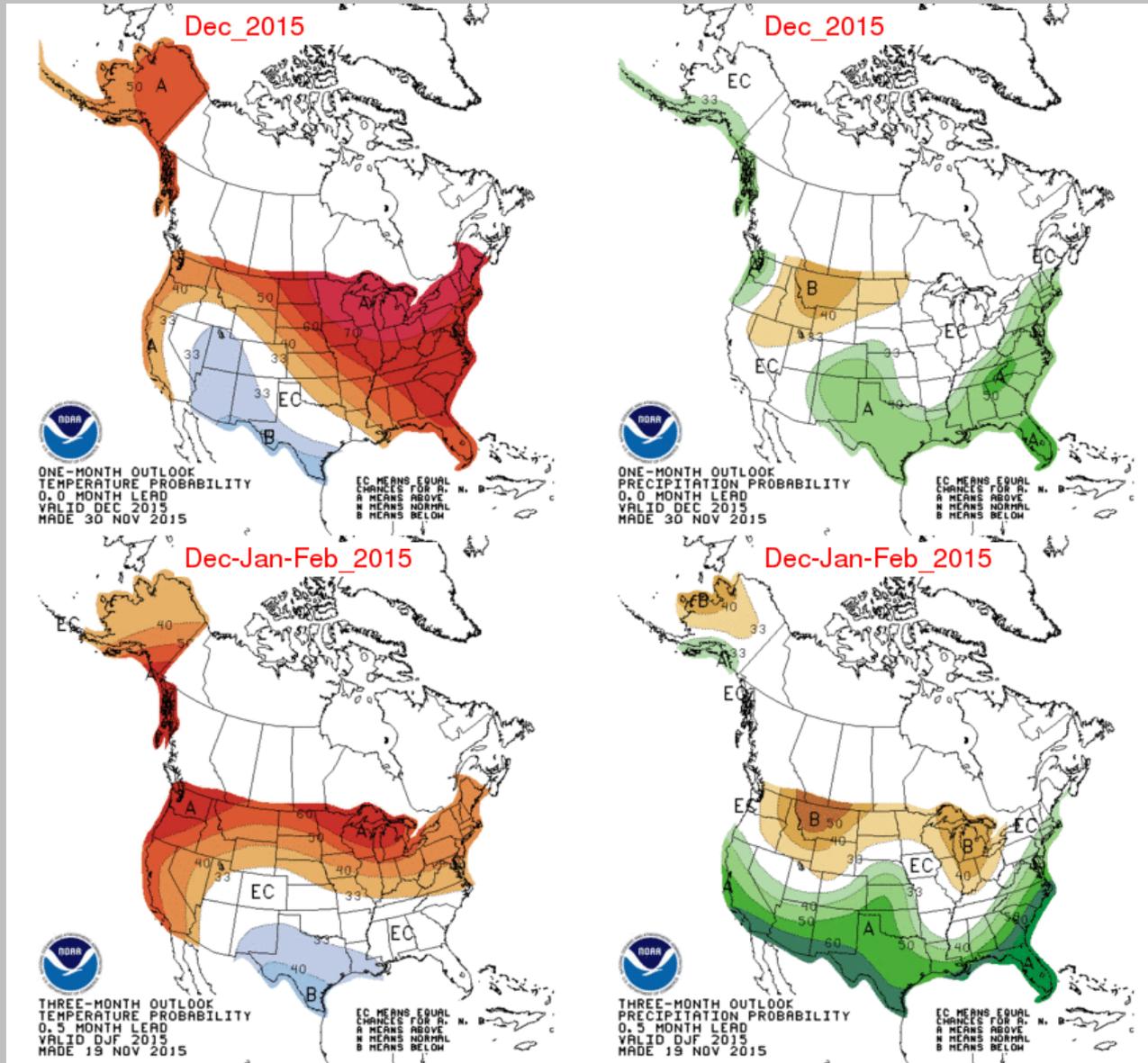


THE JET-STREAM IS HIGHLY ENERGIZED!



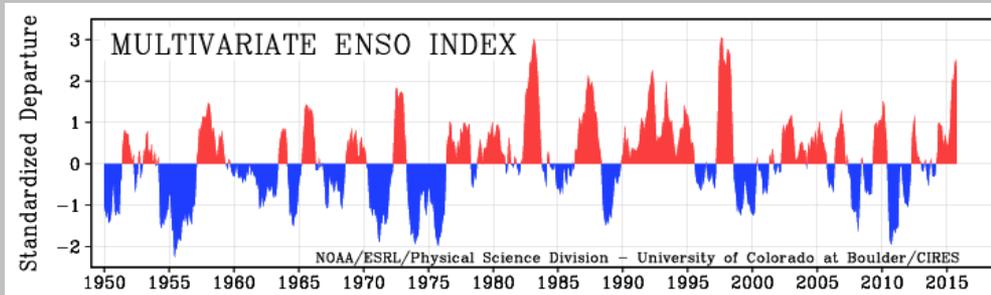
...WHAT IS THE LATEST FORECAST FOR EL NIÑO?

NOAA "EL NIÑO" FORECAST

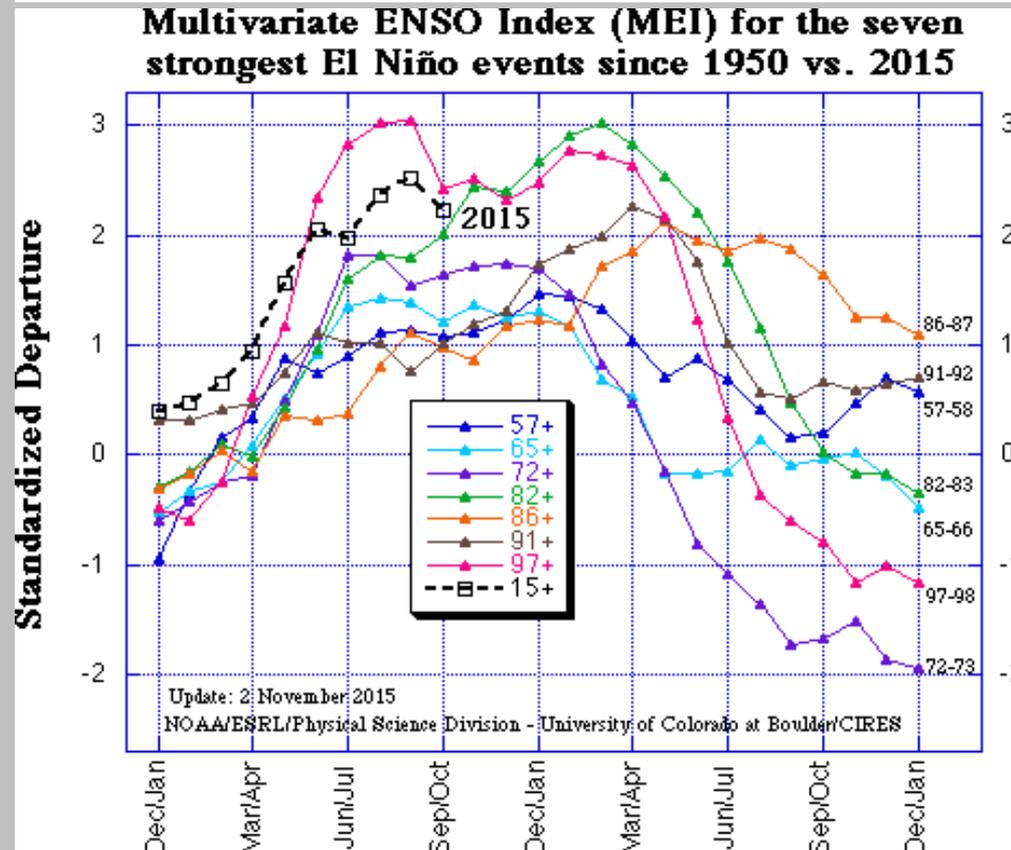


...WHAT ARE CLIMATE TRENDS FOR PAST EL NIÑO EVENTS?

MEI SIGNAL SUGGESTS A MAJOR "EL NIÑO" EVENT



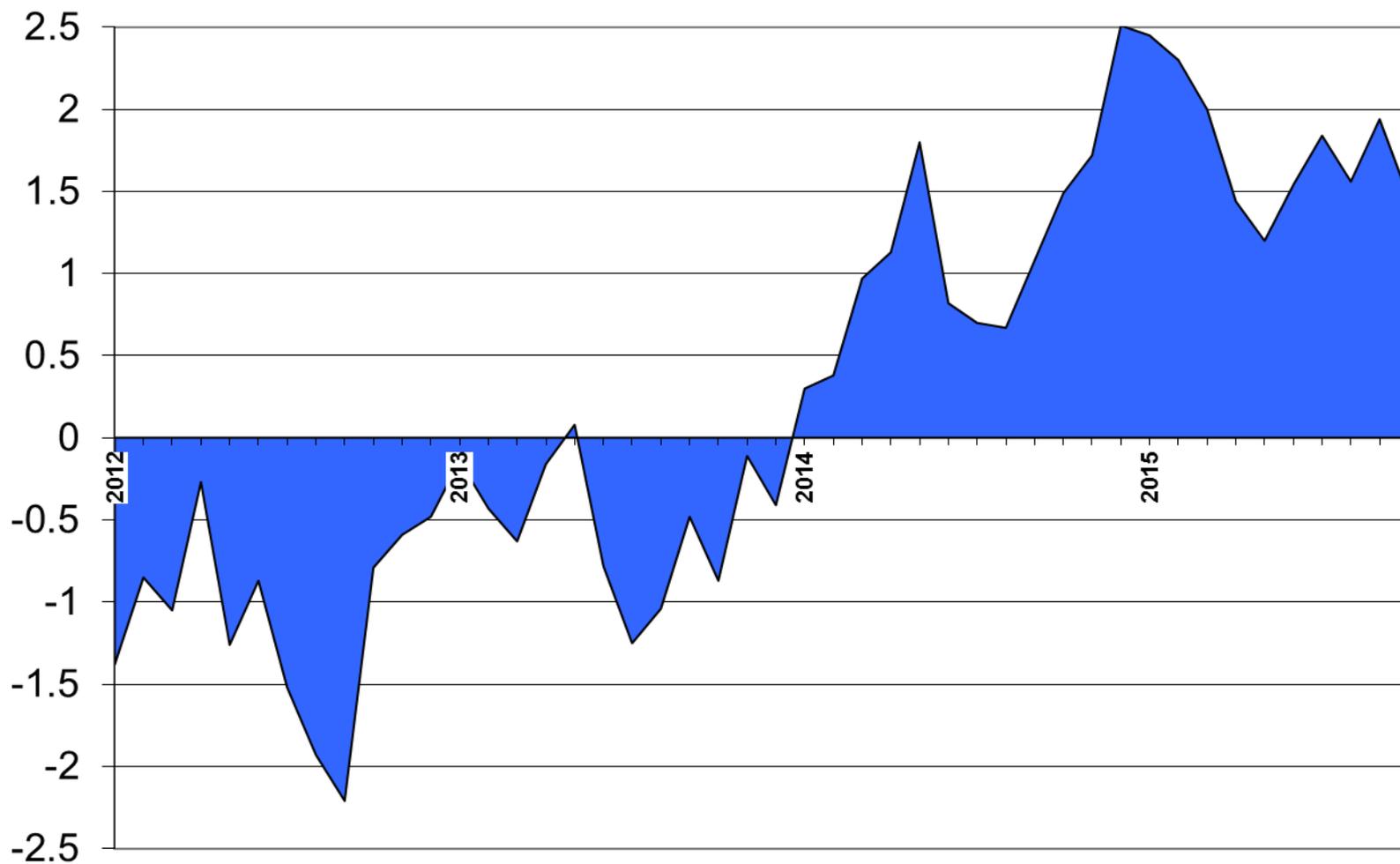
CLIMATE TRENDS
FOR 1950-2015
ENSO EVENTS!



MEI tracks the Sea-Level Pressure, surface winds (2D), Sea-surface Temperature, Air Temperature, and fraction of Cloud cover.

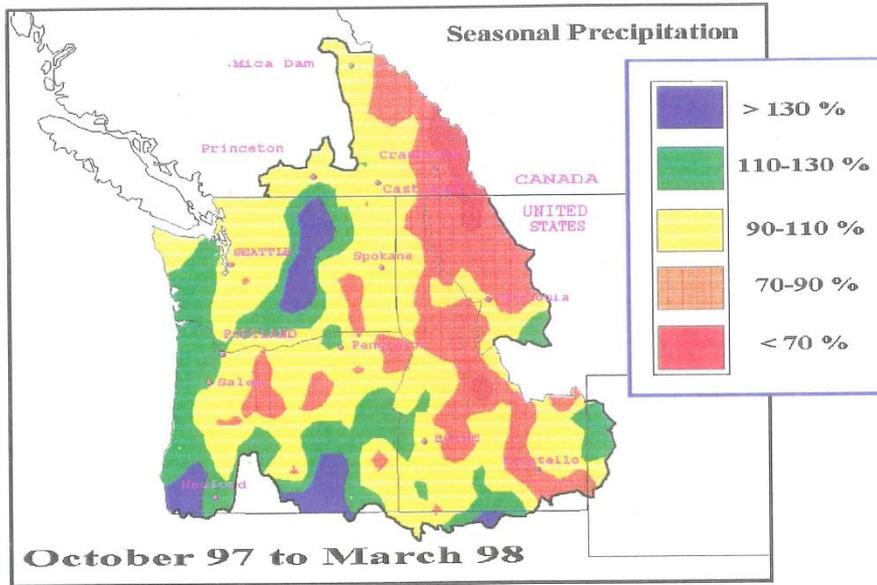
PDO SIGNAL...THE COLD PHASE CONTINUES (however...)

PACIFIC DECADAL OSCILLATION (PDO)



Source: Dr. Nate Mantua, NOAA (formerly UW-Climate Impacts Group)

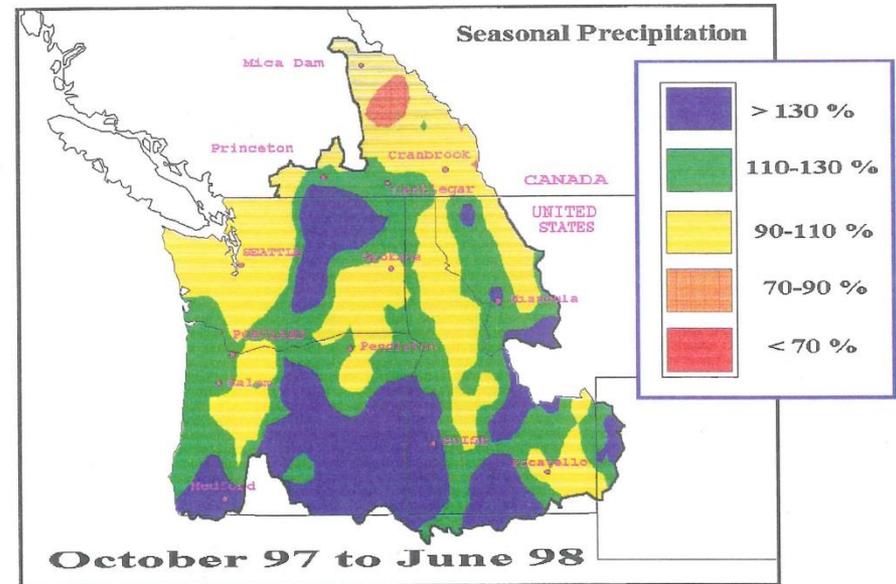
ANALOGUE WATER YEAR 1997-98 SEASONAL PRECIPITATION



Precipitation values based on 30 year normals (1961-1990)

CHARTS FROM THE NWS-NWRFC

...BUT WITH A WET SPRING!



Precipitation values based on 30 year normals (1961-1990)

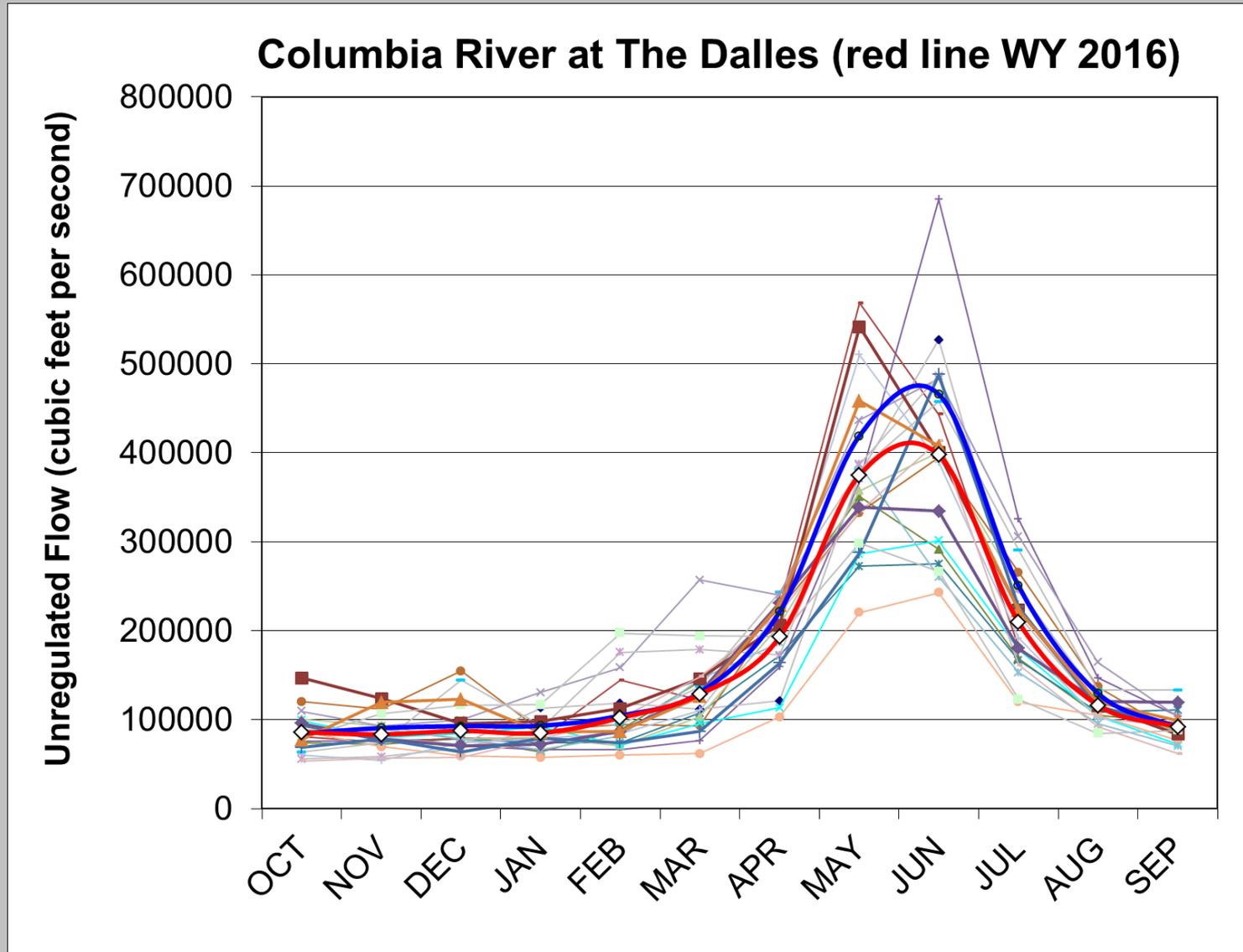
WHAT IS THE CRITFC CLIMATE AND WSF FORECAST?



CRITFC Forecast – Methods

- CRITFC forecast uses a holistic, integrated big picture view.
- Big-picture: **Solar Forcing** (e.g., sunspot cycles) does have some influence on our global weather patterns. *In memoriam: Dr. Landscheidt, 1922 – 2004, of Germany.*
- Track ENSO with the Multi-variable ENSO Index: **MEI**.
- NOAA's Sea-Surface Temperature Departure Forecasts.
- **Hydro-Climate** approach: Water year 2016 volume forecast uses regressed Multi-variable ENSO Index vs. historic runoff for the Columbia R. at The Dalles. Use a suite of 20 past water years.
- Select the "right" mixture of past Water Years: 1940, 1941, 1942, 1958, 1964, 1966, 1970, 1973, 1977, 1978, 1980, 1983, 1987, 1995, 1998, 2003, 2004, 2010, 2013, and 2015.
- Pattern recognition is key: all **El Niño** years (moderate to strong).

CRITFC ENSEMBLE STREAMFLOW FORECAST



Blue line = long-term average (WY 1929-2015)



Summary: New Forecast Point

Government Camp

Month:	Temperature (mean monthly):	Avg. (n=20)	Precipitation (% normal):	Avg. (n=20)	Snow fall	% Normal
December	Near Normal (-1.8 to + 1.8 degF)	0.5	Near Normal (90 - 110%)	94%	36	74%
January	Above Normal (> + 1.8 degF)	2.5	Near Normal (90 - 110%)	98%	43	95%
February	Above Normal (> + 1.8 degF)	2.3	Below Normal (70 - 90%)	79%	28	81%
March	Near Normal (-1.8 to + 1.8 degF)	1.5	Below Normal (70 - 90%)	89%	36	108%
April	Near Normal (-1.8 to + 1.8 degF)	0.8	Near Normal (90 - 110%)	97%	22	97%
May	Near Normal (-1.8 to + 1.8 degF)	0.5	Near Normal (90 - 110%)	106%	4	84%

CRITFC WATER SUPPLY FORECAST: **92 MAF** (90%), COLUMBIA AT THE DALLES, JAN-JULY.



What are your questions? Thanks! 😊

