

Winter 2015-2016 Climate Forecast

Oregon AMS and OMSI, Portland, OR



Kyle Dittmer

Hydrologist-Meteorologist

Columbia River Inter-Tribal Fish Commission
Portland, Oregon



**Portland
Community
College**

Professor of Earth Science

PCC – Southeast Campus, Portland, Oregon

October 24th, 2015

Columbia River Inter-Tribal Fish Commission - CRITFC

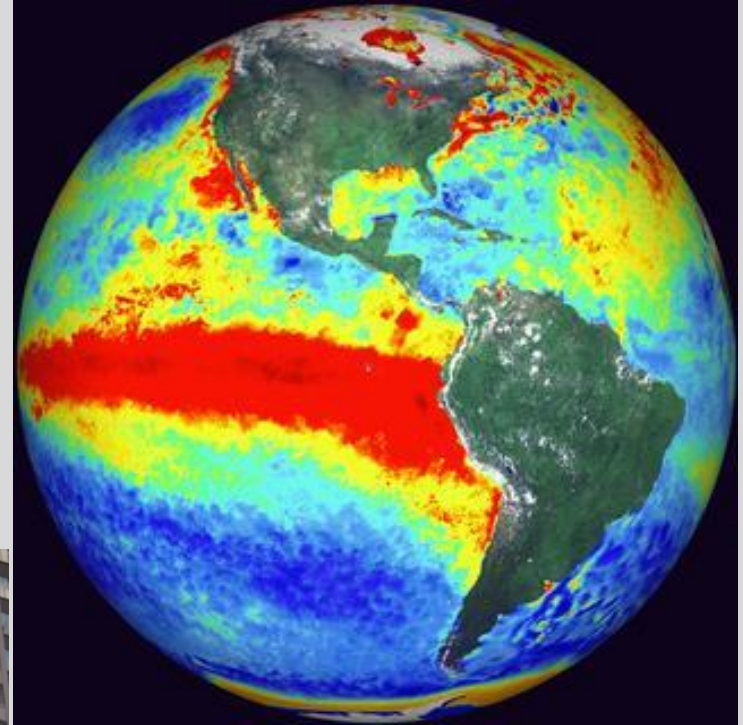


The screenshot shows the CRITFC website with an orange header. The logo is on the left, followed by the text 'Columbia River Inter-Tribal Fish Commission' and the tagline 'putting fish back in the rivers'. Navigation links include 'Jobs', 'Calendar', 'Donate', 'Contact', and 'Press Room'. A search bar is labeled 'Search CRITFC'. Below the header is a menu with 'About CRITFC', 'Salmon Culture', 'Member Tribes', 'Blog', 'Buy Salmon', and social media icons for Twitter and Facebook. A secondary menu lists 'FISH AND WATERSHEDS', 'TRIBAL TREATY FISHING RIGHTS', 'EDUCATION', and 'FISHER SERVICES'. The main content area features a large image of a person in traditional regalia holding a fishing net, with the text 'Sharing Salmon Culture' and a paragraph about the meaning of 'Wya-Kan-Ush-Pum'. To the right is a yellow box titled '2013 Bonneville Fish Count' with a notice about unavailable counts. Below this are two columns: 'Currents' with an article 'Tribal Restoration Efforts Paying Off' and a 'Subscribe' button, and 'Advocacy Issues' with a 'Resident Fish Consumption Advisory' and a 'Continue Reading' link. A red 'CONSUMPTION ADVISORY' banner is also visible. The footer contains links for 'CRITFC Home', 'CRITFC RESOURCES', 'RESEARCH', 'ACTIVITIES', and 'CONNECT'.



CRITFC website, <http://www.critfc.org>

THE GODZILLA EL NIÑO!





2014-2015 Portland Climate Forecast Performance

Month:	Temperature (mean monthly):	Avg. (n=20)	Observed	Precipitation (% normal):	Avg. (n=20)	Observed
November	Near Normal (-1.8 to + 1.8 degF)	1	1.0	Below Normal (70 - 90%)	88%	54%
December	Near Normal (-1.8 to + 1.8 degF)	1	3.4	Near Normal (90 - 110%)	96%	109%
January	Near Normal (-1.8 to + 1.8 degF)	1	2.3	Near Normal (90 - 110%)	97%	71%
February	Near Normal (-1.8 to + 1.8 degF)	1	5.1	Below Normal (70 - 90%)	78%	93%
March	Near Normal (-1.8 to + 1.8 degF)	1	4.2	Below Normal (70 - 90%)	85%	132%
	average:	1.0	+3.2	average:	89%	92%

...but what about Snow events?!

Forecasted four events...all minor (2-inch seasonal total), November to March.

Observed one snow event (Nov. 11)...trace seasonal total.

Water Supply Forecast (MEI method): Columbia R. at The Dalles, Jan.-July:

97 MAF (issued Nov. 2014), 95%. Observed: 101 MAF. Error $\pm 4\%$.

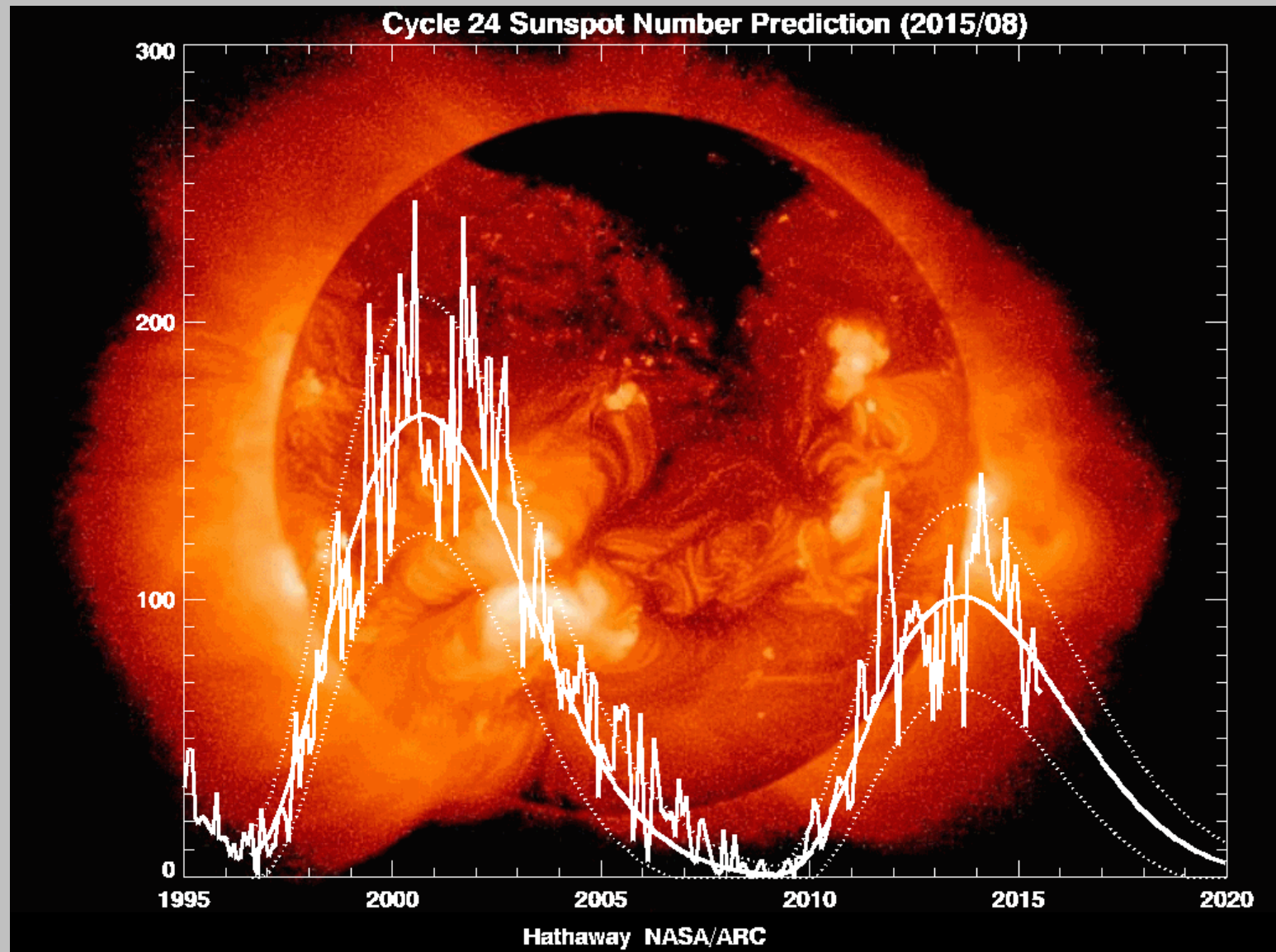
96 MAF (issued April 2015), 95%. Observed: 101 MAF. Error $\pm 5\%$.



Introduction – Methods

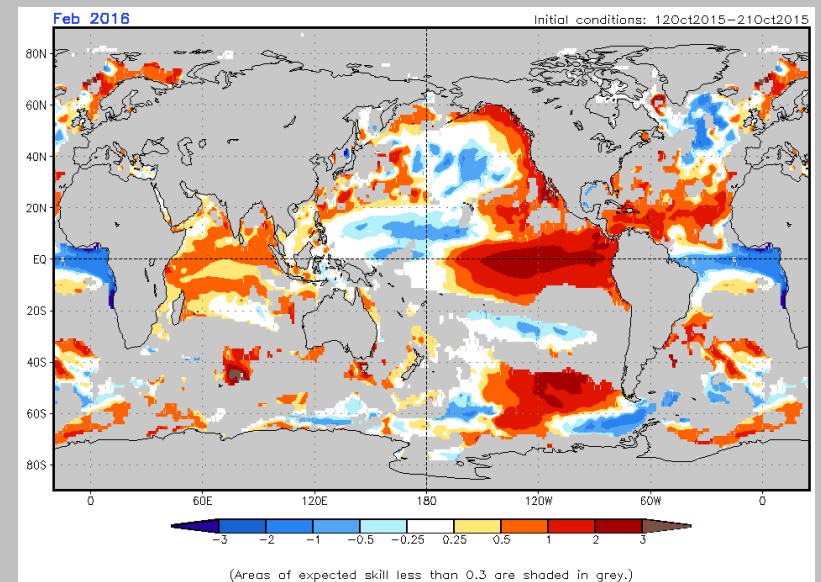
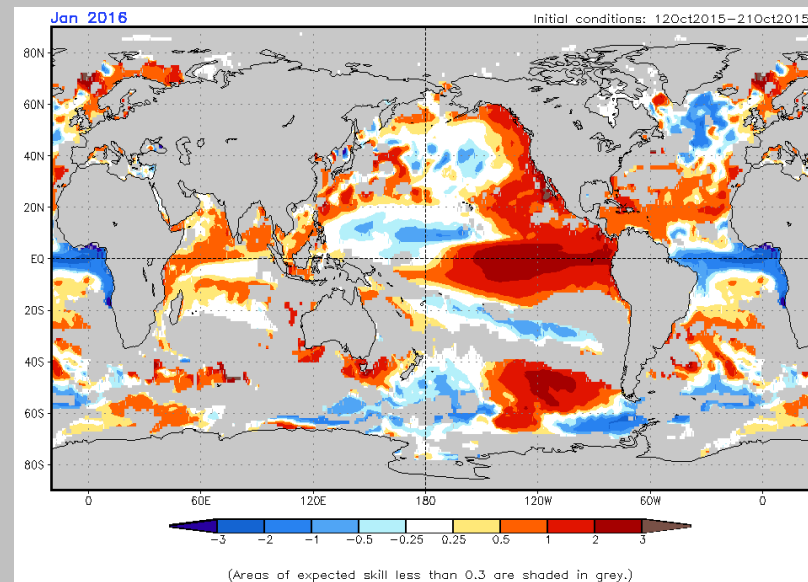
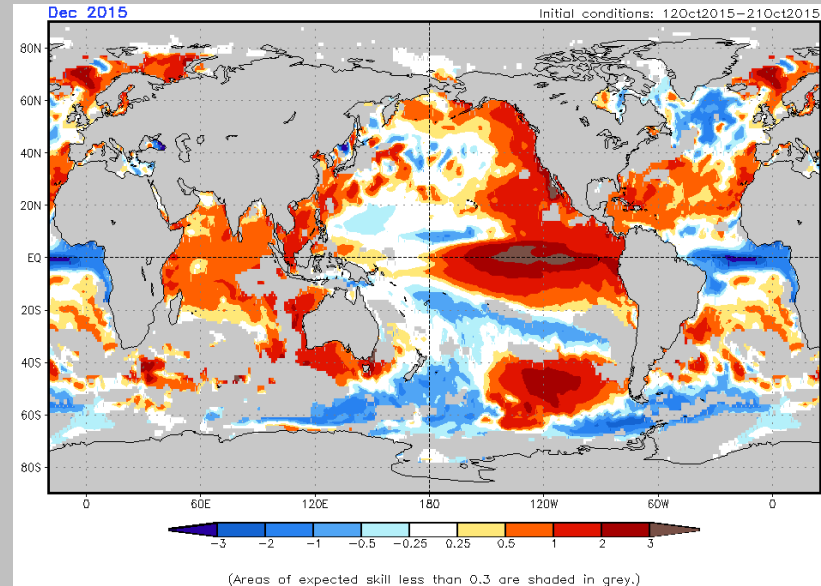
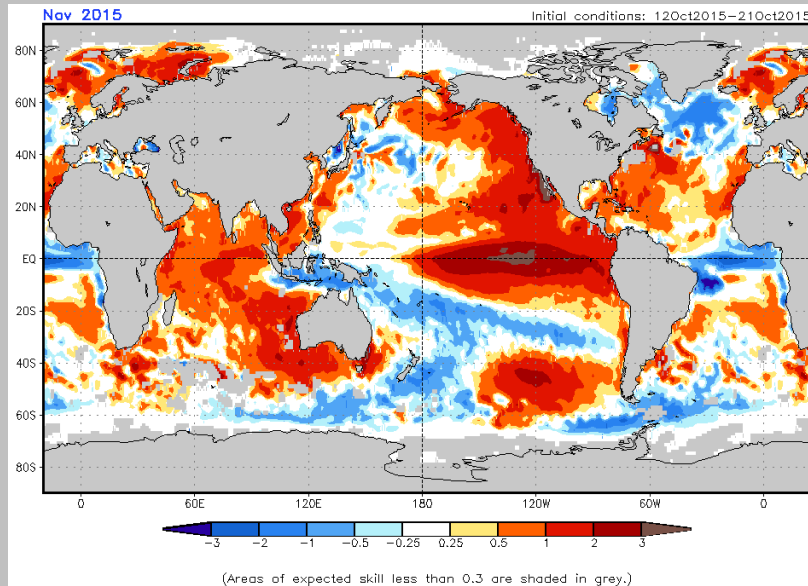
- CRITFC forecast uses a holistic, integrated big picture view.
- Big-picture: **Solar Forcing** (e.g., sunspot cycles) does influence our global weather patterns. *In memoriam:* Dr. Landscheidt, 1922 – 2004, of Germany.
- Track ENSO with the Multi-variable ENSO Index: **MEI**.
- NOAA's Sea-Surface Temperature 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).

SUNSPOT COUNTS – “EL NIÑO”

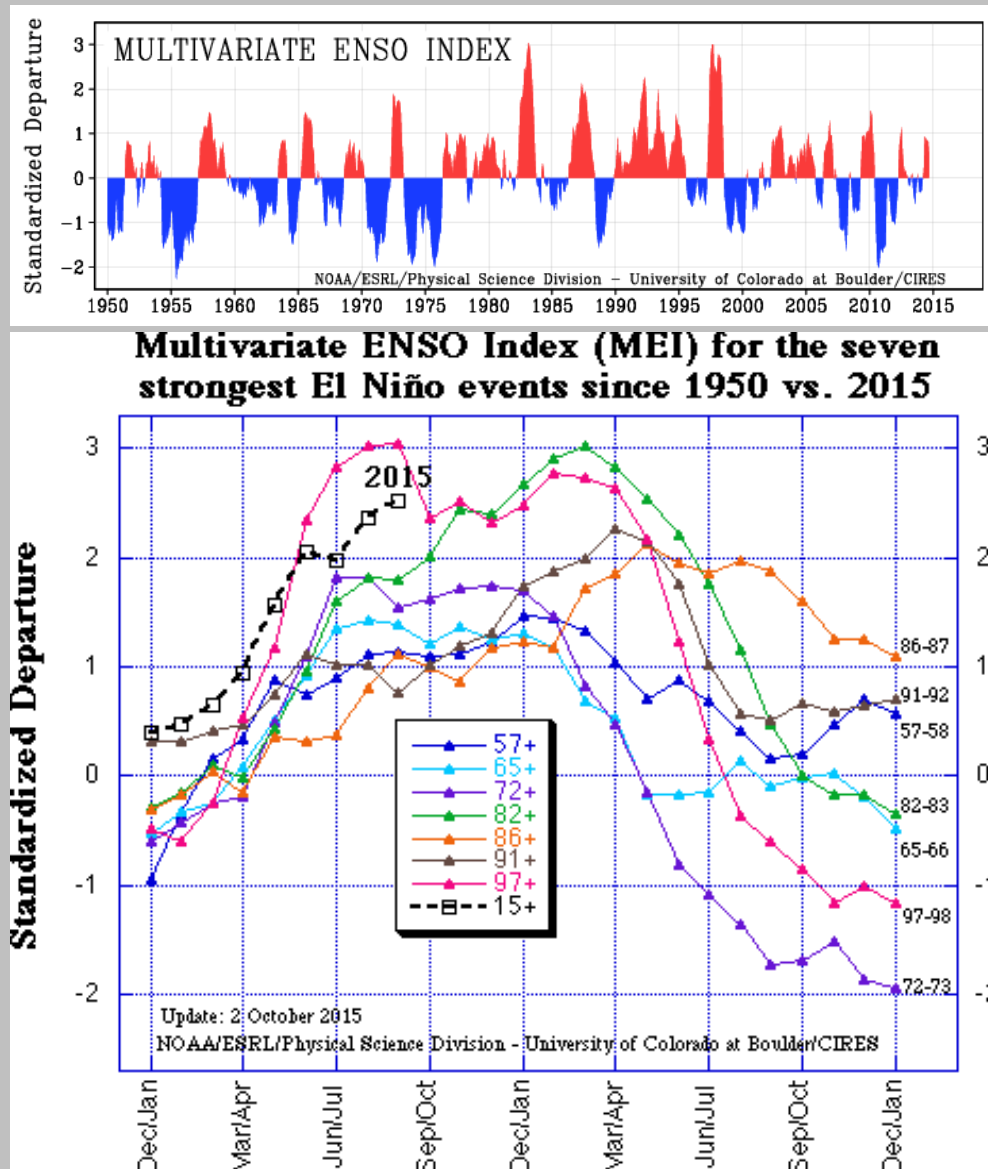


http://solarscience.msfc.nasa.gov/images/ssn_predict_l.gif

NOAA SEA SURFACE TEMPERATURES - BIG "EL NIÑO"



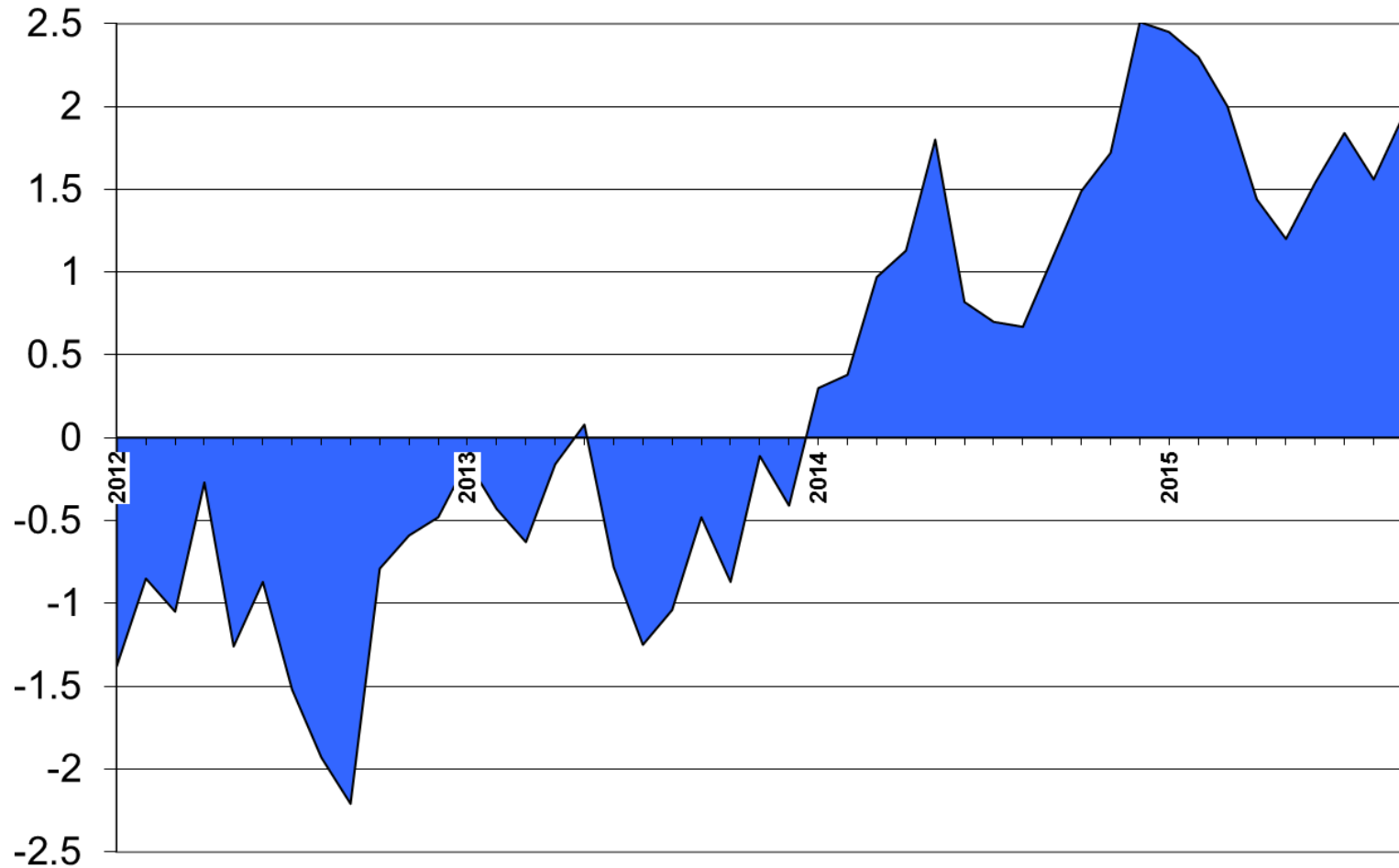
MEI SIGNAL SUGGESTS MAJOR "EL NIÑO" WINTER WEATHER



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

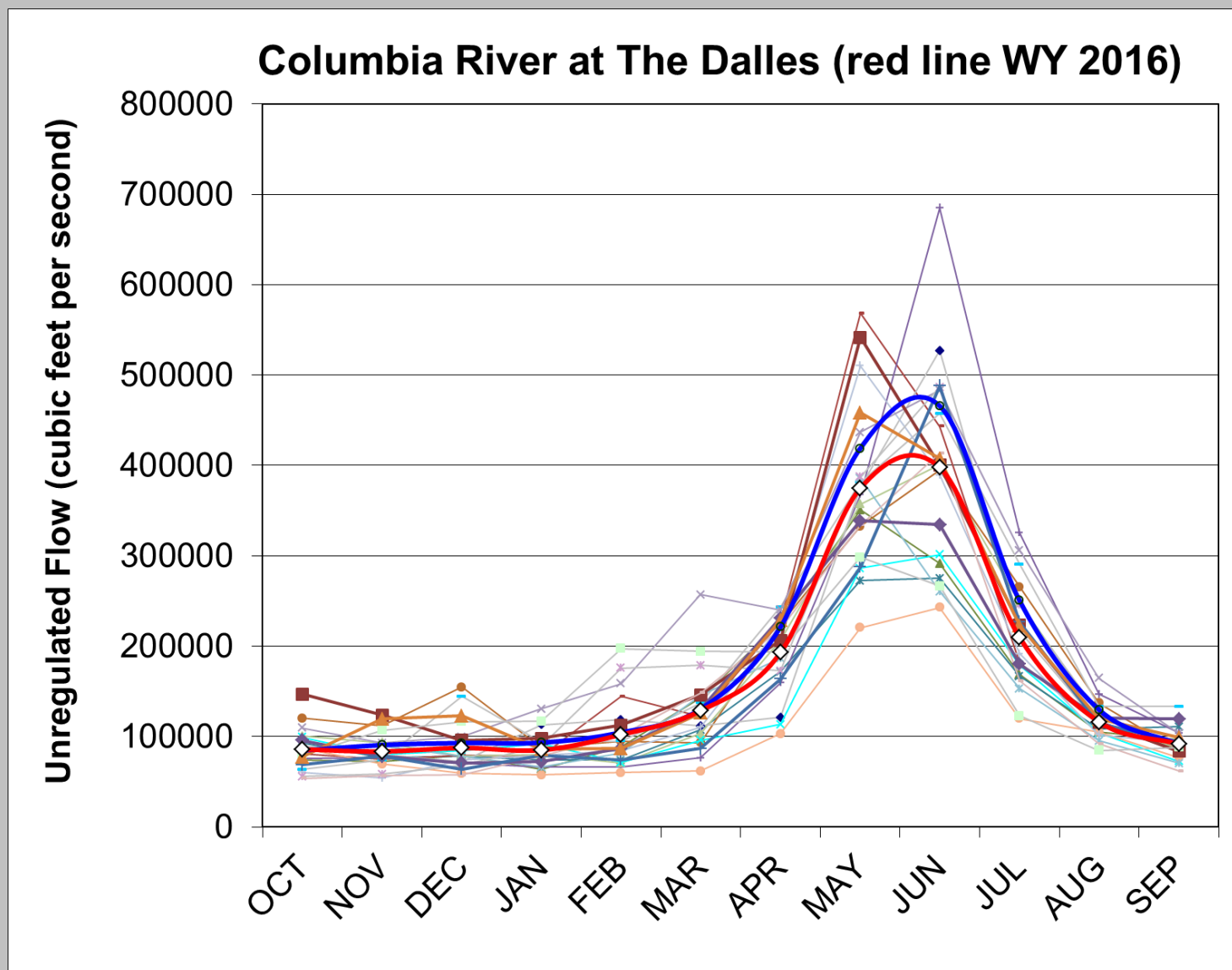
PDO SIGNAL...THE COLD PHASE CONTINUES (however...)

PACIFIC DECADAL OSCILLATION (PDO)



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

ENSEMBLE STREAMFLOW FORECAST



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



Summary: A New Forecast

Government Camp

Month:	Temperature (mean monthly):	Avg. (n=20)	Precipitation (% normal):	Avg. (n=20)	Snow fall	% Normal
November	Near Normal (-1.8 to + 1.8 degF)	0.3	Below Normal (70 - 90%)	91%	23	65%
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%





Summary: The Portland Forecast

Month:	Temperature (mean monthly):	Avg. (n = 20)	Precipitation (% normal):	Avg. (n = 20)
November	Near Normal (-1.8 to + 1.8 degF)	1	Below Normal (70 - 90%)	77%
December	Near Normal (-1.8 to + 1.8 degF)	1	Near Normal (90 - 110%)	103%
January	Near Normal (-1.8 to + 1.8 degF)	1	Near Normal (90 - 110%)	96%
February	Near Normal (-1.8 to + 1.8 degF)	1	Below Normal (70 - 90%)	86%
March	Near Normal (-1.8 to + 1.8 degF)	1	Below Normal (70 - 90%)	89%

EXPECT LOW VARIABILITY — FEW RAIN EVENTS, MANY DRY-SPELLS, etc. EXPECT A SHORT ACTIVE WEATHER SEASON!

WATER SUPPLY FORECAST: **92 MAF** or 90%, COLUMBIA RIVER AT THE DALLES, JANUARY - JULY.

...but what about Snow events?!

Expect Two events...one moderate (2-inch), one minor.

(65% - 70% likely), December through January.

