

Winter 2014-2015 Climate Forecast

TMT End-of-Year Review Meeting

December 3rd, 2014



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Portland, Oregon

Columbia River Inter-Tribal Fish Commission - CRITFC



Columbia River Inter-Tribal Fish Commission
putting fish back in the rivers

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Sharing Salmon Culture

Wy-Kan-Ush-Pum means "salmon people" and all residents of the Columbia River Basin are "Salmon People." It focuses on the importance of salmon and the environment in which salmon live.

2013 Bonneville Fish Count

The daily fish counts are provided by the Corps of Engineers. Due to the federal government shutdown, these counts are unavailable.

Currents

Tribal Restoration Efforts Paying Off

Back in the 1970s, salmon runs were declining so quickly that there was a real worry that they would go extinct in some areas. In 1980, only 470,000 salmon passed Bonneville Dam—and that's adding up chinook, sockeye, and coho. In 1995, the tribes released the... [Continue Reading »](#)

Advocacy Issues

Resident Fish Consumption Advisory

Oregon and Washington have issued two fish consumption advisories on 9/23/13 for RESIDENT FISH in the Columbia River caught between Bonneville and McNary dams due to high to moderate levels of mercury and PCBs. The Oregon Health Authority and Washington State Department of Health issued this advisory to limit people's exposure.

CONSUMPTION ADVISORY

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2013-2014 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	0.4	Near Normal (90 - 110%)	102%	55%
December	Near Normal (-1.8 to + 1.8 degF)	1	-4.4	Below Normal (70 - 90%)	82%	29%
January	Near Normal (-1.8 to + 1.8 degF)	1	0.3	Near Normal (90 - 110%)	100%	58%
February	Near Normal (-1.8 to + 1.8 degF)	1	-3.8	Near Normal (90 - 110%)	95%	128%
March	Near Normal (-1.8 to + 1.8 degF)	1	0.9	Near Normal (90 - 110%)	103%	211%
	average:	1.0	-1.3	average:	96%	96%

...but what about Snow events?!

Forecasted four events...1 moderate (2-4 inches), 3 minor (1 inch), Jan. to March.

Observed FIVE snow events (Feb. 3-day major event)...18.5 inch seasonal total.

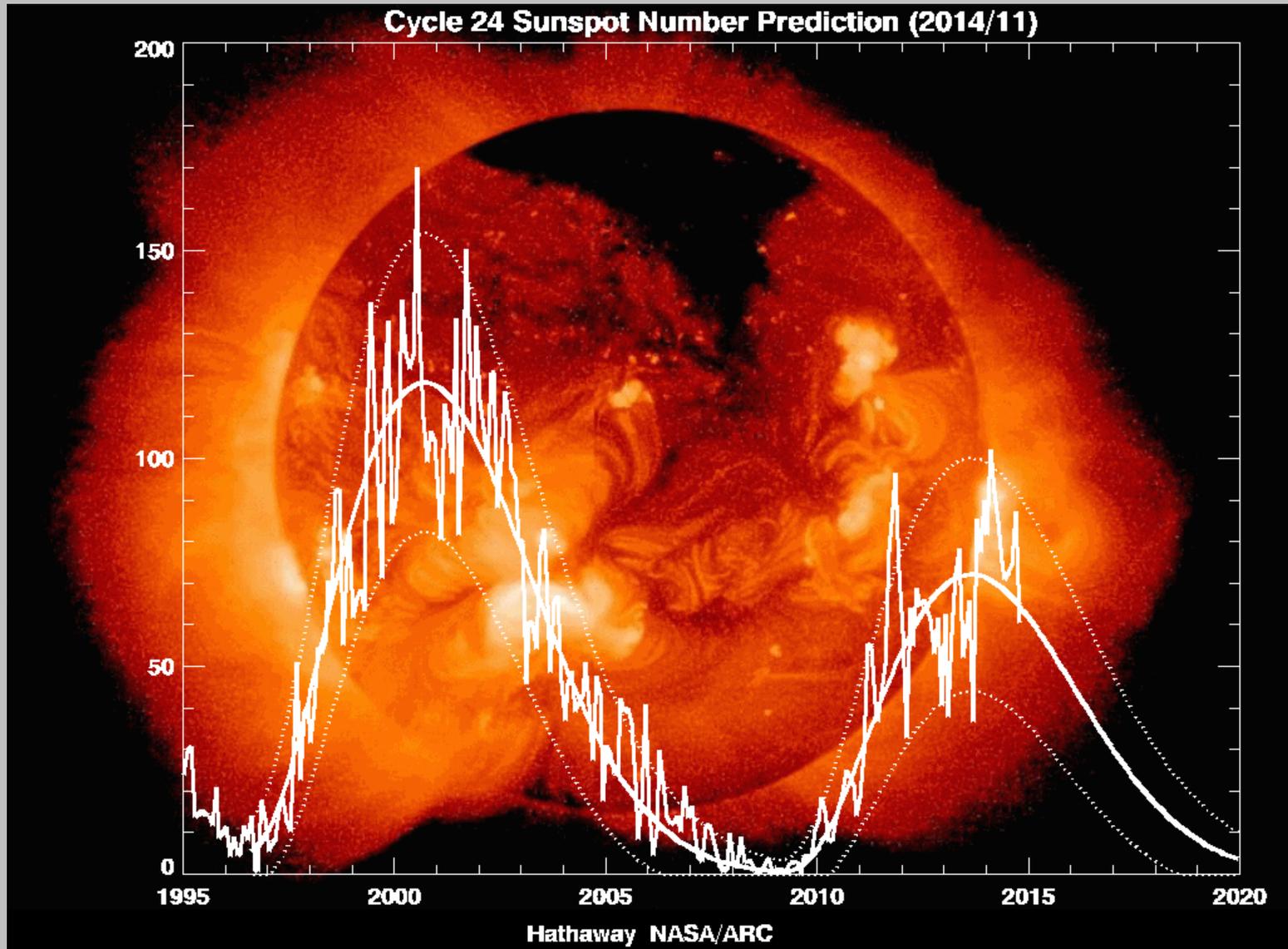
Water Supply Forecast (MEI method): Columbia R. at The Dalles, Jan.-July:
 110 MAF (issued Oct 2013), 108%. Observed: 108.1 MAF. Error $\pm 0.3\%$.
 103 MAF (issued April 2014), 102%. Observed: 108.1 MAF. Error $\pm 4.3\%$.



Introduction – Methods

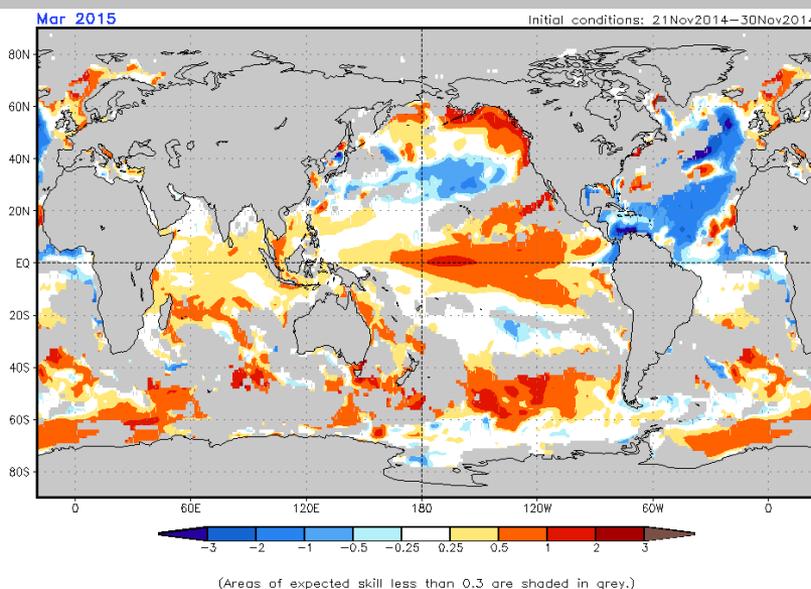
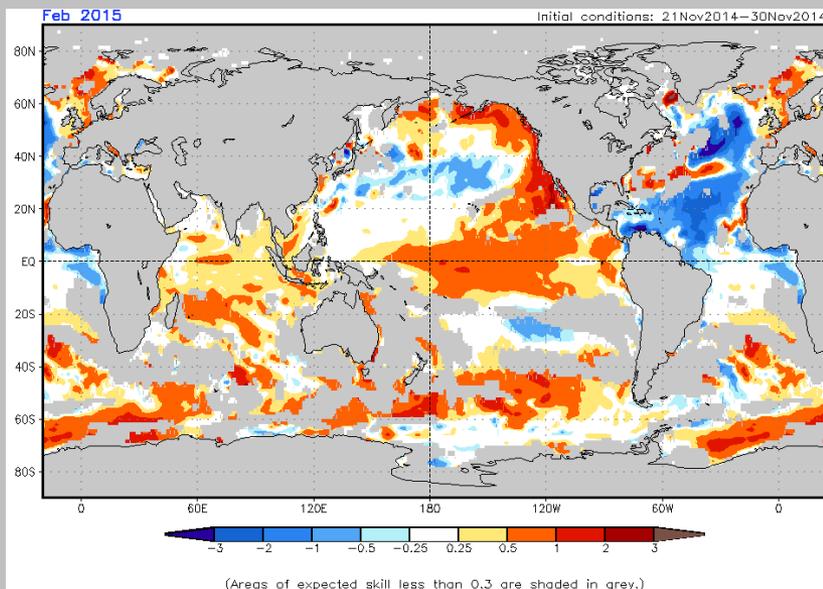
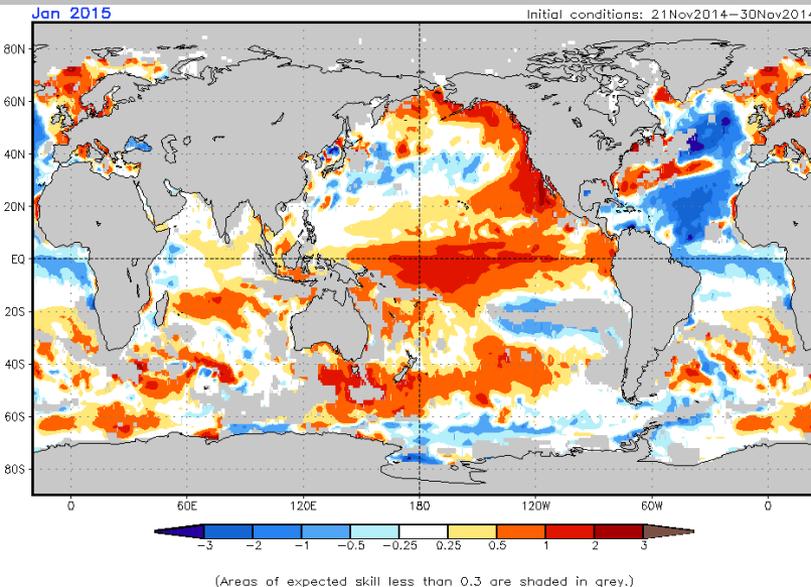
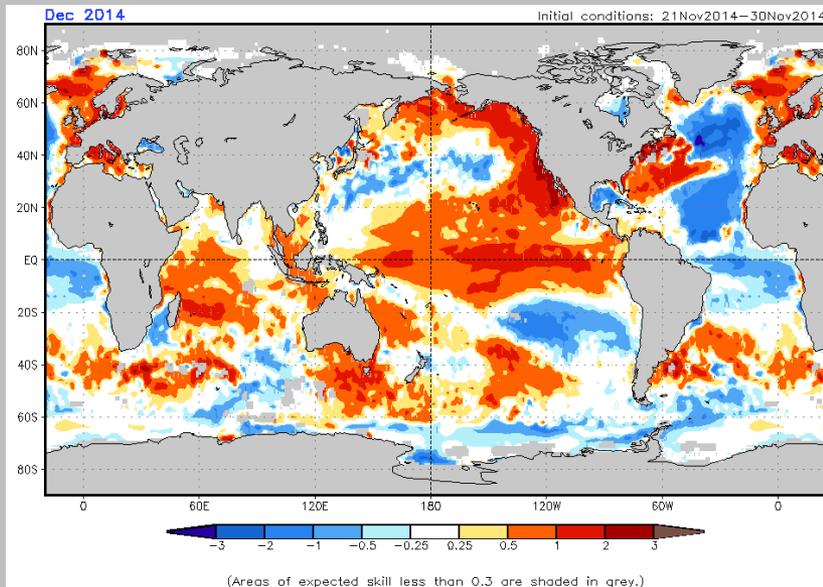
- CRITFC forecast uses a holistic, integrated big picture view.
- Big-picture: **Solar Forcing** (e.g., sunspot cycles) does influence our global weather patterns. *In memoriam*: Dr. Landscheidt, 1922 – 2004, of Germany.
- Track ENSO with the Multi-variable ENSO Index: **MEI**.
- NOAA's Sea-Surface Temperature Departure Forecasts.
- Hydro-Climate approach: Water year 2015 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 years: 1947, 1949, 1953, **1958**, 1960, 1962, **1964**, **1966**, **1970**, 1981, 1990, 1993, 1994, 2002, **2003**, **2004**, **2005**, 2007, **2010**, and **2013**.
- Pattern recognition is key: **ENSO-neutral** and **El Niño**.

SUNSPOT COUNTS – TREND TO “EL NIÑO”?

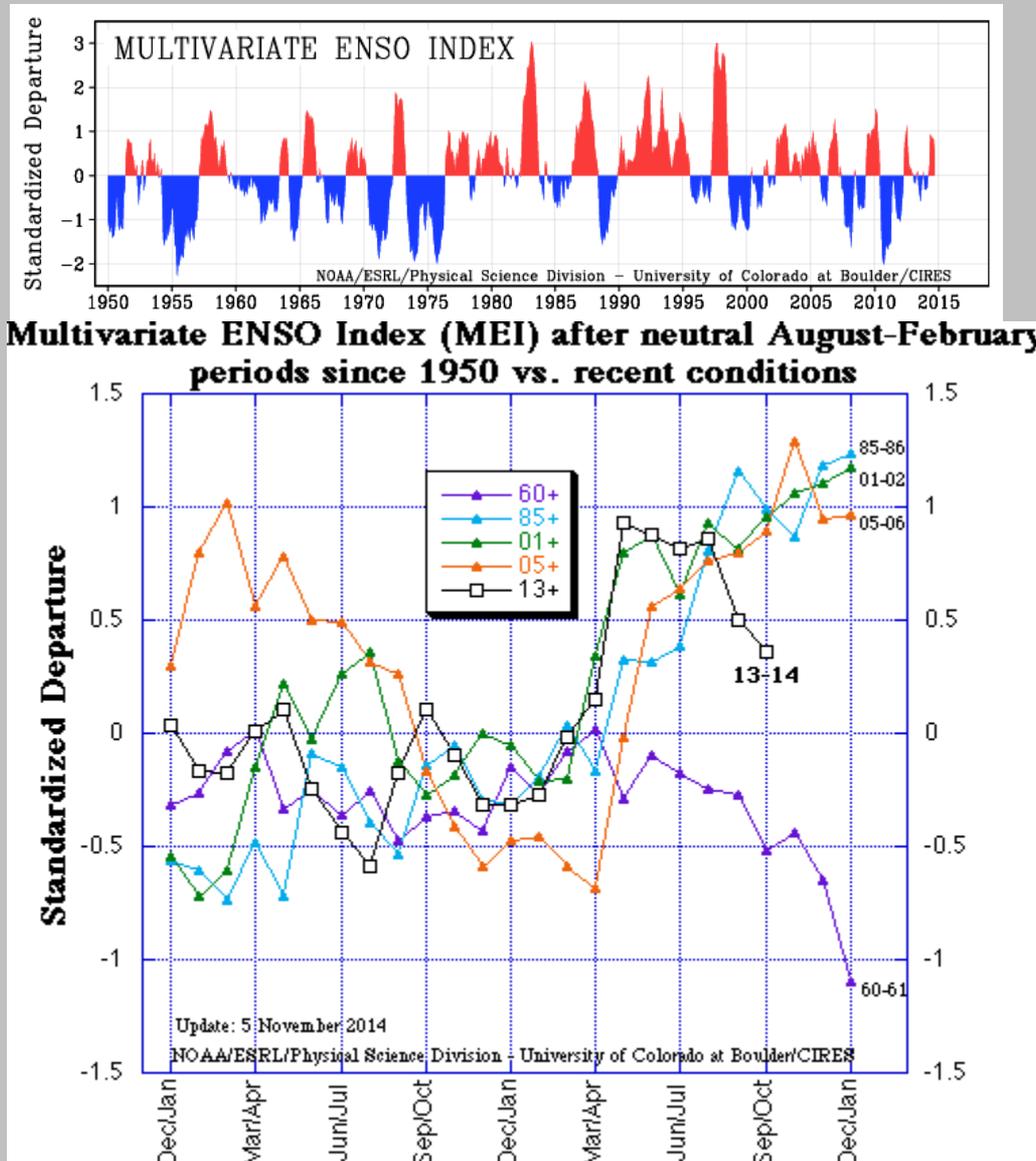


http://solarscience.msfc.nasa.gov/images/ssn_predict_l.gif

NOAA SEA SURFACE TEMPERATURES SUGGEST "EL NIÑO"



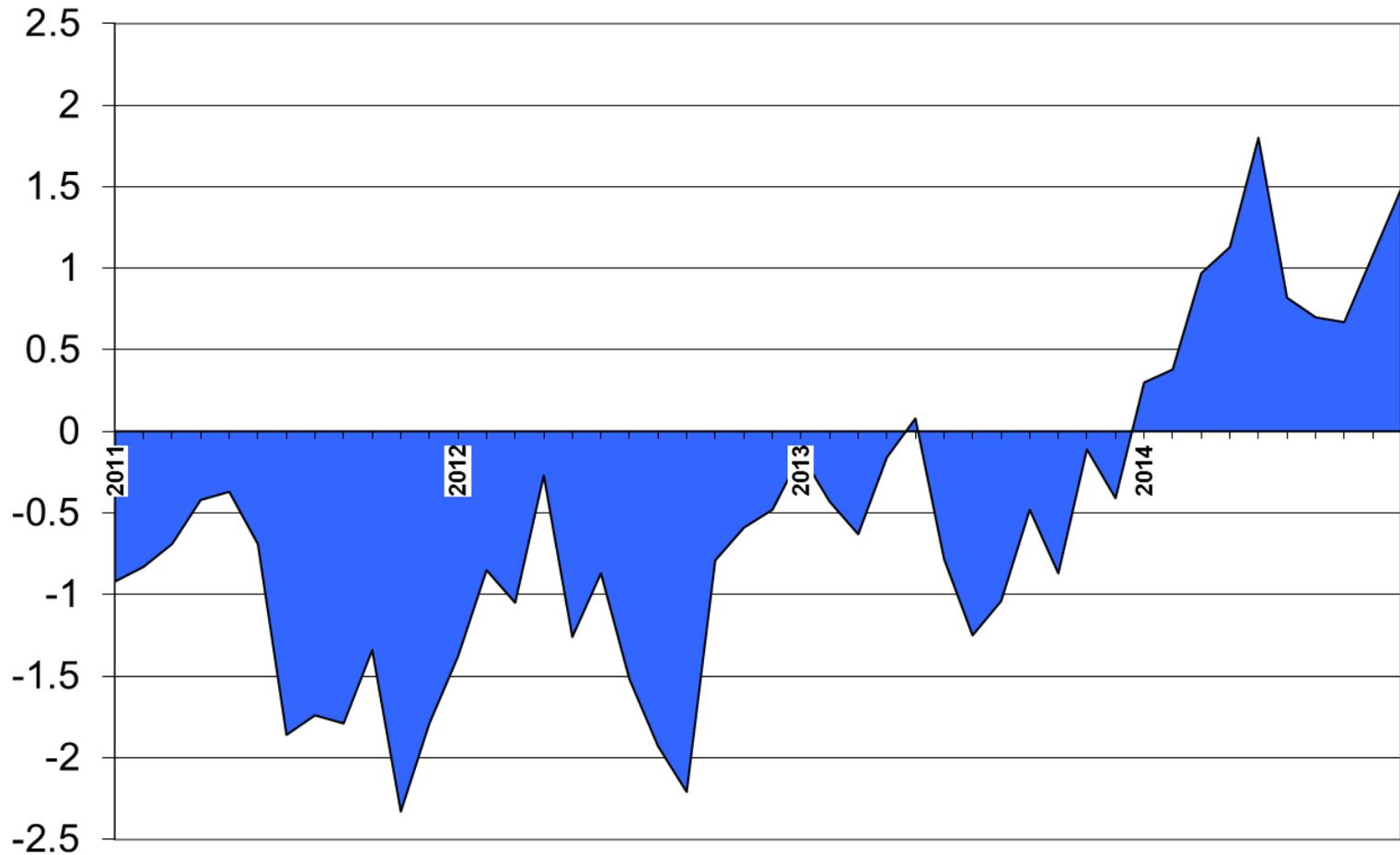
MEI SIGNAL SUGGESTS "ENSO-NEUTRAL" WINTER WEATHER



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

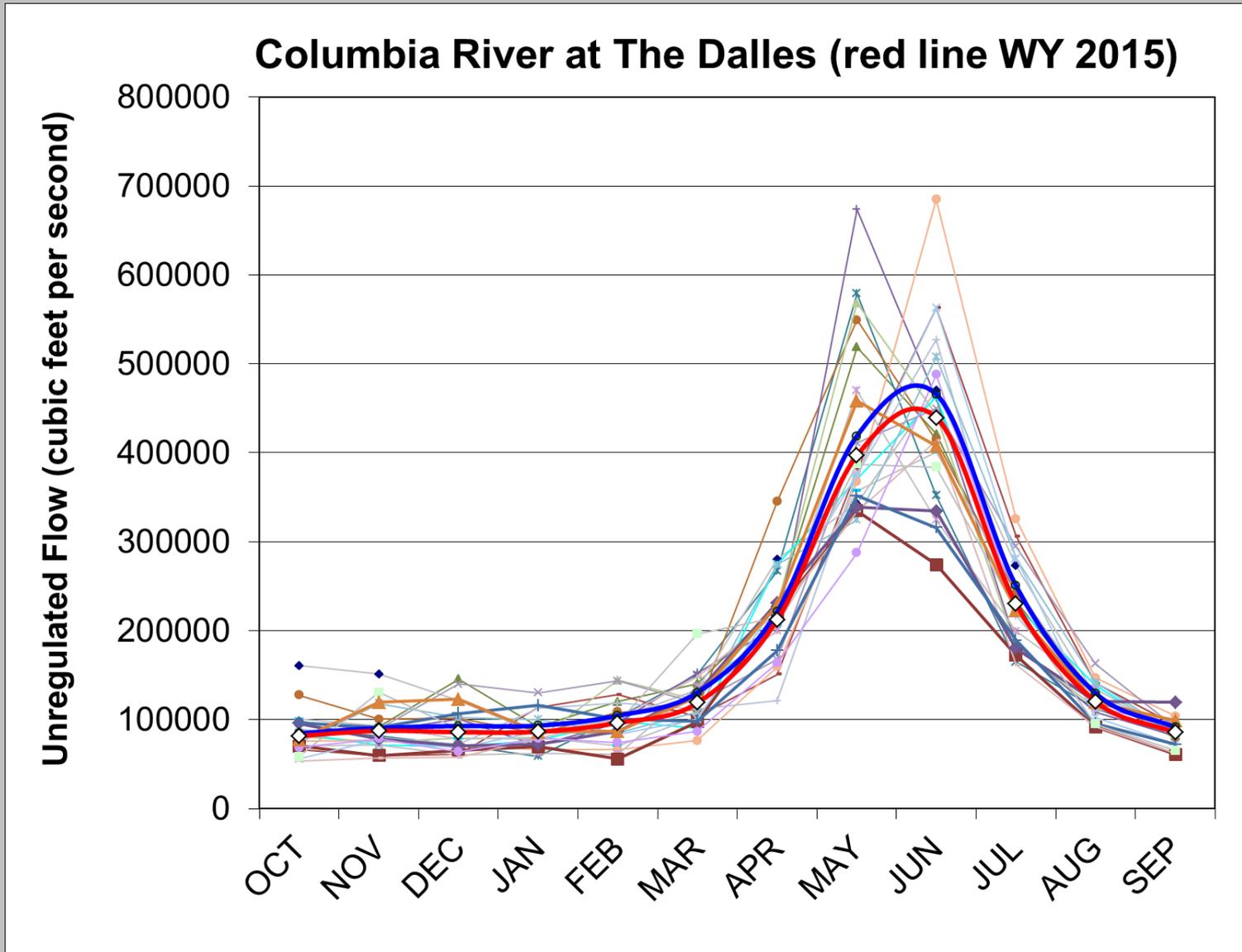
PACIFIC DECADAL OSCILLATION (PDO)



Source: UW-Climate Impacts Group

...even though we're in a "Warm Phase" departure!

ENSEMBLE STREAMFLOW FORECAST



Blue line = long-term average (WY 1929-2014)



Summary: The 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%)	88%
December	Near Normal (-1.8 to + 1.8 degF)	1	Near Normal (90 - 110%)	96%
January	Near Normal (-1.8 to + 1.8 degF)	1	Near Normal (90 - 110%)	97%
February	Near Normal (-1.8 to + 1.8 degF)	1	Below Normal (70 - 90%)	78%
March	Near Normal (-1.8 to + 1.8 degF)	1	Below Normal (70 - 90%)	85%

EXPECT HIGH VARIABILITY, EXTREMES — INTENSE RAIN, DRY-SPELLS, WIND-STORM, FLOODS, etc. WATCH FOR SPRING!

WATER SUPPLY FORECAST (as of Nov. 11): **97 MAF** or 95%, COLUMBIA RIVER AT THE DALLES, JANUARY - JULY.

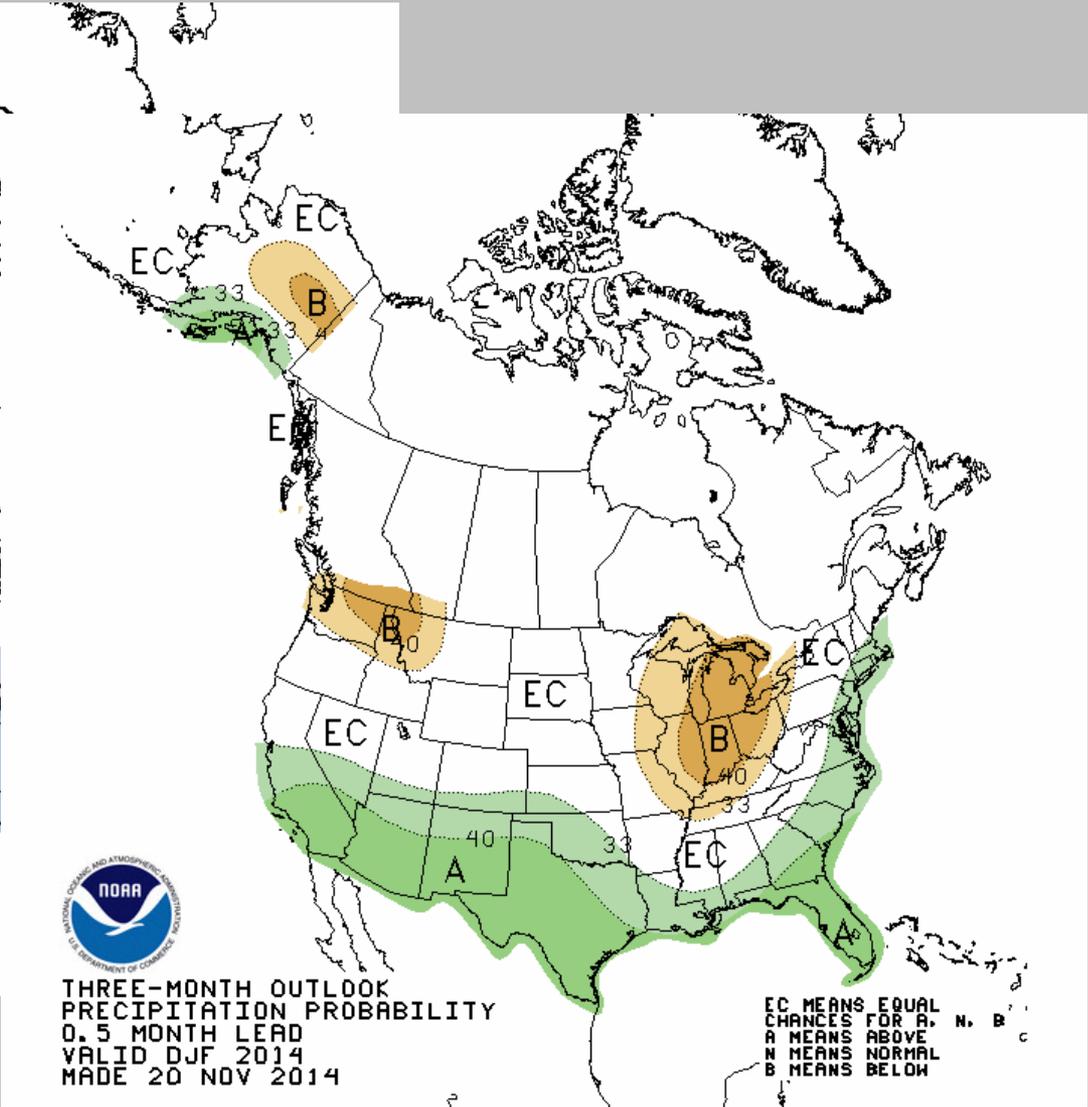
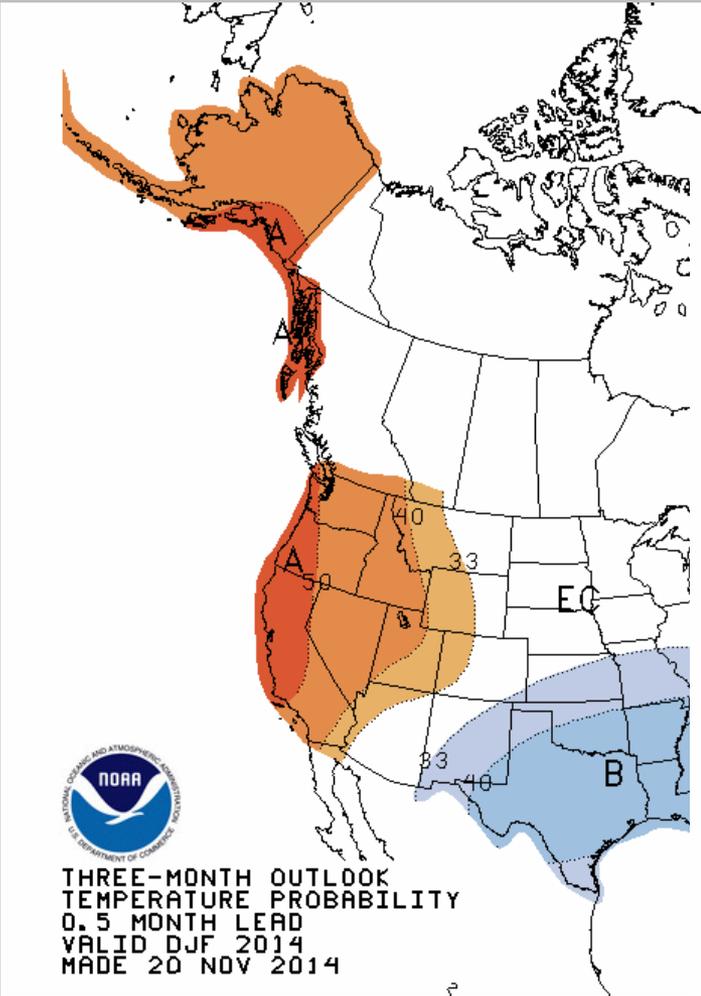
...but what about Snow events?!

Expect Four events...all minor (2-inch seasonal total)

(60% - 80% likely), December through mid-February



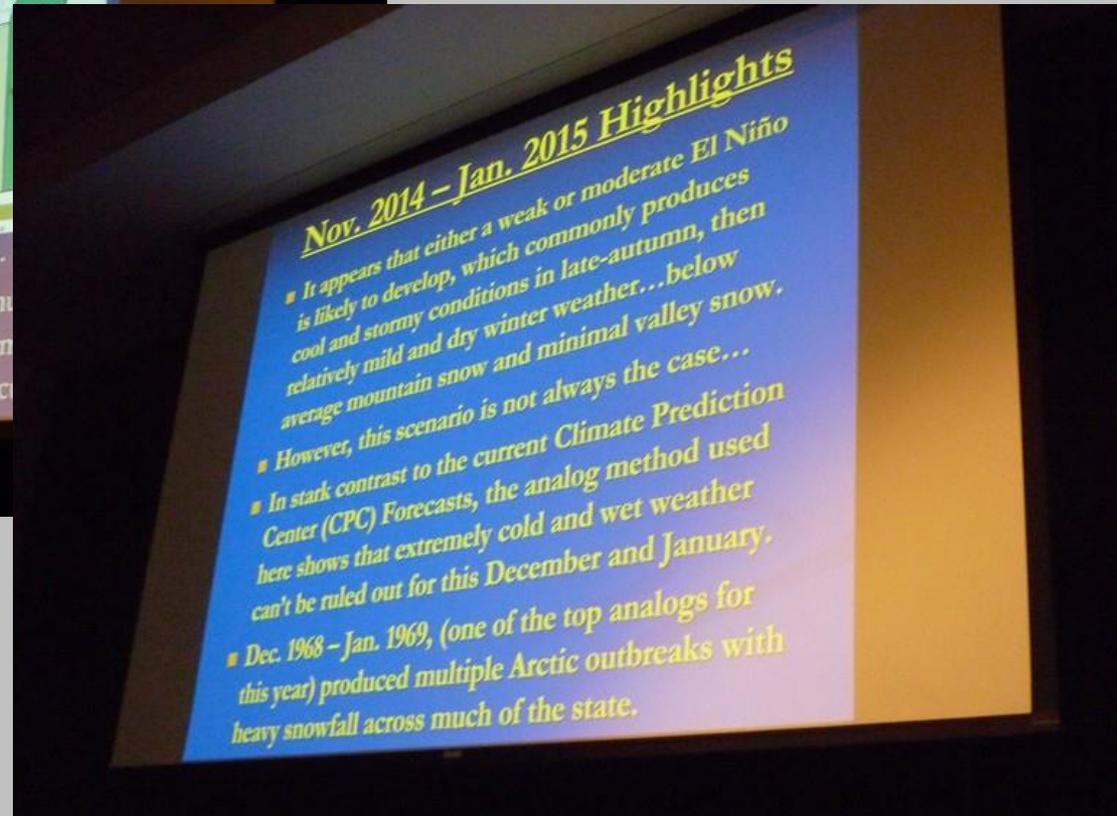
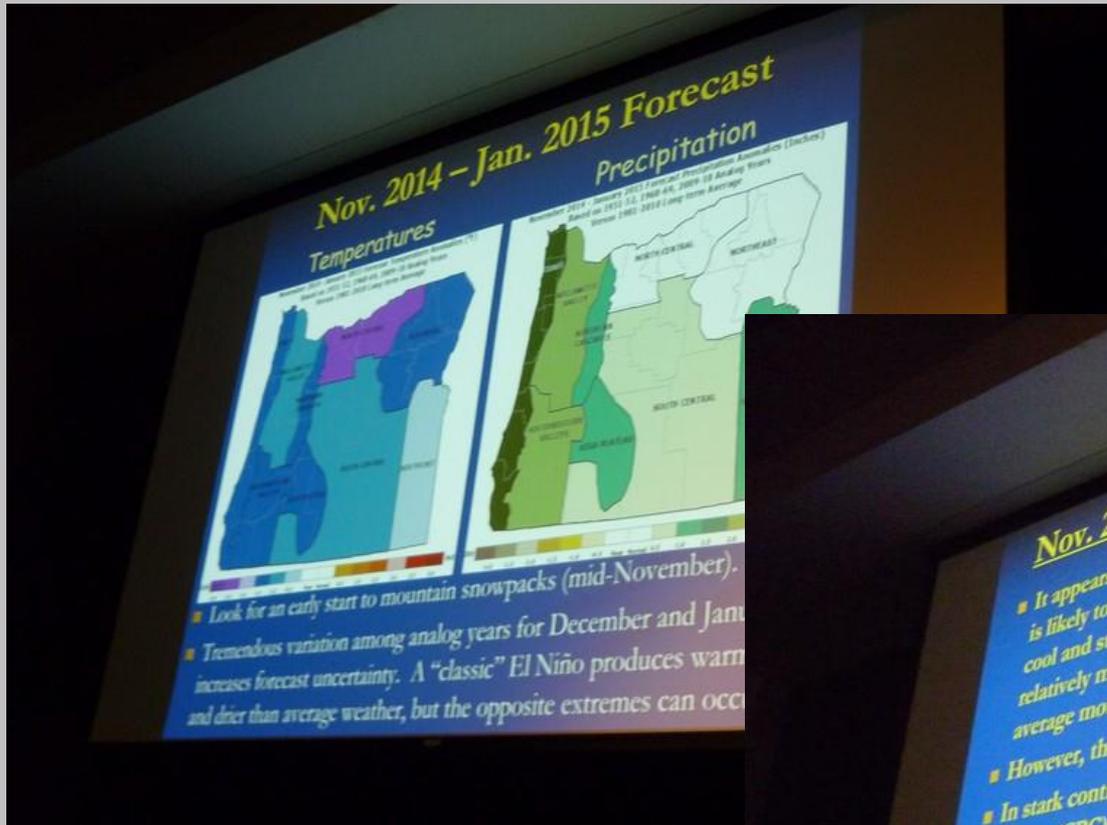
OTHER FORECASTS...



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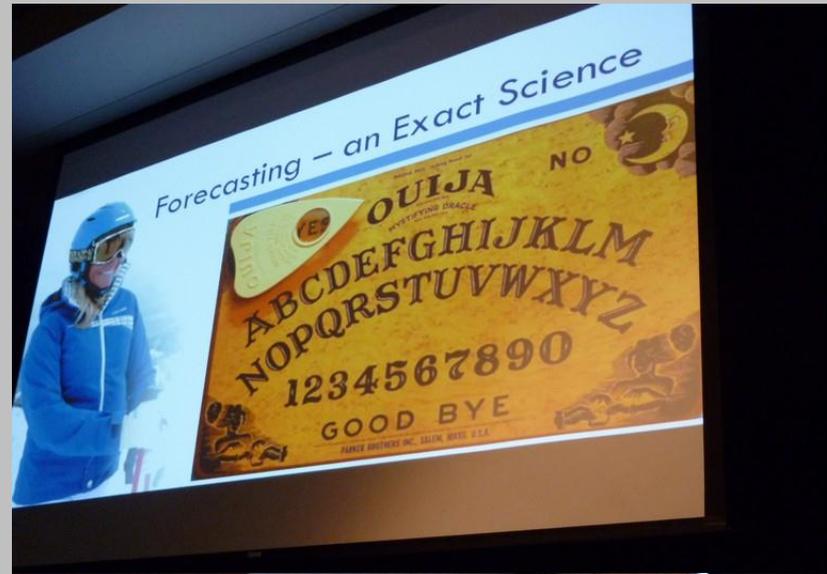
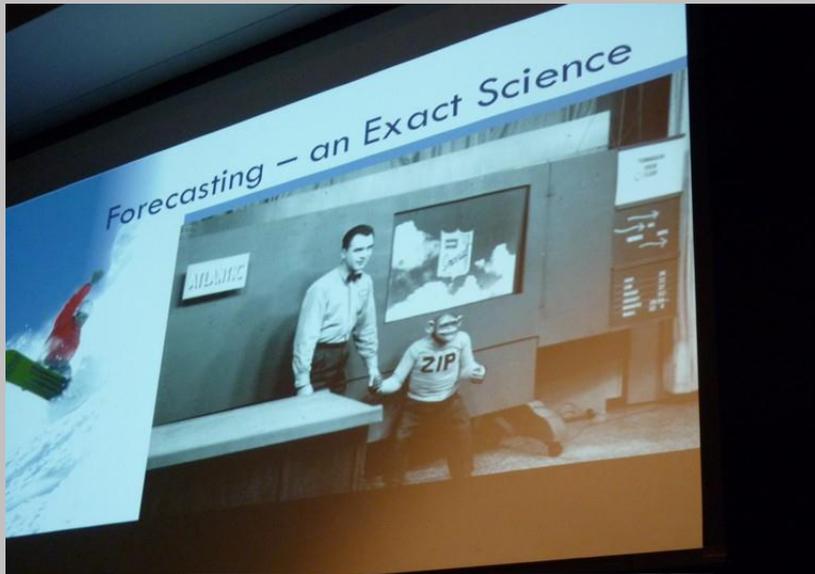
OTHER FORECASTS...



Pete Parsons – Oregon Dept. of Agriculture

<http://www.oregon.gov/ODA/programs/NaturalResources/Pages/Weather.aspx>

WEATHER PREDICTORS...



“Informal” environmental indicators?

What are your **Questions?**