Winter 2014-2015 Climate Forecast

TMT End-of-Year Review Meeting

December 3rd, 2014

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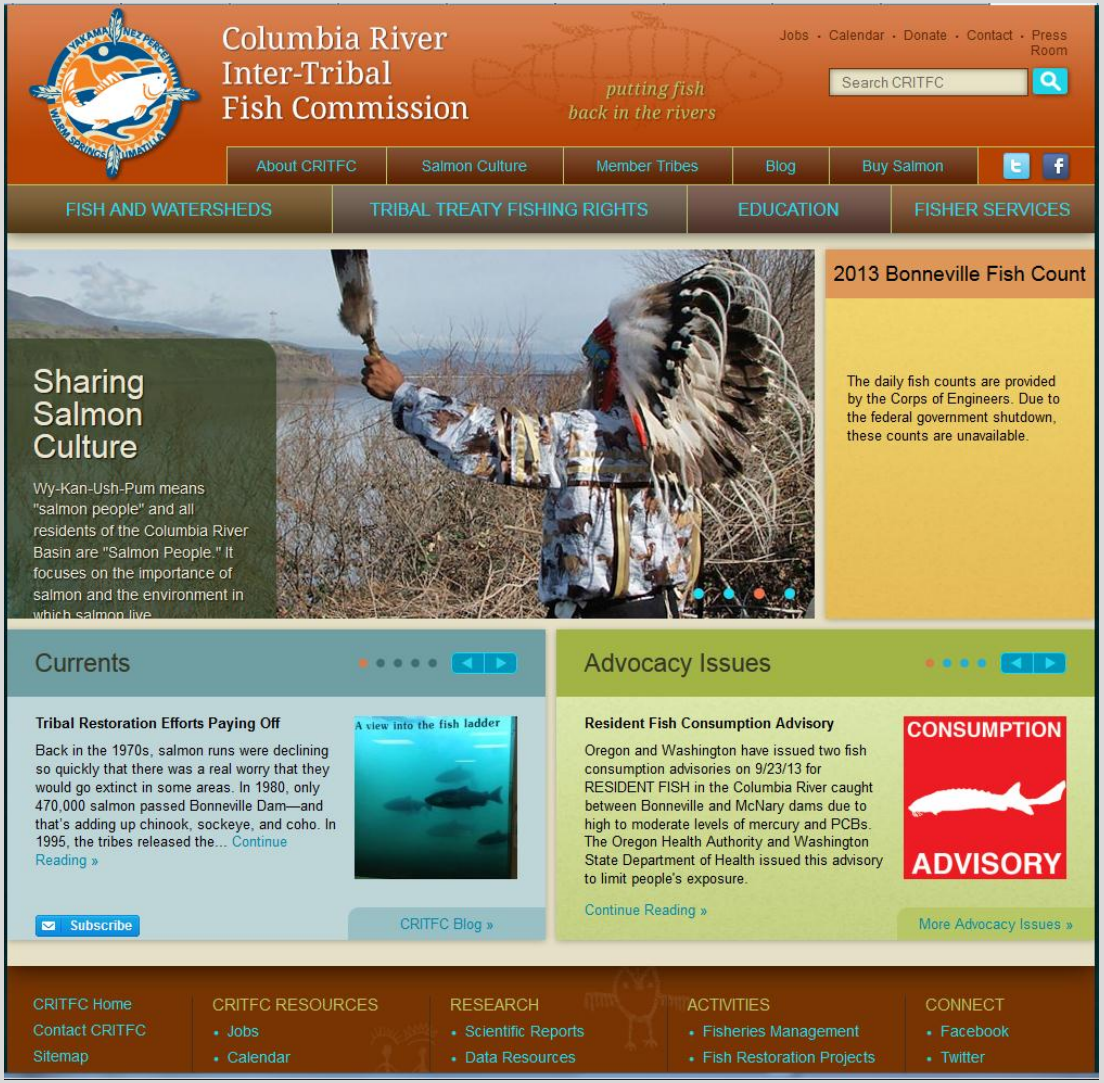
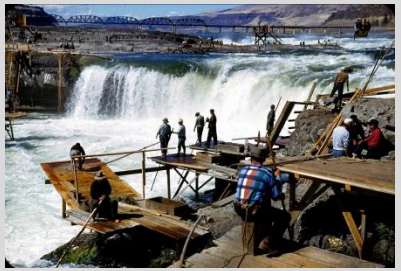
Columbia River Inter-Tribal Fish Commission
Portland, Oregon

Columbia River Inter-Tribal Fish Commission - CRITFC





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

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:

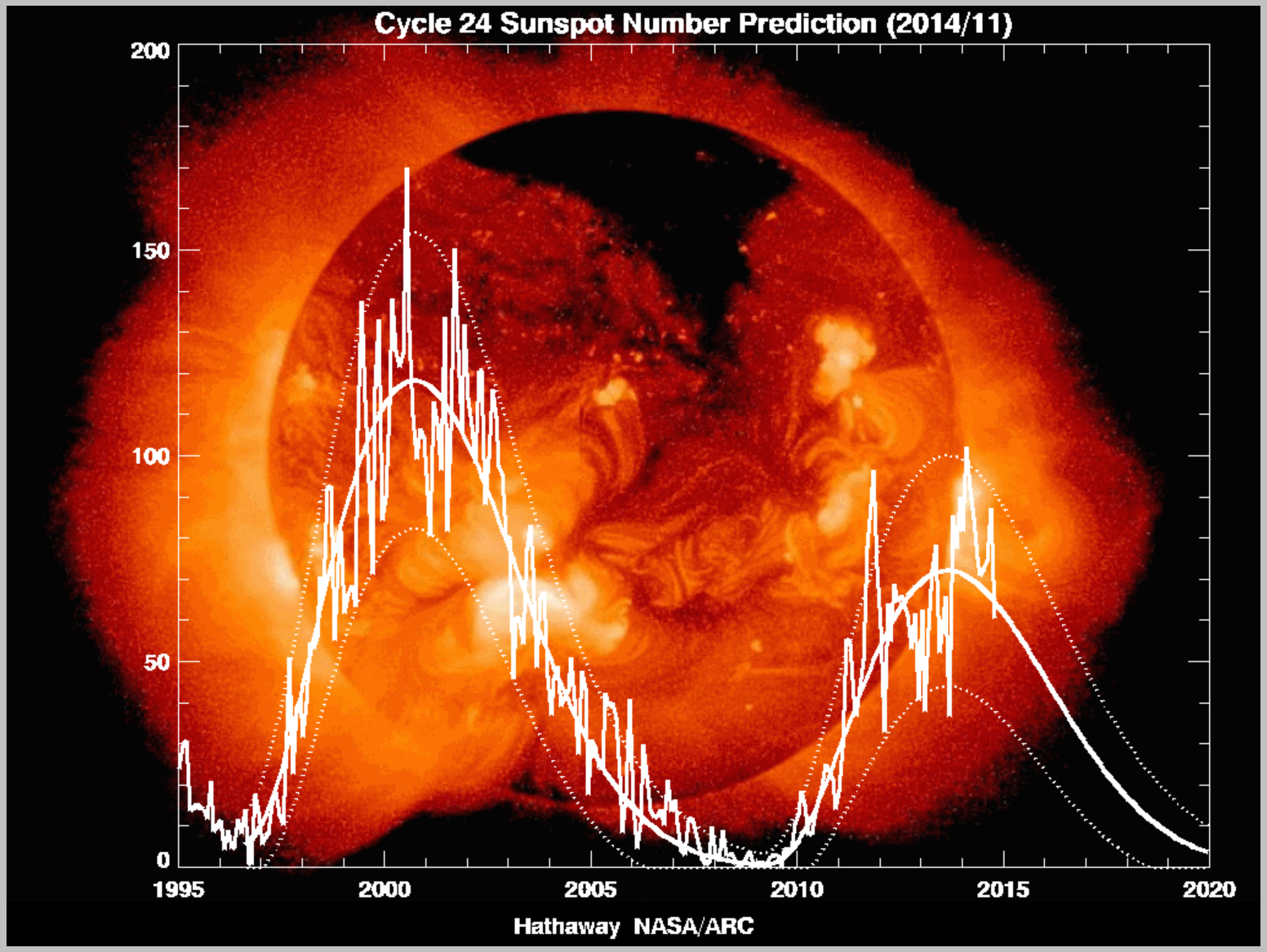
110 MAF (issued Oct 2013), 108%. Observed: 108.1 MAF. Error ±0.3%.

103 MAF (issued April 2014), 102%. Observed: 108.1 MAF. Error ±4.3%.

Introduction – Methods

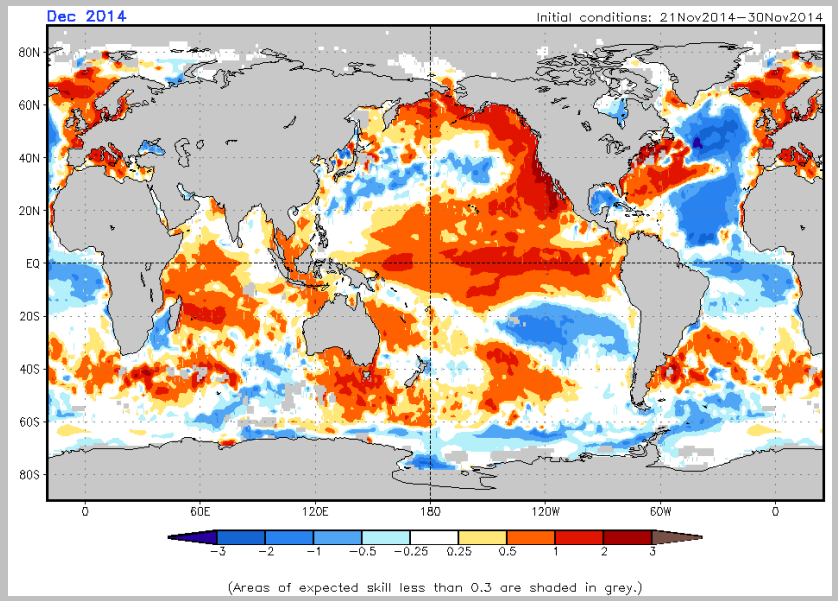
- CRITFC forecast uses a holistic, integrated big picture view.
- Big-picture: **Solar Forcing** (e.g., sunspot cycles) does influence our global weather patterns. *In memoriam:* Dr. Landscheidt, 1922 – 2004, of Germany.
- Track ENSO with the Multi-variable ENSO Index: **MEI**.
- NOAA's Sea-Surface Temperature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

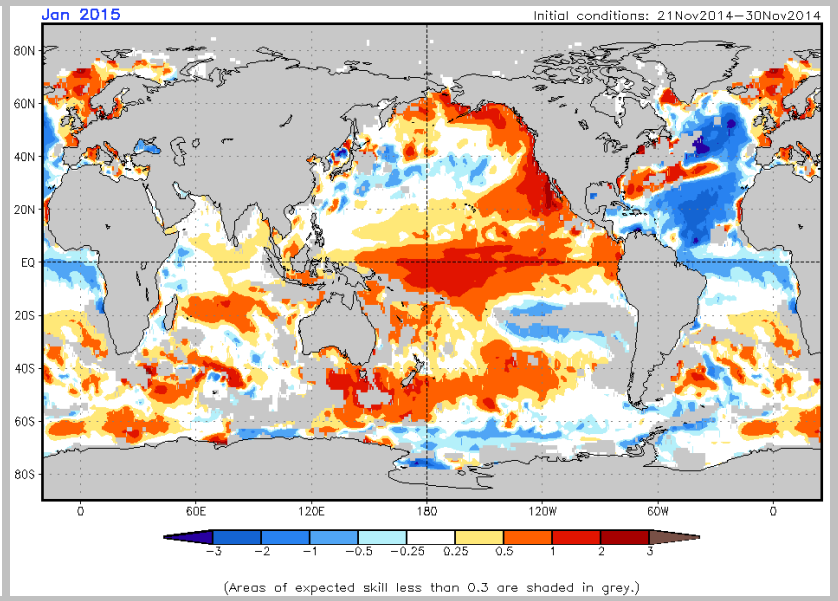
SUNSPOT COUNTS – TREND TO "EL NIÑO"?

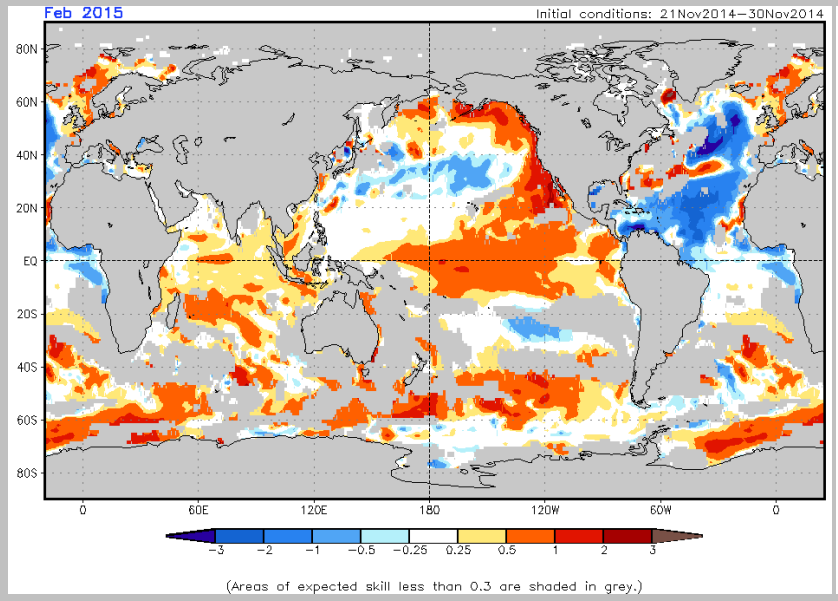


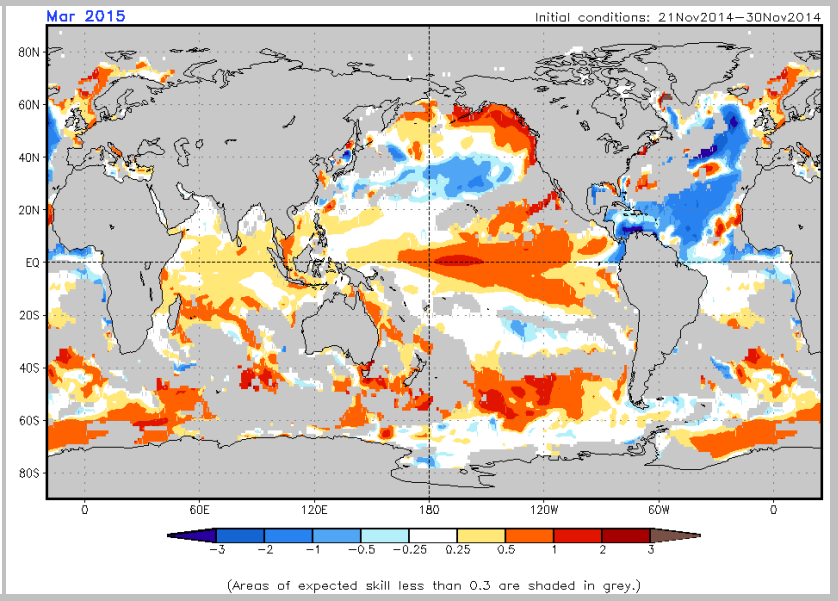
http://solarscience.msfc.nasa.gov/images/ssn_predict_l.gif

NOAA SEA SURFACE TEMPERATURES SUGGEST "EL NIÑO"



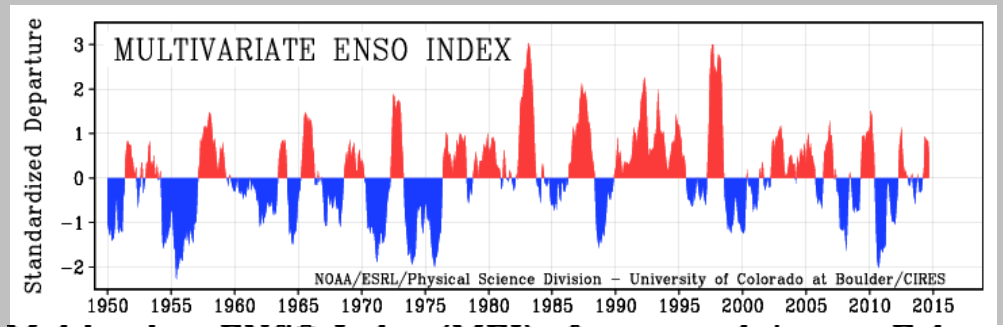


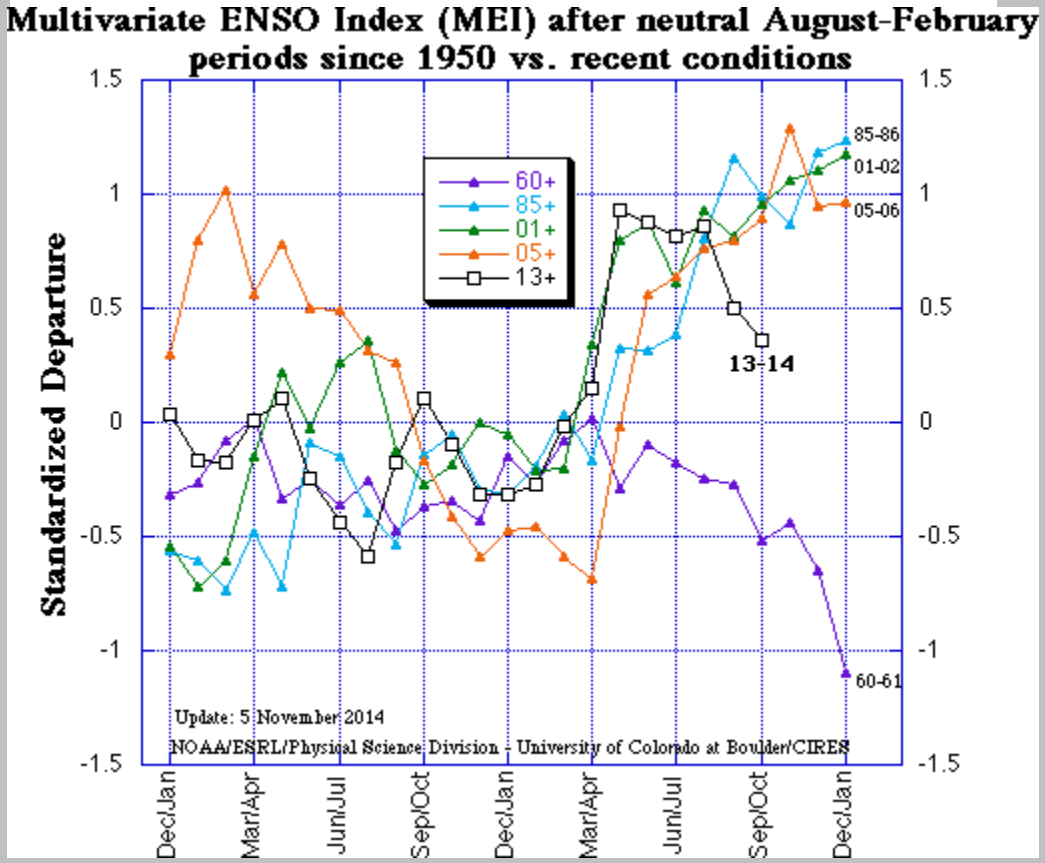




http://www.cpc.ncep.noaa.gov/products/CFSv2/htmls/glbSSTe3MonMask.html

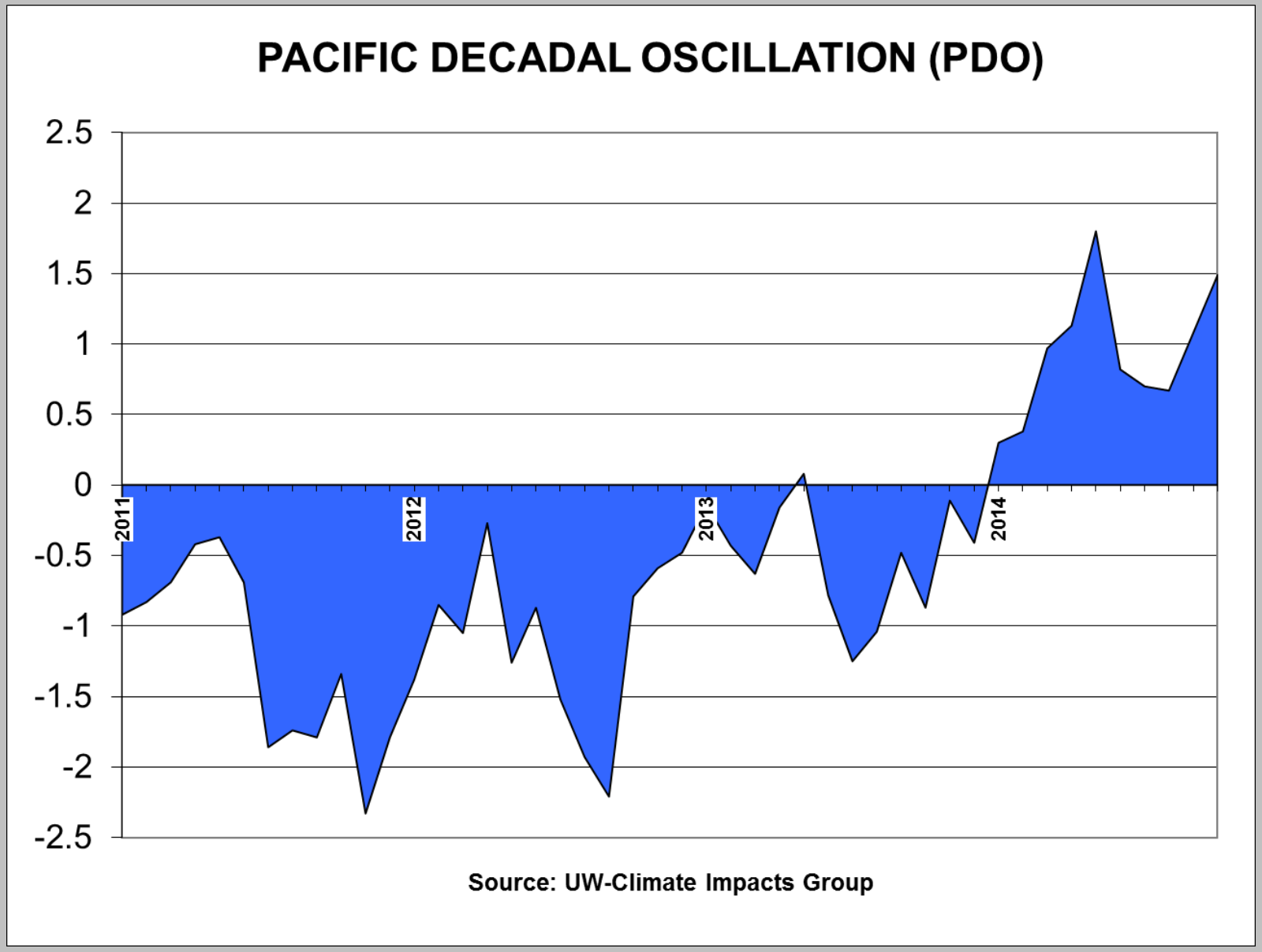
MEI SIGNAL SUGGESTS "ENSO-NEUTRAL" WINTER WEATHER





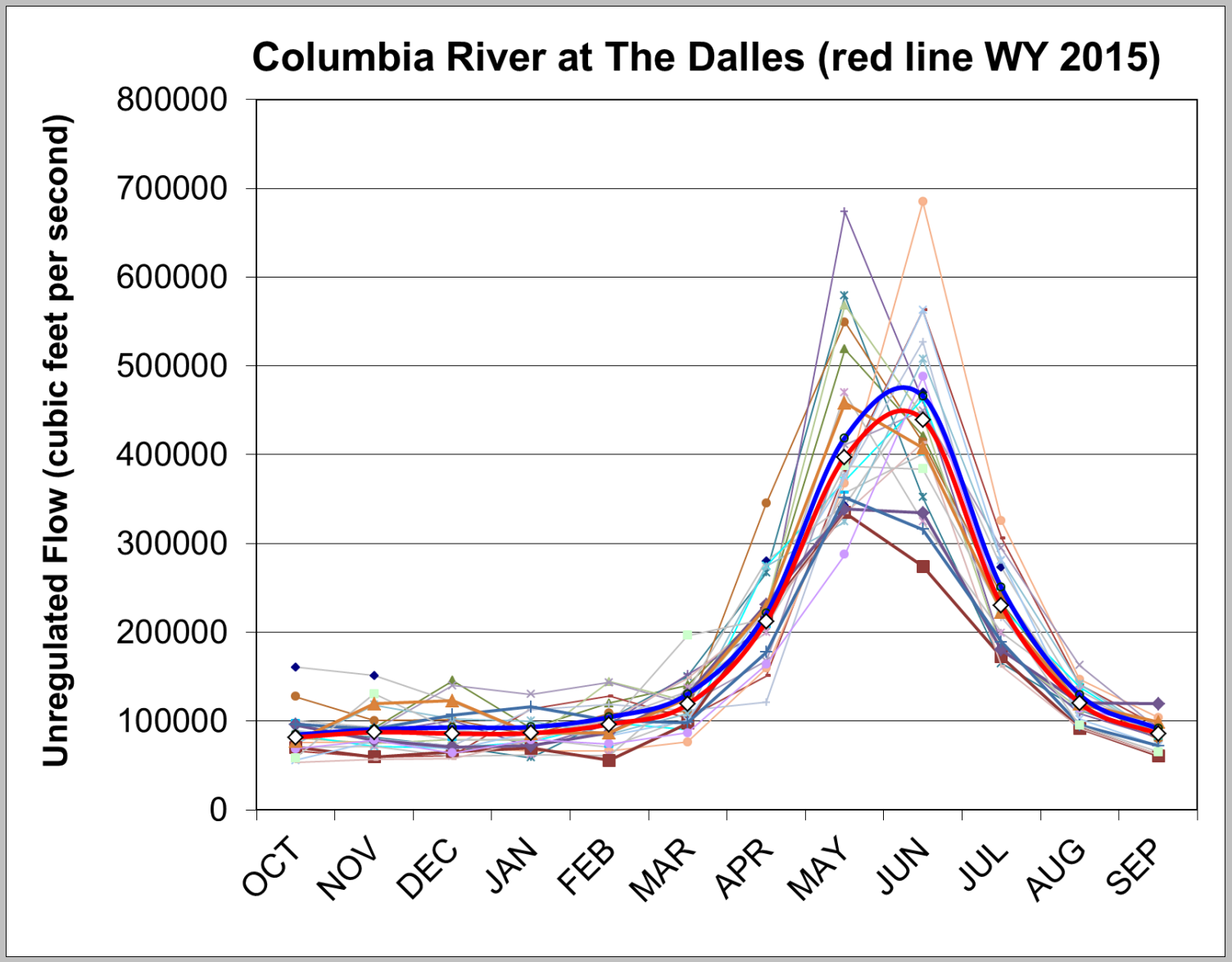
MEI tracks the Sea-Level Pressure, surface winds (2D), Sea-surface Temperature, Air Temperature, and fraction of Cloud cover.

PDO SIGNAL...THE COLD PHASE CONTINUES



...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!

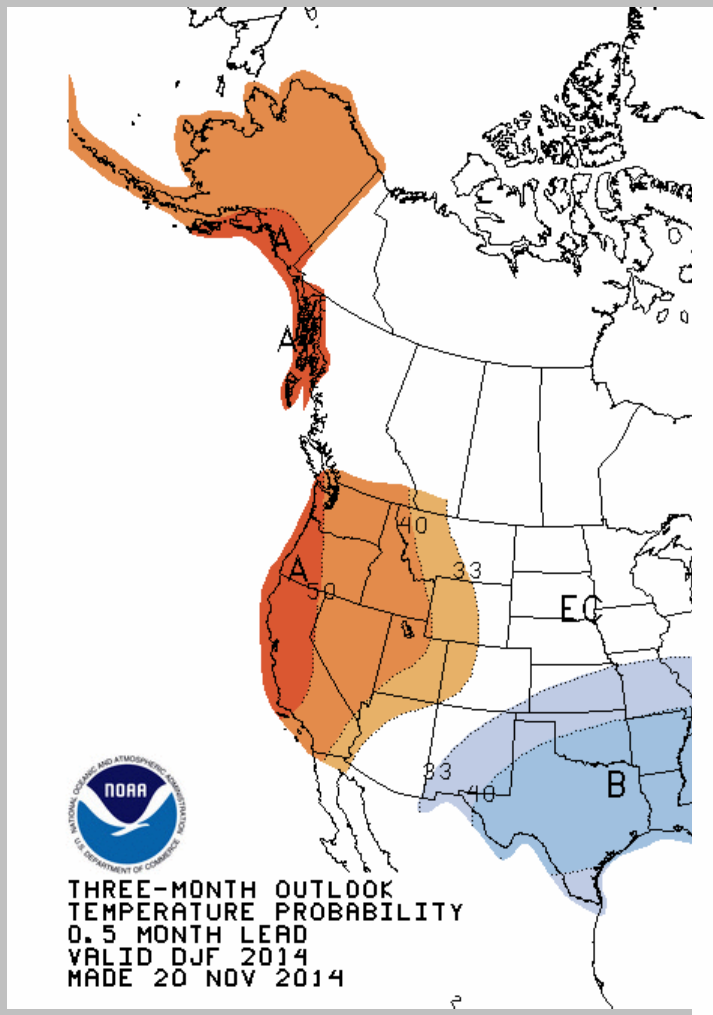
WATER SUPPLY FORECAST (as of Nov. 11): **97 MAF** or 95%, COLUMBIA RIVER AT THE DALLES, JANUARY - JULY.

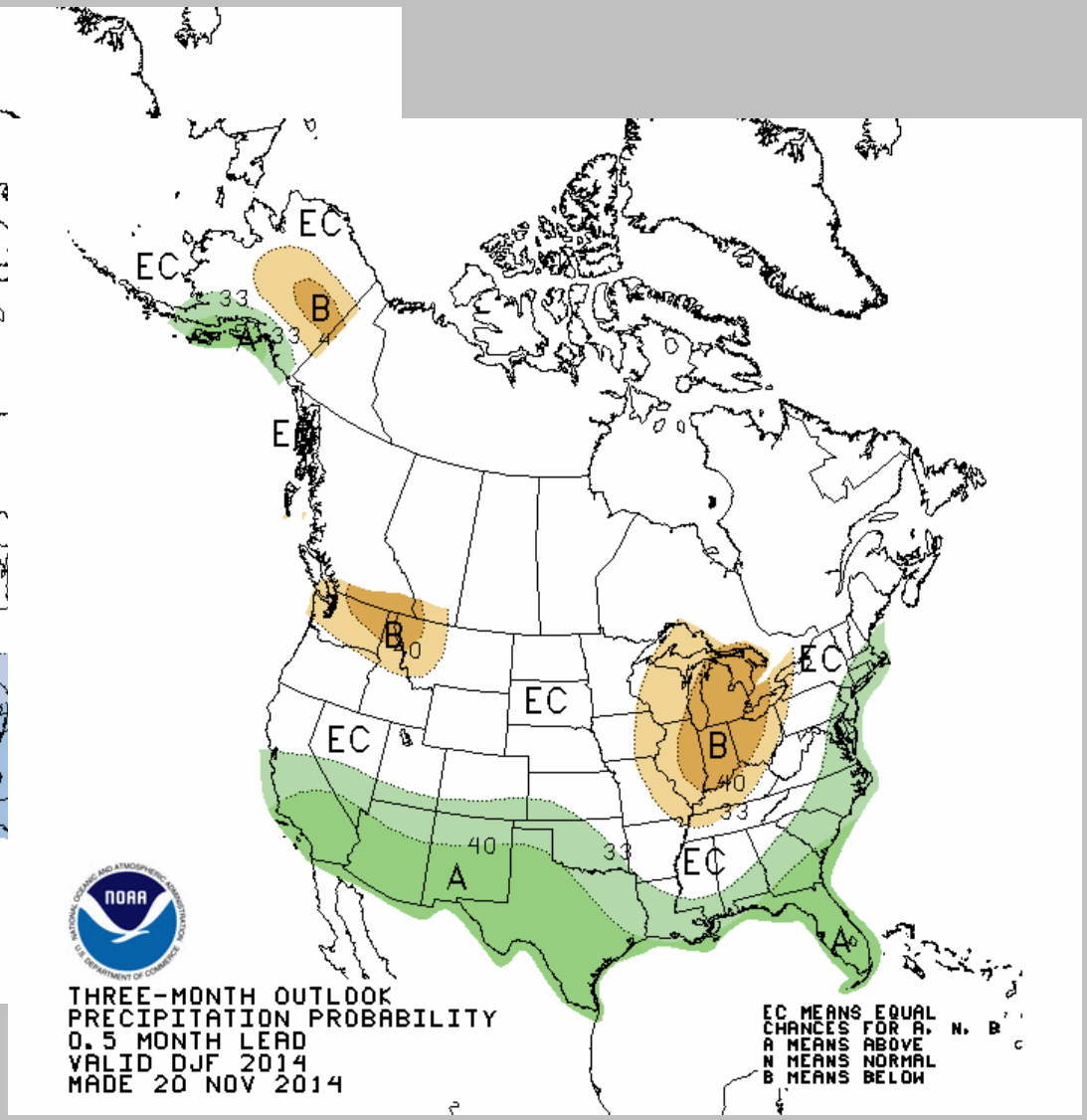
…but what about Snow events?!

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

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

OTHER FORECASTS…





NOAA – National Weather Service and Climate Prediction Center

OTHER FORECASTS…

Rod Hill – KGW Ch. 8

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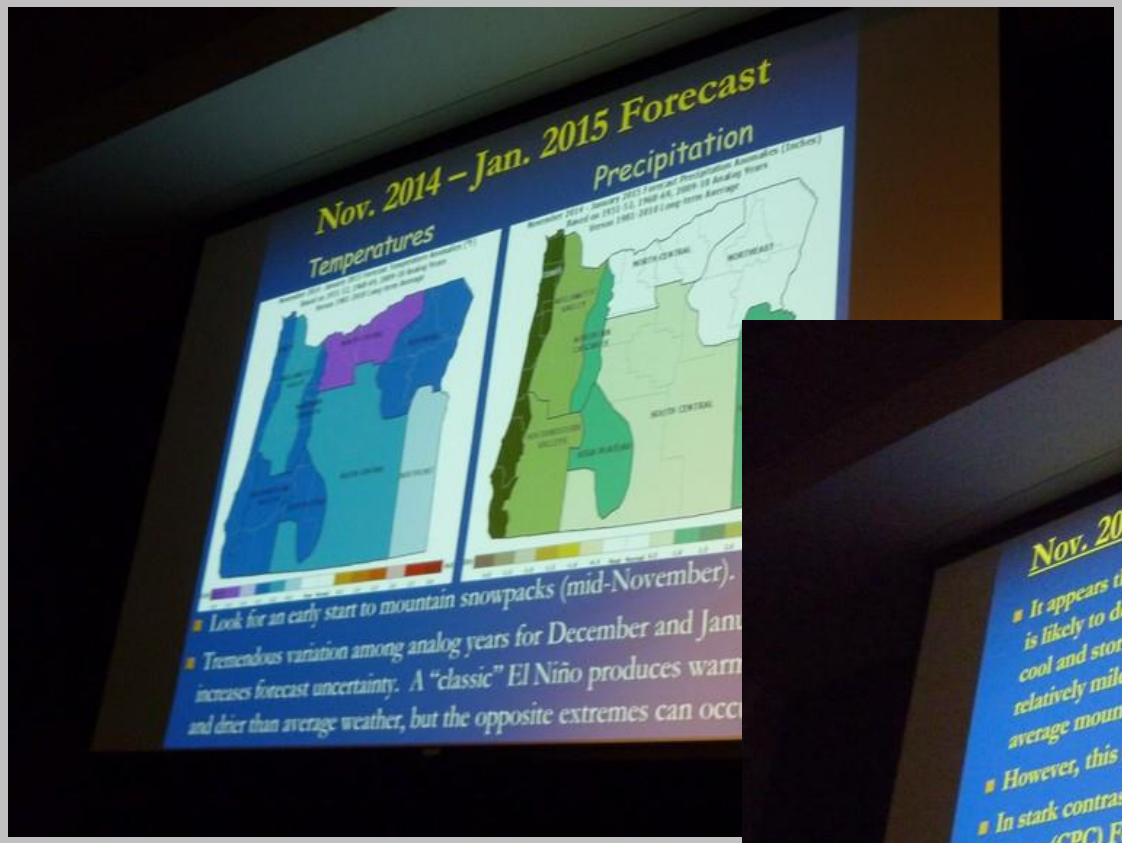
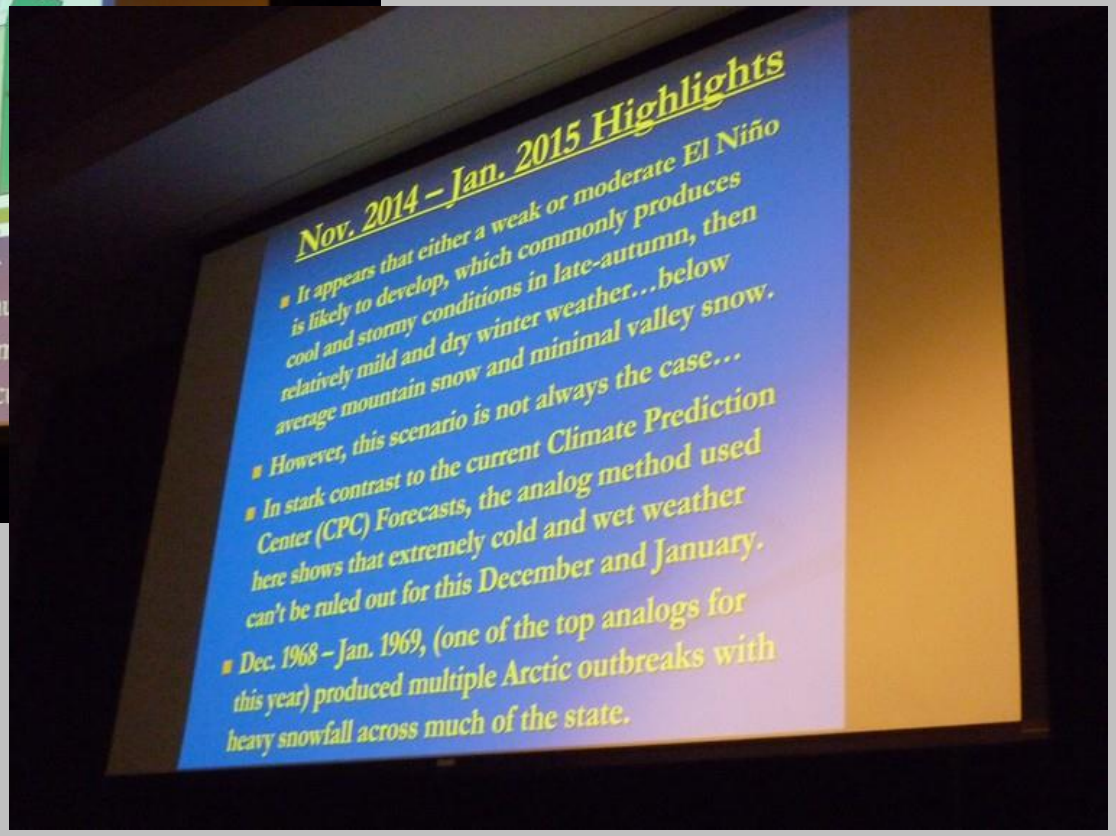
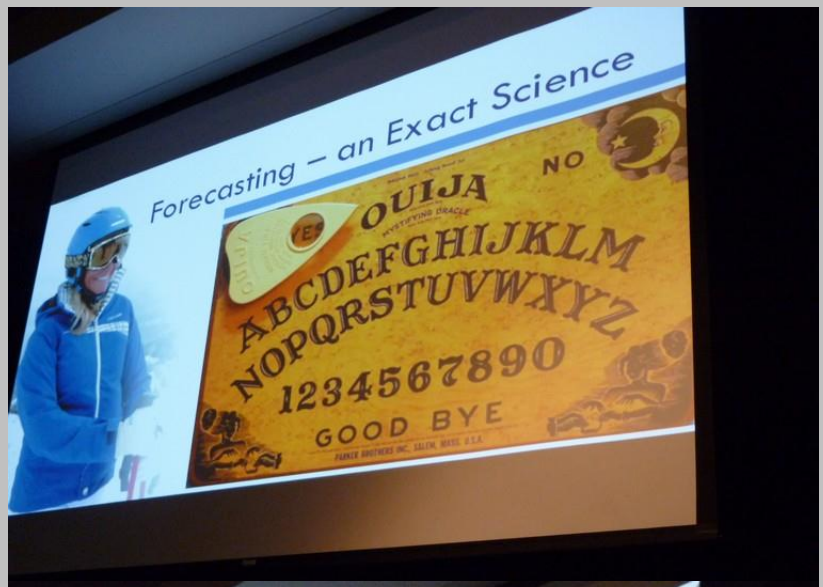




Pete Parsons – Oregon Dept. of Agriculture
http://www.oregon.gov/ODA/programs/NaturalResources/Pages/Weather.aspx

WEATHER PREDICTORS…



"Informal" environmental indicators?

What are your **Questions**?