

MEI and The Dalles Water Supply Forecast



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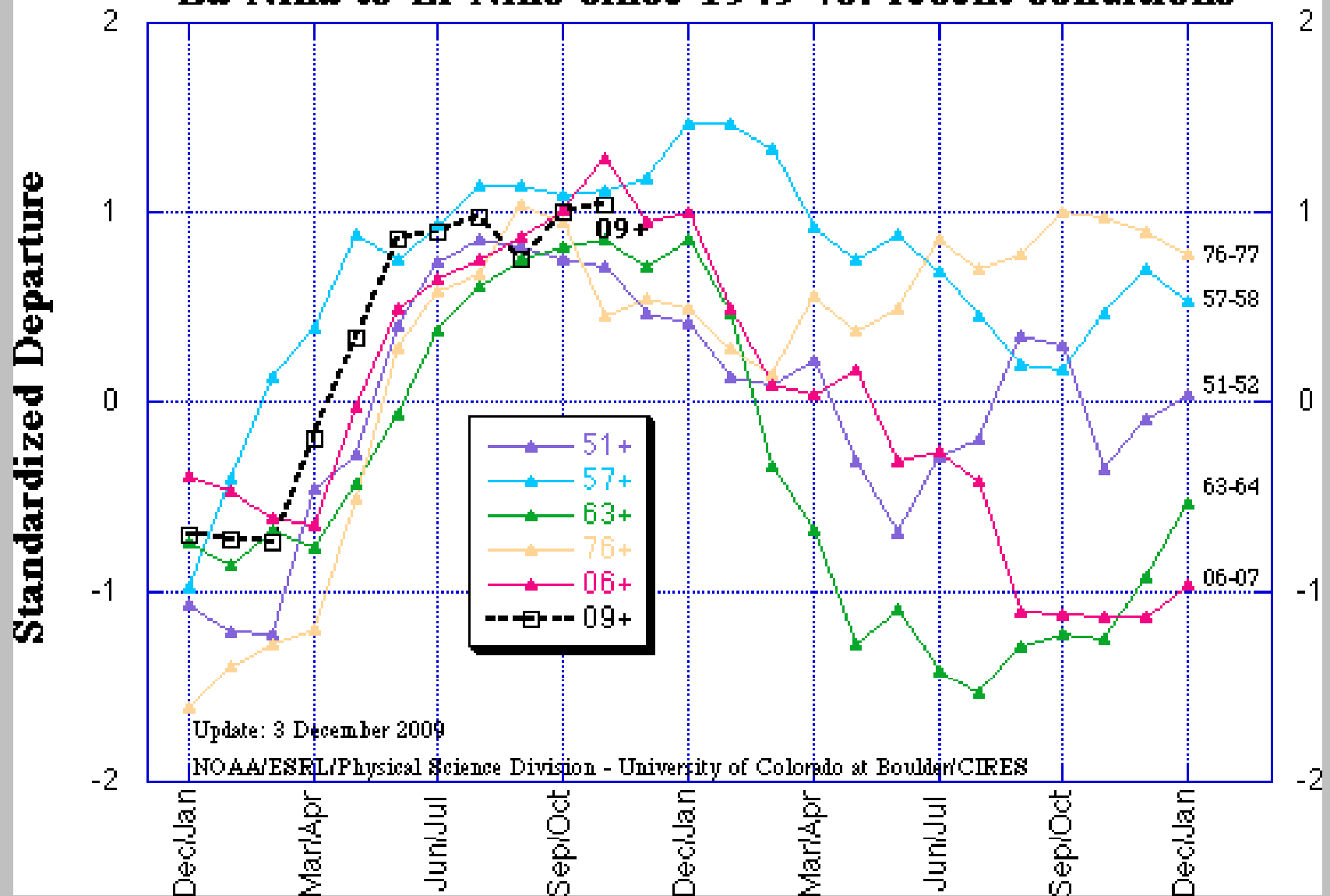
Portland, Oregon

What is the MEI?

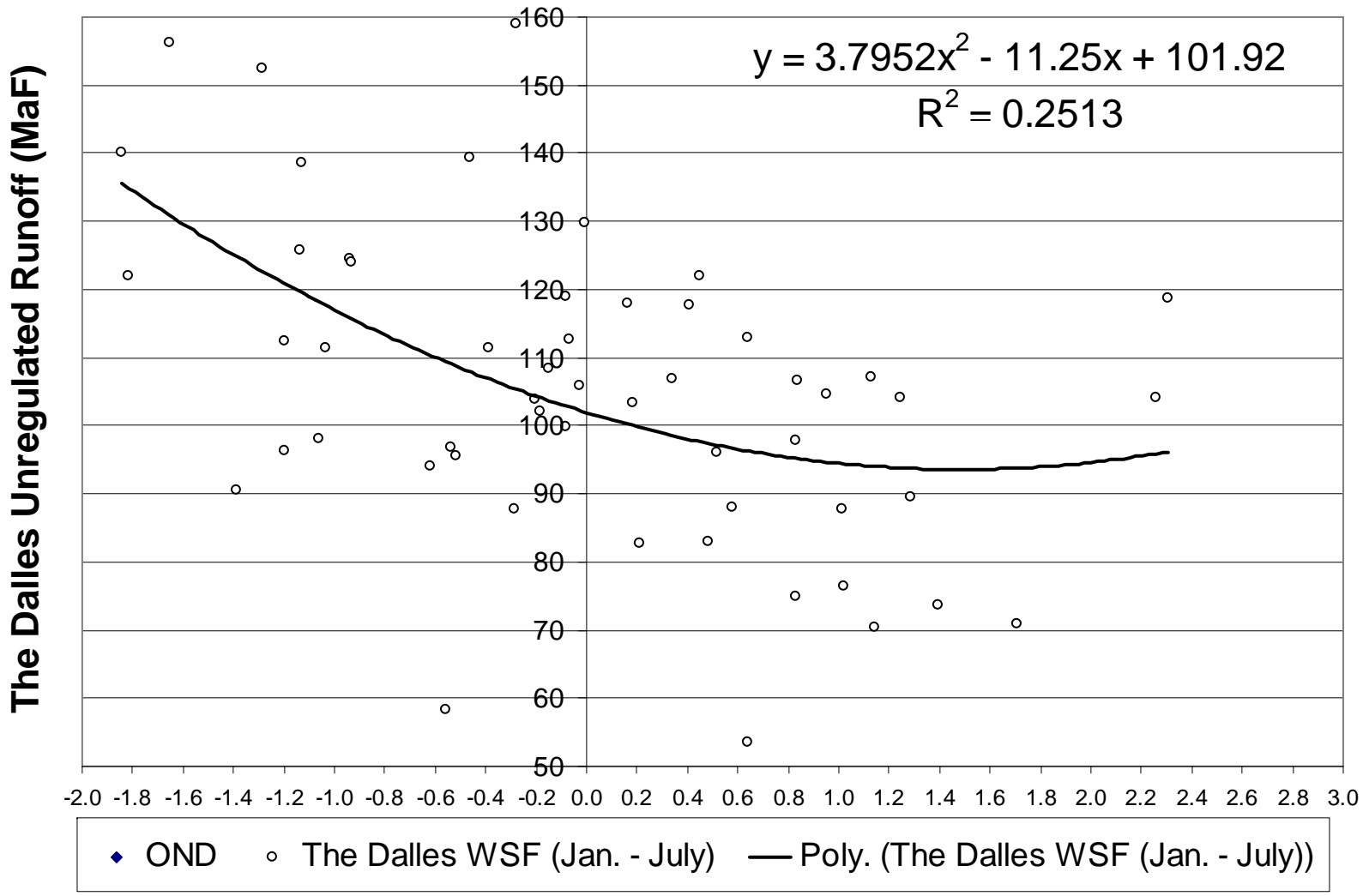


- MEI is a composite of sea-level pressure, surface wind vector, sea-surface and air temperature, and fraction of cloud-cover.
- Historical data extends back to 1950.
- For more info on data and methods:
<http://www.esrl.noaa.gov/psd/people/klaus.wolter/MEI>

Multivariate ENSO Index (MEI) for 5 transitions from La Niña to El Niño since 1949 vs. recent conditions



MULTI-VARIABLE ENSO INDEX vs. HISTORIC RUNOFF

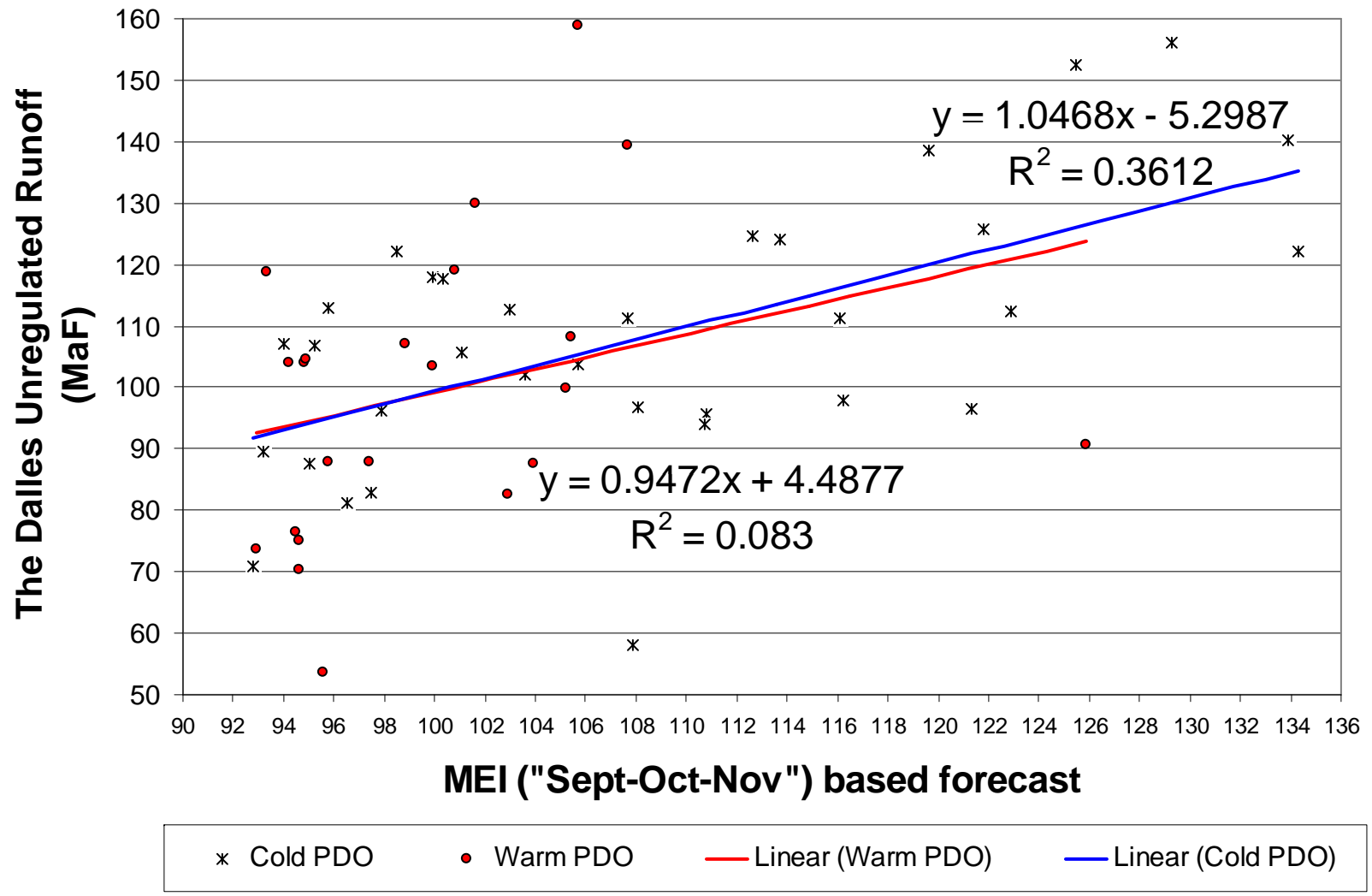


Forecast Calculation



- Three-month moving average of MEI is inserted into a regression.
- The Oct-Nov-Dec average gives the best R^2 .
- Columbia at The Dalles (Jan-July) pre-season forecast is made during October – January.
- After each season, MEI values and the TDA unregulated-volume are added to the database and can strengthen the regression.

Multi-ENSO Index Forecast vs. TDA HISTORIC RUNOFF



Test Results to Date



<i>The Dalles (Jan. - July)</i>	Observed	"JAS" Frct	"ASO" Frct	"SON" Frct	"OND" Frct	% Error
WY 2006	114.7				107	-6.7%
WY 2007	95.7	96.2	94.9	93.9	93.8	0.5%
WY 2008	99.2	111.2	115.7	119.4	119.4	12.1%
WY 2009	90.2	105.9	109.4	110.3	110.8	17.5%
WY 2010		95.1	94.6	94.4		

Summary



- A MEI-based WSF forecast for Columbia at The Dalles gives a reasonable pre-season forecast.
- More retrospective tests need to be run.
- Advantages: new pre-season tool, fast to make a forecast, minimize forecast "flip-flop".
- Disadvantages: not statistically robust, more work is needed for operational use.