

Winter 2024-2025 Weather Forecast

32nd Winter Weather Forecast Meeting, OMSI and Oregon AMS, Portland



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October 19th, 2024

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 on the right. Below the header is a menu with 'About CRITFC', 'Salmon Culture', 'Member Tribes', 'Blog', 'Buy Salmon', and social media icons. 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 article 'Sharing Salmon Culture' to its left. To the right is a yellow box for the '2013 Bonneville Fish Count'. Below these are two columns: 'Currents' with an article on 'Tribal Restoration Efforts Paying Off' and a 'Subscribe' button, and 'Advocacy Issues' with a 'Resident Fish Consumption Advisory' and a 'CONSUMPTION ADVISORY' graphic. The footer contains links for 'CRITFC Home', 'CRITFC RESOURCES', 'RESEARCH', 'ACTIVITIES', and 'CONNECT'.

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 »](#)

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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.

[Continue Reading »](#) [More Advocacy Issues »](#)

CONSUMPTION ADVISORY

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



2023-2024 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)	0.7	2.4	Below Normal (70 - 90%)	82%	95%
December	Near Normal (-1.8 to + 1.8 degF)	0.5	5.4	Near Normal (90 - 110%)	104%	158%
January	Near Normal (-1.8 to + 1.8 degF)	1.3	-0.8	Above Normal (110 - 130%)	111%	202%
February	Near Normal (-1.8 to + 1.8 degF)	1.2	2.1	Below Normal (70 - 90%)	80%	108%
March	Near Normal (-1.8 to + 1.8 degF)	0.9	1.8	Near Normal (90 - 110%)	92%	76%
	average:	0.9	2.2	average:	94%	128%

...but what about Snow events?!

Forecasted two events: one moderate and one minor (3-inch seasonal total), December to March.

Observed one snow event: Jan. 13 (plus trace snowfall),
... a **1.6-inch** seasonal total.



2023-2024 Hood River 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)	-0.2	0	Below Normal (70 - 90%)	84%	63%
December	Near Normal (-1.8 to + 1.8 degF)	0.4	3.6	Near Normal (90 - 110%)	105%	157%
January	Near Normal (-1.8 to + 1.8 degF)	0.7	-4.9	Above Normal (110 - 130%)	113%	129%
February	Near Normal (-1.8 to + 1.8 degF)	1.5	0.8	Below Normal (70 - 90%)	83%	77%
March	Near Normal (-1.8 to + 1.8 degF)	0.4	0	Below Normal (70 - 90%)	86%	59%
	average:	0.6	-0.1	average:	94%	97%



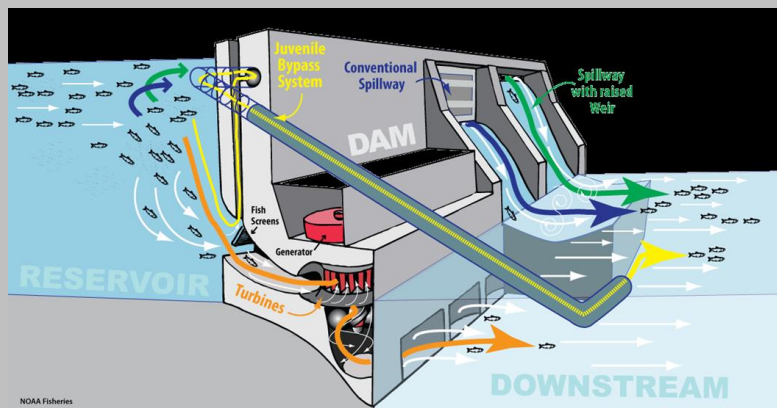
2023-2024 Government Camp Climate Forecast Performance



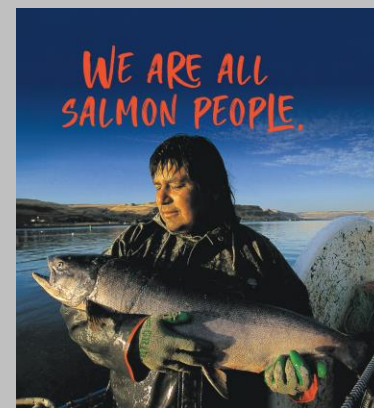
Month:	Temperature:	Observed	Precipitation:	Observed	Snowfall	Observed	Forecast	Observed
November	-0.1	0.3	96%	54%	30	2	113%	7%
December	-0.1	6	96%	97%	43	36	97%	71%
January	2.1	-1.8	104%	96%	50	90	97%	183%
February	1	0	90%	92%	35	55	89%	139%
March	0.7	0.1	94%	57%	35	26	86%	73%
April	0.7	-0.1	100%	54%	21	16	97%	91%
May	0.7	-2.2	97%	95%	3	8.5	60%	202%
average:	0.7	0.3	97%	78%	217	233.5	91%	109%

Water Supply Forecast (MEI method): Columbia R. at The Dalles, Jan.-July:
 96 MAF (issued Oct. 2023), 93%. Observed: 78.5 MAF. Error $\pm 22\%$.
 95 MAF (issued April 2024), 92%. Observed: 78.5 MAF. Error $\pm 21\%$.

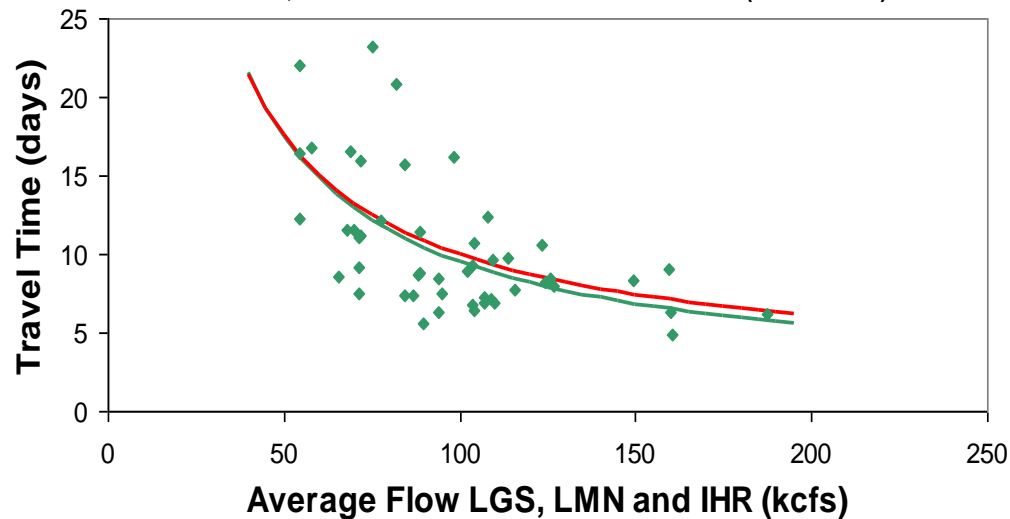
WEATHER, RIVERS, SALMON – WHY IT MATTERS



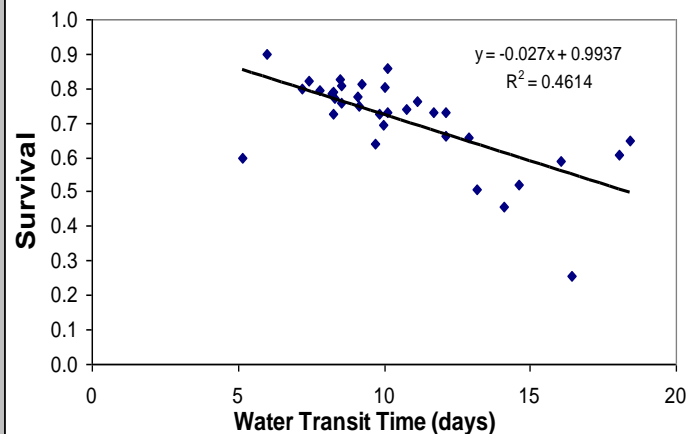
NOAA Fisheries



Travel Time Lower Granite tailwater to Ice Harbor Dam versus Average Flow at Little Goose, Lower Monumental and Ice Harbor dams (1998 to 2002)



Wild Yearling Chinook Survival and Water Transit Time from Lower Granite to McNary Dam (1998 to 2002)





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 over the long term (decades).
In memoriam: Dr. Landscheidt, of Germany (1922 – 2004).
- Track ENSO with the Multi-variable ENSO Index: **MEI**.
- NOAA's Sea-Surface Temperature Departure Forecasts.
- Hydro-Climate approach: Use a regression: Multi-variable ENSO Index (1950-2024) vs. historic runoff for the Columbia River at The Dalles, then compute a 2025 Water Supply Forecast.
- Select the "right" mixture of 20 past Water Years (next slide).
- Pattern recognition is key: *La Niña* years.



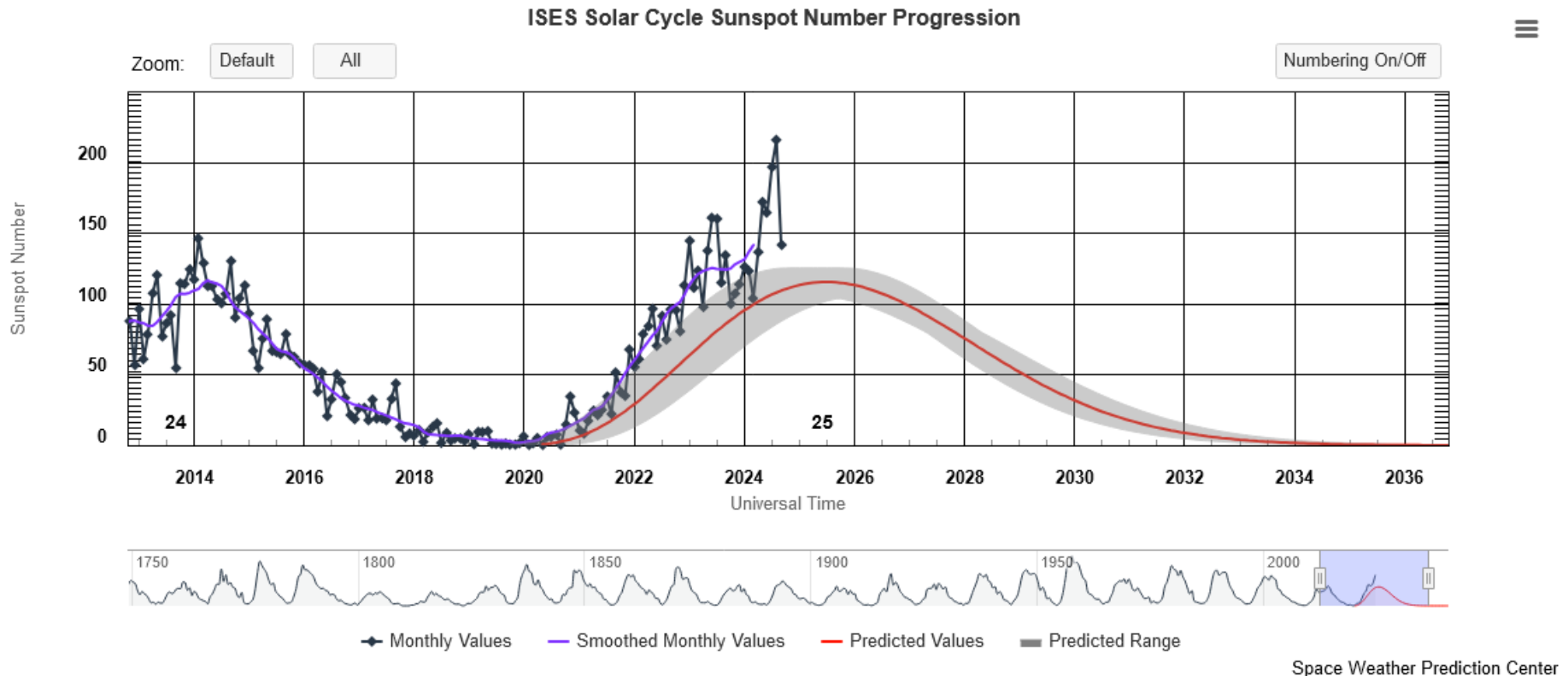
Introduction – Methods

Ensemble forecasting – 20 past water years:

WY2025	TDA runoff	PDO-warm	PDO-cold	El Nino	E-neutral	La Nina
1945	83.31	x				X
1955	96.9		x			X
1965	126.1		x			X
1967	113.7		x		X	
1968	95.54		x			X
1975	111.9		x			X
1976	122.7		x			X
1985	90.48	x				X
1989	93.2	x				X
1990	99.7	x			X	
1999	124.1		x			X
2000	98		x			X
2002	103.8		x		X	
2006	114.7		x			X
2008	99.2		x			X
2009	90.2		x			X
2018	118.5		x			X
2021	82.1		x			X
2022	105.3		x			X
2023	80.1		x			X
	(MAF)					
Average:	104.8		La-Nina:			17
STDEV:	12.7		ENSO neutral:			3

SUNSPOT COUNTS – “*El Niño* winter”

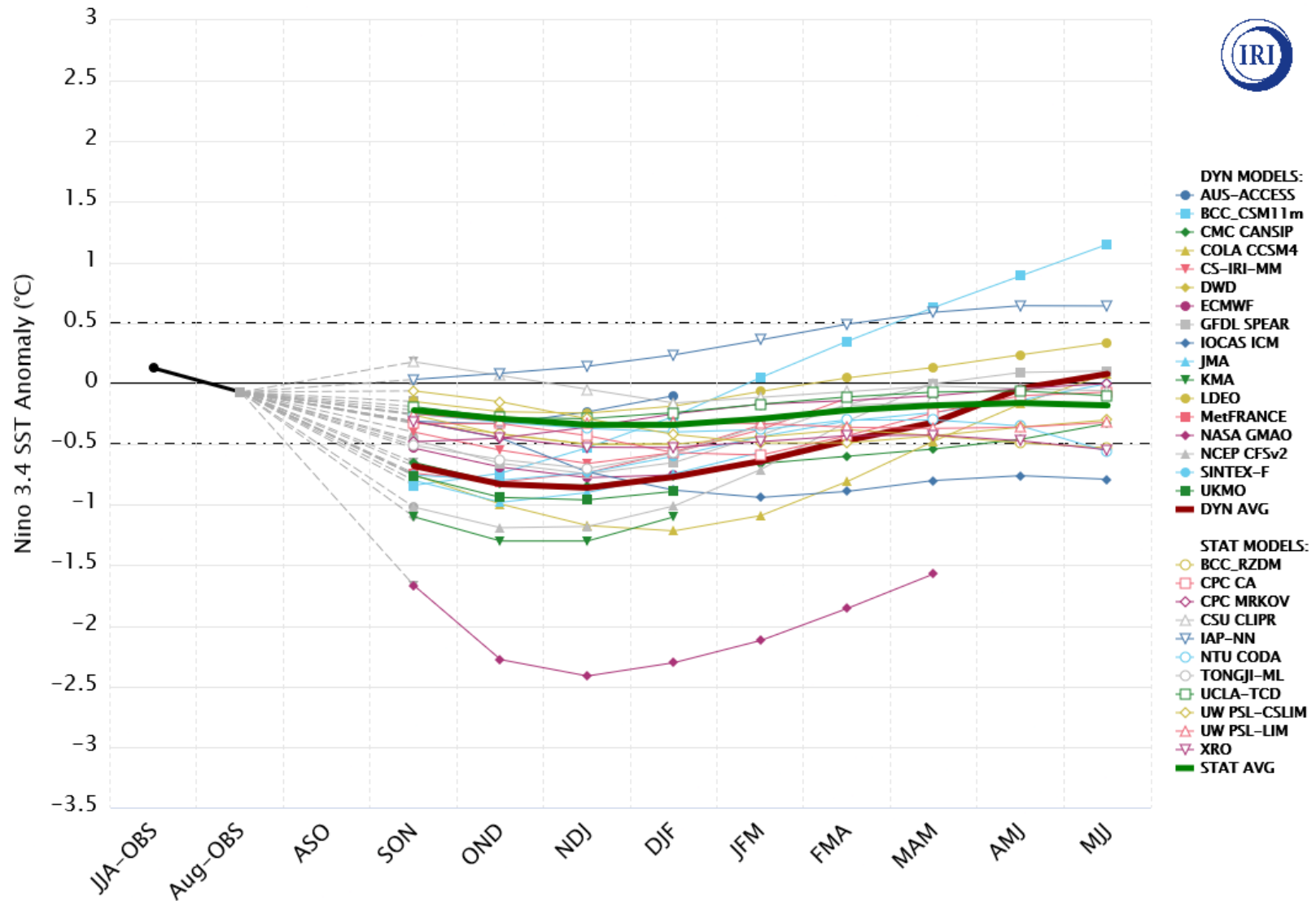
SOLAR CYCLE PROGRESSION



<https://www.swpc.noaa.gov/products/solar-cycle-progression>

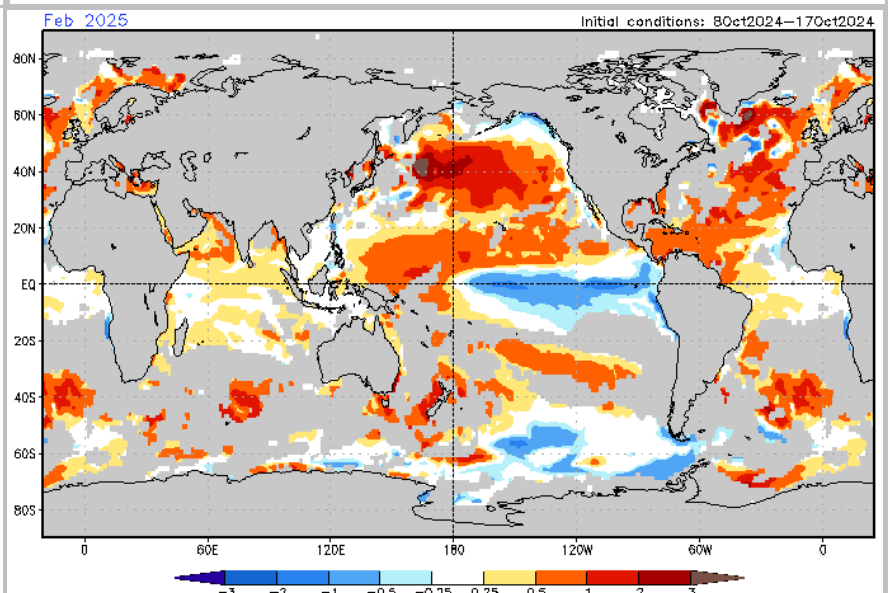
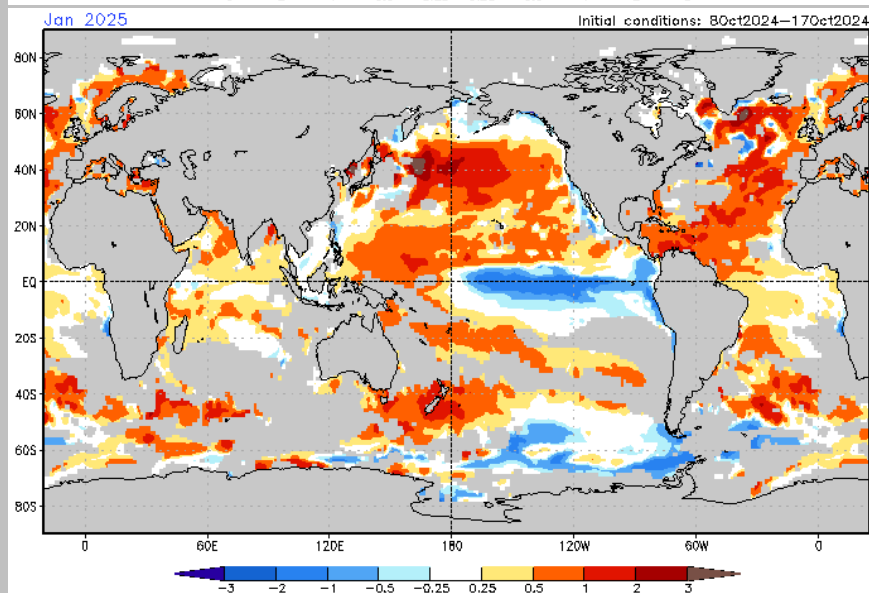
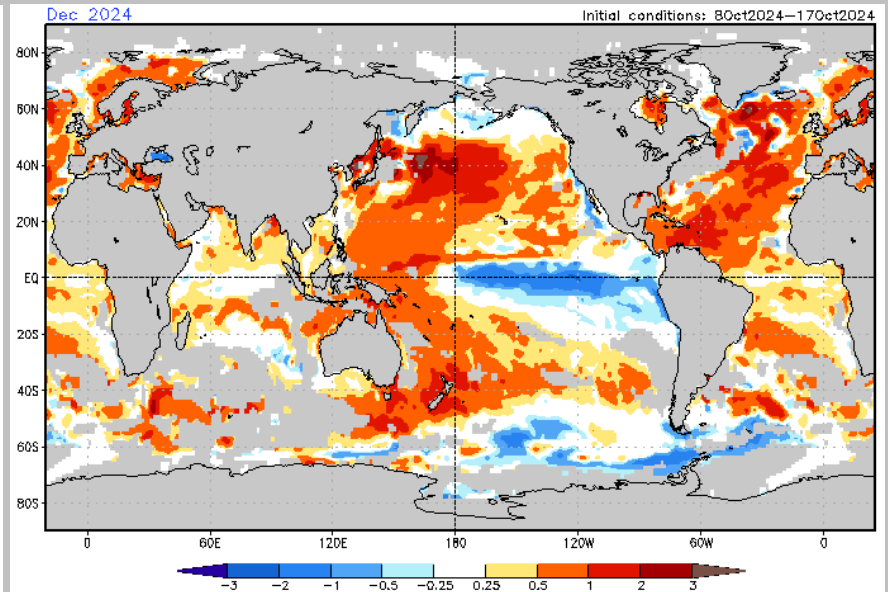
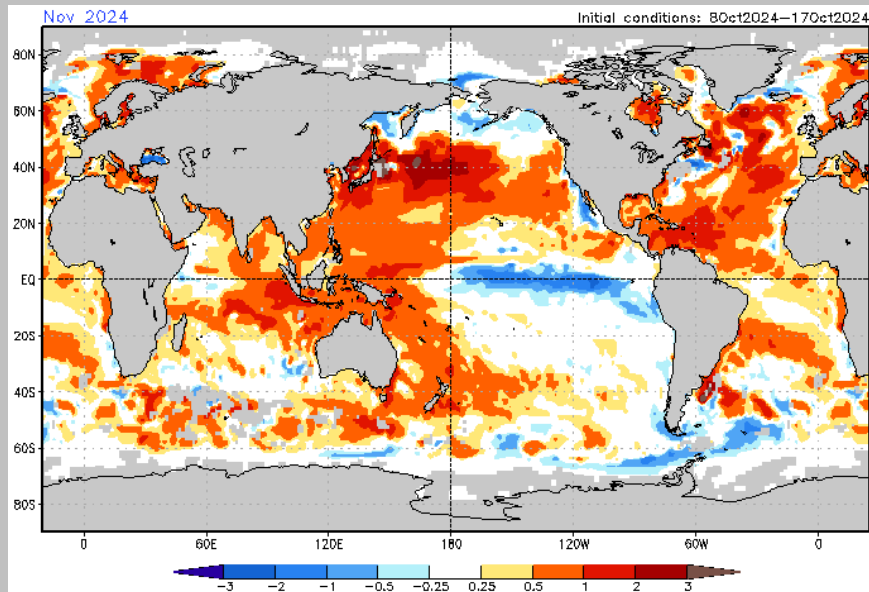
COLUMBIA U. IRI & NOAA's CPC ENSO FORECAST

Model Predictions of ENSO from Oct 2024

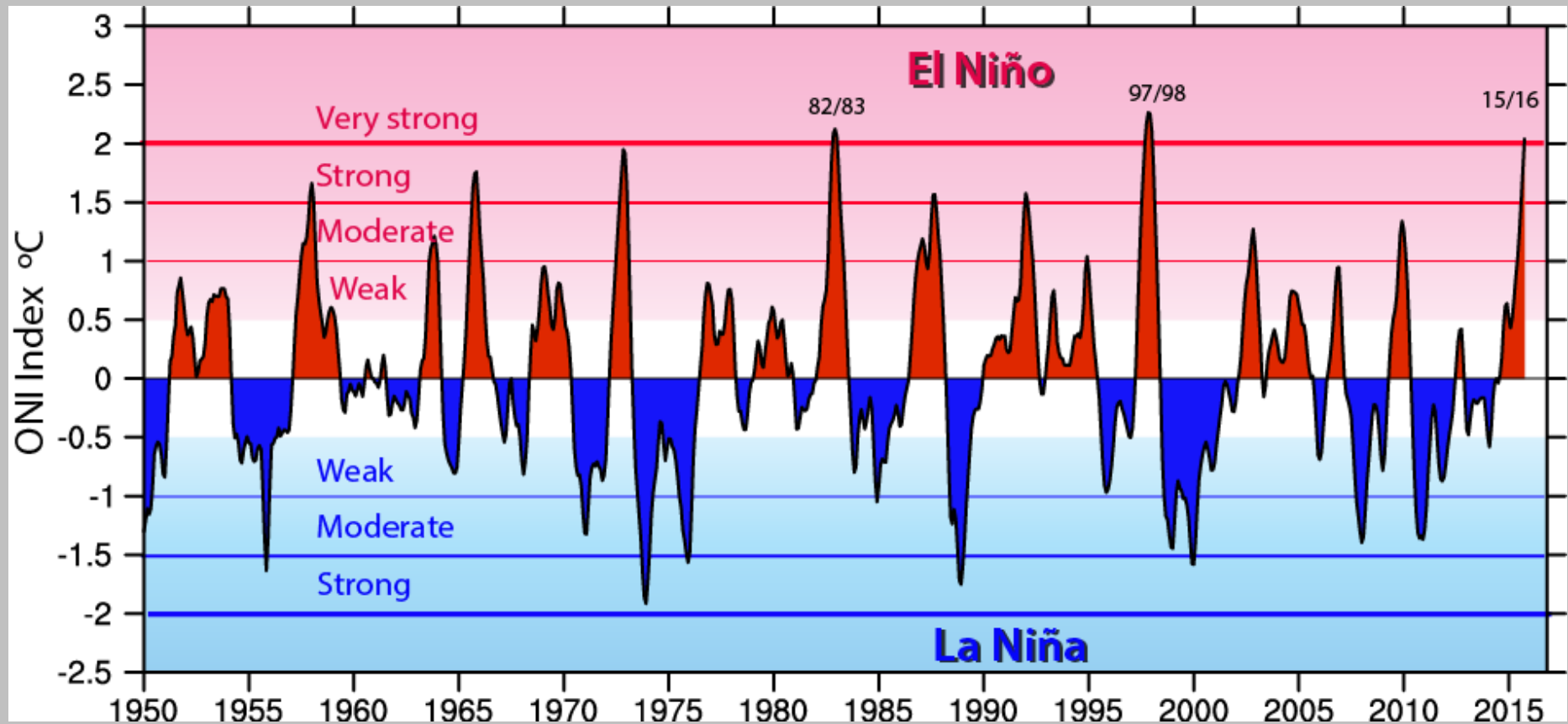


Highcharts.com

NOAA SEA SURFACE TEMPERATURES - "*La Niña* winter"

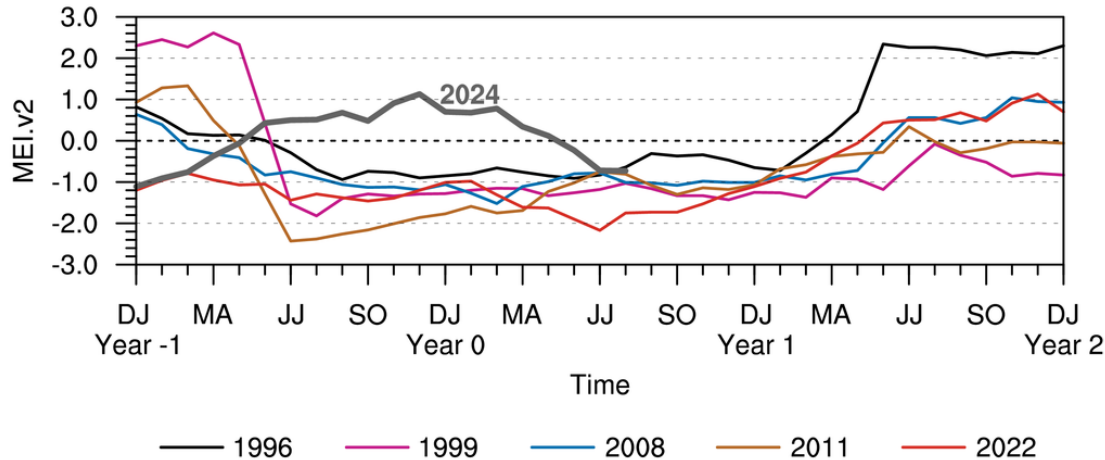


NINO SEA SURFACE TEMPERATURE INDICES



MEI SIGNAL SUGGESTS “*La Niña* winter”

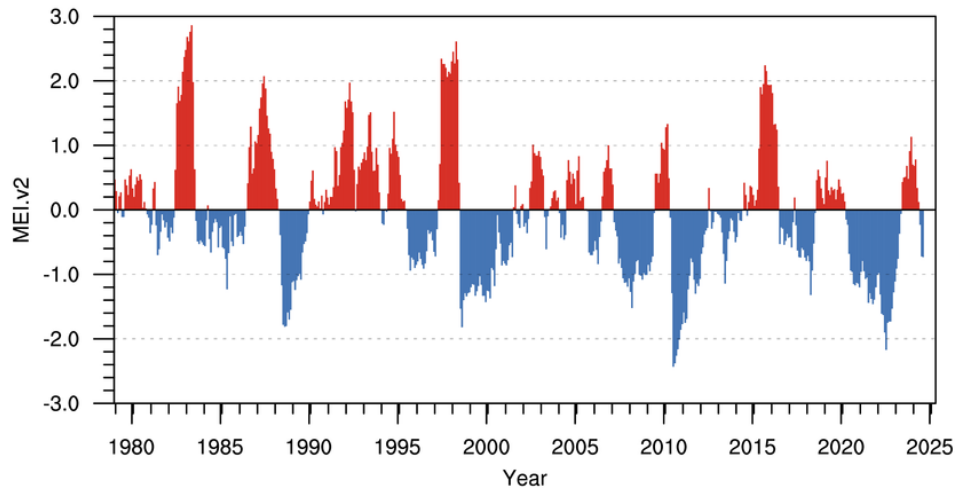
MEI.v2 Evolution of Current ENSO Event in Historical Context



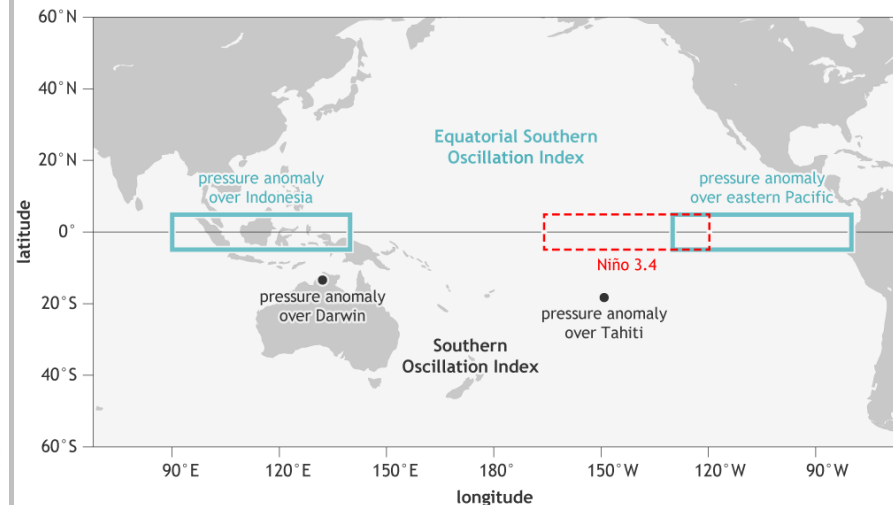
MEI – one index that tracks:

- Sea-Level Pressure
- Surface winds (2D)
- Sea-surface Temperature
- Surface Air Temperature
- Fraction of Cloud cover

Multivariate ENSO Index Version 2 using JRA3Q



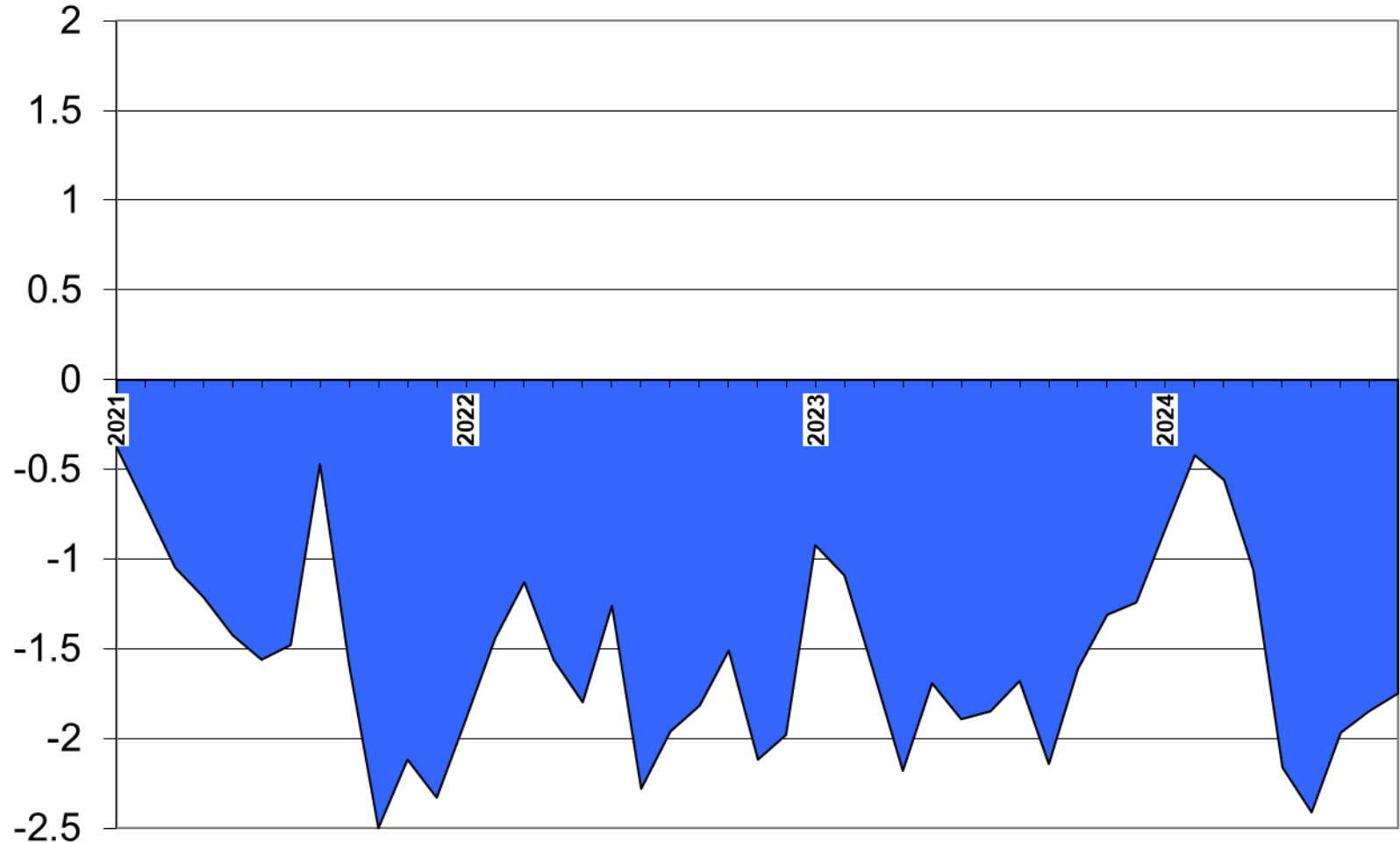
ENSO indexes



Source: <https://www.esrl.noaa.gov/psd/enso/mei>

PDO SIGNAL: COLD PHASE...MORE NEGATIVE

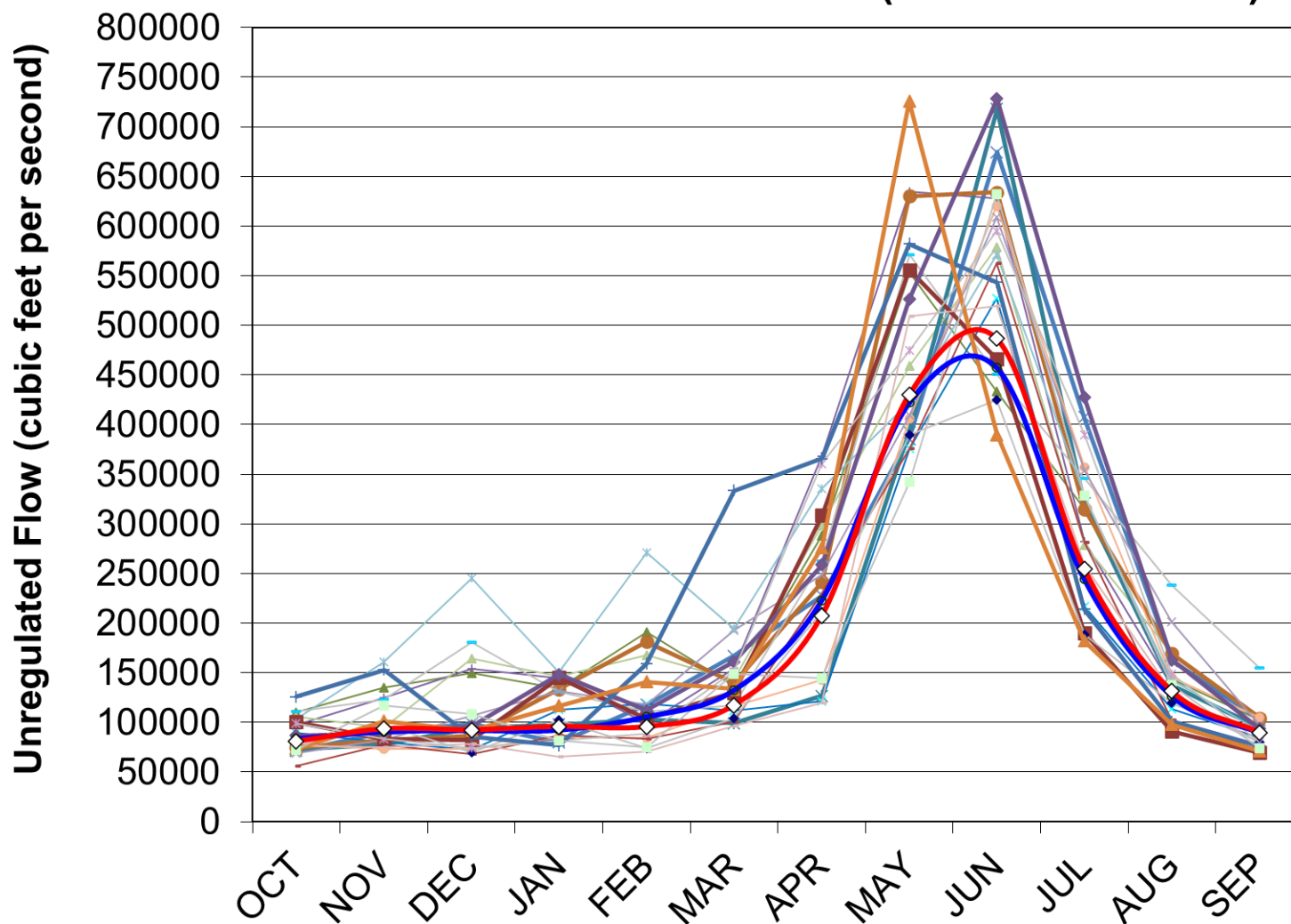
PACIFIC DECADAL OSCILLATION (PDO), v.5



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

ENSEMBLE STREAMFLOW FORECAST

Columbia River at The Dalles (red line WY 2025)



Blue line = long-term average (WY 1929-2024)



Summary: Columbia R. Gorge

Hood River, Oregon

Month:	Temperature (mean monthly):	Avg. (n=20)	Precipitation (% normal):	Avg. (n=20)
November	Near Normal (-1.8 to + 1.8 degF)	1	Above Normal (110 - 130%)	111%
December	Near Normal (-1.8 to + 1.8 degF)	-0.2	Near Normal (90 - 110%)	96%
January	Above Normal (> + 1.8 degF)	3	Near Normal (90 - 110%)	95%
February	Near Normal (-1.8 to + 1.8 degF)	-0.1	Near Normal (90 - 110%)	95%
March	Near Normal (-1.8 to + 1.8 degF)	-1	Below Normal (70 - 90%)	88%

Expect many snow events: **103%** of normal (NOV-MAR); seasonal total **26-inches**.

NOV 2-inch (up to 4), DEC 9-inch (up to 20), JAN 6-inch (up to 16), FEB 8-inch (up to 19), MAR 2-inch



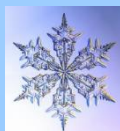


Summary: the mountains

Government Camp, Oregon

Month:	Temperature (mean monthly):	Avg. (n=20)	Precipitation (% normal):	Avg. (n=20)	Snowfall	% Normal
November	Near Normal (-1.8 to + 1.8 degF)	0.8	Near Normal (90 - 110%)	109%	32	123%
December	Near Normal (-1.8 to + 1.8 degF)	-0.5	Near Normal (90 - 110%)	105%	59	129%
January	Near Normal (-1.8 to + 1.8 degF)	1.6	Above Normal (110 - 130%)	112%	61	113%
February	Near Normal (-1.8 to + 1.8 degF)	-1.3	Above Normal (110 - 130%)	111%	54	130%
March	Below Normal (< -1.8 degF)	-1.5	Near Normal (90 - 110%)	99%	50	123%
April	Near Normal (-1.8 to + 1.8 degF)	-0.8	Near Normal (90 - 110%)	98%	29	145%
May	Near Normal (-1.8 to + 1.8 degF)	-0.5	Near Normal (90 - 110%)	99%	7	177%

Expect a seasonal snow total: **293**-inches or **134%** of normal (NOV-MAY).





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	Near Normal (90 - 110%)	107%
December	Near Normal (-1.8 to + 1.8 degF)	-0.1	Below Normal (70 - 90%)	89%
January	Above Normal (> + 1.8 degF)	2	Near Normal (90 - 110%)	101%
February	Near Normal (-1.8 to + 1.8 degF)	-0.6	Below Normal (70 - 90%)	86%
March	Near Normal (-1.8 to + 1.8 degF)	-1.1	Below Normal (70 - 90%)	89%

EXPECT MEDIUM VARIABILITY – HARD RAIN EVENTS, FLOODS, FOG, WIND-STORMS, GORGE WIND, FREEZING RAIN, etc.

WATER SUPPLY FORECAST: **105 MAF** (± 13 MAF) or **104%**, COLUMBIA RIVER AT THE DALLES, JANUARY - JULY.

...but what about Snow events?!

Expect **FOUR** events: 2 moderate (2-3 inch), 2 minor (1 inch or less).

NOV 0-inch, DEC 2.5-inch (up to 7), JAN 1-inch (up to 2), FEB 2-inch (up to 6), and MAR 0.25-inch (up to 1).

(70% - 85% likely) Season: **5.5-inches**

