

Seasonal Climate Forecast

March – May 2017

Issued: February 16, 2017



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ODA Production support from Diana Walker and Andy Zimmerman

El Niño Southern Oscillation (ENSO)

Current Status and Forecast

- Tropical Pacific sea-surface temperatures (SSTs) have warmed from *La Niña* Modoki (below-average SSTs, centered in the central tropical Pacific) to ENSO-neutral. Current SSTs range from slightly below average in the central Pacific to above average in the eastern Pacific.
- The Climate Prediction Center (CPC) defines a *La Niña* event as having ONI values of -0.5°C or colder for 5 consecutive months. The Oceanic Niño Index (ONI) for Nov. - Jan. was -0.7°C ...the fifth consecutive month with the ONI below the *La Niña* threshold. According to CPC's definition, that makes this an official *La Niña*.
- CPC has issued its final *La Niña Advisory* for this event. Their forecast is for ENSO-neutral conditions to continue through this spring. Their dynamic models are favoring a transition to *El Niño* by this summer. In contrast, the analog years used in this forecast favor ongoing ENSO-neutral conditions through this summer.

Forecast Overview

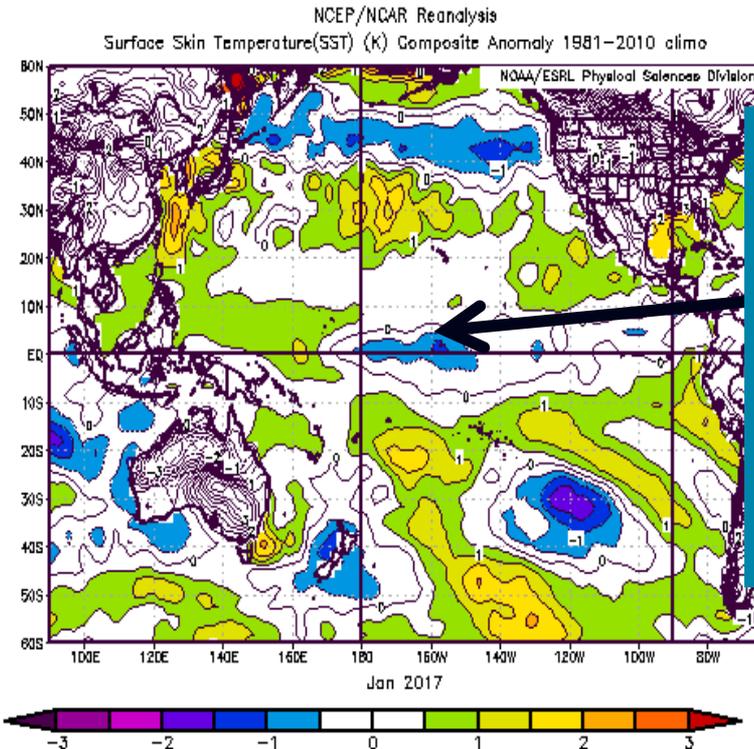
- The analog years (1984, 1993, & 1999) have been performing exceptionally well and are unchanged from last month.
- Below-average temperatures likely, especially eastern zones. Above-average precipitation, especially western zones.
- Mountain snowpacks should generally peak at greater-than-average depths and slightly later than usual. Cooler-than-average conditions should also delay the spring melt-off.

IMPORTANT NOTE: This forecast is based on past and current weather data, such as SSTs, and is not associated with CPC predictions (see Forecasting Methods) nor the official CPC “Three-Month Outlooks,” which are available here: http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=2

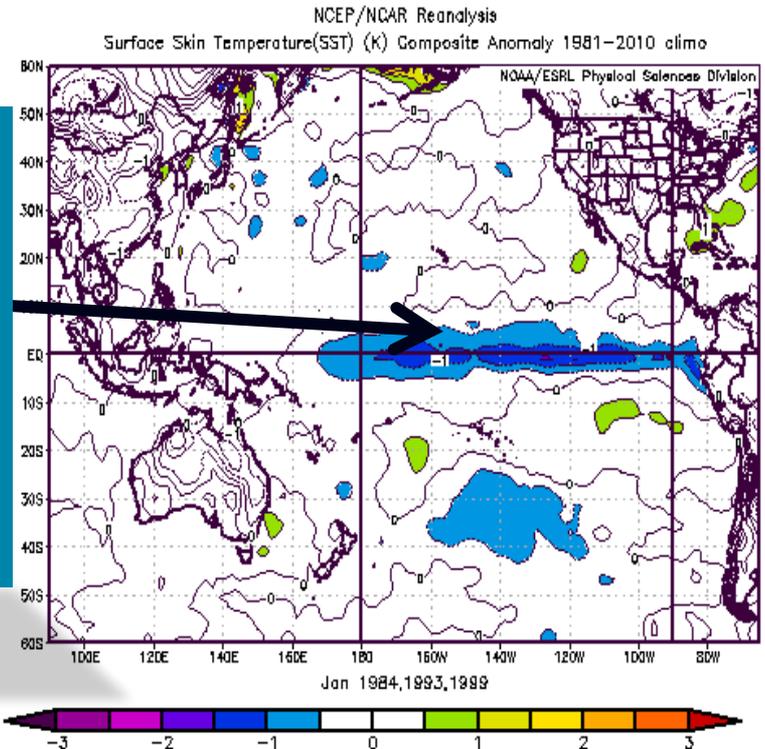
January SST Anomalies (°C)

2017

Composite: 1984;1993;1999



Similar
La Niña
Modoki
Patterns
Across
the
Tropical
Pacific

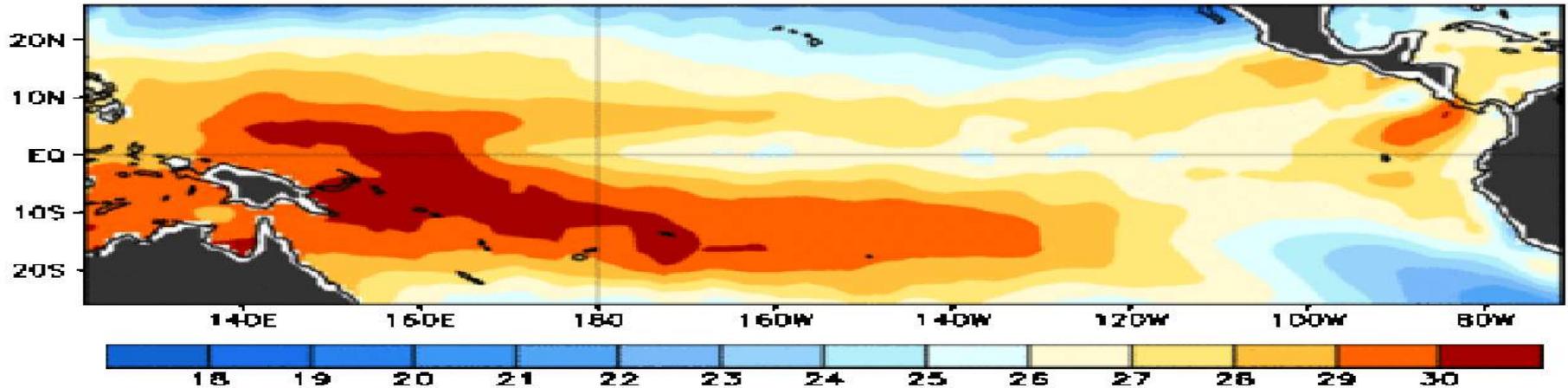


- The January 2017 tropical Pacific SST anomaly pattern is similar to the January SST anomaly pattern generated from the composite of the analog years (1984; 1993; 1999). Both SST anomaly patterns reflect *La Niña Modoki* conditions.
- The northern Pacific Ocean SST anomaly pattern for January 2017 (above-left) is similar but more amplified than the analog composite SST pattern (above-right).

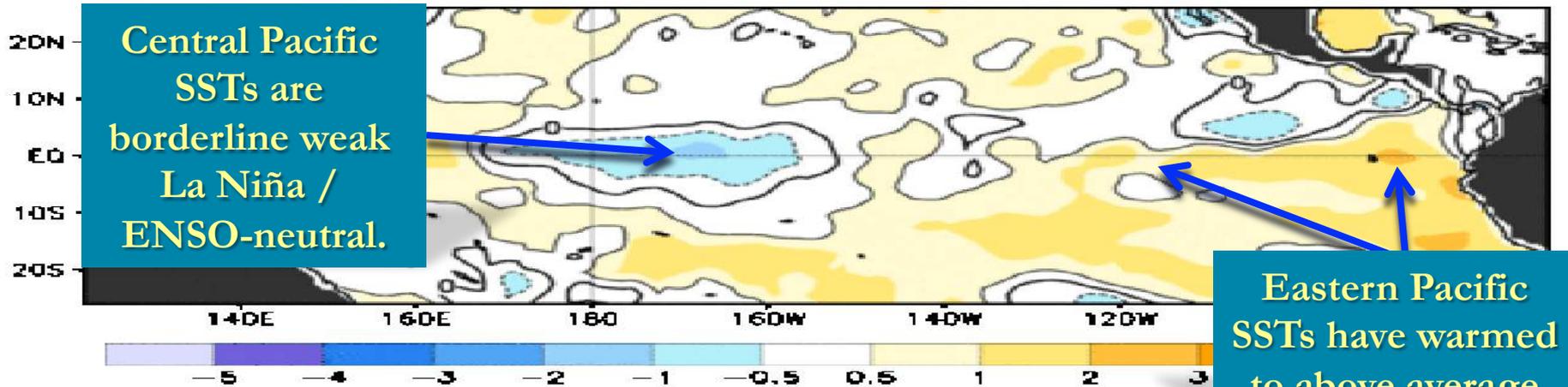
Tropical Pacific Ocean

Current SST anomalies (bottom) reflect ENSO-neutral conditions

Observed Sea Surface Temperature (°C)



Observed Sea Surface Temperature Anomalies (°C)

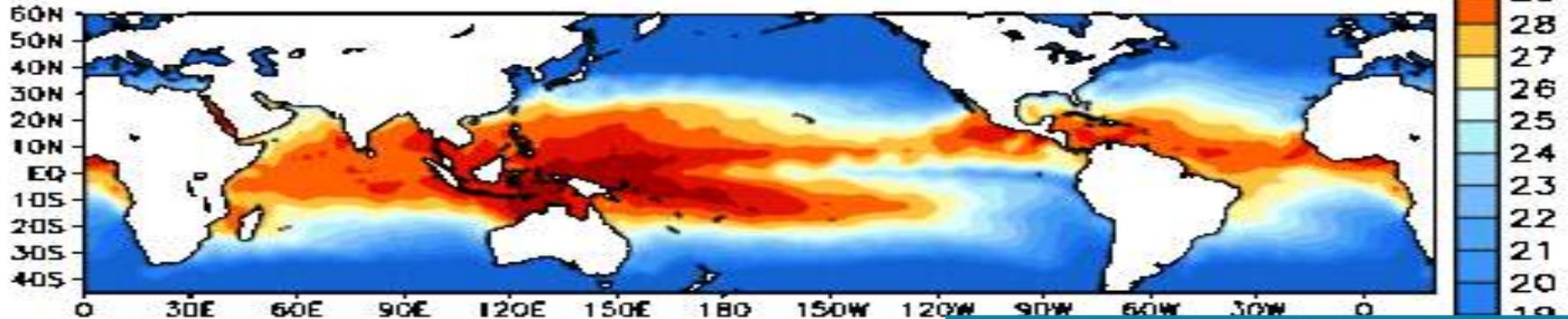


7-day Average Centered on 08 February 2017

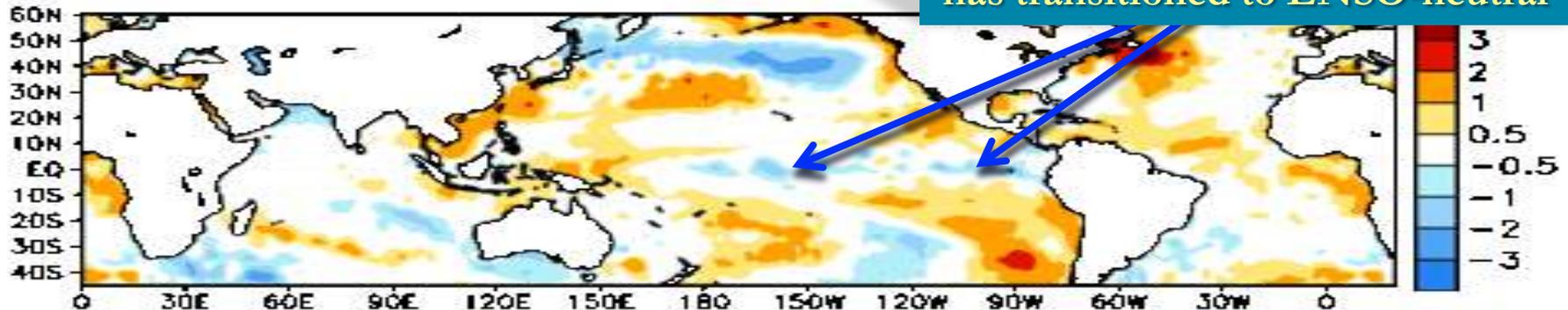
Pacific Ocean

Animated (PowerPoint only) SSTs (top) / Anomalies (bottom)

Week centered on 23 NOV 2016
SST (°C)



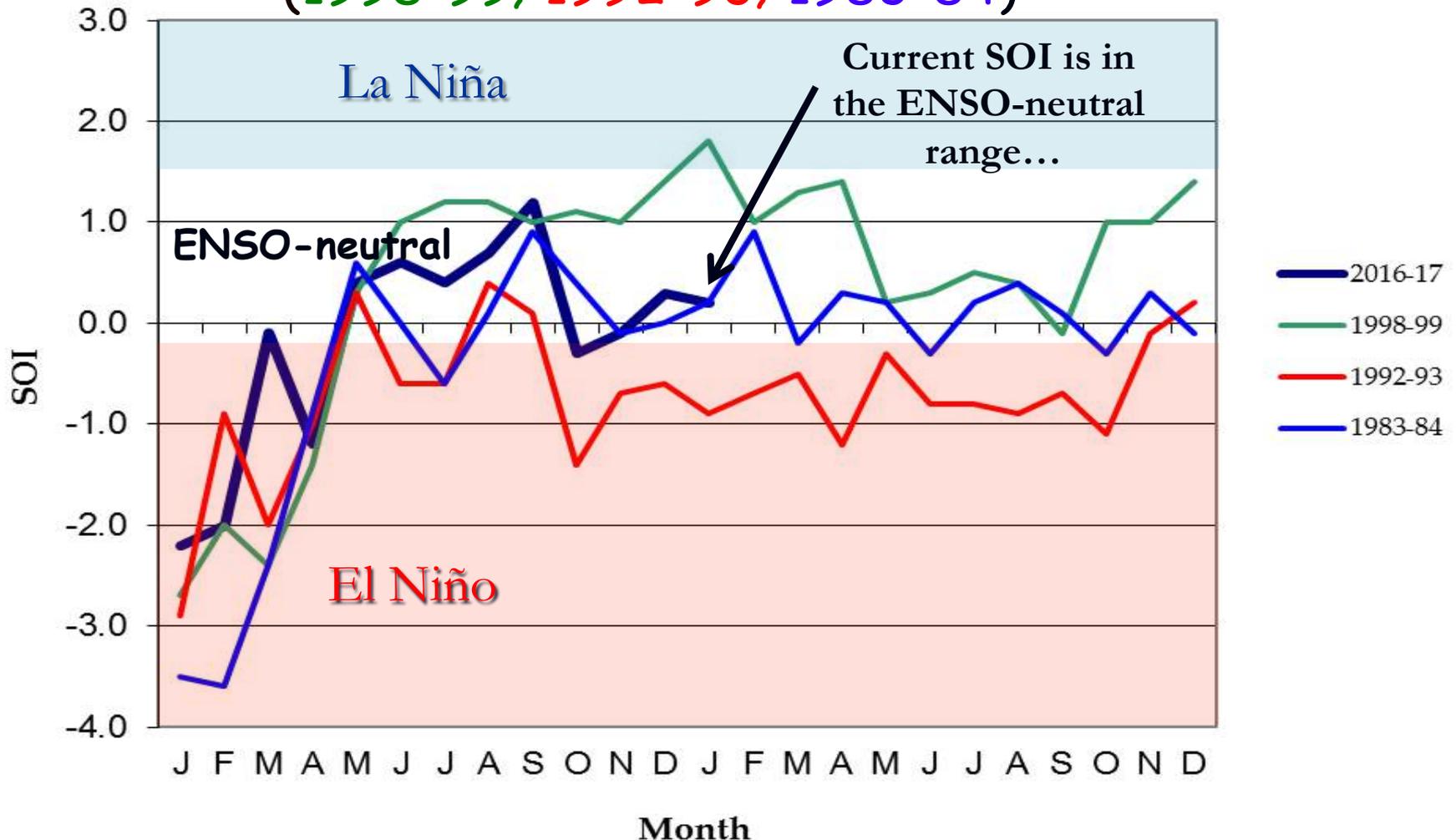
Anomalies (°C)



La Niña Modoki (negative SST anomalies centered across the central equatorial Pacific Ocean) has transitioned to ENSO-neutral

Tropical Pacific Ocean

SOI* values from the top "analog years"
compared with the current period (2016-17)
(1998-99; 1992-93; 1983-84)

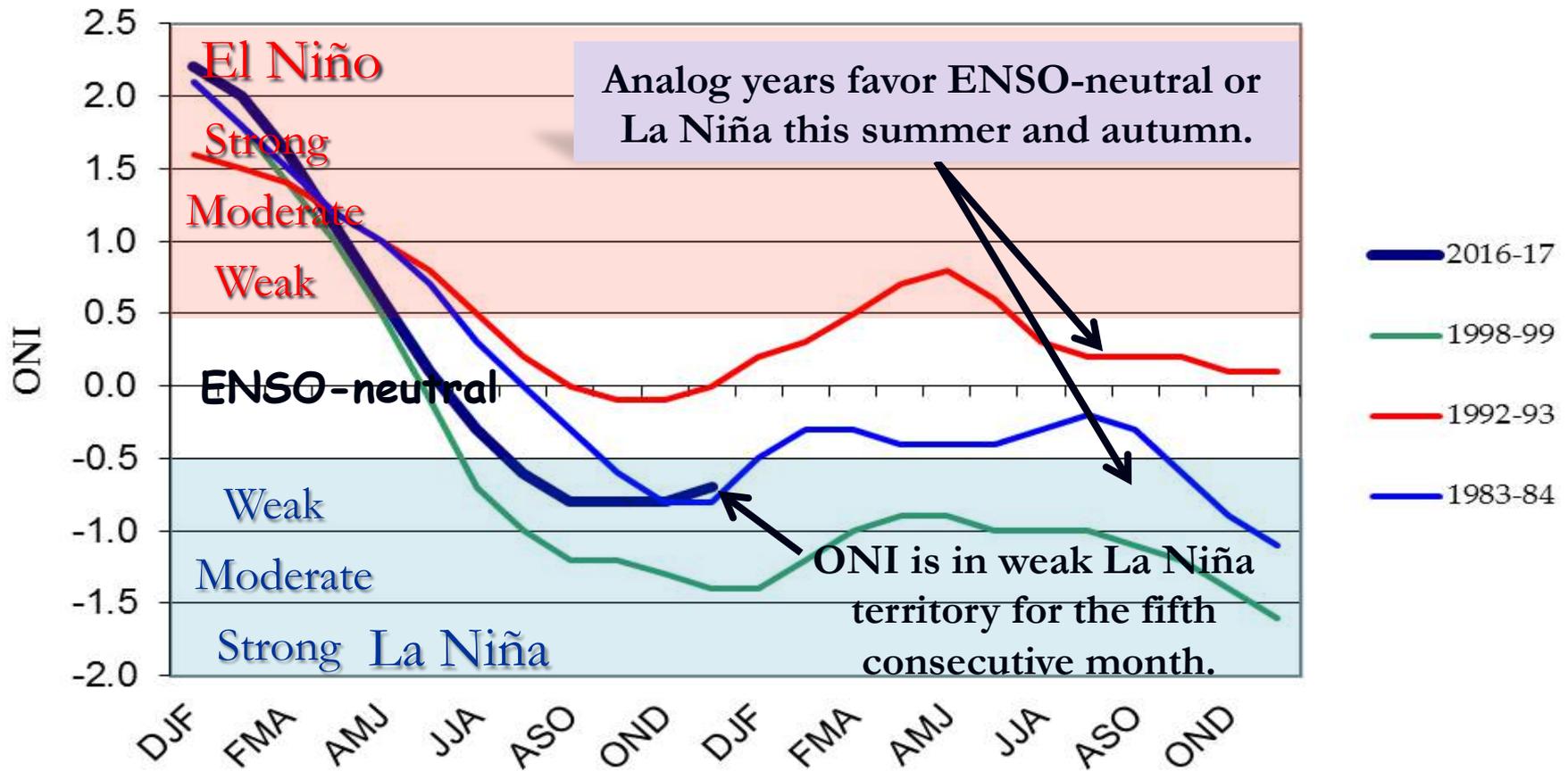


*SOI explanation via "Forecasting Methods..." at <http://www.oregon.gov/ODA/programs/NaturalResources/Pages/Weather.aspx>

Tropical Pacific Ocean

ONI* values from the top "analog years"
compared with the current period (2016-17)

(1998-99; 1992-93; 1983-84)

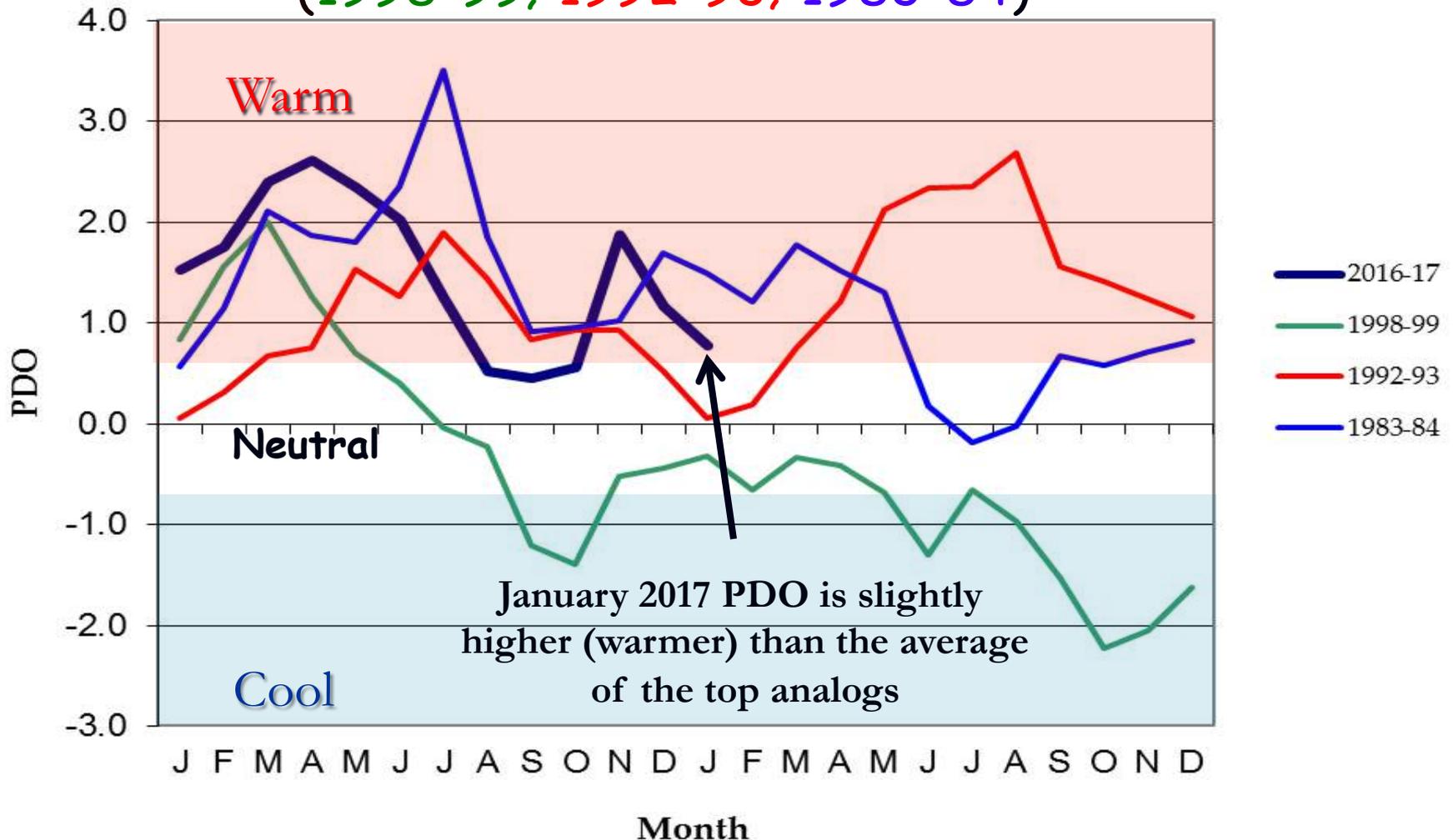


3-Month Running Mean

*ONI explanation via "Forecasting Methods..." at <http://www.oregon.gov/ODA/programs/NaturalResources/Pages/Weather.aspx>

North Pacific Ocean

PDO* values from the top "analog years"
compared with the current period (2015-16)
(1998-99; 1992-93; 1983-84)

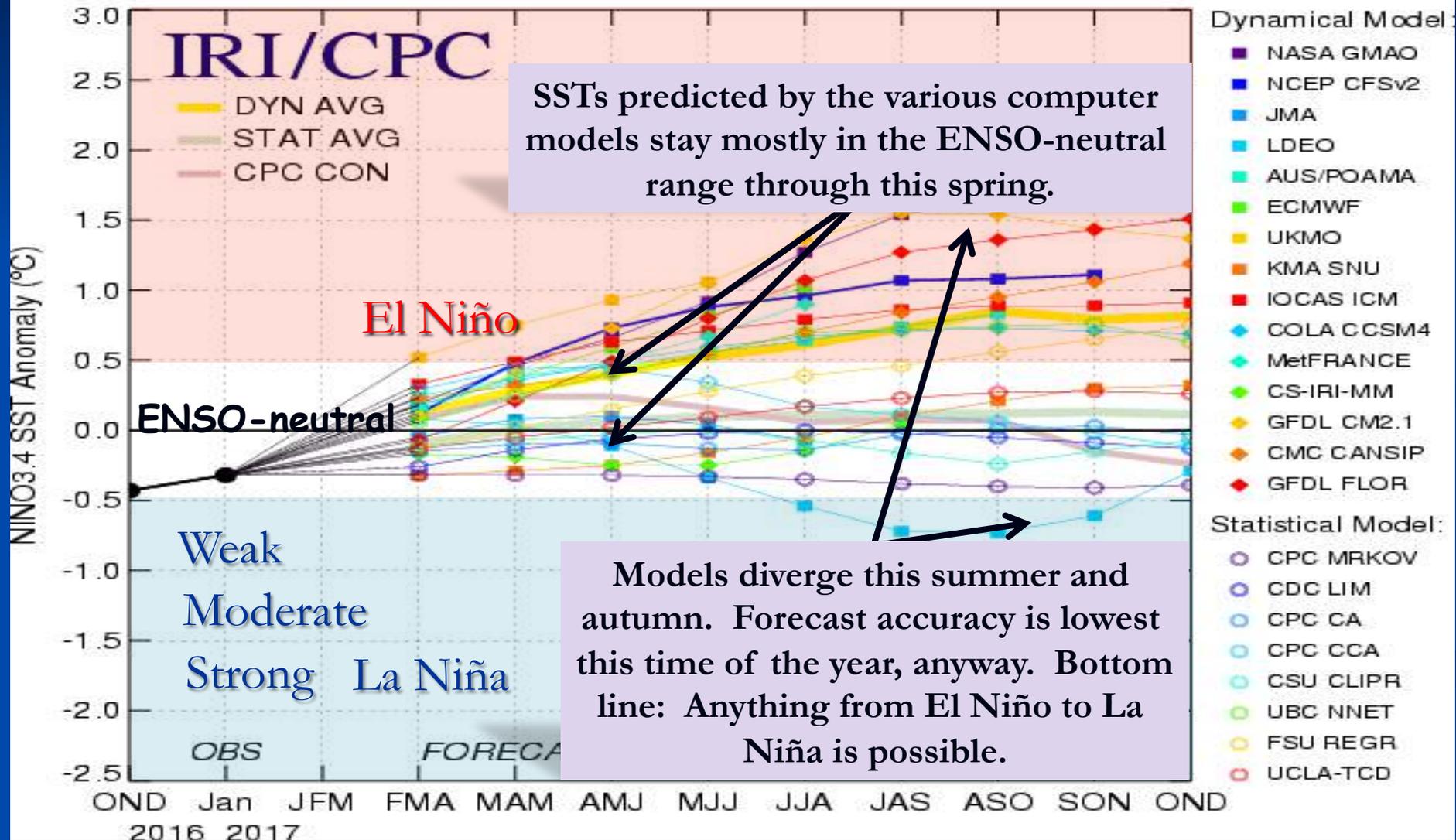


*PDO explanation via "Forecasting Methods..." at <http://www.oregon.gov/ODA/programs/NaturalResources/Pages/Weather.aspx>

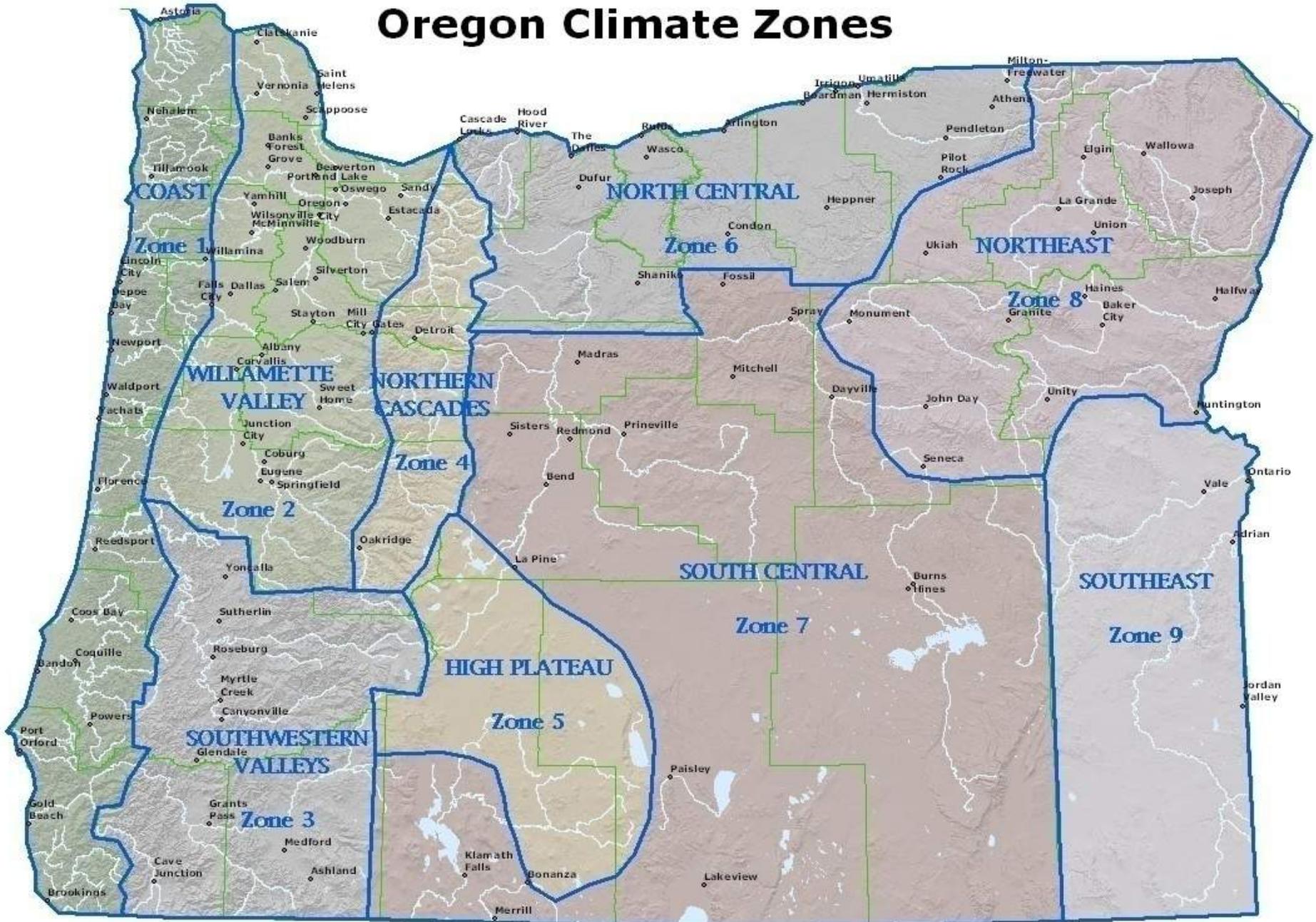
ENSO Predictive Models

Includes both dynamic and statistical model predictions

Mid-Feb 2017 Plume of Model ENSO Predictions

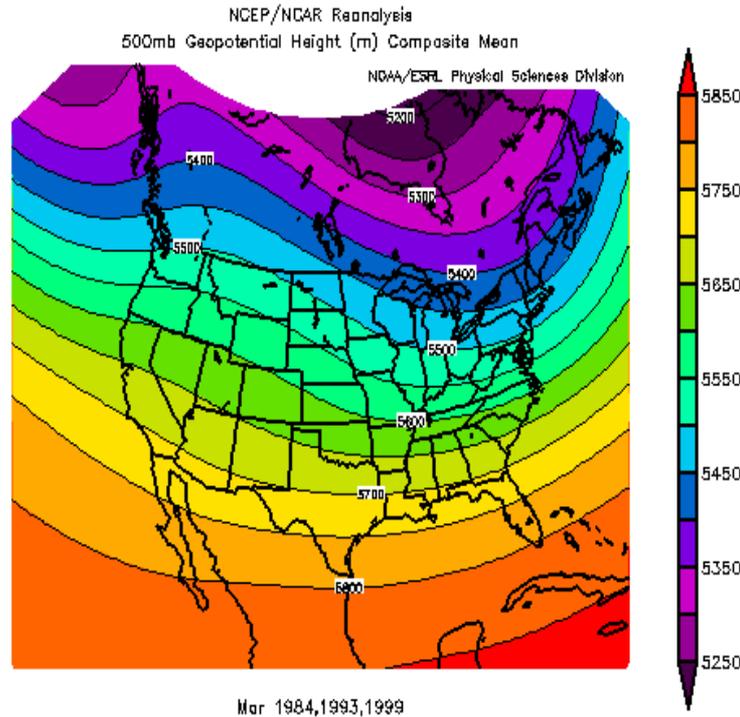


Oregon Climate Zones

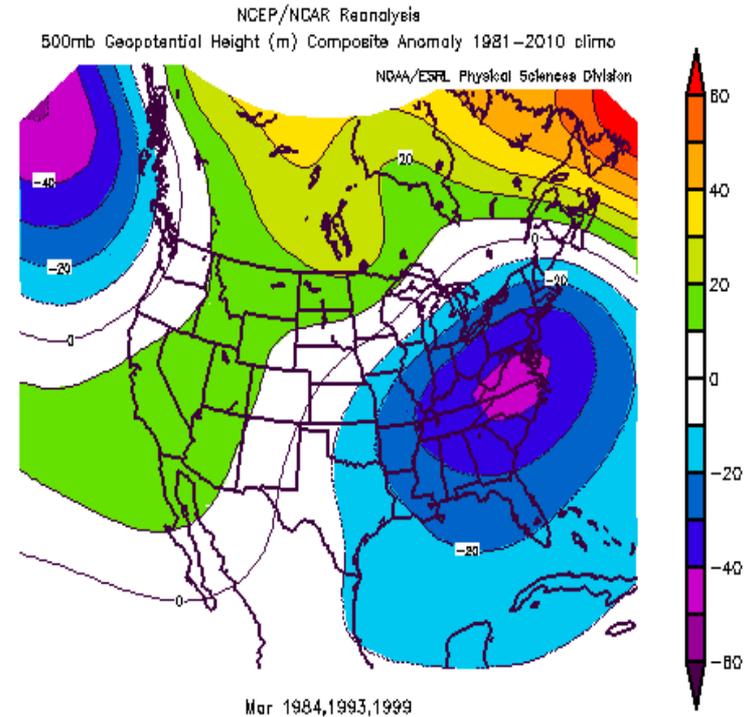


March 2017 Forecast

Mean Upper-Air Pattern



Upper-Air Anomalies

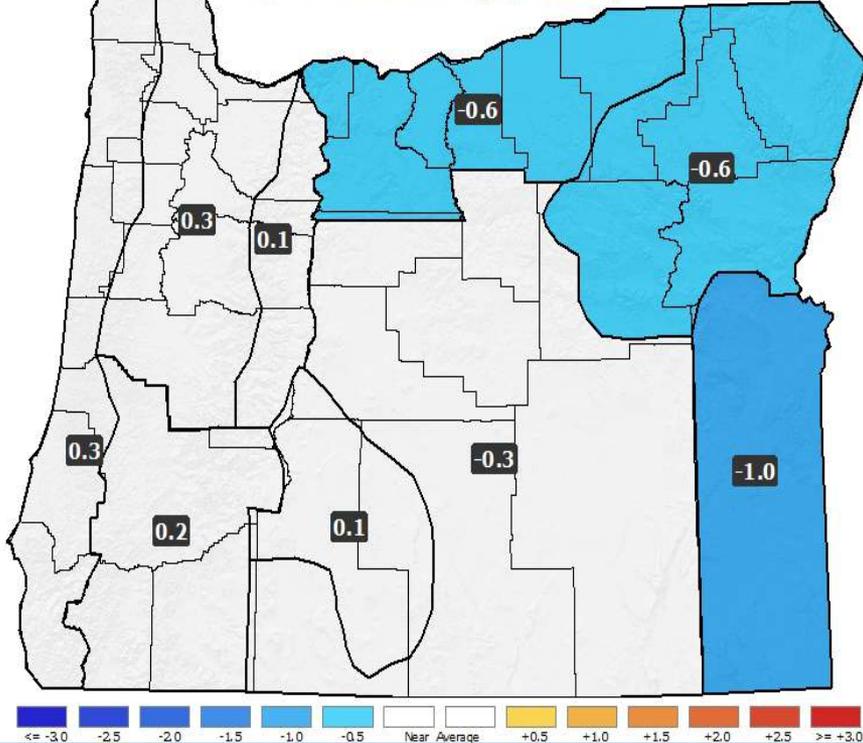


- Upper-air patterns from the top three analog years diverge, which lowers forecast confidence...
- A blend of the analog years shows slightly-more storminess than usual.

March 2017 Forecast

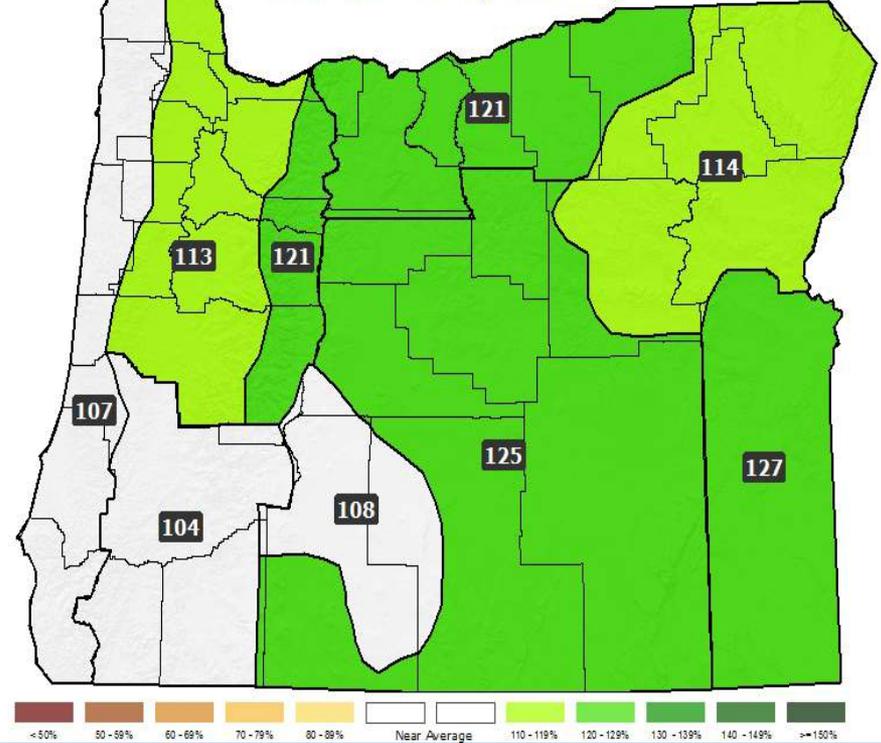
Temperatures

March 2017 Forecast Temperature Anomalies (°F)
Based on 1984, 1993, 1999 Analog Years
Versus 1981-2010 Long-term Average



Precipitation

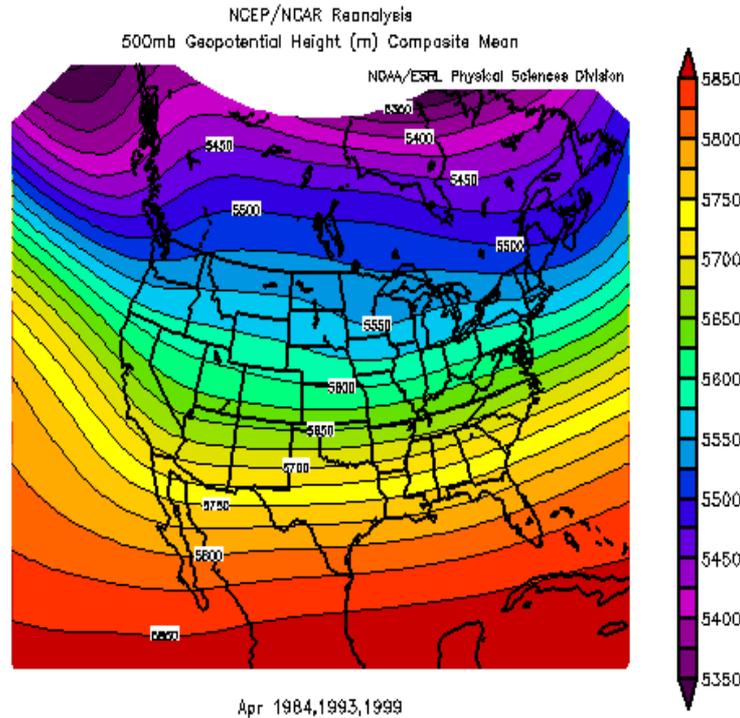
March 2017 Forecast Precipitation Anomalies (% of Avg)
Based on 1984, 1993, 1999 Analog Years
Versus 1981-2010 Long-term Average



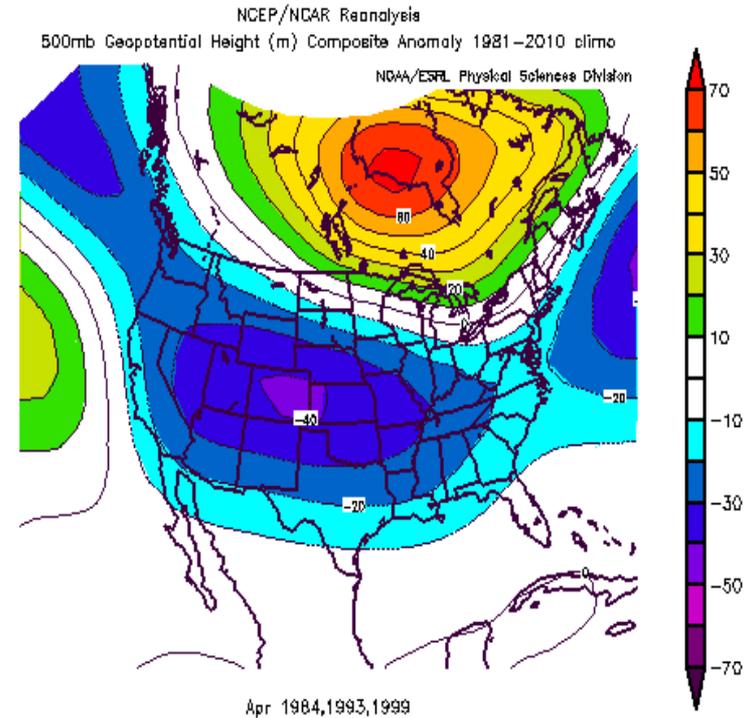
- Temperatures near average west and slightly cool east.
- Precipitation slightly-above average west and above average east.
- Above-average mountain snowpacks.

April 2017 Forecast

Mean Upper-Air Pattern



Upper-Air Anomalies

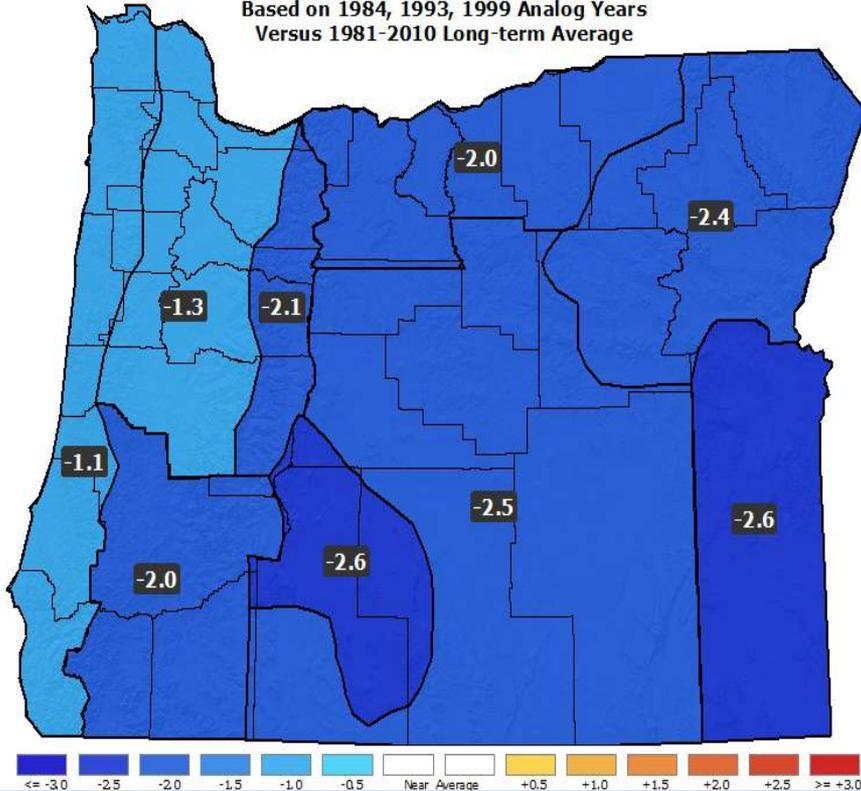


- Enhanced jet stream over Oregon should bring more cloudiness than usual, which will tend to suppress maximum temperatures.
- The air aloft should stay colder than average, which would delay the peak and melt-off of most mountain snowpacks.

April 2017 Forecast

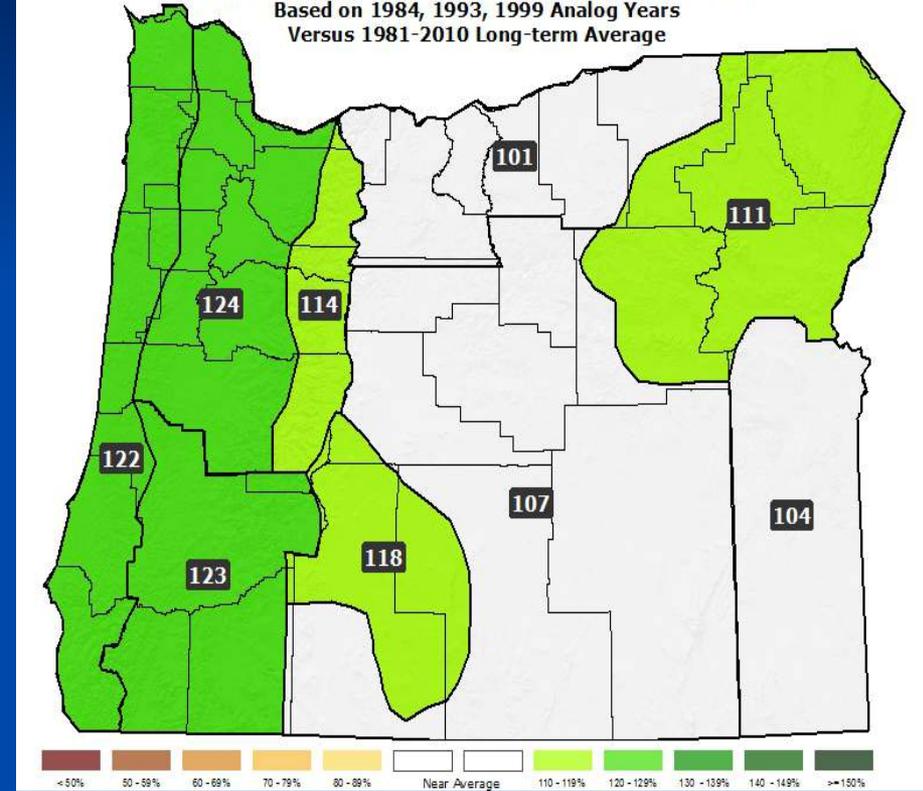
Temperatures

April 2017 Forecast Temperature Anomalies (°F)
Based on 1984, 1993, 1999 Analog Years
Versus 1981-2010 Long-term Average



Precipitation

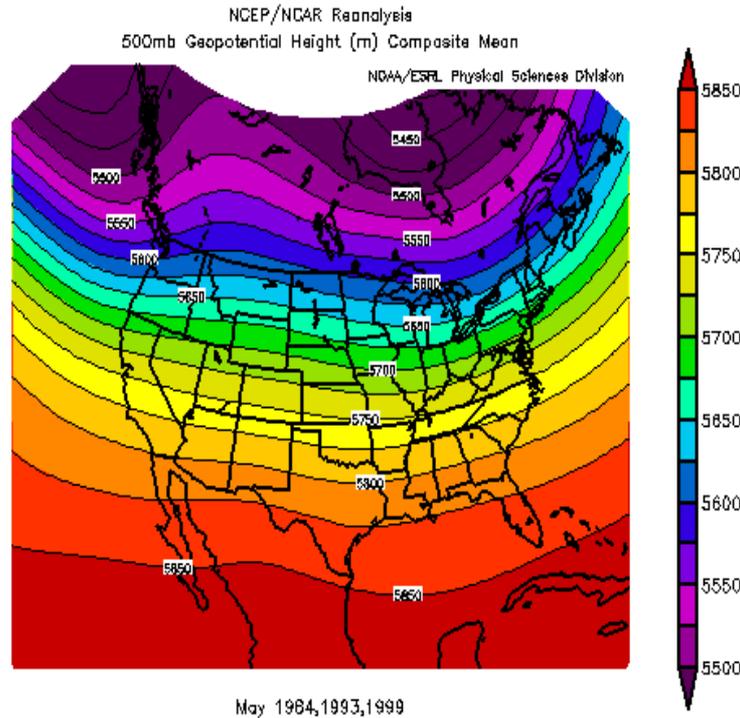
April 2017 Forecast Precipitation Anomalies (% of Avg)
Based on 1984, 1993, 1999 Analog Years
Versus 1981-2010 Long-term Average



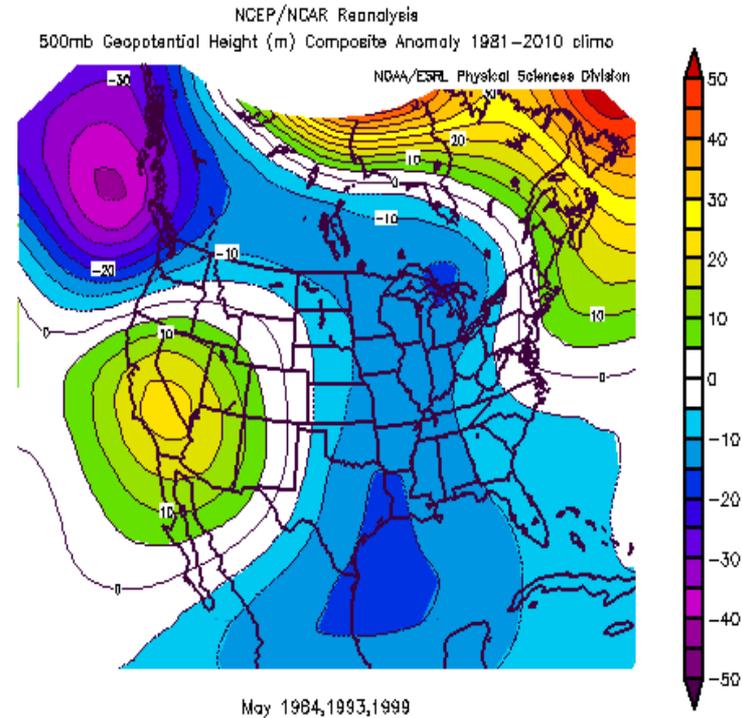
- Below-average temperatures, especially east of the Cascades.
- Lots of wet days with abundant rain and mountain snow. Snowpacks likely peaking higher and slightly later than usual.

May 2017 Forecast

Mean Upper-Air Pattern



Upper-Air Anomalies

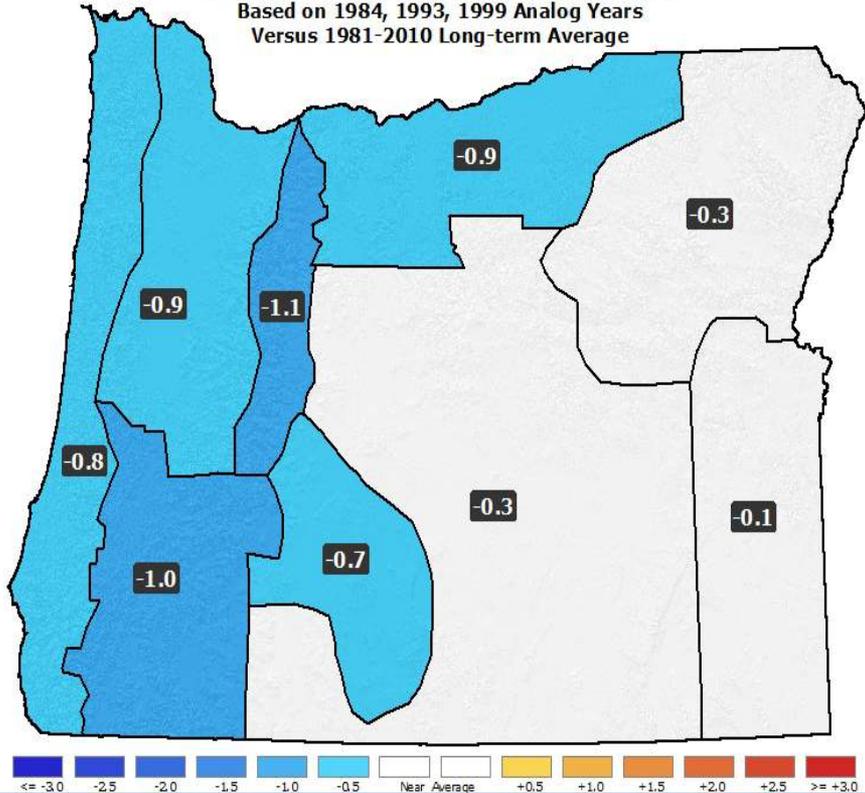


- Upper-air patterns of the top analog years have significant variation, which lowers forecast confidence.
- A blend of the analogs favors above-average storminess.

May 2017 Forecast

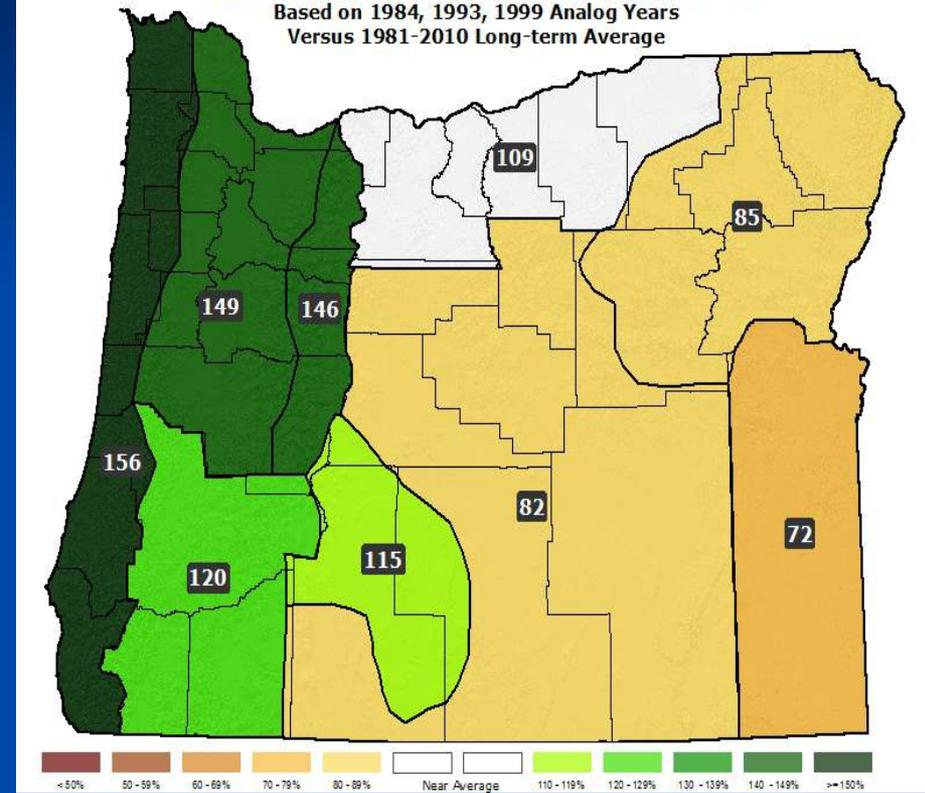
Temperatures

May 2017 Forecast Temperature Anomalies (°F)
Based on 1984, 1993, 1999 Analog Years
Versus 1981-2010 Long-term Average



Precipitation

May 2017 Forecast Precipitation Anomalies (% of Avg)
Based on 1984, 1993, 1999 Analog Years
Versus 1981-2010 Long-term Average

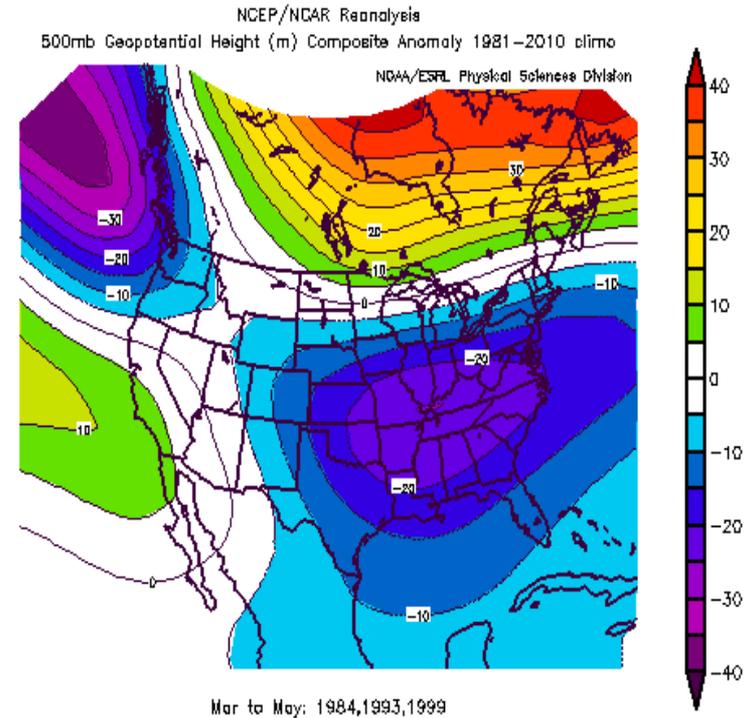
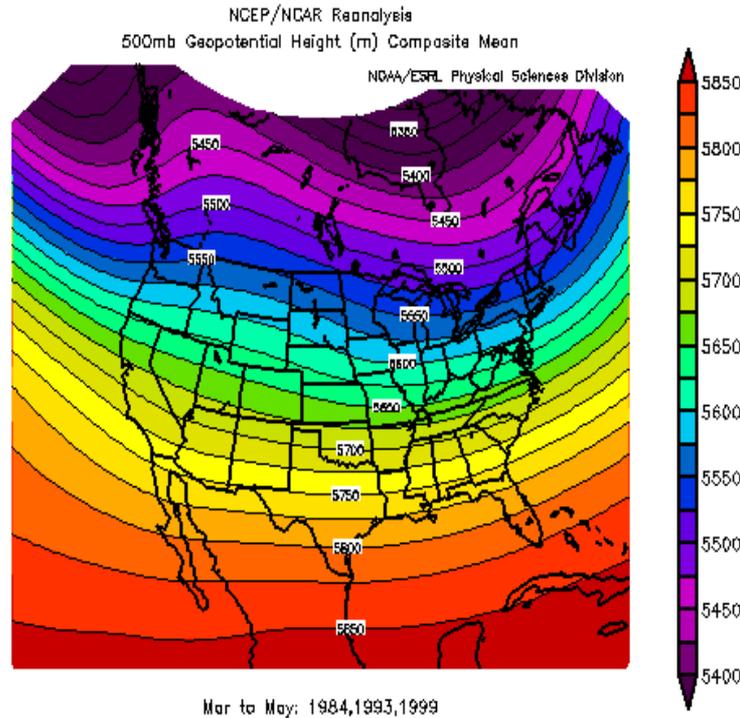


- Below-average temperatures are favored, especially west.
- Precipitation ranging from about 150% of average along the coast to slightly below average across the eastern zones.
- Seasonal melting of mountain snowpacks should be delayed.

March – May 2017 Forecast

Mean Upper-Air Pattern

Upper-Air Anomalies

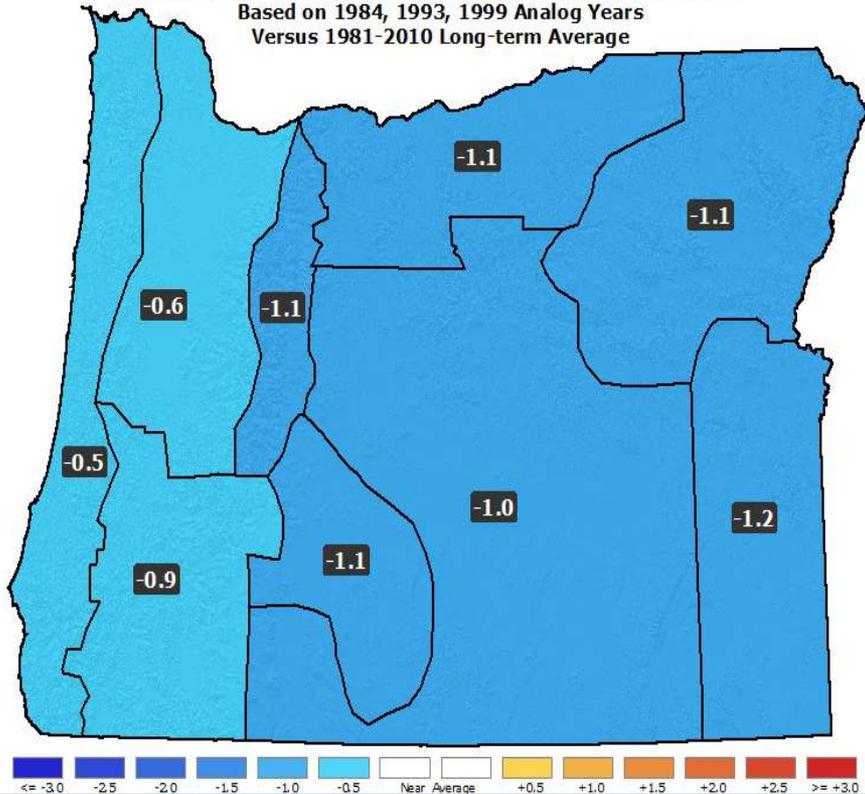


- More upper-level troughing than usual is likely, which would enhance storminess and maintain mountain snowpacks later into the spring.
- The top analogs had generally cool and damp springs, which typically would follow a winter with La Niña conditions.

March – May 2017 Forecast

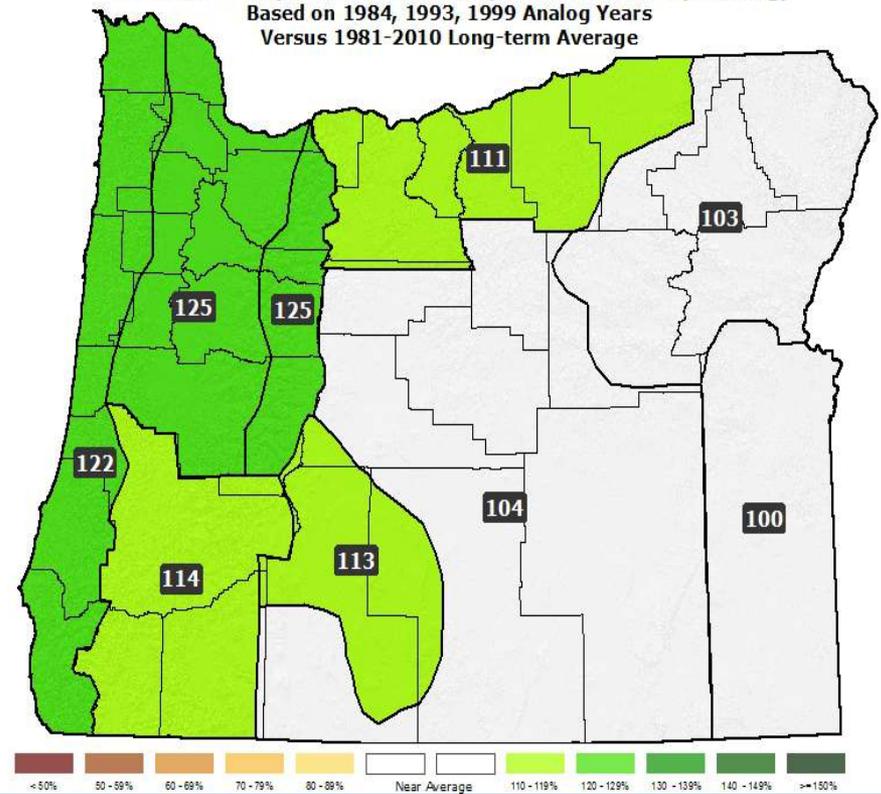
Temperatures

March 2017 - May 2017 Forecast Temperature Anomalies (°F)
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Versus 1981-2010 Long-term Average



Precipitation

March 2017 - May 2017 Forecast Precipitation Anomalies (% of Avg)
Based on 1984, 1993, 1999 Analog Years
Versus 1981-2010 Long-term Average



- Below-average temperatures statewide.
- Above-average precipitation, especially western zones.
- Snowpacks likely peaking higher and slightly later than average.

Forecast Resources

- **CPC Official US Three-Month Forecasts (Graphics):**

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=01

- **CPC US 30-Day & 90-Day Forecasts (Discussions):**

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/fxus07.html

- **CPC Weekly & Monthly ENSO Discussions:**

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory

- **Australian Government Weekly Tropical Climate Note:**

<http://www.bom.gov.au/climate/tropnote/tropnote.shtml>

- **Australian Government ENSO Wrap-Up:**

<http://www.bom.gov.au/climate/enso>

- **IRI ENSO Quick Look:**

<http://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/>

- **ODA Seasonal Climate Forecast Home:**

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

Water Supply Information

- NDMC U.S. Drought Monitor:

<http://droughtmonitor.unl.edu/>

- NIDIS North American Drought Portal:

<http://www.drought.gov/nadm/content/percent-average-precipitation>

- NRCS Snow Water Equivalent Oregon Map:

http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/or_swepctnormal_update.pdf

- NRCS Snow Water Equivalent Products:

<http://www.wcc.nrcs.usda.gov/snow/snotel-wereports.html>

- NRCS Weekly Water and Climate Update:

<http://www.wcc.nrcs.usda.gov/cgibin/water/drought/wdr.pl>

- NRCS Western Snowpack Data & Water Supply Forecast:

<http://www.wcc.nrcs.usda.gov/cgibin/westsnowsummary.pl>

- WRCC WestWideDroughtTracker:

<http://www.wrcc.dri.edu/wwdt/>

Updated Monthly

(Around the 20th)

Your Feedback is Welcome!

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<http://listsmart.osl.state.or.us/mailman/listinfo/seasonalclimateforecast>

Contact: Pete Parsons, ODF Meteorologist
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