Seasonal Climate Forecast Verification
January – March 2019
Issued: April 10, 2019

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Oregon Dept. of Agriculture (ODA) - Oregon Dept. of Forestry (ODF).
ODA Production support from Diana Walker, Jacob Cruser, and Andy Zimmerman
Format and Purpose:

- A side-by-side comparison of the “Seasonal Climate Forecast” vs. what (Actually Occurred) is done for both the 1-month & 3-month forecasts.*
- The accuracy of each forecast is reviewed, and the need for analog-year updates is examined.
- This is part of an ongoing assessment of the utility of this forecast method.**

*Utilizes 1981-2010 long-term averages

**See “Forecasting Methods…” at: https://oda.direct/Weather
Analog years ranged from very cold to quite mild, which lowered forecast confidence. Their “blend” favored anomalous troughing (left), which did not materialize (right). A forecast “miss.”
January 2019
(Forecast Issued December 19, 2018)/(Actual)

Forecast Temperatures

Actual Temperatures

Data courtesy of the National Centers for Environmental Information (NCEI)
January 2019
(Forecast Issued December 19, 2018)/(Actual)

Forecast Precipitation

Actual Precipitation

Data courtesy of the National Centers for Environmental Information (NCEI)
The analog years showed a large variety of possible outcomes. Significant Arctic outbreaks in 1969 skewed the “blended” forecast cold. In the absence of such events, relatively-mild temperatures were expected. (A split-flow jet stream pattern, typical of El Niño, kept temperatures quite mild with no Arctic intrusions.) The 1969 analog turned out to a great one, although the extremely cold weather it predicted for January did not materialize until February!

The forecast called for near or below average rainfall and mountain snow. (Weaker-than-usual storms brought mostly below-average rain and mountain snow…see next two slides.) A forecast “hit.”
The forecast (left) had negative height anomalies (troughing) along the west coast, but the observed (right), highly-negative, anomalies were centered more over Oregon. *The strong negative anomalies expected in January showed up in February!*
February 2019
(Forecast Issued January 17, 2019)/(Actual)

Forecast Temperatures

Actual Temperatures

Data courtesy of the National Centers for Environmental Information (NCEI)
February 2019
(Forecast Issued January 17, 2019)/ (Actual)

Forecast Precipitation

Actual Precipitation

Data courtesy of the National Centers for Environmental Information (NCEI)
Temperatures near or slightly-below average west; slightly-above average east. Colder across all zones. Colder, if we experience Arctic events. (A highly-anomalous jet stream pattern dropped a series of cold upper-level troughs over Oregon. Repeated shots of modified Arctic air plunged temperatures to well-below average statewide. For most of Oregon, it was the coldest February in 30 years!)

Slightly-above average precipitation, especially south. (Rain and mountain snowfall were well-above average, especially south and east. Even the western valleys and central Oregon got pounded with heavy snow. Ask the residents of Eugene, Oakridge, Roseburg, Redmond, and Bend about that!)
Oregon SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Feb 01, 2019

Current Snow Water Equivalent (SWE)
Basin-wide Percent of 1981-2010 Median

- unavailable *
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >=150%

* Data unavailable at time of posting or measurement is not representative at the time of year

Provisional Data Subject to Revision

The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).
Oregon SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Mar 01, 2019

Hood, Sandy, Lower Deschutes
Umatilla, Walla Walla, Willow
Grande Ronde, Powder, Burnt, Imnaha

Current Snow Water Equivalent (SWE)
Basin-wide Percent of 1981-2010 Median

- Unavailable *
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >=150%

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Provisional Data Subject to Revision

The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).
A “split-flow” pattern, typical during El Niño winters, was predicted (left) and eventually observed (right), but not before a cool start to the month across the Pacific NW. *A forecast “miss” early…but a “hit” after mid-month.*
March 2019

(Forecast Issued February 21, 2019) / (Actual)

Forecast Temperatures  Actual Temperatures

Data courtesy of the National Centers for Environmental Information (NCEI)
March 2019
(Forecast Issued February 21, 2019)/(Actual)

Forecast Precipitation

Actual Precipitation

Data courtesy of the National Centers for Environmental Information (NCEI)
Near or above-average temperatures. (The first half of the month was quite cool, followed by a transition to more mild weather, as a split-flow jet stream pattern, typical of El Niño, began to emerge.) A continuation of February’s very cold conditions lasted until mid-March, which skewed the monthly averages to below normal - a forecast “miss.” However, the expected transition to a more-mild split-flow jet stream pattern did emerge at mid-month – a forecast “hit.”

Below-average precipitation. (Relatively-dry conditions prevailed throughout the month.) A forecast “hit.”

Note: Mountain snowpacks held up well, due to cool weather early and a lack of rain-on-snow melting events…see next two slides.
Oregon SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Mar 01, 2019

Hood, Sandy, Lower Deschutes
89

Umatilla, Walla Walla, Willow

Grande Ronde, Powder, Burnt, Imnaha

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median

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* Data unavailable at time of posting or measurement is not representative at this time of year.

Provisional Data Subject to Revision

The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by: USDA/NRCS National Water and Climate Center
Portland, Oregon
http://www.woc.nrcs.usda.gov
Oregon SNOWEL Current Snow Water Equivalent (SWE) % of Normal

Apr 01, 2019

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median

- unavailable *
- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 145%
- >= 150%

* Data unavailable at time of posting or measurement is not representative of this time of year.

Provisional Data Subject to Revision

The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 03:00).

Prepared by: USDA/NRCS National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov
A split-flow jet stream pattern was expected (left) with the “door open” for Arctic intrusions into the Pac NW. The jet stream did exhibit a split-flow pattern (right), and Arctic intrusions into the Pac NW were frequent in February. **A forecast hit.**
January – March 2019
(Forecast Issued December 19, 2018)/(Actual)

Forecast Temperatures

Actual Temperatures

Data courtesy of the National Centers for Environmental Information (NCEI)
January – March 2019
(Forecast Issued December 19, 2018)/(Actual)

Forecast Precipitation

Actual Precipitation

Data courtesy of the National Centers for Environmental Information (NCEI)
Temperatures near or slightly below average. (After a very mild January, near-record cold and snowy weather, in February, extended into mid-March, before a transition to more-mild conditions. That skewed temperatures to below normal statewide.) **The 3-month temperature forecast was much better than the month-by-month forecasts.**

Near-to-below-average precipitation and mountain snowpacks. (January was generally mild with below-average precipitation and mountain snow. In contrast, an extremely cold and moist February helped most areas recover to above-normal precipitation and mountain snowpacks for the 3-month period. **A forecast “hit” early, but a forecast “miss” overall.**
Updated Mid-Month

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