The Inland Northwest Informer

Information For Storm Spotters, Cooperative Observers And Everyone

A Publication Of WFO Pendleton, Oregon

Spring/Summer 2019 - Volume 24

Winter 2018-2019 Summary

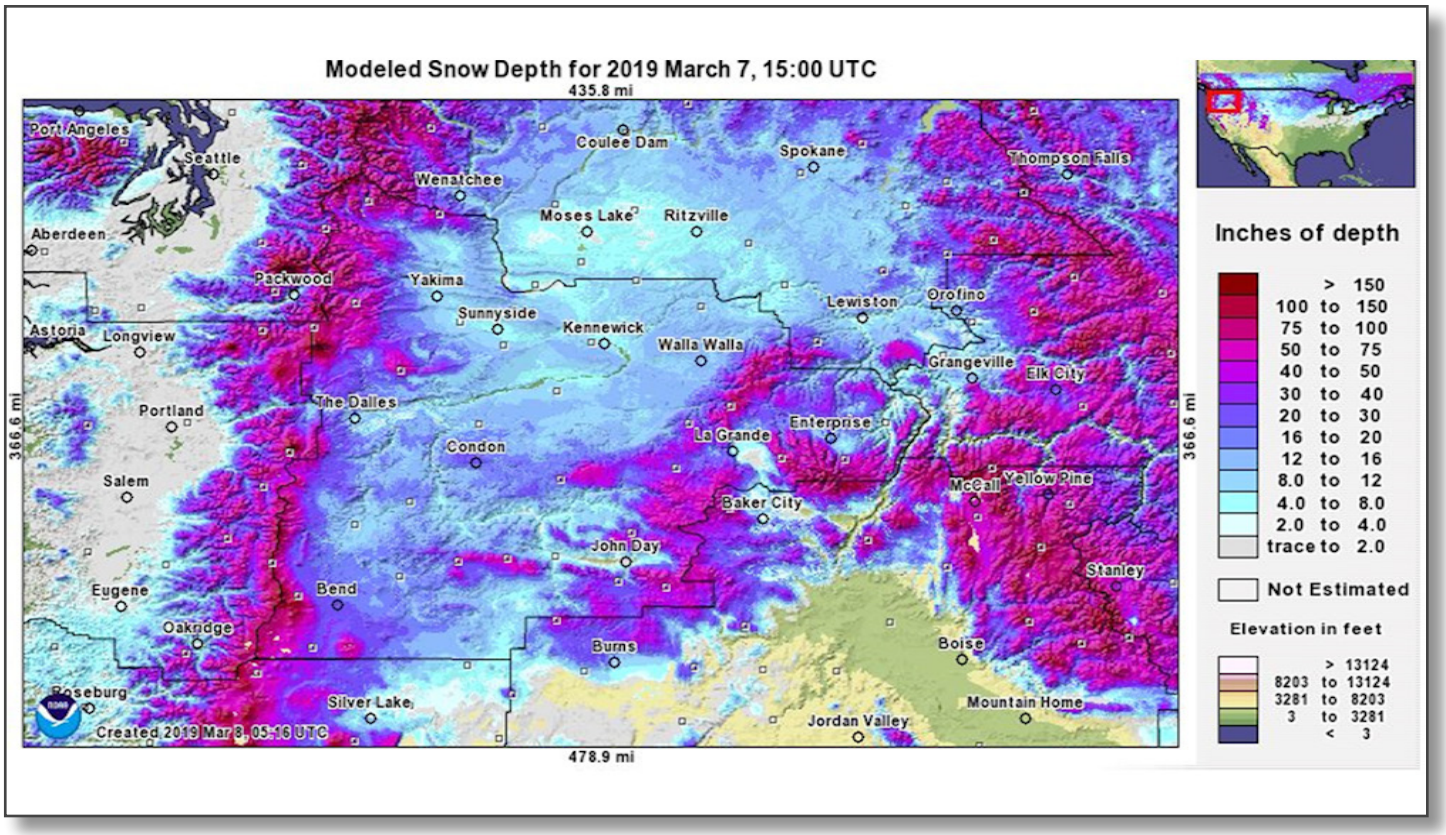
Very Snowy February and Early March

By Roger Cloutier, Meteorologist

The months of February and early March were very snowy with some of the coldest temperatures of this past winter season. **Figure 1**, below, shows the maximum snow depth accumulation on March 7th, just before a significant warm up began to melt away the snowpack across the forecast area.

As the image shows, everywhere in the forecast area had snow on the ground on March 7th.

The greatest snow amounts were over the eastern mountains and the Cascades. Even the lower elevations across the Lower Columbia Basin and the adjacent valleys had a very unusual amount of snow on the ground for March 7th with about 6 to 12 inches of snow from Pendleton, Oregon to the Tri-Cities, Washington and surrounding areas. The snow was measured in feet in the mountains.



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At the Pendleton Airport, the month of February (not including the first week of March) had an all time record amount of snow for February, ever since data were begun to be recorded, with a total of 32.5 inches. This was after a much warmer January in which there was not any snow at all at the Pendleton Airport. There were other locations that had record snowfall in the month of February too. The table below (Figure 2) shows how much snowfall there was in February at select cities in the Pendleton WFO Forecast Area. Figures 3 and 4 (on page 3) show the snowfall totals for just the month of February and a visible satellite image of the widespread snow cover on March 7th, 2019. ❖

Figure 2. **February Snow Totals for Select Cities**

City	Snowfall (In.)
Pendleton, OR	32.5*
Hanford, WA	25.3**
Walla Walla, WA	11.0
Tri-Cities, WA	21.3
Yakima, WA	8.5
Bend, OR	20.9
Ellensburg, WA	31.3
Hermiston, OR	17.6
John Day, OR	13.8
La Grande, OR	12.0
The Dalles, OR	27.0
Wallowa, OR	64.5

** Pendleton, OR snowfall for Feb. 2019 broke previous monthly snowfall record of 16.8 inches in February 1994.*

*** Hanford Met Office, WA snowfall for Feb. 2019 broke previous monthly snowfall record of 17.0 inches in February 1989, and highest monthly snowfall ever (for any month) since station records began in 1945, surpassing the previous record of 22.7 inches in January 1950.*

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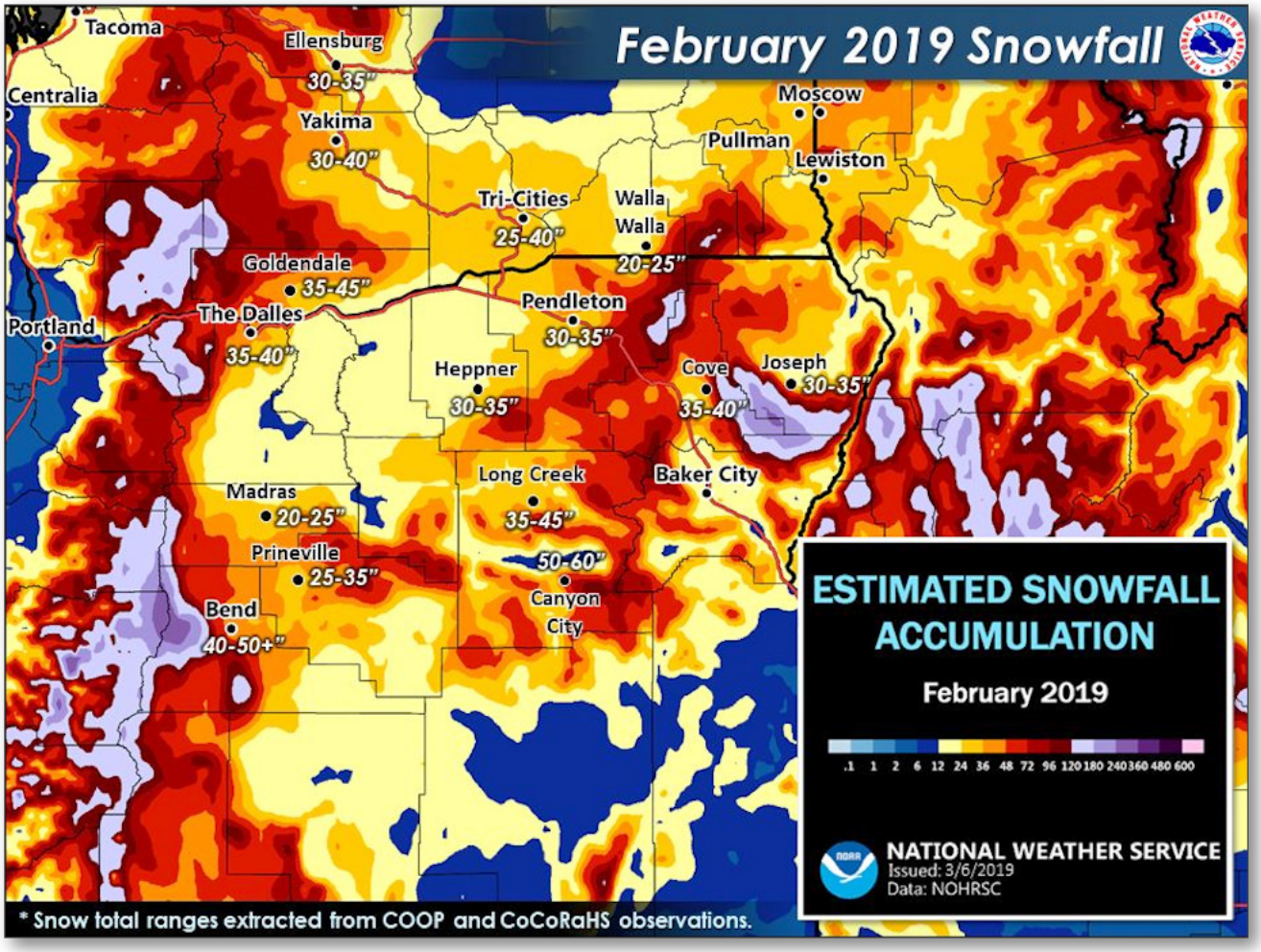

Figure 3.

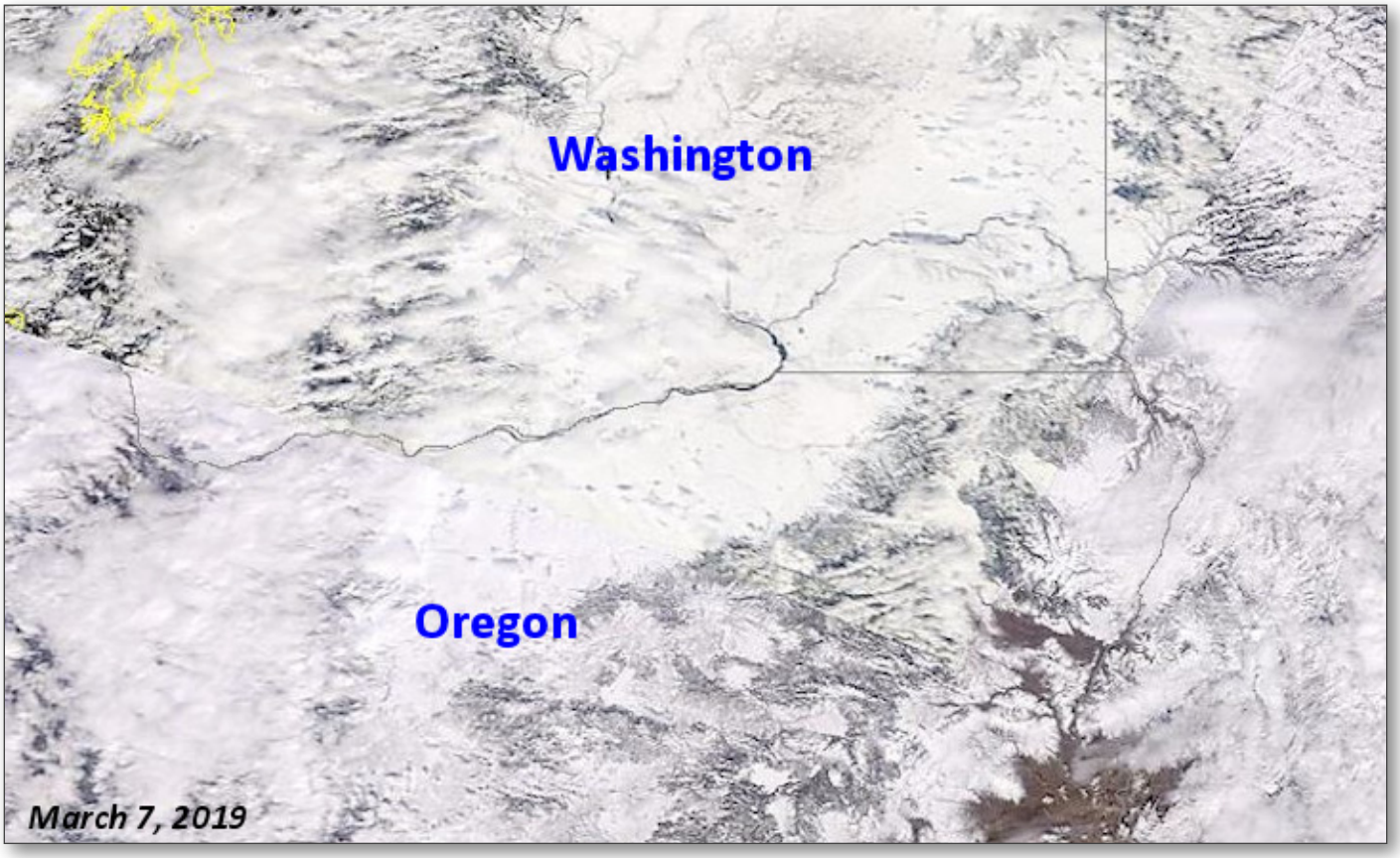

Figure 4.

Northeast Oregon Flooding

By Marilyn Lohmann, Service Hydrologist and Marcus Austin, Warning Coordination Meteorologist

An unusually snowy February set the stage for a heightened potential of flooding as the Spring thaw ensued in April. With snowpack exceeding 150-180% of normal over the Blue, Ochoco, and Wallowa mountains of central and northeast Oregon and saturated ground from snowmelt, a rainfall event would cause rivers, creeks, and streams to rise rapidly. Flooding occurred in two distinct waves capped off by a thunderstorm event April 19-20.

The first wave developed during the April 6-9 time frame as an upper level storm system developed over the northern Pacific Ocean and moved south and east across Oregon. This induced powerful west to southwest winds laden with Pacific moisture. As this moisture encountered the mountainous terrain, moderate to heavy rainfall ensued. Several areas received record to near-record rainfall over the subsequent 48 hours, resulting in rises on area creeks, streams and rivers. The Grande Ronde, John Day and Umatilla rivers rose above flood stage.

On April 10, winds became more northwesterly, which maintained a moist upslope flow over the mountains of northern and central Oregon through April 14. While the rainfall intensity decreased, additional rains coupled with snowmelt runoff continued to promote flooding on the Umatilla and John Day rivers, and on many other area creeks and streams. McKay Creek, with headwaters in the Blue Mountains near Meacham, saw significant rises with record inflows recorded at McKay Reservoir in Pendleton. This resulted in increased releases from the McKay Dam, with flooding downstream.

Flood reports included widespread field flooding across Union County with at least 5000 acres of agricultural land flooded as well as numerous roads with water damage. The Promise Road to Troy in Wallowa County was badly damaged. In Grant County, there was widespread field and road side flooding along the Silvies River in and around Seneca. There was flooding along Canyon Creek, numerous roads across Grant County had damage including the state highways near Dayville and through Picture Gorge. In Umatilla County, portions of Ukiah were flooded, when a levy was damaged. There was field flooding along many creeks and streams and

Figure 5. *Town of Nolan, Oregon on the Umatilla River. River and levee (foreground) and flooded field (center). Photo by Logan Wood*

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the Umatilla River across the Umatilla Indian Reservation. There was widespread field flooding from outside Pendleton through Echo, Hermiston and Umatilla from both the Umatilla River and also other creeks steams including Butter Creek and Birch Creek. High water on the Walla Walla River near Milton-Freewater damaged an electrical power vault. Overall across Umatilla County, there were 140 properties damaged including 20 to 30 homes. Across Wheeler County, the high water on the John Day River caused several sections Oregon Highways 19 and 207 to be closed.

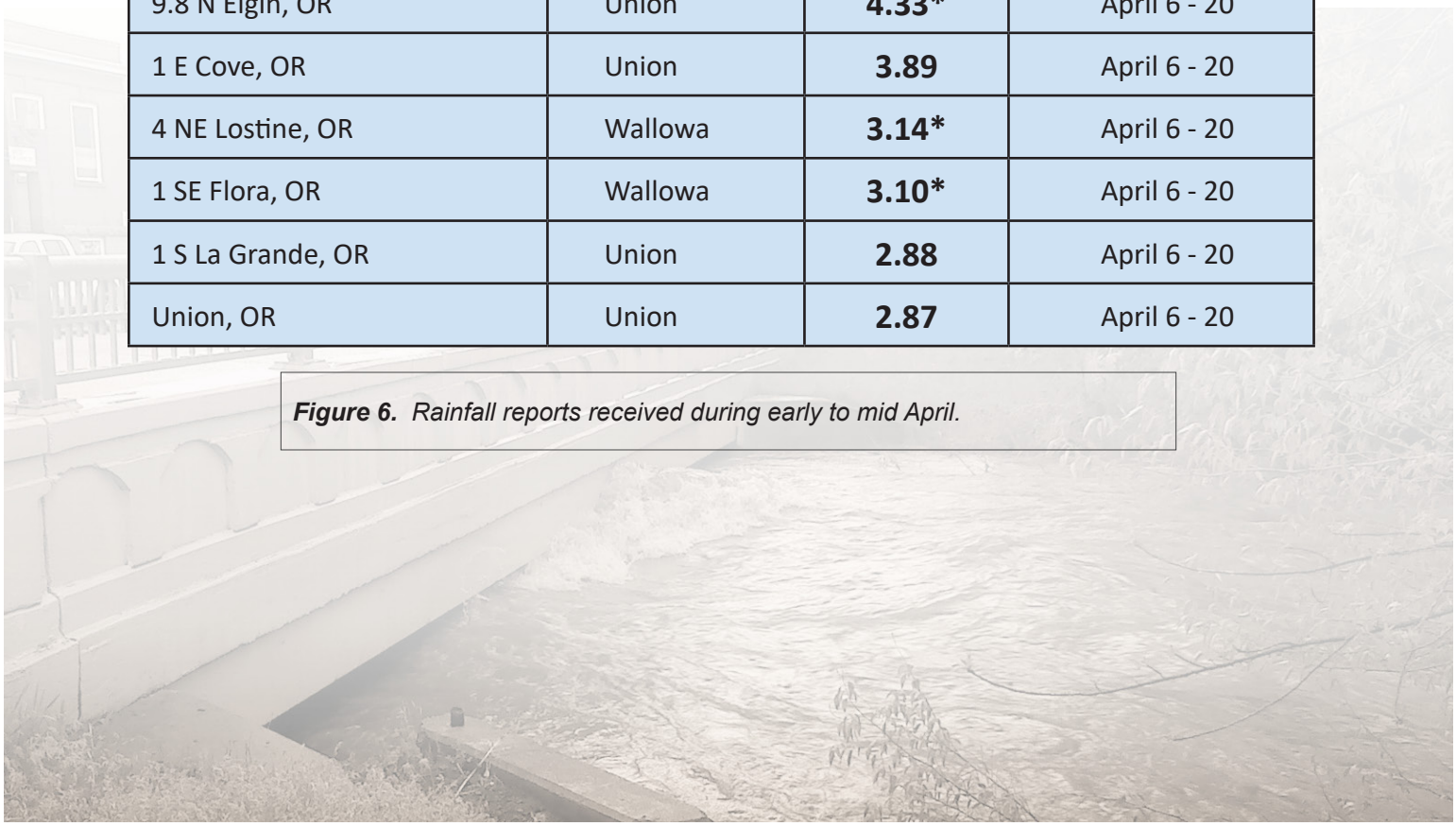
A brief lull in rainfall occurred April 14 through 18 with mainly dry conditions, though runoff continued to support high river levels and areal flooding.

Finally, on April 19 and 20, a round of thunderstorms over central and eastern Oregon resulted in locally heavy rainfall with 1 to 2 inches falling in Wheeler County. Total rainfall of 1.67 inches was recorded just east of Mitchell. This heavy rain over a short period of time triggered a flash flood through Huddleston Heights and Nelson Street, and off of High Street and Rosenbaum with mud and debris blocking roads in and around the town of Mitchell. ❖

Multi-Day Rainfall Totals

Location	County	Amount	Dates
Meacham, OR	Umatilla	**7.18***	April 6 - 20
4 NW Meacham, OR	Umatilla	**6.97***	April 6 - 20
Emigrant Springs, OR	Umatilla	**6.97***	April 6 - 20
2 E Mitchell, OR	Wheeler	**2.37***	April 6 - 20
2 E Mitchell, OR	Wheeler	**1.67**	April 20 - 21 *Flash Flood Report*
9.8 N Elgin, OR	Union	**4.33***	April 6 - 20
1 E Cove, OR	Union	**3.89**	April 6 - 20
4 NE Lostine, OR	Wallowa	**3.14***	April 6 - 20
1 SE Flora, OR	Wallowa	**3.10***	April 6 - 20
1 S La Grande, OR	Union	**2.88**	April 6 - 20
Union, OR	Union	**2.87**	April 6 - 20

Figure 6. *Rainfall reports received during early to mid April.*

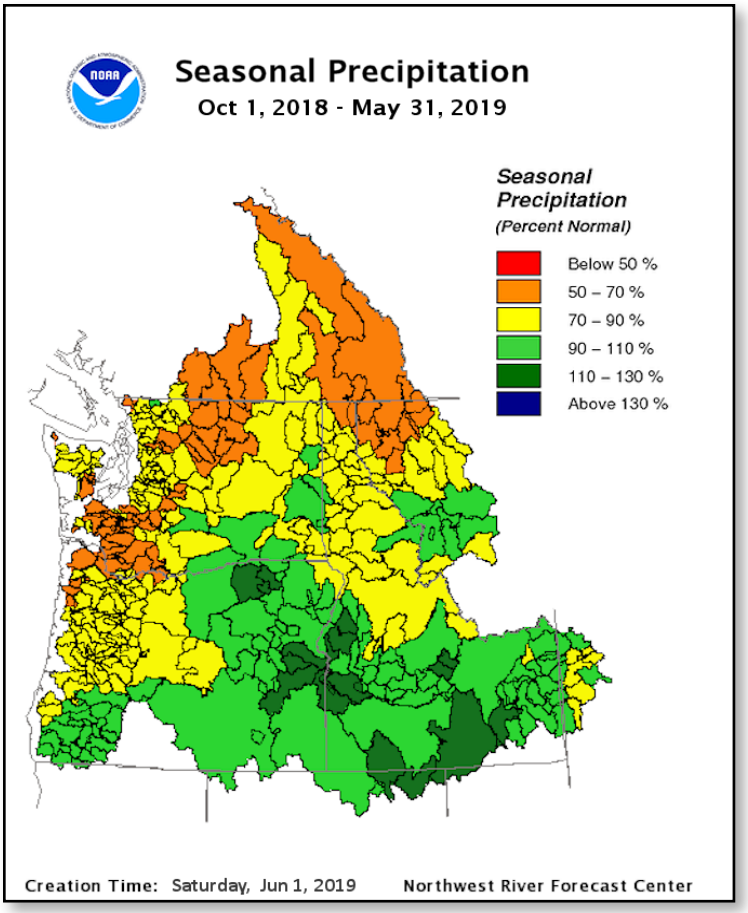


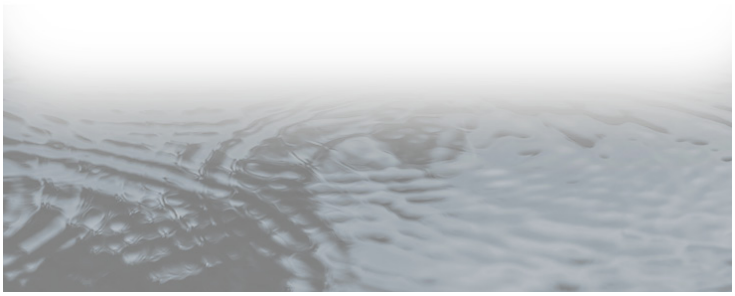
Water Year Precipitation
October 2018 - May 2019

By Marilyn Lohmann, Service Hydrologist

Location	Amount In Inches	Percent of Normal
Bend	14.18	154%
Heppner	13.38	118%
John Day City	9.88	100%
La Grande	18.75	147%
McNary Dam	8.94	126%
Madras	9.12	108%
Meacham	38.83	140%
Milton-Freewater	17.50	129%
Mitchell 2NE	16.53	154%
Pelton Dam	10.33	110%
Pendleton Airport	13.29	125%
Pilot Rock 1SE	17.36	151%
Prineville 4NW	10.49	124%
Redmond Airport	8.25	121%
Wallowa	20.21	154%
Wickiup Dam	18.19	100%
Cle Elum	16.24	83%
Dayton	15.23	95%
Ellensburg	8.53	116%
Hanford	7.04	124%
Ice Harbor Dam	11.25	122%
Mill Creek Dam	23.06	147%
Prosser	7.27	100%
Selah 2NE	7.01	101%
Sunnyside	6.76	110%
Yakima Airport	8.06	119%

The start of the water year brought above normal precipitation to much of the Inland Northwest in October, except for Central Oregon which came in below normal. Relatively dry conditions in November and December produced near to below normal precipitation for most locations. January precipitation was near to below normal across parts of central & southeast Washington and central Oregon, while above normal precipitation was reported elsewhere. February proved to be a cold and snowy month with well above normal precipitation across the board, as well as a number of new snowfall records. March saw near to below normal precipitation. April and May rebounded with above normal precipitation for most areas except southeast Washington which checked in with just below normal precipitation. ❖

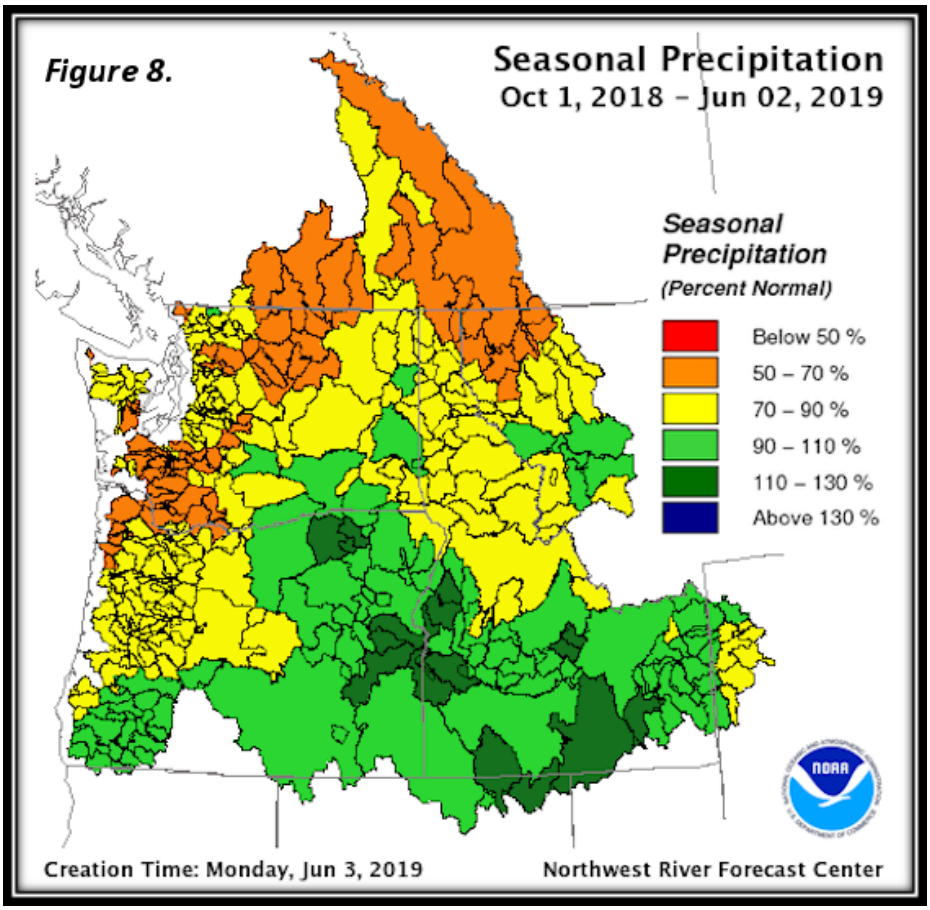




2019 Projected Fire Season

By Mary Wister, Incident Meteorologist / Fire Weather Program Leader

Above average rainfall and snowpack last winter and spring has deterred significant wildfires over eastern Washington and eastern Oregon. Since October 1, rainfall amounts have averaged about 70-100 percent of normal (figure 8). The snowpack on May 1 averaged around 80-100 percent of normal across the forecast area. The same statistics cannot be said for western Washington and northwest Oregon where it has been unusually dry and warm during the water year (since October 1). There have been numerous--albeit small--wildfires reported this spring west of the Cascades. According to a Twitter post on May 24 from the Washington Department of Natural Resources (DNR), DNR has responded to 345 fire calls so far this year and almost 50% of those calls were on the west side of the state. Based on this information, it is probably no surprise that the Northwest Geographical Area Coordination Center (GACC) predictive services have placed western Washington and northwest Oregon in the area that is at an above average risk for large wildfires for the next four months (figure 2).



It may bring a sigh of relief that most of eastern Washington and eastern Oregon are not under the "higher risk" potential for large costly wildfires from June through September for this year. However, that does not mean this area is under a low risk either. In fact, the GACC is predicting normal wildland fire conditions for the season. It will be highly unusual to not have at least one large grass fire based on the abundant grassy fuels from recent precipitation this year. Even two to three weeks of hot and dry conditions in the summer will lead to drying of vegetation that increases the flammability at a fast rate, even in the higher elevation forests.

Wildland and volunteer firefighters have a dangerous job but also work incredibly hard to save lives and property.

You can never be too safe by following some simple guidelines to avoid costly and deadly fires this summer season. The firefighting community will thank you for it.

1. Never leave a fire unattended. Contact 911, the park service, or the local fire department if you observe an unattended or out-of-control fire. For the best response time, provide an accurate description of the fire location.
2. If camping, have a shovel, water, and fire retardant in close range. Although you may be careful using fueling lanterns, stoves, and heaters, you never know if your camping neighbor is not.

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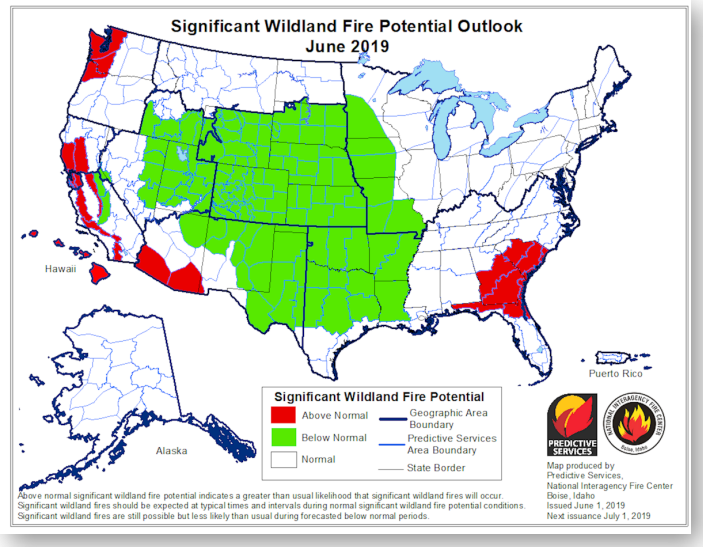
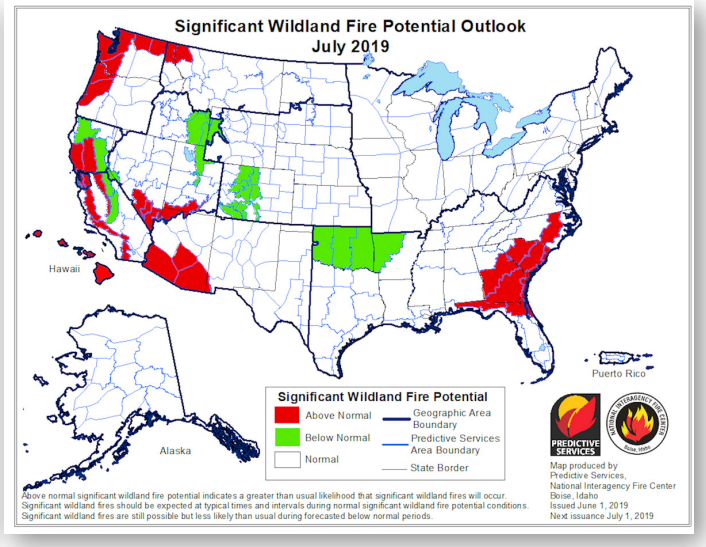
3. Monitor fireworks closely in early July whether or not you are lighting fireworks. Guideline #1 also applies to careless or illegal fireworks lit near grassy areas.

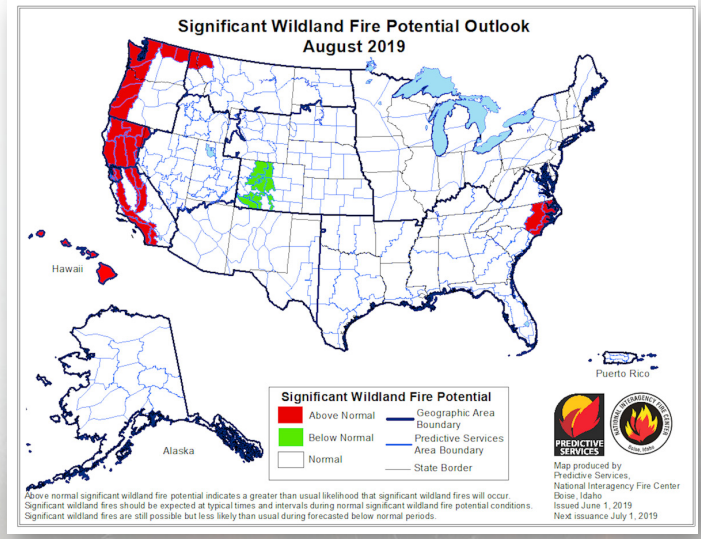
4. Avoid parking your vehicle with a hot exhaust near tall grass or other flammable vegetation. Don't let your vehicle idle on grassy areas.

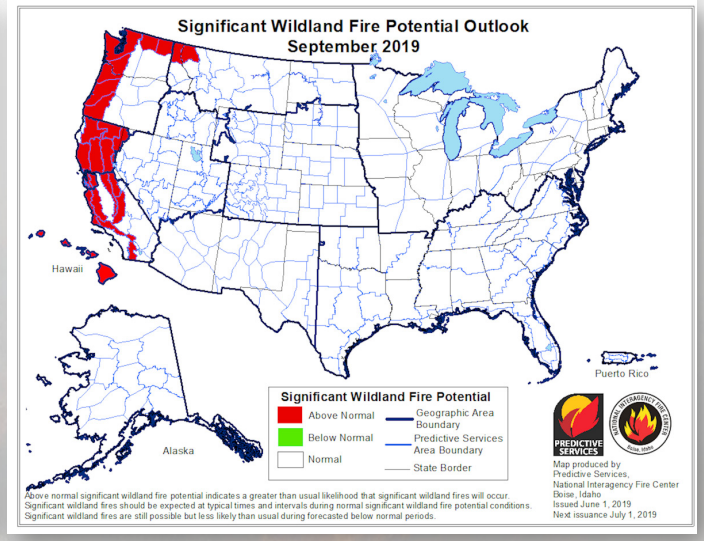
Simply by preventing one spark, you can eliminate a potentially large wildfire. Pay close attention to the weather and be extra diligent during hot, dry, and/or windy conditions. ❖

For more information visit: www.ready.gov/wildfires









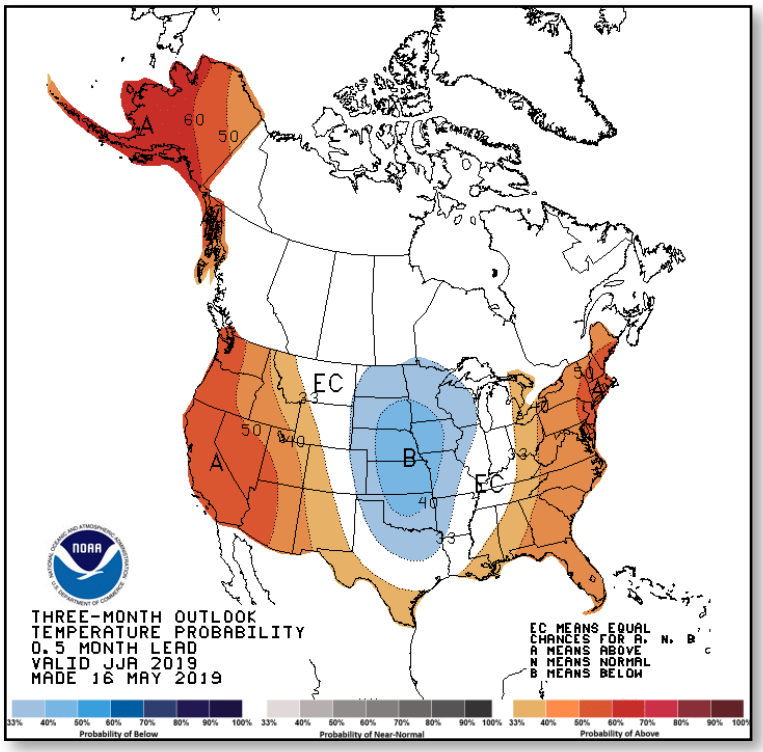
For full-sized graphics, https://www.nifc.gov/nicc/predictive/outlooks/monthly_seasonal_outlook.pdf

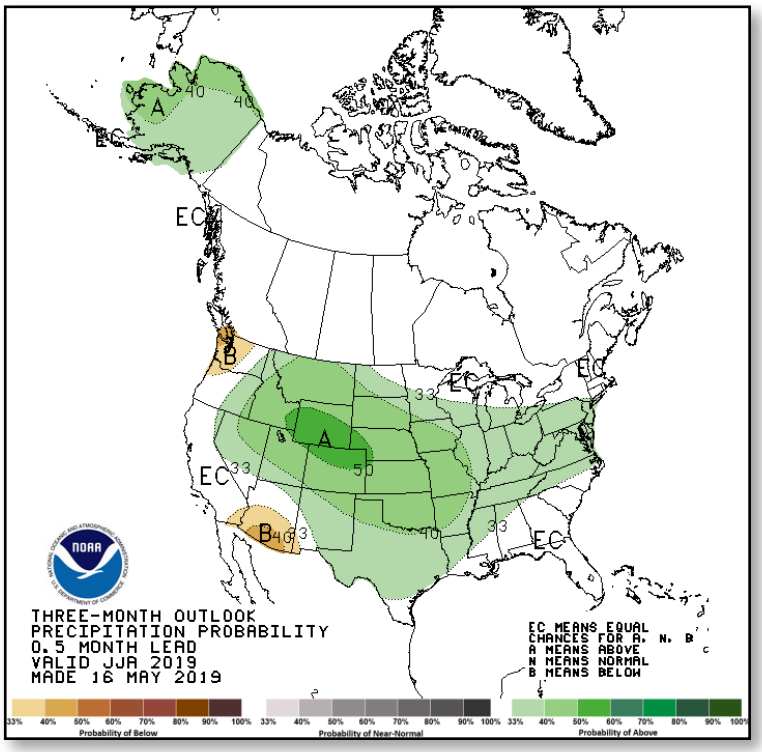
Summer 2019 Climate Outlook

By Marcus Austin, Warning Coordination Meteorologist

On the heels of a rather snowy February, when many monthly and seasonal snowfall records were broken, and a wet March and April, when flooding occurred across eastern Oregon, what will the remainder of Spring and Summer hold for the Inland Northwest? Given that we continue to see storm systems bringing occasional opportunities for rain, area rivers, streams, and lakes should be in good shape, which is excellent news for agricultural and recreational interests.

Looking well into the summer and early Fall, the three-month outlook from the Climate Prediction Center (CPC) shows a 40-50% chance of above normal temperatures and near to slightly above normal precipitation. This should occur as we move toward our more climatologically favored summer pattern with generally warmer and drier conditions as high pressure becomes the more prevalent weather feature. However, long-range and climate models do show a continuation of intermittent disturbances affecting the region through at least the end of June, with the main axis of the long-term ridge extending more across California and the Desert Southwest. This would be consistent with a forecast that is warmer but not necessarily drier than normal.





Figures 1 & 2. The Climate Prediction Center is calling for greater chances of above average temperatures (shaded orange) across most of the US for the three month period of July—August—September. They are also calling for equal chances of above, below or near normal precipitation amounts across the Pacific Northwest during the same three month period.

Looking at the climatological circulations El Niño and La Niña, April and May continued to display slightly above average sea surface temperatures (SSTs) in the equatorial pacific. This is consistent with a weak El Niño, which has persisted for quite some time now. Most forecasts call for a continuation of this pattern through much of the remainder of 2019. Impacts of El Niño and La Niña over the Pacific Northwest are negligible during the summer months, but become more apparent during the cool season. El Niños tend to bring warmer than normal winters, while La Niñas

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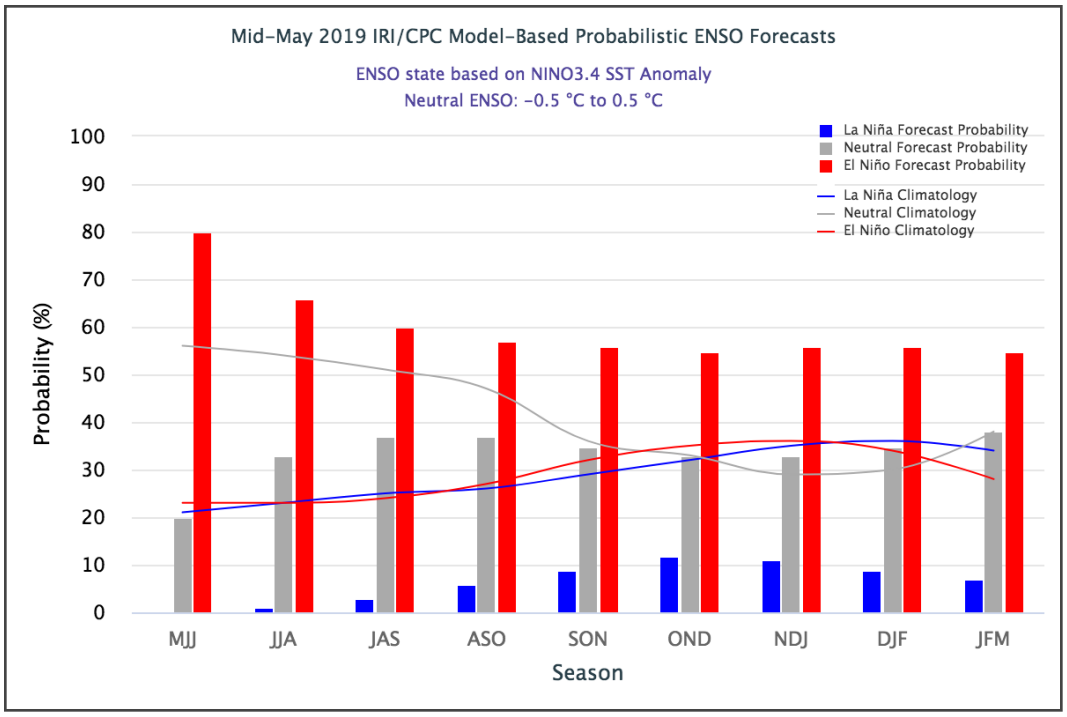
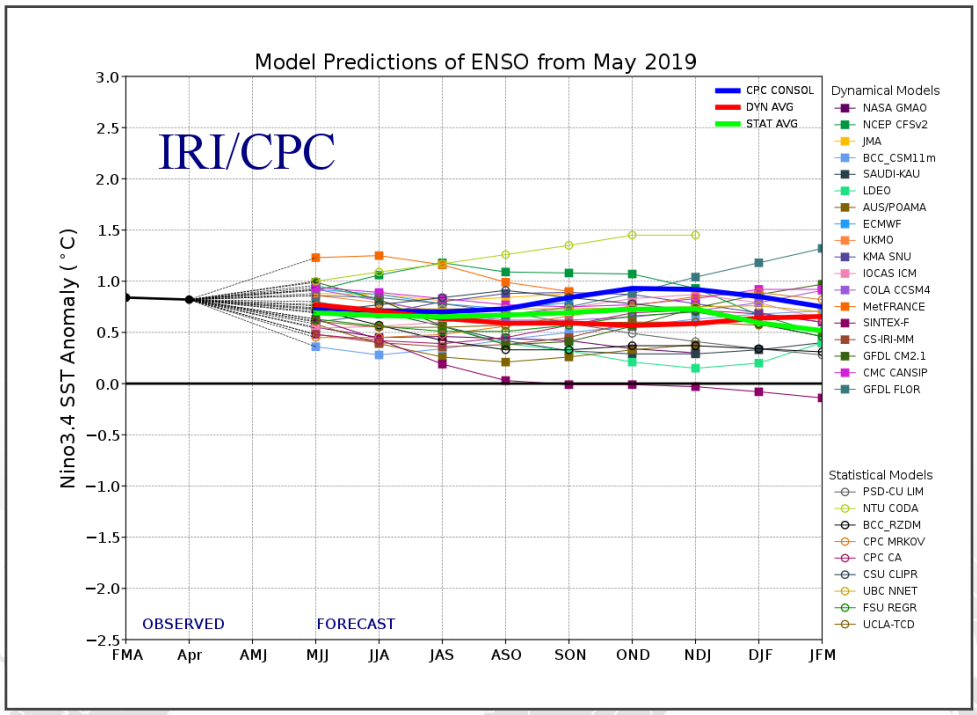
typically lead to cooler and wetter/snowier winters, much like the winter of 2016-2017, when many areas saw record snowfall. The strength of these oscillations is also a factor, as weaker phases don't fall as closely in line with expected seasonal affects. Recall this most recent winter, in which we had a weak El Niño. While most of the winter was fairly mild, the month of February was incredibly snowy and cold. While the long-term average may turn out to be on track, individual extreme events within those timeframes are not always captured. A reminder to always prepare for the worst and hope for the best. ❖





For more information on El Niño - Southern Oscillation, visit
http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml

A Visit To Hanford Meteorological Station

In late January, several NWS Pendleton employees visited and toured the Hanford Meteorological Station, located on the Hanford Site in northern Benton County, Washington. Grant Gutierrez, Data Manager at Mission Support Alliance, took us to a few of the many remote sensor sites, as well as a tour of their office. Handford Meteorological Station (HMS) has been in operation since late 1944, at the time of the Manhattan Project, and has maintained a detailed database and archive, including station logs books, observation forms and sensor charts. We found observations from May 1980, detailing the eruption of Mount St. Helens in southwest Washington. In addition to observations and sensor data, HMS provides analyses and forecast products to various agencies and interests within the Hanford Project. ❖

Staff Spotlight

Dan Slagle, Meteorologist

Dan was born and raised in a small town outside Omaha, in northeast Nebraska. Dan always had a strong interest in weather while growing up, especially seeing all the severe thunderstorms in the spring and summer months. He went on to study at the University of Nebraska and earned his degree in Atmospheric Sciences. Dan then worked for a private weather forecasting company in Grand Forks, ND that specializes in winter weather forecasting for many state DOTs around the country. He actually saw his first and only tornadoes while he was there.

Dan got into the National Weather Service in January 2015 in Elko, NV. There he fell in love with all the West has to offer. He loves the mountains, the canyons, the waterfalls, all the hiking, the camping, the backpacking and most of all, the breweries! He was promoted to Meteorologist Journeyman, and moved to Pendleton in July 2018. He enjoys his time here in the Pacific Northwest, and finds the people are friendly and the weather is beautiful. Many people thought that the last winter was tough, but after spending many harsh winters up in North Dakota, Dan feels it was quite benign by comparison. ❖

Photo Album

Snow, freezing fog, and a frosty tree against a crisp February sky.
Photo by A. Adams

A Great Blue Heron, a frequent visitor, near the NWS Pendleton office.
Photo by A. Adams

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