

2016 Annual Summary

January started off on a cold note. With fresh snow on the ground and clearing skies, nighttime lows dropped to around zero with daytime highs in the teens to lower 20s. But this was quickly replaced with milder and moister air mass by the 4th. This transition resulted in 4 to 7 inches of snow over North Central Washington on the 4th. A more significant storm on the 12th dumped 5 to 12 inches of snow for the Leavenworth area. More snow fell in this part of the region on the 18th with another 2 to 7 inches of snow. Impressive snow depth measurements in a few areas to finish out on the month with 40" in Mazama, 30" in Stehekin, and 27" in Winthrop and Waterville.

Otherwise for most of the region daytime temperatures consistently made it above freezing each day and nighttime lows weren't all that cold. Weak weather systems moved through the area on a regular basis, bringing rain or wet snow just about every day. Spokane Airport recorded at least a trace of rain or snow on 25 of the 31 days of the month. The biggest snow event for NE Washington and N Idaho was on the 16th where a widespread 2 to 5" fell. For the last ten days of the month, temperatures were very mild with readings into the 40s with even some low to mid 50s. This warmth coupled with the frequent rain reduced the snow on the ground significantly except locally near the Cascade valleys and Waterville Plateau where a deep snow pack remained. On the 29th a small low pressure system moved across the Palouse bringing wind gusts of 50 mph in Genessee and 55 mph to Thorton.

The first few days of **February** started off slightly on the cool side but then mild weather dominated the remainder of the month. Several weather systems tracked through during the month bringing wet weather for the Cascade crest and mountains of NE Washington and north Idaho. Westerly flow resulted in below normal precipitation for most of Central and Eastern Washington. The mild temperatures brought mostly rain to the valleys with snow in the mountains. Occasionally windy conditions also occurred on the Palouse with gusts to 45 mph in Pullman on the 6th...15th...18th...and 19th.

After a drier than normal February, the pattern turned wet in **March**. The first 13 days were especially wet across Central Washington and the Upper Columbia Basin, with around 2.5 inches of rain falling in the Wenatchee area, with even higher amounts of 4-5.50 inches falling in the Leavenworth and Stehekin areas. The north Idaho Panhandle was also hard hit with 3-5 inches of precipitation. This rain contributed to several rock slides and debris flows near Omak, Entiat, Pateros, Evans, and Bonners Ferry. The rain fell as snow in the mountains and the Methow Valley on occasion with Holden Village picking up 43 inches of snow during this 13 day stretch, with 17 inches in Mazama. These wet storms also brought a couple bouts of windy conditions with Pullman recording a 52 mph wind gust on the 1st and 45 mph on the 13th. A couple more wet storms were observed during the second half of the month on the 22nd and 28th. Both storms resulted in rain...with even snow at times across the higher portions of the Spokane and Coeur D'Alene, Palouse, and Camas Prairie. The storm on the 28th brought 4.5 inches of snow to Rathdrum and 2 inches in Elk. The month finished on a sunny and mild note.

Record March rain totals include Davenport with 3.70 inches, Wenatchee Waterplant 2.49 inches, as well as Lind with 2.46 inches. Other noteworthy cities include Chelan with 3.16 inches (2nd wettest), Winthrop 2.89 inches (3rd wettest), Spokane 3.30 inches (4th wettest), and Ephrata 1.60 inches (5th wettest).

After a wet March, **April** brought unseasonably warm temperatures. Here is a list of the stations that recorded the warmest April on record, along with a couple close calls.

Station	April 2016 Avg temp	Rank	Previous record	Year
Wenatchee Waterplant	59.1 F	1 st	58.5 F	1934
Bayview	48.2 F	1 st	46.8 F	1987
Bonnars Ferry	53.5 F	1 st	52.2 F	1941
Boundary Dam	52.3 F	1 st	49.5 F	1987
Grand Coulee	56.3 F	1 st	54.0 F	1977
La Crosse	54.7 F	1 st	54.1 F	1934
Mazama	52.1 F	1 st	49.7 F	1977
Plain	51.7 F	1 st	48.7 F	1941
Priest Rapids	61.6 F	1 st	60.2 F	1977
Pullman 2 NW	53.2 F	1 st	51.8 F	1987
Republic	51.6 F	1 st	51.4 F	1934
Spokane	54.7 F	2 nd	N/A	
Lewiston	57.5 F	3 rd	N/A	

The month also was drier than normal for most of the Inland NW. The one exception was the Wenatchee area where in just three hours they received the normal monthly amount of April rainfall when 0.50 inches fell on the 14th. This rain fell as a quick burst of heavy snow in the mountains with snow covered roads over Blewett and Stevens Passes. Also, localized heavy rain from thunderstorms developed on the 22nd over the North Idaho Panhandle and northeast Washington Mountains. The Diamond Lake area was hardest hit with a few reports of dime to quarter size hail and 2.57 inches of rain. Another observer near Spirit Lake recorded 1.2 inches.

May started off like much of April with unseasonably warm temperatures for the first eight days. High temperatures in the 70s to mid 80s were common. A couple rounds of thunderstorms occurred on the 4th and 5th across Eastern Washington and north Idaho. As storms developed over the Blue Mountains on the 4th and tracked north a gust front tracked across the Columbia Basin into the Spokane area with 40-50 mph gusts and blowing dust. The rest of May brought typical spring weather...with several swings between cool and showery weather and mild...dry weather. In between these air mass changes thunderstorms resulted. This includes the 18th when a strong cold front brought showers and thunderstorms to Eastern Washington and north Idaho. On the 22nd, strong thunderstorms dumping heavy rain developed around the Spokane

area, with the northwest side of town and Nine Mile Road hardest hit where 2-3 inches of rain in a short period of time led to water, debris, and significant standing and running water on area roads.

After a record hot summer in 2015 and a very active fire season where over 900,000 acres were burned across Central and Eastern Washington into north Idaho, many were wondering how this summer would end up. Thankfully, temperatures this summer were close to normal but with below normal precipitation. The exception was in portions of the Columbia Basin, Methow Valley, Okanogan Valley, and Lewiston area where some stations reported above normal amounts.

June started off with summer like conditions with high temperatures in the 90s from the 4th through the 7th. The pattern changed after that with several weather systems tracking through the region bringing scattered showers and isolated thunderstorms. During this transition to cooler weather a few severe thunderstorms developed on the Camas Prairie and Central Panhandle Mountains with golf ball size hail in Craigmont, and quarter size hail in Winchester and Avery. Just three days after the heat, Spokane and Pullman only topped out in the upper 50s on the 10th. High pressure returned at the very end of the month with temperatures warming back up into the upper 80s to mid 90s.

July was an active month across the Inland NW with several rounds of showers and thunderstorms. One system on the 10th brought cool and rainy conditions to Lewiston with a high of only 60 degrees, making it the 3rd coldest July high temperature on record. A two day rain total of 1.26 inches was measured in Lewiston as well. On the 19th a storm about five miles east of Chelan produced flash flooding and debris flows, including McNeil Canyon Road and Highway 97 causing road closures and damage to private property. The strongest storms occurred on the 22nd and 26th. On the 22nd a low pressure system tracked across northern Washington and Idaho producing abundant lightning, severe thunderstorms, and even two weak tornadoes on the Waterville Plateau and in Airway Heights. Downed trees and nickel size hail from thunderstorms was also reported in Spokane and Mead. Storms in the North Cascades resulting in mud and debris on SR 153 and also on roads near Methow and Brewster. On the 26th strong thunderstorms near the Canadian border sent out an outflow boundary with downed trees between Addy and Chewelah. A very wet thunderstorm in Winthrop dumped 1.22 inches making it the third wettest July day on record.

August brought breezy to windy conditions several times during the month as cold fronts swept through the region. These winds resulted in large grass fires at times over the region. The most noteworthy of these fronts went through on the 21st with very warm, dry, and windy conditions during the afternoon and evening ahead of the front. Two large fires developed in the Spokane area with another north of Davenport near Porcupine Bay which jumped the Spokane River and headed towards Wellpinit. The fires burned several homes and structures. Another fire burned several structures near Deep Lake about eight miles southeast of Northport. Another strong front on the 18th came down from Canada, sending strong winds down the Purcell Trench in North Idaho with Sandpoint reporting a wind gust to 47 mph. This resulted in downed trees and power outages. The other noteworthy event was a low pressure system that

tracked through the region from the 7th through the 9th bringing cool and showery conditions, isolated thunderstorms, with yet another weak brief tornado in Airway Heights.

This fall sure provided a several swings in the weather. **September** lived up to its reputation as being a quiet month weather wise with just a few noteworthy events. Scattered showers and thunderstorms occurred on the 8th which produced a 42 mph wind gust in Spokane. For most of the region rain was below normal for the month except near the Cascade crest and Idaho Panhandle where a round of heavy rain on the 17th brought one to two inches. One last stretch of summer like temperatures arrived from the 26th through the 30th with highs in the 80s common...with Lewiston even reaching 91 degrees on the 26th.

After a quiet September, some were hoping that **October** would provide more of the same as mild October sunny days are not uncommon in the Inland Northwest. This October however was just the opposite with lots of cloudy and rainy days setting new October rainfall records at most locations. Spokane even recorded its wettest month ever with 6.23 inches with measurable rain recorded on 22 days. The cloudy skies resulted in cooler than normal high temperatures but warmer than normal low temperatures. Freezing temperatures were uncommon, except on the 11th and 12th with a brief cool spell. Here is a table of the monthly records that were set during the month.

Site	Oct 2016 rain total (inches)	Previous record (year)
Priest River, ID	10.64"	8.31" (1947)
St. Maries, ID	9.19"	6.31" (1955)
Kellogg, ID	8.79"	7.23" (1950)
Boundary Dam, WA	8.76"	3.97" (1968)
Bonnars Ferry, ID	7.99"	7.64" (1947)
Spokane Airport, WA	6.23"	5.41" (1947)
Moscow, ID	6.17"	4.51" (1994)
Potlatch, ID	6.07"	5.25" (1955)
Rosalia, WA	5.90"	4.42" (1951)
Colville, WA	5.82"	4.81" (1947)
Pullman 2 NW, WA	5.69"	4.29" (1950)
Davenport, WA	5.06"	3.94" (1947)
Republic, WA	4.87"	4.27" (1950)
Ritzville, WA	4.86"	3.94" (1947)
Grand Coulee Dam, WA	3.98"	2.95" (1947)
Chief Joseph Dam, WA	3.80"	2.04" (1956)
Winthrop, WA	3.72"	3.13" (2003)
Waterville, WA	3.47"	2.94" (1947)
Ephrata, WA	2.52"	1.92" (1950)
Priest Rapids Dam, WA	2.22"	1.92" (1957)
Wenatchee Airport, WA	2.03"	1.72" (1962)

After a record wet October, the weather pattern changed in **November**. The first half of the month was much warmer and drier than normal with high temperatures in the 50s to mid 60s

common with below freezing temperatures at night still hard to find. The pattern then turned cooler and wetter although temperatures still remained slightly above normal for most locations through the rest of the month. The month as a whole in terms of average temperatures finished the warmest on record in Ephrata, Wenatchee, Mazama, Ritzville, Chewelah, and Bonners Ferry. Lewiston came in 3rd warmest, and Spokane 4th warmest. Lewiston finally recorded its first freeze of the season on Nov 16th which was the 3rd latest first freeze on record. The cooler and wetter pattern was good news for ski resorts with several opening near or just after Thanksgiving.

After a record wet October and near record warm November, the pattern sure changed in **December**. An active polar jet stream occasionally brought very cold weather while an also active Pacific jet stream brought several storms into the region. These two air masses particularly collided over Oregon and southern Washington resulting in a very snowy pattern for the Lewiston area where 19.7 inches fell, making it the snowiest December on record. The 14th and 15th is when the snowiest period occurred in Lewiston with 7.6 inches. The Cascade crest received a lot of snow during the month with several significant storms dumping 1 to 2 feet. Stehekin received 97 inches for the month, with 43 inches in Mazama. For NE Washington the snowiest period occurred on the 23rd with widespread snow accumulations of 3 to 7 inches. An arctic freeze hit the region on the 16th and 17th with low temperatures mostly in the single digits both above and below zero. A few colder pockets occurred with -14F in Deer Park, -13 Odessa, and -12F in Pullman and Moscow, and -10F in Davenport, Mazama, Newport, and Prichard.

Site: Wenatchee, WA (Water Plant)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average High Temp	35.2	47.8	55.5	71.7	75.1	81.4	85.6	88.8	76.9	59.5	53.6	32.7	63.7
Dep from Normal	-0.7	+4.4	+0.4	+7.5	+2.1	+1.6	-2.6	+1.2	-1.4	-4.0	+7.3	-2.1	+1.1

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average Low Temp	27.9	30.2	35.1	46.3	52.1	56.6	61.7	61.2	51.2	43.1	40.1	20.5	43.8
Dep from Normal	+2.5	+2.5	+0.8	+5.6	+3.3	+1.0	+0.2	+0.7	-0.5	+1.9	+7.9	-4.7	+1.8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Precipitation	2.42	.40	2.49	.51	.88	.41	.30	.00	.04	2.02	.39	.60	10.46
Dep from Normal	1.09	-.60	1.88	-.02	+.19	-.25	-.04	-.19	-.26	1.50	-.99	-.93	+1.38

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Snowfall	13.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	23.1
Dep from Normal	+9.1	-1.7	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.9	+2.3	+7.4

Site: Lewiston, ID

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average High Temp	43.6	53.0	56.9	69.7	73.9	83.1	87.2	90.8	76.6	61.1	54.8	34.6	65.4
Dep from Normal	+2.0	+6.5	+2.0	+7.4	+3.0	+4.6	-2.1	+2.0	-1.6	-1.5	+6.6	-4.9	+2.0

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average Low Temp	31.3	35.7	37.0	45.2	50.0	54.3	59.5	59.5	52.0	46.0	39.4	22.7	44.4
Dep from Normal	+1.7	+4.8	+1.4	+4.9	-3.0	+0.9	-0.1	+0.3	+1.0	+4.9	+5.3	-5.3	+1.4

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Precipitation	.93	.65	2.11	1.60	1.53	1.01	1.57	.24	.55	2.66	.63	1.59	15.07
Dep from Normal	-.15	-.13	+.96	-.28	-.08	-.23	+.91	-.45	-.12	1.70	-.55	+.62	+2.20

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Snowfall	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.7	20.4
Dep from Normal	-1.9	-1.9	-0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.8	+16.2	+9.9

Site: Spokane, WA

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average High Temp	35.4	45.7	51.2	66.2	69.5	76.8	81.0	84.6	71.8	54.8	49.7	29.2	59.7
Dep from Normal	+1.0	+6.1	+2.3	+9.0	+3.1	+3.0	-2.3	+1.7	-1.1	-3.2	+8.1	-3.0	+2.1

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average Low Temp	26.5	32.0	34.2	43.2	47.6	52.9	56.9	57.8	47.6	41.9	37.2	16.9	41.2
Dep from Normal	+1.8	+5.6	+2.6	+6.4	+3.8	+2.5	+0.6	+2.0	+0.2	+4.7	+7.4	-6.6	+2.6

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Precipitation	2.74	.72	3.30	.32	.78	.51	.27	.16	.21	6.23	1.57	1.49	18.30
Dep from Normal	+.95	-.61	+1.69	-.96	-.84	-.74	-.37	-.43	-.46	5.05	-.73	-.81	+1.74

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Snowfall	6.7	1.3	0.6	Tr	0.0	Tr	0.0	0.0	0.0	0.0	3.3	19.0	30.9
Dep from Normal	-4.7	-5.5	-2.9	-1.0	-0.1	0.0	0.0	0.0	0.0	-0.1	-4.1	+4.4	-14.0