

2009 Annual Summary

As the New Year rang in, the snowy weather pattern continued. A couple of storms quickly hit the region on **January 1st** and **2nd**, with 12" of snowfall at Spirit Lake, ID. Skies briefly cleared allowing temperatures to drop below 0 degrees on the 3rd. The mercury dropped to -15F at Priest Lake and Coeur d'Alene, -11F at George, and -20F at Deer Park. The last of the snowstorms arrived on the evening of the 4th. Another 5 to 12" of snow fell on an already snow-weary region. While Spokane Airport officially measured 8.9", more than a foot of snow fell in the area around Wenatchee as well as near Moscow.

The weather pattern finally changed on the 6th of January, which led to a new set of weather problems. On the night of the 6th a strong windstorm hit the east slopes of the Cascades from Wenatchee to Yakima. Half of a roof was torn off of a house in Wenatchee Heights while some businesses in Wenatchee suffered damage to their windows. Power was out for most of the evening in town as power lines went down. Wind gusts as high as 75 mph were recorded in the area, with the sensor at the top of Mission Ridge measuring a gust to 121 mph.

Warm and moist air from the southwest changed the snow to rain. This coupled with strong winds dramatically reduced the snowpack, leading to flooding in some areas. Plain, Washington (between Wenatchee and Stevens Pass) measured 4.14" of rain in 24 hours, and flooding in the area washed out part of the road near the Highway 2 and 97 junction.

Little did we realize it at the time, but the weather would be markedly different for the remainder of the winter season. High pressure dominated the area from mid-January through mid-**February**, steering all of the storms away from our region. The 45 day period from January 7th to February 21st was driest ever in Spokane. The inactive weather pattern allowed dense freezing fog to form. This resulted in a slow ice-storm of sorts along the Highway 2 corridor between Spokane and Almira. Ice and frost built up on power lines causing numerous power outages.

While most folks in the valleys didn't miss the snow, the absence of snowfall in the mountains was beginning to be noticeable. The mountain snowpack dipped to around 70-85% of normal by late February. A moist Pacific storm on the 25th brought around 2 feet of snow to the Idaho Panhandle ski resorts, which helped the snowpack a little. By the end of February, Holden Village (in the Cascades) was 5th on the list of least snowy winters dating back to 1930.

As with most of the articles that look back and summarize a winter season, we again are faced with classifying this winter in a historical sense. Trying to come up with a single measure for a winter is often difficult. For instance, how do you compare a cold but dry winter with a mild winter that had a few heavy snowfalls? One measure that was derived is called snow-depth days. This number is simply calculated by adding up the daily snow depth each day of the winter. The theory is that this measures the winter

as a whole. It takes into account heavy snowfall events, but also tends to downplay winters where that snow did not last very long. The coldness of the winter is measured by the fact that even a few inches of snow on the ground will last day after day in sub-freezing air. Below is a table of the top 10 snow-depth day winters at Spokane:

1968-69	1529 – Deepest snow depth ever of 42". Jan 11 degrees below normal.
1951-52	1186 – Snowy Dec & Jan, snow on the ground till mid-March.
1992-93	1059 – Above normal snowfall each month Nov-Feb
1984-85	1019 – Dec-Mar much colder than normal.
1948-49	993 – Coldest Jan ever; 22 nights Dec-Feb were sub-zero
1978-79	917 – 10" or more snow depth for 45 straight days.
1949-50	821 – Snowiest winter ever.
1985-86	808 – Nearly 2 feet of snow in November with 8 sub-zero nights.
2000-01	729 – An anomaly. Drought winter with a few inches snow depth.
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2007-08	432 – Only 10 days with snow depth 10" or more
2008-09	510 – Snowiest month ever, but almost no snow after Jan 5th

As can be seen, the recent two winters, while snowier than normal, pale somewhat in comparison to some of the historically harsh winters. What made this winter so remarkable was the short amount of time over which so much snow fell. There was more than a winter's-worth of snow the top of many buildings by early January, causing many roof collapses in the Spokane area.

After a fairly cold and snowy winter, Inland Northwest residents were hoping to be treated to an early warm spring. Unfortunately that wasn't to be. While La Nina conditions in the equatorial Pacific were slowly decaying, the effects of La Nina persisted through most of the spring.

March started off on the wet side with a moist Pacific storm system arriving during the first few days. The Spokane airport recorded 0.85" of precipitation over the first 3 days of the month, while Omak had 0.68" and Coeur d'Alene had 0.84" in that same period. Temperatures were generally warm during this event so the majority of the precipitation fell as rain in the lower elevations. But then a cold Canadian air mass moved into the Pacific Northwest causing well-below normal temperatures. Everyone stayed below freezing on the 10th and 11th. Coeur d'Alene failed to even reach 20 degrees for a high on the 10th. By the morning of the 11th, numerous sites were setting record low temperatures. Priest Lake dropped all the way to -13F while the Coeur d'Alene airport dropped to -11F. After this cold snap, temperatures returned to near-normal readings for March, but the weather remained wet with measurable precipitation on more days than not. By the end of the month, yet another cold weather system dropped into the region. While not nearly as frigid as the mid-March event, this storm brought significant spring snow to many locations. A spotter in Palouse, Washington measured 6.3" of snow on the morning of the 29th. Sandpoint picked up 4.2" and the Spokane Airport received 3.9". This latest addition of snowfall pushed the official Spokane seasonal total into first place on the list of snowiest winters ever. There would be a few more light

snowfalls to reach the final seasonal total of 97.7", which topped the previous snowy winter of 93.5" in 1949/50. As a whole, the month of March was wetter than average and much cooler than normal, with daytime temperatures an average of 5-7 degrees below average.

The cool and snowy spring weather persisted into the first few days of **April**. The Spokane Airport added to its seasonal total with 1.4" and 2.4" on the 1st and 2nd. But the heavy snow was over the Palouse. Moscow picked up 7" of snow, Troy received 6.5", and the town of Palouse had 6" of new snow. Inland Northwest residents were now truly wondering if this winter would ever end. They got their answer as temperatures rebounded quickly to above-normal readings in just a few days. The warmth was short-lived as usual with a cool wet Pacific storm system moving through during the middle of the month. But even warmer weather ensued as most locations warmed into the 70s with the Columbia Basin reaching the mid 80s. Wenatchee Airport set daily high temperature records on both the 20th and 21st with highs of 83 and 84 respectively. While April was still a bit cooler than normal, the two warm and dry episodes during the month meant drier conditions for many locations.

This warmer and drier weather trend continued into the month of **May**. The first part of the month saw near-normal temperatures and rainfall. On the evening of the 6th, a few thunderstorms developed. A funnel cloud was spotted near Odessa, and then a tornado actually touched down north of Davenport causing mainly tree damage. Strong thunderstorm winds also caused some damage south of Deer Park. The cool and wet weather ended by mid-month as temperatures began to climb. On the 18th the mercury climbed into the 80s in most locations. Strong thunderstorms developed near Lewiston that evening. Hail up to 1 inch in diameter fell in Lapwai and Cloverland. High pressure then built into the area for warm and dry weather through the remainder of the month. The last 3 days of May saw much-above normal temperatures. Many locations saw their first taste of 90 degree weather, with Wenatchee reaching 94 degrees.

This past summer saw the usual number of warm, sunny days and mild nights. Overall, it was a bit warmer than normal. The summer of 2009 ranks 10 out of 85 for Wenatchee, 36 out of 129 for Lewiston, and 27 out of 129 for Spokane. But in general it was still cooler than the recent summers of 2003-2007. Meanwhile Seattle and Phoenix were experiencing their hottest July ever, while folks from Iowa to Pennsylvania saw their coldest July ever.

June started out on the warm side with temperatures reaching near 90 on the 3rd and 4th. This warm spell came to a quick end as a cooler and unstable air mass moved into the area. Strong thunderstorms were prevalent on the 5th through the 7th. The storms on the 6th were noteworthy as 4 tornadoes were spawned between Creston and Wilbur in eastern Washington. These tornadoes were fairly weak and did not cause any damage, but there were several impressive photos taken of them. They can be seen at: http://www.wrh.noaa.gov/otx/photo_gallery/Jun6_Creston_tornadoes.php. There were more strong thunderstorms on the 12th with nickel-sized hail and funnel clouds reported near Ephrata and Moses Lake. Heavy rain from thunderstorms dropped 1.41" in 40

minutes near Northport, WA on the 15th. An observer at Inchelium picked up 2.90" from storms. The heavy rains caused some road washouts in the area. A very cold Pacific storm then moved into the area with heavy rains on the 19th. Spokane Airport only reached a high temperature of 55 degrees on the 21st. But warmer weather quickly returned with near normal temperatures to finish out the month.

While many **July** 4th weekends in the Inland Northwest are less than summer-like, this year the holiday weekend was, with temperatures in the 90s across the region. A cold front for the start of the new work week brought rain and much cooler temperatures to the region. Some locations struggled to reach 70 degrees on the 8th. After a brief warm spell, an even colder air mass moved into the area. Thunderstorms that moved in with the front brought 1 inch hail stones to Kettle Falls. Behind the front, Pullman and Kellogg only reached a high of 62 degrees on the 13th; not exactly mid-July weather. But after this cold episode, summer took hold on the Inland Northwest. Temperatures for the remainder of the month would be in the 80s and 90s with a few 100s in the usual places like Lewiston, which hit 101 on the 22nd. Thunderstorms on the 25th brought more heavy rain and small hail to the communities of northeast Washington. On the evening of the 27th, thunderstorms from Canada moved across the northern Panhandle. One of these storms produced strong winds knocking down trees in the town of Priest River. The next afternoon, another strong thunderstorm developed near Priest Lake. This storm dropped 1 inch hail near Coolin. Damaging winds from the storm knocked down trees from Priest Lake to Newport. The worst damage occurred in a small community just east of Newport, where numerous trees were blown down, four of which landed on a house.

August started off with the hottest weather of the summer. Readings on the 1st included 107 at Wenatchee, 106 at Lewiston, Omak, Moses Lake, Ephrata and La Crosse, and 103 at Ritzville and Colville. A weak cool front provided some relief, as temperatures dropped back into the 90s for the remainder of the first week of August. A heavy rainstorm moved into the area from the south on the 6th and 7th. This storm brought widespread rain to the Panhandle and extreme eastern Washington. Lewiston received a total of 1.41" of rain from the event and had a high temperature of only 68 on the 7th, well below the normal of 89 degrees. Before summer heat could return, another cold front moved into the region a week later. Once again a number of locations had highs only in the 60s on the 14th. But the heat would return. Temperatures quickly jumped back into the 90s and lower 100s. But a couple of weaker cool fronts would provide breaks in the heat on the 23rd and 29th. As a result, while the average temperatures for the summer would show it to be warmer than normal, the frequent Pacific fronts and associated rainfall would provide breaks in the heat about every 7 to 10 days.

September started off the fall season with beautiful weather. After a rather hot Labor Day weekend, the weather turned cooler as a Pacific front moved through the area on the 6th. A few severe thunderstorms developed over parts of northeast Washington and north Idaho. Penny-sized hail fell at Reardan and nickel-sized hail fell near Lone, while strong thunderstorm winds caused damage at Chewelah, Usk, Metaline, and Priest

Lake. Winds gusted to 50 mph in many locations from Omak and Lake Chelan to the Spokane area. Temperatures quickly rebounded by the middle of the month. Omak, Wenatchee and Winthrop set record high temperatures on the 13th with readings in the mid-90s. After another quick cool spell which brought the majority of the rain for the month, temperatures once again were soaring to near record readings by the 23rd. Pullman reached 93 degrees to tie their record for the day. For the month, temperatures on average were warmer than normal.

The summer-like warmth of September gave way to much colder weather in **October**. The month started seasonable with temperatures in the 50s and 60s. But on the 9th a cold Canadian front brought much colder air into the area. Temperatures plummeted with readings on the 11th and 12th remaining below 40 degrees in many areas. Nighttime lows were cold even by mid-winter standards. Bayview, Idaho had a low of 8 degrees on the 10th, breaking its old record by 13 degrees! The mercury read 10 degrees at the NWS office in Spokane. On the 11th the temperature at Pullman was 8 degrees, breaking its old record by 12 degrees. The affect on the agricultural industry was significant, with many farmers having to pick apples and grapes early to avoid the extreme temperatures. The cold snap ended on the 14th as a Pacific front brought warmer and wetter weather to the area. By the 17th temperatures were back into the upper 60s and lower 70s. It didn't last though, and readings dropped back to more normal values. The weather pattern also became rather wet. Some years see the dry weather of summer extend into October. This wasn't the case in 2009. Two wet fronts on the 23rd and 26th each brought up to an inch of rain to many locations. Some towns in the Idaho panhandle received just over 2" of rain from each storm. 2009 was the wettest October in Wenatchee since 1997 and was the 15th wettest since 1925. Halloween ended the month with a windy cold front. Wind gusts as high as 53 miles per hour were observed in the Cascades.

November weather was fairly close to average. Temperatures generally ranged in the 40s and 50s throughout the month. A cold front on the 13th brought the first measurable snow of the season to many low land locations. While most sites only saw around an inch, a few spots picked up 3 or 4 inches of the white stuff. Temperatures on that day also stayed below freezing for the first time of the season in some spots. The lowland snow didn't last, as warmer temperatures and rain moved in by the middle of the month. A somewhat stronger snow event occurred on the 22nd. Anatone in southeast Washington received 7" of snow, and Viola in the southern Panhandle picked up 9.5". Another cold front brought widespread rain to the region, with just about everyone picking up at least a quarter of an inch. Overall, though, the month was a dry one, with only about 60% the normal amount of precipitation.

December started off dry and seasonable, but this would quickly change. The first Canadian air mass of the winter made its way into the Inland Northwest on the 6th. Northeast winds gusted to 52 mph at Deer Park and 44 mph at the Spokane Airport, causing wind chill temperatures to drop to -10°F to -20°F. High temperatures for the next few days were well below normal. Daytime high temperatures in the teens were fairly common, with a few locations in the Idaho Panhandle staying below 10°. Lows

were in the single digits above and below zero. For many areas, these cold temperatures occurred with little or no snow on the ground. This fact, combined with the relatively wet soils from all of the November rain, resulted in deep frozen soil. Temperatures began to moderate by the 14th as a Pacific storm system moved onshore, spreading 2 to 5 inches of snow over most of the region. Leavenworth picked up 7.5" and Inchelium received 6". Temperatures continued to rise, changing the snow to rain in most locations. The odd situation was that the rain and melted snow coupled with the deep frozen ground caused flooding in some locations, as the water couldn't soak into the ground. Temperatures remained above freezing for about a week, from the 16th to the 22nd. This ruined any chances for a white Christmas for most Inland Northwest residents. A large area of strong high pressure developed over the western U.S. just before Christmas while cool, dry air from Canada moved into the Inland Northwest. The month finished with a weak storm system that brought light snowfall to most of the region, giving most of us a little snow on the ground to start the New Year.

Site: Wenatchee, WA (Water Plant)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average High Temp	33.5	40.9	49.9	63.6	73.3	82.3	91.6	88.9	80.9	57.5	48.9	31.7	61.9
Dep from Normal	-1.6	-1.9	-5.0	-1.0	+0.2	+2.2	+3.8	+1.7	+3.2	-6.2	+3.0	-4.0	+1.2

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average Low Temp	22.8	28.0	30.8	39.3	47.3	57.0	62.8	61.4	52.6	48.3	33.3	20.3	42.0
Dep from Normal	-0.4	+0.6	-3.1	-1.5	-1.3	+1.5	+1.9	+1.2	+1.4	-1.7	+1.1	-4.9	+0.2

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Precipitation	1.14	0.42	1.14	0.35	0.35	0.48	0.19	0.00	0.28	1.22	0.76	0.48	6.81
Dep from Normal	-.21	-.52	+.50	-.16	-.16	-.21	-.11	-.41	-.12	+.73	-.60	-1.04	-1.63

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Snowfall	8.2	1.1	0.5	0	0	0	0	0	0	0	0	6.4	16.2
Dep from Normal	-1.2	-3.1	-0.4	0	0	0	0	0	0	0	-2.4	-4.2	-11.3

Site: Lewiston, ID

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average High Temp	39.3	47.8	48.8	61.3	73.5	79.9	91.6	88.3	83.1	58.6	49.0	35.4	63.1
Dep from Normal	-0.1	+2.2	-5.0	-0.3	+3.6	+2.0	+4.1	+0.7	+6.4	-3.3	+2.2	-3.8	+0.8

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average Low Temp	28.5	31.4	32.5	39.4	47.2	54.3	61.1	61.2	53.2	38.5	33.8	23.0	42.0
Dep from Normal	+0.6	+0.2	-3.1	-1.2	+0.3	+0.7	+1.9	+1.9	+2.3	-2.7	-0.3	-4.7	-0.4

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Precipitation	1.45	0.53	2.12	0.82	0.86	0.82	0.48	1.76	0.09	0.76	0.71	1.04	11.44
Dep from Normal	+0.31	-0.42	+1.00	-0.49	-0.70	-0.34	-0.24	+1.01	-0.72	-0.20	-0.50	-0.01	-1.49

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Snowfall	3.0	Tr	1.7	Tr	0	0	0	0	0	0	0	2.6	7.3
Dep from Normal	-2.7	-2.2	+0.6	-0.1	0	0	0	0	0	0	0	-2.2	-6.6

Site: Spokane, WA

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average High Temp	31.2	36.3	41.7	55.1	68.0	75.1	85.5	83.1	77.0	52.2	43.4	29.6	56.5
Dep from Normal	-1.6	-3.0	-6.9	-2.4	+1.8	+1.2	+3.0	+0.5	+4.5	-6.3	+2.3	-3.2	-0.7

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
Average Low Temp	20.6	24.8	27.5	35.4	43.4	51.3	58.8	57.6	50.8	34.3	30.4	19.1	37.8
Dep from Normal	-1.1	-0.9	-2.9	-0.1	+0.8	+2.1	+4.2	+3.1	+4.9	-1.5	+1.7	-2.5	+0.6

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Precipitation	1.19	1.21	2.43	1.29	0.93	1.18	0.48	0.74	0.49	2.31	1.31	1.88	15.44
Dep from Normal	-.63	-.30	+.90	+.01	-.67	.00	-.28	+.06	-.27	+1.25	-.93	-.37	-1.23

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Snowfall	17.6	4.1	9.5	3.9	0	0	0	0	0	Tr	4.7	6.7	46.5
Dep from Normal	+3.4	-2.6	+5.9	+3.0	-0.2	0	0	0	0	-0.3	-2.0	-8.4	+0.1