YOUR NATIONAL WEATHER SERVICE SPOKANE QUARTERLY REPORT

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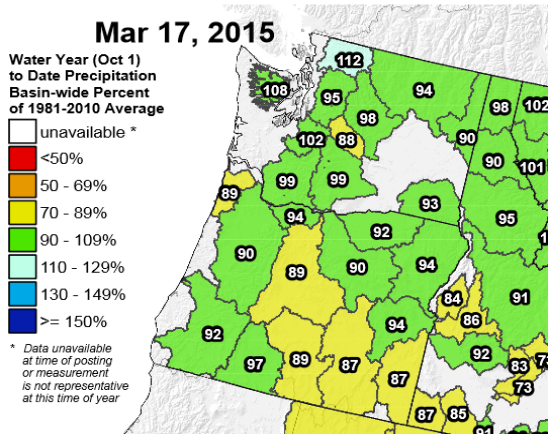
The Weather Watcher

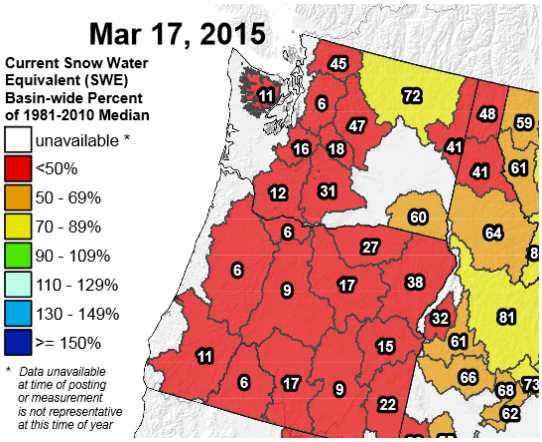
of the Inland Northwest

www.weather.gov/Spokane

Mountain Snow at Record Lows?

Many across the Inland Northwest may be wondering if our low mountain snow pack is near record levels, is there is any relief in sight? First, let's look at precipitation in the mountains. Given the lack of snow pack in the mountains, the assumption might be we haven't had much moisture. As the images below shows, this is clearly not the case. All of the Pacific Northwest mountains have received near normal precipitation since the start of the Water Year (October 1st), as seen in the image on the left. So, how does our snow pack look?





Clearly, a good portion of what has fallen in the mountains has been in the form of rain, as seen in the right-hand image which shows the current snow water equivalent. This is especially true across the majority of the Cascades. Much of the rain fell early in the season, October and November, before a snow pack had been established, and then during the winter as well.

The snow pack is low this year, but most areas are not at record levels. You may be asking yourself "what's the problem?" The mountains received their normal precipitation, but just in the form of rain instead of snow. The issue is: the mountain snow pack also acts like summer precipitation in the western U.S. In other words, since the western states don't receive much rain in the summer, the melting of mountain snow pack and runoff behave a lot like rain and keep our rivers running through the drier summer and fall months. With a low snow pack, the mountain snow will likely melt earlier than normal. This will likely result in low stream flows in the late summer and fall. Whether this has an impact to irrigation, fish, or agriculture remains to be seen. The Northwest snow pack typically peaks around April 1st, so let's keep our fingers crossed for more whiteness in the mountains. ☼ *Jeremy Wolf & Katherine Rowden*

El Niño and the Spring Outlook

The El Niño Watch has been updated to an El Niño Advisory. Although the El Niño is expected to have little impact on weather patterns into our spring months. The El Niño is now marginally favored to last through the summer.

The Climate Prediction Center has updated their spring outlook for March-May 2015. It calls for continued above normal temperatures and a better chance of at or below normal precipitation. ☼ *Jeremy Wolf*

Mt. Spokane Ski Base on 3/17/15

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INSIDE THIS ISSUE:

Editor's Notes.

When does Spring really start? Some say it's the "Astronomical Spring" which begins on the vernal equinox of March 20th. Others think it's the "Meteorological Spring" as defined as the months of March, April and May. A few others think it's the last measureable snowfall, the last freeze or the first sight of green leaves. But many of these would be difficult to apply to all spots. What are your thoughts?

We are always looking for new ideas, pictures and stories for our publication. If you have any to share, please contact us by phone at (509) 244-0110 or email nws.spokane@ noaa.gov.

This newsletter and past issues are available online on weather.gov/Spokane.

The main purpose of this publication is to keep our readers informed about NWS services and programs, and recognize those who help us with our mission, including weather spotters, observers, media, emergency managers, and government agencies.

All articles are written by the NWS staff. Special thanks to Ron Miller, Jon Fox, Mark Turner, Katherine Rowden & Jeremy Wolf for their help.

Answer: Spokane: 6" 3/4/39
Wenatchee: 4.7" 3/2/72 & Lewiston: 5.4" 3/14/55

Coop News

Recognizing 20 years of service, the National Weather Service named Winchester, Idaho resident **Tim Dorgan** the 2014 recipient of the agency's John Campanius Holm Award for outstanding service in the Cooperative Weather Observer Program.

Every day for 20 years, Mr. Dorgan recorded the weather in the Camas Prairie town of Winchester. At nearly 4000 feet elevation, this region of Idaho is subject to weather extremes unheard of in the milder valley locations. Temperature extremes as low as -40°, daily snowfalls in excess of 20 inches and precipitation deluges of more than 2.00 inches in a 24 hour period have been recorded in Winchester.

Whether bitter cold, blizzard conditions, or before dawn, the NWS has always been able to count on Tim to provide detailed information and report his weather observations on time. Even during the most extreme weather conditions, Tim has never balked at obtaining real time weather data for WFO Spokane.

Now for some sad news, our COOP from Harrington, **Eugene Cronrath** passed away on January 13th, 2015.

Gene began taking weather observations for the NWS on November 28, 1961. Looking through all of those observations, it is difficult to see where any were missed through any fault of his. Over 50+ years, that is quite some dedication. Our condolences to the Cronrath family. ☼ *Mark Turner*

Tim Dorgan, Mark Turner and ID State Senator Dan Johnson.

Winter Weather Statistics

Wenatchee Water Plant	Dec	Jan	Feb	Total
Avg High Temp	39.6	36.5	50.3	42.1
Departure from Norm	+4.8	+0.6	+6.9	+4.1
Avg Low Temp	29.4	28.6	32.9	30.3
Departure from Norm	+4.2	+3.2	+5.2	+4.2
Total Precip	2.24	1.03	0.76	4.03
Departure from Norm	+0.71	-0.30	-0.24	+0.17
Total Snowfall	0.5	4.6	0.0	5.1
Departure from Norm	-6.2	+0.6	-2.7	-8.3
Lewiston Airport	**Dec**	**Jan**	**Feb**	**Total**
Avg High Temp	43.6	43.9	52.3	46.6
Departure from Norm	+4.1	+2.3	+5.8	+4.1
Avg Low Temp	32.1	32.5	35.4	33.3
Departure from Norm	+4.2	+2.9	+4.5	+3.9
Total Precip	1.84	0.83	1.36	4.03
Departure from Norm	+0.87	-0.25	+0.68	+1.30
Total Snowfall	T	1.5	T	1.5
Departure from Norm	-3.5	-0.9	-2.1	-6.5
Spokane Airport	**Dec**	**Jan**	**Feb**	**Total**
Avg High Temp	38.0	35.2	47.3	40.2
Departure from Norm	+5.8	+0.8	+7.7	+4.8
Avg Low Temp	27.6	26.7	31.6	28.6
Departure from Norm	+5.1	+2.0	+5.2	+4.1
Total Precip	1.97	1.91	1.04	4.92
Departure from Norm	-0.33	+0.12	-0.29	-0.50
Total snowfall	3.7	10.4	1.1	15.2
Departure from Norm	-10.9	-1.0	-5.7	-17.6

Staff News

Forecaster Intern, **Ryan Fliehman,** moved to Wilmington, Ohio in February, where he will be a hydrologist with the NWS Ohio River Forecaster Center. Ryan arrived here in summer of 2012 after finishing his Masters degree in Hydro-Meteorology at the University of Arizona.

Rose Tibbitts, our super Admin Assistant, will be moving to a warmer climate as she transfers to the NWS Weather Forecast Office in Phoenix, AZ this June. Rose has been an integral part to our office for over 15 years.

Good luck to Ryan, Rose and their families. They will be missed! ☼ *Robin Fox*

CoCoRaHS

It's recruitment time for new CoCoRaHS observers, known as the season of March Madness! For the Community Collaborative Rain, Hail and Snow Network, this is when states strive to sign up new precipitation observers. So please, tell your neighbors, friends and families about this program! If you know anyone who is a weather enthusiast and enjoys taking daily rain or snow measurements, then CoCoRaHS may be a terrific program to get involved in. CoCoRaHS can be found in every state in the county and much of Canada. For more details and where to signup, go to www.cocorahs.org. ☼ *Robin Fox*

Winter in Review

The calendar might have said that this was winter, but the weather certainly didn't seem too wintry. Some have asked if this was our warmest winter ever. The short answer is "no, but it was close." The table to the right shows how the average temperature for December-February compared with history.

City	2014/15	Record
Wenatchee	35.8°F (6th warmest)	37.8°F (1966)
Lewiston	39.8°F (5th warmest)	40.4°F (1957)
Spokane	34.1°F (7th warmest)	38.1°F (1933)

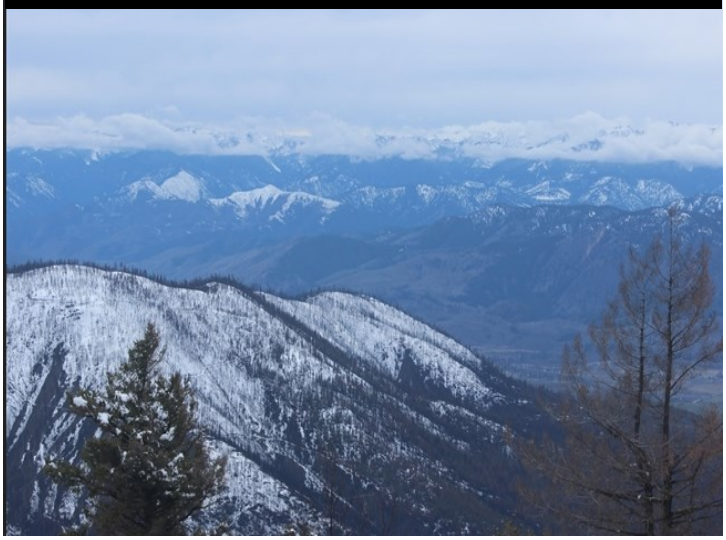
December actually started off on the cold side in the wake of a cold Canadian air mass that moved into the area just after Thanksgiving. But this was short lived as warm moist air from the south pushed the cold air out and replaced it with record warm temperatures. After a tenth of an inch of freezing rain on the 4th, Pullman hit 56°F on the 10th while Lewiston reached 66°F on the 11th, both records for the day. This started a streak of mild weather that would last until the end of the month. As Christmas approached, the rain continued. The 20th was the wettest day of the month. Chelan received 0.76 inches of precipitation. The northern Cascades were about the only place with snow, as Twisp and Winthrop picked up 7-9" of snow. Finally on the 27th, a cold air mass moved into the Inland Northwest to bring the first real snow of the season to many locations. The Spokane Airport received its first inch of snow, the latest this has ever taken (dating back to 1947).

For the first few days in **January,** this cold air persisted. It would be the coldest period of the winter, with low temperatures in the single digits. A strong weather system on the 4th scoured out this cold air, but with it came 4 to 6 inches of snow for many locations. The Sandpoint area received a foot of snow. The worst weather was in the Wenatchee Valley. Leavenworth picked up 4 to 6 inches of snow, followed by an inch of freezing rain which brought down trees and power lines. The next ten days were quiet with cool temperatures. A couple of stronger storms moved through the region in the middle of the month, bringing 2-5" of snow to the northern valleys and Cascades. Leavenworth and Plain picked up 7 to 10" of snow. Then the month of January ended on a quiet and uneventful note.

Robins spotted in early January at the NWS Spokane office. Was this early for Spokane? It's possible they knew more of our weather then we did.

February saw the end of what little winter we had. A strong pineapple express pattern, or atmospheric river, set up and brought rain to the valleys and mountains on the 4th through 7th. A couple rivers actually exceeded flood stage and a few mudslides occurred. This rain and warmth removed the low elevation snow from most locations as temperatures soared into the mid-50s and lower 60s. Numerous records were set on the 6th, including 64°F at Lacrosse and 66°F at Lewiston. The mild temperatures lasted until the middle of the month before cooling a bit. A cooler air mass moved in on the 20th, allowing nighttime temperatures to finally drop below freezing again. Still, daytime temperatures generally warmed into the 40s and 50s for the remainder of the month.

Snow topped mountains from the Pasayten Wilderness 3/17/15



So as we discussed earlier, this wasn't the warmest winter ever, but was it the least snowy winter? Again, after calculating the numbers, the answer is "no, but close." See the table below for the winter snowfall numbers in our top three climate sites this season as compared to the record low snow amounts across the Inland Northwest. It was very close, but then there have been more meager winters. ☼ *Ron Miller*

City	2014/15	Record Year
Wenatchee	5.4" (4th least snow)	3.6" (1962)
Lewiston	1.5" (6th least snow)	Trace (1944, 57 and 91)
Spokane	15.7" (18th least snow)	4.4" (1933)

Want to report precipitation? Check out CoCoRaHS at *www.cocorahs.org*

Remember your Spring Spotter Checklist

Tornado or Funnel Cloud
Hail: pea size or larger
Strong Winds: 30mph+ or damage
Reduced Visibility: under a mile due to snow, fog...
Heavy Rain: Showery: 1/2" + in 1 hr Steady Rain: 1"+ in 12 hrs or 1.5"+ in 24 hrs
Snow: 2"+ valleys & 4"+ mountains
Any Flooding
Any **Mixed Precipitation**!
Travel Problems or Any Damage: due to severe or hazardous weather.

#Punch hole Clouds

On the morning of February 18th, there were some amazing clouds in the sky—punch hole clouds or fallstreaks. What caused them? They happen in altocumulus clouds when an aircraft penetrates super cooled liquid in the cloud that leads to a large number of ice crystals. This decreases the water vapor through evaporation as the ice crystals fall beneath and leaves a cloud hole behind. For more information, see the Inland Northwest Weather Blog. ☼ *Jon Fox*

#Milky Rain

On February 6th, reports of muddy rain were found across Spokane and much of the Inland NW. This rain left residue on cars and outdoor surfaces. What caused it? The likely culprit was strong southerly winds ahead of an approaching storm system. These winds with gusts of 60-70 mph lofted dust and dirt from south-central Oregon near Summer Lake. This was based on trajectory model data. For more information, see the Inland Northwest Weather Blog. ☼ *Jon Fox*

Severe Thunderstorm WATCH
CAUTION—Watch the Sky!
PREPARE

Severe Thunderstorm WARNING
DANGER—Storms coming
ACT NOW!

The Weather Watcher
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Trivia: After the limited winter snow, some may want to know what was the highest spring daily snowfall across the Inland Northwest ?