YOUR NATIONAL WEATHER SERVICE SPOKANE QUARTERLY REPORT

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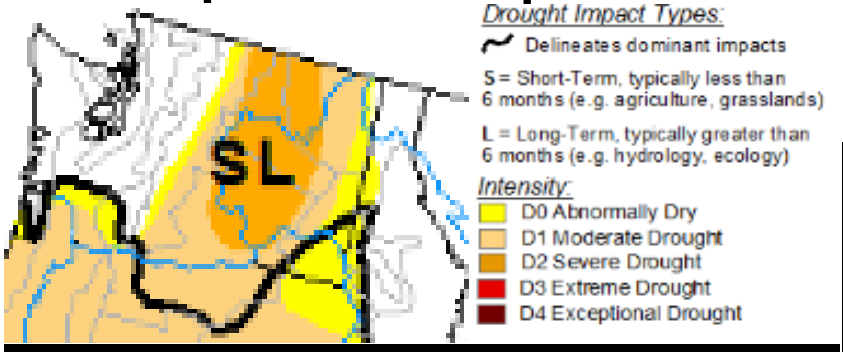
The Weather Watcher

of the Inland Northwest

www.weather.gov/Spokane

Mountain Snowpack & Precipitation

After the lack of precipitation during the holiday season and through January, there were concerns that drought conditions could expand across the Pacific Northwest. But the weather pattern changed, and precipitation finally did arrive in February and much of March. This helped to chip away at the dryness and drought conditions across the region. As of March 11th, the U.S. Drought Monitor showed most of eastern Washington in a moderate to severe drought, which could affect both agriculture and ecology. Meanwhile, the Idaho Panhandle has experienced more precipitation and is nearing normal.



U.S. Drought Monitor for the Pacific NW from 3/11/14

Better late than never. This late winter snow has helped boost snow totals in the mountains close to normal. As of March 11th, the National Resources Conservation Service showed the average mountain snow water equivalent ranging from 111% of normal for northeast Washington and north Idaho, to 98% in the east slopes of the northern Cascades.

The seasonal outlook for spring indicates a better chance for near seasonal conditions to continue. Based on the current trends, there is a good chance for improving drought conditions across the region. ☼

Freeze Dates

There are many sayings or words of wisdom on when to start your outdoor plants and gardens. To help you, here is a list of the average LAST freeze dates for several spots in our area. Each was compiled by NWS temperatures records. ☼

City	Avg Last Freeze
Lewiston	11-April
Wenatchee	13-April
Ephrata	23-April
Spokane	4-May
Moses Lake	7-May
Omak	10-May
Coeur d'Alene	11-May
Colville	18-May
Sandpoint	20-May
Republic	30-May

El Nino Watch

An El Nino Watch has been issued from the NWS Climate Prediction Center. There is a 50% confidence that an El Nino will develop during this summer or fall.

The current ocean-atmosphere conditions are in a ENSO neutral state, and has been for much of 2013. ENSO stands for the El Nino-Southern Oscillation, and it's a naturally occurring phenomenon that involves fluctuating ocean temperatures in the equatorial Pacific. The warmer waters essentially oscillate, back and forth across the Pacific Ocean, which effects precipitation distribuation. During ENSO-neutral period, the ocean temperatures, tropical rainfall pattern and atmospheric winds over the equatorial Pacific are near the long-term average.

The long range model predictions show the ENSO neutral conditions to continue through this spring. Then there are indications of warming in the tropical Pacific which could lead to El Nino conditions later this year.

For details on El Nino, see http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.pdf ☼

INSIDE THIS ISSUE:

Editor's Notes

Spring has arrived and rather quickly! Snow is melting. Days are longer. Robins and red wing black birds have returned. And the spring bulbs are poking out of the ground. Plus the first rumbles of thunder and flashes of lighting have moved through the region.

The Pacific Northwest Severe Weather Awareness Week runs from 4/27-5/3. It is a time to review safety rules on thunderstorms and what hazards they can produce including hail, wind, flash flooding and tornadoes.

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 for his help.

A web cam view of the Paysaten Wilderness from 1/20/14. Notice the lack of snow and the fog trapped in the valley.

Winter Weather Statistics

Wenatchee Water Plant	Dec	Jan	Feb	Total
Avg High Temp	35.3	41.3	38.6	38.4
Departure from Norm	+0.5	+5.4	-4.8	+0.4
Avg Low Temp	24.3	30.3	25.8	26.8
Departure from Norm	-0.9	+4.9	-1.9	+0.7
Total Precip	0.19	0.56	1.29	2.04
Departure from Norm	-1.34	-0.77	+0.29	-1.82
Total Snowfall	T	5.0	7.3	12.3
Departure from Norm	-6.7	+1.0	+4.6	-1.1
Lewiston Airport	**Dec**	**Jan**	**Feb**	**Total**
Avg High Temp	37.5	40.8	39.9	39.4
Departure from Norm	-2.0	-0.8	-6.6	-3.1
Avg Low Temp	23.9	30.7	28.6	27.7
Departure from Norm	-4.1	+1.1	-2.3	-1.8
Total Precip	0.73	1.05	1.37	3.15
Departure from Norm	-0.24	-0.03	+0.59	+0.33
Total Snowfall	2.5	T	13.4	15.9
Departure from Norm	-1.0	-2.4	+11.3	+7.9
Spokane Airport	**Dec**	**Jan**	**Feb**	**Total**
Avg High Temp	31.3	33.9	32.0	32.4
Departure from Norm	-0.9	-0.5	-7.6	-3.0
Avg Low Temp	20.1	25.6	20.0	21.9
Departure from Norm	-2.4	+0.9	-6.4	-2.6
Total Precip	0.68	1.00	1.93	3.61
Departure from Norm	-1.68	-0.79	+0.60	-1.87
Total snowfall	3.7	7.1	15.2	26.0
Departure from Norm	-10.9	-4.3	+8.4	-6.8

CoCoRaHS

March is the annual recruiting competition for the CoCoRaHS program, or the Community Collaborative Rain, Hail and Snow Network. This network is a volunteer program to measure and report daily precipitation in your backyard. All you need is a rain gauge and an internet connection to send your reports online.

We have a simple challenge to everyone out there during March: "Would you please take a moment to recommend the program to at least one friend or relative and encourage them to sign up to be a volunteer observer?" That's it just one (OK, two or three if you are really ambitious). If just half of our 19,500 current volunteers gave this a shot, we could really see the density of our coverage improve. Let the madness begin!

Training for this program is easy. There are many terrific YouTube videos, slideshows and presentations online that can help you step by step with all your needs. To learn more and where to register, please visit www.cocorahs.org

☼ *Robin Fox*

Riming on the fence near the NWS Spokane radar on 1/23/14

End to ESpotter

The online way to submit weather spotter reports has changed for NWS Spokane. Over the past several years, it has been accomplished by an online program called ESpotter. This program will be decommissioned in March 2014.

But not to worry, a **new online program** has been developed and is ready for reports. It is linked to our NWS Spokane web page under left hand column link Spotter Information. You can also use this link: http://www.srh.noaa.gov/StormReport/SubmitReport.php?site=otx

If you have been a faithful ESpotter reporter, please change to this new online link and keep reporting. Thanks for all of your reports; we appreciate your efforts.

☼ *Robin Fox*

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

Answer: Hail 1"+ in diameter and winds of 58+ mph, which verify a Severe thunderstorm Warning.

Winter in Review

What a bizarre winter this was! **December** continued the dry trend from the previous two months. The dry weather was a result of a strong ridge of high pressure which formed off the coast by the second day of the month and generally remained fixed there until the end of the year. A few weak disturbances were able to temporarily disrupt the strong ridge. This was the driest December on record for a few locations and in the top 10 for most. The driest conditions were found over the western Columbia Basin and near the Cascades. Ephrata only received 0.02" of precipitation for the month, while Omak saw 0.11". Both values shattered the previously set records. These reports are extraordinarily meager considering December is typically the wettest month for most locations in the Inland Northwest. The other highlight for the month was the intrusion of some very cold air which arrived from northwest Canada. The month began on a warm note with widespread high temperatures in the 40s to middle 50s, but this warmth was abruptly curtailed by a strong arctic cold front. Initially the front brought moderate rain and some pockets of snow, most of which either fell near the Cascade Crest or over the Idaho Panhandle. A rainfall report of 1.38" occurred in Cabinet Gorge, ID on the 2nd with 1.20" falling over Kamiah. Meanwhile, where it was cold enough, snow occurred. Most of the snow either fell over extreme eastern Washington or over the Idaho Panhandle. The heaviest snow amounts were 6" near Prichard, Idaho to around 5" in Field Springs State Park (in extreme SE Washington) and Newport, WA. Snow also fell over much of the Palouse and Columbia Basin. Once the front departed, the skies cleared and temperatures plummeted. This set the stage for the coldest weather the area had seen since January 2011. Between the 3th and 8th, the Pullman area saw below zero readings each day. That streak of six days was the second longest on record and the most since 1974. The coldest readings occurred on the 7th and 8th with Pullman seeing low temperatures of -10° and -11°F respectively. Record lows were also set in Wilbur, Lewiston, and Moses Lake. Temperatures began to moderate by the 10th and continued to warm through the 17th as northwest flow ahead of the ridge weakened. Despite the warming, the weather was generally dry. Between the 20th and 23rd , a couple weak weather systems moved through the area. Although widespread precipitation occurred, most reports were light and were over the eastern third of Washington and the Idaho Panhandle. Both Rosalia and LaCrosse Washington reported around 5" of snow on the 21st. The weather for the remainder of the month was generally dry with near normal or slightly warmer than normal temperatures.

January brought more dry weather. The month started off quiet for the first week. But then the storm door opened briefly. Light snow fell in many locations on the 7th and 8th, but it didn't last long as temperatures warmed into the 40s and lower 50s. Omak hit 61ºF on the 13th, while Republic reached 53ºF. Both were the warmest January day ever for those locations. A wind storm on the 11th brought down trees and power lines at some locations. The rain and melting snow caused flooding in some areas Then the high pressure returned. Much of the area was blanketed with freezing fog for about two weeks. The month ended with some more snow. The heaviest snow fell near Deer Park, WA where up to 7" was reported.

After 4 dry months in a row, drought was now becoming a real possibility. All that changed in **February**. The persistent ridge of high pressure suddenly gave way, and the storm door opened. First, a cold arctic air mass invaded the Inland Northwest. Nighttime temperatures dropped below zero with daytime readings only in the teens. Republic hit -15ºF on the 5th, a record low for the day. As the arctic air retreated, snow began to fall. By the 11th, most locations had at least a few inches of snow on the ground. Lewiston, ID had a record 5.3" of snow on the 8th. Another surge of warm air brought more melting snow and flooding. This flooding was exacerbated by our frozen ground. The arctic cold snap in early December arrived with little or no snow cover. This froze the ground harder and deeper than normal. So by February, the rain and melting snow couldn't penetrate the frozen ground, and resulted in flooding in locations not normally susceptible to it. The exception to this was in the Cascade valleys, where the precipitation remained as snow, and lots of it. Mazama, Winthrop, Holden Village, and Plain all set records for the snowiest February ever! Mazama had 10" of snow or more on 5 different days in February, with a total of 91.8" for the month.

Flooding from Fairfield, WA on 2/12/14

The mid-month warmth in February was only temporary. Another round of cold air at the end of the month brought more lowland snow to the region. A storm on the morning of the 24th produced 5.8" of snow in Kellogg, 6" in Hayden, and 13" at Stehekin in the Cascades. So after an incredibly dry October through January, February turned out colder and wetter than normal. In fact, February was considerably colder than January, which is rather rare. As the month closed, we were still well-behind on our winter precipitation. But the snow pack in the mountains was in much better shape. ☼ *Ron Miller*

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 fog, dust...
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.

The Weather Watcher
Of the Inland Northwest

National
Weather Service
2601 N Rambo Rd
Spokane, WA 99224
(509)-244-0110

Inland Northwest Thunderstorm Climatology

Based on local thunderstorm data over the last 30 years, the NWS has been able to develop a thunderstorm climatology for the Inland Northwest. Here are few interesting statistics:

- Thunderstorm season for the Inland Northwest typically begins in mid March and lasts into October.
- The best time of the year for severe thunderstorms is between May 15-Aug 29.
- During that time, the Inland Northwest typically experiences about 5 severe weather events a month.
- The peak month for severe weather is July.
- The most severe warnings in one month so far has been in July 2006 with 51!
- The best time of the day for severe thunderstorms is during the evening and overnight hours with the max time around 6pm PDT.
- Of the last 15 years, there have been 23 Severe Thunderstorm Watches in our region or about 1.5 per year.
- Of the last 15 years, the has been an average 31 severe warnings per year.
- There are on average 3 tornadoes in the Inland Northwest each year.
- Most tornadoes in our region are EF0-EF1, with peak winds up to 110 mph.

Severe Thunderstorm in near Omak 8/29/13
Courtesy of Nick Boettger

Watch : Conditions are favorable for severe or hazardous weather around the watch area.
CAUTION—Watch the Sky!

Warning : Severe or hazardous weather is likely or is occurring in the warned area.
DANGER—ACT NOW!

Trivia: What does the term "severe winds and severe hail" mean?