YOUR NATIONAL WEATHER SERVICE SPOKANE QUARTERLY REPORT

VOL XVIII, ISSUE 4
DECEMBER 2013

The Weather Watcher

of the Inland Northwest

www.weather.gov/Spokane

Snow Terminology

This is the season for the solid precipitation, that "white stuff" that falls from the skies. That's right, SNOW! Snow is precipitation in the form of flakes of ice crystals that fall from clouds. All snowflakes begin with 6 sides, and no two snow flakes are alike. But besides that, there are many different names for snow. Some are meteorological, some have been coined by skiers and snow buffs, and others have been passed down by generations of native people. Here is a short list of snow terms:

- **AVALANCHE:** a mass of loosened snow, ice &/or earth that suddenly moves down a mountain side.
- **BLIZZARD:** a combination of heavy snow, strong winds, and blowing snow that lead to visibility to less than a 1/4 mile for 3 hours or more. Accompanied by bitter wind chill.
- **BLOWING SNOW:** snow lifted off the ground by the wind and reduces visibility.
- **CRUST:** a hard snow surface lying upon a softer layer of snow.
- **DENDRITE:** the hexagonal ice crystals of a snow flake with complex branches.
- **FLURRY:** light snow with short duration that lead to little accumulation
- **FROST:** solid deposition of water vapor; not precipitation.
- **GRANULAR SNOW:** snow that has big flakes that often looks like rock salt.
- **GRAUPEL:** snowflakes that become rounded pellets due to riming, they bounce and can be called small hail.
- **MASHED POTATO SNOW:** wet, heavy snow you can stand a shovel in.
- **POWDER:** thin, dry snow surface composed of loose, fresh ice crystals
- **SLEET:** ice pellets.
- **SLUSH:** snow that is starting to melt.
- **SNOW LEVEL:** the elevation where the precipitation changes from rain to snow.
- **SNOW SQUALL:** a brief but intense snowfall that greatly reduces visibility.
- **WHITEOUT:** a combination of snow cover reflected into a low overcast sky makes it difficult to see the horizon.

Ice Jams & Potential Winter Flooding

After our wide-spread December deep freeze, concerns increased toward ice jam flooding. Generally, the cause of ice-related flooding is a spell of frigid temps that freezes up the creeks or rivers. This is followed by a rapid warm up with no time for ice to melt slowly. Add some rain and maybe some snowmelt, and then the ice breaks up as the rivers rise, moving downstream in large chunks. These ice chunks can jam up somewhere, leading to the back up of water and causing flooding. Another possible issue is a freeze-up jam where the little bit of water still flowing in a creek during the cold spell runs into the frozen portion of the creek and has no where to go but out of the channel, and can lead to additional flooding.

So far, recent reports of ice related flooding have been minor. This is fortunate and thanks in part to the slow and gradual warming that has been spreading over the region, in addition to the lack of significant precipitation. But this will continue to be a concern through the winter, so keep an eye to the nearby creeks and streams in the coming months.

☼ *Katherine Rowden*

Ice on the N. Fork of the Coeur d'Alene near Prichard

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INSIDE THIS ISSUE:

Editor's Notes

Now that winter officially starts on December 21st at 9:11 am PST, the snow season is upon us. Even though Spokane has not seen much of the "white stuff" in late 2013, hopes are high that snow will arrive for early 2014.

Remember to prepare for winter travel on any road trip, especially one that takes you in mountains. Make sure your tires are suited for winter weather. Always check the latest DOT road conditions and the weather conditions from the NWS.

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. A special thanks to Ron Miller, Katherine Rowden & Ellie Kelch for their help.

Autumn 2013 in Review

The somewhat strange weather from this past summer seemed to perpetuate into autumn. Our driest month turned out to be rather wet, while our wettest month was on the dry side. And in between, it was just down right dry.

September started off with very active weather, unusual for that time of year. Thunderstorms rumbled through the area on the third, bringing golfball-sized hail south of Pomeroy, Washington. More storms on the 4th blew down trees in Endicott, Washington. Heavy rain storms on the 5th brought over an inch to the Cascade mountains. Significant flash flooding occurred outside of Wenatchee closing roads, cutting off some campers, and damaging homes with debris flows. 2.25" of rain fell near Twisp. Two people were injured near Entiat when a tree fell on their home. Temperatures after this warmed up to 10-15° above normal. Lewiston touched 99° on the 11th and 14th. A number of locations set record high temperatures on the 14th.

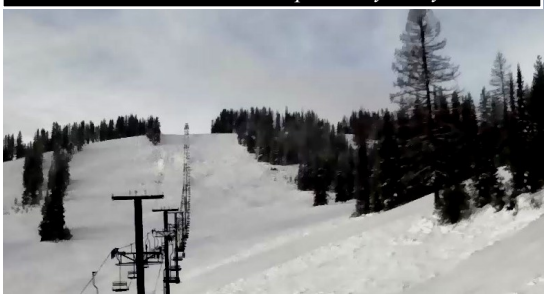
Another round of thunderstorms on the 15th brought dense blowing dust to the Othello and Warden area of central Washington, reducing visibility to 50 feet at times. The NWS office west of Spokane measured a gust of 60 mph. Numerous trees were blown down and some buildings were damaged. Six power poles were snapped off near Soap Lake with widespread power outages in central Washington. After this big event, the weather calmed down a bit, with cooler temperatures and occasional showers; still, not the usual September weather. The month ended on an especially wet note. Remnants of a west Pacific typhoon brought heavy rain to the area. Some sites in north Idaho recorded over 4" in 24 hours.

After a wet and wild September, the weather took quite a turn in **October**. High pressure dominated the Northwest. Sunny days and cool night were the theme. A cold front on the 8th of the month provided most of the rain that the region received for the entire month. Another front on the 27th brought gusty winds, knocking down some trees near Priest River and Bovill in the Idaho Panhandle.

Autumn Weather Statistics

Wenatchee Water Plant	Sep	Oct	Nov	Total
Avg High Temp	79.7	63.3	47.7	63.6
Departure from Norm	+1.4	-0.2	+1.2	+0.8
Avg Low Temp	56.2	40.6	33.4	43.4
Departure from Norm	+4.5	-0.6	+1.2	+1.7
Total Precip	0.68	0.14	0.47	1.29
Departure from Norm	+0.38	-0.52	-0.91	-1.05
Total Snowfall	0.0	0.0	0.0	0.0
Departure from Norm	0.0	0.0	-1.9	-1.9
Lewiston Airport	**Sep**	**Oct**	**Nov**	**Total**
Avg High Temp	79.2	61.0	45.3	61.8
Departure from Norm	+1.0	-1.6	-2.9	-1.2
Avg Low Temp	56.8	37.3	31.7	41.9
Departure from Norm	+5.8	-3.8	-2.4	-0.1
Total Precip	1.57	0.09	0.71	2.37
Departure from Norm	+0.90	-0.87	-0.47	-0.44
Total Snowfall	0.0	0.0	T	T
Departure from Norm	0.0	0.0	-1.8	-1.8
Spokane Airport	**Sep**	**Oct**	**Nov**	**Total**
Avg High Temp	73.5	56.4	41.2	57.0
Departure from Norm	+0.6	-1.6	-0.4	-0.5
Avg Low Temp	52.6	35.0	28.4	38.7
Departure from Norm	+5.2	-2.2	-1.4	+0.6
Total Precip	1.56	0.09	1.56	3.21
Departure from Norm	+0.89	-1.09	-0.74	-1.03
Total snowfall	0.0	T	3.1	3.1
Departure from Norm	0.0	-0.1	-4.3	-4.4

Lookout Pass Ski Area open early this year.



November saw an early start to the snow season. A series of storms moved through the area in the first few days of the month, initially bringing heavy rain and then the first low-land snow to many locations. The Panhandle and Cascade mountains picked up over an inch of rain on the 2nd. Strong winds moved in behind the initial cold front, with a gust to 55 mph at Pullman and 49 mph at Spokane Airport. Lowland snow fell on the morning of the 5th. Spokane received 1.9" of snow, Republic picked up 1.6", and Mazama received 1.5". More stormy weather moved in on the 8th, with valley rain and heavy mountain snow. Another cold system arrived on the 15th for more low-elevation snow. In the Panhandle, Moscow picked up 4.5", Laclede had 6.5", Clark Fork received 5", and Bonners Ferry got 4". But by the 18th, a warmer storm brought rain to the valleys, melting away much of the low land snow. After this a very large area of high pressure developed over the western U.S. This brought ten days of dry sunny weather to Inland Northwest. But the nights were very cold, with low temperatures in the teens. Some locations dipped into the single digits. ☼ *Ron Miller*

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

Capitol Tree

A 88 foot Englemann Spruce was harvested in the Colville National Forest for the 2013 Capitol Christmas Tree. The Colville National Forest staff selected several tree candidates and in June the final selection was made. The tree grew on the Newport District in Pend Oreille County. 2013 will mark the second time that Washington state has provided the Capitol Christmas Tree. In 2006, a Pacific silver fir was provided from the Olympic National Forest.

The tree was harvested November 1st and wrapped for its journey. It spent several weeks on the road visiting communities across the country before arriving at the capital in time for Thanksgiving. The Capitol Christmas Tree traveled with companion trees and more than 5,000 handmade ornaments. Washingtonians were invited to create ornaments depicting this year's theme "Sharing Washington's Good Nature." After the lighting ceremony, the Capitol Christmas Tree will be lit nightly from dusk to 11:00 pm throughout the holiday season. ☼

According to the National Snow Analyses, as of December 15th, the area of the United States cover by snow was 53%. That is an increase of almost 6% from last month. ☼

A view from Mount Spokane in during Thanksgiving weekend.

Online Spotter Reports

For many years, weather spotters have had the opportunity to send their reports online, in addition to calling the toll-free number. The online system was called ESPOTTER, and many spotters used this system.

Now, an updated online spotter reporting system is available and linked to the NWS Spokane web page at *www.weather.gov/spokane.* Look on the left hand column and click on Spotter Information. Then just click on the link **Send Spotter Reports**. It should be an easier system to use and maintain. Please give it a try and bookmark it for future use. Thanks! ☼ *Robin Fox*

Answer: -30 on 1/16/1888 in Spokane, -19 on 12/30/1968 in Wenatchee, and –23 on 12/13/1919 in Lewiston

Snow Measurements

There are four values used in measuring and reporting solid precipitation: snowfall, snow depth, snowfall water equivalent, and snow depth water content.

- **SNOWFALL:** This the new snow or ice, prior to melting or settling. Measure to nearest 0.1 inch on your snow board.
- **SNOW DEPTH:** This is the old and new snow. Take multiple measurements in your yard and average your results. Report to the nearest 0.5 inch.
- **SNOWFALL WATER EQUIVALENT:** Melt the snow that has accumulated from your rain gauge. Or take a core sample from your snow board. Report to the nearest 0.01 inch.
- **SNOW DEPTH WATER EQUIVALENT:** Take a core sample from the total snow depth in your yard. Report to the nearest 0.01 inch.

For the latest guidelines on measuring and reporting snow, see *www.nws.noaa.gov/om/coop/reference/Snow_Measurement_Guidelines.pdf*

CoCoRaHS Corner

The CoCoRaHS office has been busy creating training video shorts and webinars. If you haven't seen them yet, I encourage you to view one or more. To find them, go the cocorahs web page at *www.cocorah.org* and click on the small **You Tube** link in the upper right hand corner. Then enjoy the videos on WxTalk, Freezing Rain, and Snow Training Shorts.

Remember, we appreciate all your CoCoRaHS precipitation reports from snow to rain to zeros. Keep up the good work! ☼ *Ellie Kelch*

Remember your Winter Spotter Checklist

Snow:
2"+ valleys & 4"+ mountains

Strong Winds:
30mph+ or damage

Hail: pea size or larger

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

Any Flooding

Any **Mixed Precipitation**!

Travel Problems or Any Damage: due to severe or hazardous weather.

Skywarn Recognition Day 2013

On the chilly afternoon of December 6th, the Spokane ARES/RACES group arrived at the NWS Spokane to setup for the annual Skywarn Recognition Day. This marks the 15th year for this event between the National Weather Service and the American Radio Relay League. It celebrates the contributions that volunteer SKYWARN radio operators make to the National Weather Service. The NWS Spokane office was one of over 100 NWS offices taking part in this event.

Skywarn Recognition Day started at 4pm Friday December 6th and ran for 24 hours to Saturday at 4pm. During that time, amateur radio operators used their radios to contact many different locations. For the 2013 event, they had contacted 79 different stations, with locations as far away as Vermont, Texas and North Carolina. They also exchanged weather conditions, including that the low temperature on the morning of December 7th was 0°F! But that wasn't the coldest. They received a report of –30°F from Egremont, Alberta. And on the flip side, a balmy 47°F from Phoenix. Thanks to Spokane ARES/RACES group for spending their time at the NWS office. ☼ *Robin Fox*

Thank You Weather Observers & Spotters
We Appreciate All You Do!

Warm Wishes for the New Year!

NWS Spokane

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!

The Weather Watcher
Of the Inland Northwest

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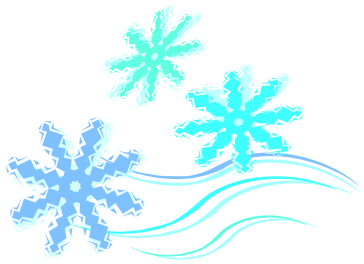

Trivia: What are some of the all time cold temperatures in the Inland NW?