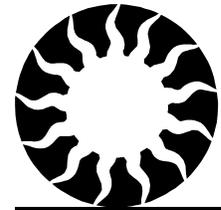


The Weather Watcher of the Inland Northwest

www.weather.gov/Spokane



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January Thaw and Winter Flooding

The Inland Northwest experienced a typical “Pineapple Express” winter flood event in January. 2011 started out with seasonably cold temperatures and an average of 6 inches of snow on the ground across much of the low lands. By the 13th, temperatures across the region began to rise well above freezing and nighttime low temperatures stayed above freezing for several days, even above 6,000 ft.

Along with warmer temperatures and winds melting the snow, the Pacific system brought large amounts of rain. The rain fell steadily from the 12th through the 18th in most areas. See the *Table* below for several precipitation values.

The higher elevation snowpack was able to absorb some of the rainfall, but by the 18th, much of the snow below 4,000 ft in the Palouse, Spokane, Lower Snake, and Coeur d’Alene river basins was gone! By the 16th, the heaviest rain fell in North Idaho, particularly in the North Fork of the Coeur d’Alene drainage. By the 17th, the rivers were rising rapidly and flooding was experienced at several locations in the Idaho Panhandle and the Palouse that day.

Ice jams were also a concern with the warm-up, as several rivers in the area had significant ice accumulation or were completely iced over. This was the case with the St Joe River at St Maries. Fortunately, the ice was able to melt without causing additional flooding problems.

In addition to many small rivers and streams running high, main-stem river flooding was experienced on the Coeur d’Alene River at Cataldo, the Palouse River at Potlatch, the St Joe River at St Maries, and the St Joe River at Calder. Due to the low winter time levels on Lake Coeur d’Alene, the lake had room to accommodate the incoming floodwaters, while the Post Falls Dam kept its gates wide open to pass as much water as possible. Because of this fortuitous timing of the event, flooding was avoided downstream of the lake on the Spokane River where it has been an issue in the past during these types of events.

Some preliminary impacts and damage estimates from the event include:

- Roads closed along the North Fork of the Coeur d’Alene River, the St Joe and St Maries Rivers, the Palouse River near Potlatch, and around Cataldo.
- Residents living along 10 miles of the North Fork of the Coeur d’Alene River, upstream of Enaville, were advised to evacuate on Jan 17th.
- St Maries closed one floodgate in their levee to keep flood waters from coming into the town.
- Parks inundated, homes surrounded by water, basement flooding, etc. along Potlatch, St Joe, St Maries, Coeur d’Alene
- Homes and USFS building flooded along Avery Creek near Avery.

☼ Katherine Rowden

Editor’s Notes

Spring has sprung and the snow is melting. Recently we have been seeing cumulus clouds develop into showers with graupel, small hail, gusty winds and lightning. Thunderstorm season is here!

Remember your thunderstorm safety. When thunder roars or lightning strikes, go and stay indoors. Wait at least a half hour after the storm has passed to return to outdoor activities. A vehicle is a safe place during a thunderstorm.

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

This newsletter and past issues are available online on the NWS Spokane web page. If you would like a paper copy, please contact us and we will be happy to put you on the mailing list.

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 big thanks to Ron Miller, Bob Tobin, Katherine Rowden, and Mark Turner for their help.

Precipitation from January 13-18 from some SNOTEL sites

SNOTEL Site	Precip.	SWE change	Total water into rivers
Sherwin (3200’)	3.4”	-1.7”	5.1”
Humboldt (4250’)	5.2”	-0.2”	5.4”
Moscow Mt. (4700’)	2.6”	-1.1”	3.7”
Mica Creek (4750’)	5.1”	0.0”	5.1”
Lookout (5140’)	4.5”	+1.4”	3.1”
Lost Lake (6110’)	6.5”	+5.4”	1.1”

Flooding near St. Maries



Staff News

The National Weather Service Spokane is pleased to announce a new meteorologist Intern to the staff. Joey Clevenger just got out of the U.S. Air Force from “Down South” in Del Rio, Texas where he was a Weather Officer at Laughlin AFB. He is originally from Louisville, Kentucky and a graduate of Mississippi State in 2006. He and his wife enjoy outdoor activities. He looks forward to living in the Inland Northwest and experiencing his first winter snow. Welcome aboard Joey! ☀ *Robin Fox*



2011 Fire Season Outlook

The winter of 2010/2011 was dominated by a strong La Nina pattern. However the winter was not overly La Nina like. Through the middle of March temperatures were normal to slightly below normal. Precipitation and snow was very near normal for most locations, except for the Cascades which was below normal.

Looking back at previous La Nina years that are similar to 2010/2011, temperatures were cooler than normal, but precipitation was very near or slightly below normal. So we are expecting a cooler, but not necessarily a wet spring. Early summer looks to remain on the cool side of normal which will result in the mountain snowpack melting later than normal. Fuel green-up is expected to be 1 to 3 weeks later than normal which should result in fuels curing a few weeks later in the summer. This will push back the beginning of fire season a few weeks. Summer is expected to continue the cool trend. July and August will still warm up, but we should experience fewer “hot” episodes. Most of the precipitation in July and August is from thunderstorms. The long term forecasts indicate a slightly below normal convective season, with mainly wet thunderstorms.

So what can we expect? For most of eastern Washington and north Idaho we can expect a later start to the fire season with about normal number of starts but fewer than normal acres. The areas of most concern will be the Cascade Mountains north of I-90 and east across the Okanogan Highlands along the Canadian border. ☀ *Bob Tobin*

Winter Weather Statistics

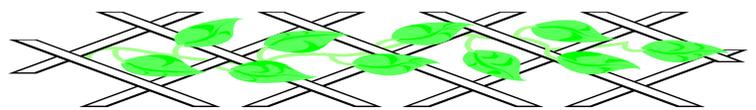
Wenatchee Water Plant	Dec	Jan	Feb	Total
Avg High Temp	35.6	37.2	41.5	38.1
Departure from Norm	-0.1	+2.1	-1.3	+0.2
Avg Low Temp	28.2	25.2	24.9	26.1
Departure from Norm	+3.0	+2.0	-2.5	+0.8
Total Precip	2.06	0.88	0.30	2.25
Departure from Norm	+0.54	-0.47	-0.64	-0.57
Total Snowfall	9.6	6.0	3.4	19.0
Departure from Norm	-1.0	-3.3	-0.8	-5.1
Lewiston Airport	Dec	Jan	Feb	Total
Avg High Temp	41.4	42.9	42.3	42.2
Departure from Norm	+2.2	+3.5	-3.3	+0.8
Avg Low Temp	29.7	30.7	27.9	29.4
Departure from Norm	+1.2	+2.8	-3.3	+0.3
Total Precip	1.70	1.10	1.97	4.77
Departure from Norm	+0.65	-0.04	+1.02	+1.63
Total Snowfall	4.7	0.1	0.0	4.8
Departure from Norm	-0.1	-5.6	-2.2	-7.9
Spokane Airport	Dec	Jan	Feb	Total
Avg High Temp	34.2	35.4	36.1	35.2
Departure from Norm	+1.4	+2.6	-3.2	+0.3
Avg Low Temp	24.5	22.9	21.6	23.0
Departure from Norm	+2.9	+1.2	-4.1	0.0
Total Precip	3.19	2.43	1.14	6.76
Departure from Norm	+0.94	+0.61	-0.37	+1.18
Total snowfall	17.4	7.1	14.3	38.8
Departure from Norm	2.3	-7.1	+7.6	+2.8

SPOTTER REPORTS:

244-0435 or spotter.weather.gov

Coop Corner

Cooperative Observer Jean Moore passed away at her home on Feb. 17th. She was an active observer and took the observations in Plain, Washington for over 44 years. She led a full life and will be missed. ☀ *Mark Turner*



Weather Spotters Training

Spotter Training is now in session. The National Weather Service is busy assembling a spring training schedule for the coming months. The training will cover the Severe Weather Checklist along with convection and thunderstorms spotting techniques. Check out the Local News on the NWS Spokane web page for details. Currently sessions are set up for Wenatchee, WA and Nez Perce, ID. Remember, if you aren't able to attend, there is online training available under the Spotter Resource section of the NWS web page. ☀ *Robin Fox*

Want to report precipitation? Check out CoCoRaHS at <http://www.cocorahs.org>

Winter 2010/2011 in Review

During the fall of 2010, the formation of La Nina conditions in the equatorial Pacific Ocean led to a prediction of a colder/wetter than normal winter for the Inland Northwest. While the winter of 2010/11 will go down with above-normal snowfall for many Inland Northwest locations, it may not have lived up to people's expectations of a harsh winter.

After a very cold and snowy end of November, the stage was set for a big winter. But inspection of past winters with strong La Nina conditions indicated that the heavy November snowfall might not survive until Christmas. In **December** 2010, this was once again the case. The weather pattern during the first part of December was anything but snowy for most of the area. A few locations in the Cascades picked up 6-8" of snow on the 8th. A heavier snow event on the 11th and 12th dumped up to 2 feet of snow in the Cascades and Waterville Plateau area. A spotter in East Wenatchee received 13.8" of snow in 24 hours, while Mazama picked up 21". Then the temperatures warmed as a wet and windy storm moved through on the 14th. A peak gust of 51 mph was measured in Spangle, south of Spokane. The combination of wind and warmth melted most of the snow in the Columbia Basin and Palouse. The warm spell was brief and light amounts of snow started to accumulate once again, bringing a white Christmas for most folks. A somewhat stronger storm brought up to 7" of snow to the Spokane area on the 29th. But the big winner was the town of Clark Fork, ID which received 28.5" of snow from the storm! In the wake of this storm, temperatures dropped into the teens with sub-zero lows for New Years Day.

The cold snap lasted into the first few days of the new year, but eventually temperatures moderated back to near normal. By mid **January**, a "Pineapple Express" weather pattern set up, with mild and moist air flowing into our region from the tropics near Hawaii. Daytime temperatures rose into the 40s and 50s, with night time readings staying above freezing for five days. The result was rain, melting snow, and flooding. Some rivers in the Idaho Panhandle exceeded flood stage for a few days. Temperatures cooled, but the snow didn't return. In fact, the weather was rather dry for the last half of January. here were a couple of weak storms on

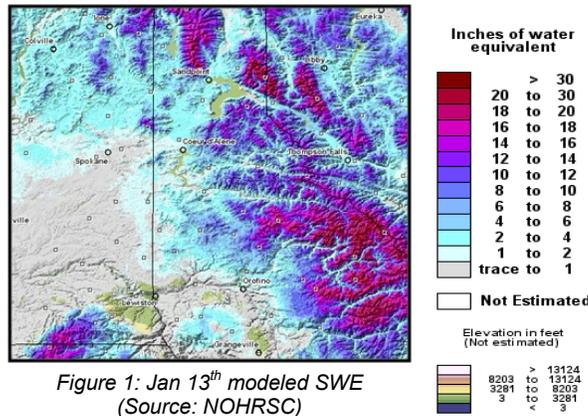


Figure 1: Jan 13th modeled SWE (Source: NOHRSC)

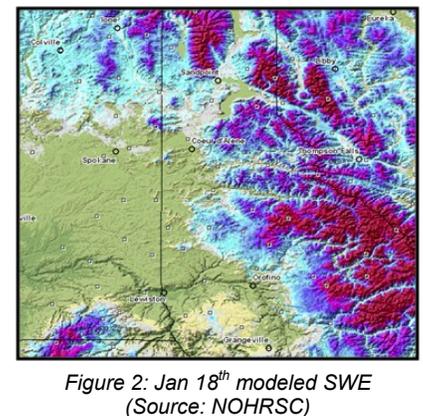


Figure 2: Jan 18th modeled SWE (Source: NOHRSC)

to the northern Panhandle and extreme northeast Washington. In general, January turned out to be warmer and drier than normal. People started wondering, "What happened to La Nina?"

Historically, the effects of La Nina in the Pacific Northwest are most notable in the latter half of winter and spring. So as January turned to **February**, the weather continued to remain mild and rather snow-free. A couple of weak snowfall events during the first few days of the month were followed by a wind event on the morning of the 7th. Winds gusted to 52 mph in the Columbia Basin, with a 44 mph gust at Wenatchee Airport. A stronger wind storm occurred 5 days later. Gusts to 72 mph were reported in Beverly, Washington, with gusts to 52 mph at nearby Moses Lake and Ephrata. Gradually, the weather pattern began to change by the middle of the month as storms started approaching the region from the northwest. The first storm on the 15th brought 7" of snow to near Moscow. Subsequent storms brought 3-6" of snow to the northeastern parts of the area, including 8.2" at Northport, WA on the 22nd. Bonners Ferry received an impressive 20.5" the following day, while the Spokane metro area picked up around a foot of snow, unusual for this late in the winter. Even more unusual was the Arctic air that invaded the area following the snow storm. Some of the coldest temperatures of the winter occurred on the last few days of February, breaking several daily records. Temperatures dropped below zero on the 25th and 26th. Bonners Ferry hit -14°F, while nearby Priest Lake fell to -20°F. The month finished with another strong snow storm. The Sandpoint area picked up about 15" of snow, while in the Cascades the town of Leavenworth received 17.5". ☀ *Ron Miller*

Spring Outlook

The NWS's Climate Prediction Center indicates that cooler/wetter than normal weather will continue through April across the Inland Norwest. There is a good chance for cooler weather to continue through the rest of the spring, while the chance of precipitation becomes more normal. ☀ *Robin Fox*

the 21st and 24th that brought 3-6" of snow

Answer: It's a type of spring showery precipitation formed when snow encounters supercooled water. Also known as "small hail."

Remember your Spring Spotter Checklist

Tornado or Funnel Cloud

Hail: pea size or larger

Strong Winds:
30 mph+ or damage

Reduced Visibility:
under a mile due to rain, snow, dust, smoke or fog

Heavy Rain:
Showery: 1/2" + in 1 hr
Steady Rain: 1"+ in 12 hrs
or 1.5"+ in 24 hrs

Any flooding!

Snow:
2"+ valleys & 4"+ mountains

Any mixed precipitation!

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

Spring Flood Outlook

The 2011 water year, which started in October 2010, has been in a La Niña pattern. This usually means a colder and wetter than normal winter for the Pacific Northwest. Most of Eastern Washington and North Idaho have seen average to above average precipitation during the winter, as would be expected, although some areas along the east slopes of the Cascades have actually received *below* average precipitation this winter. The combination of the above average precipitation in most areas and seasonably cold temperatures in the higher elevations has allowed for good accumulations of the snow pack that feeds the area's rivers, streams, and lakes throughout the spring and into the summer as it melts off.

Along with the average to above-average snowpack, comes an increased risk of snowmelt flooding. Additionally, moist soil present across the region will increase runoff amounts and favor higher peak flows in the rivers and streams.

As part of their river forecasting process, the NWS Northwest River Forecast Center (NWRFC) in Portland creates spring peak flow

forecasts for the area based on current snowpack and historical runoff behavior in the different drainages. These peak flow forecasts are updated as the snow accumulation season progresses. It is

important to note that it is not possible to forecast flooding from specific rain storms or rain-on-snow events more than 4 to 7 days into the future. Therefore, while the seasonal peak flow forecasts for the season can provide good guidance, short term weather and river forecasts should be closely monitored during rain events on the Advanced Hydrologic Prediction Services (AHPS). For more information on spring runoff and peak flow forecasts, please visit <http://www.nwrfc.noaa.gov/peak/peak.cgi> and <http://water.weather.gov/ahps2/index.php?wfo=otx> ☀ Katherine Rowden.



The Weather Watcher

Of the Inland Northwest



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Trivia: What is graupel?