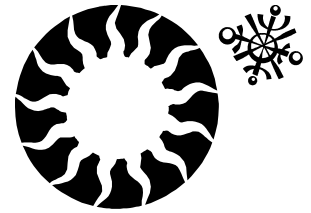


The Weather Watcher

of the Inland Northwest

www.weather.gov/Spokane



Snow Has Arrived

The Inland Northwest experienced the first round of snow for the season during the last week of November. After a prolonged period of high pressure with dry and warm weather in the mountains and cold, foggy weather in the valleys, a strong winter storm complex pushed across the Pacific Ocean toward Washington. Winter was poised to strike!



A strong warm front swept across the Cascades late on the 27th, bringing rain and freezing rain from Wenatchee to Spokane and points north. The freezing rain caused icy roadways and numerous accidents. Then a cold front plowed across the region during the afternoon and evening of the 28th, cooling temperatures and bringing snow to most locations. The hardest hit areas were near the Canadian border from Republic to Sandpoint where 3-5 inches of snow were reported. Meanwhile, a secondary low pressure system developed off the Washington coast and slowly crept inland. The easterly winds associated with this low caused a strong upslope precipitation event. Steady snow developed and accumulated over the east slopes of the Cascades through the afternoon of the 29th with 2-6 inches of snow from Wenatchee to Twisp.

This low pressure center then slowly tracked across the southern Washington Cascades and passed Yakima and Hanford during the early evening of the 29th. As it did, the low center became more organized with a well defined precipitation pattern on radar. This low continued east to Pullman and Pierce, ID. Along and north of the low track, a swath of heavy snow developed which included the Spokane and Coeur d'Alene area. The path of this low and the snow it generated was a difficult call for the NWS forecasters, as it took an attentive watch on satellite, radar and hourly surface observations to be able to make timely updates. The increased atmospheric instability and lift from the low center translated to rapid snow growth. This efficient snow production led to snowfall amounts of 4-7 inches within about 5 hours!

What are the chances the snow will remain on the ground through the month of December? In other words, what is the chance of a "White Christmas"? Well, the odds are in our favor. It appears that the weather pattern will become more unsettled in the coming weeks. If temperatures remain below freezing, we can expect the snow to last through the holiday season! For more on the long range outlook, visit <http://www.cpc.ncep.noaa.gov> ☀ Robin Fox

Mountain Snow Pack off to a Slow Start



With winter upon the Inland Northwest, attention turns to the mountain snow pack in hopes of improving the drought conditions that plagued our region last summer. The mountain snow pack is the primary source of runoff for area rivers and streams in the spring and summer months when the impacts of droughts are most widely felt. The lack of mountain snow pack last winter was the main reason we saw drought conditions last summer. As of early December the water equivalent of the snow packs were 60-80% of normal

across the east slopes of the Washington Cascades to the north Idaho mountains. While these readings are below average, there is still plenty of time left this winter and spring to improve mountain snow pack conditions. Long range weather forecasts remain optimistic that there is a good chance of at least average precipitation occurring this winter and spring across the Pacific Northwest. The first water supply outlook for the upcoming spring and summer runoff season will be issued in early January. ☀ Charles Ross

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Editor's Notes

With the snow on the ground, winter driving season is underway. It is important to allow for extra time when traveling to a destination. Remember to drive defensively and dress appropriately for the weather conditions. It is important to have a winter supply kit packed with warm clothes, a blanket and snacks in case you get stranded.

For any questions or comments on the newsletter, please contact Robin or Ken at (509)244-0110 extension 223 or email w-otx.webmaster@noaa.gov.

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

All articles are written by the NWS staff. A special thanks to Ron Miller, Charles Ross, Bob Bonner, Todd Carter, & John Livingston for their contributions.

How the Weather Works...Air Stagnation

This is a continuing feature where Meteorologist in Charge John Livingston writes an article explaining some of the weather terms and concepts you might see in an Area Forecast Discussion or other weather products and presentations.

Winter is our busiest time of year as snow, wind and cold temperatures bring hazardous travel conditions to the Inland Northwest. In addition to these more "normal" winter conditions, rain and sudden warm ups can bring flooding to our region as happened in February 1996 and January 1997. Yet even when the jet stream moves well north or south of the area and high pressure takes over, National Weather Service (NWS) forecasters become involved in forecasting another potentially hazardous type of weather—stagnant air conditions.

The NWS defines air stagnation as: a meteorological situation in which there is a major buildup of pollutants in the atmosphere. This usually occurs when an air mass remains over the same area for several days. During this time, the light winds cannot "cleanse" the buildup of smoke, dust, gases, and other industrial air pollution.

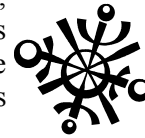
In a typical Inland Northwest stagnation event, a large high pressure system becomes stationary over the western US. There are no storms moving through the area and widespread subsidence or slowly downward moving air creates a temperature inversion where cold air is trapped at the surface by warmer air just above. The air does not mix from the surface upward or hori-

zontally due to the lack of wind, allowing pollutants build up over time.

The Spokane NWS has partnered with federal, state and local air quality agencies to establish the meteorological conditions and procedures for issuance of Air Stagnation Advisories. These partners include the US Environmental Protection Agency, the Washington State Department of Ecology, the Idaho State Department of Environmental Quality, and the Spokane County Air Pollution Control Authority.

The NWS role is to forecast the onset, duration and end of stagnant conditions, while the partners take actions to reduce emissions and mitigate the effects of the build up of pollutants. The NWS monitors and forecasts the weather, while the air quality agencies monitor and forecast the pollution levels.

Our region tends to experience one or two stagnation events that persist three days or more each winter. The topography, short winter days, and a nearby cold continental air source all contribute to this. When you see an Air Stagnation Advisory issued by the NWS, check out the air agency web sites to see what you can do to ease the effects on yourself and your friends and neighbors. ☼ *John Livingston*



Please call the NWS with spotter reports at (509) 244-0435

Ag Expo

The National Weather Service will staff a booth at the upcoming Agriculture Expo, held at the Spokane arena from January 17th through 19th. If you are planning to attend, please stop by for a visit. ☼

Answer: On the shortest day of the year, daylight lasts about 5.5 hrs in Anchorage, 10 hrs in LA, and 8.5 hrs in the Inland NW.

Spotter Notes

Technological advances have made weather spotter reporting more exciting. Now there is an alternative to making phone calls to the NWS office. **Espotter** is here; it is a safe and secure way to send spotter reports online. To be eligible, you need a computer and an internet connection. Simply go the central web site to register and assign a password. The web site is <http://espotter.weather.gov>. After permission is granted, you are able to send your reports to the NWS office. The NWS office will receive your reports almost instantly and respond back if additional information is needed.

The process is fairly self-explanatory, but if you have any questions or concerns, you can contact call the office or contact

w-otx.webmaster@noaa.gov ☼ *Todd Carter*

An Unremarkable Autumn 2005

It was another beautiful autumn in the Inland Northwest, and rather unremarkable weather-wise. September began in its usual fashion, with the last few warm days of summer. Temperatures climbed into the 80s across the region and touched 91° in Lewiston on the 9th. But temperatures were nearly 30 degrees cooler only a couple of days later as a Pacific cold front brought light precipitation to the region on

the 11th and 12th. Although brief warm-ups were still to come, this system was essentially the beginning of the fall weather. The rest of the month was still fairly warm and sunny until another front arrived at the very end of the month and brought almost three quarters of an inch of rain to Spokane.

Autumn Weather Statistics

Wenatchee Airport	Sept.	Oct.	Nov.	Total
Avg High Temp	75.2	61.9	41.5	59.5
Departure from Norm	-1.3	+0.2	-2.5	-1.2
Avg Low Temp	51.8	43.2	30.3	41.8
Departure from Norm	+0.9	+3.1	0	+1.3
Total Precip	0.09	0.46	1.57	2.12
Departure from Norm	-0.34	+0.01	+0.42	+0.09
Lewiston Airport	Sept.	Oct.	Nov.	Total
Avg High Temp	76.6	63.9	46.5	62.3
Departure from Norm	-0.1	+2.0	-0.3	+0.6
Avg Low Temp	49.4	43.7	34.2	42.4
Departure from Norm	-1.5	+2.7	+0.1	+0.4
Total Precip	0.17	1.57	0.48	2.22
Departure from Norm	-0.64	+0.61	-0.73	-0.76
Spokane Airport	Sept.	Oct.	Nov.	Total
Avg High Temp	69.3	57.1	39.9	55.4
Departure from Norm	-3.2	-1.4	-1.9	-2.2
Avg Low Temp	45.7	40.8	29.0	38.5
Departure from Norm	-0.2	+5.0	+0.3	+1.7
Total Precip	0.84	1.03	2.02	3.89
Departure from Norm	+0.08	-0.03	-0.22	-0.17
Total Snowfall	0	0	7.4	7.4
Departure from Norm	0	-0.3	+1.0	+0.7

October is known as the month with the largest average change in temperature. In Wenatchee and Lewiston, the average high temperatures drop from a balmy 70° on the 1st to only 53° on the 31st. In 2005, October started on a cool foot and ended on a mild one, rendering the month nearly constant in temperature. Showery and cool 50s and 60s prevailed for the first week as temperatures were nearly 10 degrees cooler than normal. But thoughts of a cold and wet fall were soon replaced by stunning mild and sunny weather. Lewiston reached 78° on both the 14th and 17th while Wenatchee saw a reading of 75° on the 17th. While none of these were records, they were still 10 or more degrees above the mid-October normals. Even Spokane didn't record a freezing temperature in the month of October, a feat that hadn't occurred since 1952! By the end of the month, the weather pattern had returned to a more typical one: cool and showery.

Once again, this continued into the next month. November saw cooler than normal temperatures for the first half of the month with intermittent periods of precipitation. Spokane even recorded a inch of snow on the 13th, although most of it melted quickly. Even so, it was great news for local ski resorts after contending with a dry and mild winter last year. But once again, high pressure built into the area. But while this pattern brings warm weather during September or October, in the low sun angle month of November it brings fog and low clouds. The stagnant conditions persisted through the Thanksgiving holiday. A weak front managed to slip through the ridge on the next day and bring some freezing rain to the area. After that things only got worse, as snow returned to much of the area. Spokane picked up 5.2" of snow on the 29th as temperatures stayed below freezing for the first day. Apparently, winter had arrived right on schedule. ☀ *Ron Miller*



Coop Corner

The following cooperative observers were recognized for their many years of service in 2005. The NWS appreciates your hard work and dedication. Congratulations on your accomplishments and keep up the good work! ☀ *Bob Bonner*



Holm Award	40 years	Galbreath family	Ritzville, WA
Holm Award	36 years	William Hoffman	Rosalia, WA
Length of Service	35 years	Norma Booher	Smyrna, WA
Length of Service	25 years	Janice Lecaire	Northport, WA
Length of Service	15 years	Michael Price	Bonnors Ferry, ID
Institutional Award	50 years	City of Tekoa	Tekoa, WA

Remember your Winter Spotter Checklist

Snow- 2" in valleys
6" in mountains

Any **mixed or freezing** precipitation

Reduced Visibility — under a mile due to snow, fog or rain, etc.

Any **Flooding**

Strong Winds— 30 mph+ or damage

Hail— pea size or larger

Heavy Rain— Showery— 1/2+" an hour
Steady Rain- 1" in 12 hrs or 1.5"+ in 24 hrs

Travel Problems or Any Damage due to hazardous weather.

Skywarn Recognition Day

It was a busy day at the NWS office on December 3rd, as the local ARES/RACES amateur radio group arrived for the annual Skywarn Recognition Day. During this 24-hour special event, teams of radio amateurs set up stations at local NWS offices to contact other radio enthusiasts across the US and around the world. Operators exchange call signs, signal reports, and a one or two word description of their weather, such as "cold" or "sunny."

Co-sponsored by the NWS and the American Radio Relay League (ARRL), SKYWARN Recognition Day is the Weather Service's way of expressing its appreciation to amateur radio operators for their commitment to helping keep communities safe. It celebrates the contributions that volunteer SKYWARN radio operators make to the National Weather Service. Ham radio operators, who volunteer as storm spotters, are an extremely valuable asset to National Weather Service as they are cross-trained in both communications and severe storm recognition. More information on the Skywarn Recognition Day can be found at <http://www.crh.noaa.gov/hamradio/index.php>.

While NWS offices utilize the real-time reporting of severe weather events to assist in warning operations, hurricanes Katrina and Rita have shown that radio operators are equally important during the recovery phase of natural disasters. After Katrina knocked out nearly all conventional emergency communication gear, 911 centers, cell towers and telephone service across southern Louisiana and Mississippi, amateur radio volunteers immediately stepped in to relay emergency traffic where normal communication was non-existent. ☼



Staff News

There has been a change in the staff at the NWS Spokane. Meteorologist John Werner took a new position in Mobile, Alabama in October. He and his wife Connie have a home on the Gulf Coast and were eager to return. Meanwhile, a new meteorologist has recently been selected to fill his spot, Jeremy Wolf. Jeremy is currently at the NWS Pendleton office and will be arriving in January. He is originally from Vancouver, WA. We wish John, Jeremy, and their families good luck with their new endeavors. ☼

The Weather Watcher Of the Inland Northwest



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Trivia: How much daylight is available on the winter solstice?

Happy Holidays
From NWS Spokane

