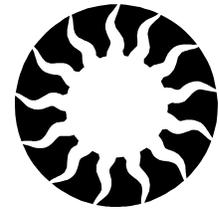


The Weather Watcher

of the Inland Northwest

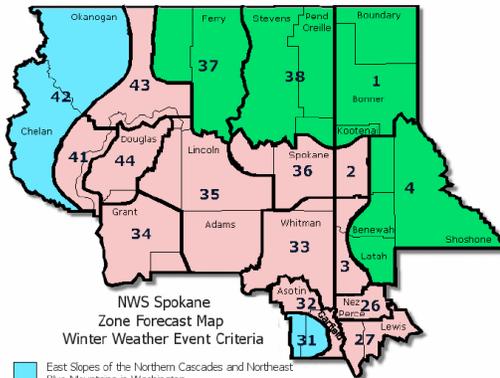
www.weather.gov/Spokane



Updated Snow Criteria for this Winter

The National Weather Service (NWS) in Spokane, like other forecast offices throughout the region, uses various criteria to formulate and verify winter weather watches, warnings, and advisories. Criteria are established for many types of winter weather including: ice accumulation, freezing rain, heavy snow and blowing snow, and blizzard conditions. Forecasts during the winter season are among the most challenging, especially snow amounts over our region's varied and complex terrain. NWS Spokane forecasters use specific snow amounts, and even times of year, when considering the issuance of a winter weather highlight. These criteria vary depending upon the area and elevation. Follow-

Note: Criteria are established for each forecast zone (see map below) and, in some cases, they are different for lower and higher elevations within each zone.



NWS Spokane
Zone Forecast Map
Winter Weather Event Criteria

- East Slopes of the Northern Cascades and Northeast Blue Mountains in Washington.
- Okanogan Highlands, Northeast Mountains and Valleys in Washington, and in Idaho the Northern Panhandle and Central Panhandle Mountains and Valleys.
- Lower Elevation Zones of the Wenatchee Area, Okanogan Valley, Columbia Basin, Spokane and Coeur d'Alene Areas, the Washington and Idaho Palouse, Lewiston/Clarkston Areas and the Camas Prairie.

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Editor's Notes

September is NOAA Weather Radio Awareness month for Washington. This is terrific time to get prepared for hazardous weather, especially for the upcoming winter months.

NOAA Weather Radio is the voice of the National Weather Service, broadcasting the latest forecasts and warnings, 24-hours a day. In addition, it is an "all hazards" warning system, used not only for weather events but for volcanic activity, hazardous releases, & AMBER alerts.

For any questions or comments on the newsletter, please contact Robin at (509)244-0110 extension 221 or email nws.spokane@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, Kerry Jones, Jeremy Wolf, Matt Fugazzi, and Milt Maas for their contributions.

East Slopes of the Northern Cascades and Northeast Blue Mountains in Washington (WA Zones 31 and 42)

All Elevations	Warnings		Advisories	
	12 hour	24 hour	12 hour	24 hour
Standard	8+ inches	12+ inches	5-7 inches	7-11 inches

Early or Late Season between April 1-Oct 31	4+ inches	6+ inches	2-3 inches	3-5 inches
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Okanogan Highlands (and valleys), the Northeast Mountains (and valleys) in Washington, and in Idaho the Northern Panhandle and the Central Panhandle Mountains (and valleys).

Above 3000' (Mountains)	Warnings		Advisories	
	12 hour	24 hour	12 hour	24 hour
Standard	8+ inches	12+ inches	None	None
Early or Late Season between April 1-Oct 31	4+ inches	6+ inches	None	None

Below 3000' (Valleys)	Warnings		Advisories	
	12 hour	24 hour	12 hour	24 hour
Standard	4+ inches	6+ inches	2-3 inches	3-5 inches
Early or Late Season between April 1-Oct 31	4+ inches	6+ inches	2-3 inches	3-5 inches

Lower Elevation Zones of the Wenatchee Area, Okanogan Valley, Columbia Basin, Spokane and Coeur d'Alene Areas, the Washington and Idaho Palouse, Lewiston and Clarkston Areas and the Camas Prairie

All Elevations	Warnings		Advisories	
	12 hour	24 hour	12 hour	24 hour
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Early or Late Season between April 1-Oct 31	4+ inches	6+ inches	2-3 inches	3-5 inches
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ing an event, detailed verification results are compiled based upon these criteria.

In an effort to simplify our winter weather event criteria, NWS Spokane recently conducted an extensive evaluation of current policies regarding winter weather watches, warnings, and advisories. Based upon the findings, NWS Spokane has proposed new updated criteria that are summarized in the following tables. We are in the final review process and would appreciate any comments regarding the updated criteria. The plan is to implement the new policies on October 1st, in time for the upcoming winter of 2006-07. Please feel free to contact John Livingston at 509-244-0110 x221 or via email: john.livingston@noaa.gov.



A Summer of Extremes

June started off on a wet foot. Spokane picked up 3.09" of rain for the month, and all of that fell in the first 14 days. Thunderstorms were common during this period over much of the Inland Northwest. Heavy rains washed out roads near Spangle on the 10th. Two days later thunderstorm rains caused a flash flood and mudslide in the Entiat River valley in the Cascades. On the 13th an unusual severe thunderstorm developed near Pullman before 7 am and moved northward to the Spokane metro area. Along the way the storm produced numerous reports of ¾" to 1" sized hail, as well as a flash flood in Spokane washing out a road. The 3.09" of rain ranked as the 6th wettest June out of 126 years. The weather dried out for the second half of the month, with temperatures warming considerably after the 24th. Lewiston, Ephrata, Moses Lake, Omak and Wenatchee reached the century mark on the 26th and 27th.

July saw its share of hot weather. While many of the 4th of July weekends in the Inland Northwest are not very summer-like, this year was one of those exceptions. Most locations reached the 90s over the holiday weekend with a few sites topping out around 100°F. Added to that were some thunderstorms that developed in the late afternoon and evening, providing an additional light show for some residents. The start of the fireworks display at Spokane

was actually moved up a half hour after NWS meteorologists warned organizers of the thunderstorms headed toward the city. These storms also produced hail up to 1.25" in Harrington and Wash Tucna. Over the next two days, thunderstorms dropped 1" hail over a large area between Wenatchee and Omak, resulting in considerable damage to the fruit crops. Flash flooding also washed out roads and caused mudslides between Lake Chelan and the Methow Valley. Strong thunderstorms on the 12th produced damaging winds in the Columbia Basin and in Spokane. Thunderstorm activity ended as a hot high pressure ridge took hold of the area on the 21st. The region sweltered under near record heat for 5 days. Lewiston hit 100°F or more 7 days in a row, while Wenatchee did it 4 consecutive days and Spokane 3 days. The heat finally broke by the end of the month with temperatures cooling into the 70s and lower 80s, a welcome relief.

August turned out to be near-average for temperatures, but continued dry. Three notable hot spells occurred during the month, with Lewiston reaching the triple digits each time. But these hot spells lasted only about 5 days and were followed by a period of below-average temperatures, bringing some relief to Inland Northwest residents. The last cool spell came at the end of the month. After temperatures climbed into the 90s and lower 100s on the 28th, a very cool Pacific air mass moved onshore. Temperatures just 2 days later had dropped 30 degrees in Spokane with a high on the 30th of only 63°. Lewiston experienced a drop of 37 degrees in 2 days. Locally freezing morning temperatures were observed in Priest Lake and Deer Park. As for moisture, August 2006 was quite dry. Most of the locations along the east slopes of the Cascades did not even measure a trace of rain for the entire month. The northern Idaho panhandle did pick up some much needed rain from some severe thunderstorms on the 10th. Hail up to 1 inch also fell from these storms, along with some damaging wind gusts. ☼ *Ron Miller*

Summer Weather Statistics

Wenatchee Airport	Jun	Jul	Aug	Total
Avg High Temp	79.8	91.3	87.5	86.2
Departure from Norm	+1.1	+4.6	+1.4	+2.4
Avg Low Temp	56.4	64.4	61.0	60.6
Departure from Norm	+2.5	+4.6	+1.3	+2.8
Total Precip	0.75	0.03	0.00	0.78
Departure from Norm	+0.11	-0.27	-0.35	-0.51
Lewiston Airport	Jun	Jul	Aug	Total
Avg High Temp	80.5	95.6	89.6	88.5
Departure from Norm	+2.6	+8.0	+2.0	+4.2
Avg Low Temp	56.4	63.0	58.3	59.2
Departure from Norm	+2.8	+3.7	-1.0	+1.8
Total Precip	1.45	0.21	0.18	1.84
Departure from Norm	+0.29	-0.51	-0.57	-0.79
Spokane Airport	Jun	Jul	Aug	Total
Avg High Temp	75.0	87.7	83.1	81.9
Departure from Norm	+1.1	+5.2	+0.5	+2.3
Avg Low Temp	52.1	59.7	54.7	55.5
Departure from Norm	+2.9	+5.1	+0.2	+2.8
Total Precip	3.09	0.10	0.24	3.43
Departure from Norm	+1.91	-0.66	-0.43	+0.82

Answer: It is a unit used to relate the day's temperature to the energy demands of heating or air conditioning. To calculate, a heating degree day = (65° - Avg Temp), and a cooling degree day = (Avg Temp - 65°).

Autumn to Winter Outlook

The Climate Prediction Center (CPC) of the National Weather Service is responsible for the long range outlooks for the nation. The CPC autumn outlook for the Inland Northwest indicates a greater chance of above normal temperatures and below normal precipitation. This trend is forecast to continue into the early winter season as a weak El Nino conditions have developed. For more information, visit the CPC web site at <http://www.cpc.ncep.noaa.gov/>. ☼ *Robin Fox*

NWS Spokane

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Dwight Williams

Electronic Technicians

Paul Kozan

Facilities Technician

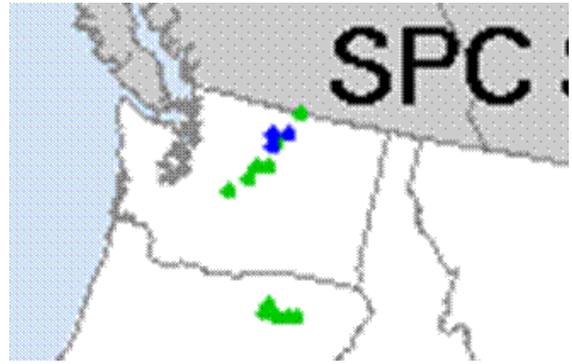
Mike Belarde

Spotter Corner

I would like to give a big THANK YOU to all the weather spotters after our very active convective season this year. You, as weather spotters, provide the “ground truth” for the hazardous weather across eastern Washington and north Idaho. This “ground truth” is the lifeblood of our short-term severe weather warning and forecasting operations. When you submit a report, either by phone, ham radio or online, the report is documented at the NWS office by your spotter ID and location. If the report reaches or exceeds warning criteria, it is included in a Local Storm Report which is disseminated to the media and the public. This report is also sent to the Storm Prediction Center in Norman, OK, which uses the information to plot a national map of reports. For more information or to view the spotter reports maps, please visit <http://www.spc.noaa.gov/>

The map on the right was created by the storm reports gathered on July 5, 2006. The dots noted over central Washington represent the severe weather reports received from weather spotters. Severe thunderstorms produced strong winds, large hail, and heavy rain especially near Lake Chelan into western Okanogan county. ☀ *Robin Fox*

Here were some of these spotter reports that were submitted on this day by area spotters.



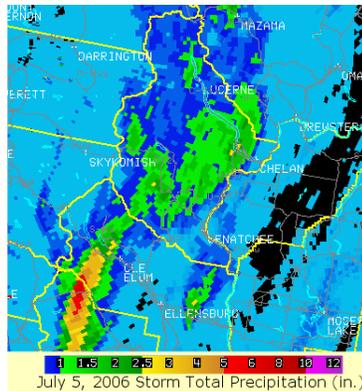
1715 PDT - Chelan #27: 14 mi NW Entiat – 1 inch hail.

1801 PDT - Chelan EM: 2-3 feet deep of mud covering roadway on Slide Ridge Road along south shore of Lake Chelan

1820 PDT - Chelan #24: Mason area – 1 inch size hail and tree down in Navarre Coulee

1825 PDT - Chelan #36: Chelan area – dime size hail with 0.87” of rain in an hour, mudslides spotted and trees down.

Flash Floods



During the afternoon of July 5, 2006, an outbreak of severe thunderstorms along the east slopes of the Cascades resulted in significant flash flooding near Lake Chelan. The radar image above depicts several strong to severe thunderstorms at around 4 pm PDT. Radar estimated between 2.5 and 3.0 inches of rain within about a 2 hour time span, as depicted in the storm total precipitation image above. Runoff from the very heavy rain resulted in a significant rock and debris slide along Slide Ridge south of Lake Chelan. The slide damaged portions of South Lakeshore drive between Lake Chelan State Park and 25 Mile Creek State Park. ☀ *Kerry Jones*

Staff News

There have been many changes to the faces around the NWS Spokane office over the past several months. In addition to the arrival of Kerry Jones, the Warning Coordination Meteorologist in June, two new forecasters arrived in July. Lead forecaster Greg Koch moved from Pleasant Hill, Missouri. A native from Nebraska, he worked in Pendleton, Oregon, as an intern forecaster several years ago and enjoyed the challenges of the West. He and his wife look forward to making their home in Spokane. Forecaster Mike Fries made the move from Washington, D.C., where he had worked at the Hydrometeorological Prediction Center as an analyst of meteorological models. He is originally from Michigan and a recent graduate of University of Wisconsin-Madison. Mike is excited to forecast the weather for the Inland Northwest.

Forecaster Intern Jeffrey Coté received a promotion on station to a forecaster in July. Jeffrey has been at the office for the last 2 years where he worked primarily in the upper air program. He is eager to expand his office roll into forecasting. A new Forecast Intern, Steve Bodnar, will arrive from Norman, OK, by mid October.

Electronics Technician Robert Sumpter left NWS Spokane to take a position for the FAA in the Tri-Cities in July. Meanwhile, Ray Grant of Riverton, Wyoming, has accepted the position as the new Electronics Technician. He will arrive in October. Finally, Hydrologist Charles Ross will be leaving the Spokane office in October. He will be taking a position with the Bonneville Power Administration in Portland, Oregon.

We welcome the new staff to the Spokane weather office and bid farewell to those who will be traveling on to greater endeavors. We wish the best of luck to all! ☀ *Robin Fox*

Remember your Autumn Spotter Checklist

Funnel Cloud or Tornado

Hail— pea size or larger

Reduced Visibility — under a mile due to smoke, rain, blowing dust, etc.

First snow of the year

Strong Winds— 30 mph+ or damage

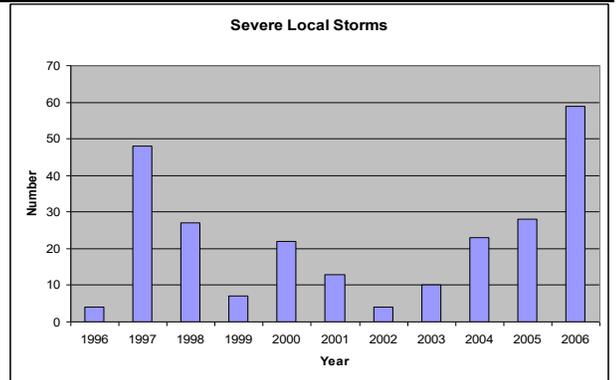
Heavy Rain— Showery— 1/2+” an hour
Steady Rain- 1” in 12 hrs or 1.5”+ in 24 hrs

Travel Problems or Any Damage due to hazardous weather.

Active Severe Weather

Eastern Washington and North Idaho experienced an unusually active severe weather season this year with 59 separate severe local storm events (tornadoes, flash floods, and severe thunderstorms). As seen in the graph, it appears the spring and summer of 2006 was the most actively severe in the last 10 years. Most of the storm reports were received from intrepid weather spotters throughout the region.

Why was this year so active? Necessities for the formation of thunderstorms are instability, atmospheric lifting and adequate moisture. During most summer seasons there is no shortage of hot, dry and unstable days over the Inland Northwest, with the occasional weak weather impulses providing atmospheric lift. The element which is usually lacking during the warm season in this region, but appeared frequently this year, was adequate moisture. Whether streaming in from the Pacific on westerly flow, or infiltrating from the south in monsoonal waves, deep atmospheric moisture was in abundance this year. Thus, there were more opportunities for all of the elements to come together at the same time, producing an unusually busy year for storm spotters. ☀*Matt Fugazzi*



One Busy Fire Season

The 2006 fire season has been hectic across the Inland Northwest, and the western U.S. in general. So far, it has been the most active season since 2003. According to the situation reports as of September 15th, there were 8 major fires in eastern Washington which have consumed over 240,000 acres. The bulk of the wildfire activity has been in the higher country of Okanogan county and most can be attributed to lightning. The largest fire in the forecast area has been the Tripod fire, north of Winthrop, Washington. In the Idaho Panhandle, there were 3 major fires which have consumed over 8700 acres. The outlook for the remainder of the fire season indicates more Pacific storm systems delivering cooler and moister conditions to the region through late September. This will help decrease the wildfire threat by early October. ☀*Jeremy Wolf*

The Weather Watcher

Of the Inland Northwest



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Trivia: What is a heating or cooling degree day?